

# **OUTCOME 2**

**#SETUP**

## **Empowering MSMEs for World-Class Products**



**Department of Science and Technology**

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OUTCOME 2 **#SETUP** | EMPOWERING MSMEs FOR WORLD-CLASS PRODUCTS

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## FOREWORD

Science Nation. The phrase is not an apt description for our country of 7,107 islands. Not yet.

The key to make the Philippines a real “Science Nation” is information. With information, programs and technologies developed or funded by the Department of Science and Technology (DOST) – as well as other locally crafted technologies which help solve the country’s multi-sectoral problems - become known among Filipinos in all corners of the archipelago, thus pushing them to avail or to take advantage of these science-based innovations to uplift their lives.

When such information is cascaded to the Filipino everyman – every Juan and Maria, including those in the so-called “laylayan ng lipunan” - a lot of things are on cue to take place:

Farmers will become more productive and earn more, small enterprises will grow, thrive and be more competitive, industries will be revitalized, technopreneurship will be more prevalent and employment will increase via the Business Process Management (BPM) sector, government services will become more responsive, healthcare services will improve and become more accessible to more Filipinos, opportunities for S&T education especially among the underprivileged will become more available, and the citizenry will be armed with more effective strategies for disaster preparedness and strategies.

What I had just mentioned are the DOST 8 Outcomes – eight specific targets that the Department aims to achieve in the long run via the following sectors: Agriculture (Outcome 1), Enterprise (Outcome 2), Industry (Outcome 3), IT-BPM (Outcome 4), E-governance (Outcome 5), Health (Outcome 6), Education (Outcome 7), and Disaster Preparedness (Outcome 8).

This compendium of seven publications is a tool for delivering such vital information. It presents to you how DOST and its 8 Outcomes address the current problems in each of these sectors, and thus help contribute to the Philippines’ economic resurgence. Six of these seven publications tackle one DOST Outcome each, while the seventh publication focuses on both Outcomes 4 and 5.

In short, this collection is a veritable showcase of the Department’s various initiatives across these eight sectors, with stories of ordinary Filipinos whose lives have been touched by the possibilities that S&T has to offer. These stories – encapsulated in news and feature articles – were written by information officers from the different DOST agencies. The articles capture in a nutshell the pivotal role of S&T in a nation’s journey to progress and prosperity and why, therefore, S&T should not be taken lightly by any nation, much less a developing country such as the Philippines. S&T, on the contrary, should be at the forefront



of government efforts to drive the country forward and sustain this horizontal trajectory. S&T therefore, should not take the backseat.

This particular publication – titled **#SETUP Empowering MSMEs for World-Class Products** focuses on DOST's Outcome 2 which is Enterprise. For this outcome, DOST aims to provide innovative, cost-effective, and appropriate technologies that enable micro, small and medium enterprises (MSMEs) to develop and produce competitive products that meet world-class standards. This will be fulfilled through implementation of necessary technology catch-up programs for local MSMEs to be at par with those in other countries. These include the establishment of innovation centers nationwide to make developed technologies more available to majority of MSMEs for product development; enhancing/upgrading testing, calibration and quality assurance facilities and services; and expanding DOST's Small Enterprise Technology Upgrading Program (SETUP), one of the Department's big-ticket programs; and sustaining jobs created.

Indeed, information is one of the starting blocks for the country's successful run toward being the definitive Science Nation that it should be. For it is only through complete, accurate, comprehensible,

and timely information that mass or public awareness is generated. If the public is aware of scientific and technological developments, they now know how to improve their lives, and thus take action to make this a reality. If there is action, S&T then gets the chance to show off its full capability: rolling its veil of magic across the sectors, over the entire nation, to wrap the entire Philippine population with the bountiful fruits of harnessing its S&T resources. All these, for the welfare and the future of the Filipino.

I humbly invite you to read the stories in this publication and in all of the other six publications as well. In reading these, not only will you get a sense of S&T's importance to a nation, you will also learn how S&T can actually touch your life and that of your family, how it can help you fulfill your dreams, keep you safe and healthy, and allow you to touch other people's lives as well.

Reading these stories will make you realize that S&T has always been a part of our lives and will always be. All we have to do is acknowledge it, use it, and maximize it.

When we do, we're well on our way to becoming a real "Science Nation."



**DR. ARISTOTLE P. CARANDANG**

Chief, Communication Resources and Production Division  
Department of Science and Technology-Science and Technology Information Institute (DOST-STII)

## MESSAGE

There is science in enterprise and there is enterprise in science.

This book chronicles the lives of our Filipino entrepreneurs who embraced the power of science, technology, and innovation as potent tools in achieving business success. Likewise, this book also heralds the science behind the proliferation of successful entrepreneurial endeavors.

The Department of Science and Technology (DOST) takes pride in one of its flagship programs envisioned to elevate our micro, small, and medium enterprises in the international community - the **Small Enterprise Technology Upgrading Program or SETUP**.

Some of the featured stories of DOST intervention through SETUP are the following: agricultural machineries in the highlands of the Cordillera;

world class packaging technology; high standard wine and vinegar production by an indigenous tribe in Zamboanga; sophisticated balut making; and the Community Empowerment through Science and Technology or CEST program that improves the lot of those in the countryside.

In these pages, you will experience our entrepreneur's personal struggles, strong determination, and the unwavering faith to succeed using science and technology. We reveal to you their triumphs and how they overcame the challenges and turned liabilities into opportunities.

I know that as you read their stories, you will create your own dreams as well. This is what we want to achieve by sharing with you their stories. Let this be your own bible for success because we believe that the Filipino entrepreneur, embracing the culture of science and technology, can beat the odds and come out winners.



RAYMUND E. LIBORO  
Assistant Secretary

## MESSAGE

The Department of Science and Technology's (DOST) information arm – the Science and Technology Information Institute (STII) – is proud to present “#SETUP Empowering MSMEs for World-Class Products” for Enterprise, a collection of inspiring, relevant, and interesting stories of ordinary men and women around the archipelago whose lives have been changed by science and technology (S&T) and the various initiatives poised to elevate the Filipino's standard of living in ways that only an all-encompassing game changer can do. That game changer is of course, S&T.

“Science and Technology: Changing the Game” for Enterprise is part of a compendium chronicling the DOST 8 Outcomes – or eight thrusts for the Philippines as it fulfills its mandate to “provide central direction, leadership and coordination of scientific and technological efforts and ensure that the results therefrom are geared and utilized in areas of maximum economic and social benefits for the people.”

This particular publication is all about Outcome 2 which is geared toward Enterprise. To achieve its plans and vision for Philippine enterprises, DOST has developed programs for the benefit of the country's micro, small and medium enterprises (MSMEs), among which are SETUP or the Small Enterprise Technology Upgrading Program and CEST or Community Empowerment through Science and Technology.

DOST also continues to create cost-effective yet high-impact technologies that will help upgrade MSMEs' production processes to improve

the quality of their products, make them more competitive not just in the local market but also in the regional market, and thus enable the small enterprise owner to earn more and grow his business.

Some of DOST's efforts are detailed here, giving the readers a bird's eye view of how DOST is navigating its roadmap for Philippine enterprises, with S&T resources as its well-oiled wheels.

Yet, Enterprise is just one of its 8 Outcomes. The others are: **Agriculture** (Outcome 1), **Industry** (Outcome 3), **IT-BPM** (Outcome 4), **E-governance** (Outcome 5), **Health** (Outcome 6), **Education** (Outcome 7), and **Disaster Preparedness** (Outcome 8).

Together, DOST's projects across these 8 Outcomes will help keep the country on course, and keep its desired results on target.

For this end, STII will keep on churning timely, accurate, and easy-to-understand information to help make the DOST mission complete. After all, it is through information via publications such as this that scientific and technological advancements – key ingredients for national development – are made known to policy makers, leaders, and the general public who are ultimately the beneficiaries of well-utilized S&T resources.

May the reader find this publication useful – for his daily life, his education, his work and livelihood, his family, for the present, and most of all, for his future.

  
**RICHARD P. BURGOS**  
 Director, STII



## DOST chief cheers SETUP-assisted firms for rising after Yolanda

By JOY M. LAZCANO, DOST-STII

Ormoc City, Leyte - Department of Science and Technology (DOST) Chief Mario G. Montejo made the rounds of three successful DOST assisted firms in Ormoc City at the recent opening of the Visayas Cluster Science and Technology Fair hosted by DOST Regional Office VIII at the Ormoc City Superdome.

In his visit, Sec. Montejo was elated to see how Eastern Visayas has recovered from the debilitating effects of Super Typhoon Yolanda two years past. "I am glad that we are seeing firms that were affected by the calamity and are now getting back on their feet," said Montejo during one of the stops at Mayong's Bakeshop and Snackhouse.

Montejo who hails from Leyte, attended the launching of Mayong's two new veggie bread products, the squash and malunggay breads, which are the firm's contribution in fighting malnutrition in the region. According to Peter Rodriguez, chief executive officer of Rodriguez Burger and Bread Co., "Mayong's strives to provide healthy and quality food products over the years, that is why we sought DOST's help in achieving that business model."

Mayong's is one of the leading fast food and bakeshop firms in Ormoc in Leyte province. Part of DOST's assistance under the Small Enterprise Technology Upgrading Program (SETUP) in the province is the transfer of technology for veggie breads to form a new line of food products that addresses the prevailing malnutrition in the province. Aside from this, DOST assisted in guiding the company in its packaging development, consultancy on efficient sanitation standard operations, and upgrading of processing equipment.

In a report given by Dr. Ma. Lourdes Lampong, city nutrition action officer, the province has a "malnutrition rate of 12 percent which exceeds the 10 percent allowable rate." "We are approaching the 13 percent mark, and the government should make the necessary actions to counter this trend," added Lampong.

As part of the government's initiative in countering malnutrition in Leyte, Department of Education Superintendent Carmela Tamayo said that the education department

will include the veggie breads, which are developed by DOST, into its department's feeding program.

Aside from Mayong's, Montejo also visited Armea Enterprises, a firm that specializes in fabricating food processing equipment.

DOST helped the firm in acquiring the much needed metal working equipment such as bending and cutting machines. Juanita Armea intimated to Montejo that she used to outsource bending and cutting of metal sheets outside Ormoc City. "We bring them to Cebu just to bend the sheets which cost us P50 per bend," says Armea.

The firm now produces various lines of baking and kitchen equipment, and steel-based architectural. It also accepts contract services on metal works.

Aside from Mayong's and Armea Enterprises, Montejo made a short trip to Brgy. Bantique also in Ormoc to see the development of another SETUP Program beneficiary. Victor Kangleon of VSK Vehicle and Equipment Rentals received a boost in his metal fabrication business when he applied for assistance in acquiring industry grade metal bending equipment. VSK is producing chassis for light vehicles and trucks, steam wheel gears, oil mill shaftings, and sprocket U-belt for the geothermal plant in Leyte.

After the DOST assistance, VSK has a production capacity of 80 chassis for trucks and light vehicles, 20 steam wheel gears, 12 oil mill shaftings and four sprocket u-belt.





During the Science Nation Tour at the Cordillera Administrative Region, Jennifer A. Calawa, manager of SETUP beneficiary Green Salad Farms, shows the various crops in their greenhouse at Guisguisaan, Mount Data, Bauko, Mountain Province.

## DOST's SETUP hoists agri and machinery firms in Cordilleras

By LOTUSLEI P. DIMAGIBA, DOST-STII

The Department of Science and Technology's (DOST) pursuit toward "Agham na Ramdam" for every 'Juan' has reached the far flung areas of Cordillera with the holding of its Science Nation Tour in the Cordillera Administrative Region (CAR) recently.

Science Nation Tour is a nationwide roadshow that aims to highlight the benefits of DOST programs and technologies in every region of the archipelago.

To showcase how science and technology directly impact on people's livelihoods and day to day living, part of its activities is a series of project visits to micro firms within the region which benefited from DOST's SETUP, or Small

Enterprise Technology Upgrading Program which provides assistance to micro, small and medium enterprises.

In CAR, project visits were made to Green Salad Farms and St. Bede Mushroom and Vegetable Growers Association, both in Bauko, Mountain Province; and in Aurochs Aerospace Precision Manufacturing Corporation (AAPMC) in Loakan, Baguio City.

These three firms achieved an increase in production and gross sales after the technological interventions given to them through SETUP.

DOST assisted in two phases: first, by upgrading the greenhouse for high value crops

production which was implemented in October 2010 and second, by upgrading Green Salad Farms, implemented in October 2014.

Assistance came in the form of: acquisition of a 1,500 sqm greenhouse facility with one set drip irrigation system, colloid mill, double jacketed kettle, pulveriser, electric dryer, steamer, foot sealer for carrot processing; training on carrot-pineapple-mango juice processing and label design; laboratory testing of products and information material support.

Green Salad Farms, which was an open field prior to the intervention, gradually increased its gross sales right from the first year. Before, the firm posted P 4.8M in gross sales. After the intervention, gross sales increased to P 7.2M for the first year, P 7.7M for the second year and P 8.6M for the third year. They were also able to increase their produce of Romaine lettuce from 96,000 kg to 144,000 kg.

Jonie B. Calawa and Jennifer A. Calawa, managers of Green Salad Farms shared their thoughts: "I started with 200 sqm, and then it expanded," said Jonie. Jennifer also mentioned that the greenhouse helped a lot in preventing rain and mud from getting into their crops and frost from damaging the crops.

Meanwhile, St. Bede Mushroom and Vegetable Growers Association availed of SETUP to upgrade their community-based oyster mushroom production. An autoclave and inoculating chamber were acquired while information material support was provided.

Lydia Orpilla, secretary of St. Bede Mushroom and Vegetable Growers Association, said that prior to the intervention, "Naglututo kami sa drum, firewood ang gamit naming panggatong (We cooked and we were using firewood as fuel)." She said that with their conventional method of sterilization, it took 5-6 hours with a capacity of 80 bags. With the autoclave, however, sterilization time was reduced to 3-4 hours with 130 and more bag

capacity. Additionally, the inoculating chamber aided the prevention of contaminants in their spawn and fruiting bags.

On the other hand, DOST assisted AAPMC through capacity and equipment upgrading via SETUP as well as its CREAMM Project (Clustering of Regional Enterprises for Agro-Industrial Machinery and Parts Manufacturing) and Manufacturing Productivity Extension or MPEX Consultancy.

AAMPC provides products and services to the industrial, automotive, aerospace and defense markets. The company was able to improve its process and production efficiency by integrating de-burring operations which involve the removal of unwanted materials from machine parts, by improving the cleaning system for de-burred metal parts, training 63 individuals in deburring, and hiring nine regular employees and 33 part-time employees.

Truly, with the Science Nation Tour – "Agham na Ramdam" is more than just a tagline; rather, it is an actuality - happening and spreading in the regions of the Philippines to make the average Juan feel the many benefits of science and technology in his daily life.



Abigail Ballo, member of St. Bede Mushroom and Vegetable Growers Association shows their oyster mushroom facility at Monamon Sur, Bauko, Mountain Province.



Rejano's Bakery owner Carmelita Rejano-Reyes expresses joy as she receives the plum prize.



Keroobee Farms



McAlba Foods



## Rejano's Bakery wins DOST's Best SETUP Adoptor Award, MSMEs Packaging Innovation Award

By LOTUSLEI P. DIMAGIBA, DOST-STII

**R**ejano's Bakery emerged with back to back victories as it grabbed the Department of Science and Technology's (DOST) 2015 Best SETUP Adoptor Award and MSMEs Packaging Innovation Award during the SETUP Forum at the recent National Science and Technology Week (NSTW) at SMX Convention Center in Pasay City.

SETUP, or Small Enterprise Technology Upgrading Program, is one of DOST's leading programs for micro, small and medium enterprises (MSMEs) in the Philippines. It aims to provide financial assistance and encourage MSMEs to adopt technological innovations for the improvement of their products, process and operations to boost their productivity and competitiveness. A SETUP adoptor is any MSME which has availed assistance from SETUP.

Rejano's Bakery bagged the regional Best SETUP Adoptor Award for MIMAROPA, earning for the bakeshop an automatic berth to the nationwide competition.

The other regional winners were Keroobee Farms of CAR Region, Ressteel Construction of Region I, Base Wood Products of Region II, Mom's Haus of Mushroom of

Region III, Starwood Manufacturing Company, Inc. of NCR, Riclet Engineering of Region IV-A, Prima General Merchandise of Region V, Filbake Food Corporation of Region VI, Viricap Light Metal Industries of Region VII, Ormoc Marm Mercury Hardware and Allied Services Inc. of Region VIII, Marc's Balut of Region IX, McAlba Foods Corporation of Region X, Tagum Golden Foods of Region XI, Tecuala Mini Sawmill and Wood Works of Region XII, and Guerta Enterprises of CARAGA Region.

Following Rejano's Bakery as finalists were Keroobee Farms and McAlba Foods Corporation.

Meanwhile, the two other finalists for the MSMEs Packaging Innovation Award were Chocovron Global Corporation of Region IV-A and Javier's Instant Salabat Producers Association of Region VIII.

"DOST-SETUP has really been such a huge help. Our business has grown tremendously, earning more than 10 times its previous earnings prior to SETUP's assistance," said Rejano's Bakery owner Carmelita Rejano-Reyes during the awarding ceremony.

Reyes assured the Department that she will help in the promotion of SETUP in order to reach out to more MSMEs around the country.



DOST-ASSISTED PRODUCTS FEATURED IN ROADSHOW. Norphil Health Foods Corporation's ready-to-drink fruit juices were among the Cagayan Valley products on exhibit during SETUP Summit, one of the activities during the Department of Science and Technology's (DOST) Science Nation: Agham na Ramdam roadshow from March 24-26, 2015 in Tuguegarao City. The roadshow, which was on its second leg in Cagayan, will travel to all 17 regions of the Philippines to showcase the various DOST programs and their benefits to the average Filipino. SETUP, or Small Enterprise Technology Upgrading Program assists small enterprises via funding, technology upgrade, and manpower training. With assistance from SETUP, Norphil, based in the municipality of Lal-lo in Cagayan, was able to upgrade its production of organic fruit juices in PET bottles. (Photos by Henry A. de Leon, S&T Media Service, DOST-STII)

## Region 2's small enterprises showcased in DOST roadshow

**M**icro, small and medium enterprises (MSMEs) in Cagayan Valley or Region 2 created a strong presence during the second leg of the Department of Science and Technology's (DOST) nationwide roadshow dubbed Science Nation: Agham na Ramdam last March 24-26, 2015 in Tuguegarao City.

The roadshow, set to tour all 17 regions of the Philippines, aims to highlight various DOST programs and the importance of science and technology to the average Filipino.

One of these programs is SETUP, or the Small Enterprise Technology Upgrading Program which provides assistance to MSMEs via funding, technology upgrade, and manpower training.

More than 10 MSMEs around the Cagayan region exhibited their products during the SETUP Summit, one of the major activities in the roadshow, held at the Cagayan State University (CSU)-Carig Campus' Red Eagle Gymnasium. The exhibitors, majority of whom are beneficiaries of SETUP, were engaged in the food, woven products, woodcraft and furniture, and gifts and décor businesses. After availing of the services of SETUP, they improved their

production processes, achieved higher product quality and earned bigger incomes. Some of the products also went on sale to the delight of the visitors, many of whom were students.

Another project visit was held at the CSU-DOST Food Innovation Center (FIC) at CSU-Carig. The facility is a one-stop food research and development center providing technical support to small food enterprises in the region which is largely agriculture based. DOST aims to establish an FIC in every region to help MSMEs across the archipelago to be more competitive and successful.

Housed inside the FIC are vacuum packaging for meat and dried fruit products; freeze dryer for dehydrating heat-sensitive food products; deep fryer for frying chips, crackers, and fries; water retort for sterilizing glass and PET or polyethylene; vertical fill form seal for packaging solid food products; vacuum fryer; and a research and testing laboratory, among others. Trainings and consultancies are also provided.

Science Nation: Agham na Ramdam's next stop is in Caraga Region on the last week of April 2015. (S&T Media Service)





Furniture by Kenneth Cobonpue

## SETUP and CEST to fire up Philippines for ASEAN Integration

By: ROMELIE JANELLE MARANAN and ESPIE ANGELICA A. DE LEON, *DOST-STII*

**I**mpressively competing with its neighboring countries with its persistent and fast 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 to achieve sustainable development not only for today, but also for the foreseeable future.

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 a brighter future for small entrepreneurs.

Business enterprise creation and development are some of the goals of AEC's vision. And with the help of science, technology and innovation, these are indeed possible for every Filipino entrepreneur.

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 apt

technology innovations, as well as manpower training. The priority sectors eligible for SETUP assistance are food processing; furniture; gifts, housewares, and decors; marine and aquatic resources; horticulture and agriculture; metals and engineering; information and communications technology; and pharmaceuticals.

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 country'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 the beneficiaries of SETUP are product brands with strong market visibility and which have revolutionized the industry, such as Kenneth Cobonpue's Interior Crafts of the Islands, Inc., MFP Home of Quality Food Corporation - makers of House of Polvoron, Trappist Monastic Products, and Merl's Suman sa Lihya.

Other beneficiaries include Farmtec Foods Incorporated, Total Woodcraft, TAP's Handmade Products, Woodtech Builders Inc., Mindoro Progressive Multi-Purpose Cooperative, Rafols Machine Shop and Engineering Services, Apo Ni Lola, Marc's Balut

Processing Facility, Kimes Foods International Inc., Rise Mo Women's Group, and Kablon Farms.

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.

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.

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 and most depressed communities in the country. This community may assume the form of an entire barangay, a registered organization, a tribal or indigenous group, a cooperative, or perhaps formal or informal settlers within a specified area of a city or a municipality.

Livelihood/Economic Enterprise Development is actually just one of five areas or entry points 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, the livelihood/economic enterprise development entry point aims to increase the number of S&T-based livelihood projects, provide sustainable economic activities among the identified low-income 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 Vizcaya; 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. These 91 communities are spread out across all the regions of the country.

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.



Products by the Sarakat Women Weavers Association





# Boosting enterprise dev't via S&T

By **ESPIE ANGELICA A. DE LEON**, *DOST-STII*

Everyone and everything in the business community is aiming for enterprise development. This is neither a farfetched idea nor rocket science; it is achievable. Through science, technology, and innovation, enterprise development is certainly possible.

The DOST regional offices play a pivotal role in this endeavor. Their direct link with the micro, small, and medium enterprises known as MSMEs, comprising about 99.6% of the country's registered enterprises, spells the difference between success and failure in creating a rock solid foundation for partnerships.

In the celebration of the 2015 National Science and Technology Week (NSTW), the regional offices have highlighted their focus on enterprise development - geared to provide innovative, cost-effective and appropriate technologies that enable MSMEs to develop and produce competitive products that meet world-class standards.

They developed various strategies by highlighting the sub-theme, "Building SmarTer MSMEs and Communities through Science, Technology and Innovation." These strategies include 1) Technology Innovations for SMARTER MSMEs; 2) Technical Assistance/ Consultancy Services; 3) Packaging Innovations for MSMEs; 4) Laboratory and Testing Services; and 5) Community Empowerment through S&T (CEST).

World-class SETUP products, interactive exhibits, infographics, audio-visual productions (AVPs), IEC materials, actual demonstration of laboratory analyses and technical consultation as well as simulated use of laboratory InfoSystem are available to the general public. For the more technologically inclined, technology clinics and various fora are also held. The idea is for each strategy to be a "total learning experience" for the viewers to appreciate that enterprise development can be achieved through the application of the SmarTer concepts.

## SmarTer MSMEs

Strategy 1 was designed to provide focus on the top MSMEs assisted by the DOST through the trailblazing Small Enterprise Technology Upgrading Program (SETUP); cooperators of which are those who have effectively adopted technology innovations and SmarTer principles in improving production processes and enhancing productivity.

As a support activity, the "Smart Innovations for MSMEs: Celebrating SETUP Innovators" showcases successful entrepreneurs while celebrating emerging innovators through the awarding of Outstanding SETUP Adoptors for 2014.

Under Strategy 2, technical assistance and consultancy services in the areas of food safety, energy audit, and cleaner production



are also provided, as well as services such as the Consultancy for Agricultural Productivity Enhancement Program and the Manufacturing Productivity Enhancement Program.

Strategy 3 refers to innovative packaging services which lead to effective marketability of products. Appropriate packaging and product labeling are important elements to ensure that products are not only protected from damage during handling, storage and transport but also to guarantee that color schemes, designs and types of product packaging complement food safety and mandatory label information.

Parallel to the exhibit is the launching of the MSMEs Packaging Innovation Awards dubbed "STeP UP! or "S&T Packaging for Biz Upgrading" – a showcase of available DOST packaging technology assistance featuring distinguished resource speakers.

Meanwhile, under Strategy 4 is the DOST Regional Standards and Testing Laboratories (RSTL) and its ISO 17025 accredited testing services. All the activities under this particular strategy emphasize the impact of DOST RSTL services to industries. In support of the interactive exhibits is a forum titled "Food Safety: A Must, NOT just a Choice" where experiences in the implementation of Food Safety Management System are shared.

Touching base with the grassroots has become one of the Department's most positive

moves. With its heartwarming program called CEST or 'Community Empowerment through Science and Technology', the DOST has implemented a new form of assistance to empower the poorest of the poor communities. Support to health and nutrition, water and sanitation, basic education and literacy, livelihood/economic enterprise development, and disaster risk reduction and climate change adaptation is given through the DOST regional offices via this integrated program which falls under Strategy 5. It provides a venue for knowledge sharing and best practices among beneficiaries to identify direction, strategies and partnerships to further improve program implementation. In addition to the interactive exhibits is the forum dubbed "Malusog at Matalinong Mamamayan, Ligtas at Maunlad na Pamayanan" which highlights experiences from partner local government units, non-government organizations, recipient communities and Indigenous Peoples in the implementation of the CEST program. The activity highlights the commitment of DOST with the signing of the 'Panata.'

Undoubtedly, the application of science, technology and innovation in enterprise development is crucial in the Philippines' bid for competitiveness especially as the ASEAN economic integration is just around the corner.



Quality balut sa puti

# When “balut worries” go kaput

By **ESPIE ANGELICA A. DE LEON**, *DOST-STII*



Maricris Huit and the automated 18-rack bay egg incubator with a digital thermostat control system.

**M**aricris B. Huit and husband Calixto used to have three manually operated incubators for their balut processing business in Ipil, Zamboanga Sibugay which they call Marc's Balut Processing Facility.

*Balut* is a local street food – fertilized duck egg with a developing duck embryo inside – eaten right from the eggshell.

Being manually operated, the machines worked slowly and the products were not 100% balut sa puti.

Which was a pity because *balut sa puti* is what the locals crave for. *Balut sa puti* is a 17-day-old cooked egg. It is called *balut sa puti* because it is balut wrapped in white.

Thus, in 2012, the couple received assistance from the Department of Science and Technology's (DOST) Small Enterprise Technology Upgrading Program (SETUP). SETUP assists the country's micro, small, and medium enterprises in the adoption of technology innovations to improve their operations and expand their business reach.

With a grant of P 349,000 from the program, the Huits were able to purchase an automated 18-rack bay egg incubator with a digital thermostat control system and a load capacity of 80,000 per cycle.

Aside from equipment acquisition, DOST's technology interventions also included manpower development training, process improvement, and system improvement for mechanized production.

After benefiting from this assistance package, Maricris' and Calixto's "balut worries" have now gone kaput.

The facility used to produce between 1,000-2,000 eggs a day. Now, it can churn out 5,000 quality balut sa puti eggs every day.

Sales have skyrocketed. Before, they merely posted average sales of 216,000 balut eggs per year and annual earnings of P2.16M. Now, Marc's Balut Processing Facility has sold 360,000 eggs on the first quarter of 2014 alone, translating to a whopping P3.24M in gross sales.

According to Maricris, orders come from Zamboanga City, Basilan, Dipolog, and Cagayan de Oro. "Through word of mouth, our customers increased, especially those in Zamboanga," she said.

In terms of manpower, from six workers, the business has grown to hire additional workers. Now, the facility has 22 regular personnel under its employ.

Despite the success, the Huits are not stopping at this point. They plan to buy another incubator to keep up with the demand, and to have their own poultry in order to have a continuous supply of fresh eggs. They have a few ducklings but during summer, the excessive heat prevents them from hatching a lot of eggs, which affects production. To augment their supply, they buy fresh duck eggs from Manila, Pampanga, and Nueva Ecija, said Maricris.

But for now, the family is certainly enjoying the fruits of their hard work and the DOST interventions.

"My husband and I were able to buy a car and we can now send our two boys to better schools." The Huit boys are 10-year-old Marc Alexi and 3-year-old Marc Audei. Their parents' balut business was named after them. "We also get to go on family outings more often now," Maricris shared. Their last family outing was in Dahilayan Adventure Park in Bukidnon which has the longest zipline in Asia.

"I feel that the business is more stable now," Maricris revealed.

A stable family business combined with a stable family life equals nothing less than happiness.



Inside the egg incubator



Buug Subanen Tribe workers at the facility





# Indigenous tribe in Zambo benefits from wine and vinegar factory

By ESPIE ANGELICA A. DE LEON, DOST-STII

Through the Department of Science and Technology-Region IX's Community Empowerment Through Science & Technology (CEST) Project, the Buug Subanen Tribe in Zamboanga Peninsula has a good source of livelihood.

CEST established the Pangase Rice Wine and Coco Water Vinegar Processing Facility for the Buug Subanen Workers Association via funding worth P 679,152. Technology training and equipment were also provided.

Among these equipment are stainless steel tables, drums for vinegar fermentation, two large vats, pots, stainless steel casserole, burners, and 300 jars. This intervention was for vinegar processing alone.

For Pangase Rice Wine production, P475,500 was provided to upgrade the processing facility.

The results of the intervention are remarkable: sales grew, posting P26,000 in gross sales per month. Also, a new production site is now under construction plus, the facility now employs 14 workers.

Every month, the workers produce one large Pangase Wine (4 gallons) at a selling price of P 2,000, 4 medium Pangase Wine (2 gallons) at P1,500 a bottle, 10 small Pangase Wine (1 gallon) at P1,000 apiece, 100 Spiced Vinegar (750 ml) at P60 and 100 Plain Vinegar (750 ml) at P20.

"The income goes to the Buug Subanen tribe workers," said Jocelyn Chua, association president and owner of the house and lot where the facility is located. Accommodation for the workers, she said, is free. The facility also includes a training area.

Livelihood and economic enterprise development is just one component of CEST for their target communities in the region. The others are health and nutrition, education and literacy, and disaster risk reduction and mitigation.



Buug Subanen Tribe members welcome guests at the Pangase Rice Wine and Coco Water Vinegar Processing Facility with indigenous music.

Community Empowerment is about building active and sustainable communities.

Engr. Mario G. Montejo  
*Secretary, DOST*



Sec. Montejo delivers his message to the people of Jaro, Leyte.



Sec. Montejo demonstrates the use of ceramics filter to Mayor Rolando T. Celebre of the Municipality of Jaro. With them are Dir. Esperancilla (in green T-shirt) and FNRI Director Dr. Mario V. Capanzana.

# CEST la vie

## How DOST helps rebuild lives of Yolanda victims

By RAMIL T. UY, *DOST-VIII*

**L**ives lost or lives put on hold – these were the remnants of Yolanda, the super typhoon that devastated the Visayas Islands, particularly Region VIII, with Jaro, Leyte and Basey, Samar as two of the most shattered towns.

Yolanda left these two towns in ruins and several inhabitants homeless and unemployed. People to this date rely on relief efforts initiated by the Philippine and foreign governments. However, relief operations are not forever. It then becomes important to implement practical mechanisms to empower the people who live in these areas.

In his visit to Jaro and Basey, Secretary Montejo said, "Kinahanglan natong ud buliganin inga mga para gumanga biktimahan bagyo nga makatindog otro ha ira mga panginabuhì. Kami ha DOST, naniniguro nga makabulig pinaagi hin syensya ngan teknolohiya. (We really need to help these farmers that were victims of the typhoon to recover their livelihood. We at DOST are trying hard to help through science and technology)."

DOST's response to help farmers regain their livelihood is a program called Community Empowerment through Science and Technology (CEST) which, according to Sec. Montejo, will help alleviate poverty. CEST provides community-based livelihood that will be run by the community itself through respective LGUs and the people.

The project lays down S&T interventions to improve the economic condition of the municipalities of Jaro, Leyte and Basey, Samar. In particular, the CEST program will:

- provide technology and innovation support system to boost the production efficiency of the existing small enterprises in the area
- conduct trainings and provide technical consultancy that will serve as corridors for livelihood opportunities for the community
- establish an S&T information center to motivate intellectual enrichment in the community
- introduce highly nutritious supplemental food products developed by DOST- Food and Nutrition Research Institute to address the gap between health and malnutrition
- install Automated Weather Station facilities that will raise awareness and help build people's resilience to climate change
- install water purifying system stations in Basey and Jaro barangays that have no access to potable water.

The CEST program components will be implemented by various DOST agencies such as the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development, Food and Nutrition Research Institute, Science and Technology Information Institute, Industrial Technology Development Institute, Forest Products Research and



Sec. Montejo gives directive to DOST VIII for the fast-tracking of the CEST program implementation.



Sec. Montejo checks a wood plank used by the furniture shop in Marabut, Samar.



Development Institute, and the Metals Industry Research and Development Center. Other agencies that will be involved in the program are the Visayas State University (VSU) that has expertise in R&D in agriculture, and the Department of Labor and Employment (DOLE) through its Rehabilitation Assistance on Yolanda.

### **Package of assistance to MSMEs**

The Secretary likewise visited a SETUP-assisted furniture production business based in Brgy. Legaspi in Marabut town. SETUP, or Small Enterprise Technology Upgrading Program, is DOST's package of assistance that offers technology innovations to improve the operations and expand business reach of micro, small, and medium enterprises. Marabut, meanwhile, is among Samar's most devastated towns hit by Yolanda.

Furniture shop owners Ludigarion Cinco and wife Vilma informed the Secretary during his visit that most of their wood materials for furniture making were swept away by the rushing water that engulfed their production area as well as their house. For others, this loss is devastating but the entrepreneur in Vilma pushed the business to rise from the muck and the shop was soon awhirl with projects, churning various furniture and other wood-based items.

After eye-opening talks with other CEST Program beneficiary-municipalities, Sec. Montejo and his party went to visit some other typhoon affected areas in Tacloban City. A dinner meeting with Leyte Gov. Leopoldo Dominico L. Petilla brokered possible DOST assistance to other affected Leyte municipalities. Montejo identified several

projects and, along with Engr. Edgardo Esperancilla, DOST-VIII regional director, discussed exhaustibly other possible areas of cooperation between DOST and the provincial government to address the needs of the communities.

Sec. Montejo's visit promoting the CEST program gave embers of hope to the local executives and constituents of Jaro, Leyte and Basey, Samar, assuring them of a partner in their rehabilitation efforts. To help "put back the lives" of aggravated constituents is the marching order given by Sec. Montejo to DOST VIII, thus the regional office takes the lead in implementing the program at the soonest possible time.

Community empowerment is indeed high on the current policy agenda of the government. The DOST is leading the drive to "enable more people to play an active role in the decisions that affect their communities," so said Sec. Montejo. Currently, the Department has introduced practical mechanisms to contribute to community empowerment, such as industry development, health and nutrition, basic education and literacy, public safety, agriculture, and fisheries. There is also a need for comprehensive understanding of what community empowerment looks and feels like.

As Sec. Montejo said, "Community empowerment is about building active and sustainable communities."

"It is about changing structures to remove the barriers that prevent people from participating in the issues that affect their lives," he added.

# DOST's 2014 Best SETUP adoptor turns threat into a sweet opportunity

By MA. LUISA S. LUMIOAN, DOST-STII



Alejandro Florian O. Alcantara's Raw Brown Sugar Milling Company Inc. was awarded as this year's Best SETUP adoptor during the Department of Science and Technology's (DOST) National Science and Technology Week celebration. SETUP or Small Enterprise Technology Upgrading Program is an initiative of DOST which supports micro, small, and medium enterprises to increase their efficiency, productivity, and product quality, make them more competitive, and contribute to the upliftment of the nation's economy. (S&T Media Service)

The Department of Science and Technology (DOST) has awarded Raw Brown Sugar Milling Company Inc. in Pamplona, Negros Oriental as this year's National Best SETUP (Small Enterprise Technology Upgrading Program) adoptor during the Smart Innovation for SMEs program of the National Science and Technology Week held last July 25 at the SMX Convention Center.

The award is given annually by the DOST to recognize the efforts of outstanding entrepreneurs who availed of assistance from SETUP – a DOST project which aims to boost small and medium enterprises' (SMEs) productivity and competitiveness by assisting them in adopting technological innovations to improve their operations, boost product quality and productivity, and make them more competitive in the market.

"From the technology, the choice of lot, the layout of the plant, the training of our personnel and staff and marketing of our products, we owe everything to DOST," said Atty. Alejandro Florian O. Alcantara, president and chief executive officer of the Raw Brown Sugar Milling Company Inc.

Atty. Alcantara revealed that he was once a legal counsel for a sugar association in Negros Oriental. He was invited by the

board of directors to become a member of the association, but that would require him to become a sugar planter. Thus, he acquired a few hectares of land and got started in the sugar business.

"I didn't have any knowledge about cultivating sugarcane," he said. "My fellow directors mentored me until I became knowledgeable about the business." From a few hectares, Atty. Alcantara now has more than a hundred hectares of sugar plantation.

In 2007, after almost 20 years in the sugar industry, he learned about the ASEAN Integration which will be implemented by 2015, under which tariffs on sugar and other commodities will be reduced or totally eliminated to facilitate a free flow of goods in the Southeast Asian region.

"I think Thailand is the biggest threat to the Philippines when it comes to sugar production," Atty. Alcantara said. "Its industry is highly subsidized; their sugar mills are very efficient," he added.

After learning about ASEAN integration, he thought it was time to decide: Should he give up his plantation or should he innovate to add value to his product and be able to compete in the market? He chose the latter.

His first step towards innovation was establishing his own sugar mill. It was then that he came across DOST through its regional office.

In 2009, his staff underwent training for cleaner production technology of muscovado (raw brown sugar) with the Industrial Technology Development Institute, another agency under the DOST.

Another assistance from DOST came through SETUP. He was able to acquire equipment for the improvement of their

production namely: a cube sugar making machine, a band sealer for the hygienic and efficient packaging of assorted muscovado products in plastic pouches, and a form fill sealing machine for the hygienic and efficient packaging of powdered muscovado in conveniently sized sachets.

With the help of these interventions, Raw Brown Sugar Milling Company Inc. was



able to penetrate the foreign market with their products which are organic certified by certifiers from Italy and South Korea.

Among these are muscovado powder, muscovado rocks, and muscovado cubes. Specifically 90 percent of these products are exported.

His advice to fellow entrepreneurs: "Choose products with raw materials that can be sourced locally, ensure the quality of the products and make them affordable so that they can compete in the market."

With science, technology and innovation, Atty. Alcantara was able to successfully turn a threat into an opportunity.



## SETUP helps mill churn out quality feeds at lower cost

By GERALDINE BULAON-DUCUSIN, *DOST-STII*



**I**F YOU can't find it, make it. This is what prompted a group of poultry raisers 12 years ago to venture into what is now Qualimeal Feedmills, Inc., which was specifically set up to produce and guarantee their supply of quality feeds at less cost.

"Qualimeal was mainly established to supply stockholders and directors with whom some small entrepreneurs and growers, mainly swine growers, get their supply of feeds. Stockholders thus pay for their feeds and they then assume the responsibility to pay the feedmill. It does safeguard the feedmill to prevent possible occurrence of overdue accounts. Today, it serves other clients but through the directors," said Teotimo L. Reyes, Jr., president of Qualimeal Feedmills.

In the past, feeds were sourced from various feedmills but the quality and price were not good, negatively affecting profits. "Quality" here entails attaining the desired weight of fattening swine in a certain marketable age; while for layers, it means attaining standard or even better in egg production even without nutritional supplements.

Back in 2004, with less than P3 million in capital, two office staff and six production workers, Qualimeal Feedmills, Inc. set out to produce quality feeds at lower cost. In seven years, the company acquired its own poultry farm with 20,000 heads of day-old-chicks. Of these, 7,000 were used for egg laying production, while the 13,000 were sold in the market.

But in 2013, Reyes learned from friends about the Department of Science and Technology's (DOST) Small Enterprise

Technology Upgrading Program (SETUP) which supports local enterprises to enhance their production and operations capability by providing a package of assistance.

Qualimeal availed itself of the program and now vouches for SETUP's big help to the business.

"Before SETUP, we produced 12,000 to 14,000 50-kilogram bags of poultry and swine feeds. Our mixer and hammer mills were capable only of producing half ton. But the assistance from DOST has greatly improved our entire production," says Reyes Jr.

Reyes credits the boost to DOST's SETUP assistance which consists of the following: 5-ton capacity hammer mill; 1-ton capacity feed mixer; feed hopper (4 units); feeder unloader (2 units); plus the Manufacturing Productivity Extension Program; and Energy Audit and Cleaner Production Technology.

The company's production has increased to 17,000 and even up to 20,000 bags per month and the overall operation's cost was cut down while efficiency increased. Sales improved by 25-30 percent.

One of the challenges is erratic supply and cost of ingredients like corn, soya and rice bran. These were countered with constant monitoring of sources, inventories, and analysis of common practices of suppliers.

Today, all stockholders and directors are product users, 75 percent for layers and 25 percent for swine. The office staff increased to five, plus 14 production workers, and 10 contractual personnel handling the loading and unloading of raw materials.





Wilson Lee Flores, owner of Kamuning Bakery Cafe, shares with Department of Science and Technology (DOST) Secretary Mario G. Montejo and DOST-National Capital Region Director Teresita Fortuna the bakeshop's rich past and how DOST's assistance, via SETUP, really helped to increase their production and expand their operations.

## Montejo salutes Pinoy entreps in DOST-NCR's "Science Festival"

By RODOLFO P. DE GUZMAN, DOST-STII

**T**he very important role of micro, small and medium enterprises (MSMEs) in fueling economic development in the country was recently recognized by no less than Secretary Mario G. Montejo of the Department of Science and Technology (DOST) during its Stakeholders Summit held on December 9, 2015 at the DOST Executive Lounge.

The Stakeholders Summit was part of several activities under the National Capital Region leg of the Science and Technology Information Institute's Science Nation Tour dubbed "Science Festival," held from December 7-11, 2015.

"Today I acknowledge the technopreneurs as they are our steadfast partners in development by using the power of science, technology and innovation," said Montejo, himself a proponent of MSMEs having been an inventor and technopreneur before he joined government service.

DOST has for many years been a staunch advocate of MSMEs and has been supporting thousands of Filipino entrepreneurs through one of its flagship programs - the Small Enterprise Technology Upgrading Program or SETUP, which extends assistance via funding, technology upgrading, and training. SETUP's outstanding adoptors for 2015 were also given recognition at the Stakeholders Summit.

"What is important for us at DOST is to harness the creativeness and innovativeness of our entrepreneurs using S&T for the benefit of Mang Juan and Aling Maria," Montejo added, "and that is why we call our motto 'Agham na Ramdam' because it is us Filipinos who chart our course and we must build our own capabilities."

The Science Secretary also cited the inroads of the DOST in disaster preparedness and mitigation through another flagship program, the Nationwide Operational Assessment of Hazards or Project NOAH.

"By using the latest computer software and cutting-edge technologies like the LiDAR or light detection and ranging, we were able to create a six-hour early flood warning system by generating high-resolution topographic flood hazard maps in all the 18 major river basins in the country, thereby providing vulnerable communities accurate and timely information about weather and hazards," he said.

Project NOAH spawned success stories like those during typhoon Pablo when zero casualty was reported in Cagayan de Oro, the same city devastated by typhoon Sendong in 2012. The project was also instrumental in having zero casualty in Marikina during the habagat episodes of 2012 and 2013 and during typhoon Ruby in December 2014.

In addition, Montejo bannered the different technologies developed by DOST in only a span of five years like those in genomics for agricultural and healthcare applications, mass transport solutions like the Automated Guideway Transit or AGT and the Hybrid Electric Road Train, Food Innovation Centers which serve as food processing hubs in the regions, and the Electronics Product Development Center, to name a few.

"We have a wealth of S&T information at the DOST at binubuksan namin ang pinto ng DOST para maramdaman ni Aling Maria

at Mang Juan ang siyensya at teknolohiya (...and we're opening our doors so that Aling Maria and Mang Juan will feel the essence of science and technology). We have created a whole ecosystem that empowers your creativity as innovators and technopreneurs to be one community. By developing good products, the whole world becomes your market," he said.

Science Nation Tour is a shared initiative of the DOST-NCR Office under the leadership of Director Teresita C. Fortuna and the whole DOST system including PHIVOLCS, PAGASA, Science Education Institute, Technology Application and Promotions Institute, and others joining the weeklong celebration with entrepreneurs sharing the limelight as partners in achieving the country's economic development agenda.



The Spiral Mixer is one of the production equipment that Kamuning Bakery Café was able to acquire through SETUP. The said equipment can help produce large quantities of dough continuously.



Until now, Kamuning Bakery Café continues to serve its clients with artisanal, high-quality and *pugon*-style baked products.





Daniel Revantad, manager of Philippine Pioneer Rubber Product Corporation, shows some of the natural rubber in their facility.



# A flourishing livelihood from the rubber trees of Zamboanga

By LOTUSLEI P. DIMAGIBA, *DOST-STII*

**R**ubber trees have always been known to produce a milky white sap known as latex and it has been used in many ways in ancient times. Today, modern processing of the latex sap from rubber trees has been generating income for the local community.

Zamboanga Peninsula is considered the top producer of natural rubber in the country. With this flourishing industry, a major challenge is to ensure that the state and quality of their rubber and rubber products comply with industry regulations and market requirements.

The Philippine Rubber Industry Association (PRIA) identified the need for a rubber testing facility in the country to provide objective evidence using scientific approach on the rubber's state and quality.

To address this challenge, the Department of Science and Technology (DOST) provided funds to set up a laboratory testing facility that will analyze the quality of natural rubber crumbs.

The rubber testing laboratory located at the DOST Region IX compound at Pettit Barracks, Zamboanga City has the capability to test these parameters: dirt content,

nitrogen content, ash, volatile matter, plasticity retention index, mooney viscosity, and color.

Rosemarie S. Salazar, head of the Regional Standards and Testing Laboratory of DOST Region IX and Sonoro L. Buñag, technical manager of the chemistry laboratory, enumerated the significance of these parameters.

First, dirt content helps detect adulteration in the product for it affects the processing of rubber and its quality. Nitrogen Content indicates possible adulteration with skim latex if content is high. Ash Content helps detect adulteration with clay, talc, sludge and silicates and coagulants such as sulfuric acid and phosphoric acid. Meanwhile, volatile matter indicates dryness of the rubber as wet rubber may develop molds and putrefactive odor. Plasticity retention Index on the other hand, measures the resistance of rubber to oxidative degradation or aging. Mooney Viscosity characterizes the ability to process the rubber and lastly, color determines the grade of rubber crumbs.

All these parameters are important in establishing the quality of the natural rubber crumbs.



The facility is equipped with plastimeter, Money viscometer, kjeldahl block digestion and distillation system, furnace, laboratory mill, aging chamber, analytical balance, ultrasonic bath, and hydraulic press.

To further elevate the rubber industry in Zamboanga, DOST assisted the Philippine Pioneer Rubber Product Corp. (PPRPC) in La Paz, Naga, Zamboanga through its Small Enterprise Technology Upgrading Program (SETUP). The program provides assistance to micro, small and medium enterprises (MSMEs) through funding, technology upgrade, and manpower training.

According to PPRPC Manager Daniel Revantad, SETUP helped them compete in the rubber industry. "Naisip namin nung palapit itong ASEAN Integration, hindi na pwedeng yung produkto mo na 'pwede na', kailangan pwedeng pwede (We thought that with the coming ASEAN Integration, you can no longer make do with a so-so product. It should be excellent). You have to cope with the standard," Revantad said.

DOST assisted PPRPC with a technology intervention worth P8,276,800 for the improvement of their system and product and manpower development. Two units of slab cutter and two units of blending tanks were

delivered and installed in the plant.

The PPRPC provides milling services to rubber-producing cooperatives, rubber farmers and traders. It was organized in 2000 as a federation of six agrarian reform communities which enabled them to avail the SETUP assistance. The production increased by 25% and they now provide better quality rubber and faster service to rubber farmers and traders. They became compliant to ISO 2000 quality standards and generated 23 additional employees, from 127 to 150.





# SETUP and its adoptors: Growing together

By KARL RAVEN A. RAMON, DOST-STII

*“The success of the program will not be possible without your cooperation, extended by you, our SETUP adoptors.”*

*-Dr. Urdujah A. Tejada,  
Assistant Secretary for  
Countryside Development*



**BEST SETUP ADOPTORS** in 2016 | (L-R) DOST Region XI Director Anthony C. Sales, former Asec. Urdujah A. Tejada, Benjamin Lao of LIFI, Florentino Rodil of BLMC, Troy Bumagat of Trophy Farm (National Best SETUP Adopter of 2106), Sec. Fortunato T. de la Peña, Engr. Crispin Muyrong of Sunlight Food Corp., Engr. Rolando G. Rupac of AMCC, Usec Rowena Cristina L. Guevara, and Dr. Carl E. Balita of OneStore Hub during the SETUP Forum held at the DOST-Executive Lounge on July 26. (Photo by Gerardo Palad, S&T Media Service, DOST-STII)

A happy and grateful batch of entrepreneurs handpicked from all over the country basked in both pride and humility for being cited as the best SETUP adoptors in 2016. SETUP or the Small Enterprise Technology Upgrading Program is the Department of Science and Technology's (DOST) flagship program in assisting micro, small, and medium enterprises

(MSMEs). Through SETUP, MSMEs are able to adopt technological innovations that improve their operation, escalating their productivity and competitiveness.

The awarding was held during the SETUP Forum at the DOST Executive Lounge last July 26 as part of the National Science and Technology Week (NSTW 2016). Aside from recognizing the remarkable performance of



Q&A PORTION OF  
SETUP FORUM. Panel  
consists of DOST officials  
and the finalists for the  
National Best SETUP  
Adaptor of 2016.



said SETUP adoptors, the DOST also aims to encourage other adoptors to perform better and non-adoptors to avail themselves of the SETUP.

Finalists for National Best SETUP Adaptor in 2016 consist of enterprises that focused on metals industry, food processing, and livestock production. The Best National SETUP Adaptor in 2016 is into broiler production.

### **Million-worth Trophy: National Best SETUP Adaptor of 2016**

*"I owe my success to the tremendous support extended by DOST, specially at the typical time when I needed help the most"*  
-Mr. Troy Bumagat (Trophy Farm)

From thousands to millions, that's how Trophy Farm Supplies' owner Troy D. Bumagat, a retired military officer turned agripreneur, expanded his enterprise after his foray into broiler production and availing of DOST's support.

From a P 35,000- start-up capital in 2010, Trophy Farm in Kananga, Leyte became a P40M integrated farm in just five years. Neither a day-old success nor a chicken feat, Trophy Farm is now as proud as a rooster for being recognized as the Best SETUP Adaptor of 2016 in the Visayas and eventually bagging

the title "National Best SETUP Adaptor of 2016" despite being a newbie in SETUP, as it availed itself of the program in 2014.

Thru DOST-SETUP's support, Trophy Farm was able to expand its broiler capacity from 64,000 in 2014 to 140,000 in 2016. As such, the company is the biggest poultry farm in Region VIII. Aside from its broiler capacity increase, its production of bio-organic fertilizer also grew nine times higher.

Apart from equipment acquisition, Trophy Farm also went through breeder production management trainings which led to "improving the efficiency as manifested by high production and low mortality," as Bumagat said during the forum.

In 2014, the average mortality rate of the broiler breeds was 5-6 percent. But after DOST's technical advice it leveled down to 1-2 percent only. In just one year, the integrated farm's income soared to 179 percent and gained 277 percent increase in employment generation by creating 25 additional jobs directly involved in the project.

The growing enterprise also expanded its distribution from Ormoc to the whole of Region VIII. "I am proud to say that my partnership with DOST contributed to ensure food security in Region 8," said Bumagat.





Mr. Troy Bumagat (Trophy Farm)



Engr. Crispin Muyrong, Sunlight Food Corp.



Engr. Rolando G. Rupac, AMCC

### **A brighter sunlight for this food company**

*"SETUP, tinuruan kami tungkol sa equipment, capital, pinansyal at higit sa lahat binigay samin yung trainings, napakaraming trainings ng DOST. Ito yung tinatawag na techniques" -Engr. Crispin Muyrong, Sunlight Food Corp.*

Sunlight Food Corporation a manufacturer of sweet preserves is not a newcomer when it comes to being a SETUP awardee. At the Science Festival's Stakeholders Summit of DOST-NCR, Sunlight was recognized as the best SETUP Adoptor of 2015 in NCR.

This year, the sun shone even brighter for Engr. Crispin Muyrong Jr. and Mrs. Maria Luz Muyrong, owners of the Marikina City-based company, as their company was given another recognition-- this time as BEST SETUP Adoptor of 2016 in NCR.

The Company has greatly improved after it availed of DOST-SETUP assistance in 2006 and 2009. At present, Sunlight Food Corporation is continuing its sweet success as it manufactures goods for major markets like Unilever, Selecta, Gardenia, Fitrite Incorporated, Adobo Connection, Red Ribbon, Chowking and Jollibee.

From high quality sweet preserves like ube, macapuno, saging na saba, langka, nata and kaong, and strawberry, the company expanded its production to other products like ube and banana puree, ube powders, buko strings, coconut milk, frozen gata, and pinipig.

The hardwork of the Muyrongs and their workers plus the support of

DOST boosted the company value up to 468 percent, escalated its gross sales up to 206 percent, pushed an income increase of 181 percent, surged employment by 65 percent, and achieved a 282 percent rise in terms of volume production from 2005 to 2015.

### Wide field of opportunity

*"From the category of small enterprise before SETUP assistance, we are now in medium size category."*

*-Engr. Rolando G. Rupac, AMCC*

The Northern Region is known for its fertile soil suitable for farming. Aside from the productive soil, equipment, machineries, and facilities also help the farmers achieve higher yield.

One of the machine fabricating enterprises that helps the northern farmers have better harvest is the Agri-Component Machineries and Construction Corporation (AMCC) situated in Cauayan, Isabela. Being a promising DOST-assisted enterprise and at the same time promoting science and technology in the farming industry, AMCC was awarded the Best SETUP Adopter of 2016 in Northern Luzon.

AMCC began its journey to business during the early 90s in which the firm experienced having limited fabrication equipment which resulted in limited production capacity. But this was until the company availed itself of the DOST-SETUP assistance in 2012. The said enterprise received P2 million worth of equipment acquisition inclusive of trainings and seminars.

Starting 2015, AMCC was able to offer time-and-cost-efficient farm implements, dryers, furnace, and milling machines for different type of commodities.

From then on, the enterprise plowed its way towards success. By 2015, its income increased by 434 percent, opened additional 71 jobs, boosted production by up to 81 percent, and raised its asset value 12 times higher, with its gross sales increased to a whopping 14 times higher.

### Meatier than it sounds

*"Ang market naming dati palengke lang ng Bansud, ngayon mayroon na kaming 14 dealers and outlets sa Mindoro, mayroon din sa Marinduque."*

*-Mr. Florentino Rodil, BLMC*

Before Bansud Livestock Multipurpose Cooperative's (BLMC) high leap, the firm only supplies the Bansud Municipal Market in Oriental Mindoro. Now after DOST's support, BLMC has reached other provinces like Marinduque, Aklan, Cavite, and even Metro Manila.

DOST thru SETUP started assisting this meaty enterprise in 2012, granting P 750, 000 worth of equipment upgrading inclusive of trainings. Now BLMC offers tummy-fillers such as hotdog and bacon apart from their previous product lines of fresh meat, longganisa, skinless longganisa, footlong, and tocino.

Seeing a beefier future for the firm, DOST awarded BLMC as Best SETUP Adopter of 2016 in Southern Luzon not only for sustaining the program but also for promoting science and technology in the meat processing industry.

From 2011-2015, the asset value of BLMC stretched up to 104 percent, and its fresh meat production rose five times: its tocino products increased seven times, its skinless longganisa rose thrice as much, and its footlong hotdog went up three times. Also



Mr. Florentino Rodil, BLMC



Mr. Benjamin Lao, Lao Intergrated Farm Inc. (LIFI)



(Photo by Gerardo Palad, S&T Media Service, DOST-STII)

increase in asset value and production was reflected in their net income.

With the firm's dramatic growth, more locals are joining this multipurpose cooperative. From 317 active members in 2012, membership has beefed up to 596 in 2015. BLMC also shares opportunity to the locality as it generated additional five jobs to people who are directly involved in the project.

### **LIFI's better with coconut**

*"I am not curious about who will win as over-all best SETUP adoptor...The fact that we are here today, adoptors sa ating program ng DOST sa SETUP, tayo po right now ay winners. Hindi alam siguro ng aking mga kababayan na kayo (DOST) ay nagbigay ng magandang buhay hindi lang sa amin kundi sa mga tao na aking kasama sa aking negosyo."*

*-Mr. Benjamin Lao*

LIFI or the Lao Integrated Farm Inc. in 2008 was just a goat project under the coconut trees located in Bansalan, Davao del Sur. But this was until the owner Benjamin R. Lao took advantage of these coconut trees in 2009 by turning this type of palm into something sweeter.

LIFI is a two-time SETUP adoptor. Its first project was an expansion of coco sugar and syrup production where LIFI was granted consultancies on Manufacturing Productivity Extension (MPEX), training on Good Manufacturing Practices, packaging and labeling execution, energy audit, and process improvement of coco- based products worth P 660,000 both funded and facilitated by DOST from 2011 to 2014.

Since then, LIFI's production of coconut sugar increased by 162 percent. Lao sees a more delightful future for LIFI so he availed himself of a second SETUP-assisted project, this time to help him augment his new project by upgrading the facilities for other coconut-based products.

The implementation of the second project started in February 2016 and will end in February 2020. At present LIFI goes beyond coco sugar and syrup as the company now offers other coconut-based products like coconut teriyaki sauce, all dip seasoning and coconut sugar-based healthy teas with lemon grass, ginger, moringa and turmeric, and hot chocolate.

At present because of Mr. Lao's tough grind and the DOST-SETUP's efforts, LIFI is now a certified FDA (Food and Drugs Administration)-licensed manufacturer and exporter of coco sugar and syrup, serving both local and international markets including USA, Canada, Australia, Germany, New Zealand, and Korea and soon it will be making its way to France.

With its more efficient production and a growing market, the company was able to increase its gross sales 500 times and income by 24 times, all from 2008-2015. LIFI provided additional 444 jobs, employing Davao locals as the owner's way of paying back his hometown.

As an act of caring for the environment and concern for its employees, LIFI promises to integrate organic farming as an advocacy for healthy living. This advocacy stemmed from the owner's experience of being hospitalized during his younger years due to over exposure to chemicals when he was still applying inorganic or chemical pesticide in his father's rice field.

### **SETUP, a success!**

*"Additional employment nandoon sa region, hindi na kailangang umalis para lang maghanap ng trabaho. Malaking bagay ang hindi mahiwalay sa inyong pamilya"*  
[pertaining to the 146, 728 job opportunities generated by SETUP]

*-DOST Secretary Fortunato T. de la Peña*

The 14-year old flagship program of DOST continues its mission of assisting MSMEs and immediately addressing the needs of entrepreneurs in adopting appropriate technologies.

Despite the young age of the program, which had only two adoptors in 2002, SETUP has already assisted 26,673 MSMEs after 14 years. A total of P 2.546 billion of SETUP investment support has already been granted and some 45, 462 technological interventions had been facilitated, creating a domino effect as it opened 146, 728 job opportunities.

It is not only the SETUP adoptors who grew each year but also the program itself. The success of SETUP adoptors is also the success of the program. SETUP and its beneficiaries—they are indeed growing together.





## Divisoria trips nurtured entrep spirit of PH pioneer in healthy sugar

By GERALDINE BULAON-DUCUSIN, DOST-STII

**M**aura De Leon was in grade six when she would tag along with her aunt to Divisoria for the latter's banana business.

"Maaga pa lang sumasama na ko sa tiyahin ko sa Divisoria. Dun sya bumibili ng mga saging. Tapos sa ibabaw na ako ng mga saging natutulog. Sa sampung tumpok, sabihin nya 'Ibenta mo walo, iyo na yung dalawa.' Kaya siguro ako nahilig sa negosyo, kasi bata pa ko, namulat na ko sa negosyo."

(Very early in the morning I would go along with my aunt to Divisoria. My aunt would buy bananas there. Then I would be sleeping on top of the bananas. For ten piles





of bananas she would ask me to sell eight and I get the two piles. Perhaps that's why I was drawn to business because I was exposed to it at a young age).

This little girl would later find herself in various businesses - garments, chemicals, and her latest venture, as the country's pioneer in healthy sugar --- Stevia. She is now president of the Glorious Industrial and Development Corp. (GIDP), maker of Stevia sold in leading supermarkets and drugstores.

### Of ventures and losses

De Leon's first venture started when she was 25. She got into the embroidery business and stayed there for 17 years, after which the industry went for a downturn due to influx of garments from China. She incurred debts and her business eventually folded up.

The turn of events did not deter her though.

"Para akong magkakasakit pag hindi ako nag negosyo (I felt as if I'd get sick if I will not get into business)," she said.

She asked her friends what possible business she could get into. One of them suggested chemicals. And so into chemicals she ventured.

She studied how chemical products are done. A leading grocery store gave them the opportunity to become the supplier of their house brand, so her foray into chemicals began with her production of soap, powder detergent, toilet bowl cleaner, fabric softener, liquid dishwashing and more. However, that venture came into a halt when her chemical warehouse was destroyed by fire.

Despite yet another loss, she ploughed on, this time venturing into uncharted territory: Stevia.



Maura de Leon, president of Glorious Industrial and Development Corporation, tells how her love for business fueled her drive to keep on going despite several business setbacks.

One of de Leon's children was taking up Medicine at the time, when she stumbled upon her child's book. Thereupon, she read about diabetes and learned that incidence of diabetes was steadily rising.

Coincidentally, de Leon's sister suffered a stroke around that time, as a complication of her diabetes. Little did she know that these minor events will lead her to another enterprise.

Still recovering from another loss, she solicited suggestions from friends and family on possible business ideas. A friend came home from Malaysia and pitched a healthy coffee product. De Leon's team embarked on product formulation.

"Kung magko-coffee tayo, tapos wala din naman syang magiging pagkakaiba sa

malalaking players sa market, baka hindi rin tayo maging successful (If we get into coffee and they will not have any difference from the ones produced by the big time market players, we might not succeed),” she addressed her team for product development.

Then, a doctor told her about a plant that serves as sugar substitute – the Stevia. But it grows in Paraguay.

She became hopeful when she heard the word “plant.” She was reminded of the time when her family was into farming. Thus, she hired an agriculturist to look for the plant Stevia in Baguio, La Union and Tagaytay. After a couple of months however, the agriculturist returned empty handed.

Not all is lost, though. She had a child in Europe who was able to send her the seeds of the plant which will be the core of her business. They struggled for three years to make Stevia adaptable to Philippine soil.

But the next challenge was what to do about it.

### **Of pains, triumphs and government’s help**

In the early stages while they were developing possible commercial products, they tried to make use of Stevia as feeds to chickens and hogs. They noticed that chickens which normally laid 12 eggs, were producing 24 eggs upon feeding on Stevia. And the pigs who fed

on Stevia were more meaty and not smelly even if they hadn’t bathe for 10 months.

When a family member suggested approaching the Department of Science and Technology (DOST) for assistance, it was then that they discovered the many services a government office can offer.

She would have preferred that small businesses in the barangay or municipalities know about the services of DOST right away.

“Nang mag start kaming mag-inquire sa DOST, nabuhayan kami ng loob (When we began inquiring from DOST, our hopes were rekindled),” she shared.

“Sabi ko nga at that time, kung ang mga nagnenegosyo nga sana alam na may assistance ang DOST, mas madali (I thought at that time, if businessmen knew about DOST’s assistance, it would be easier),” she added, as she recounted the various ways they tried to make Stevia useful.

According to her, they first approached DOST-National Capital Region (NCR) in 2009 and obtained assistance a year later. She found DOST-NCR to be very accommodating. Aside from assisting them on drying, they were also referred to another agency for product shelf-life.

With the assistance, they obtained the following: cabinet type dryer, form fill & seal machine, calamansi juice extractor, shrink tunnel, bench top pH meter, refractometer, and digital incubator.

They also availed of other DOST services, such as Technology Needs Assessment, Technical Assistance on Food Safety (GMP, SSOP and HACCP), Seminar on Good Agricultural Practices (GAP), and Consultancy for Agricultural and Manufacturing Productivity Improvement (CAMPI).

The interventions led to increased gross sales by 40%, improved product quality and safety, improved packaging, and elimination of outsourcing of packaging.

Their brand, the Sweet and Fit Stevia is the first organically grown product in the country. Meanwhile, (GIDC) has been in the business of food and non-food products for six years now.

Before DOST's intervention, they used to have over 30 employees. Today, their employees number to over a hundred, including Stevia growers.

"Very proud kami na assisted kami ng DOST. Noon, nung walang nag-a-assist, medyo hesitant ka pa, kasi [yung] Stevia hindi sya masyadong kilala. Pag tinanong kung ano ang Stevia, kung safe ba yan? Pag sinabi naming assisted po kami ng DOST, parang ang laking tulong nya na ang tao nagtitiwala doon sa safety ng product (We're very proud that we're DOST-assisted. Before, when there was nobody assisting us, we were hesitant because Stevia was not yet known. Whenever we're asked what is Stevia, is it safe? When we say we're DOST-assisted, it helped us a lot

in boosting public's trust on product's safety)," de Leon revealed.

Aside from manufacturing food and non-food products, GIDC is advocating Filipinos' return to farming. They want young children to see and enjoy a nearby farm, that is why aside from offering healthy farm products, they're also expanding to include a farm eco-tour.

De Leon's life goal is to contribute to other people's well-being. She came from a poor family and she wants to help others improve their lives.

She also seldom lets go of people. Most of those who had been with her in her embroidery business days are still under her employ now.

"Naniniwala kasi ako na lahat may potensyal (I believe that everybody has potential)," she said.

"Kailangan mo lang silang gabayan sa pag-nenegosyo. May parte na ispirituwal. Gusto ko yung pagwo-work nila sa akin, may na-contribute ako sa buhay nila (You only need to guide them in business, also in the spiritual aspect. I like it that they work for me, I get to contribute in their lives, the people who worked with me)."

For more information on technology products and services at the DOST-National Capital Region region, visit <http://ncr.dost.gov.ph/>.



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