NATIONAL REPORT ON IHP RELATED ACTIVITIES

PHILIPPINES

24TH REGIONAL STEERING COMMITTEE MEETING UNESCO INTERNATIONAL HYDROLOGICAL PROGRAMME FOR SOUTHEAST ASIA AND THE PACIFIC

ULAANBATAAR, MONGOLIA
24 NOVEMBER 2016

Philippine National Committee (Members)

1. Bureau of Soils and Water Management (BSWM), Department of Agriculture (DA)
2. Bureau of Research and Standards (BRS), Department of Public Works and Highways (DPWH)
3. Environmental Management Bureau (EMB), Department of the Environment and Natural Resources (DENR)
4. Flood Control & Sabo Engineering Center (FCSEC), Department of Public Works and Highways (DPWH)
5. Laguna Lake Development Authority (LLDA)
6. Local Water Utilities Administration (LWUA)
7. LPA & Associates (private sector)
8. Metropolitan Waterworks and Sewerage System (MWSS)
9. Mines and Geoscience Bureau (MGB), Department of the Environment and Natural Resources (DENR)
10. National Economic and Development Authority (NEDA)
11. National Hydraulic Research Center, University of the Philippines (UP-NHRC)
12. National Irrigation Administration (NIA)
13. National Mapping and Resource Information Authority (NAMRIA)
14. National Power Corporation (NPC)
15. National Water Resources Board (NWRB)
16. Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), Department of Science and Technology (DOST)
17. Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD), Department of Science and Technology (DOST)
18. Philippine Water Partnership (PWP)
19. Mapua Institute of Technology, School of Civil Engineering, Manila
20. University of Santo Tomas (UST), Department of Civil Engineering (UST), Manila
21. University of the Philippines at Los Baños (UPLB), College of Engineering and Agro-Industrial Technology (UPLB-CEAT), Los Baños, Laguna
22. Ateneo De Manila University (ADMU) - Manila Observatory, Quezon City
23. Central Luzon State University (CLSU), Muñoz, Nueva Ecija
24. De La Salle University (DLSU), Department of Civil Engineering (DLSU), Manila
25. University of San Carlos (USC), Department of Civil Engineering & Water Resources Research Center (USC), Cebu City

Highlights of Activities of Most Active of Philippine National Committee Members

Philippine Water Partnership (PWP)

- Round table discussion on Updating the Philippine Water Code
- Discussions on incorporation of climate change provisions in existing national water policies through legislative forums
- Participation in the Experts' Forum on the Proposed Amendments of the Water Code of the Philippines organized by the National Water Resources Board (NWRB)
- Development of an investment checklist and priority programs of two (2) river basins:
- Capacity building on climate change for personnel of DENR-RBCO and members of the Board of River Basin Organizations (RBOs) to enable them to actively take part in the preparation and review of the river basin master plans.

National Water Resources Board

Reservoir operations studies of Ambuklao, Binga and San Roque of the Upper Agno River Basin (January-November 2016): Involves optimization-simulation model development, optimization-simulation studies with 50 years historical data and with rescaled historical data under 2050 climate change scenario, and, finally development of reservoir operation rule curves based on these optimization-simulation studies.

Assessment and establishment of new streamflow monitoring system in the Upper Agno River and Angat River basin (2016-2017): Components of this project include sampling network design based on sampling error variance and capital and maintenance costs, and the establishment of new or revision of location of old stations based on the assessment of sampling network design.

University of the Philippines - Diliman, Institute of Civil Engineering (UP-ICE) and National Hydraulic Research Center (NHRC)

Coastal Protection, Planning and Engineering: Includes coastal flooding mitigation works of an airport runway in a storm-tracked island, engineering of a sustainable beach pier along a typhoon-prone coast; engineering of a seawall against storm tides and waves along a built-up waterfront.

Review and Value Engineering of the Flood Risk Management Improvement Project of Cagayam de Oro River: Include public consultations on alternative flood management plans, assessments of alternative flood mitigation plans through 2-d model simulations, presentation of flood simulations studies to stakeholders.

Bolinao Pangasinan Environment Study to study on phosphorus as a driver of nitrogen limitation and sustained eutrophication and elucidation of sustained eutrophic conditions in the mariculture areas of Bolinao and Anda, Philippines using biogeochemical indices including oxygen isotope of phosphate.

Assessment Study of Water Quality and Pollution of Rivers in Northern Luzon such as assessment of heavy metal contamination in sediments due to small-scale mining and ecological risk assessment of heavy metals in river sediments and soils around the rivers.

University of the Philippines - Diliman, Department of Geodetic Engineering with its Remote Sensing & Image Processing Laboratory:
DREAM Program (2011-2016) for LIDAR mapping of the Philippines. LIDAR data used to create high resolution up-to-date detailed maps of 18 major river basins for floods and disasters and other applications.

Department of Science and Technology (DOST) and University of the Philippines – Diliman:
Project NOAH: Nationwide Operational Assessment of Hazards that includes rainfall forecasting, river water level forecasting, flood hazard mapping using LIDAR data.

Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA):
Continuing Priority Programs of the Flood Forecasting Branch, (ii) Calibration of the following hydrologic models, to be applied operationally to the various flood forecasting points of the Pampanga, Agno, Bicol and Cagayan River Basins, (iii) Establishment/Enhancement of Community-based Early Warning System, (iv) Conduct of flood hazard mapping, (v) strengthening of the FFWS for dam operation.

Department of Public Works and Highways (DPWH):

Project for Enhancement for Urban Resilient to Climate Change Projects

- Formulation of river basin flood mitigation master plans to flexibly cope with the potential impacts of future climate changes:
- structural measures resilient to climate change
- measures not to cause any casualties, even in the event exceeding the design flood
- Strengthen non-structural measures for climate change
- Strengthen monitoring system for rainfall intensities, river water level, tidal levels and other hydrological factors related to the climate changes
- Promotion of Rainwater Harvesting
- Retarding basins or ponds for flood control
- Rainwater collector systems in public school buildings for water supply and flood control
- Construction of Evacuation Centers

Last Slide. Thank you very much.

NATIONAL REPORT ON IHP RELATED ACTIVITIES

PHILIPPINES

24th Regional Steering Committee Meeting
UNESCO International Hydrological Programme
(UNESCO IHP)
for Southeast Asia and the Pacific
held at Ulaanbataar, Mongolia
24 November 2016

OCTOBER 2016

Philippine National Committee
for the
UNESCO International Hydrological Programme
Republic of the Philippines

1. ACTIVITIES UNDERTAKEN IN THE PERIOD OCTOBER 2015- SEPTEMBER 2016

1.1 Meetings of the IHP National Committee

1.1.1 Decisions regarding the composition of the IHP National Committee

The institutional members of the Philippine National Committee for the UNESCO-IHP are agencies and organizations (public and private) which are mandated with, and are engaged in research, development and management activities in the water sector:

Bureau of Soils and Water Management (BSWM), Department of Agriculture (DA)
Bureau of Research and Standards (BRS), Department of Public Works and Highways (DPWH)
Environmental Management Bureau (EMB), Department of the Environment and Natural Resources (DENR)
Flood Control & Sabo Engineering Center (FCSEC), Department of Public Works and Highways (DPWH)
Laguna Lake Development Authority (LLDA)
Local Water Utilities Administration (LWUA)
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National Mapping and Resource Information Authority (NAMRIA)
National Power Corporation (NPC)
National Water Resources Board (NWRB)
Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), Department of Science and Technology (DOST)
Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD), Department of Science and Technology (DOST)
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Ateneo De Manila University (ADMU) - Manila Observatory, Quezon City
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De La Salle University (DLSU), Department of Civil Engineering (DLSU), Manila
University of San Carlos (USC), Department of Civil Engineering & Water Resources Research Center (USC), Cebu City

Officers of the Philippine National Committee for UNESCO-IHP:

Chairman: Leonardo Q. Liongson (UP Diliman)
Treasurer: Lino P. Aldovino (LPA & Associates)
Secretariat: NHRC and PWP staff (on secondment)

Agency Lead Representatives:
Leonor Cleofas, MWSS
Virgilio Basa, NAMRIA
Antonio Morano, DPWH-BRS
Resito David, DPWH-FCSEC
Christopher Ilagan, MWCI
Lennie Santos-Borja, LLDA
Rodora Gamboa, PWP

Finance Sub-Committee members:
Leonor Cleofas, MWSS
Dolores Hipolito, DPWH-FCSEC
Ms. Lyn Almario, MWCI
Francisco Arellano, MWSI
Romualdo Beltran, NPC
Lino P. Aldovino, PNC-UNESCO-IHP Treasurer

Technical Sub-Committee members::
Guillermo Q. Tabios III, UP-NHRC & I.C.E.
Roberto S. Soriano, UP I.C.E.
Romualdo Beltran, NPC
Samuel Contreras, BSWM
Emiterio Hernandez, LLDA
Milo Landicho, NIA
Roy Badilla, PAGASA

Program Sub-Committee members::
Peter Paul Castro, UP- NHRC & I.C.E. Dept.
Maria Antonia Tanchuling, UP- En.E. Program
Susan Abano, NWRB
Margarette Bautista, PAGASA
Isidora Camaya, NIA
Efren Carandang, NAMRIA
Maristel Espiritu, LLDA
George Estioko, NWRB
Myrna Lansangam, LWUA
Nicanor Mendoza, DENR-EMB
Jesusa Roque, NWRB
Teresita Sandoval, BSWM

Status of IHP activities

1.1 The Philippines Country Priorities has always been in response to the UNESCO-IHP Paris office as well as Jakarta Office. Since the

1.2 Activities at national level in the framework of the IHP

1.2.1 National/local scientific and technical meetings

Philippine Water Partnership (PWP),

- *Round table discussion on Updating the Philippine Water Code:* The activity under this Work Package is entitled "Updating of the 1976 Water Code of the Philippines and its Implementing Rules and Regulations (IRR)". This program supports the National Government's effort to update the Water Code, especially in the light of the major climate-induced calamities the country has been experiencing in more recent years. Series of discussions with the Project Team and stakeholders has been conducted in late 2015 and continued until mid-2016. Final revisions and discussions will be held before the end of 2016.
- *Incorporation of climate change provisions in existing national water policies:*
    - Final version of the draft bill has been prepared integrating all relevant comments generated from the multi-stakeholder consultations
    - Participation in the Experts' Forum on the Proposed Amendments of the Water Code of the Philippines organized by the National Water Resources Board (NWRB)
    - Finalize the communication plan indicating strategies and champions identified to ensure that the proposed bill is in the priority agenda of Congress
    - Prepare a brief profile on the identified potential champions / endorsers
    - Identify and liase with concerned committee at the House of Representatives (HOR) and Senate as potential Bill
- *Development of an investment checklist and priority programs of two (2) river basins:*
    - Capacity building on climate change for personnel of DENR-RBCO and members of the Board of River Basin Organizations (RBOs) to enable them to actively take part in the preparation and review of the river basin master plans.
    - Identify potential climate change related infrastructure in the masterplan.
    - Develop / prepare concept note for the planned regional workshop / consultation on the development of investment checklist.
- *Plan Activities for 2017:*
    - Strategic Goal 1 - Catalyze change in policy and practice
        - Outcome Challenge: CWP Incorporate water security in their IWRM and climate change-related policies and plans
        - Activity: Understanding Water and Food Nexus to Improve Water Security: The Philippine Context
    - Strategic Goal 2 - Generate and Communicate knowledge
        - Outcome Challenge: Stakeholders gain improved political awareness and commitment to deliver water security with demonstrable follow-up commitments and actions
        - Activity: Information, Education and Communication (IEC) campaign on water security

1.2.2 Participation in IHP Steering Committees/Working Groups

Country Representative, Attended 23rd Regional Regional Steering Committee Meeting of the UNESCO International Hydrological Programme for Southeast Asia and Pacific (UNESCO-IHP SEAP) and the International Conference at Medan, Indonesia, October 2015.

1.2.3 Research/applied projects supported or sponsored

National Water Resources Board

Reservoir operations studies of Ambuklao, Binga and San Roque of the Upper Agno River Basin (January-November 2016): Involves optimization-simulation model development, optimization-simulation studies with 50 years historical data and with rescaled historical data under 2050 climate change scenario, and, finally development of reservoir operation rule curves based on these optimization-simulation studies.

Assessment and establishment of new streamflow monitoring system in the Upper Agno River and Angat River basin (2016-2017): Components of this project include sampling network design based on sampling error variance and capital and maintenance costs, and the establishment of new or revision of location of old stations based on the assessment of sampling network design.

University of the Philippines - Diliman, Institute of Civil Engineering (UP-ICE) and National Hydraulic Research Center (NHRC)

Coastal Protection and Seawall at Roxas Blvd. Manila Project with Department of Public Works (Dr. Eric Cruz, principal investigator): Components include (i) Planning and engineering of coastal flooding mitigation works of an airport runway in a storm-tracked island, (ii) Preliminary engineering of a sustainable beach pier along a typhoon-prone coast; (iii) Coastal development planning for tsunami exposure risk – theory and project applications; (iv) Preliminary engineering of a seawall against storm tides and waves along a built-up waterfront.

Review and Value Engineering of the Flood Risk Management Improvement Project of Cagayam de Oro River (Dr. Guillermo Q. Tabios III, principal investigator) July 2015-July 2016.: Project components include public consultations on alternative flood management plans, assessments of alternative flood mitigation plans through 2-d model simulations, presentation of flood simulations studies to stakeholders, finalize simulation and assessment studies after accommodating final concerns and issues of alternative flood mitigation plans and recommend flood mitigation plans to the decision maker (essentially the Department of Public Highways, Republic of the Philippines.

Bolinao Pangasinan Environment Study (Dr. Eugene Herrera, principal investigator): Component of this project include, (1) Study on Phosphorus as a Driver of Nitrogen Limitation and Sustained Eutrophication; (ii) Elucidation of sustained eutrophic conditions in the mariculture areas of Bolinao and Anda, Philippines using biogeochemical indices including oxygen isotope of phosphate,

Assessment Study of Water Quality and Pollution of Rivers in Northern Luzon (Dr. August Resurreccion, principal investigator, 2016): Assessments of Spatial and Seasonal Variation of Water Quality Parameters in Surface Water of Bued River and Identification of Mobility Indices and Assessment of Heavy Metal Contamination in Sediments nearby Small-Scale Mining Sites within Ambalanga River and the Ecological Risk Assessment of Heavy Metals in Soils, Water and River Sediments in and around Bued River.

University of the Philippines - Diliman, Department of Geodetic Engineering (UP-GE Dept) and Remote Sensing & Image Processing Laboratory

The DREAM Program (2011-2016) - The DREAM Program is a research and development project supported by DOST. It uses state-of–the-art technology in particular LiDAR to create high resolution up-to-date detailed maps of 17 major river basins. The DREAM Program is geared towards the generation of information related to floods and disasters as well as other applications of this detailed information for various industry sectors, government agencies, academe, and other stakeholders. The Workshop was a venue to understand the acquisition strategy, the characteristics of the data and prospects for research and science applications.

Department of Science and Technology (DOST) and University of the Philippines - Diliman (UPD).

Nationwide Operational Assessment of Hazards (Project NOAH)
Executive mission: to put in place a responsive program for:

(a) Flood mitigation, specifically targeting a 6 hour flood early warning system for communities along 18 major river systems;
(b) Improving communications for weather and other hazards

Activities:

(a) Integrated Flood Early Warning System Rollout 2012
(b) Airborne LIDAR survey: GPS, IMU, Laser Rangefinder
(c) Precision watershed surveying for modeling of watersheds and flood zones
(d) Accomplishments - Purchase, Inspection and Delivery of LiDAR Equipment, Training Lease of Aircrafts
(e) Advanced Works
    Establishment/Relocation of GCPs for base stations
    At least two base stations are needed for LiDAR Survey
    Reconnaissance and Preparation for LiDAR survey
    Flood Plain Extent Delineation
    Development of tools for DEM correction
    Mobile Lidar Processing
    Integration of Satellite, Terrestrial and Bathymetric Data
    Automated 6-Hour prediction of Water Level in Montalban
    Marikina Watershed Modeling
    Rapid Flood Simulation for Flood Events

Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA),

Continuing Priority Programs of the Flood Forecasting Branch

- Upgrading of *Flood Forecasting Operations.*
- Establishment of *Communication Network Thru SMS Link* Between PAGASA Weather and Flood Forecasting Center (WFFC) Bldg. (Quezon City) and Magat Dam in Isabela.
- Calibration of the following hydrologic models, to be applied operationally to the various flood forecasting points of the Pampanga, Agno, Bicol and Cagayan River Basins: MLRegression, Storage Function and Sacramento Model.

Establishment/Enhancement of *Community-based Early Warning System(CBEWS)* under the READY Project (UNDP), covering the following Provinces: Laguna, Ilocos Sur, Zambales, Cavite, Bohol

Conduct of *flood hazard mapping* (READY Project) in the following provinces: Ilocos Sur, Laguna, Cavite, Pampanga, Iloilo.

Improvement of the *Flood Forecasting and Warning System (FFWS)* of the Pampanga and Agno River Basins, to include the ff. activities:

Construction of the Pampanga River Flood Forecasting Center.

Implementation of JICA project in the Pampanga and Agno river basins

Strengthening of the *FFWS for Dam Operation*, including Magat Dam through the improvement of dam facilities and conduct of training.

Establishment of *Early Warning System for disaster mitigation* in the south (Iloilo) under the Korean Government - project began March 2008.

1.2.4 Collaboration with other national and international organizations and/or programmes

No additional information is available.

1.2.5 Other Initiatives

National Water Resources Board (NWRB)

Reforms in the Water Sector - Philippine Development Plan (2011-2016)

Strategy: Practice IWRM in the Water Sector,

- Whole Water Cycle Management and River Basin Approach

On-going Programs:

- Groundwater Resource Vulnerability
- Assessment using Isotope Techniques in Regions 2 and 10 (MGB/NWRB/PNRI- IAEA Funding)
- Inventory of water users in Region 2 -(IAEA)
- Groundwater Management Plan in Metro Iloilo including establishment of monitoring network (Government Funding)
- Preparation of Localized Customer Service Codes in CPC grantees
- Improvement of the water allocation system using Climate Change Impact Model intended for groundwater regulation that considers climate change scenarios
- Data collection and sampling of the groundwater data in Manila Bay Coastal Province (DENR-MBCO)
- Amendment of the Water Code (PD 1067) to be responsive to current issues and challenges and operationalize IWRM.

Proposed Programs:

- Establishment of an Integrated 3D GIS Based Water Resources Management Information System in the Provinces of Pampanga and

National Initiatives

- Legislative :Proposed Water Regulatory Commission and Water Reform Act
- Executive: Creation of a National Water Resources Management Office to address institutional fragmentation and improved science-based decision making.

Metropolitan Waterworks and Sewerage System (MWSS)

Water Supply Projects

- New CentennialWater Supply Project 2013 - 2017 Ppublic-Private Partnership (PPP)

Construction of a new water source in order to meet the increasing water demand. Also intended to provide a redundant dam for Metro Manila's domestic water supply.

- Bulacan BulkWater Supply Project 2014 -2017 PPP
Construction of water distribution system that will provide bulk water supply to the water districts of the Province of Bulacan
- 15 CMS Water Source Development Project 2014 -2017 PPP /Office of Development Assistance (ODA)

Department of Interior and Local Government (DILG)

Current Initiatives & Programs
- MDGF-Enhancing Access to & Provision of Water Services with the Active Participation of the Poor
aims to enhance the provision of and access to water services in 36 waterless communities through a combination of improved policy environment and increases local capacities.
(a Joint Program of the Government and the United Nations, with funding from the Spanish government under the MDG Achievement Fund Strategies works with local governments and communities empowers the vulnerable and disadvantaged inspires commitment, support and partnerships)
- Sound Practices and Knowledge Products
Human rights-based approach to WATSAN development planning.
Godparent schne for knowledge and skills transfer
Localized customer service code for Level II systems
Fact sheets, Publications, Brochures
Local Water Governance Toolbox - Physical and Web-based Knowledge Products
- Sagana at Ligtas na Tubig sa Lahat Program- 455 Waterless Municipalities 2011-2016
Bottom-Up Planning & Budgeting Program 609 Focus Areas 2013-2016
- Sagana at Ligtas na Tubig sa Lahat Program (SALINTUBIG)
A pro-poor initiative designed to provide water supply systems for waterless municipalities and intend to enhance/improve local capacities of
LGUs and Water Service Providers in planning, implementation and operation and management of water supply facilities in a sustainable manner;
Target Beneficiaries - 455 waterless municipalities, waterless barangays, resettlement / relocation sites, lying-in clinics, RHUs and BEMONCs
- Program Components
Capacity Development
Training and Workshops
Studies
OJT
Mentoring and Coaching
Infrastructure Investment
Construction
Rehabilitation
Expansion
Upgrading

National Irrigation Administration

- Construction of Balog-balog Single High Dam (650 MCM storage, 1.3 dam crest length with 20 CMS and 60 MW hydropower plant at 95% reliability.

Department of Public Works and Highways (DPWH)

Short-listed Structural Mitigation Measures

Pasig-Marikina River Improvement (RI) + Dam
Meycauayan RI
Malabon-Tullahan RI
South Parañaque – Las Piñas RI
East Mangahan Floodway (Cainta & Taytay RIs)
West Laguna Lakeshore Land Raising
Land Raising for Small Cities around Laguna Lakeshore
Improvement of the Inflow Rivers to Laguna Lake
Manila Core Area Drainage Improvement
West Mangahan Area Drainage Improvement
Valenzuela, Obando and Meycauayan (VOM) Improve.(to be studied further)

Proposed Non-Structural Measures

Strengthening of the Flood Information and Warning System (FIWS)
Effective Flood Control Operation and Warning System (EFCOS) improvement
New telemetric rainfall and water level gauging stations

Capacity Building for Strengthening Community-based FRM

Update and implement Information and Education Campaign (IEC) programs
Rainfall and water level monitoring by Barangay Disaster Risk Reduction and Management Councils (BDRRMCs)
Construction of evacuation routes and temporary evacuation centers

Improvement of Management Information System (MIS) for Disaster Risk Management

Improvement and development of MIS
Capacity building

Reforestation and Watershed Management

Fort Bonifacio Retarding Tank - a model urban rainwater catchment system.

Estero de Paco Development - dredging, riprap, slope protection and phytoremediation, facelifting of residential homes, walkway/linear park

National Sewerage and Septage Management Program (NSSMP)

Project Description -

Increase number of sewerage and septage management projects (outside Metro Manila) by 2020

Septage Management Targets

All LGUs have septage management programs serving their urban barangays
Capital costs per project range from P4-71 M

Sewerage Targets

17 HUCs outside of MM serving 50% of urban barangays; to be done in 2 phases of 25% each (interceptor type systems)
Capital costs average P410 million/project/phase

National Strategy

Facilitate a bottom-up, demand-driven project development process by providing local implementers with training, tools and financial incentives, including NG cost share for sewerage.
DPWH (in coordination with DOH) – conduct a high-impact nationwide training and promotion campaign

Integral component of the Sanitation Roadmap and National Sustainable Sanitation Plan, broader, over-arching frameworks (needed water and sanitation sector reforms are being developed by other groups)

Local Strategy

LGUs, water districts, and small water service providers use the NSSMP Guide for Local Implementers to develop projects

Projects will include operational guidelines, ordinances, enforcement, user fees, promotion campaigns

LGUs encouraged to share capital costs with WDs and/or bid out contracts to the private sector for septage collection and treatment

DENR regional offices continue to lead the creation of WQMAs and Funds

Flood Control & Sabo Engineering Center (FCSEC), Department of Public Works and Highways (DPWH), *Project for Enhancement of Capabilities in Flood Control and Sabo Engineering of the DPWH*, JICA.

Urban Resilient to Climate Change Projects

- Formulation of river basin flood mitigation master plans to flexibly cope with the potential impacts of future climate changes:
- structural measures resilient to climate change
- measures not to cause any casualties, even in the event exceeding the design flood
- Strengthen non-structural measures for climate change
- Strengthen monitoring system for rainfall intensities, river water level, tidal levels and other hydrological factors related to the climate changes
- Promotion of Rainwater Harvesting
- Retarding basins or ponds for flood control
- Rainwater collector systems in public school buildings for water supply and flood control
- Construction of Evacuation Centers

Bureau of Soils and Water Management (BSWM)

Bureau of Soils and Water Management (BSWM), *Drought Mitigation Measures.*

Bureau of Soils and Water Management (BSWM), *Integrated Watershed Management for Sustainable Soil and Water Resources Management of the Inabanga Watershed, Bohol Island, Philippines.*

Bureau of Soils and Water Management (BSWM), *Rainwater Harvesting.*

Bureau of Soils and Water Management (BSWM), *Rehabilitation/Upgrading of Regional and Provincial Soil and Water Analyses.*

Bureau of Soils and Water Management (BSWM), *Small Water Impounding Projects (SWIP).*

Flood Control & Sabo Engineering Center (FCSEC), Department of Public Works and Highways (DPWH), *Project for Enhancement of Capabilities in Flood Control and Sabo Engineering of the DPWH*, JICA.

Laguna Lake Development Authority (LLDA), *Environmental User Fee Program* (as centerpiece of Environmental Management Program).

Laguna Lake Development Authority (LLDA), *River Rehabilitation Program* .

Laguna Lake Development Authority (LLDA), *Lake Fishery Management Program.*

Laguna Lake Development Authority (LLDA), *Laguna de Bay Shoreland Management*.

1.3 Educational and training courses

1.3.1 Contribution to IHP Courses

None

1.3.2 Organization of specific courses

None

1.3.3 Participation in IHP courses

Papers and Publications

None.

1.4 Participation in international scientific meeting

7th International Conference on Water Resources and Environment Research (ICWRER2016), Kyoto, Japan, June 6-9 2016

1.4.1 Meetings hosted by the country

International Conference on “Megacities, Water and Climate Change” hosted Waterlinks 2016 at Dusit Hotel, Makati City, October 5, 2016.
3rd International River Summit, "Megacities, Water and Climate Change ", to be hosted by the local government of Cagayan de Oro City, Philippines, 24-25 November 2016.

1.4.2 Participation in meetings abroad

No additional information is available.

1.5 Other activities at regional level

1.5.1 Institutional relations /co-operation

No complete information is available.

1.5.2 Completed and ongoing scientific projects

No additional information is available.

2.0 Future Activities

2.1 Activities planned for 2015-2016

Mapping of RSC Future Projects against IHP VIII "Water Security: Responses to Local, Regional and Global Challenges (2014-2021).

Participation in currently RSC-supported programs and activities such as APFRIEND, Catalogue of Rivers for SEAP, FFWS and the IHP training courses conducted by the Kyoto University.

Participation in the review of cross-cutting programs such as FRIEND, HELP and IWRM.

Evaluation by the national committee of the proposed IHP-VIII Themes, Focal Areas and Activities.

2.2 Activities in the long term

Concerted efforts and initiatives for research and extension activities in flood management, water-related multi-hazard risk assessment and mitigation, climate change mitigation and adaptation, and sustainable development in the context of integrated water resources management (IWRM).

Continued support of, and participation in the UNESCO-IHP in general and the RSC in particular, in all present and future: activities: APFRIEND (rainfall IDF and flood frequency studies), Catalogue of Rivers for SEAP, DRH, IHP training courses conducted by host countries, and joint hydrologic training courses and researches among member countries.