PHILIPPINE COUNCIL FOR INDUSTRY, ENERGY AND EMERGING TECHNOLOGY RESEARCH AND DEVELOPMENT (PCIEERD) 
Department of Science and Technology (DOST) 

STAKEHOLDERS MEETING – JANUARY 22, 2012
A collaborative effort among NGAs, academe, private, NGO and other stakeholders in the sector
Spearheaded by PCIEERD
Sets the direction to meet the sector challenges and objectives by 2016
In line with the following:
- National Science and Technology Plan (NSTP)
- Presidential Coordinating Council on R & D (PCCRD)
- Medium-Term Philippine Development Plan (MTPDP) and 2015 Millennium Development Goals (MDG)
- Philippine Clean Water Act of 2004 (Republic Act No. 9275)
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<tr>
<th>Sector</th>
<th>Affiliation</th>
<th>TPRC</th>
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<tr>
<td>Private</td>
<td>San Miguel Yamamura</td>
<td>ENGR. BENJAMIN T. GREGORIO</td>
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<td>Private</td>
<td>Ayala Foundation Inc.</td>
<td>MS. ADELIA R. LICOS</td>
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<td>NGO</td>
<td>Blacksmith Institute</td>
<td>MS. JENNIFER MARIE S. AMPARO</td>
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<tr>
<td>Academe</td>
<td>FEATI/University Belt Consortium</td>
<td>DR. ROGELIO A. PANLASIGUI</td>
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<tr>
<td>Academe</td>
<td>UPD–Dept. of Mining, Met, &amp; Matl’s Eng’g</td>
<td>DR. LESLIE JOY DIAZ</td>
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<tr>
<td>Academe</td>
<td>DLSU</td>
<td>DR. SUSAN M. GALLARDO</td>
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<td>Academe</td>
<td>ADMU</td>
<td>DR. TERESITA R. PEREZ</td>
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# Technical Panel and Review Committee (TPRC)

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<td>Academe</td>
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<td>DR. ANALIZA P. ROLLON</td>
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<td>Government</td>
<td>ERDB–DENR</td>
<td>ENGR. SANTIAGO BACONGUIS</td>
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<td>Government</td>
<td>LLDA</td>
<td>MS. ADELINA C. SANTOS–BORJA</td>
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<td>DIR. CORAZON H. DICHOSA /</td>
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<td>MR. DENNIS PANGA</td>
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<td>DOST–ITDI</td>
<td>ENGR. REYNALDO L. ESGUERRA</td>
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<td>Government</td>
<td>DOST–PCAMRD</td>
<td>ENGR. EDUARDO V. MANALILI</td>
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Technical Panel and Review Committee (TPRC)
Technical Panel and Review Committee (TPRC)
Rationale

- **DENR Administrative Order No. 2005-10 Implementing Rules and Regulations**
- **Philippine Clean Water Act of 2004 (Republic Act No. 9275)**
- **SEC 24. Pollution Research and Development Programs** - The Department, in coordination with the DOST, other concerned agencies and academic research institutions, shall establish a National Research and Development Program for the prevention and control of water pollution.
- As part of said program, the DOST shall conduct and promote the coordination and acceleration of research, investigation, experiments, training, surveys and studies relating to the causes, extent, prevention and control of pollution among concerned government agencies and research institutions.
Vision and Mission

Ecological functions and services of water ecosystems are sustained through generations

MISSION:
- Provide S & T support for the enforcement of guidelines and standards under Philippine environmental laws
- Strengthen the R & D of cost effective waste management and treatment options and cleaner production to reduce pollution at source
- Build capacity for good environmental governance
1. Rehabilitation of polluted water bodies in urban areas
2. Meet water quality guidelines and standards of specific parameters (e.g. BOD, DO, E. coli, heavy metals) in water bodies
3. A rich and abundant source of aquatic resources for food
4. Lower the cost of investments and operations for installation, adoption of water treatment technologies for Small and Medium Enterprises (SMEs)
5. Restoration of all major water bodies in the country for livelihood purposes
6. Strict enforcement and implementation of environmental laws especially the Clean Water Act
7. Maximum use of water bodies for transport systems
8. Rehabilitation of water bodies to its original state or condition with respect to its intended use
9. Clean and free from informal settlers along Riverbanks
10. Clean source of water requiring only minimal treatment to be fit for human consumption
S&T WATER ENVIRONMENT ROADMAP 2011-2016

**2011**
- Updated Inventory of Philippine Water Bodies, pollution sources, standards and policies
  - Baseline data gathering and compilation of major rivers and lakes in MM
  - Profiling on Non-Point Sources of Pollution (agricultural, domestic, mining)
- Centralized database on surface water resources for management purposes
- Policy analysis on water

**2012**
- Compendium/database database of water technologies
- Pool of technical people on water management (MS, MA, Ph.D. and others)

**2013**
- Technology Database / Techno-Demo on Prevention and Control of Water Pollution
  - Development of Clean Technologies for Point / Non-Point Sources
  - Collaborative Research Programs among academe, industry, government, civil societies and NGOs
- Pilot Demo of treatment / rehabilitation / remediation technologies (i.e. Biofilm, Prototyping of Water filter, Kaolinite)

**2014**
- Commercialized water technologies
- Upgraded capacities/capabilities of institutions for sustainable water environment management
- Capacity / Capability Building of R & D Member Institutions / technical experts / researchers / law enforcers
- Development of Remediation Protocols
- Documentation of Success Stories

**2015**
- Formulation of Guidelines/policies/standards from results of R & D
- Harmonization of existing laws and policies (ETV, Mutual Recognition Agreement among water quality testing, Institutionalization of incentives awards system. Market-based instruments for effluents
- Capacity / Capability Building of R & D Member Institutions / technical experts / researchers / law enforcers
- Enhanced / Development of Remediation Protocols
- Technical verification of water technologies for SMEs
  - Drink Program
  - Advanced oxidation process on waste water – DLSU
  - Development of Biological + Ozonation Process – UPD
  - Better Mine Program – UP-DMMME and ADMU
  - Development of Electro-Coagulation for Pharmawaste (PPCPs) – DLSU
  - Pasig River Stewardship Program – U-Belt Consortium
  - Bioremediation Technology – UPLB and Blacksmith

**2016**
- Upgraded the quality of water ecosystems in the country
- Localized effluent regulation standards
- Adopted/implemented approved policies
- Formulation of Guidelines/policies/standards (groundwater, sediment, Industry Specific Effluent Stds.)
- Harmonization of existing laws and policies (ETV, Mutual Recognition Agreement among water quality testing, Institutionalization of incentives awards system. Market-based instruments for effluents
- Capacity / Capability Building of R & D Member Institutions / technical experts / researchers / law enforcers

**S&T Support for the Enforcement of Guidelines and Standards**
- S&T Capacity for Good Environmental Governance

**S&T Support for Strengthening the R&D of Cost-Effective Waste Management and Treatment Operations & CP to reduce pollution at source**
2011

Updated Inventory of Philippine water bodies, pollution sources, standards and policies

- Baseline data gathering and compilation of major rivers and lakes in MM
- Profiling of Non-Point Sources of Pollution (agricultural, domestic, mining)
- Centralized database on surface water resources for management purposes
- Policy analysis on water
2012

Technology Database /Techno-Demo on Prevention and control of water pollution /
Technology verification of water technologies for SMEs

- DRINK Program
  - Advanced oxidation process on wastewater – DLSU
  - Development of Biological + Ozonation Process – UPD
- Better Mine Program – UP-DMMME and ADMU
- Development of electro-coagulation for PPCPs – DLSU
- Pasig River Stewardship Program – U-Belt Consortium
- Bioremediation Technology – UPLB and Blacksmith
Techno-Demo on Prevention and Control of Water Pollution

- Developed an advanced treatment technology in treating colored wastewater from textile and paper industries using photocatalysis
- Developed Biological + Ozonation Process for wastewater treatment

Scientific Equipment and Laboratory Facilities

- Hot plate Stirrer
- Ultrasonicator
- Oven
- Furnace

Nano-Titania Catalyst Preparation

Prepared Catalyst

Catalyst Characterization

Scientific Equipment and Laboratory Facilities

- SEM-EDX Analyzer
- BET Surface Analyzer
- Chem. Eng. DLSU

Scientific Equipment and Laboratory Facilities

- Photocatalytic decolorization activity testing
- UV-VIS Spectrophotometer

PCIEERD Environment Sector 8/5/2015
Techno-Demo on Prevention and Control of Water Pollution

• BETTER MINING TECHNOLOGIES Program
Techno-Demo on Prevention and Control of Water Pollution

Development of Compact and Efficient Electro-coagulation Treatment System for Pharmaceutical Waste Products and Other Pharmaceutical and Personal Care Product Residues in the treatment of affected water systems
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.
Techno-Demo on Prevention and Control of Water Pollution

Pasig River Stewardship through SCIENCE, TECHNOLOGY & ADVOCACY Program
2013 – 2014

Development of Technologies for Control of Point / Non-Point Sources of Water Pollution

- Technology Transfer of Commerciable Technologies (IEC, publications, patents, operational manual and licensing)
- Capacity / Capability Building of R&D Member Institutions, technical experts / researchers
- Enhancement / Development of Remediation Protocols
- Pilot Demo of Treatment / rehabilitation / remediation technologies (i.e. Biofilm, Prototyping of Water Filter, Kaolinite / High – Grade Ceramic Filters)
- Collaborative research programs among academe, industry, government, civil societies and NGOs
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.
Pilot Demo of Treatment / rehabilitation / remediation

ENHANCED WATER FILTER SYSTEM

➢ simplified, inexpensive and highly efficient clay-based water filter made of red clay and coated with nano-colloidal silver.

➢ a partnership was forged with the National Housing Authority last March 31, 2011 for the use of this system in areas lacking in potable water.
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.
2015

Formulation of Guidelines / Policies / Standards from results of R&D

- Updated/approved / formulation of guidelines / policies / standards (groundwater, sediment, industry Specific Effluent Standards)

- Harmonization of existing laws and policies (ETV, Mutual Recognition Agreement among water quality testing, Institutionalization of incentives awards system, market-based instruments for effluents)

- Capacity / Capability Building of R&D Member Institutions / technical experts / researchers / law enforcers

- Documentation of Success Stories
2016

Upgraded the quality of water ecosystems in the country

- Localized effluent regulation standards
- Adopted / implemented approved policies
Water Environmental Management Program:

*Water Roadmap*
1. Rehabilitation of water bodies to its original state or condition with respect to its intended use
2. Source of livelihood and place of recreation for the people
3. Preparedness to meet the impacts of climate change
4. Developing human resources for the industry and information management and dissemination
5. Strengthening of linkages among academe, industry, government and communities
## PRES. AQUINO’S PRIORITIES

<table>
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<th>Anti-Corruption / Transparent, Accountable, Participatory Governance</th>
<th>Poverty Reduction and Empowerment of the Poor</th>
<th>Rapid Equitable &amp; Sustained Economic Growth</th>
<th>Just, Inclusive &amp; Lasting Peace / Rule of Law</th>
<th>Integrity of Environment / Climate Change Mitigation &amp; Adaptation</th>
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## DOST MANDATE
Provide central direction, leadership and coordination of all and technological efforts and ensure that the results therefrom are geared and utilized in areas of maximum economic and social benefits for the people.

## DOST ‘S PRIORITY PROGRAMS

PCIEERD MAJOR PROGRAMS

1. Support for R&D
2. Human Resource Development
3. Institution Development
4. Support for Technology Transfer and Commercialization
5. Information Dissemination
6. Policy Development and Advocacy
R & D PRIORITIES

Industry

• electronic and semicon industries
• mining and minerals industry
• metals and engineering
• food processing
R & D PRIORITIES

Energy
• alternative sources of energy
• energy efficiency
• transportation
R & D PRIORITIES

EMERGING TECHNOLOGIES

• Nanotechnology/materials science
• Genomics
• Biotechnology
• ICT
• Space Technology applications
R & D PRIORITIES

Special concerns
- Climate change adaptation
- Disaster risk management and mitigation
- Environmental issues
R & D PROJECT EVALUATION CYCLE

Start

Classification / Cross-sectoral

Submission of Proposals

In-house Evaluation

Review and Evaluation of concerned technical division; duplication, priority thrusts, completeness / enhanced proposal / with cooperator or industry partner (1 week)

Passed initial Evaluation?

Yes

Technical Panel Evaluation / Presentation

Technical panel to evaluate the Technical viability, S&T contribution, marketability / economic viability (min. of 3 panel with Mngt. Team)

No

Inform Proponent

Proponent to reply within 2 weeks else, proposal is considered in-active

Proposal Acceptable?

Yes

Revision by Proponent

No

Governance Council Presentation

Revision by Proponent

Proposal Approved?

Yes

Memorandum of Agreement (MOA) Preparation / Project Implementation

No

End
Thank you and good day.