100M

Mountain Engineering

Establishment of

Center Towards

Infrastructure and

Sustainable

Upland Water

(BOONDOCK)

Integrated water

basin approach)

Smart water meter

Water for Tourism

management (river

Security

resource

Updated as of 10 November 2023

Needs for Government Facilities and Laboratories

- ■Mountain engineering center towards sustainable infrastructure and upland water security program (BOONDOCK)
- □Smart water infrastructure and management R&D Center (SWIM)
- □Community-based water harvesting technologies program
- □Advancement of O&M for water supply facilities

Needs for Human Resource:

- ☐ Training on modelling software ☐ Training on data analytics
- ☐ Training on sensor/system development/operation and maintenance

R&D Program/Project Needs

- ■Water for tourism
- ■Smart water monitoring and harvesting technologies
- ■Water security
- □Integrated water resource
- management
- □Comprehensive water resourcé management
- □Dam/watershed/reservoir S&T management strategy

Thematic Areas

- Decision support tools
- Localized sensor/monitoring system and technologies
- Infrastructure intervention

 UK-PH Water security program

105M

- Establishment of Smart water infrastructure and management **R&D** Center (SWIM)

2021

Decision support tool

for water management

management plan and

monitoring system

· Automated real-time

dams and reservoir

water supply using

artificial intelligence

monitoring system for

Forecasting models for

Groundwater

2022

water storage

· Automated water

control systems

Decision support

Integrated water

guidelines for

tourist islands and

measurement and

Urban storm

for dams

tool for water

management

planning

river basin

100M

water resource

management

Infrastructures

Sedimentation

monitoring and

mitigation system

and technologies

strategy

System

Green

- Comprehensive
- Dam/watershed/i eservoir S&T management
 - · Development of drought and systems and

100M

- · Communitybased water harvesting technologies
- **Smart farming** innovative water management systems
- flood mitigation technologies

2024

2023

- Smart flood monitoring remediation and mitigation
- Science-based Assessment. Design and Development of Water
- Resources Projects and Interventions

 Innovative dam/watershed/r eservoir

management

- and technologies Science-based · Water supply and **Upland River and** demand monitoring Spring Water and modelling Assessment and systems and
- Water auditing/accounti Established green ng Management Advanced
- systems/technologie modeling softwar s and guidelines e and Established intervention of sedimentation saltwater monitoring and intrusion mitigation system and technologies

Advancement O&M for water supply

facilities

250M

Nationwide

e water

resource

assessment

2026

Integrated

support for NIA and **NWRB** S&T Support for Water

advancement and

Possible Solutions

100M

mitigation systems and

emerging contaminant

Development of

technologies

Groundwater

SS&T

investigation for

drought and flood

Infra

2025

technologies

infrastructure

- community based Hybrid water management harvesting system
- Artificial Established rainfall generating t comprehensive echnologies water resource Innovative water assessment tools
 - saving/recyling technologies and system Assessment,
 - sourcing, monitoring and intervention for emerging contaminants

comprehensiv 250M Nationwide comprehensive water resource assessment

200M

 Nationwide comprehensive water resource assessment

2028

Vision

S&T based management for sustainable water resources

2027

- Saltwater intrusion intervention Recharge wells
- (recharge canals) Physical sub-surface barriers
- Smart systems for water resource monitoring
- Modular water desalination system
- Smart water supply facilities
- Flood protection and defense system technologies
- Science-based design and demonstration of water infrastructures

- · Integration of developed technologies for smart cities
- Standard designs for effective water resource management

NAST Foresight

- Small-scale water cisterns to collect rainwater households
- Water reservoirs through groundwater aquifers with infiltration galleries at strategic areas
- · Infiltration galleries build around houses to deep-percolate into the ground subsurface, minimizing flood risk in case storage tanks for rainfall are full

Difference

Cost-effective and localized tools, methodologies, and technologies





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R&D Technologies	Project Title	l	Chahua					
		2021	2022	2023	2024	2025	2026	─ Status
Establishment of Smart Water Infrastructure and Management R&D Center (SWIM R&D Center)	SWIM P1: SMART WATER RESOURCES PLANNING AND MONITORING	25,411	7,087	5,705	_	-	-	On- going
	SWIM P2: Integrated assessment and analysis of hydraulic assets for sustainable and resilient flood control infrastructure	10,418	3,014	3,526	_	-	-	On- going
	SWIM P3GIS-Based Decision Support Tool in Managing Urban Water Infrastructure with Stormwater Intervention for Smart Cities: A Case for Cauayan CityElevated	9,514	3,255	_	_	-	-	On- going
	SWIM P4: Smart Water Control Infrastructures for Effective Irrigation Management	5,549	3,785					On- going
Water for Tourism	Boracay P1: Water for Tourism: A Science-Based Water Resource Monitoring and Management Planning Guide for Tourist Destinations in the Philippines	7,681	3,132					Compl eted
	Boracay P2: Hydrological Characterization of Boracay Island's Groundwater System and Nabaoy Watershed using Isotope and Nuclear-	4,211	1,081					Compl eted
Republic of the F	Philippines						20 mm	

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

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R&D Technologies	Project Title	Budget Allocation ('000)						
		2021	2022	2023	2024	2025	2026	Status
Sedimentation monitoring and mitigation system and Technologies	SEDI: Sediment Evaluation and Development of Intervention				9,394	7,088		New
Establishment of Mountain Engineering Center Towards Sustainable Infrastructure	Boondock P2: Improving the Livelihood of MSMEs thru Cable Supported Water and Transport Infrastructure	7,863	6,788					On- going
and Upland Water Security	Boondock P4:Development of Artificial Groundwater Recharge Facility for Drought and Flooding Mitigation	4,463	3,066					On- going







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R&D Technologies	Project Title		01.1					
		2021	2022	2023	2024	2025	2026	Status
Integrated Water Resource Management	IFWARM: Integrated Flood and Water Resources Management in the Asean Basin for Sustainable Development	7,505	7,268					Completed
Smart Water Meter	IOT: IoT (Internet of Tubig) : Development of smart water meter wireless network	4,695						Completed
Green Infrastructure System	Rainstech: Rainfall and Stormwater Runoff Management Technology for Tropical Catchment (RainS- TECH)			9,700	9,084	8,225		On-going
	Batanes 1: Structural Strength of a Smart Engineered Greenhouse Across Varying Wind Loads in the Islands of Batanes				8,341	4,314		New
	Batanes 2: Science and Technology-Based Interventions for Sustainable Tourism in Batanes				15,481	6,793		New
Dam/watershed/Re servoir S&T Management	Darma: Dam Risk Management Decision Support Tool			7,689	4,954			On-going
Strategy Republic of the Philip	nines	9						* * *

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R&D Technologies	Project Title	Budget Allocation ('000)						
		2021	2022	2023	2024	2025	2026	Status
Development of drought and flood mitigation systems and technologies	Cloud P1:							
	Cloud P2:							
Groundwater investigation for emerging contaminants	LASER: Luzon Arsenic Source Tracing and Extent Mapping with Risk Mitigation and Engineering Intervention			10,731	8,596			On-going



