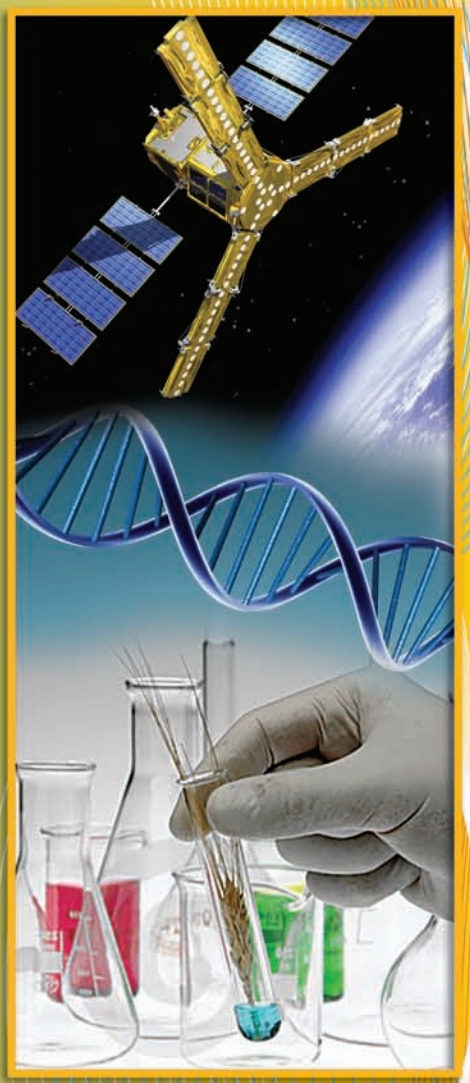
ANNUAL REPORT 2010



PCIEERD

PHILIPPINE COUNCIL FOR INDUSTRY, ENERGY AND EMERGING TECHNOLOGY RESEARCH AND DEVELOPMENT

PROFILE

The Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD) is one of the sectoral planning councils of the Department of Science and Technology (DOST).

It is mandated to serve as the central agency in the development of policies, plans and programs as well as in the implementation of strategies in the industry, energy and emerging technology sectors through the following S&T programs:

- Human Resource Development
- Institution Development
- Research and Development
- Technology Transfer and Commercialization
- Information Dissemination and Promotion

VISION

A recognized leader in fostering new and emerging technologies and innovations in building Science and Technology collaborations for vibrant industry and energy sectors.

SECTORAL COVERAGE

Industry

- Electronics
- Food Processing
- Process
- Mining/Minerals
- Metals and Engineering

Energy

- Alternative Energy
- Energy Efficiency
- Transportation

Emerging Technologies

- Materials Science/Nanotechnology
- Genomics
- Biotechnology
- Information and Communications Technology
- Space Technology Applications

MESSAGE FROM THE SECRETARY

I congratulate the Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD) for its accomplishments in its first year of existence. I am very pleased that the work that you have done is very much aligned with the rallying call of the Department of Science and Technology (DOST) toward a more sustainable economic growth that would benefit our people.

DOST's priority programs are directed to using S&T in solving pressing national problems, developing appropriate technologies to boost growth in the countryside, and improving industry competitiveness for our country's socio-economic development. Likewise, the Department is prioritizing the use of S&T towards enhancing government and social services, and the development of emerging technologies to underpin our industry's global competitiveness.

PCIEERD is in the right path towards creating an environment wherein S&T can make the country more globally competitive. The Council is consistently pursuing its mandate to formulate policies and strategies for S&T development, to allocate funds and manage R&D programs/projects efficiently, and to support continuing development of our R&D institutions and human capital. Likewise, PCIEERD develops and implements projects to promote commercialization of technologies; and establishes and maintains an effective system for the acquisition and dissemination of research information.

Again, I commend the management and staff of PCIEERD for their unceasing commitment to science, technology and innovation. I wish the Council more productive years ahead. Mabuhay ang PCIEERD!

MARIO G. MONTEJO
Secretary
Department of Science and Technology

MESSAGE FROM THE OFFICER-IN-CHARGE

I find it a great opportunity to have worked with the Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD) during its early months and I commend the Council for the accomplishments and successes it achieved in its first year despite the challenges of its "birth pains."

The year 2010 saw the successful consolidation of the Philippine Council for Advanced Science and Technology Research and Development (PCASTRD) and the Philippine Council for Industry and Energy Research and Development (PCIERD) into PCIEERD.

As the country's lead agency in the research and development (R&D) of industry, energy and emerging technologies, PCIEERD funded and monitored 146 R&D projects in 2010, including those under the Engineering Research and Development for Technology Program and the Technology Innovation for Commercialization (TECHNICOM) Program of the DOST. In 2010, P52.27 million of PCIEERD's Grants-in-Aid funds were utilized to support R&D projects.

On its first year, PCIEERD continued to enhance the competitiveness of our human capital by awarding a total of 289 graduate scholarships, comprising of 44 and 245 scholarships under PCASTRD's Human Resource Development Program and DOST's Accelerated S&T Human Resource Development (ASTHRD) Program, respectively. This entailed a total of P73 million in funding support, of which P66.53 million came from the DOST's GIA Program for PCIEERD to implement and monitor the DOST's ASTHRD Program.

PCIEERD also pursued its mandate of speeding up knowledge creation and dissemination to raise business competitiveness and productivity through the conduct of technology demonstrations. The Council continued to help hasten the transfer and commercialization of R&D outputs and technologies with its management of 14 projects under DOST's TECHNICOM Program and its monitoring of Technology Business Incubation projects.

Meanwhile, in its bid for quality management and performance excellence as part of its core principles, PCIEERD is currently preparing for qualification in the Philippine Quality Awards, which is the highest level of national recognition for exemplary organizational performance.

Once again, I congratulate PCIEERD for its continuous support to research, and scientific and technological innovations. I hope you will remain steadfast in encouraging local experts to come up with services, products, technologies and processes to make S&T a key factor of our national progress.

CAROL M. YOROBE
Undersecretary for Regional Operations
Department of Science and Technology

FOREWORD

The year 2010 marked the birth of a new Council of the Department of Science and Technology (DOST). As we all know, the Philippine Council for Industry and Energy Research and Development (PCIERD) and the Philippine Council for Advanced Science and Technology Research and Development (PCASTRD) now exist as one consolidated agency – the Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD).

For its sector coverage, PCIEERD now encompasses these 15 priority areas: Process, Food and Feed, Metals and Engineering, Mining and Minerals, Energy, Transportation, Construction, Environment, Disaster Management, Biotechnology, Electronics Technology, Information and Communications, Materials Science, Photonics, and Space Technology Applications.

As a new organization, we struggle to adapt to all the changes in the environment in terms of broader organizational framework and wide-ranging tasks for the PCIEERD manpower; but these do not hinder the Council from performing its best. We focus our efforts and seek to establish partners and linkages, looking at the various needs and concerns of an expanded clientele.

The year 2010 proved to be a most challenging year for the Council. The DOST System under the current administration is looking at the research and development (R&D) Councils to help set off a conducive climate for innovation where the R&D sector can tie up with local firms to come up with products, services and technologies that are competitive locally and in the world market. This PCIEERD 2010 Annual Report provides a glimpse of the Council's accomplishments and endeavors as it rallies behind the DOST's resolve towards developing a local innovative capability that propels the growth of the economy and progress of our country.

RAUL C. SABULARSE
Deputy Executive Director

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PCIEERD CONSOLIDATION

In 2010, the Department of Budget and Management, by authority from the President of the Philippines, approved the rationalization plan for the consolidation of the Philippine Council for Advanced Science and Technology Research and Development (PCASTRD) and the Philippine Council for Industry and Energy Research and Development (PCIERD) into the Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD) pursuant to Executive Order No. 366 dated October 4, 2004. The said approval was issued on June 29, 2010, and was published in the Official Gazette on September 13, 2010.

New Logo Contest

In view of the consolidation of the two Councils, PCIEERD launched the "PCIEERD Logo Design Contest" on September 7, 2010. The new Council invited interested individuals to come up with a logo symbolizing its functions as an agency in charge of the development of policies, plans and programs and implementation of strategies in the areas of advanced science, industry and energy sectors in the country.

Submitted entries were required to have a brief description relevant to the areas of concern of PCIEERD as well as a tagline. The new logo should be patterned after the DOST logo – maintaining the four circles while modifying the center to depict the function of the new agency. The criteria for judging were: Interpretation and Relevance to PCIEERD (30%), Overall Visual Impact (40%) and Originality and Creativity (30%).

PCIEERD launched its "Logo Design Contest" on September 7, 2010. Submitted entries were patterned after the PCIERD (left) and PCASTRD (right) logos, maintaining the four circles while modifying the center to depict the function of the new agency.

When the contest ended on October 31, 2010, a total of 304 entries was received, of which 188 were considered qualified entries.

Servicing More Sectors

Due to the consolidation, PCIEERD now serves and addresses a more extensive list of priority areas in the industry, energy and emerging technology sectors. These areas are electronics, food processing, process, mining and minerals, metals and engineering, alternative energy, energy efficiency, transportation, materials science and nanotechnology, genomics, biotechnology, information and communications technology, and other emerging technologies like space technology applications.

PCIEERD now serves and addresses a more extensive list of priority areas in the industry, energy and emerging technology sectors.

2010 Highlights

In 2010, the Department of Budget and Management approved the rationalization plan for the consolidation of I Research and Development (PCIEERD).

Highlights of Accomplishments

The year 2010 was an eventful year with the implementation of the rationalization program of the national government across all agencies. At the DOST, the consolidation of the Philippine Council for Advanced Science and Technology Research and Development (PCASTRD) and the Philippine Council for Industry and Energy Research and Development (PCIERD) into the new Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD) was formalized on June 29, 2010 through an issuance of the Department of Budget and Management pursuant to Executive Order No. 366.

As a result of this consolidation, PCIEERD is still going through transitional challenges but this was not a hindrance for the Council to accomplish the goals it set for the year. Amidst its wider sectoral coverage and with strengthened human and financial resources, PCIEERD directed its efforts to advancing research and development (R&D) in its priority areas, building up human capability in science and technology (S&T), and promoting technology commercialization, particularly for locally developed technologies.

Setting Directions for S&T

In 2010, the DOST under Secretary Mario G. Montejo set new directions for S&T where innovation is considered as the platform for the country to achieve sustainable socio-economic development and global competitiveness. Responding to this, PCIEERD continued to pursue its mandate for the industry, energy and emerging technology sectors.

Counting among its important accomplishments in 2010 was the development of two new S&T Roadmaps for most of its sectoral areas to serve as guide in identifying the critical inputs, technology gaps and proposed alternatives and milestones for the sectors. The S&T Water Environment Roadmap leads to the goal of making safe and potable drinking water accessible nationwide, while the Philippine Ethnic Food Roadmap specifies the industry strategy for the development of various ethnic foods as well as the marketing strategies for making these products sustainable and globally competitive.

Likewise, PCIEERD formulated an S&T Energy Conservation Program tailored primarily for the reduction and effective management of energy costs of small and medium enterprises (SMEs). This features training and conduct of energy management audits with assistance of institutions in PCIEERD's regional consortia.

Also PCIEERD's priority programs included a focus on disaster management that is aligned to national government efforts. The Council spearheaded the development of the DOST's Priority Action Plan in Disaster Management, which covers Policy Support for Mainstreaming, Risk Identification, Assessment,

PCASTRD (left) and PCIERD (right) into the Philippine Council for Industry, Energy and Emerging Technology

Monitoring and Early Warning Systems, among others.

Advancing S&T Research

The consolidation of PCASTRD and PCIERD into PCIEERD strengthened PCIEERD's mandate in supporting research and innovation in the industry, energy, and emerging technology sectors in the country. Significantly, PCIEERD funded and monitored 146 R&D projects in 2010, including those under the Engineering Research and Development for Technology (ERDT) Program and the Technology Innovation for Commercialization (TECHNICOM) Program of the DOST.

Among the significant projects supported and monitored by PCIEERD were the pilot production and testing of biodiesel from *Jatropha curcas*, enhancement of earthquake and volcano monitoring, and effective utilization of information for disaster management.

Taking the cudgels for the environment, the Council supported projects for the development and use of cleaner and safer technologies to ensure availability of safe and potable drinking water and also address waste management, including those from small-scale mining activities. The Council also supported the Pasig River Stewardship Program.

For the emerging technology sector, PCIEERD supported projects on innovations in solar cell technology, improvement of existing designs of polder dikes for disaster mitigation, development of database management system of existing species at Mt. Isarog National Park, and development of software for forecasting landslides. In nanotechnology, some of the supported projects are on the development of biodegradable nanocomposites for advanced food packaging, exploration on the use of nanomaterials from indigenous sources for

PCIEERD transferred to its new office at the Philippine Science Heritage Building in mid-2010. DOST Secretary Estrella F. Alabastro was the guest of honor during PCIEERD's office blessing.

Students from the FEATI University did their part in the recovery of the Pasig River as part of the project "Determining Sources of Heavy Metals and PCBS Contamination at Selected Esteros."

remediation of groundwater, and generation of a sensor that detects endocrine-disrupting contaminants.

Upgrading R&D Facilities and Providing Quality S&T Services

Realizing the importance of developing an institution's capability to carry out up-to-date research outputs, PCIEERD supported the upgrading of research facilities of three (3) institutions namely, DOST's Metals Industry Research and Development Center (MIRDC), UP Mindanao's College of Science and Mathematics, and UPLB's National Institute of Molecular Biology and Biotechnology (UPLB-BIOTECH). Assistance to UPLB-BIOTECH was for the upgrading of its Philippine National Collection of Microorganisms in preparation for its application as an International Depository Authority.

Further, PCIEERD continued to support the upgrading of DOST Regional Laboratories located at DOST Regional Offices.

Cultivating Human Resource

The Council sustained its scholarship program for scientists and engineers pursuing higher learning. It also supported the continuing professional enhancement and skills-training of researchers in its priority areas.

For School Year 2010-2011, 44 scholarships were awarded under PCASTRD's Human Resource Development Program (HRDP). Under the DOST Accelerated S&T Human Resource Development Program (ASTHRDP), 245 were awarded, of which 114 were for science (PCASTRD) and 131 for engineering (PCIERD).

At PCIEERD, two (2) personnel earned their degree in Master in Information in Technology (MIT) and three (3) in Master in Technology Management under the ASTHRDP.

Furthering Technology Commercialization

PCIEERD has taken a more aggressive stance to speed up the transfer and commercialization of R&D outputs. In 2010, PCIEERD actively supported the enactment of Republic Act 10055, also known as the "Philippine Technology Transfer Act of 2009," which was signed by former President Gloria Macapagal Arroyo on March 10, 2010. It also participated in DOST's Information, Education and Communication Committee for RA 10055.

To facilitate commercialization of locally developed innovations, PCIEERD supported the filing of patent application of five (5) products from dragon fruit developed by the Cavite State University. It also facilitated the commercialization of six (6) technologies, namely: Instant Kalamansi Extract; Low Fat, Low Sugar Ice Cream; Micro/Pico Hydro; Ferrocement Technology; E-Bamboo Tiles; and Microbial Rennet.

The Council also continued to support Technology Business Incubation (TBI) as a means to accelerate commercialization of innovations and R&D outputs. Together with Capability Building International Germany (InWent), PCIEERD organized and supported three (3) TBI-related activities. These were the TBI Implementation Workshop, International Conference on Promoting Business Incubation in South East Asia – Importance of Networking and Dialogue on International Success Stories, and Training of Trainers.

Moreover, PCIEERD evaluated 10 TBI project proposals, four (4) of which had been approved for funding under the DOST-GIA Program. These TBIs are DOST-PEZA Open TBI, DOST-UP Cebu TBI, DOST UP-Diliman Enterprise Center for Technopreneurship and UP Los Baños (UPLB) TBI.

In addition, the Council supported the UPLB Agriculture, Forestry and Natural Resources' project "A Complementary Initiative to UPLB's TBI Project." Student-entrepreneurs who participated in the project commercialized the following products: cream cheese, ricotta cheese, ready-to-drink fruit juices and microbial rennet.

Recognizing Excellence in S&T Activities

PCIEERD gave due recognition to exemplary achievements in S&T. Scholarly works that could contribute significantly to the body of knowledge and development of S&T in the country were recognized through the Council's Search for 2010 Outstanding Thesis and Dissertation in Advanced S&T. This search was open to recent MS and PhD graduates particularly in biology and related fields, chemistry/biochemistry, physics, mathematics, statistics, computer science/IT, earth sciences/space technology

PCIEERD continued to support Technology Business Incubation (TBI) as a means to accelerate commercialization of innovations and R&D outputs. PCIEERD, together with Internationale Weiterbildung und Entwicklung (InWent)/Capacity Building International Germany, conducted a TBI Implementation Workshop in Clark Field, Pampanga on February 3 to 7, 2010. Shown in the photo with the organizers are the workshop participants from the government, private and academic sectors.

applications, material science, and microelectronics/ mechatronics.

The winners in the Dissertation Category were Editha C. Jose (Mathematics), Jaime T. Ballena IV (Statistics), Michael O. Baclig (Biology and Allied Fields), Rodrigo S. Jamisola, Jr. (Microelectronics/Mechatronics) and Lemmuel L. Tayo (Chemistry). On the other hand, the winners in the Thesis Category were Ayra G. Panganiban (Computer Science/IT), Rolando T. Candidato, Jr. (Materials Science), Siegfred Alan C. Baluyot (Mathematics), Jeffrey C. De Vero (Physics), Eiffel A. de Vera (Statistics), Rowena H. Oane (Biology and Allied Fields), Deogracias P. Villame (Microelectronics/Mechatronics) and Lorico DS. Lapitan, Jr. (Chemistry).

Also PCIEERD conducted its biennial S&T Fora and Competitions in Industry and Energy Research where the Outstanding R&D in Industry and Energy is chosen. This is to encourage local researchers to conduct R&D, address environmental concerns, respond to the needs of the industries, and harness the use of energy resources. The top three winners were namely, Engr. Leilanie O. Suerte of the Mines and Geosciences Bureau of the Department of Environment and Natural Resources Region VI (1st prize), Dr. Prima Fe R. Franco of Mariano Marcos State University (2nd prize), and Dr. Marina A. Alipon of the Forest Products Research and Development Institute (3rd prize).

PCIEERD now aims to attain excellent performance for efficient public service by preparing for the Philippine Quality Awards (PQA). DOST Undersecretary for Regional Operations and PCIEERD Officer-In-Charge Dr. Carol M. Yorobe discussed the importance and merits of the PQA during the Project Launching for pilot DOST agencies.

PCIEERD also recognized the accomplishments of its regional consortia in terms of R&D coordination and management, capability building, resource generation and utilization, training and operations. In 2010, the 4th Industry and Energy R&D Consortia Symposium was held and the Outstanding Consortium was awarded. The top three winners were namely, Ilocos Consortium for Industry and Energy Research and Development (1st prize), Cordillera Industry and Energy Research and Development Consortium (2nd prize), and Eastern Visayas Consortium for Industry and Energy Research and Development (3rd prize).

Reinforcing Quality and Competitiveness at the Workplace

In its bid for excellence and quality as part of its core principles, PCIERD maintained its ISO 9001:2008 certification for Quality Management System (QMS) given by the international certification body Technischer Überwachungsverein (TÜV). This covers design, monitoring and evaluation of research and development projects in the industry, energy, utilities and infrastructure sectors. The QMS also includes Grants-In-Aid (GIA), continuing support for S&T services, scholarship grants, and dissemination of S&T information.

PCIEERD now aims to attain excellent performance for efficient public service by preparing for certification in the Philippine Quality Awards (PQA). The highest level of national recognition for exemplary organizational performance, the PQA is patterned after the internationally acclaimed Malcolm Baldridge Quality Award of the US. PQA is given to organizations in the private and public sectors for QMS that hinges on continuous improvement in the delivery of products and/or services, and provides a way of satisfying and responding to customers' needs and requirements. Together with the Metals Industry R&D Center and DOST Regional Office IX, PCIEERD comprises DOST's pilot agencies for certification in PQA implementation. Members of the Council's Business Excellence for Organization Transformation (BEST) Team are participating in a series of training seminar-workshops and immersion activities on PQA criteria. These criteria consist of key elements in organizational performance namely, leadership, strategic planning, customer and public focus, measurement analysis knowledge management, workforce focus, and process management.

S&T Policy and Program Formulation

S&T POLICY AND PROGRAM FORMULATION

The DOST has set a new direction where innovation is considered as the platform for achieving competitiveness. The DOST's vision is to make use of local science and technology in addressing many of the urgent and lingering problems of the country and develop cutting-edge technologies to make Filipino industries and our country as a whole globally competitive.

In pursuing the DOST vision, PCIEERD actively contributed inputs to its various sectors in terms of policy formulation, particularly with respect to technology commercialization and transfer.

Philippine Technology Transfer Act of 2009

The enactment of Republic Act 10055 is a milestone in policy formulation in the field of research and technology utilization. It provides the framework and support system for the ownership, management, use and commercialization of intellectual property generated from research and development funded by government and for other purposes. The effective implementation of RA 10055 is seen to create a culture and environment in which innovations can grow.

PCIEERD was actively involved in the Technical Working Group for the enactment of the Technology Transfer Bill. On March 23, 2010, former Pres. Gloria Macapagal-Arroyo signed Republic Act 10055 known as the "Philippine Technology Transfer Act of 2009." Five months later, the Implementing Rules and Regulations for RA 10055 were signed.

With the growing number of technology transfer activities, side by side with the keen awareness of scientists, researchers and funding agencies on the management of Intellectual Property (IP), the Council was actively involved in the Technical Working Group (TWG) for the enactment of the Technology Transfer Bill. On March 23, 2010, former Pres. Gloria Macapagal-Arroyo signed Republic Act 10055 known as the "Philippine Technology Transfer Act of 2009."

Five months after the signing of RA 10055, the Council together with the TWG finalized the Implementing Rules and Regulations (IRR) for RA 10055. The IRR was signed on August 19, 2010 by DOST Secretary Mario G. Montejo and Intellectual Property Office (IPO) Director General Ricardo R. Blancaflor.

In 2010, the Council also supported the project "Documenting Stakeholder's Experiences, Assumptions and Perspectives Regarding Valuation and Commercialization of Technology Produced through Publicly Funded Research for the Purpose of Crafting the Implementing Rules and Regulations and Guidelines for the Technology Transfer Act of 2009." The results of the study conducted by the University of the Philippines Diliman were used as inputs for crafting the Implementing Rules and Regulations for the Technology Transfer Act of 2009, as well as planning capability-building activities.

Intellectual Property

The project "A Baseline Survey of Filipino Inventions Based on Patent Information" was supported by PCIEERD in 2010. The research project resulted in a comprehensive compilation of patent data involving local inventions registered as patents and utility model with the Intellectual Property Office of the Philippines in the past 10 years.

S&T Roadmaps

As a policy, PCIEERD continued to develop S&T Roadmaps for all its sectors to serve as guide in identifying the critical requirements, performance targets, timeframes, future products, processes, services, technology gaps and alternatives, and milestones. The S&T Roadmaps are anchored on national development goals, particularly the DOST priority programs.

For the year, the S&T Water Environment Roadmap was developed which is aligned to the Millennium Development Goals towards access to safe drinking water. Specific activities, research projects and policies needed to meet the targets were identified to assure supply and access to safe and potable drinking water. The Roadmap envisions the implementation of focused programs and policies for the sector that would lead to the application of mature/adaptable technologies.

The Philippine Ethnic Food Roadmap (CY 2010-2016) was likewise drafted. The Roadmap presents an industry strategy for the development of various ethnic foods and the marketing strategies that would bring these products to the market and eventually achieve the goal of 20 or more sustainable and globally competitive food products.

S&T Policy Initiatives on Energy Conservation

With the inevitable rise in local energy costs due to perennial oil price increases in the international market, PCIEERD came up with its S&T Energy Conservation Program to help local SMEs sustain their competitive positions. Education campaigns and trainings on energy conservation techniques for the PCIEERD industry and energy consortia were encouraged and supported by the Council. The widespread awareness on the importance and manner in which energy conservation can be introduced and become part of the daily operations of SMEs is vital in making them competitive.

Alternative Energy

The DOST, through PCIEERD, is an active member of the National Biofuels Board (NBB). As such, it has instituted S&T programs and projects towards full exploitation of the country's alternative energy resources. PCIEERD provides technical information to the Board as a result of its R&D activities that aid in setting policy directions, such as the increase in fuel blends. In addition, the agency is currently working on the feasibility of other feedstocks for biofuel production, aside from the commercially known feedstocks like coconut oil for biodiesel and sugarcane for bioethanol fuel.

S&T Interventions on Disaster Management

The Strategic National Action Plan (SNAP 2009 – 2019) assessed the status of the Disaster Risk Reduction in terms of the Hyogo Framework for Action priorities. The priority action plans were identified based on the following strategic objectives: 1) Enabling Environment, 2) Financial and Economic Soundness, 3) Supportive Decision-Making for an Enlightened Citizenry, 4) Safety and Well-being Enhancement, and 5) Implementation and Evaluation of Disaster Risk Reduction.

As the DOST Council at the forefront of disaster management, PCIEERD spearheaded the development of the Priority Action Plans of DOST which cover the following areas:

1) Policy Support for Mainstreaming – Intended to support initiatives of Local Government Units in reducing risks, capacity building and enhancing adaptive capacity through Information, Education and Communication (IEC) activities.
2) Risk Identification, Assessment, Monitoring and Early Warning Systems – Aimed at providing financial and administrative support to PHIVOLCS' and PAGASA's R&D initiatives as well as those of various academic institutions involved in risk assessment and identification.
3) Information and Database Generation and Utilization – Focused on ensuring that vital information is available and accessible to all decision makers, especially in critical situations through the worldwide web. This support facility is in line with the SNAP Priority Programs of Information and Database Generation and Knowledge Management in which the DOST shares primary responsibility with the Office of Civil Defense and the Department of Environment and Natural Resources (DENR).
4) Education and Research – Intended to set and specify R&D goals and priorities, and rationalize the allocation of available resources particularly in Disaster Management.

In 2010, PCIEERD continued to develop S&T Roadmaps for all its sectors. The Philippine Ethnic Food Roadmap, which was drafted in 2010, presents an industry strategy for the development of various ethnic foods and the marketing strategies that would bring these products to the market and eventually achieve the goal of 20 or more sustainable and globally competitive food products.

Environment Policy Initiatives

Clean Development Mechanism

The DOST, through PCIEERD, is a member of the Clean Development Mechanism (CDM) Steering Committee, led by the DENR as the Designated National Authority (DNA) for CDM.

The CDM Steering Committee is an inter-agency and multisectoral committee that is responsible for reviewing the assessment of the appropriate CDM Technical Evaluation

Committee(s) and providing advice to the DENR Secretary for the effective implementation and improvement of the Philippine CDM policy and framework in accordance with the provisions of Department Administrative Order (DAO) 2005-17 on the Implementation of CDM and any amendments thereto.

As of November 2010, there were already 86 approved CDM Projects by the Philippine DNA. Leading the list of these projects are those on biogas (animal waste), followed by biomass utilization and methane recovery and utilization.

The CDM Steering Committee is currently pursuing the following policy concerns:

1) Proposal on the standard baseline for biogas projects in the Philippines
2) Improvement of the national approval criteria and indicators for sustainable development
3) Amendment of DAO 2005-17 on the implementation of the CDM
4) Guidelines for host country approval to facilitate the development and implementation of CDM Project Activities (PoAs) in the country
5) Guidelines on the Grid Emission Factor Development

Presidential Mineral Industry Environmental Award

PCIEERD also represents the DOST in the Presidential Mineral Industry Environmental Award (PMIEA) Selection Committee. The PMIEA was first officially established in 1997 and re-established by virtue of Executive Order 374 on October 10, 2004. It establishes a functional recognition of the private sector's initiatives and exemplary achievements in the protection of the environment in the mineral sector.

As a member of the Committee, PCIEERD recommended Research and Development (R&D) as one of the minimum requirements for qualification under the Implementing Rules and Regulations (IRR) of the PMIEA. This will give recognition to R&D undertaken by the mining and minerals sector to help promote the protection of the environment.

Support for R&D: Industry Sector

SUPPORT FOR R&D: INDUSTRY SECTOR

PCIEERD supports and monitors R&D projects funded under the Grants-in-Aid Program of the Council and of the DOST, including projects implemented under the Engineering Research and Development for Technology (ERDT) Program of the DOST.

The ERDT Program aims to address the country's need for more engineering R&D as well as for highly-qualified researchers and engineers. It involves a consortium of seven-member universities in the country that offer master's and doctoral degrees in various engineering fields. De La Salle University, Mapúa Institute of Technology, Ateneo de Manila University, Mindanao State University – Iligan Institute of Technology, University of San Carlos, Central Luzon State University, and the University of the Philippines Diliman constitute the consortium.

Among PCIEERD's advocacies is to address environment issues by providing cleaner and safer technologies that would respond to the pressing concerns on waste management, safe and potable drinking water, and other environmental problems.

Water Environment Program

Realizing the need for safe and potable drinking water not only in the National Capital Region but throughout the country, PCIEERD, in coordination with the different stakeholders, developed the S&T Water Environment Roadmap.

Completed

Project Title: Development of Compact and Efficient Electro-coagulation Treatment System for Pharmaceutical Waste Products and Other Pharmaceutical and Personal Care Product Residues in Wastewater

Implementing Agency: De La Salle University

Pharmaceutical wastes are an emerging class of pollutants that are posing a serious threat to our local water systems. De La Salle University, together with PCIEERD, has developed a technology that uses eclectrocoagulation (EC) in the treatment of affected water systems. Electrocoagulation is an electrochemical treatment in the removal of organic pollutants. The use of EC was found beneficial for it can address a wide range of pollutants and minimize the use of chemicals which leads to sludge generation.

Project Title: Photocatalytic Treatment of Colored Wastewater from Textile Industries

Implementing Agency: De La Salle University

The project developed an advanced treatment technology in treating colored wastewater from textile and paper industries using photocatalysis. The technology will help the Philippine textile industry to pass the strict standards of the Department of Environment and Natural Resources.

Project Title: Bioremediation Through Selective Recovery of Heavy Metals from Industrial Wastewaters

Implementing Agency: National Institute of Molecular Biology and Biotechnology – University of the Philippines Los Baños (BIOTECH-UPLB)

A clean-up and recovery system of valuable heavy metals from industrial wastewaters (e.g. tannery and gold smelting companies) was developed using bioremediation technology. The treatment was proven effective for the detoxification of chromium. With the treatment, 99.69% reduction was observed for the synthetic wastewater, while 13.27%-55.39% reduction was observed for the actual tannery wastewater. The result of the project will help companies to comply with water standards set under the Clean Water Act.

Ongoing

Project Title: Development of Biological and Ozonation Process as Treatment for Effluents of Distillery

Implementing Agency: UP Diliman

The project aims to design a wastewater treatment system involving ozonation and ozonation-biological processes. The results of the study are expected to contribute in developing guidelines and protocols for designing the system tailored to the capacity requirement of the target industry such as distillery, paper mills and relevant industries. Furthermore, the process technology being developed will benefit large-water demand industries by decreasing wastewater treatment cost. This will enable them to comply with effluent standards and in the long run, generate savings with the application of water reuse or recycling.

Project Title: High-grade Ceramics Development Utilizing Kaolinite Clay Deposits from Ilocos Norte Province

Implementing Agency: Mariano Marcos State University

This project is intended for water purification, particularly during emergency (i.e. calamities), and for domestic use. The porous ceramic filters made from kaolinite clay have the primary advantage of reusability, chemical and mechanical durability and low-maintenance cost over the commercially available water filters. It will also enhance

and upgrade the quality and characteristic of Ilocos Norte ceramic industry, from basic pottery to nanotechnology-level products.

Pasig River Stewardship Program

The Department of Science and Technology and its agencies, local government units, private industries and the University Belt (U-Belt) Consortia worked together to save the historical Pasig River. The U-Belt Consortia is composed of the following universities: Adamson University, Arellano University, Centro Escolar University, Far Eastern University, FEATI University, Jose Rizal University, Lyceum of the Philippines University, Mapúa Institute of Technology, Manuel L. Quezon University, National University, University of the East, University of Manila and University of Santo Tomas. Part of the advocacy of the program is to determine the sources of heavy metal contamination of its tributaries, water assessment (physicochemical and application of remediation techniques, biodiversity) and social advocacy programs through environmental awareness.

Ongoing

Project Title: Determining Sources of Heavy Metals and Polychlorinated Biphenyls (PCBs) Contamination at Selected Esteros

Implementing Agency: Far Eastern Air Transport Incorporated (FEATI) University

The project will help determine the point sources of pollution, particularly heavy metals like iron, copper, chromium, cadmium, lead, zinc, mercury and PCBs. Results of validation would be used as reference in the drafting of sediment quality guidelines.

Project Title: Levels of Endocrine Disruptive Chemicals (EDCs) Along Estero de Pandacan

Implementing Agency: Mapúa Institute of Technology

The project will determine the extent of EDCs, which interfere with the production, release, transport, metabolism, binding action or elimination of natural hormones in the body.

Project Title: Biochemical and Mechanical Remediation Techniques for the Rehabilitation of Estero de Balete

Implementing Agency: Adamson University

The project will develop a cost-effective solar-powered biochemical and mechanical remediation equipment that uses locally available materials. Local government units, which also serve as project monitors, are the primary beneficiaries of the project.

Project Title: Limnological Assessment of Estero de Balete

Implementing Agency: University of Sto. Tomas

This project will provide technical support to the previous project in terms of effectiveness validation of the developed technology through limnological assessment. This entails an evaluation of biological, chemical, physical, geological and other attributes of inland waters.

Project Title: Physicochemical and Biodiversity Study of Estero de Paco

Implementing Agency: Far Eastern University

The project will investigate the level of biodiversity of Estero de Paco, including Estero de Concordia, through physicochemical and biological parameters. These parameters will serve as baseline information for the

The DOST and its agencies worked with local government units, private industries and the U-Belt Consortia in saving the historical Pasig River. Researchers from University of Sto. Tomas (top photo) conducted data sampling for the limnological assessment of the Estero de Balete. Meanwhile, researchers from Mapúa Institute of Technology (bottom photo) interviewed a stakeholder along the Estero de Pandacan during a field survey.

Technical monitors from PCIEERD conducted a landslide susceptibility assessment of the coastal road segment from Abra de Ilog to Puerto Galera. Copies of the landslide susceptibility report have been distributed to the concerned municipalities.

assessment of the extent of the pollution and its effects on the said esteros.

Project Title: Instilling Environmental Awareness Through Waste Minimization and Waste Management Among the Learning Institutions and Communities

Implementing Agency: DOST – Industrial Technology Development Institute (ITDI)

The project will promote basic environmental management and enhance the environmental awareness and responsibility of learning institutions and communities within the University Belt (U-Belt).

Better Mining Technologies

The Philippines is considered as one of the countries most endowed with metallic resources and has the potential to be one of the largest mining powers in the world. PCIEERD, recognizing the importance of the mining and minerals industry, continuously develops and supports projects that would promote and mitigate the effects of mining in local communities.

Completed

Project Title: Arc-continent Collision in West Central Philippines

Implementing Agency: University of the Philippines – National Institute of Geological Sciences (UP-NIGS)

In this study, the researchers aimed to determine the nature, extent and timing of arc-continent collision in the area and to assess the natural hazards, including relative mean sea level changes resulting from such a tectonic event. Copies of the landslide susceptibility report and assessment of the coastal road segment from Abra de Ilog to Puerto Galera have been distributed to the concerned municipalities. These maps and geo-hazards data have also been submitted to the Mines and Geosciences Bureau of the Department of Environment and Natural Resources to be used as critical inputs to its current National Geohazards Mapping and Assessment Program.

Project Title: Development of a Non-expert Tool for Site-specific Evaluation of Rain-induced Landslide Susceptibility

Implementing Agency: Kalinga Apayao State College

A simple and graphical tool based on geotechnical surveys of around 230 landslide sites in the Mountain Province was developed to serve as guide in building safer homes and roads, especially in mountainous and steep terrain. The assessment procedure that was developed is simple and user-friendly and has undergone committee review primarily to come up with recommendations and suggestions. The study will enable citizens to better adapt and mitigate more tragic and devastating landslides due to intense and heavy rains.

Project Title: Geochemical, Mineralogical and Geophysical Characterization of Philippine Nickel, Copper and Gold Ores

Implementing Agency: UP-NIGS

This research on the mineralogy, geochemistry and ore beneficiation of Philippine ores provided avenues for maximizing revenues and helps in efforts to add value to ore exports and develop indigenous technology. The results of the

study is expected to improve the quality of ores exported and reduce the elements being thrown to the environment in mine tailings.

Project Title: Hazard Characterization for Decommissioning of the Philippine Research Reactor (PRR-1)

Implementing Agency: DOST – Philippine Nuclear Research Institute

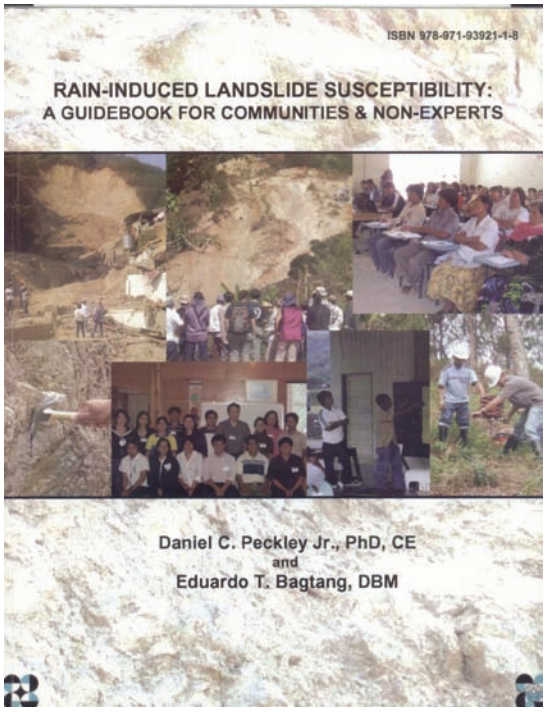
A survey was conducted to identify the radiological and other hazards remaining in the PRR-1, a research reactor installed since 1963. The survey is in preparation for the hazard characterization of the PRR-1 and preparation of decommissioning plan. A decommissioning plan will describe how dismantling and decontamination will be done.

Ongoing

Project Title: Development of Nanofiber Membrane with Modified Nanoclay for Wastewater Treatment

Implementing Agency: UP Diliman

A polymeric nanofiber affinity membrane is being developed for the treatment of mine wastewater. Initial investigations of the project were confined to treatment of synthetically prepared wastewater contaminated with selected toxic heavy metals but subsequent investigations will deal with actual wastewater from mine processing plants. Ultimately, the project aims to propose an engineering design of the actual configuration of the affinity membrane that can be easily handled in the field.



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Project Title: Development and Testing of Coco Peat Filter Bed for Treatment of Heavy Metals

Implementing Agency: UP Diliman

Coco peats are byproducts of the coconut industry that are usually used for horticultural and agricultural applications and as industrial absorbent. This research will diversify the use of coco peats by designing actual filter beds using the material. Initial studies conducted show that coco peat has good sorption qualities based on batch and column tests using zinc as the contaminant. It can be used as filter material in a filtration bed and can remove heavy metals from a wastewater stream.

Project Title: Copper Flotation Technology for Small-scale Mining Industry

Implementing Agency: UP Diliman

This study will develop a mine waste treatment program by determining a simplified process of recovering the copper (or other valuable metals) from the solid wastes and applying an integrated preventive environmental strategy to minimize the generation of waste.

Project Title: Alternative Method to Amalgamation and Cyanidation for the Recovery of Gold

Implementing Agency: UP Diliman

The recovery of gold in small-scale mining industries involves two processes: cyanidation and amalgamation, both of which use chemicals that have long been proven to cause adverse effects to health and environment. The project aims for the proper application of technology to allow even small-scale operations to conduct gold recovery activities at the lowest capital and operational expenditure. This will maximize profit and minimize, if not eliminate, the adverse effects of gold recovery activities to health and environment.

PCIEERD technical staff conducted a monitoring visit at Philex Mining Corporation in Baguio City for the project "Alternative Method to Amalgamation and Cyanidation for the Recovery of Gold".

Project Title: Development of Philippine Montmorillonite Purification Technique for Nanocomposite Applications

Implementing Agency: UP Diliman

The project will develop and optimize a purification method to obtain polymer-grade montmorillonite (MMT) from locally mined deposits. This aims to give the Philippine clay industry a process that has a high recovery rate and fast production of high-purity MMT.

Project Title: Life Cycle Analysis of Small-scale Mineral Production Systems: The Case of Gold

Implementing Agency: UP Diliman

The use of life cycle thinking and time-to-market concepts is an effective approach in addressing concerns at the early stages of design for production systems. This method will be applied to gold production and will be analyzed for its appropriateness.

Project Title: Assessing Biosorption Performance of Water Hyacinth and Other Aquatic Plants

Implementing Agency: Ateneo de Manila University

The project will compare capability of heavy metal (Copper, Cu; Cadmium, Cd; Mercury, Hg; and Lead, Pb or Chromium, Cr) removal from single-metal aqueous solutions of various species of brown algae (seaweeds) such as Sargassum and Turbinaria. The output of the project will be a prototype equipment that can clean up the heavy metal component of mine tailing waste.

Project Title: Alternative Technology for Processing of Laterite Ores: Iron and Nickel Production

Implementing Agency: Mindanao State University-Iligan State University

The project will use an alternative process in extracting iron and nickel from laterite ores by means of a gaseous process. The process does not require high energy in the operation and does not produce acidic by-products. Also, the process is environment-friendly.

Project Title: Establishing the History of the Philippine Island Arc System: Clues from the Rocks of the Zambales-Pangasinan Region

Implementing Agency: UP-NIGS

The project aims to determine the geochemical and geophysical signatures of the rocks in West Central Luzon and to propose a model on the tectonic evolution and mineralization of West Central Luzon sedimentary and related igneous rock sequences. The study also aims to re-assess the mineralization potential of the Zambales Ophiolite Complex and related rock formations from geophysical and geochemical evidence.

Disaster Management

PCIEERD has drawn a roadmap on disaster management whose goal is to develop an S&T-capacitated community adapted to natural hazards. With its network in the sector, the following projects and activities are steps towards the roadmap's goal.

Ongoing

Project Title: Monitoring the Crustal Deformation Patterns Along the Philippine Fault and the Cotabato-Sindangan Fault Through Global Positioning System

Implementing Agency: DOST – Philippine Institute of Volcanology and Seismology (PHILVOLCS)

To develop a comprehensive program for evaluating seismic hazards and risks, there is a need to determine the crustal deformation patterns along the Philippine Fault and Cotabato-Sindangan, measure their velocities, and calculate the recurrence intervals. These are essential components of earthquake disaster risk mitigation. This project will come up with quantitative estimates of the velocity rates of the Philippine Fault and the Cotabato-Sindangan Fault shown in a velocity field map. Further, structural maps delineating which parts of the Philippine Fault and Cotabato-Sindangan are accumulating strain, creeping or currently locked will be prepared.

Project Title: Tephrochronologic Studies of the Bicol Arc and Western Philippine Basin

Implementing Agency: DOST – Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA)

The project aims to identify large explosive eruptions that affected the Bicol Region and Western Pacific Basin for the last one million years by examining tephra deposits in marine and land environments. From the study, a physical and geochemical data base on tephra in the Bicol region will be constructed.

Project Title: Tracing the Eastern Philippine Arc Evolution from Marine and Terrestrial Volcanic Rocks and Ash Records

Implementing Agency: UP-NIGS

To gather details on the geochemistry and geochemical correlations of volcanic products in the Bicol Region, the project will conduct a detailed chemical stratigraphy of the volcanic ash layers from cores drilled in Philippine waters northeast of Bicol region. The data will also be used in identifying and correlating the geochemical signatures across the different core locations and select a target for a detailed study of the magmatic evolution of the source volcano.

Project Title: Influence of Large Explosive Eruptions on Primary Productivity of Philippine Waters (Pacific and Internal Seas)

Implementing Agency: UP-NIGS

The project aims to determine the impact of large-scale volcanism to the marine environment specifically pertaining to primary productivity and the food base for all marine organisms. Another objective of the project is to determine if there is a link between volume and composition of volcanic tephra with primary productivity. Of interest is the impact of volcanic ash to the upwelling zone east of Luzon Island.

Project Title: Enhancement of the Broadcast Capability of PAGASA Through the Full Operation of the Weather and Disaster Alert System in Central Visayas Regions

Implementing Agencies: DOST-PAGASA and Don Bosco Technology Center – Cebu

The public and important government agencies need to be informed and updated on a 24-hour basis on weather changes and advisories as well as rescue situations. To address this, the broadcast capability of PAGASA will be enhanced through the full operation of the weather and disaster alert system through an effective communications facility. This will likewise eliminate the inconvenience in accessing information from PAGASA weather news and advisories. With the project, it is expected that once the disaster and alert system becomes fully operational, it will benefit the public within 27,000 square miles with unobstructed coverage. Information (weather and disaster) will be easily disseminated in a vast expanse in the shortest time.

New

Project Title: Enhancement of Earthquake and Volcano Monitoring and Effective Utilization of Disaster Mitigation Information in the Philippines

Implementing Agency: DOST-PHIVOLCS

The project intends to obtain improved earthquake information as well as an integrated volcano monitoring information in real time. This will result to accurate evaluation of earthquake generation potential as well as disaster mitigation information that will be provided through a portal site.

Project Title: Integrative Data Archiving for Disaster Risk Management

Implementing Agency: UP-NIGS

The UP-NIGS will develop a database of materials and information in electronic

In the project "Determination of Water Impoundment Capacity Along the Wawa Reservoir for Flood Control and Mitigation Applications," water volume capacity in the area at different scenarios of flood inundation depths will be used for flood monitoring, forecasting and early warning.

format on earth sciences with emphasis on disaster risk management for disaster studies and disaster risk reduction. This database will be made available to everyone at the UP-NIGS Library. The database will contain geologic, tectonic, geohazard and meteorological information at the various scales.

Project Title: Quantified Flood Forecasting Through Rain Rate Estimation Using Satellite Imagery and Generalized Watershed Runoff Calculations

Implementing Agency: UP-NIGS

Rain rate forecasts will make use of public domain information to supplement information coming from the planned PAGASA Pulse Doppler RADAR systems. A quantified flood forecasting will be in place that can be directly used by concerned LGUs and emergency managers for their early warning system. This will improve the ability of the Philippines to respond to disastrous flooding scenarios.

Project Title: Establishment of Spillover Elevation Along Flood Prone River Systems: Marikina-Pasig River

Implementing Agency: UP Diliman – Training Center for Applied Geodesy and Photogrammetry (TCAGP)

The project intends to contribute in operationalizing the flood monitoring, forecasting, and warning systems being installed along the Pasig-Marikina floodplain area. Targeted in the project is a modernized technology-based, information-driven disaster management program for the National Capital Region. It will also develop a standardized set of protocols for the capture, processing and analysis of geospatial data required for the assessment of flooding events, modeling and simulation studies, forecasting and installation of warning systems.

Project Title: Determination of Water Impoundment Capacity Along the Wawa Reservoir for Flood Control and Mitigation Applications

Implementing Agency: UP Diliman-TCAGP

Water volume capacity in the study area at different scenarios of flood inundation depths will be used for flood monitoring, forecasting and early warning. An operational, interactive distributed hydrological model for river basin implemented under an interactive, dynamic Geographic Information System (GIS) environment will be also be developed, including a fully-calibrated, interactive, visual flood modelling tool using remote sensing in a GIS environment.

Food and Food Packaging

To cope with the demands from local and international markets, PCIEERD sees the need to optimize the food sector's full potential. To keep abreast with current food trends, the Council is supporting researches and studies that promote healthy and natural food products.

Completed

Project Title: Production and Shelf Life Study of Ready-to-drink Vitamin-rich Green Mango Juice

Implementing Agency: DOST – Food and Nutrition Research Institute (FNRI)

A previously conducted study by the FNRI on the green mango concentrate was further developed to produce a ready-to-drink green mango juice fortified with vitamin C and A in support of the Food Fortification Act of 2000 and the Sangkap Pinoy Seal Program of the Bureau of Food and Drugs of the Department of Health.

Project Title: Pilot Testing of Dragon Fruit Products: Jam, Jelly, Puree and Juice (Flavored Drink)

Implementing Agency: Cavite State University (CvSU)

This study is the offshoot of the project on the development of dragon fruit jam, jelly, juice and puree at a laboratory scale done by CvSU. The development of dragon fruit products has provided an additional flavor in the food market. The project is currently

undergoing patent application for mass production.

Project Title: Development/Improvement of Philippine Products Through the Application of Advanced/Modern Packaging Technologies – Phase III

Implementing Agency: DOST-ITDI

ITDI, through its Packaging Technology Division, focuses its attention in promoting food products from small and medium enterprises (SMEs) by improving and upgrading the packaging technologies of SMEs. Seminars and studies on appropriate packaging technologies were conducted to provide the SMEs and DOST packaging coordinators first-hand experiences.

Ongoing

Project Title: R&D Program for Brown Rice *(Oryza sativa L.)* Optimization, Functionality and Utilization in the Philippines

Implementing Agency: DOST-FNRI

The use of brown rice has been limited due to its short shelf life of approximately three months. To improve the shelf life of locally produced brown rice, FNRI is exploring different food processing techniques and using different packaging materials. It also intends to provide data on the nutritional and health benefits of optimized brown rice.

Project Title: Development of *Spondias pinnata* (Libas) as Seasoning Mix

Implementing Agency: Universidad de Sta. Isabel

Libas, also known as lubas, is palatable and grows abundantly in the Bicol province and other parts of the country. Its leaves are traditionally used as an ingredient in Bicol to dishes involving pork and beef meats. This project will introduce the processing of libas leaves into powder form that will make it more digestible and convenient to use.

Project Title: Product Optimization and Market Testing of Dessert Red Wine from Purple Taro and Black Rice

Implementing Agency: Visayas State University

The current technology is an adaptation of the 'brem' in Indonesia, which utilizes pure glutinous black rice for the production of wine. In this study, purple taro will be used as substitute of glutinous black rice in the production of nutritious dessert red wine. This rootcrop contains anthocyanins that are best known for their anti-oxidative property with

The development of dragon fruit products has yielded an additional flavor in the food market. The project "Pilot Testing of Dragon Fruit Products: Jam, Jelly, Puree and Juice (Flavored Drink)" is currently undergoing patent application.

Quality food products come with quality packaging. DOST-ITDI, through its Packaging Technology Division, helps local SMEs with packaging of their products for local and international markets.

PCIEERD supported the project of DOST-ITDI that aims to assists SMEs in reducing their packaging costs for products in the furniture and gift, toys and hardware industries.

low glycemic index and various vitamins and minerals.

Project Title: Development of Standards for Selected Ethnic Food Products – Phase III

Implementing Agency: UP Diliman – College of Home Economics (UP-CHE)

To help the local food industry penetrate the international market, PCIEERD, together with UP-CHE, has developed standards for selected ethnic food products, particularly food products and beverages. This will serve as a technical guide for local processors and assure the quality and safety of their products and beverages against technical barriers to trade in the global market. To date, the project has drafted standards for native cured meats and various confectioneries such as cold cuts-emulsified sausages; ethnic cured meats; ethnic milk-based confectionery (pastillas and yema); and ethnic flour-based confectionery (piaya, polvoron, barquillos).

Project Title: Setting-up of Processing Facilities for the Production of Flours Made from Root Crops, Cereals, Legumes and Vegetables

Implementing Agency: DOST - Technology Resource Center

The project aims to address the development of an alternative to wheat flour and malnutrition problems in the country. DOST's Technology Resource Center and Food and Nutrition Research Institute teamed up to establish a processing facility to produce flours made from cassava, sweet potato and squash. To the date, the researchers produced value-added products such as pandesal, cookies, loaf bread, hard crackers and buns using camote, cassava and squash flours at a laboratory-scale giving the flour its name "3K Harinang Pinoy."

Project Title: Commercial-scale Production of Cassava Grates and Flour in Bohol

Implementing Agency: Visayas State University

The project aims to commercialize the production and utilization of the different food products from cassava flour and grates. The researchers are currently fabricating and designing a dryer and processing machine in Bohol. The health and economic values of the products are also studied.

Project Title: Toxic Migrants in Canned and Plastic Packaged Foods and Beverages Addressing the Safety Issues on Packaging-related Contaminants in Foods – Year III

Implementing Agency: DOST-ITDI

Safety issues related to contaminants in packaged products is a growing concern in terms of consumer safety and its impact to international trade and/or disputes of the Philippines with other countries. The scientific data on packaging-related contaminants generated by project will support claims or settle disputes that may arise in the future. To date, ITDI has assessed the safety issues on packaging-related contaminants like the use of polyethylene terephthalate (PET) bottles and metal cans.

Project Title: Development/Improvement of Transport Packaging Technology for Non-food Products (House Décor and Furniture) – Year II

Implementing Agency: DOST-ITDI

One major problem of SMEs in the furniture and gift, toys and hardware (GTH) industries is transport packaging. The lack of technical capability to develop appropriate packaging for products tends to lead to overpackaging or damage to products. To date, ITDI has provided assistance to SMEs in reducing the packaging cost by 30-50% depending on the product type. The results helped increase the level of confidence from buyers and importers.

Biotechnology Program

Biotechnology is a broad term that applies to the use of living organisms in enhancing and developing new products. Biotechnology in the Philippines is still in its early stage. PCIEERD recognizes the need to create a solid identity for the biotechnology industry in the country; thus, the Council

focuses its attention to providing support to researches and studies that would further development on different aspects of biotechnology.

Ongoing

Program Title: Harnessing Biotech Microbial Strains for Bioethanol Production from Viable Feedstock Materials

Project 1 Title: Evaluation, Validation and Business Analysis of Ethanol Production from Alternative Substrates Using BIOTECH-UPLB Yeast Strains

Project 2 Title: Improvement of Yeast Strains for Industrial Ethanol Production

Project 3 Title: High-cell Density Ethanol Fermentation of Appropriate Feedstock Materials Using Selected Yeast and *Zymomonas* Strains

Project 4 Title: Evaluation of Pollution Potential of the Sweet Sorghum-based Distillery Effluent

Implementing Agency: BIOTECH-UPLB

The Council aims to improve the fermentation technology for the production of ethanol by optimizing microorganism-substrate-process combinations. The improved fermentation technology will be assessed for its commercial potential. At the end of the program, it is expected that a more efficient process of ethanol production with higher ethanol yield can be achieved for industrial application.

Philippine Tropical Fabrics Program

PCIEERD supports plans and projects that will highlight the use of indigenous Philippine fiber-based textiles. The program will also promote the preferential use of locally manufactured goods using local resources.

Completed

Project Title: Pilot Scale Spinning of Piña Blended Yarns in the Cotton Systems for Circular Knitting (Year 1)

Implementing Agency: DOST – Philippine Textile Research Institute (PTRI)

Raw brushed pineapple fibers were pretreated to attain the required softness for blending with polyester fibers. The mechanically softened pineapple fibers were further chemically softened and processed in the crimping machine to produce quality yarns. The project is expected to create an international market for Philippine tropical fabrics.

Project Title: Assessment of the Commercial Viability of Banana and Pineapple Fibers for Nonwoven Fabrics – Year 1

Implementing Agency: DOST-PTRI

Pineapple and banana fibers, in pure form or blended with other fibers, can be successfully processed to produce fabrics of various thickness and weights for different uses. Nonwoven fabrics from these fibers could be another product niche that can be introduced in the global market. With the country's vast land planted to pineapple and banana, their utilization for fiber and nonwoven fabric production would create job opportunities and generate income for the Filipinos.

Construction

PCIEERD is giving assistance to projects that are looking at the best practices in building designs that could withstand the effects of natural disasters and structural pressures.

Ongoing

Program Title: Green Affordable Shelter Systems (GRASS)

Project 1 Title: Leak-proof Panels for Modular Housing Projects

Project 2 Title: Alternative Building Systems for Residential Structures Considering Seismic Loads

Projects 3 Title: Fire Hazard Mitigation Syster for Cluster Housing

Implementing Agency: UP Diliman - College of Engineering

The program studies the specific components that would make houses and structures durable, environment-friendly and low-cost. As part of the Engineering R&D for Technology (ERDT) Program, the research outputs of graduate and undergraduate students involved in the project will be used. Ultimately, the project also intends to produce more PhD and MS graduates in civil engineering.

Program Title: Marine Concrete Maintenance (MARINE)

Project 1 Title: Adaptation of Prediction Models to Determine the level of Deterioration of Reinforced Concrete in Marine Environment

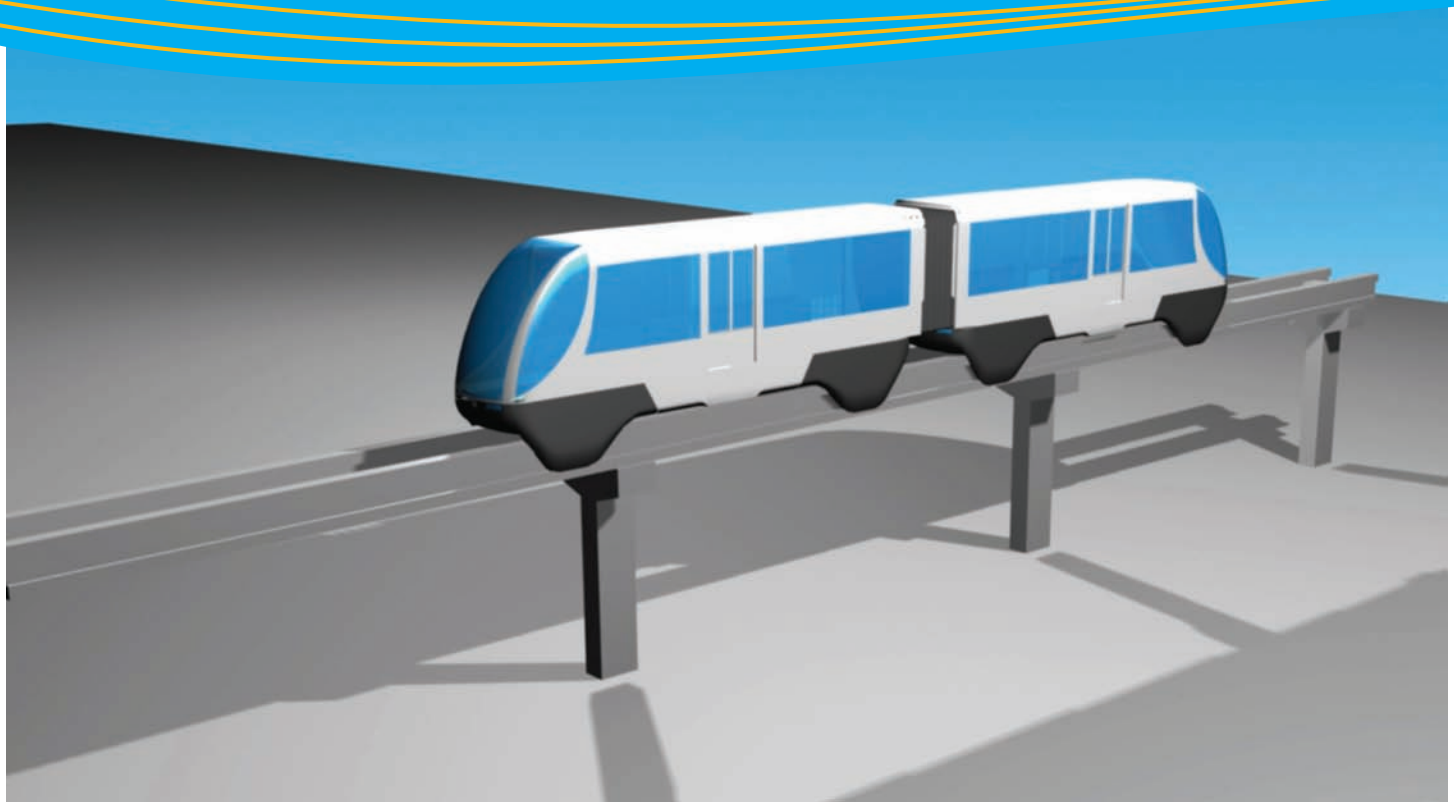
Project 2 Title: Evaluation of Strength and Durability Parameters of Plain and Reinforced Concrete Using Local Cements

Project 3 Title: Analysis of Deterioration of Reinforced Concrete Structures in Local Marine Environment

Project 4 Title: Development of Performance-based Maintenance System for Marine Concrete

Implementing Agency: UP Diliman - College of Engineering

The performance of marine concrete is the focus of the program. It will develop a



The project "Development of a Prototype Automated Guide-way Transit System" aims to come up with a fast and reliable mass transport system.

performance-based maintenance system for marine concrete as exposed to marine environment for both maintenance of structures and product development.

Project Title: Recycling of Waste Rubber Crumb for Construction Application

Implementing Agency: DOST-ITDI

Cooperating Agency: Vermilion Ventures, Inc.

The project will develop an economical and environment-friendly recycling technology using recycled waste tire to produce products such as mulch for playgrounds, pavers/blocks that are applicable to apartment complexes especially for elderly people, anti-slippery material for patios and swimming pools, block for erosion control and floor tiles. Studies on the mechanical properties, including flammability, chemical resistance, slip and abrasive resistance, performance as well as the cost benefit analysis of the prototype product will be undertaken.

Transportation

The transport sector is the second highest energy-consuming sector in the Philippines, next to the industry sector. PCIEERD continues to support projects that aim to promote environmentally sustainable mass transportation alternatives.

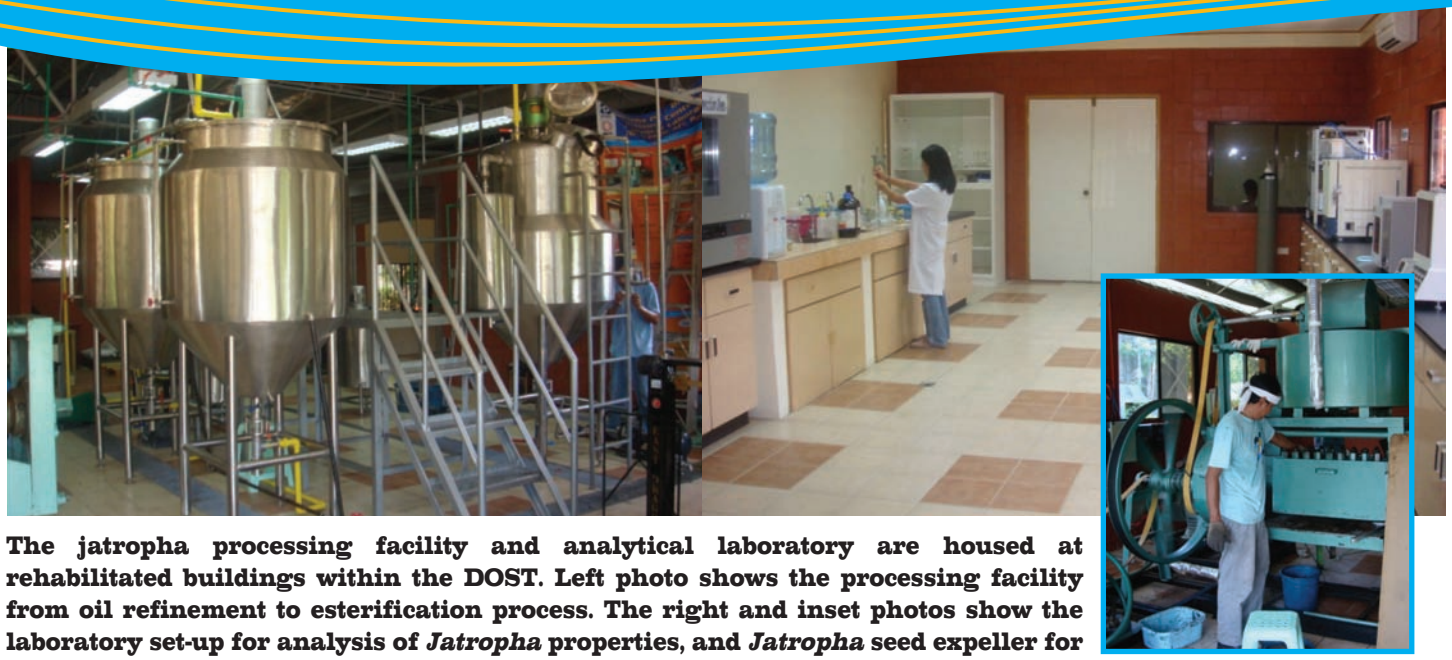
Ongoing

Project Title: Development of a Prototype Automated Guide-way Transit (AGT) System

Implementing Agency: DOST – Metals Industry Research and Development Center (MIRDC)

The project intends to showcase Filipino ingenuity and capability in engineering by developing a prototype AGT that could be a model for adoption in other urban areas in the Philippines. Very much like the Metro Rail Transit (MRT), the AGT is seen to address the severe lack of environmentally sustainable technology alternatives, particularly for a fast and reliable mass transport system.

Support for R&D: Energy Sector



The jatropha processing facility and analytical laboratory are housed at rehabilitated buildings within the DOST. Left photo shows the processing facility from oil refinement to esterification process. The right and inset photos show the laboratory set-up for analysis of *Jatropha* properties, and *Jatropha* seed expeller for jatropha methyl ester production, respectively.

SUPPORT FOR R&D: ENERGY SECTOR

Guided by the Biodiesel Roadmap, PCIEERD continues to focus on the development of alternative energy sources for the goal of increasing the country's level of energy self-sufficiency.

Other significant initiatives in the energy sector include the Methane to Market (M2M) program, which is a partnership with the US Government for the promotion of methane recovery and use from agro-industrial residues in the Philippines. A long-time collaboration with the Japan External Trade Office (JETRO) on energy conservation developed strong Regional Core Groups of Energy Auditors that actively assist SMEs in energy conservation, management and audit measures.

Completed

Project Title: Pilot Production and Testing of Biodiesel from *Jatropha Curcas*

Implementing Agencies: DOST-ITDI and DOST-MIRDC

The partnership of the DOST, through PCIERD, and the Philippine National Oil Company-Alternative Fuels Corporation has resulted in the establishment of a pilot demonstration plant for the processing of Jatropha curcas into biodiesel. The project was implemented by ITDI and MIRDC to establish the parameters in the processing of *Jatropaha curcas* to biodiesel that conform to set standards. The jatropha processing facility and analytical laboratory are housed at rehabilitated buildings within the DOST.

Test results showed that the Jatropha methyl ester-diesel blends have practically similar fuel economy (in g/km and km/l) as diesel. They also have lower smoke emission density, higher mileage (km/L) by 1.8%-14.44% and lower fuel consumption by 1.8%-12.7% compared to pure diesel fuel.

Project Title: Capacity Building for Methane Recovery and Use for Agro-industries in the Philippines

Implementing Agency: PCIEERD

This project aimed to develop the capacity to promote and sustain the development of methane recovery and use from agro-industrial residues in the Philippines. The Philippine Resource Assessment study showed that pig farming, slaughterhouses, sugar distillery, desiccated coconut, and pineapple processing plants are the top industries likely to produce significant methane emissions from their wastewater treatment facilities. The project focused on pig farm waste which shows the most potential.

Regional campaigns, one each in Luzon, Visayas and Mindanao were conducted to promote methane recovery and utilization projects for improvement of the local and global energy and environment. Speakers were invited to discuss the benefits of methane recovery and utilization, as well as mechanisms for its development. It is expected that increased information exchange and technical training would help generate support for methane recovery projects.

Project Title: Strengthening the DOST Regional Offices on Energy Conservation and Management

Implementing Agency: Department of Science and Technology Regional Office VII

Co-Implementing Agencies: DOST Regional Offices (NCR, Region I, III, IV-A, V, VIII, X and XII)

Implementing Agencies: DOST-ITDI and DOST-MIRDC

The project aimed to develop strong Regional Core Groups of Energy Auditors that could actively assist SMEs or establishments in energy conservation, management and audit measures. This was done through the following: a) organization and training of regional core groups on various energy management opportunities, actual practices in undertaking energy audit and in the preparation and presentation of an energy audit report; and b) procurement and provision of necessary energy audit equipment.

The trained regional core groups were deployed to conduct training; promote awareness on energy conservation, management and audit measures; and conduct of energy audit activities among DOST regional beneficiaries and partners.

There are now five Regional Core Groups in DOST Regional Offices, namely: Regions I, III, IV-A, NCR and XI. An additional three DOST Regional Offices, namely, Regions V, VIII and X were also trained. A total of 132 local experts are now part of the regional core group of the energy audit team.

Ongoing

Project Title: Energy Efficiency Improvement Project in the Philippines

Implementing Agency: International Center for Environmental Technology Transfer (ICETT)

The project is a collaborative initiative of the ICETT and PCIEERD that aims to conduct energy conservation and efficiency improvement in various industries in the Philippines. The ICETT is a non-government, Japanese organization that carries out training, technical guidance and research and development by applying accumulated industrial technologies and administrative measures for environmental conservation.

In this project, PCIEERD and ICETT selected Asia Brewery Inc. (brewing industry) and D&L Industries, Inc. (oleo-chemical industry) as the

PCIEERD organized regional campaigns to promote projects on methane recovery and utilization. The main photo was taken from the Training of Trainors on Biodigester Development for Pig Farms in the Philippines that was held at East Asia Royale Hotel in General Santos City on December 2, 2010. An information, education and communication campaign (inset) was also held in Stotsenberg Hotel at Clark Field, Pampanga on October 14, 2010.

PCIEERD supported the project "Strengthening the DOST Regional Offices on Energy Conservation and Management," which aimed to develop strong Regional Core Groups of Energy Auditors that could actively assist SMEs or establishments in energy conservation, management and audit measures. The trained regional core groups were deployed to conduct training; promote awareness on energy conservation, management and audit measures; and conduct energy audit activities among DOST regional beneficiary-firms and partners.

beneficiaries of the project. Together with PCIEERD, a Japanese expert was sent by ICETT to conduct energy audits in these companies and provide analysis and assessment.

Project Title: Vehicle Research and Testing Laboratory (VRTL)

Implementing Agency: UP Diliman – Department of Mechanical Engineering

This project calls for the establishment of a vehicle research and testing center that will completely validate and test alternative fuel vehicles and fuel-saving and emission reduction devices. The validation can provide information for the government to protect the public for any adulterated products.

Testing for fuel economy and maximum power of various coco-methyl ester (CME) blends (1 to 10% blends) were conducted using the chassis dynamometer system of the VRTL in UP. Tests showed significant improvement of fuel consumption by as much as 2.06% with the D99-B1 (where D=diesel and B=biodiesel) blend but the improvement gradually reduced as the amount of CME was increased. Fuel consumption also started to worsen at D50-B50 blend, but the worst fuel consumption was observed with pure CME at 11.13% decline from neat diesel fuel. Maximum power slightly improved with closely similar values from 1% - 10% CME blends with the D90-B10 fuel having the highest increase at +2.85% over neat diesel. Also, power reduction started at D50-B50 with pure CME having the biggest reduction with maximum power at 4.86% decline.

For the emission test, results showed that CME was able to decrease THC (total hydrocarbon) emissions by 41.23% with D97-B3 and CO emissions by 10.03% with D50-B50 compared to neat diesel fuel. Oxides of nitrogen were also continuously decreasing as the blend of CME goes higher with the B100 CME having a reduction of 9.49% over neat diesel fuel. Steady state tests showed that effects of CME were not as evident compared to the transient drive cycle test.

Moreover, to further enhance the capability of the facility, an engine dynamometer system is also being constructed and is expected to be finished by August 2011.

Support for R&D: Emerging Technology Sector

SUPPORT FOR R&D: EMERGING TECHNOLOGY SECTOR

In 2010, the Council supported and monitored projects in the emerging technology fields particularly in biotechnology, information and communications technology, materials science, nanotechnology, photonics, semiconductor and electronics.

Biotechnology

The science of biotechnology promises a wealth of potential benefits. Underscoring the importance of maximizing this discipline, PCIEERD continues to support projects and research studies on the use of biotechnology in the fields of agriculture, medicine and biodiversity conservation.

Completed

Project Title: Structural Characterization of Bioactive Compounds from Philippine Microorganisms: Part 1. Antimicrobial Compounds from Locally Isolated *Streptomyces species*

Implementing Agency: National Institute of Molecular Biology and Biotechnology (BIOTECH) University of the Philippines Los Baños (BIOTECH-UPLB)

The project resulted in the characterization and structure elucidation of bioactive compounds from locally isolated *Streptomyces species* that are effective against methicillin-resistant *Staphylococcus aureus*, which is a bacterium responsible for a number of difficult-to-treat infections in humans.

Project Title: Development of PCR-based Detection Method Specific for *Listeria monocytogenes* in Raw and Ready-to-eat Processed Products

Implementing Agency: BIOTECH-UPLB

The study developed a detection kit for *Listeria monocytogenes* based on polymerase chain reaction (PCR) by designing primers from the sequence of identified molecular markers and by devising extraction and enrichment protocols.

Project Title: A Proteomic Approach to Elucidate the Role of Granules in *Conus* Venoms

Implementing Agency: UP Diliman – Marine Science Institute

The project determined the protein profiles of granules and soluble fractions from the venom of *Conus* (cone snails) species belonging to different prey types, and the effects of selected proteolytic enzymes on the bioactivity of venom granules. It also provided insights on the role of venom granules as storage packets for enzymes and conotoxin precursors.

Project Title: Pilot Study on the DNA Barcoding of Selected Philippine Birds

Implementing Agency: UP Diliman – Institute of Biology

The project conducted a preliminary study on DNA barcoding of Philippine birds using species found at the Philippine Eagle Center in Davao City. The project also tested the effectiveness of the 648-base pair fragment of a mitochondrial gene in distinguishing the birds.

Project Title: Direct Lactic Acid Production from Sago Starch Using a Novel Amylolytic Lactic Acid Bacterium

Implementing Agency: UP Mindanao

This project is under the program "Utilization/Conversion of Sago Starch into Value-added Products: Lactic Acid, Ethanol and Biodegradable Plastics." The study was able to increase lactic acid yield and improve

The project "A Proteomic Approach to Elucidate the Role of Granules in Conus Venoms" aimed to determine the protein profiles of granules and soluble fractions from the venom of Conus (cone snails) species belonging to different prey types, and the effects of selected proteolytic enzymes on the bioactivity of venom granules.

A major objective of the project "Plant Growth-promoting Factors from Rhizobacterial Strains of Sago Palm" at the University of the Philippines Mindanao is to come up with a soil inoculant formulation from the best strain.

on the previous parameters optimized. The best culture medium was determined and optimized using Response Surface Methodology. The runs were optimized in the 2-liter fermentor for trial into the 30-liter fermentor.

Project Title: Micropropagation of Sago Palm
Implementing Agency: UP Mindanao

Sago palm shoots were regenerated from modified Murashige and Skoog's (MS) medium. Direct shoot regeneration was observed in cultures grown under optimum conditions.

Ongoing

Project Title: Plant Growth-promoting Factors from Rhizobacterial Strains of Sago Palm
Implementing Agency: UP Mindanao

This project aims to determine the morphological, biochemical and molecular identification of various rhizobacteria from sago, quantify the hormone-like activity of the rhizobacteria from sago, and characterize the growth-promoting mechanisms of the rhizobacterial strains. The project intends to come up with a soil inoculant formulation from the best strain. As of today, six bacterial strains from the sago rhizosphere have been characterized through traditional, biochemical and molecular analyses.

Program Title: Database and Systems Biology for Selected Plants and Associated Arthropods in the Four Subcatchments of Mt. Isarog National Park (MINP)
Project 1 Title: Inventory and Documentation of Some Plants and Their Associated Arthropods in MINP
Project 2 Title: Multimodal Network Database and Analysis System for Data Acquisition and Systems Biology
Project 3 Title: Chromatographic and Spectrophotometric Profiling and Chemical Marker Identification of Selected Plants and Associated Arthropods of Interest
Project 4 Title: Protein Profiling and Genomic Studies of Selected Plants and Their Responses to Associated Arthropods
Implementing Agencies: UP Manila and Ateneo de Naga University

This program aims to create a database management system of existing species and traditional knowledge related to these species in a model protected area such as a natural park. It also aims to create a database management system for genomic, proteomic and chemical profiles of the existing species with focus on interdependent species.

The program "Database and systems biology for selected plants and associated arthropods in the four subcatchments of Mt. Isarog National Park" aims to contribute to conservation efforts in the national park.

The study "An Adult Content Filtering System" dealt with the development of a system for filtering adult content, specifically pornography in web pages based on the analysis of images and text in such pages. It demonstrated that it is possible to detect pornography using only a text filter but the performance can be improved if used in combination with an image-based filter.

Information and Communications Technology/ Electronics

In response to the growing role of electronics and ICT in the country, PCIEERD supports and monitors programs and projects that promote research, development and innovation in these knowledge areas.

Completed

Project Title: Automatic Generation of Children's Stories
Implementing Agency: De La Salle University (DLSU) – College of Computer Studies

This project extended the automated story generation system of picture books to produce stories for a wider age group (children ages 4 to 8 years old) from a specified multi-scene picture. The software has been developed and tested with human experts. It demonstrated that grammatically correct and coherent stories comprising the four basic elements of a story (problem, rising action, solution and climax) can be generated from a given picture with at least three scenes, provided that the appropriate storytelling domain knowledge and narratological concepts to drive the story flow are present.

Program Title: Towards the Development of a Self-improving and Ambient Emphatic Space: Data-centric, Multimodal Emphatic Modeling from Pluridisciplinary Discipline
Project 1 Title: Development of Scalable Computing System for an Ambient Intelligent Emphatic Space
Project 2 Title: An Adaptive Multimodal Affect Recognition System in the Emphatic Space
Project 3 Title: Using Body Movement for Automatic Human Identity and Emotion Recognition in the Emphatic Space
Project 4 Title: Adaptive and Self-Improving Emphatic Responses for an Ambient Intelligent Emphatic Space
Project 5 Title: Developing an Adaptive Music-based Affect Model for Self-Improving Ambient Intelligent Emphatic Space
Project 6 Title: Adaptive Emphatic Feedback in an Intelligent Tutoring System for Object-oriented Programming
Implementing Agency: DLSU – College of Computer Studies

The program focused on the development of a self-improving, ambient intelligent emphatic space using a data-centric, multi-modal emphatic modeling from pluridisciplinary disciplines. The project has resulted in the design and implementation of the communication protocol for both low-level and high-level devices, with tests now ongoing. In addition, the module for affect recognition using body movement and posture has been built using head and shoulder movement, body posture and hands.

Project Title: Integrative Bioinformatics: Data Warehousing of Microbial Information Databases
Implementing Agency: BIOTECH-UPLB

The data warehouse of microbial information is temporarily installed at the Advanced Science and Technology Institute (ASTI) in Diliman, Quezon City until uploading of the databases has been completed and the server at UP Los Baños has been installed. The Web interface has also been developed.

Project Title: Towards an Adaptive Mobile Museum Guide
Implementing Agency: De La Salle University

The project developed a prototype of an adaptive mobile museum guide that provides recommendations from a cultural semantic portal based on user profile and behavior. It digitized museum content and used it in two ways: as content for semantic web-based portal and as content for a mobile museum guide.

Project Title: An Adult Content Filtering System
Implementing Agency: De La Salle University

The study dealt with the development of a system for filtering adult content, specifically pornography in web pages based on the analysis of images and text in such pages. It

demonstrated that it is possible to detect pornography using only a text filter but the performance can be improved if used in combination with an image-based filter.

Project Title: Development and Deployment of an Intelligent Affective Detector for the Blue J Interactive Development Environment
Implementing Agency: Ateneo de Manila University

The project developed an agent that can flag the teacher when students feel frustrated, confused, bored or when they are engaged in non-learning behaviors. Based on this study, the causes of non-literal errors that stem from the most common student compilation errors were identified. In addition, a detector was developed that can successfully identify most of these non-literal errors.

Project Title: Development of Affect-Sensitive Interfaces
Implementing Agency: Ateneo de Manila University

The project developed a framework for the design of motivational agents for an intelligent tutor for algebra, and developed an affect-sensitive game and room.

Project Title: Open Source Mobile Application Distribution Service on a Social Network
Implementing Agency: De La Salle University

The project designed a framework of a mobile application store that integrates social networking and communication and persistence middleware to allow the development of interactive multi-user applications and support user recommendations for applications.

Project Title: Development of Data and Network Communications Protocol Motherboard Using Reconfigurable Hardware
Implementing Agency: San Jose – Reyes School of Learning Maharlika Hi-Way, Baligatan, Ilagan, Isabela

The project tested, debugged and redesigned a motherboard that uses reconfigurable hardware. The reconfigurable hardware enables users to learn how to implement data handling and network communications protocols. The design will allow for easily interchangeable daughterboards that house other protocols not included in the motherboard.

Program Title: ICT for the Environment Program: R&D on Solutions, Applications and Infrastructure
Project 1 Title: Philippine Real-time Environment Data Acquisition and Interpretation for Climate-related Tragedy (PREDICT)
Project 2 Title: Early Warning System for Tsunami
Implementing Agency: DOST – Advanced Science and Technology Institute

On the project's first year of implementation, the project developed a prototype of the field monitoring system. More particularly, it was able to complete the schematics and layout design for the wireless board and the printed circuit board (PCB), and tested its communication protocol and firmware codes. The featured sensors were also tested.

Project Title: Wireless Electrocardiogram (ECG) Circuit and System Design for Stress Test Application
Implementing Agency: Ateneo de Manila University

The digital three-lead remote ECG system was developed through analog circuitry, a microchip capable of analog-to-digital conversion, and a graphical user interface complete with digital filters, heart rate computations and graphing processes. The ECG system is currently at the calibration phase and is being prepared for deployment.

Ongoing

Project Title: Research Study on Low-cost Computing Solutions for Primary Education – Phase 1
Implementing Agency: DOST-ASTI

This project aims to study the feasibility of a low-cost tablet computer/e-book reader tailored for primary schools.

The project "Secure Distribution of Digital Content for Resource-constrained Devices" aims to provide secure multimedia exchange in mobile phones, netbooks and other similar handheld devices.

Project Title: Rain Monitoring and Alarm System Using Hybrid Wireless Networks

Implementing Agency: Ateneo de Manila University

The project aims to carry out a proof of concept of a rain-related alarm system based on hybrid technologies such as Wireless Fidelity (Wi-Fi)/Smart Bro, Wireless IP Access System (WIPAS) and Global System for Mobile Communications (GSM) using acoustic sensors and tipping buckets, with user interfaces for web access and mobile phone service.

Project Title: Secure Distribution of Digital Content for Resource-constrained Devices

Implementing Agency: UP Diliman – Department of Computer Science

The project aims to provide secure multimedia exchange through stream cipher encryption of multimedia streams in resource-constrained devices. Resource-constrained devices are those with slower processors, more limited storage and memory than current desktop computers; thus, this includes mobile phones, netbooks and other similar handheld devices. Stream ciphers allow for faster computations and smaller memory requirements due to their small key sizes.

Project Title: Towards a Context-aware Classification and Retrieval System of E-learning Materials

Implementing Agency: UP Diliman – Department of Computer Science

The research project will examine current classification and retrieval systems, particularly those designed for e-learning materials. The main objective of this project is to provide a more efficient retrieval system for e-learning materials by focusing on learner-centered contextual attributes.

Project Title: Information Visualization via Data Signature

Implementing Agency: UP Diliman – Department of Computer Science

The project's main aim is to use the concept of data signatures to some data sets, particularly, to use possible concepts in statistics, data mining, Logical Analysis of Data (LAD), combinatorics, fuzzy sets and fuzzy logic as a way of defining data signatures and aid in data visualization. In addition, the project aims to use data signatures to create a simpler visualization of a large high-dimensional data set to facilitate easier and more precise analysis of the data set.

Early Warnings Systems have been deployed in two locations. Once validated, deployment is being planed to other landslide-prone areas.

Program Title: Disaster Risk Management Using Sensors Networks and Computing: Early Warning System for Landslides, Slope Failures and Debris Flows

Project 1 Title: DYNASLOPE: Development of Dynamical Models for Landslides, Slope Failures and Debris Flow

Project 2 Title: SENSLOPE: Development of Alternative Cost-effective Instrumentation and Sensor Networks

Implementing Agency: UP Diliman

In this research program, an alternative means for monitoring slopes that is both accurate and cost-effective is proposed. This approach uses wireless sensor networks (WSN) deployed at strategic points covering the slope that periodically measure parameters such as ground movement, rainfall intensity, moisture content and pore water pressures. These collected data are transmitted to a central repository for processing and analysis from which landslide forecasts and/or predictions can be made.

To date, an Early Warning System has been developed and deployed in two locations. Once validated, deployment is being planned to other landslide-prone areas.

Project Title: SoDeRa: Development of Software-defined Radio Platforms and Techniques for Enabling Next Generation Wireless Communication Networks

Implementing Agency: UP Diliman – Electrical and Electronics Engineering Institute (EEEI)

The project intends to develop new intellectual property (IP) in wireless technology through software-defined radio research and communications signal

processing. These patentable IP will be at the core of defensible and differentiated wireless products that can be offered by Philippine companies to the global wireless market.

Project Title: Innovation and Design for Manufacturability of Microwave and Millimetre-wave Radio Modules Through Industry Collaboration

Implementing Agency: UP Diliman – EEEI

The project aims to design and characterize prototypes of functional passive and active microwave (MW) and millimeter wave (MMW) wireless communication system blocks that incorporate design for manufacturability concepts. It also aims to develop a critical mass in manpower in the area of radio frequency (RF)/MW and MMW wireless communication system design and design for manufacturability.

Prototyping, testing and characterization of waveguide-based MW and MMW passives (filters, couplers, duplexers/diplexers, attenuators and isolators/circulators) have already been conducted. In addition, the simulation of transmission linebased microwave and millimeter wave active blocks (small-signal amplifiers, oscillators, low-noise amplifiers, power amplifiers and tuners) has been done.

Program Title: Eye C: Design of a Vision-capable Microcontroller Integrated Circuit for a Robot Explorer

Project 1 Title: Microcontroller Design for Micro-mouse Applications

Project 2 Title: CCD Interface With Color to Monochrome Image Conversion

Project 3 Title: An 18-bit Oversampling Audio Delta Sigma D/A Converter Design

Project 4 Title: Design of a High PSSR Two-stage Operational Amplifier

Implementing Agencies: UP Diliman – EEEI, University of San Carlos – Department of Electronics and Communications Engineering, Mindanao State University – Iligan Institute of Technology and Mapúa Institute of Technology – School of Electrical, Electronic and Computer Engineering

The program aims to move up university electronics research in the Philippines by providing Engineering for Research and Development for Technology (ERDT) member universities access to the tools and experience in implementing and testing their own integrated circuit designs.

Program Title: Digital Design and Interfacing for ERDT's Semiconductor and Electronics Track

Project 1 Title: Application-specific Integrated Circuit and System Level Design

Project 2 Title: Interface Module Design

Project 3 Title: High-speed Printed Circuit Board (PCB) Design

Implementing Agency: UP Diliman – EEEI

The program intends to come up with a system integration solution. The design of the high-speed system solutions will start with the system level design using programmable devices such as field programmable gate arrays.

Program Title: Chip Design for ERDT's Semiconductor and Electronics Track

Project 1 Title: Radio Frequency (RF) Complementary Metal-oxide Semiconductor (CMOS) Design

Project 2 Title: Analog and Mixed Signal Integrated Circuit Design

Project 3 Title: Low Power Reduced Instruction Set Computer (RISC) Design

Implementing Agency: UP Diliman – EEEI

The program aims to design system-on-chip (SoC) solutions for a wide range of consumer requirements. Aside from the SoC solutions, a direct output of this program would be the increase in the number of highly skilled engineers that would be needed by the country's electronics industry.

New

Project Title: Access Control for Collaborative Internet-based Digital Content

Implementing Agency: UP Diliman – Department of Computer Science

The project proposes to study access control frameworks and mechanisms designed for collaborative Internet-based applications. It will investigate collaborative applications for two target domains: health and education.

Project Title: LEAP: Learning While Playing

Implementing Agency: UP Diliman – College of Engineering

Existing studies have already established that there is a positive effect of educational games on the learning of the student. The goal of this project, however, is not to create just another educational game. The focus of the project is on how a framework can support the development of educational game and teacher tools so that they would be able to communicate with each other.

The project "Development of Hybrid Weather Monitoring System and Production of Weather and Rain Automated Stations" will produce 80 automated weather stations (shown in the photo) and 100 automated rain monitoring stations using local technologies.

Project Title: Development of an Educational Data Mining Workbench

Implementing Agency: Ateneo de Manila University

The project aims to develop the Educational Data Mining Workbench, which is a software tool that will accept as input raw data from intelligent tutors, preprocess it according to the specifications of researchers and analysts, and output it into formats that other analysis tools can read.

Project Title: Development of Hybrid Weather Monitoring System and Production of Weather and Rain Automated Stations

Implementing Agency: DOST-ASTI

The project will produce 80 automated weather stations (AWS) and 100 automated rain monitoring stations using local technologies. The developed AWS and automated rain monitoring stations will be deployed in key areas across the Philippines to complement the weather monitoring facilities of DOST's Philippine Atmospheric Geophysical and Astronomical Services Administration. In addition, the program aims to develop and incorporate satellite communication capability to the system as an alternative to Global System for Mobile Communications (GSM)/General Packet Radio Service (GPRS) communication for timely and continuous weather information access.

Materials Science

Recognizing the importance of research and development in the area of materials science, PCIEERD continues to support and monitor studies on carbon nanotubes and atmospheric plasma devices.

Completed

Project Title: Production of Carbon Nanotubes in the Presence of Magnetic Field and Other External Factors by Microwave-enhanced Chemical Vapor Deposition

Implementing Agency: DLSU – College of Engineering

Project researchers conducted experiments on the effects of magnetic field on the alignment of carbon nanotubes produced in the microwave-induced plasma-assisted chemical vapor deposition.

Ongoing

Project Title: Development of a Microwave-induced Atmospheric Plasma Jet

Implementing Agency: UP Manila – Department of Physical Sciences and Mathematics

The project aims to locally develop atmospheric plasma devices. Particularly, it will design and construct a unique, flexible and modular gas nozzle system that will enhance the stability of the plasma jet. An implemented microwave plasma jet source has already been set up and is currently being evaluated.

Nanotechnology

PCIEERD promotes nanotechnology research and development as a new field of endeavor. Nanotechnology applications include new materials for agriculture, medicine and environmental uses.

Completed

Project Title: Development of Au(III) and Pt(III) Single-crystals as Substrates for Nanomaterials: Preparation, Characterization and Applications

Implementing Agency: University of Santo Tomas

The project developed and characterized Au(III) and Pt(III) single crystal electrodes that could be utilized as substrates for nanomaterials with electrocatalytic applications. These can also be used as substrates for adsorption and electropolymerization of 3,4-ethylenedioxythiophene (EDOT) monomers. The electrocatalytic activity of the dispersed platinum and palladium nanoparticles showed superior performance towards oxidation of ethanol and formic acid compared to the bulk electrodes.

Project Title: Synthesis and Characterization of Carbon-based Nanostructures UsingHorizontal Vapor Phase Deposition

Implementing Agency: De La Salle University

The project developed a simple, inexpensive and convenient method of synthesizing various types of carbon-based nanostructures using a static vapor-phase deposition technique that does not require the use of a carrier gas to entrain the starting materials towards the deposition surface.

Ongoing

Project Title: Development of Biodegradable Starch-clay Nanocomposite for Advanced Food Packaging

Implementing Agency: DOST – Industrial Technology and Development Institute (ITDI)

The project aims to develop biodegradable nanocomposites from local sources for advanced food packaging. To date, nanocomposites were prepared by mixing thermoplastic starch with clay, and were extruded into pellets. Nanoclay was added at various concentrations in the thermoplastic starch matrix.

Project Title: Nanozeolites From Rice Hull Ash for Application to Protein Studies

Implementing Agency: UP Los Baños – Institute of Chemistry

This project aims to add value to rice hull by exploring its use as a readily available and cheap alternative source of amorphous silica. The silica extracted was used in the preparation of nanozeolites to isolate proteins with reduced number of operations and simplified recovery procedures. Nanozeolite is a submicron oral spray designed to detoxify selective heavy metals, metabolic toxins and environmental chemicals.

Project Title: Nanomaterials from Indigenous Sources for the Removal of Arsenic from Groundwater

Implementing Agency: UP Los Baños – Institute of Chemistry

The project aims to explore the use of nanomaterials from renewable sources and/or agricultural by-products for remediation of groundwater from arsenic contamination. The use of low-value agricultural-by-products is expected to increase the productivity of the Filipino farmer and address concerns about agricultural waste disposal and remediation of arsenic-contaminated environments.

Project Title: Development of Nano-biomaterials from Agricultural Resources for the Protection and Delivery of Nutraceutical, Cosmeceutical and Functional Food Ingredients and Products: Nanoencapsulation of Bioactive Food Phytochemicals

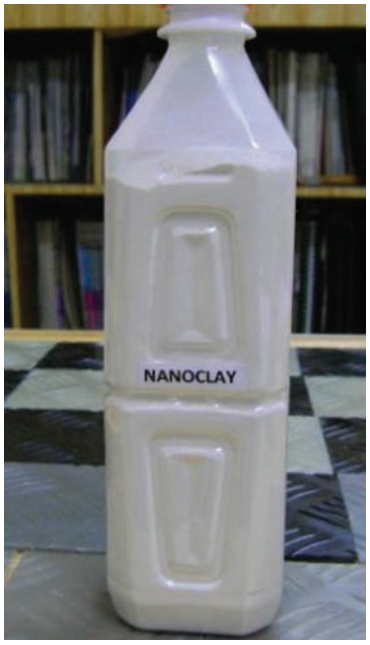
Implementing Agency: UP Los Baños – Institute of Chemistry

The project aims to develop nano-biomaterials from agricultural resources that can be used for the protection and efficient delivery of cosmeceutical, nutraceutical, and functional food ingredients and products. To date, the project has determined the fatty acid components of rice bran phospholipids that were used in encapsulation. In addition, the resulting nanocapsule was tested to determine storage stability in terms of antioxidant activity and structural stability.

Project Title: Development of Hemicellulose-chitosan-tripolyphosphate Nanocomposite Coating for the Postharvest Life Extension of Papaya *(Carica papaya)*

Implementing Agency: UP Los Baños – Institute of Chemistry

The project aims to prepare a nanocomposite coating from hemicelluloses isolated from pineapple crown leaves, sugarcane bagasse and chitosan-tripolyphosphate nanoparticles for the



The project "Development of Biodegradable Starch-clay Nanocomposite for Advanced Food Packaging" aims to develop biodegradable nanocomposites from local sources for advanced food packaging. Montmorillonite clay from Cebu was synthesized with a non-ionic modifying agent to make the clay compatible with thermoplastic starch.

The project "Development of Hemicellulose-chitosan-tripolyphosphate Nanocomposite Coating for the Postharvest Life Extension of Papaya aims to develop a nanocomposite coating to extend the shelf life of papaya.

postharvest life extension of papaya. The preparation and partial characterization of different types of hemicellulose films were already conducted as well as preparation of chitosan-tripolyphosphate nanoparticles. In addition, preliminary coating of solo papaya using hemicelluloses-nanoparticles with additives from pineapple crown leaves has been done.

Project Title: Synthesis of Hybrid Nanocomposites from Coconut Fatty Acid for Polymer and Environmental Use

Implementing Agency: UP Diliman – Institute of Chemistry

The project aims to use locally available materials like coconut fatty acid in combination with locally abundant montmorillonite in producing nanocomposites. Montmorillonite is a member of the general mineral group of clays that is characterized by its ability to expand when they absorb large quantities of water. The output of this project is expected to contribute in solving the problem on plastic waste that pollutes the environment because of their non-biodegradability.

Project Title: Development of Electrochemical Surface Plasmon Resonance Sensing Using Electropolymerized Molecularly Imprinted Polymers and Nanomaterials for Detecting Endocrine-Disrupting Contaminants (EDC) and Chemical Contaminants

Implementing Agency: UP Diliman – Institute of Chemistry

The project aims to develop a sensor based on novel ultra-thin films of molecularly imprinted polymer nanomaterial composite as recognition elements for a variety of chemical contaminants and EDCs.

Project Title: Conjugated Diblock Copolymer Nanocomposites Heterojunctions-nanostructured for Improved Photovoltaics

Implementing Agency: UP Diliman – Institute of Chemistry

The project will provide a mechanism to design, fabricate and characterize a novel set of conjugated polymer nanocomposites. Conjugated or conduction polymers are a promising class of materials in energy conversion technologies.

Project Title: Development of Nanostructured Composites Coatings by Electrodeposition

Implementing Agency: DOST-ITDI

Nanocomposite coatings by electrodeposition is a simple, low-cost coating technique that offers important advantages in the development of nanostructured coatings on various substrates. The project aims to generate a zinc-nanosized inorganic powder composite coating for industrial applications.

Project Title: Synthesis of Nanosilica from Local Silica for High-performance Concrete

Implementing Agency: DOST-ITDI

The project will develop nano silica for high-performance concrete; local silica was used as the raw material. The average particle size of the said sample was 700nm using dynamic light scattering. Chemical analysis and surface area analysis are ongoing.

Program Title: Nanostructured Solar Energy Devices
Project 1 Title: Nanostructures for Solar Cell Applications
Project 2 Title: Transparent Electrodes for Solar Cell Applications
Project 3 Title: GaAs-based Solar Cell Devices
Project 4 Title: Modification of Graphene for Nanostructured Photovoltaic Cells
Project 5 Title: Solar Cell Characterization Facility

Implementing Agencies: Ateneo de Manila University – Chemistry Department and UP Diliman – National Institute of Physics (NIP)

Solar cells provide the most promising alternative energy source that is also environment-friendly. This program aims to develop new innovations in solar cell energy research based on nanotechnology, and to develop working solar cell devices with measured efficiencies. The program also aims to establish a national solar testing facility/ center that can service the local needs of researches in solar cell technology.

New

Project Title: Optical Sensor for Cd(II) Ions Based on Glutathione-capped Gold Nanoparticles

Implementing Agency: University of Sto. Tomas – Research Center for Natural Resources

Cadmium is toxic to man and the environment; thus, there is a need to monitor its presence in air and water. This project will develop an optical sensor for the detection of Cd(II) ions based on the localized surface plasmon resonance of glutathione-capped gold nanoparticles.

Project Title: Nanostructured Ultra-thin Films Based on Electrochemically Grafted Polymer Brushes

Implementing Agency: UP Diliman – Institute of Chemistry

The project aims to pursue the systematic design, synthesis and characterization of new dendritic-linear block copolymers with electropolymerizable functional groups of various dendron generation and linear block molecular weights. In addition, the project aims to investigate mesophase formation, electrochemical properties and electropolymerizability in thin films.

Photonics

Photonics is the study of generation, detection and manipulation of light. PCIEERD supports and promotes programs or projects that explore the potential of photonics in the telecommunications and imaging and sensors industries.

Completed

Project Title: An Improved Air Pollution Sensor Utilizing Differential Optical Absorption Spectroscopy (DOAS) Technology

Implementing Agency: AdMU – Manila Observatory

The project developed a DOAS instrument with a built-in calibration system and provisions for data communication for measuring ambient concentrations of three criteria pollutants. To accomplish this, the design and fabrication of an open-path DOAS sensor was undertaken.

Ongoing

Project Title: Fluorometric Chemosensor for the Detection of Tuberculosis

Implementing Agency: Ateneo de Manila University

The project aims to tag mycolic acid mimic with fluorophore donor as well as to prepare acceptor fluorophores. Fluorophore is a type of fluorescent dye used to mark proteins, tissues and cells with a fluorescent label for examination by fluorescence microscopy.

Program Title: Automated Rapid Reef Assessment System

Project 1 Title: Multi-sensor Reef Assessment

Project 2 Title: Computerized Reef Assessment and Visualization

Implementing Agency: UP Diliman – NIP

The program aims to develop multiple scales of assessing coral reef health. The results of the two projects will be used to develop a reef assessment system to monitor the condition of a coral reef using optical signals from underwater video or spectra.

The project "An Improved Air Pollution Sensor Utilizing Differential Optical Absorption Spectroscopy Technology" developed an instrument that measures ambient concentrations of sulfur dioxide, ozone and nitrogen dioxide. Shown in the photo are project leader Dr. James B. Simpas with research assistant Sherdon Niño Y. Uy beside the retroreflector.

The program "Automated Rapid Reef Aseesment System" aims to develop multiple scales of assessing coral reef health.

Studies and researches on disaster mitigation are important in reducing the economic and human cost of natural disasters to the country. Recognizing thi, PCIEERD is supporting a project that aims to determine the extent and rates of ground subsidence in Kalookan, Malabon, Navotas and Valenzuela where lowering of the ground surface levels are at alarming rates.

To date, high-resolution satellite and field images with spectral signatures were used to measure changes in reef health. A suite of tools for automated reef assessment was developed as well as a database comprising of over 200 GB of coral video and still images that were gathered during fieldwork.

Disaster Mitigation

Studies and researches on disaster mitigation are important in reducing the human and economic cost of natural disasters to the country. Recognizing this importance, PCIEERD supports and monitors projects relating to disaster mitigation to help lessen the impact of disasters on people and property.

Ongoing

Project Title: Satellite and Field Detection and Analysis of Ground Subsidence in KAMANAVA, Metro Manila and Other Coastal Areas Such as Hagonoy and Obando, Bulacan

Implementing Agency: UP Diliman - National Institute of Geological Sciences

The project aims to determine the extent and rates of ground subsidence in Kalookan, Malabon, Navotas and Valenzuela (KAMANAVA), where lowering of the ground surface levels are at alarming rates. To assess the contribution of various factors to the subsidence problem, the project will make use of Permanent Scatterer Interferferometric Synthethic Aperture Radar (PSInSAR), an advanced space technology technique, complemented by detailed analysis of the geology of Metro Manila.

Semiconductor

PCIEERD supports research to boost the semiconductor industry in the Philippines. The Council monitors and provides technical assistance to projects and studies that promote technology innovation in this sector.

Ongoing

Program Title: High-value Added Materials for the Semiconductor and Electronics Industry

Project 1 Title: Modification of the Surface Properties of Polymer Materials by Plasma Treatment

Project 2 Title: Deposition of Superior Metallization Layers for the Semiconductor and Electronics Industry by Pulse Plating Technique

Project 3 Title: Nanomaterials from Indigenous Sources for the Semiconductor and Electronics Industry: Fabrication of Philippine Nanoclay/Polymer Composite as Thermally Conducting Material

Implementing Agency: UP Diliman – Department of Mining, Metallurgical and Materials Engineering

The program involves three projects which are concerned with converting the starting materials [polymer (polyethylene and polyimide), metal (tin) and ceramic (clay)] in their usual bulk form to a final state wherein some important properties will become enhanced, making them more valuable for certain target applications in the semiconductor and electronics industry.

Project Title: Printable Solar Cell Device Coupled With a Supercapacitor Energy Storage Device

Implementing Agency: Ateneo de Manila University – School of Science and Engineering

The project aims to fabricate working prototypes that couple a third-generation solar cell device with an energy storage device based on supercapacitors. As of today, improvements in cell fabrication were done, including methodologies in consideration of requirements for printing.

Human Resource and Institution Development Programs

HUMAN RESOURCE AND INSTITUTION DEVELOPMENT PROGRAMS

HUMAN RESOURCE DEVELOPMENT PROGRAM

PCIEERD is dedicated to developing and upgrading the human resource capital of the country. In 2010, the Council provided grants for scholarships, fellowships and visiting professorships. It also granted financial assistance for the conduct of conferences and seminars. To recognize and also provide incentives toward excellence, the Council conducted the Search for 2010 Outstanding Thesis and Dissertation. The competition provided prizes of P75,000 and P60,000 for the researchers of the Outstanding Dissertation and Thesis, respectively.

Scholarship Program

The Council implements its Human Resource Development Program (HRDP) and the Accelerated Science and Technology Human Resource Development Program (ASTHRDP) of the Department of Science and Technology (DOST). Both programs offer scholarships for MS and PhD studies in engineering and advanced science and technology fields.

Fellowships in Advanced Science and Technology (FAST)

The PCIEERD provided financial assistance to four (4) scholars for the conduct of their thesis or dissertation in universities abroad.

Overseas Research Enrichment Program and Post-doctoral Program

The PCIEERD administers the Overseas Research Enrichment Program/Sandwich Program and Post-doctoral Program under DOST-ASTHRDP for science and engineering components.

Table 1. Distribution of scholars for SY 2010-2011.

Degree Program	Science		Engineering (DOST-ASTHRDP)
	PCASTRD	DOST-ASTHRDP	
New MS	–	1	–
New PhD	–	1	–
Ongoing MS	26	88	108
Ongoing PhD	18	24	23
Total	44	114	131

Table 2. Distribution of graduates under DOST-ASTHRDP.

Degree Program	Graduated in 2010		Total Number of Graduates		Total
	Science	Engineering	Science	Engineering	
MS	31	7	39	12	51
PhD	–	–	–	–	–
Total	31	7	39	12	51

Note: As of end of 1st Sem SY 2010-2011

Table 3. Distribution of PCASTRD graduates.

Degree Program	Graduated in 2010	Total Number of Graduates
MS	8	328
PhD	5	112
Total	13	440

Note: As of end of 1st Sem SY 2010-2011

One (1) PhD scholar, Lilia M. Fernando, was granted a "sandwich program" grant to do her research at Michigan State University.

The post-doctoral program at the NASA Goddard Space Flight Center in Maryland, USA of Dr. Gay Jane P. Perez was continuously supported in 2010.

Support for Seminars/Conferences

The Council received and evaluated 38 requests for funding assistance for the conduct of seminars and conferences. Financial assistance amounting to P2,861,263.62 was provided to 27 conferences/seminars, and to three (3) ongoing scholars for their participation in different seminars/conferences.

Table 4. List of FAST scholars.

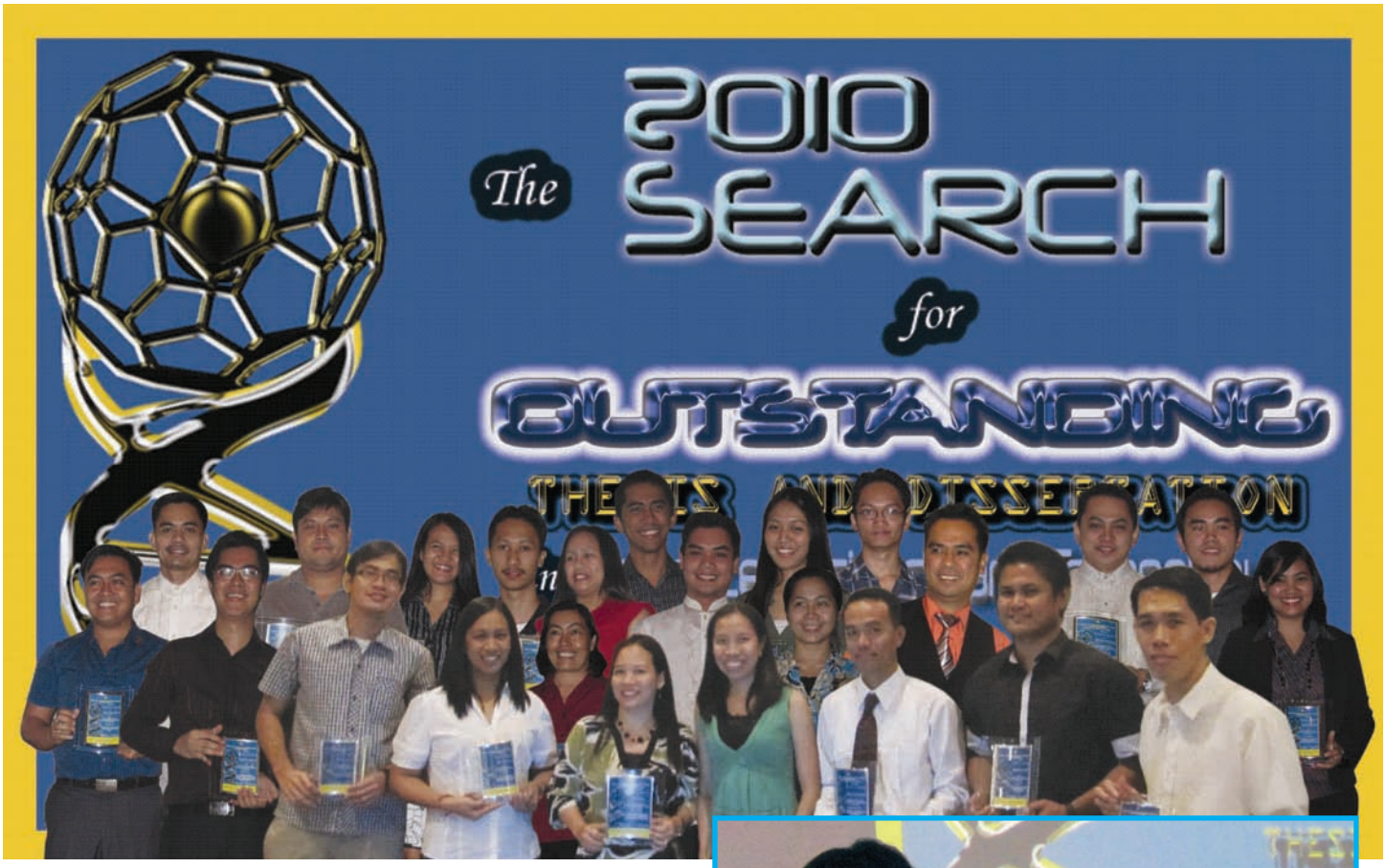
Scholar	Area of Specialization	University
Emelda A. Ongo	Chemistry	University of Brescia, Italy
Jonyl L. Garcia	Chemistry	National Central University, Taiwan
Elizabeth G. Panerio	Genetics	National Taiwan University, Taiwan
Rosalie B. Reyes	Remote Sensing	Asian Institute of Technology, Thailand

Table 5. Technical seminars/conferences supported by PCIEERD.

Title of Conference/ Seminar	Date	Institution
Capacity Building on Research Performance Evaluation – Workshop on Research Performance Evaluation and Support	January 26-28, 2010	DOST – National Academy of Science and Technology
Graduate Research Symposium on Analytical Sciences	February 15, 2010	Kapisanang Kimika ng Pilipinas (Chemical Society of the Philippines) – Division of Analytical Science
6th Youth Conference on IT	February 17-18, 2010	University of the Philippines – Information Technology Training Center and University of the Philippines IT Foundation Inc.
DLSU Touchpoint 2010: 1st International Conference on Technology in Education	March 4-5, 2010	College of Computer Studies De La Salle University Manila
10th Philippine Computing Science Congress	March 5-6, 2010	Computing Society of the Philippines
Forum on Biotechnology: Opening Doors and Creating Opportunities for Food Sustainability	March 8, 2010	Philippine Phytopathological Society Inc.
25th Philippine Chemistry Congress	April 8-10, 2010	Philippine Federation of Chemistry Societies
11th RevUP Workshop Series of the Philippine Society for Biochemistry and Molecular Biology	April 26, 2010	Philippine Society for Biochemistry and Molecular Biology
Polymer P3 Workshop: Packaging, Paints and Pharmaceuticals (How to Make You Polymer Smart, Very Smart)	May 18-21, 2010	Institute of Chemistry University of the Philippines Diliman

Title of Conference/ Seminar	Date	Institution
2010 Annual Scientific Conference of the Microscopy Society of the Philippines	May 27-28, 2010	Philippine Association of Microscopists Inc.
Training Course on Cultivation Techniques for Microalgae	August 7-8, 2010	Philippine Phycological Society Inc.
First National Bioremediation Conference	October 26-27, 2010	University of the Philippines Los Baños
11th National Genetics Symposium	November 18-20, 2010	Philippine Society for the Advancement of Genetics Inc.
37th Annual Convention of the PSBMB: Health and Wellness through Molecular Medicine and Biotechnology	December 2-3, 2010	Philippine Society for Biochemistry and Molecular Biology
2nd Annual Convention of the Philippine Society for Developmental Biology Inc.	August 21, 2010	Philippine Society for Developmental Biology Inc.
Workshop on Laboratory Course on Gene Manipulation for Biotechnology Teachers	November 3-5, 2010	Biology Department Ateneo de Manila University
Workshop on Solar Cells: Measurement, Device Physics and Technologies	June 8-9, 2010	Chemistry Department Ateneo de Manila University
10th Conference of the Science Council of Asia	June 13-16, 2010	DOST – National Research Council of the Philippines Science Council of Asia
5th Annual Meeting and Scientific Convention of the Outstanding Young Scientists Inc.	July 13, 2010	Outstanding Young Scientists Inc.
8th Philippine Youth Congress in IT	September 14-17, 2010	University of the Philippines – Information Technology Training Center
3rd ASIAN Computational Materials Design Workshop and Workshop on Emphatic Computing	September 27-28, 2010	De La Salle University Manila
12th Samahang Pisika ng Visayas at Mindanao National Physics Conference	October 21-23, 2010	Samahang Pisika ng Visayas at Mindanao
2010 Annual Conference of the Mathematical Society of the Philippines Regions 10, 12 and ARMM	October 28-29, 2010	Mathematical Society of the Philippines
7th National Natural Language Processing Research Symposium	November 19-20, 2010	De La Salle University Manila

Title of Conference/ Seminar	Date	Institution
Lecture-Workshop on Electronic Tongue System Design and its Application in Water Quality Monitoring	November 23, 2010	Department of Mathematics and Physics University of Santo Tomas
15th Annual Convention of the Natural Products Society of the Philippines	December 2-3, 2010	Natural Products Society of the Philippines
Seminar-Workshop on Analytical Method Validation	December 6-8, 2010	DOST – Industrial Technology Development Institute



The awarding ceremony of the Search for the 2010 PCASTRD Outstanding Thesis and Dissertation in Advanced S&T was held at the Hotel Intercontinental Manila on December 10, 2010 in Makati City. Shown in the photo are the winners and finalists for both thesis and dissertation categories.

PCIEERD's Human Resources Institution and Development Division, led by its chief Engr. Ermie M. Bacarra, organized the Search for the 2010 PCASTRD Outstanding Thesis and Dissertation in Advanced S&T.

Table 6. Winners of the Search for the 2010 PCASTRD Outstanding Thesis and Dissertation.

Name/Category	Title of Paper	University/ Institution
Dissertation		
Editha C. Jose (Mathematics)	Asymptotic Behavior of a Parabolic Problem with an Imperfect Interface	University of the Philippines Diliman
Jaime T. Ballena IV (Statistics)	Multivariate Poverty Index for the Provinces and Major Cities in the Philippines	University of the Philippines Los Baños
Michael O. Baclig (Biology and Allied Fields)	Genomic Analysis of the 5' Untranslated Region (5'UTR) Non-Structural 5A (NS5A) and Non-structural 5B (NS5B) Genes of Hepatitis C Virus Genotype 1 at St. Luke's Medical Center	University of Santo Tomas
Rodrigo S. Jamisola, Jr. (Microelectronics / Mechatronics)	Identifying Mass, Center of Mass and Moment of Inertia Through Natural Oscillations for Full-dynamics Control of Robot Manipulators	De La Salle University Manila
Lemmuel L. Tayo (Chemistry)	Proteomic Analysis of Venom from *Conus textile* Linnaens	University of the Philippines Diliman
Thesis		
Ayra G. Panganiban (Computer Science / Information Technology)	Implementation of Wavelet Algorithms for Iris Recognition System	Mapúa Institute of Technology
Rolando T. Candidato, Jr. (Materials Science)	Synthesis and Characterization of Sol-Gel Derived ZnS and Mn-Doped ZnS and their Complexes	Mindanao State University – Iligan Institute of Technology
Siegfred Alan C. Baluyot (Mathematics)	An Approximate Formula for a Class of Dirichlet Series	Ateneo de Manila University
Jeffrey C. De Vero (Physics)	Synthesis of $Bi_2Sr_2CaCu_2O_{8+d}$ Films on MgO (001) by 1064nm Nd:YAG Pulsed Laser Ablation	University of the Philippines Diliman
Eiffel A. de Vera (Statistics)	Semi-parametric Poisson Regression for Clustered Data	University of the Philippines Diliman
Rowena H. Oane (Biology and Allied Fields)	Transcription Factor "No Apical Meristem" – A Major Candidate Gene in the Large Effect QTL for Rice Yield Under Reproductive Drought Stress	University of the Philippines Los Baños
Deogracias P. Villame (Microelectronics / Mechatronics)	Carrier Suppression Locked Loop Mechanism for UHF RFID Readers	University of the Philippines Diliman
Lorico DS. Lapitan, Jr. (Chemistry)	Molecular Assembly of 3,4-ethylenedioxythiophene and its Electropolymerization on Bare and Iodine Modified Au(111) Single Crystal Electrodes as Probed By Electrochemical Scanning Tunneling Microscopy	University of Santo Tomas

Table 7. List of projects/proposals that were evaluated and/or monitored in 2010.

Monitored Ongoing Projects
1. eDOST: Institutionalizing ICT within the DOST System Program (ASTI) e-DOST: Upgrading of ICT Infrastructure and Interconnectivity Network (e-DOST Infra) e-DOST: Upgrading of DOST Information System (eDOST-INFOSYS) e-DOST: Programs and Change Management and Implementation of Open Standards to DOST (eDOST OPEN STANDARDS)
2. Philippine e-Grid Program (ASTI) Boosting grid computing using reconfigurable hardware technology Boosting social and technological capabilities for bioinformatics research
3. Mindanao Opportunities for Vitalized Education and Upgrading of Science (MOVE-UPS)
4. Enhancing Interoperability in the DOST Enterprise
5. DOST's Grants to Outstanding Achievements in S&T
Evaluated New Proposals
1. Development of Interactive Science and Mathematics Courseware for Secondary Level Schools (DOST-SEI)
2. Development of Interactive English and Filipino Courseware for Elementary (Grades I-IV) Schools (DOST-SEI)
3. Rehabilitation and Upgrading of DOST Network and Telephone Infrastructure (DOST-PES)
4. DOST IT Enhancement Program (DOST-PES)

Table 8. Research facilities upgraded in 2010 with PCIEERD funding.

Institution	Project Title	Total Financial Assistance
DOST – Metals Industry Research and Development Center	Upgrading of Facilities of the DOST RDIs in Support of R&D and S&T Services	P700,000
UP Mindanao – College of Science and Mathematics	Cloning and Expression of a Raw-starch-digesting Amylase (RSDA) in *Escherichia coli (E. Coli)*	P 300,000
UP Los Baños – National Institute of Molecular Biology and Biotechnology (BIOTECH)	Upgrading of the Philippine National Collection of Microorganisms in Preparation for Application as an International Depository Authority (IDA)	P10,000,000

Research Fellowships Under the Re-entry Program

Three (3) applications under the re-entry program were processed and approved by the PCIEERD; however, only one (1) was able to complete documentary requirements for the release of project funds in 2010.

Financial support was provided to Dr. Jose H. Bergatin of the University of Santo Tomas – Research Center for Natural Sciences to pursue his research project entitled "Development of a Homogenous Assay for the Saxotoxin-based Light Scattering Signals from Gold Nano-particles."

Visiting Professorship

In 2010, the PCIEERD supported one (1) visiting professor to serve as guest lecturer and/or research mentor at the Mindanao State University – Iligan Institute of Technology (MSU-IIT). Dr. Ludwig Streit of the Universitat Bielefeld in Bielefeld, Germany was provided with a grant for his visiting professorship at MSU-IIT.

Outstanding Thesis and Dissertation

Thirty-five (35) thesis and 12 dissertation entries were received. Thirteen (13) winners were awarded – eight (8) for outstanding thesis and five (5) for outstanding dissertation. Dr. Jinky B. Bornales, a former PCASTRD scholar and now Dean of the College of Science and Mathematics of MSU-IIT, delivered the inspirational talk. Dr. Bornales completed her doctorate in physics on a scholarship from PCASTRD.

Winners for the Outstanding Dissertation and Thesis received certificates and cash awards including their advisers.

The awarding ceremony of the Search for the 2010 PCASTRD Outstanding Thesis and Dissertation in Advanced S&T was held at the Hotel Intercontinental Manila in Makati City on December 10, 2010.

Management of DOST-GIA Projects for the Priority Integration Sectors

The Council's Human Resource and Institution Development Division (HRIDD) also evaluates and monitors projects funded by DOST's Grants-In-Aid Program for the priority integration sectors.

INSTITUTION DEVELOPMENT PROGRAM

In addition to human capital, all organizations rely heavily on its physical infrastructure to accomplish its tasks. Understanding the importance of improving an institution's capability to carry out its functions and responsibilities, the PCIEERD supported the upgrading of research facilities of three (3) institutions in 2010.

The Council also supported the publication of Engr. Jojene R. Santillan's paper entitled "Detection of 25-year Land-cover Change in a Critical Watershed in Southern Philippines using LANDSAT MSS and ETM+ Images: Importance in Watershed Rehabilitation" in the International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences of the International Society for Photogrammetry and Remote Sensing.

Provision of Quality S&T Services

PROVISION OF QUALITY S&T SERVICES

PCIEERD continuously provides quality S&T services by empowering industries through studies, researches and product testing, as well as laboratory upgrading and international standards compliance.

Equipment Manufacturing Cluster

To promote the metals industry in the region, the Cagayan Valley Industry and Energy Research and Development Consortium (CVIERDEC), together with the Metals Industry Research and Development Center (MIRDC), organized the Equipment Manufacturing Cluster (EMC). The EMC is a stock corporation wherein the profits generated are utilized for the improvement of the farmers, entrepreneurs and metals sector in Region II.

Upgrading of DOST Regional Standards and Testing Laboratories (DOST-RSTL)

The four-year project has upgraded and expanded the existing services of DOST laboratories, allowing them to provide world-class quality services. The project focused on three main aspects: replacement of worn-out equipment; expansion of testing services; and specialization/establishment of specialized tests.

For Years 1 to 3, the project acquired new equipment and upgraded the facilities of DOST laboratories in the regions. The scope and testing services were expanded. Also, technical trainings and local and international benchmarking activities were conducted to enhance manpower development program. The RSTLs were able to offer new test services to the industry.

On its last year, the RSTLs focused on: (1) institutionalization of networking and complementation schemes among RSTLs; (2) harmonization of fees; (3) review of demands through surveys; and (4) the creation of marketing plans to promote new services of RSTLs.

DOST R&D Institutes and Laboratories Get ISO/IEC 17025 Accreditation

Many institutes and organizations turn to DOST laboratories for testing and analysis. To ensure the quality and accuracy of results, PCIEERD, together with the DOST Regional Offices, are working on a project that would increase management and technical competence of DOST laboratories by providing technical and financial support in the establishment, implementation and maintenance of laboratory quality management systems. This will make available reliable testing and calibration services, which are especially needed by export-oriented companies, particularly small and medium enterprises (SMEs).

PCIEERD, together with DOST Regional Offices, are working on a project that would increase management and technical competence of DOST laboratories by providing technical and financial support in the establishment, implementation and maintenance of laboratory quality management systems. Shown in the photo are PCIEERD technical staff conducting project monitoring and inventory at Silkworm Breeding and Multiplication Center at Kalingagan, Misamis Oriental.

Implementation and maintenance of laboratory accreditation in all DOST Laboratories is in accordance with ISO/IEC 17025, an accreditation given for the competence to carry out tests and/or calibrations, including sampling.

ISO 9001 Certification for DOST RDIs

The project aims to establish, implement and maintain quality management systems in all DOST Research and Development Institutes (RDIs), Regional Offices (ROs), Councils, PAGASA and the DOST Special Projects Division. The adoption of ISO 9001 in the DOST system serves as a strategic decision to respond to the demands of DOST clients and to improve the quality of DOST's services. To date, the project was able to help the PTRI, PCHRD, PCAMRD, DOST Region IV-B, DOST Region V, DOST CARAGA, DOST Region III and DOST Region VIII receive ISO 9001:2008 certification.

Upgrading of Facilities of DOST RDIs in Support to R&D and S&T Services – Year 3/3

The DOST RDIs undertake basic and applied researches; hence, there is a need for better and more appropriate facilities. For three (3) years, the project upgraded the DOST RDIs through: 1) replacement of worn-out equipment, (2) renovation/improvement of existing facilities, and (3) establishment of new facilities/capabilities.

Organizational Transformation of DOST Agencies Towards Excellent Performance

This project aims to raise a notch higher the competitiveness of the DOST via organizational performance enhancement through the Philippine Quality Award (PQA). The PQA is the highest level of national recognition for exemplary organizational performance comparable with the Malcolm Baldrige National Quality Award (MBNQA) of the US. The award was designed to set a standard that will help and encourage organizations to attain performance excellence. PCIEERD, MIRDC and DOST Region IX are the pilot agencies of DOST for the PQA.

Strengthening Linkage with Regional Metrology Organization

The Philippines, represented by the National Metrology Laboratory of the Industrial Technology Development Institute (NML-ITDI), was chosen as host of the 2010 Asia Pacific Metrology Programme (APMP) mid-year meetings. The APMP is a group of National Metrology Institutes (NMIs) in the Asia-Pacific region that engages in improving regional metrological capabilities through sharing of expertise and exchange of technical services among member NMIs.

The Philippine Quality Award was designed to set a standard that will help and encourage organizations to attain performance excellence and be recognized for their achievement and contributions to economic growth and improvement of the quality of life for Filipinos.

S&T Promotion and Dissemination Program

S&T PROMOTION AND DISSEMINATION

PCIEERD keeps its partners and linkages up to date with current developments on researches and projects through information dissemination. The Council's information activities include participation in exhibits, conduct and/or support of seminars, production of publications, and use of the quad media (print, radio, TV and cyber media).

Spreading Information on S&T Developments

The Council keeps the public informed on its latest activities and R&D results by preparing press releases. The press releases are usually published in leading newspapers like the *Philippine Star, Philippine Daily Inquirer, Business Mirror* as well as other provincial newspapers and magazines.

Also, PCIEERD's management and staff are often invited to radio and TV interviews to talk about recent developments on R&D projects; particularly, on the priority areas of PCIEERD. For radio interviews, PCIEERD was invited in the following stations: *DZMM-Bago Yan Ah!, DZBB-Future Tense, DZRM-Balita at Panayam* and *DZRV.*

PCIEERD also produced institutional flyers and brochures for the advocacy and promotion of technologies. Information materials on Billy Aire Refrigerant Recovery Unit, Sustaining the Environment, and Alternative Energy S&T Projects were printed.

Furthermore, with support from the United States Agency for International Development, International Food Policy Research Institute, Program for Biosafety Systems of Michigan State University and Institute of International Agriculture, a primer entitled FAQ on Biosafety was produced. The FAQ focused on common concerns regarding biotechnology, risk management procedures and Philippine regulatory procedures and international agreements.

Promoting Technology Output Thru Seminars/ Conferences

As part of PCIEERD's information dissemination and advocacy program, PCIEERD conducts and/or supports seminars and trainings. Table 9 shows the projects/seminars/conferences supported by PCIEERD.

PCIEERD's Research Information and Technology Transfer Division, together with the Polytechnic University of the Philippines (PUP), conducted a popular lecture at the Jasmine Hostel, PUP Sta. Mesa on December 16, 2010. The speakers were Dr. Blessie A. Basilia, DOST Balik-Scientist Dr. Zoraida P. Aguilar and Dr. Erwin P. Enriquez for the nanotechnology lecture (main photo), and Dr. Merlin Teodosia C. Suarez, Mr. Paulo C. Canivel and Mr. Conrad A. Alampay for the discussion on information communications technology (inset). Dr. Virginia G. Novenario-Enriquez of PCIEERD's RITTD opened the lecture series.

Table 9. PCIEERD-funded information projects/activities.

Project/Activity	Organizer/s	Date
DNA Pro-Kids: Using DNA to Help Fight Child-Trafficking	DNA Analysis Laboratory	January 19, 2010
Strengthening and Sustaining Typhoon and Flood Awareness Consciousness	Science and Technology Information Institute	August 2009 –September 2010
ForgENG'G: Strengthening the Present, Shaping the Future	Department of Mining, Metallurgical and Materials Engineering University of the Philippines	February 1-5, 2010
Towards a Culture of Resilience – An International Symposium and Study Tour on the Best Educational Practices on Disaster Risk Reduction in Japan and Southeast Asia	Center for International Studies University of the Philippines	February 15 – April 17, 2010
3rd Annual Research Award	College of Engineering Polytechnic University of the Philippines	February 24 and March 5, 2010
Promotion and Dissemination of Information on Outstanding R&D Projects in Industry and Energy	Science and Technology Information Institute	April 2010 – March 2011
25th Philippine Chemistry Congress	Philippine Federation of Chemistry Societies, Inc.	April 8-10, 2010
Symposium of the Mycological Society of the Philippines, Inc.	Mycological Society of the Philippines, Inc	April 14-15, 2010
12th Annual Scientific Meeting and Symposium	Nueva Vizcaya State University	April 16, 2010
39th Annual Convention and Scientific Meeting	Philippine Society for Microbiology, Inc.	April 29-30, 2010
Meeting the Health Challenges in the Asia Pacific Region: Responding through an Integrated and Multi-Disciplinary Approach in Science and Technology	National Research Council of the Philippines (NRCP)	June 13-16, 2010
5th Annual Meeting and Scientific Convention	Outstanding Young Scientists, Inc.	July 13, 2010
32nd Annual Scientific Meeting	National Academy of Science and Technology (NAST)	July 13 and 15, 2010
Engaging Industry Partners in Business Opportunities	Food and Nutrition Research Institute (FNRI) and Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD)	July 2010
National Coconut Week	Philippine Coconut Authority	August 12-15, 2010
National Tri-Level Conference of Teachers and Educators, Inc.	Metrobank Foundation-Network of Outstanding Teachers and Educators, Inc.	September 30 – October 2, 2010

Table 10. List of exhibitions/fairs where PCIEERD participated in 2010.

Activity	Date	Venue
6th Sweep Innovation and Excellence Awards Exhibit	February 5-6, 2010	Avenue Hall, Makati City
Northern Luzon Cluster S&T Fair 2010 (Baguio)	February 15-19, 2010	Benguet State University, Benguet
1st Technology Partnering Forum (TRC @ 33: The First Techno Partnering Forum)	February 22-24, 2010	Philippine Trade Training Center, Pasay City
28th PCIERD Anniversary Celebration Exhibit	March 17, 2010	Hyatt Hotel, Manila
12th Annual Scientific Meeting and Symposium of the Mycological Society of the Philippines, Inc.	April 14-15, 2010	Nueva Vizcaya State University
Philippine Society for Molecular Biology and Biotechnology Annual Meeting	April 26-27, 2010	Central Luzon State University, Nueva Ecija
Northern Luzon Cluster S&T Fair	August 26-30, 2010	Santiago, Isabela
Visayas Cluster S&T Fair	September 28-30, 2010	Dumaguete City
Southern Luzon Cluster S&T Fair	September 14-18, 2010	Puerto Princesa City, Palawan
Mindanao Cluster S&T Fair	October 11-13, 2010	Cagayan de Oro City
6th National Biotechnology Week	November 22-28, 2010	SM Mall of Asia, Pasay City
NSTW 2010 Exhibits	July 19-20, 2010	Manila Hotel, Manila
32nd Annual Scientific Meeting	July 14-15, 2010	Manila Hotel, Manila
Third National Tri-Level Conference of Teachers and Educators	September 30 – October 2, 2010	University of Asia and the Pacific, Pasig City
Training Workshop on DNA Technologies for Philippine Coast Guard Operating Within the Waters of ARMM	November 9-12, 2010	Zamboanga City

PCIEERD continued to produce institutional flyers and brochures for the advocacy and promotion of technologies. In 2010, the Council developed and produced Investment Prospectus, Institutional Flyer, Primer on PCIERD Program Thrusts, Billy Aire Refrigerant Recovery Unit, Sustaining the Environment, Alternative Energy S&T Projects and FAQ on Biosafety.

Also, PCIEERD, together with the Polytechnic University of the Philippines, organized popular lectures on two (2) priority areas: namely, nanotechnology and information communications technology (ICT). The lecture series featured experts in the field of nanotechnology and ICT as speakers. The speakers on nanotechnology were Dr. Blessie A. Basilia of DOST-ITDI, Balik-Scientist Dr. Zoraida P. Aguilar of Ocean NanoTech LLC, and Dr. Erwin P. Enriquez of Ateneo de Manila University. Mr. Paulo C. Canivel of Digiscript Philippines Inc. and Dr. Merlin Teodosia C. Suarez of De La Salle University were the speakers for ICT. The activity was participated in by college students as well as faculty members from the University-Belt Consortium in Manila.

In 2010, PCIEERD also conducted a press conference in celebration of the PCIERD's (now part of PCIEERD) 28th Anniversary. PCIEERD organizes press conferences as one way to reach out to its media partners and further promote the Council's programs and projects.

Showcasing Technologies Thru Exhibitions

PCIEERD set up exhibits in various trade fairs and exhibitions to promote its programs and projects as well as showcase completed projects in its priority areas. Table 10 shows the various fairs/activities participated in by PCIEERD in 2010.

Also, PCIEERD played a major role in the conduct of the National Science Technology Week 2010 as co-chair of the forum entitled "Engaging Industry Partners in Business Opportunities." The forum featured testimonials from successful industry partners who have availed of DOST technology interventions to enhance and improve their respective products and services.

Raising Public Awareness Thru Workshops & Fora

In 2010, PCIEERD also implemented/supported projects for the conduct of activities relating to climate change and climate risk preparedness.

MECO-TECO Strengthens Partnership in Addressing Climate Change Through S&T Cooperation

The Philippines and Taiwan conducted a Workshop on Climate Change as part of the year's joint cooperation activities to be held in the Philippines. PCIERD was tasked to co-organize the workshop with the International Technology Cooperation Unit of the DOST, in coordination the National Science Council of Taiwan.

The workshop was successfully conducted where possible future S&T cooperation were identified to address climate change. The following were identified for Joint S&T Cooperation:

- Conduct of joint research/study
- Exchange of scientists, researchers and technical experts
- Exchange of scientific and technological information
- Scientific and technical access to facilities
- Provision of services of professionals, experts and research workers
- Capacity building through grant of fellowship, sandwich program, scholarship, training, post graduate studies or study tour/exchange visits
- Organization and participation to scientific and conferences, symposia, training courses, workshops and exhibitions
- Other forms of S&T cooperation mutually acceptable

Science & Technology for Understanding Interventions for Climate Risk Preparedness

PCIEERD, together with the DOST Regional Office III, conducted a forum to further enhance the delivery of relevant information for awareness building as well as an avenue to disseminate the plans and programs of the DOST in addressing climate change and climate risks by identifying areas of integration among stakeholders.

The forum focused on issues involved in climate change in the Philippine context and on Clean Development Mechanisms, and how the public can participate in the global greenhouse gas reduction market. The forum also broadened the respective horizons in application of suitable and available adaptation and mitigation technologies and strategies for agriculture, marine and coastal environments, energy and disaster management of the participants.

During the 2010 National Science and Technology Week, visitors at the PCASTRD booth gamely answered a short quiz based on the exhibit. Visitors who got at least five correct answers received a souvenir bag as a token.

Celebrating PCIERD's 28th Anniversary

PCIERD celebrated its 28th anniversary on March 17, 2010 at the Hyatt Hotel, Manila with the theme "Taking the Extra Mile in Facing Global Climatic Challenges." Then President Gloria Macapagal Arroyo was the Guest of Honor.

PCIERD conducted pre-anniversary activities as early as February. The 8th PCIERD Regional S&T Fora and Competitions for the National Capital Region, Luzon and the Visayas-Mindanao clusters were conducted on February 24, 25, 26, respectively. The 1st, 2nd and 3rd prize winners in the regional level moved up to compete in the National Level, and received P300,000, P250,000 and P200,000, respectively.

As in the past competitions, the winners were based on the minimum requirements like ease of use, replicability, economic opportunities and contribution to the advancement of science and technology. Below is the list of winners of the R&D competition:

First Place	Engr. Leilanie O. Suerte Mines and Geosciences Bureau Department of Environment and Natural Resources Region VI
Second Place	Ms. Prima Fe R. Franco Mariano Marcos State University
Third Place	Ms. Marina A. Alipon Forest Products Research and Development Institute

Simultaneously on March 16, 2010, the 4th Industry and Energy R&D Consortia Symposium and Awards for Outstanding Consortium for the Year 2008-2009 were conducted. The competition among the PCIERD consortia is a way of recognizing the accomplishments of each regional consortium based on the following criteria: 1) R&D Coordination and Management; 2) Capability Building; 3) Resource Generation and Utilization; 4) Training; and 5) Operations. First prize went to Ilocos Consortium for Industry and Energy Research and Development (ICIERD), second prize to Cordillera Industry and Energy Research and Development Consortium (CIERDEC), and third prize to Eastern Visayas Consortium for Industry and Energy Research and Development (EVCIERD). The winners received P200,000, P150,000 and P100,000, respectively.

All the winners in the R&D and consortia competitions were awarded during the celebration of PCIERD's 28th anniversary.

PCIERD also launched its first ever Coffee Table Book called the PCIERD Kabalikat. The book is a pictorial presentation of the Council's contributions to national development through the R&D programs, policies and projects that it shepherded throughout the years and whose tangible results and outputs are applied today.

Then President Gloria Macapagal-Arroyo, together with DOST Secretary Estrella F. Alabastro, DOST Undersecretary and PCIERD Officer-In-Charge Dr. Graciano P. Yumul, Jr., pose with PCIERD staff and other DOST officials during the celebration of PCIERD's 28th Anniversary last March 17, 2010 at the Hyatt Hotel, Manila. In the inset photo, former DOST Secretary Estrella F. Alabastro, together with former PCIERD OIC Dr. Graciano P. Yumul, Jr. and Deputy Executive Director Engr. Raul C. Sabularse, answered questions from a member of the media during the 28th PCIERD Anniversary Celebrations.

Technology Transfer and Commercialization Program

TECHNOLOGY TRANSFER AND COMMERCIALIZATION

PCIEERD recognizes the need to hasten transfer and commercialization of R&D outputs and technologies to benefit the general public. As such, PCIEERD implements the Support Program for Technology Transfer and Commercialization to facilitate the effective transfer of commerciable R&D outputs in the Council's priority fields.

Promoting Technology Transfer Act of 2009

In support of the government's thrust to encourage commercialization of technological innovations, PCIEERD committed itself to be part of the Technical Working Group (TWG) for the passing of the Technology Transfer Bill. The bill was signed into law last March 23, 2010 by former President Gloria Macapagal-Arroyo as Republic Act 10055, which is also known as the "Philippine Technology Transfer Act of 2009."

With the enactment of the bill, PCIEERD, together with the TWG, finalized the Implementing Rules and Regulations (IRR) for RA 10055. The IRR was signed by DOST Secretary Mario G. Montejo and Intellectual Property Philippines Director General Ricardo Blancaflor last August 19, 2010.

Table 11. TBI activities supported/participated in by PCIEERD.

Activity	No. of Participants	Date	Venue
TBI Implementation Workshop	31	February 3-7, 2010	Clark Field, Pampanga
International Conference on Promoting Business Incubation in South East Asia – Importance of Networking and Dialogue on International Success Stories	27	June 14-17, 2010	Jakarta, Indonesia
Training-of-Trainers	10	November 9-12, 2010	Marriott Hotel, Cebu City

PCASTRD (now part of PCIEERD) partnered with InWEnt - Capacity Building International, Germany in conducting a TBI Implementation Workshop on February 3-7, 2010 at Clark Field, Pampanga. Mr. Franz Dietrich (main photo) and Ms. Barbara Harley (inset), internationally recognized experts on Technology Business Incubation from Germany and USA, respectively, taught workshop participants financial planning, marketing and client management.

PCASTRD also organized a Workshop on Setting UP A TBI Association for TBI stakeholders from the government and academic sectors held at Caliraya Re-creation center last May 17-19, 2010. Photo on the right shows Dr. Reynaldo V. Ebora (first from left), then PCASTRD Executive Director, and Dr. Virginia G. Novenario-Enriquez (first from right), Chief of PCASTRD's Research Information and Utilization Division, presenting a certificate of appreciation to Mr. Guillermo M. Luz, Executive Vice President of Ayala Foundation, for his insights on business incubation during the workshop.

Encouraging Technology Entrepreneurship

PCIEERD supports Technology Business Incubation (TBI) as a means to promote the commercialization of innovations and R&D outputs. TBI is a facility that is set up to provide space, equipment as well as business mentoring and training to start-ups.

The Council provided financial assistance to R&D institutions/ innovation centers in the conduct of feasibility studies and business plans. Moreover, the Council performed TBI project management and monitoring as well as networking, promotion and advocacy.

In 2010, various activities were implemented to build various institutions' capability in the planning and managing of TBIs. Some of the activities were co-organized with InWEnt - Capacity Building International, Germany. InWEnt is a non-profit organization with worldwide operations dedicated to human resource development, advanced training and dialogue. The Council's TBI activities are shown in Table 11.

Ten (10) TBI-related project proposals were submitted to PCIEERD and evaluated by the Research Information and Technology Transfer Division. These were:

Setting Up and Operating TBIs

1. Technology Business Incubator (TBI) Project for Specialty Food Products Enterprises in Palawan
2. Support for the Establishment of the University of the Philippines Los Baños TBI
3. Support for the Establishment of the DOST-UP Visayas Cebu College TBI
4. DOST-UP Diliman Enterprise Center for Technopreneurship
5. Region XI TBI: Establishment of Edible Flour Mill: A Project Component of TBI for Food Processing and Packaging

Conduct of TBI Feasibility Study and Development of Business Plan

1. Establishment of a Technology Business Incubation Facility in Mindanao State University-Iligan Institute of Technology – Phase 1: Preparation of Feasibility Study and Business Plan
2. Support for the Preparation of Feasibility Study for the Establishment of IT Hub at the UPLB Science and Technology Park
3. Establishment of a Green TBI in West Visayas State University – Phase 1: Preparation of Feasibility Study
4. DOST-UP Diliman Enterprise Program for Technopreneurship
5. Supporting Technopreneurial Start-ups of Students and Alumni Under the UPLB AFNR Project: A Complementary Initiative to UPLB's Technology Business Incubation Project

From the TBI proposals evaluated by PCIEERD, four (4) were approved for funding under the DOST-GIA program. These are as follows:

- Establishment of the DOST-PEZA Open Technology Business Incubator (Year 2)
- DOST-UP Diliman Enterprise Center for Technopreneurship
- Support for the Establishment of UPLB TBI
- Support for the Establishment of the DOST-UP Cebu Technology Business Incubation

Bolstering Technology Commercialization

Successful technology transfer activities necessitate the application of the Technology Assessment Protocol (TAP) to ensure the readiness of technologies. Gaps and risks of the technologies are identified prior to technology promotion and commercialization.

The technologies that were assessed using TAP were as follows:

- Iron Rice Premix and Iron-fortified Rice
- Ready-to-drink (RTD) Tropical Fruit and Vegetable Juice Blends
- Chickpea Production
- Local Potato Variety Production
- Microbial Rennet for Cheese Making
- Natural Dye Liquid and Powder
- Mango Butter/Oil from Mango Seed Waste
- Beverage from Yacon
- Low-Cost Kit for Thermal Processing of Food
- Electric Powered Vehicle

Technologies favorably assessed by PCIEERD that have ongoing technology transfer related activities are:

- Iron Rice Premix and Iron Fortified Rice
- Microbial Rennet for Cheese Making
- Natural Dye Liquid and Powder

PCIEERD also assisted technology fora in different regions through the project of the DOST – Technology Resource Center (TRC) titled "TRC Tool for the Roll Out of DOST-generated Technologies" as shown in Table 12.

Support for Patent Application

Recognizing the importance of protecting intellectual property, PCIEERD monitored the filing of utility model registration for five products of the PCIEERD-monitored project Dragon Fruit Product, which was generated by the Cavite State University. The five products are namely jam, jelly, puree, clear juice and pulpy juice.

In 2010, PCIEERD also supported the Training Cum Writeshop on IP Policy Drafting organized by DOST Region IX, which was held at Zamboanga City on April 13-15, 2010.

Technology Innovation for Commercialization Program (TECHNICOM)

The DOST implements the Technology Innovation For Commercialization Program (TECHNICOM) Program, which provides funds to fast track the transfer and commercialization of research results.

PCIEERD, in collaboration with DOST's TECHNICOM, organized a technology fair cum investors' forum with the theme "Local Technologies, Global Opportunities Technology Fair and Investors' Forum" which was held last January 14, 2010 at the SM Megamall, Mandaluyong City.

PCIERD (now part of PCIEERD), in collaboration with the DOST's TECHNICOM, organized a technology fair cum investors' forum at SM Megamall last January 14, 2010. Former DOST Secretary Estrella F. Alabastro and former PCIERD OIC Dr. Graciano P. Yumul, Jr. led the opening ceremony.

Table 12. Technology forums conducted by PCIEERD.

Region	Venue	No. of Participants	Date
XI	Davao City	60	July 5, 2010
X	Cagayan De Oro City	92	July 7, 2010
VI	Bacolod City	85	August 19, 2010
I, II and CAR	Santiago City	100	August 27, 2010
V	Legazpi City	102	September 28, 2010
IX	Pagadian City	94	October 14, 2010

The Investors' Forum showcased to potential adoptors ready technologies with commercial potential in the local and export markets. A total of 246 participants from the academe, government, media and private sectors attended the forum.

A successful outcome of the Investors' Forum is the signing of the Technology Transfer Agreement on Instant Kalamansi Extract between PCIEERD, Mapagmahal Foods Inc. and DOST – Food Nutrition and Research Institute (FNRI) last April 2010. Also, technology adoptor Dairyman, a small-and-medium enterprise based in Bulacan, signed a Licensing Agreement with DOST-FNRI to use the Low Fat, Low Sugar Ice Cream Technology.

In addition, during the Investors' Forum, resource persons from their respective agencies discussed the following technologies: Low Fat, Low Sugar Ice Cream and Ethnic Food Technologies from the DOST – Food and Nutrition Research Institute (FNRI); Non-cyanide Electroplating Technology from the DOST – Metals Industry Research and Development Center (MIRDC); and the Ready-to-drink Tropical Fruit and Vegetable Blends Prepared by Aseptic Processing from the College of Home Economics – University of the Philippines Diliman (CHE-UP). Table 13 lists the PCIEERD-monitored TECHNICOM-funded projects that were in the exhibit area.

Table 13. PCIEERD-monitored TECHNICOM projects displayed at Investors' Forum.

Technology/Project	Implementing Agency
A. Food/Processed Food	
Enriched Rice Premix	DOST-FNRI
Ready-to-Serve Ethnic Food Mixes	
Low Fat, Low Sugar Ice Cream	
Ready-to-drink Tropical Fruit and Vegetable Juice Blends Prepared by Aseptic Processing	College of Home Economics University of the Philippines Diliman
Dragon Fruit Processed Products	Cavite State University
B. Process	
Microbial Rennet Production	BIOTECH-UPLB
Activated Carbon Technology	DOST-ITDI
Coco Methyl Ester as Diesel Substitute	
Non-cyanide Electroplating Technology	DOST-MIRDC
Improved Ceramic Products Utilizing Ilocos Clay	Mariano Marcos State University
E-Bamboo Tiles	
Natural Dyes	DOST-PTRI
Tropical Fabrics	
C. Equipment	
Biomass-fired Coffee Roasting System	DOST-ITDI
Bamboo Veneer Lathe Machine	DOST-FPRDI
Refrigerant Recovery Machine for R134a	Technological University of the Philippines
Electric Powered Vehicle	Mapua Institute of Technology
D. Construction	
F-Shelter	DOST-FPRDI

Further, in support of the program's objectives, PCIEERD managed and monitored 14 projects from implementation to promotion. Table 14 shows these projects.

Table 14. TECHNICOM projects monitored by PCIEERD.

Project	Proponent
Commercial Production and Utilization of Cassava Grates and Flour in Bohol	Dr. Daniel Leslie S. Tan Visayas State University
Development and Commercialization of a Locally-designed Digital Moisture Meter for Bamboo and Other Non-timber Forest (Year 2)	Dr. Marina A. Alipon DOST – Forest Products Research and Development Institute

Project	Proponent
Design and Fabrication of a Bamboo Flattening Machine (Year 2)	Engr. Romulo T. Aggangan DOST – Forest Products Research and Development Institute
Assessment of the Commercial Viability of Banana and Pineapple for Nonwoven Fabrics (Year 2)	Ms. Nora B. Mangalindan DOST – Philippine Textile Research Institute
Pilot Scale Spinning of Piña Blended Yarns in the Cotton System for Circular Knitting (Year 2)	Engr. Jovita A. Hayin DOST – Philippine Textile Research Institute
Technology Refinement and Commercialization of PCIERD-BIOTECH Technology on Microbial Rennet	Dr. Susan M. Mercado National Institute of Molecular Biology and Biotechnology University of the Philippines Los Baños
Pilot Testing of Dragon Fruit Processed Products: Jam, Jelly, Puree and Juice (Flavored Drink)	Dr. Teddy F. Tepora Cavite State University
Production and Shelf-life Study of Ready-to-drink (RTD) Vitamin-rich Green Mango Juice	Ms. Marcela C. Saises DOST – Food and Nutrition Research Institute
Commercialization of Improved Ceramics Products Utilizing Clay Materials in Ilocos	Engr. Samuel S. Franco Engr Emie A. Salamangkit-Mira Mariano Marcos State University
Green Mussel *(Perna viridis)* Value Added Products Improvement for Commercialization	Ms. Leonora D. Doncillo Samar State University
Pilot Commercialization of Rice-hull Bamboo Charcoal Briquettes using Chichacorn Processing Effluent as Binder	Dr. Stanley C. Malab Mariano Marcos State University
Electric Powered Vehicle	Engr. Roel John C. Judilla Mapúa Institute of Technology
TRC Tool for the Roll-out of DOST-Generated Technologies	Mr. Abelardo F. Valdez DOST – Technology Resource Center
Capacity Building and IP Protection for Technologies and Inventions Generated by DOST RDIs and Network Institution	Engr. George M. Colorado DOST – Technology Application and Promotions Institute

Aside from the TECHNICOM program, PCIEERD also monitored projects funded under the DOST-GIA Program that entails diffusion of knowledge and technologies as well as capacity building for technology transfer. The projects being monitored by PCIEERD are as follows:

Project Title: Communicating the Technology Transfer Act and its Implementing Rules and Regulations

Implementing Agency: Philippine Council for Agricultural Resources Research and Development

The project provides the blueprint for DOST for disseminating and promoting the newly enacted Philippine Technology Transfer Act of 2009 and its IRR to its stakeholders throughout the country.

Project Title: National Invention Contest and Exhibit 2010

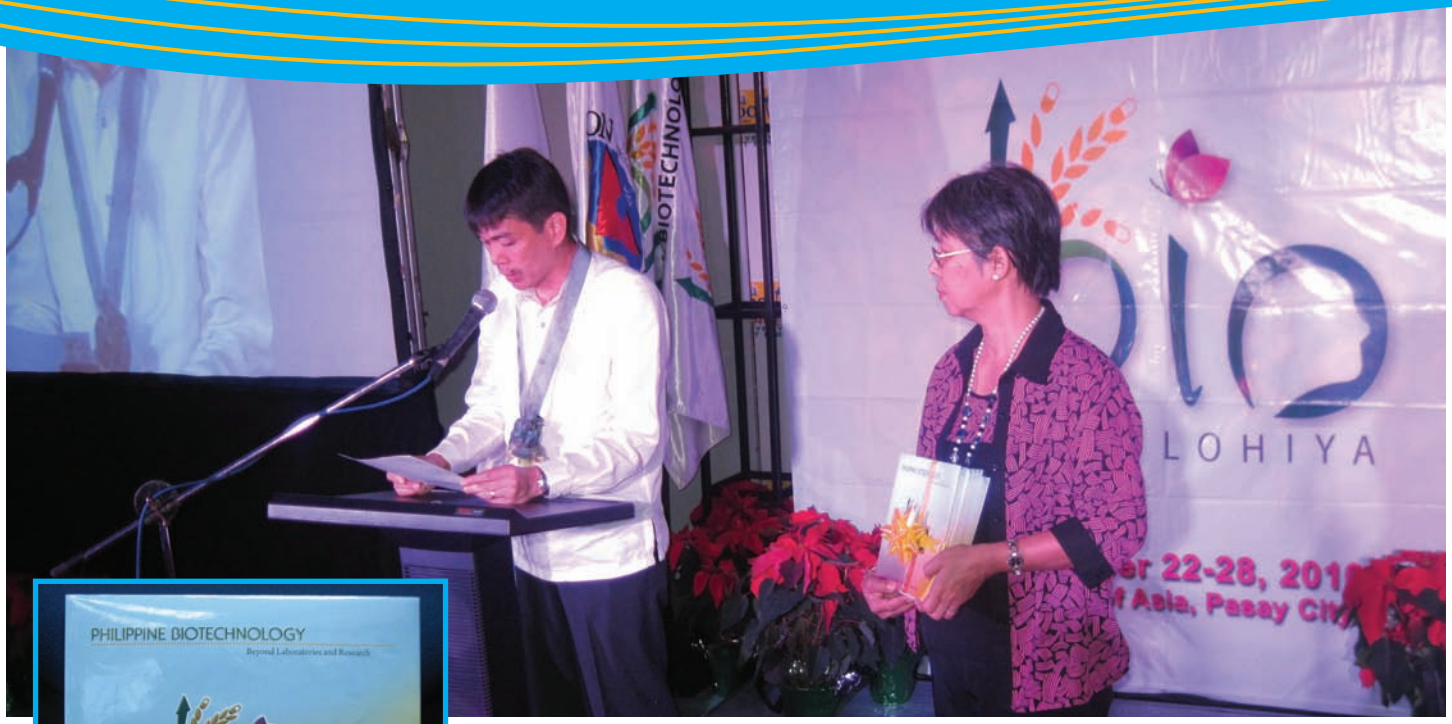
Implementing Agency: DOST - TAPI

Pursuant to Article II of Republic Act No. 7459, also known as "Inventors and Invention Incentives Act of the Philippines," the National Invention Contest aims to give recognition to ingenious Filipinos, and encourage the value of inventiveness and promote the use of technology.

Project Title: Innovative Program for Displaced Workers at the Export Processing Zone

Implementing Agency: DOST - Technology Resource Center

A joint project of the DOST, Philippine Economic Zone Authority and Technology



The coffee table book *Philippine Biotechnology: Beyond Laboratories and Research* was launched during the opening ceremonies of the 6th National Biotechnology Week. DOST Assistant Secretary Robert O. Dizon reads the congratulatory message in behalf of DOST Secretary Mario G. Montejo as Dr. Virginia G. Novenario-Enriquez, who led the book's editorial team at PCIEERD, presents a copy of the book.

Resource Center, it provided various livelihood trainings for displaced workers in response to the global financial crisis. A total of 1,058 workers were trained, with several already having started their own businesses.

Project Title: World Robot Olympiad
Implementing Agency: DOST - Science Education Institute

The Philippines hosted for the first time the World Robot Olympiad (WRO), which was participated in by more than 1,200 foreign students and coaches. The WRO aims to bring together young scientists from all over the world to develop their creativity and problem-solving skills through computer technology, basic engineering, mechatronics and communications.

Project Title: Philippine Participation in the International Year of Astronomy
Implementing Agency: DOST - Philippine Atmospheric, Geophysical and Astronomical Services Administration

The International Year of Astronomy (IYA) was a year-long celebration of astronomy that commemorated the 400th anniversary of the first recorded astronomical observations with a telescope by Galileo Galilei and the publication of Johannes Kepler's Astronomia Nova in the 17th century. In 2010, DOST supported various local activities relating to the IYA.

Marketing Investment Opportunities

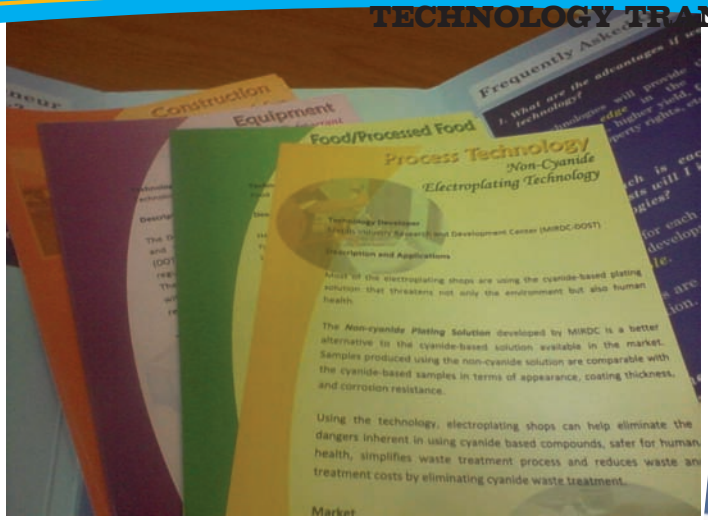
With the success of the Technology Investors' Forum, PCIEERD conceptualized and launched the Investment Opportunities during the opening of the 2010 National Science and Technology Week 2010 at Manila Hotel on July 16, 2010.

The Investment Opportunities kit compiled technologies ready for transfer that included 11 food/processed food technologies, four (4) process technologies, two (2) construction technologies, and ten (10) fabricated equipment.

Sustaining Biotechnology Promotion

Biotechnology is one of the most important and most promising technologies that can spur the country toward sustainable development and global competitiveness. As such, PCIEERD continuously undertakes activities that promote biotechnology as a tool for economic development and improvement of quality of life.

In 2010, the Council participated in the celebration of the 6th National Biotechnology Week (NBW), which was spearheaded by the Department of Agriculture as Chair and the Department



PCIEERD launched its Investment Opportunities kit during the opening of the 2010 National Science and Technology Week 2010 at Manila Hotel on July 16, 2010. The kit compiled technologies ready for transfer that included 11 food/processed food technologies, four (4) process technologies, two (2) construction technologies, and ten (10) fabricated equipment.

of Environment and Natural Resources as Co-Chair. Particularly, PCIEERD supported seminars/workshops on DNA forensics and biotechnology education. In addition, the Council supported the development of biotechnology publication materials.

As a build-up activity for 6th NBW, PCIEERD supported the conduct of the activity entitled "Training Workshop on DNA Technologies for Philippine Coast Guards Operating Within the Waters of ARMM."The activity, organized by DOST-Autonomous Region for Muslim Mindanao, was aimed at promoting awareness on the application of DNA forensic technology on sea accidents. It was held at Zamboanga City on November 9-12, 2010.

The activity was participated in by a total of 99 individuals from different areas of ARMM. Notable speakers were invited to share their insights with workshop attendees, including forensic expert Dr. Racquel Fortun, DNA expert Dr. Ma. Corazon De Ungria, Philippine Red Cross General Manager Dr. Gwendolyn Pang, archaeologist Dr. Francisco Datar and law expert Atty. Jose Jose.

Also, for the 6th NBW, PCIEERD supported the conduct of the 2nd National Biotechnology Education Conference for Teachers and Student Competition (NBECT) held last November 24, 2010 at the lobby of the IMAX Theatre, SM Mall of Asia in Pasay City. The activity, organized by UP Diliman's National Institute for Molecular Biology and Biotechnology, was participated in by biology teachers from different provinces in the country.

In addition, the DOST thru PCIEERD undertook the editorial production and printing of a coffee table book on biotechnology entitled "Philippine Biotechnology: Beyond Laboratories and Research." The book was launched on the opening day of 6th NBW last November 22, 2010. Leading the launching of the Coffee Table Book was Engr. Robert O. Dizon, DOST Assistant Secretary for Strategic Programs and Plans, who represented DOST Secretary Mario G. Montejo.

The Coffee Table Book on Biotechnology highlights the many biotechnology applications and projects in the country, particularly in agriculture, health, environment and livelihood. It also features snapshot documentation of previous NBW celebrations.

Furthermore, PCIEERD supported the development of a biotechnology comics by the DOST–Science and Technology Information Institute. The comics, which featured the DOST mascot Tron, highlighted the various applications of biotechnology. Copies of the comics were distributed during the celebration of 6th NBW at SM Mall of Asia.

As a build-up activity for the 6th National Biotechnology Week, PCIEERD supported the conduct of a training workshop in Zamboanga City on DNA technologies for members of the Philippine Coast Guard of the Autonomous Region in Muslim Mindanao.

S&T Governance and Management

S&T GOVERNANCE AND MANAGEMENT

PCIEERD recognizes the importance of continuous personal and professional development. To further enhance its capability to implement programs and projects for the advancement of S&T in the country, the Council encourages its staff to avail of and participate in capability-building activities and trainings that will expand their skillset and knowledgebase relevant to industry, energy and emerging technologies.

In 2010, the former PCIERD endorsed Ms. Mary Jane P. Salmorin and Ms. Marivic A. Legista in their pursuit of higher education. On November 2010, Ms. Salmorin and Ms. Legista started their Master in Information Technology at the University of the Philippines (UP) Los Baños.

The year 2010 also saw a number of PCIEERD employees completing their Master's degree. In March 2010, Mr. Eric B. Casilia and Engr. Rafael L. Olivar received their Master in Information Technology from UP Los Baños, while Ms. Russell M. Pili, Ms. Aileen N. Luching and Ms. Ma. Elena A. Talingdan completed the Master of Technology Management program of UP Diliman's Technology Management Center on October 2010.

Enhancing GAD Awareness and Responsiveness

Republic Act 9710, otherwise known as the "Magna Carta of Women," was signed into law by then President Gloria Macapagal-Arroyo in August 14, 2009. This law mandates agencies to mainstream gender in their policies, programs, projects and activities, and to establish enabling mechanisms to promote, implement, monitor and evaluate Gender and Development (GAD) mainstreaming efforts.

As part of the Council's efforts to strengthen its GAD program and in support of the Gender Mainstreaming Program of the Department of Science and Technology (DOST), PCIEERD organized and participated in various GAD-related activities during the year. These activities were either Agency- or Client-Focused.

PCIERD (top) and PCASTRD (bottom) personnel participated in seminar-workshops on GAD concepts and gender sensitivity.

With the transfer of PCIEERD to its new office in mid-2010, the Information Technology (IT) Group worked double-time to set-up all network appliance and services in the server room and establish Internet connection in all workstations.

A. Agency Focus

PCIEERD actively participated in various events during Women's Month, which is celebrated every March. These activities included the Kick-off Activity, Women's Negosyo Summit and Women's Day Celebration.

The Council also organized activities designed to promote GAD awareness and responsiveness. An orientation on GAD concepts, and a seminar-workshop on gender sensitivity and responsive planning and budgeting were conducted by members of the DOST's Central Office GAD Mainstreaming Team.

Seminars on health and nutrition as well as on financial management and entrepreneurship were also conducted to increase PCIEERD personnel's knowledge and know-how on wellness and livelihood. Speakers from the DOST – Technology Resource Center conducted seminars on perfume- and soap-making, including liquid detergent and fabric softener.

B. Client Focus

PCIEERD also conducts and supports activities that promote GAD awareness and sensitivity outside the agency. In 2010, the Council provided project support and technology assistance to improve the standard of living of more than 500 residents of Cagayan de Oro, and Davao, Pagadian, Legazpi and Santiago Cities.

In addition, nine (9) training courses on alternative livelihood opportunities were conducted for 86 displaced workers from the Philippine Economic Zone Authority.

Ensuring Seamless Day-to-day Operations

PCIEERD, being an agency that prides itself on being up-to-date with the latest developments in S&T, knows the importance of having an ICT system that is reliable and efficient.

The transfer of PCIEERD to its new office at the Philippine Science Heritage Building in mid-2010 brought a major challenge to the existing ICT infrastructure of the Council. The Management Information System Group of PCIEERD worked closely with other DOST agencies in ensuring Internet connectivity. All network appliances and servers were set up in the common server room, while workstations were properly connected to the Local Area Network (LAN) through wired and wireless connection.

In addition, a server-based anti-virus utility was acquired and deployed for a more secure network connectivity. The IT Group also continuously implemented a Back-up and Recovery Plan to ensure data protection and access to system files in the event of hardware or software failures. In 2010, a PCIEERD e-group was established to facilitate easy communication and to promote transparency among members of the Council.

The IT Group also continued to provide technical assistance to internal and external clients, and to represent PCIEERD in various external committees to ensure adherence and compliance to policies and standards.

Quality Management

PCIEERD Deputy Director Engr. Raul C. Sabularse (right photo) discussed the importance and merits of the Philippine Quality Award (PQA) during the Project Launching for pilot DOST agencies: namely, PCIEERD, Metals Industry Research and Development Center and DOST Regional Office IX. PQA is the highest level of national recognition for exemplary organizational performance.

During the during the Project Launch, PCIEERD employees posed questions to the Council's top management as well as representatives from the Development Academy of the Philippines regarding PQA requirements, guidelines and procedures.

QUALITY MANAGEMENT

Passing the surveillance audits of the international certification body Technisher Überwachungs Verein (TÜV), PCIERD maintained its ISO 9001:2008 certification in 2010 for Quality Management System (QMS). The certification covers design, monitoring and evaluation of research and development projects in the industry, energy, utilities and infrastructure sectors. The QMS also includes Grants-In-Aid (GIA), continuing support for S&T services, scholarship grants, and dissemination of S&T information. PCASTRD for its part was initiating its move toward ISO certification.

Under a DOST-GIA project, PCIEERD, together with the Metals Industry Research and Development Center and DOST Regional Office IX, are serving as pilot agencies in gearing up to adopt the tenets of the Philippine Quality Award (PQA) within the DOST System. Focal Persons from PCIEED, MIRDC and DOST Regional Office IX have been participating in seminars and training workshops on PQA that are conducted by a team from the Development Academy of the Philippines.

The PQA, which is patterned after the internationally acknowledged Malcolm Baldrige National Quality Award of the US, is the highest level of national recognition for exemplary organizational performance. It was established through Executive Order No. 448 that issued by then President Fidel V. Ramos on October 3, 1997, and was institutionalized through Republic Act No. 9013 on February 28, 2001. The PQA is given to organizations in the private and public sectors for quality management systems. It hinges organizational excellence on continuous improvement in the delivery of products and/or services, while providing a way of responding and satisfying to customers' needs and requirements.

International Linkages

INTERNATIONAL LINKAGES

International Cooperation on Biotechnology Development

PCIEERD continues its efforts to harness the country's capability in biotechnology to be able to compete in the global biotechnology enterprise. The Council maintains international linkages and collaboration relating to biotechnology to further gain insights on how to best use said technology to spur our goal of sustainable development.

Former PCASTRD Executive Director Dr. Reynaldo Ebora participated in international conferences that promote biotechnology as a development tool as well as to address issues and concerns on said technology.

Particularly, Dr. Ebora attended the Policy Round Table on Low-level Presence (LLP) of Products of Agricultural Biotechnology in Food, which was conducted last May 27-28, 2010 in Hanoi, Vietnam.

During the roundtable, LLP was defined as the unintentional or inadvertent mixing of grain commodity with small, insignificant quantities of another (transgenic) variety of grain. It was also clarified that LLP is in the context of that seeds of a variety commercialized in the exporting country, but not in importing country, become mixed in seeds approved for commercialization in both exporting and importing countries or there is asynchronous approval.

Low-level should be below nutritional significance. The use of the FAO database on authorized genetically modified (GM) varieties is suggested to be used for LLP monitoring, basically addressing the LLP situations arising from asynchronous approval of GM varieties.

In said forum, it was proposed that food safety assessment like potential toxicity and potential allergenicity be based on the Codex Annex and that National Authorities determine what use of the Annex is appropriate. Also, food review should focus on safety of new substances (toxicity and allergenicity) and molecular characterization (to enable identification of new substances). For food eaten in whole, individual units evaluation of potential changes in levels of key native toxicants and allergens should be done.

Harmonization was suggested to be one of the methods of avoiding trade disruption due to the LLP situations. This could be achieved through the development of regulatory systems that will allow speedy food safety assessments like sharing of information among economies in a timely manner. There should be a common format for registration submission without precluding independent risk assessment by Asia-Pacific Economic Cooperation (APEC) member economies. The use of common definitions, units and data requirements as well as mutual acceptance of risk assessment data from studies performed in other countries/economies will facilitate harmonization. Agreement on how to deal with stacked traits will also facilitate trade.

Dr. Ebora also attended other international biotechnology-related activities such as:

- Workshop on Environmental Risk Assessment of Genetically Modified Crops in Vietnam
  Hanoi, Vietnam
  January 12-14, 2010
- Second Meeting of the Group of Friends of the Co-Chairs Concerning Liability and Redress in the Context of the Cartagena Protocol on Biosafety
  Kuala Lumpur, Malaysia
  February 8-12, 2010
- Agriculture and the Role of Biotechnology in Mitigating and Adapting to Climate Change
  Sapporo, Japan
  May 29-30, 2010

Dr. Carol M. Yorobe, DOST Undersecretary for Regional Operations and Officer-In-Charge of PCIEERD, welcomed the participants during the Opening Ceremonies of the ASEAN-India Thermal Spray Project Review Meeting cum Scientific Forum on October 18, 2010 at Hotel Dominique in Tagaytay City.

Members of the ASEAN Sub-Committee on Materials Science and Technology attended the two-day Scientific Forum together with project proponents from India, Singapore, Malaysia and the Philippines as well as local researchers from the academe, government and private sectors.

- APEC's High Level Policy Dialogue on Agricultural Biotechnology (HLPDAB) Workshop and Meeting
  Sapporo, Japan
  May 29-30, 2010

ASEAN Sub-Committee on Materials Science and Technology

PCIEERD chairs the ASEAN Sub-Committee on Materials Science and Technology (SCMST) thru Engr. Ermie M. Bacarra. As the Philippine Focal Person, Engr. Bacarra remains active in participating in numerous activities of the ASEAN SCMST. Last October 18-20, 2010, the Philippines hosted the ASEAN-India Thermal Spray Project Review Meeting cum Scientific Forum, which was held at the Hotel Dominique, Tagaytay City.

The Forum was attended by members of the ASEAN-SCMST, project proponents from India, Singapore, Malaysia, the Philippines, and local researchers from the academic, government and private sectors. Members of the ASEAN-SCMST presented the latest trends in thermal spray in the ASEAN region.

A project review meeting was conducted on the second day, which was followed by a visit to San Miguel Corporation in Cavite and the National Institute of Physics in UP Diliman. The activity also highlighted by the awarding of the Best Poster Presentation, which are:

1st Prize: Alternative Light Emitting Diode Based on PEDOT-PSS Films
Assembled via Layer-by-Layer and Spin-coating Methods
Name of Winner: Ms. Stephanie Chua / William Turnbull
University of Sto. Tomas

2nd Prize: Synthesis of Multilayered Titanium-based Coatings via Magnetic
Sputtering in Magnetized Sheet Plasmas
Name of Winner: Mr. Leo Mendel Rosario
University of the Philippines Diliman – National Institute of Physics

Science and Technology Coordinating Council Committee on Space Technology Applications (STCC-COSTA)

Dr. Ebora, as Philippine Focal Person on the Regional Space Application Program (RESAP), together with DOST Undersecretary for R&D Graciano P. Yumul, Jr. and PHIVOLCS Director Renato U. Solidum, attended the 16th Session of the Asia-Pacific Regional Space Agency Forum (APRSAF-16). The theme of the APRSAF-16 was "Space Applications: Contributions Towards Human Safety and Security." The meeting was conducted last January 26-29, 2010 at the Sofitel Centara Grand Bangkok in Bangkok, Thailand.

The meeting noted the active involvement of the Philippines in the different APRSAF activities implemented in the Philippines by DOST's Advanced Science and Technology Institute, Philippine Atmospheric Geophysical and Astronomical Services Administration, PCASTRD, Philippine Institute of Volcanology and Seismology and Science Education Institute, and STCC-COSTA member institutions.

Participants visited San Miguel Yamamura Asia Corp. in Cavite (main photo) and the National Institute of Physics in University of the Philippines Diliman (inset) during the second day of the Scientific Forum.

Some of the noteworthy activities agreed upon by the participants of the APRSAFF-16 during said meeting were the following:

Sentinel Asia

- Utilize Sentinel Asia by disaster management organizations with support from United Nations for Economic and Social Commission for Asia and the Pacific (UNESCAP)
- Welcome the collaboration between Sentinel Asia and International Disaster Charter to enhance capability for disaster response in the Asia Pacific Region
- Welcome the Asian Disaster Reduction Center as a point of contact of emergency observation requests for Sentinel Asia
- Welcome the new working group called the Glacial Lake Outburst Flood

Satellite Technology for the Asia-Pacific Region (STAR) Program

- Welcome the steady progress of development of Micro-STAR satellite and system study of EO- STAR satellite
- Welcome the STAR Program coordination group (SPCG) to coordinate and decide programmatic issues for the STAR program
- Agree that through APRSAF, space education activities should be expanded in terms of participation, type and funding sources. The said activities should contribute to global initiatives undertaken by entities of the United Nations system and other international organizations in areas relating to education and awareness

Space Environment Utilization

- Welcome the completion of Japanese Experiment Module (also known as KIBO) which is a module developed for the International Space Station by Japan Aerospace Exploration Agency (JAXA) and the success of KIBO assembly after quarter century efforts, and the success of the first HTV mission
- Appreciate the realized and enhanced opportunity of KIBO utilization based on two years operations as well as recognize the education and outreach activities to public are promising mission for successful "KIBO" utilization among APRSAF participating countries
- Recommend to expand the task force activities to realize a joint "KIBO" utilization for education and outreach activities to public
- Encourage to promote bilateral cooperation among activities among APRSAF participating countries

United Nations Committee on Peaceful Uses of Outer Space (UN COPUOS)

- Recommend the Chairman of UN COPOUS will present the outcome of APRSAF-16 as regional cooperative structures to other regions such as Latin America and Africa in order to promote inter-regional cooperation as mandated by UN General Assembly
- The Philippines' active involvement in initiatives of the APRSAF was manifested through the hosting of the Joint Project Team Meeting Step 2 of Sentinel Asia held last July 2010. The meeting was conducted in collaboration with the UNESCAP and the JAXA. It was participated in by 36 organizations from 22 countries. The following were reported during said meeting:

- Participation of FORMSAT (Taiwan) was confirmed as additional satellite from the existing satellites of JAXA, the Indian Space Research Organization, the Korea Aerospace Research Institute and the Gio-Informatics and Space Technology Development Agency of Thailand
- Increase in the number of Data Provider Nodes (DAN) and progress in the establishment of operating system of data analysis conducted by the Asian Institute of Technology

Regional Space Applications Programme for Sustainable Development (RESAP)

PCIEERD remains an active member of the Regional Space Applications Programme For Sustainable Development (RESAP). Last December 16-17, 2010, PCIEERD, together with PAGASA and DOST, hosted the 14th Session of the Intergovernmental Consultative Committee on the RESAP.

The 14th Session, which was organized by UNESCAP, was attended by the National Focal Points and Senior Experts from UNESCAP member countries: namely, Bangladesh, Hong Kong, Macau, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, Sri Lanka, Thailand and the Philippines.

During said session, PCIEERD Deputy Executive Director Raul C. Sabularse was elected as Chair, while Mr. Sanath Panawennage from Sri Lanka was elected as Vice Chair. Philippine representatives summarized the current and future initiatives of PAGASA on space applications, which focus on tropical cyclone, flood control and reservoir management. The group from the Philippines also noted that the drought-monitoring framework could be improved through the use of satellite-based products.

Some of the notable actions agreed upon during the 14th Session are the following:

- Commitment of the group towards the early operationalization of the Regional Cooperative Mechanism for Disaster Monitoring and Early Warning, particularly drought (the Mechanism)
- Operation and coordination of the Mechanism by the Regional Thematic Working Group on Drought and Other Major Disaster Monitoring and Early Warning under RESAP
- Strong support to the following activities:
  - Regional cooperation for the development of collaborative energy communications for disaster management
  - Need for capacity building, sharing of best practices and call for attention to the special needs of the Pacific Island States
- Appreciation and strong emphasis on the importance of partnerships of ESCAP with China, India, Japan, Republic of Korea, Russian Federation and Thailand

Japan International Cooperation Agency (JICA)

PCIEERD maintains strong relationship with JICA, particularly in relation to disaster risk reduction and management related projects. PCIEERD, with support from JICA, monitored the following projects:

- Strengthening Flood Forecasting and Warning System for Dam Operation
- Enhancement of Earthquake and Volcano Monitoring and Effective Utilization of Disaster Mitigation Information in the Philippines
- Enhancement of PAGASA Weather Surveillance Radar Network for Nowcasting and Early Warning of Weather-Related Hazards and Disaster: Project 6 Enabling Communities for the Adoption of Disaster Prevention and Preparedness Measures for Areas Prone to Floods and Rain

Taipei Economic and Cultural Office-Manila Economic Cultural Office (TECO-MECO)

PCIEERD, as part of the Philippine-side delegation, participated in the 2nd Joint Science and Technology Commission (JSTC) Meeting of the MECO and the TECO. The JSTC meeting approved a collaborative program between the Philippines thru the National Institute of Geological Sciences and Mapúa Institute of Technology, and Taiwan thru the National Central University and National Taiwan University.

The multi-year program entitled "The Second Phase of Taiwan – Philippine Geodynamic Integrated Project" has the following project components, which are being monitored by PCIEERD:

- The Geology of an Overriding Plate: Constraints from Field Geology, Sediment Geochemistry and Paleontology
- Linking Active Margin Tectonics and Overriding Plate Dynamics: A Look at the Geochemical Nature of the Central Philippines
- Retracing the Central Philippine Overriding Plate Motion
- Geophysical Characterization of an Overriding Plate: Arc-continent Convergence and Its Implications for Natural Hazards and Resource Distribution in the Central Philippines

ASEAN Sub-Committee on Non-Conventional Energy Research (SCNCER) – Committee on Science and Technology (COST)

PCIEERD's Engr. Nonilo A. Peña is the current chairman of the SCNCER, which acts as the lead shepherd in the regional S&T cooperation for the energy sector in ASEAN. In 2010, dialogue partners supported new S&T energy cooperation initiatives. These initiatives, which are planned for implementation in 2011, are the following:

The Philippines, through PCIEERD, is actively collaborating with the Global Methane Initiative Sub-committees on Agriculture and Landfills. Under the Sub-committee on Agriculture, the project "Capacity Building for Methane Recovery and Use for Agro-industries in the Philippines" is being undertaken. Together with Methane to Markets and Development Academy of the Philippines, PCIEERD organized a Hands-on Training on Ferrocement Fixed Dome Biodigesters (main photo) and National Information, Education and Communication Campaign on Biodigester Development for Pig Farms in the Philippines (inset).

1. Capacity Building on Landfill Gas Utilization – Supported through the Japan-ASEAN Integration Fund
2. Renewable Energy Workshop – Under the ASEAN-India S&T Cooperation

The Philippines also submitted two (2) project proposals for regional cooperation. These proposals are:

1. Regional Biofuel S&T Cooperation Program – For consideration under the ASEAN +3 Cooperation
2. Capacity Building on Climate Change – Greenhouse Gases Emission (GHG) Reduction for Energy Intensive Industry in ASEAN – Endorsed for possible counterpart assistance under the Japan-ASEAN Integration Funds

Global Methane Initiative

The Global Methane Initiative (GMI), which was formerly the Methane to Market Partnership supported through the US Environmental Protection Agency (US-EPA), builds on the existing structure and success of the Methane to Markets partnership to reduce emissions of methane, while enhancing and expanding efforts and encouraging new resource commitments from country partners. By engaging partner governments and private sector entities, this initiative brings together the technical and market expertise, financing and technology necessary for methane capture and use of project development around the world. Moreover, the initiative accelerates deployment of methane emission-reducing technologies and practices, stimulates economic growth and energy security in member countries, improves local environmental quality, and leads the fight against global warming.

GMI is an international public-private initiative that advances cost-effective, near-term methane recovery and use as a clean energy source in four sectors: agriculture, coal mines, landfills and oils and gas systems.

The Philippines, through PCIEERD, is actively collaborating with the GMI Sub-committees on Agriculture and Landfills. Under the Sub-committee on Agriculture, an ongoing project entitled "Capacity Building for Methane Recovery and Use for Agro-industries in the Philippines" is being undertaken. A Country Study was also conducted on the methane to market resource assessment for livestock and agro-industrial wastes, which focused on the swine, distillery, coconut processing and slaughterhouses.

For the Sub-committee Landfill, a specific landfill gas (LFG) modeling tool was developed for the Philippine condition. The modeling tool was intended to provide landfill owners, operators and developers with a realistic tool to evaluate the feasibility and potential benefits of recovering and utilizing LFG for production of energy for various potential applications.

In early 2010, the US-EPA also extended funding assistance for the project entitled "Capacity Building on Methane Emissions Recovery and Utilization from Landfills in the Philippines."

Financial Management

FINANCIAL MANAGEMENT

For the year 2010, the PCIEERD operated on the budgets of the former PCASTRD and PCIERD.

The 2010 regular budget for PCASTRD and PCIERD amounted to P90.486 million and P42.744 million, respectively. For the PCASTRD budget, Personal Services (PS) and Maintenance and Other Operating Expenses (MOOE) accounted for 13.7% and 86.3%, respectively. On the other hand, breakdown of the PCIERD budget was 32.2% (PS) and 67.8% (MOOE). There was no budget for capital outlay in 2010.

Grants-In-Aid Funds

A major component of the Council's budget is its Grants-In-Aid (GIA) Funds, which amounted to P74 million and P20 million for PCASTRD and PCIERD, respectively. The Council's GIA Funds were used to support projects on research and development, human resource development, institution building, technology transfer and commercialization, information dissemination, policy development and advocacy. In 2010, overall budget utilization were 99% and 98% for PCASTRD and PCIERD, respectively.

In addition to the budget for regular programs, the Council also received funding to cover salary increases and other personnel benefits as mandated by law and the corresponding adjustments in government share for mandatory contributions such as life and retirement benefits.

External Funds

In 2010, PCIEERD also generated additional resources for its programs and projects. A total of P547.95 million was sourced from the Grants-in-Aid (GIA) Program of the Department of Science and Technology (DOST) to implement various programs and projects that are aligned to the Council's sectoral priorities. Of this amount, P140.426 million was directly transferred to PCIEERD to implement the engineering and science components of the DOST's Accelerated S&T Human Resource Development Program and to cover the Council's expenses for monitoring and coordinating projects funded under the DOST-GIA Program.

Chart 1: PCIEERD's 2010 Budget.

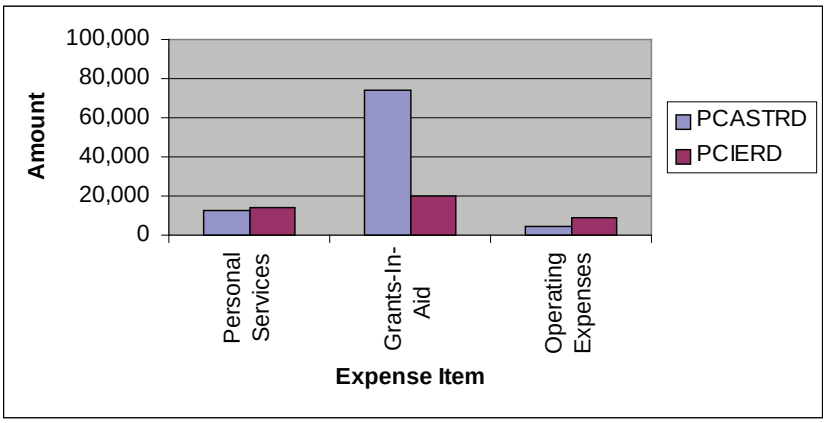


Chart 2: Breakdown of PCASTRD-GIA Utilization.

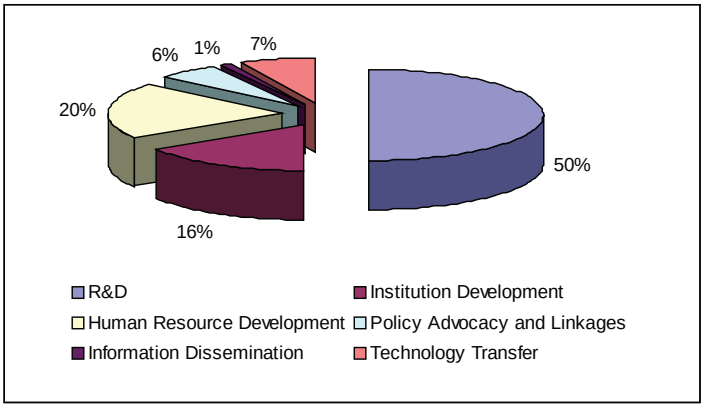
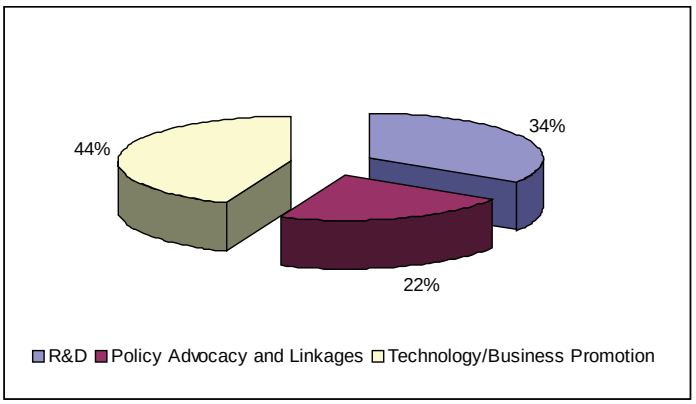
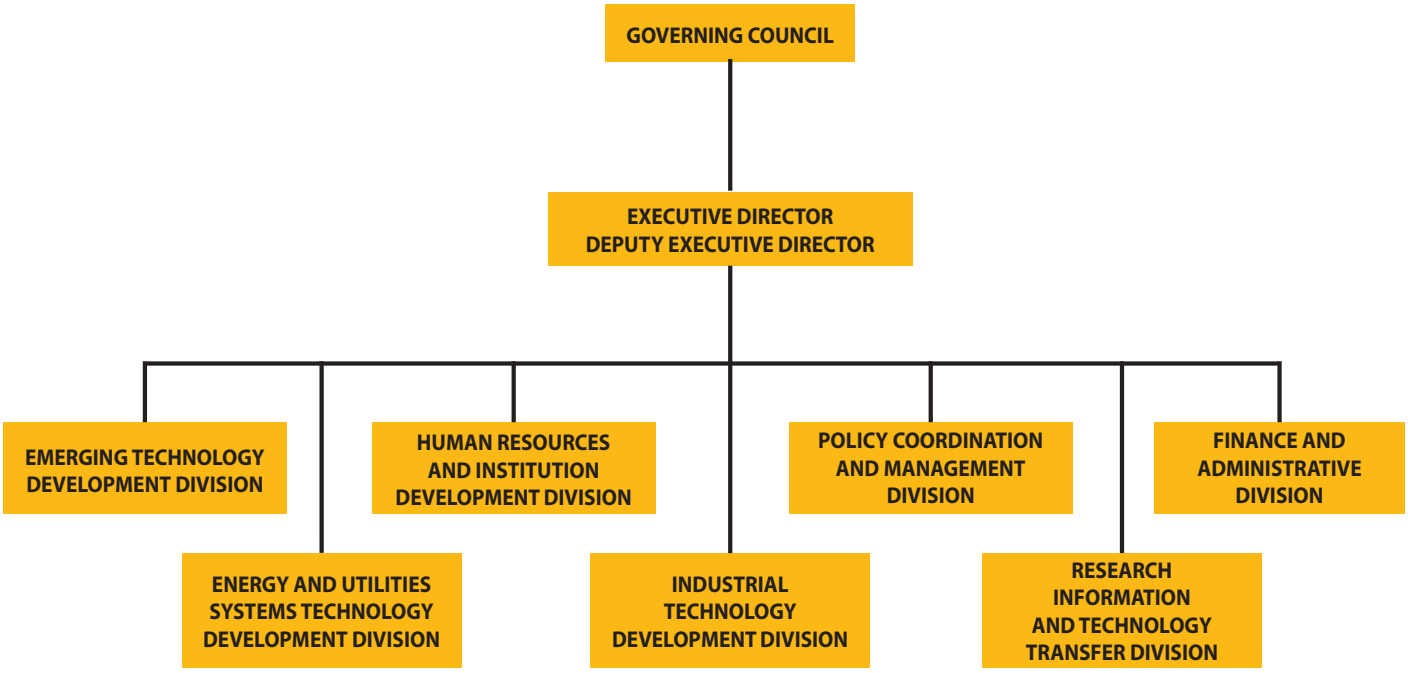


Chart 3: Breakdown of PCIERD-GIA Utilization.



Organizational Chart

ORGANIZATIONAL CHART



Key Officials

PCIEERD EXECUTIVE COMMITTEE

Dr. Carol M. Yorobe
Undersecretary for Regional Operations, DOST
Officer-In-Charge, PCIEERD

Engr. Raul C. Sabularse
Deputy Executive Director
Officer-In-Charge, Policy Coordination and Management Division

Engr. Nelson P. Beniabon
Chief, Emerging Technology Development Division

Engr. Darwin M. Rosales
Chief, Energy and Utilities Systems Technology Development Division

Engr. Ermie M. Bacarra
Chief, Human Resources and Institution Development Division

Engr. Niñaliza H. Escorial
Chief, Industrial Technology Development Division

Dr. Virginia G. Novenario-Enriquez
Chief, Research Information and Technology Transfer Division

Ms. Maridon O. Sahagun
Officer-In-Charge, Finance and Administrative Division

PCASTRD GOVERNING COUNCIL

Chair

Dr. Estrella F. Alabastro
Secretary
Department of Science and Technology

Academic Sector Representatives

Ex-Officio Member

Dr. Emerlinda R. Roman
President, University of the Philippines System

Represented by:
Dr. Amelia P. Guevara
Vice President for Academic Affairs
University of the Philippines System

Dr. William C. Medrano
Commissioner, Commission on Higher Education

Government Sector Representatives

Dr. Reynaldo V. Ebora
Executive Director, PCASTRD

Mr. Arturo C. Bumatay
Director IV, Department of Budget and Management

Private Sector Representatives

Dr. Antonio B. Villaflor
Quality Director, NXP Semiconductors

Mr. Alexander S.E. Sy
President, Alexan Commercial

Dr. Paulino Y. Tan
President, Asia Pacific College

PCASTRD Executive Committee

Dr. Reynaldo V. Ebora
Executive Director, PCASTRD

Engr. Ermie M. Bacarra
Chief, Human Resources and Institution Development Division

Engr. Nelson P. Beniabon
Chief, Research and Development Management Division

Dr. Virginia G. Novenario-Enriquez
Chief, Research Information and Utilization Division

Ms. Maridon O. Sahagun
Officer-In-Charge, Finance and Administrative Division

Note: Valid until June 28, 2010

PCIERD GOVERNING COUNCIL

Chair

Dr. Estrella F. Alabastro
Secretary
Department of Science and Technology

Members – Private Sector

Dr. Jose S. Sandejas
President
Professional Managers, Inc.

Mr. Manuel Q. Lim Jr.
Vice-Chairman, Board of Trustees
MFI Foundation, Inc.

Dr. Geronimo V. Manahan
President
Planning Resource and Operating System

Mr. Fernando S. Baldivia Jr.
President and Chairman
VMC Technologies

Members – Government Sector

Dr. Graciano P. Yumul Jr.
Undersecretary for Research and Development, DOST
Officer-In-Charge, PCIERD

Mr. Elmer A. Soneja
Assistant Secretary, Planning and Project Division
Department of Transportation and Communication

Mr. Elmer C. Hernandez
Undersecretary, Industry Planning Group
Board of Investment-Department of Trade and Industry

Dir. Raquel S. Huliganga
Director, Energy and Research Testing Laboratory Services
Department of Energy

Dr. Judy F. Sese
Director III, Bureau of Research Standards
Department of Public Works and Highways

Engr. Rodolfo P. Peñalosa
Member, Technical Panel for Engineering Technology
Industrial Engineering Department
Commission on Higher Education

PCIERD Executive Committee

Dr. Graciano P. Yumul Jr.
Undersecretary for Research and Development, DOST
Officer-In-Charge, PCIERD

Engr. Raul C. Sabularse
Deputy Executive Director

Engr. Darwin M. Rosales
Chief, Energy and Utilities Systems Technology Development Division

Engr. Niñaliza H. Escorial
Chief, Industrial Technology Development Division

Ms. Magdalena F. Frando
Officer-In-Charge, Industry Relations and Information Division

Ms. Fe T. Garcia
Chief, Finance and Administrative Division

Note: Valid until June 28, 2010

PCIEERD Personnel

PCIEERD PERSONNEL

Office of the Executive Director (OED)

Officer-In-Charge:	USec. Carol M. Yorobe	DOST Undersecretary for Regional Operations
Deputy Executive Director:	Raul C. Sabularse	Deputy Executive Director
Staff:	Jesusita C. Venturina	Planning Officer II
	Ramir D. Sarmiento*	Information Technology Officer I
	Melanie L. Baylosis*	Science Research Specialist I
	Rolando A. Yanquiling*	Computer Operator II
	Mary Ann L. Pullan*	Administrative Assistant III

Finance and Administrative Division (FAD)

Officer-In-Charge:	Maridon O. Sahagun	Supervising Science Research Specialist
Staff:	Aurora D. Tumang	Accountant III
	Sonia P. Cabangon	Administrative Officer V - Budget
	Vilma Rosa C. Borja	Administrative Officer V - Cashier
	Mildred F. Cabradilla	Administrative Officer V - Personnel
	Ena R. Conde	Administrative Officer V - Records
	Alex R. Gesmundo	Administrative Officer V - Supply
	Aileen L. Ventura*	Information System Analyst II
	Mary Ann F. Bangunan	Senior Administrative Assistant II
	Antonio L. Reduta	Administrative Assistant III
	Julieta H. Lacsa	Administrative Assistant III
	Sonia S. De Leon	Administrative Assistant III
	Pancho A. Certeza	Administrative Aide VI
	Anthony D. De La Cruz	Administrative Aide VI
	Joselito B. Velasquez	Administrative Aide IV
	Ricardo G. Palad, Jr.	Administrative Aide IV
	Rommel V. Visperas	Administrative Aide IV
	Allen Z. Manibog	Administrative Aide III
	Melissa Velasco*	Senior Administrative Assistant I
	Elaine Annette C. Salma*	Financial/Account Analyst II
	Isidro V. Querubin, Jr.*	Project Development Officer I
	Divina B. Almazar*	Administrative Assistant III
	Jayson Ryan G. Salunson*	Administrative Assistant III
	Mary Jean M. Enriquez*	Project Assistant I
	Chingky N. Silvederio*	Science Research Analyst
	Ramil M. Ramos*	Computer Operator I
	Rolly H. Pactores*	Driver
	Rodolfo A. Veloso*	Clerk II

Industrial Technology Development Division (ITDD)

Chief:	Niñaliza H. Escorial	Chief Science Research Specialist
Staff:	Ronaldo Q. Dominguez	Supervising Science Research Specialist
	Grace F. Estillore	Senior Science Research Specialist
	Russell M. Pili	Senior Science Research Specialist
	Ruby Raterta	Senior Science Research Specialist
	Mary Grace D. Gonzales*	Science Research Specialist II
	Katrina B. Landicho	Science Research Specialist II
	Laarni T. Piloton*	Science Research Specialist I
	Kashmir G. Iyo*	Science Research Specialist I
	Kristina Paula Y. Anacleto*	Science Research Specialist I
	Paula Jean T. Cansino*	Science Research Specialist I
	Donald Roy B. Grospe*	Science Research Specialist I
	Fatima Jhoan S. Ibarreta*	Science Research Specialist I
	Aleah M. Penilla*	Science Research Specialist I
	Myra Cyril M. Roces*	Science Research Specialist I
	Myrna M. Blah*	Financial/Account Analyst I

Energy and Utilities Systems Technology Development Division (EUSTDD)

Chief:	Darwin M. Rosales	Chief Science Research Specialist
Staff:	Nonilo A. Peña	Supervising Science Research Specialist
	Loreto C. Carasi	Senior Science Research Specialist
	Emelita A.S. Dimapilis	Senior Science Research Specialist
	Albert G. Mariño	Senior Science Research Specialist
	Ryan Christopher P. Viado*	Project Assistant III
	Raymundo H. Habal	Science Research Specialist II
	Patrick E. Montero*	Science Research Specialist II
	Carminda R. Tandelcarmen	Science Research Specialist I
	Rachel R. Habana*	Research Analyst II
	Paolo Martin I. Tulalian*	Science Research Analyst

Emerging Technology Development Division (ETDD)

Chief:	Nelson P. Beniabon	Chief Science Research Specialist
Staff:	Darwin V. Santos	Senior Science Research Specialist
	Meraida D. Reyes	Science Research Specialist II
	Edna C. Nacianceno	Science Research Specialist I
	Laarni P. Habal*	Science Research Specialist I
	May-Rose B. Pariñas*	Information Systems Analyst I
	Cyndi S. Ignacio*	Science Research Specialist I

Human Resources and Institution Development Division (HRIDD)

Chief:	Ermie M. Bacarra	Chief Science Research Specialist
Staff:	Jonathan G. Munoz	Supervising Science Research Specialist
	Marie Christie B. Santos	Senior Science Research Specialist
	Consuelo N. Andres	Science Research Specialist II
	Sherly L. Navilgas*	Science Research Specialist I
	Leonila P. Valdez	Administrative Assistant I
	Annaliza R. Monterey*	Project Assistant III
	Val A. Zabala*	Science Aide

Research Information and Technology Transfer Division (RITTD)

Chief:	Virginia G. Novenario-Enriquez	Chief Science Research Specialist
	Magdalena F. Frando	Supervising Science Research Specialist
	Ma. Elena A. Talingdan	Senior Science Research Specialist
	Janet Rosalie Anne H. Polita	Senior Science Research Specialist
	Efren V. Reyes	Science Research Specialist II
	Rea Castro*	Science Research Specialist II
	Aileen N. Luching*	Project Evaluation Officer II
	Margarette T. Maceda*	Project Development Officer II
	Raissa Roa L. Aguilera*	Science Research Specialist I
	Mary Grace B. Monta*	Information Officer I
	Joanna Rose A. Guardiano*	Science Aide

Policy Coordination and Monitoring Division (PCMD)

Chief:	Raul C. Sabularse	Deputy Executive Director
Staff:	Joseph R. Escorial	Supervising Science Research Specialist
	Ulysses M. Palmones	Senior Science Research Specialist
	Arlene A. Romasanta	Senior Science Research Specialist
	Carlota P. Sancho	Senior Science Research Specialist
	Eric B. Casila	Science Research Specialist II
	Rafael L. Olivar	Science Research Specialist II
	Ruel A. Pili*	Science Research Specialist I
	Marivic A. Legista*	Information System Researcher I
	Mary Jane P. Salmorin	Information System Researcher

Note: As of December 2010

** Contractual*

Network Institutions and Consortiums

REGIONAL R&D CONSORTIA

PCIEERD recognizes the importance of extending its services and assisting R&D institutions in the regions through its Regional R&D Consortia. The Consortia are the Council's partners in monitoring and conducting R&D projects in the regions that fall within PCIEERD's priority areas.

In 2010, several workshops and trainings were conducted to strengthen the capabilities of PCIEERD's Regional Partners. Among the notable accomplishments of the consortia are: technology transfer activities, conduct of regional R&D symposium and strategic planning. The following are the Council's 13 Consortia:

Ilocos Consortium for Industry and Energy Research and Development (I-CIERD) Region 1
Dr. Lauro B. Tacbas – Chairman
President, University of Northern Philippines

Cagayan Valley Industry and Energy Research and Development Consortium (CVIERDEC) Region 2
Dr. Urduja A. Tejada – Chairman
Regional Director, DOST Region II

Central Luzon Industry and Energy Research and Development Consortium (CLIERDEC) Region 3
Dr. Julius Caesar V. Sicat – Chairman
Officer-in-Charge, Office of the Regional Director,
DOST Region III

Cordillera Industry and Energy Research and Development Consortium (CIERDEC) CAR
Dr. Ben D. Ladilad – Chairman
Regional Director, DOST CAR

Southern Tagalog Consortium for Industry and Energy Research and Development (STCIERD) Region 4
Dr. Alexander P. Madrigal – Chairman
Regional Director, DOST Region IV

Southern Tagalog Island Research and Development Consortium (STIRDC)
Dr. Jesse T. Zamora – Chairman
President, Mindoro State College of Agriculture and Technology

Bicol Consortium for Industry and Energy Research and Development (BCIERD) Region 5
Dr. Ramoncito Ilarde – Chairman
President, Camarines Sur Polytechnic College

Central Visayas Consortium for Industry and Energy Research and Development (CVCIERD) Region 7
Dr. Enrique Avila – Chairman
Dean, UP Cebu College

Cotabato Region Industry and Energy Research and Development Consortium (CRIERDC) Region 12
Dr. Zenaida P. Laidan – Chairman
Regional Director, DOST Region XII

Eastern Visayas Consortium for Industry and Energy Research and Development (EVCIERD) Region 8
Dr. Socorro O. Bohol – Chairman
President, Northwest Samar State University

Southern Mindanao Industry, Energy and Engineering Research and Development Consortium (SMIEERDC) Region 11
Dr. Anthony C. Sales – Chairman
Regional Director, DOST Region XI

Metro Manila Industry and Energy Research and Development Consortium (MMIERDC) NCR
Dr. Teresita C. Fortuna – Chairman
Director, DOST NCR

Western Visayas Consortium for Industry and Energy Research and Development (WVCIERD)
Dr. Benny A. Palma – Chairman
Aklan State University

R&D INSTITUTIONS

PCIEERD also maintains a network of institutions with capability to conduct R&D activities in the Council's priority areas. Initially, its members are:

Universities

Ateneo de Manila University
De La Salle University
Mindanao State University-Iligan Institute of Technology
Siliman University
University of the Philippines Diliman
University of the Philippines Manila
University of the Philippines Los Baños
University of San Carlos
University of Santo Tomas
Xavier University

R&D Institutions

Advanced Science and Technology Institute
Industrial Technology Development Institute
Metals Industry Research and Development Center
Philippine Atmospheric, Geophysical, & Astronomical Services Administration
Philippine Institute of Volcanology and Seismology
Philippine Nuclear Research Institute

Appendix

LOCAL TRAININGS AND SEMINARS ATTENDED

Seminar/Training Attended	Date	Venue	Participant/s
Orientation on GAD Concepts and Gender Sensitivity and Responsive Planning Seminar-Workshop	January 12, 2010	DOST Executive Lounge, Taguig, Bicutan City	Myrna M. Blah Sonia P. Cabangon Eric B. Casilia Ena R. Conde Engr. Emelita A.S. Dimapilis Engr. Ronaldo Q. Dominguez Mary Jean M. Enriquez Joseph R. Escorial Engr. Niñaliza H. Escorial Grace F. Estillore Magdalena F. Frando Mary Grace D. Gonzales Donald Roy B. Grospe Rachel R. Habana Engr. Katrina B. Landicho Marivic A. Legista Maria Clarissa M. Manabat Allen Z. Manibog Mark Christian C. Manio Mary Grace B. Monta Engr. Patrick E. Montero Engr. Rafael L. Olivar Rolly H. Pactores Aleah M. Penilla Engr. Roberto P. Peredo Ruel A. Pili Laarni T. Piloton Ruby Raterta Myra Cyril M. Roces Arlene A. Romasanta Ma. Taciana A. Ruda Engr. Raul C. Sabularse Elaine Annette C. Salma Mary Jane P. Salmorin Joselito B. Velasquez Rodolfo A. Veloso, Jr. Ryan Christopher P. Viado Rhodelyn D. Wenke Rolando A. Yanquiling Mark Anthony A. Zosa

Seminar/Training Attended	Date	Venue	Participant/s
Investors' Forum 2010	January 14, 2010	SM Megamall, Mandaluyong City	Myrna M. Blah Sonia P. Cabangon Ena R. Conde Anthony D. Dela Cruz Joseph R. Escorial Engr. Niñaliza H. Escorial Magdalena T. Frando Fe T. Garcia Rachel R. Habana Engr. Katrina B. Landicho Marivic A. Legista Aileen N. Luching Allen Z. Manibog Engr. Albert M. Mariño Ruby Raterta Arlene R. Romasanta Engr. Darwin M. Rosales Mary Jane P. Salmorin Chingky N. Silvederio Joselito B. Velasquez Rolando A. Yanquiling
Workshop on Research Performance Evaluation and Support; Hands-on Training Session for Administrative Support Staff	January 25-27, 2010	Traders Hotel, Pasay City	Joseph R. Escorial Engr. Darwin M. Rosales
Eastern Visayas Consortium for Industry & Energy Research & Development (EVICIERD) Planning Workshop and Joint BOD Training RTWG Meeting	January 25-27, 2010	Cebu City	Engr. Roberto P. Peredo
Seminar Workshop on Financial and Administrative Management	January 27-29, 2010	Balanga City, Bataan	Sonia P. Cabangon Elaine Annette C. Salma Carminda R. Tandelcarmen
TBI Implementation Workshop	February 3-7, 2010	Holiday Inn, Clark Field, Pampanga	Alexis Niño H. Almasan Dr. Virginia G. Novenario-Enriquez Janet Rosalie Anne H. Polita
UNESCO-Manila Conference on Capacity Building in Life Science	February 6, 2010	Sofitel Philippine Plaza Hotel, Pasay City	Engr. Ermie M. Bacarra Dr. Reynaldo V. Ebora
International Symposium and Study Tour on the Best Educational Practices on Disaster Risk Reduction in Japan & Southeast Asia	February 15-16, 2010	Center for International Studies, UP Diliman, Quezon City	Jed Michael O. Partosa Ruby Raterta Ma. Elena T. Tabangcura

Seminar/Training Attended	Date	Venue	Participant/s
71st PICHE National Convention: Professionals in Challenging Times, Emerging Opportunities	February 17-19, 2010	Development Academy of the Philippines, Tagaytay City	Engr. Emelita A.S. Dimapilis Engr. Niñaliza H. Escorial Donald Roy B. Grospe Engr. Katrina B. Landicho Aleah M. Penilla Laarni T. Piloton
4th ERDT Conference: Charting the R&D Programs of the Country	February 19, 2010	Sofitel Philippine Plaza Hotel, Pasay City	Erika Ann M. Aguilar Engr. Nelson P. Beniabon Kathleen S. Caringal Dr. Virginia G. Novenario-Enriquez Meraida D. Reyes Darwin V. Santos
5S on Good Housekeeping and Visual Control	February 25-26, 2010	STII, DOST Compound, Bicutan, Taguig City	Ena R. Conde Jayson Ryan S. Salunson
Philippine Computing Society Congress 2010	March 5-6, 2010	Ateneo de Davao University, Davao City	Engr. Nelson P. Beniabon
Biotech Forum	March 7-9, 2010	University of Southeastern Philippines, Davao City	Dr. Reynaldo V. Ebora
Development of Non-expert Tool for Site-Specific Evaluation of Rain-induced Landslide Susceptibility	March 8-11, 2010	Baguio and Benguet, Mt. Province	Laarni T. Piloton Ruby Raterta Joselito B. Velasquez Ryan Christopher P. Viado
Seminar on Electronic Updating of the Personnel Services Itemization and Plantilla of Personnel	March 17, 2010	Baguio City	Mildred F. Cabradilla Rommel V. Visperas
Property and Supply Management System (Appraisal and Disposal) Seminar	March 18, 2010	Fernandina 88 Suites Hotel, Quezon City	Ramil M. Ramos Darwin V. Santos
Southern Tagalog Consortium for Industry and Energy Research and Development Planning Workshop	March 24, 2010	Hotel Kimberly, Tagaytay City	Engr. Niñaliza H. Escorial Russell M. Pili
S&T Roadmap: Program Development Workshop for the Philippine Tropical Fabrics	March 24-26, 2010	Development Academy of the Philippines, Tagaytay City	Maria Clarissa M. Manabat Russell M. Pili Myra Cyril M. Roces Joselito B. Velasquez

Seminar/Training Attended	Date	Venue	Participant/s
S&T Roadmap: Program Development Workshop for the Philippine Tropical Fabrics	March 25-26, 2010	Development Academy of the Philippines, Tagaytay City	Joseph R. Escorial Engr. Niñaliza H. Escorial Engr. Darwin M. Rosales Ma. Elena T. Tabangcura Carminda R. Tandelcarmen
Information, Education and Communication on Philippine Energy Plan and Nuclear Energy	April 6-8, 2010	Puerto Princesa City, Palawan	Ruby Raterta Ma. Taciana A. Ruda
25th Philippine Chemistry Congress	April 8-10, 2010	Subic Bay Convention and Exhibition Center, Subic Bay, Zambales	Mary Grace D. Gonzales Maria Clarissa M. Manabat Russell M. Pili
Intellectual Property Management: Training cum Writeshop on Institutional IP Policy Drafting	April 12-14, 2010	Zamboanga City	Dr. Reynaldo V. Ebora
Revised Implementation of R.A. 9184 Seminar	April 20, 2010	AFP Commissioned Officers Club, Camp Aguinaldo, Quezon City	Ena R. Conde
Science & Technology for Understanding & Intervention for Climate Risk Preparedness	April 21- 22, 2010	Party Land, Dolores, City of Pampanga	Engr. Nonilo A. Peña Joselito B. Velasquez Ryan Christopher M. Viado
PSBMB 11th RevUP Workshop in Biochemistry and Molecular Biology: Applications in Biotechnology	April 26, 2010	Central Luzon State University, Muñoz, Nueva Ecija	Dr. Virginia G. Novenario-Enriquez
WIPO Asia-Pacific Regional Workshop on Copyright Documentation Systems	April 26-27, 2010	Crowne Plaza Galleria, Manila	Dr. Reynaldo V. Ebora
Seminar on ICT Resources Acquisition	April 26-30, 2010	National Computer Center, Diliman, Quezon City	Engr. Efren V. Reyes
Seminar Workshop on RA 9470 and Records Disposition Administration	April 27-29, 2010	Baguio City	Lydia E. Ocampo Darwin V. Santos
39th Annual PSM Convention: Global Alert! Microbes @ Work	April 29-30, 2010	Avenue Plaza Hotel, Naga City, Camarines Sur	Dr. Reynaldo V. Ebora Maria Clarissa M. Manabat Russell M. Pili
Polymer P3 Workshop: Packaging, Paints and Pharmaceuticals	May 18-21, 2010	Institute of Chemistry, UP Diliman, Quezon City	Laarni P. Habal Darwin V. Santos

Seminar/Training Attended	Date	Venue	Participant/s
Microscopy Society of the Philippines Annual Scientific Conference and General Membership	May 27-28, 2010	International Rice Research Institute, Los Baños, Laguna	Laarni P. Habal Jonathan G. Muñoz
ArcGIS Desktop Training I	June 2-3, 2010	Ortigas Center, Pasig City	Engr. Albert M. Mariño Ryan Christopher P. Viado
Mid-Year Convention cum Seminar: AGIA Addressing Challenges on Good Governance	June 4, 2010	Quezon City Sports Complex, Quezon City	Ena R. Conde Fe T. Garcia
ArcGIS Desktop Training II	June 7-9, 2010	Ortigas Center, Pasig City	Engr. Albert M. Mariño Ryan Christopher P. Viado
10th Conference of the Science Council of Asia	June 14-16, 2010	Sofitel Philippine Plaza Hotel, Pasay City	Engr. Ermie M. Bacarra Engr. Nelson P. Beniabon Maridon O. Sahagun
Orientation on GAD Concepts and Gender Responsive Planning and Budgeting	June 28-29, 2010	Caliraya Re-Creation Center, Lumban, Laguna	Erika Ann M. Aguilar Engr. Ermie M. Bacarra Vicki Ann A. Bagulbagul Melanie L. Baylosis Maricel B. Bongares Vilma Rosa C. Borja Mildred F. Cabradilla Engr. Rea C. Castro Pancho A. Certeza Remigio F. Coldez, Jr. Sonia S. De Leon Dr. Virginia G. Novenario-Enriquez Joanna Rose A. Guardiano Laarni P. Habal Cyndi S. Ignacio Raissa Roa R. Litan Mitzie Marish J. Loquero Sherly L. Navilgas Lydia E. Ocampo Ricardo G. Palad, Jr. May-Rose B. Pariñas Janet Rosalie Anne H. Polita Isidro V. Querubin Engr. Efren V. Reyes Carlota O. Sancho Darwin V. Santos Kristine A. Sinco Margarette M. Teodosio Aurora D. Tumang Melissa S. Velasco Jesusita C. Venturina Rommel V. Visperas

Seminar/Training Attended	Date	Venue	Participant/s
ArcGIS Desktop Training I and II	July 5-9, 2010	Ortigas Center, Pasig City	Eric B. Casila Engr. Nonilo A. Peña
36th FNRI Seminar Series on Food and Nutrition Researches and S&T Activities: Pagkaing Tama at Sapat para sa Kalusugan ng Lahat	July 6-7, 2010	FNRI Auditorium, DOST Compound, Bicutan, Taguig City	Grace F. Estillore Engr. Katrina B. Landicho
Achieving Integrity in the Civil Service Through Effective Human Resource Management	July 9,16,23 and 30, 2010	UP National College of Public Administration & Governance, Diliman, Quezon City	Sonia P. Cabangon Julieta H. Lacsa Melissa S. Velasco Rommel V. Visperas
International Seminar on Software Engineering Development and its Applications in Education	July 29, 2010	Holy Angel University, Angeles City, Pampanga	Engr. Nelson P. Beniabon May-Rose B. Pariñas Darwin V. Santos
MS Access for Records Management Seminar-Workshop	September 20-22, 2010	Guadalupe, Cebu City	Sherly L. Navilgas
17th National Public Relations Congress	September 23-24, 2010	Intercontinental Hotel, Manila	Magdalena F. Frando Ma. Elena T. Tabangcura
Seminar-Workshop on Preparation of Records Management Operations Manual	September 28-30, 2010	Tagaytay Country Hotel, Tagaytay City	Ena R. Conde
Voice over Internet Protocol (VoIP) Training	October 12-15, 2010	ASTI Building, Diliman, Quezon City	Eric B. Casila
12th Samahang Pisika ng Visayas at Mindanao	October 21-23, 2010	Iloilo City	Engr. Ermie M. Bacarra Mitzie Marish J. Loquero
Web Accessibility Workshop for DOST Web Masters Consortium Members	October 22, 2010	ASTI Building, Diliman, Quezon City	Engr. Rafael L. Olivar
InWEnt Training of Trainers Workshop	November 7-13, 2010	Cebu City	Dr. Virginia G. Novenario-Enriquez
Training Workshop on Forensic DNA Technology for Philippine Coast Guard Operating Within the Waters of ARMM	November 9-12, 2010	Zamboanga City	Raissa Roa R. Litan Janet Rosalie Anne H. Polita

Seminar/Training Attended	Date	Venue	Participant/s
60 Years of AGAP: Articulating Governance, Accountability and Professionalism	November 10-13, 2010	Camp John Hay Trade & Cultural Center, Baguio City	Sonia S. De Leon Elaine Annette C. Salma Melissa S. Velasco Aileen L. Ventura
49th Philippine Association of Food Technologists, Inc. Annual Convention	November 11-12, 2010	Heritage Hotel, Pasay City	Grace F. Estillore Fatima Jhoan S. Ibarreta Kashmir G. Iyo Engr. Katrina B. Landicho
Image Editing Course	November 15-19, 2010	National Computer Center, Diliman, Quezon City	Remigio F. Coldez, Jr.
Government Association of Certified Public Accountants (GACPA): Responding to the Call for change	November 18-20, 2010	Crown Regency Hotel & Towers, Cebu City	Mary Ann F. Bangunan Salioban E. Blah Sonia P. Cabangon
Seminar on Laws, Rules and Regulations on Government Expenditures	November 24-26, 2010	Hotel Kimberly, Manila	Isidro V. Querubin
DOST S&T Human Resource Information System User Acceptance Testing Workshop	December 1-3, 2010	PCARRD, Los Baños, Laguna	Janet Rosalie Anne H. Polita
Seminar-Workshop of the Philippine Association for Government Budget Administration Inc.: Better Governance, Better Life for Civil Servants	December 1-4, 2010	Montebello Villa Hotel, Cebu City	Mary Jean M. Enriquez Maridon O. Sahagun Carminda R. Tandelcarmen
Quality Function Deployment Training	December 6-8, 2010	Sea Breeze Resort, Taguig City	Engr. Nelson P. Beniabon Mildred F. Cabradilla Sonia P. Cabangon Dr. Virginia G. Novenario-Enriquez Joseph R. Escorial Engr. Niñaliza H. Escorial Grace F. Estillore Mary Grace D. Gonzales Edna C. Nacianceno Engr. Nonilo A. Peña Arlene P. Romasanta Maridon O. Sahagun Carlota P. Sancho Ma. Elena A. Talingdan

FOREIGN CONFERENCES, TRAININGS, SEMINARS AND MEETINGS ATTENDED

Seminar/Training Attended	Date	Venue	Participant/s
16th Session of the Asia-Pacific Regional Space Agency Forum (APRSAF-16)	January 26-29, 2010	Bangkok, Thailand	Dr. Reynaldo V. Ebora
KOICA Country Training Program: National Integrated Vehicle Management and Inspection System Development	March 21 – April 10, 2010	Korea	Engr. Albert M. Mariño
Expert Training for Energy and Climate Change	April 1-17, 2010	Korea	Engr. Emelita A.S. Dimapilis
Training Course on Energy Cooperation for Asia and the Middle East	April 15-30, 2010	Korea	Engr. Raul C. Sabularse
Meeting Between the National Science Council and DOST on S&T Cooperation	April 26-28, 2010	Taiwan	Engr. Nonilo A. Peña
2010 International Training Workshop on Natural Disaster Reduction	May 10-14, 2010	Taipei, Taiwan	Ryan Christopher P. Viado
59th Meeting of the ASEAN Committee on Science and Technology (ASEAN COST)	May 17-18, 2010	Vientiane, Lao People's Democratic Republic	Engr. Ermie M. Bacarra
59th Meeting of the ASEAN Committee on Science and Technology (ASEAN COST)	May 17-21, 2010	Vientiane, Lao People's Democratic Republic	Engr. Nonilo A. Peña
APEC's High Level Policy Dialogue on Agricultural Biotechnology (HLPDAB) Workshop and Meeting in Conjunction with the Second APEC Senior Officials Meeting (SOM2)	May 29-30, 2010	Sapporo, Japan	Dr. Reynaldo V. Ebora
Promoting Business Incubation in Southeast Asia – Importance of Networking and Dialogue on International Success Stories	June 14-19, 2010	Jakarta, Indonesia	Dr. Virginia G. Novenario-Enriquez Janet Rosalie Anne H. Polita
Workshop for S&T Cooperation	June 16-17, 2010	Busan, Korea	Engr. Raul C. Sabularse
ISTIC-ISESCO Training Workshop on Science, Technology and Innovation (STI) Policy Development: Assessment of Industry Needs	June 21-25, 2010	Kuala Lumpur, Malaysia	Engr. Niñaliza H. Escorial
Seminar on Climate Change for Asian and African Countries	June 29 – July 19, 2010	Beijing, China	Mr. Raymundo H. Habal
Asia Food Tech, Innovations & Safety Conference 2010: Capitalizing on the Unmatched Connectivity of Asia's Food Hub	July 14-15, 2010	Biopolis, Singapore	Engr. Katrina B. Landicho
Formulating the Road Map of the Metals and Engineering Industry through Industry Dialogues and International Benchmarking	August 2-7, 2010	Malaysia and Thailand	Engr. Ronaldo Q. Dominguez

Seminar/Training Attended	Date	Venue	Participant/s
Stakeholder Meeting on the Regional Cooperative Mechanism on Drought Disaster Monitoring and Early Warning	September 14-16, 2010	Nanjing, China	Engr. Raul C. Sabularse
Formulating the Road Map of the Metals and Engineering Industry through Industry Dialogues and International Benchmarking	September 14-17, 2010	Malaysia and Thailand	Engr. Niñaliza H. Escorial
39th Asia Pacific Economic Cooperation (APEC) Industrial Science and Technology Working Group (ISTWG) Meeting	September 20-22, 2010	Sendai, Japan	Engr. Raul C. Sabularse
Formulating the Road Map of the Metals and Engineering Industry through Industry Dialogues and International Benchmarking	September 21-24, 2010	Taiwan	Engr. Niñaliza H. Escorial
Consultative Meeting on Regional Cooperation for Establishing an Institutional Cooperation Mechanism to Promote Renewable Energy in Asia & the Pacific	October 7-8, 2010	Bangkok, Thailand	Loreto C. Carasi
Nuclear Safety Seminar 2010 Administration Course	November 29 – December 17, 2010	Tokai, Japan	Engr. Albert M. Mariño
2010 China-ASEAN Industrial Development Forum	December 18-19, 2010	China	Engr. Raul C. Sabularse

ONGOING SCHOLARS SUPPORTED UNDER DOST-ASTHRDP – ENGINEERING

Name	Level (MS or PhD) / Field of Study	Name of Receiving Higher Educational Institution
Marquez, Ariziel Ruth D.	MS Chemical Engineering	De La Salle University
Calixto, Jose Iñigo R.	MS Civil Engineering	De La Salle University
Alejandrino, Marlene Q.	MS Electronics and Communications Engineering	De La Salle University
Bandala, Argel A.	MS Electronics and Communications Engineering	De La Salle University
David, Donato A.	MS Electronics and Communications Engineering	De La Salle University
De Luna, Robert G.	MS Electronics and Communications Engineering	De La Salle University
De Ocampo, Anton Louise P.	MS Electronics and Communications Engineering	De La Salle University
Dimaala, Fernando M.	MS Electronics and Communications Engineering	De La Salle University
Espiritu, Niño M.	MS Electronics and Communications Engineering	De La Salle University
Galang, Kassandra V.	MS Electronics and Communications Engineering	De La Salle University
Jaballas, Morris Martin M.	MS Electronics and Communications Engineering	De La Salle University
Lazana, Cristian S.	MS Electronics and Communications Engineering	De La Salle University
Maniulit, Ramil T.	MS Electronics and Communications Engineering	De La Salle University
Mendoza, Juvy Andrea M.	MS Electronics and Communications Engineering	De La Salle University
Ordoña, Aries E.	MS Electronics and Communications Engineering	De La Salle University
Prudencio, Kenneth Aldrin O.	MS Electronics and Communications Engineering	De La Salle University
Ramirez, Maria Katrina A.	MS Electronics and Communications Engineering	De La Salle University
Ramos, John Davied M.	MS Electronics and Communications Engineering	De La Salle University
Revilla, Marvin James I.	MS Electronics and Communications Engineering	De La Salle University
Sera, Ma. Belinda R.	MS Electronics and Communications Engineering	De La Salle University
Simbahan, Richard L.	MS Electronics and Communications Engineering	De La Salle University
Subol, Shane Ann M.	MS Electronics and Communications Engineering	De La Salle University
Teologo Jr., Antipas T.	MS Electronics and Communications Engineering	De La Salle University
Torregoza, Mark Lorenze D.	MS Electronics and Communications Engineering	De La Salle University
Virtudez, Kristine Jean A.	MS Electronics and Communications Engineering	De La Salle University
Amechazurra-Barboza, Ezra A.	MS Environmental Engineering	De La Salle University
Sumang, Soledad G.	MS Environmental Engineering and Management	De La Salle University
Aguila, Rowena Marie A.	MS Industrial Engineering	De La Salle University
Baranda, John Carlo B.	MS Industrial Engineering	De La Salle University
Brillante, Jamica B.	MS Industrial Engineering	De La Salle University
Enriquez, Norbert S.	MS Industrial Engineering	De La Salle University
Go, Joan Corazon C.	MS Industrial Engineering	De La Salle University
Go, Paul Anthony S.	MS Industrial Engineering	De La Salle University
Gosiaco, Katherine Grace T.	MS Industrial Engineering	De La Salle University
Macatangay, May G.	MS Industrial Engineering	De La Salle University
Mercado, Jayson M.	MS Industrial Engineering	De La Salle University
Mesa, Ivan Robie V.	MS Industrial Engineering	De La Salle University
Perez, Marc Louis C.	MS Industrial Engineering	De La Salle University
Porquiso, Mark Jun R.	MS Industrial Engineering	De La Salle University
Pring, Marie Dawn Charisse S.	MS Industrial Engineering	De La Salle University
Red, Rachelle P.	MS Industrial Engineering	De La Salle University
Santos, Ma. Crea Eurice D.	MS Industrial Engineering	De La Salle University
Tan, Kent Edward C.	MS Industrial Engineering	De La Salle University
Tirona, Emilie D.	MS Industrial Engineering	De La Salle University
Fontanilla, Gio Kristofer A.	MS Manufacturing Engineering and Management	De La Salle University
Pacer, Wenifredo L.	MS Manufacturing Engineering and Management	De La Salle University
Sta. Agueda, Joseph Rey H.	MS Manufacturing Engineering and Management	De La Salle University
Castro, Lorinelle P.	MS Materials Science and Engineering	De La Salle University
Alvarez, Precious L.	MS Mechanical Engineering	De La Salle University
Gonzales, Aramis D.	MS Mechanical Engineering	De La Salle University
Mariano, Daniel Joseph P.	MS Mechanical Engineering	De La Salle University
Torres, Emerson B.	MS Civil Engineering	Mapúa Institute of Technology
Biceda, Glenda G.	MS Computer Engineering	Mapúa Institute of Technology
Garcillanosa, Leo F.	MS Computer Engineering	Mapúa Institute of Technology
Mandia, Lorena M.	MS Electrical Engineering	Mapúa Institute of Technology

Name	Level (MS or PhD) / Field of Study	Name of Receiving Higher Educational Institution
Oldan, Billy Ray M.	MS Electrical Engineering	Mapúa Institute of Technology
Anacan, Rommel M.	MS Electronics and Communications Engineering	Mapúa Institute of Technology
Atienza, Janice V.	MS Electronics and Communications Engineering	Mapúa Institute of Technology
Bilbao, Jaycee B.	MS Electronics and Communications Engineering	Mapúa Institute of Technology
Dela Cruz, Marshid C.	MS Electronics and Communications Engineering	Mapúa Institute of Technology
Delos Lado, Jennifer E.	MS Electronics and Communications Engineering	Mapúa Institute of Technology
Destacamento, Ronjo M.	MS Electronics and Communications Engineering	Mapúa Institute of Technology
Dinglasan, Sheryl D.	MS Electronics and Communications Engineering	Mapúa Institute of Technology
Gayol, John Adam B.	MS Electronics and Communications Engineering	Mapúa Institute of Technology
Majarucon, Trinnette V.	MS Electronics and Communications Engineering	Mapúa Institute of Technology
Maleriado, Mary Ann G.	MS Electronics and Communications Engineering	Mapúa Institute of Technology
Marco, Danilo B.	MS Electronics and Communications Engineering	Mapúa Institute of Technology
Milleza, Macario Jr. M.	MS Electronics and Communications Engineering	Mapúa Institute of Technology
Tronco, Maria Leovina S.	MS Electronics and Communications Engineering	Mapúa Institute of Technology
Escalona, James Alfred M.	MS Electronics and Communications Engineering	Mapúa Institute of Technology
Yao, Cameron B.	MS Electronics and Communications Engineering	Mapúa Institute of Technology
Abongan, Fatima D.	MS Environmental Engineering	Mapúa Institute of Technology
Bitancor, Lorites D.	MS Environmental Engineering	Mapúa Institute of Technology
Bo, Bryan Julius A.	MS Environmental Engineering	Mapúa Institute of Technology
Ferrer, Prima Joy G.	MS Environmental Engineering	Mapúa Institute of Technology
Lardizabal, Cecile R.	MS Environmental Engineering	Mapúa Institute of Technology
Ogot, Ronnel L.	MS Environmental Engineering	Mapúa Institute of Technology
Saiyari, Donamel M.	MS Environmental Engineering	Mapúa Institute of Technology
Tinamisan, April C.	MS Environmental Engineering	Mapúa Institute of Technology
Valerio, Ma. Christina A.	MS Environmental Engineering	Mapúa Institute of Technology
Abad, Joseph Jorge Y.	MS Materials Science and Engineering	Mapúa Institute of Technology
Asuncion, Harold T.	MS Materials Science and Engineering	Mapúa Institute of Technology
Burce, Michelle N.	MS Materials Science and Engineering	Mapúa Institute of Technology
Ingusan, Eufrosena Arzenith Z.	MS Materials Science and Engineering	Mapúa Institute of Technology
Medroso, Mae R.	MS Materials Science and Engineering	Mapúa Institute of Technology
Sudario, Francisco A.	MS Materials Science & Engineering	Mapúa Institute of Technology
Demotica, Juvelyn S.	MS Environmental Engineering	Mindanao State University - Iligan Institute of Technology
Fermasis, Lonniel L.	MS Environmental Engineering	Mindanao State University - Iligan Institute of Technology
Latorre, Lourdes H.	MS Environmental Engineering	Mindanao State University - Iligan Institute of Technology
Icalina, Edmark S.	MS Chemical Engineering	University of the Philippines Diliman
Monteroso, Vincent Paul G.	MS Chemical Engineering	University of the Philippines Diliman
Balon, Siegfred D.	MS Electrical Engineering	University of the Philippines Diliman
Bautista, N. Fernando B.	MS Electrical Engineering	University of the Philippines Diliman
Diaz, Roma Franz Iris F.	MS Electrical Engineering	University of the Philippines Diliman
Villorente, Gabriel F.	MS Electrical Engineering	University of the Philippines Diliman
Abad, Gladys A.	MS Energy Engineering	University of the Philippines Diliman
Fausto, Eleonor D.	MS Environmental Engineering	University of the Philippines Diliman
Encabo, Xy-Za Karleen G.	MS Industrial Engineering	University of the Philippines Diliman
Ceniza, Claude R.	MS Materials Science and Engineering	University of the Philippines Diliman
Marquez, Menandro C.	MS Materials Science and Engineering	University of the Philippines Diliman
Pesigan, Christian D.	MS Materials Science and Engineering	University of the Philippines Diliman
Reyes, Larry Q.	MS Materials Science and Engineering	University of the Philippines Diliman
Geronimo, Rochelle C.	MS Mechanical Engineering	University of the Philippines Diliman
Cardosa, Jurden O.	MS Chemical Engineering	University of San Carlos
Gako, Rica Garce D.	MS Chemical Engineering	University of San Carlos
Sasan, Ronald R.	MS Chemical Engineering	University of San Carlos
Lor, Felrem G.	MS Civil Engineering	University of San Carlos
Carson, Gracely J.	MS Electronics and Communications Engineering	University of San Carlos
Narido, Pableto O.	MS Electronics and Communications Engineering	University of San Carlos
Cruz, Armie E.	PhD Electronics and Communications Engineering	De La Salle University
Gutierrez, Maria Teodora E.	PhD Industrial Engineering	De La Salle University
Malazarte, Darwin S.	PhD Industrial Engineering	De La Salle University
Reyes, Victor Paolo C.	PhD Industrial Engineering	De La Salle University

Name	Level (MS or PhD) / Field of Study	Name of Receiving Higher Educational Institution
Sio, Dhesirey Beryl K.	PhD Industrial Engineering	De La Salle University
Aquino, Ruth R.	PhD Environmental Engineering	Mapúa Institute of Technology
Bernabe, Dante P.	PhD Environmental Engineering	Mapúa Institute of Technology
Eleazar, Elisa G.	PhD Environmental Engineering	Mapúa Institute of Technology
Mapua, Aristides R.	PhD Environmental Engineering	Mapúa Institute of Technology
Santos, Rolly G.	PhD Environmental Engineering	Mapúa Institute of Technology
Barroca, Renyl B.	PhD Doctor of Engineering	Mindanao State University - Iligan Institute of Technology
Closas, Adonis A.	PhD Doctor of Engineering	Mindanao State University - Iligan Institute of Technology
Ciruela, Reynante T.	PhD Doctor of Engineering	Mindanao State University - Iligan Institute of Technology
Daroy, Joselito O.	PhD Doctor of Engineering	Mindanao State University - Iligan Institute of Technology
Famisan, Melchor M.	PhD Doctor of Engineering	Mindanao State University - Iligan Institute of Technology
Ferrolin, Tender P.	PhD Doctor of Engineering	Mindanao State University - Iligan Institute of Technology
Fuentes, Nelson C.	PhD Doctor of Engineering	Mindanao State University - Iligan Institute of Technology
Guaro, Ernesto Jr. E.	PhD Doctor of Engineering	Mindanao State University - Iligan Institute of Technology
Pagaling, Eric D.	PhD Doctor of Engineering	Mindanao State University - Iligan Institute of Technology
Ligaray, Corazon V.	PhD Environmental Engineering	University of the Philippines Diliman
Camacho, Melissa Angelica C.	PhD Materials Science and Engineering	University of the Philippines Diliman
Misa, John Vincent A.	PhD Materials Science & Engineering	University of the Philippines Diliman
Rillera, Hannah P.	PhD Materials Science & Engineering	University of the Philippines Diliman

ONGOING SCHOLARS SUPPORTED UNDER DOST-ASTHRDP – SCIENCE

Name	Level (MS or PhD) / Field of Study	Name of Receiving Higher Educational Institution
Robil, Jan Lorie M.	MS Biology	Ateneo de Manila University
Eng, Rubelyn E.	MS Information Technology	Ateneo de Manila University
Alata, Eden Joy P.	MS Biology	De La Salle University
Caldo, Laarni E.	MS Biology	De La Salle University
Angeles, Reymundo A.	MS Chemistry	De La Salle University
Florendo, Jamirose C.	MS Chemistry	De La Salle University
Ramboyong, Leandro R.	MS Chemistry	De La Salle University
Mondejar, Jeffrey M	MS Computer Science	De La Salle University
Magpantay, Daryl M.	MS Mathematics	De La Salle University
Plaza, Louis Mark N.	MS Mathematics	De La Salle University
Morente, Carlo Paul P.	MS Applied Mathematics	Mindanao State University - Iligan Institute of Technology
Beley, Maetrese Arrianne J.	MS Biology	Mindanao State University - Iligan Institute of Technology
Del Socorro, Magdalene Mae L.	MS Biology	Mindanao State University - Iligan Institute of Technology
Elumba, Zeus S.	MS Biology	Mindanao State University - Iligan Institute of Technology
Jose, Mark Anthony I.	MS Biology	Mindanao State University - Iligan Institute of Technology
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Baring, Sherile Lyn T.	MS Mathematics	Mindanao State University - Iligan Institute of Technology
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Casas, Karl Patrick S.	MS Physics	Mindanao State University - Iligan Institute of Technology
Ceblano, Christine Marie T.	MS Physics	Mindanao State University - Iligan Institute of Technology
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Odarve, Majvell Kay G.	MS Physics	Mindanao State University - Iligan Institute of Technology
Pantohan, Edmar G.	MS Physics	Mindanao State University - Iligan Institute of Technology
Quinones, Catherine J.	MS Physics	Mindanao State University - Iligan Institute of Technology
Racines, Lotis R.	MS Physics	Mindanao State University - Iligan Institute of Technology
Sajor, Normie Jean B.	MS Physics	Mindanao State University - Iligan Institute of Technology
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