



PHILIPPINES

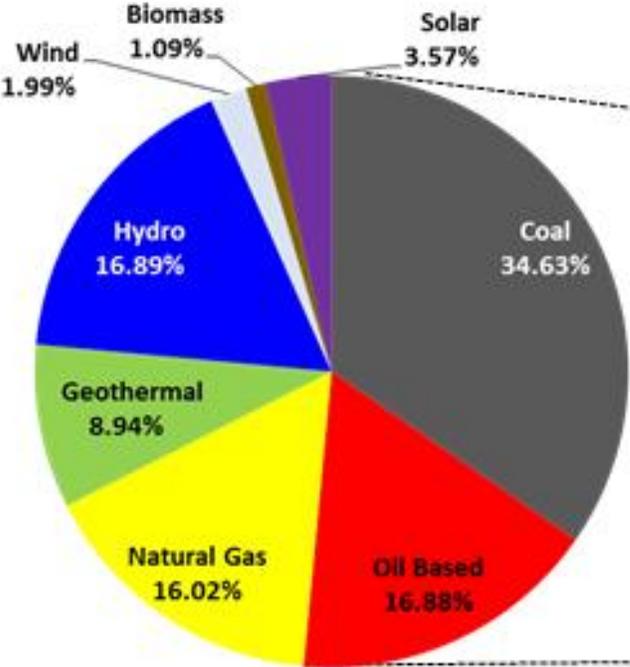
Country Report



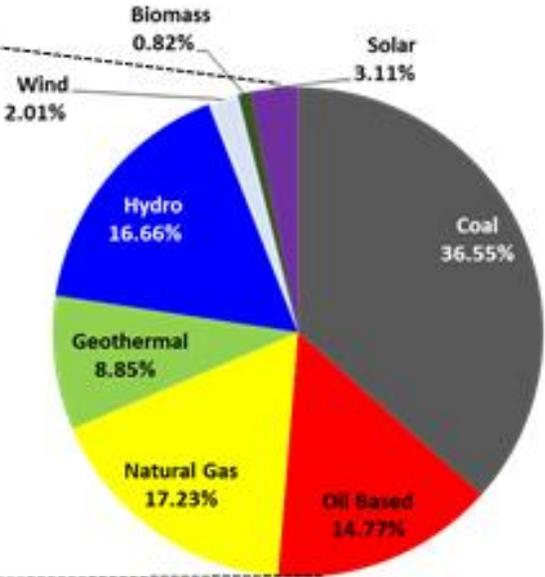
Dr. Carlo A. Arcilla
Director

Philippine Nuclear Research Institute

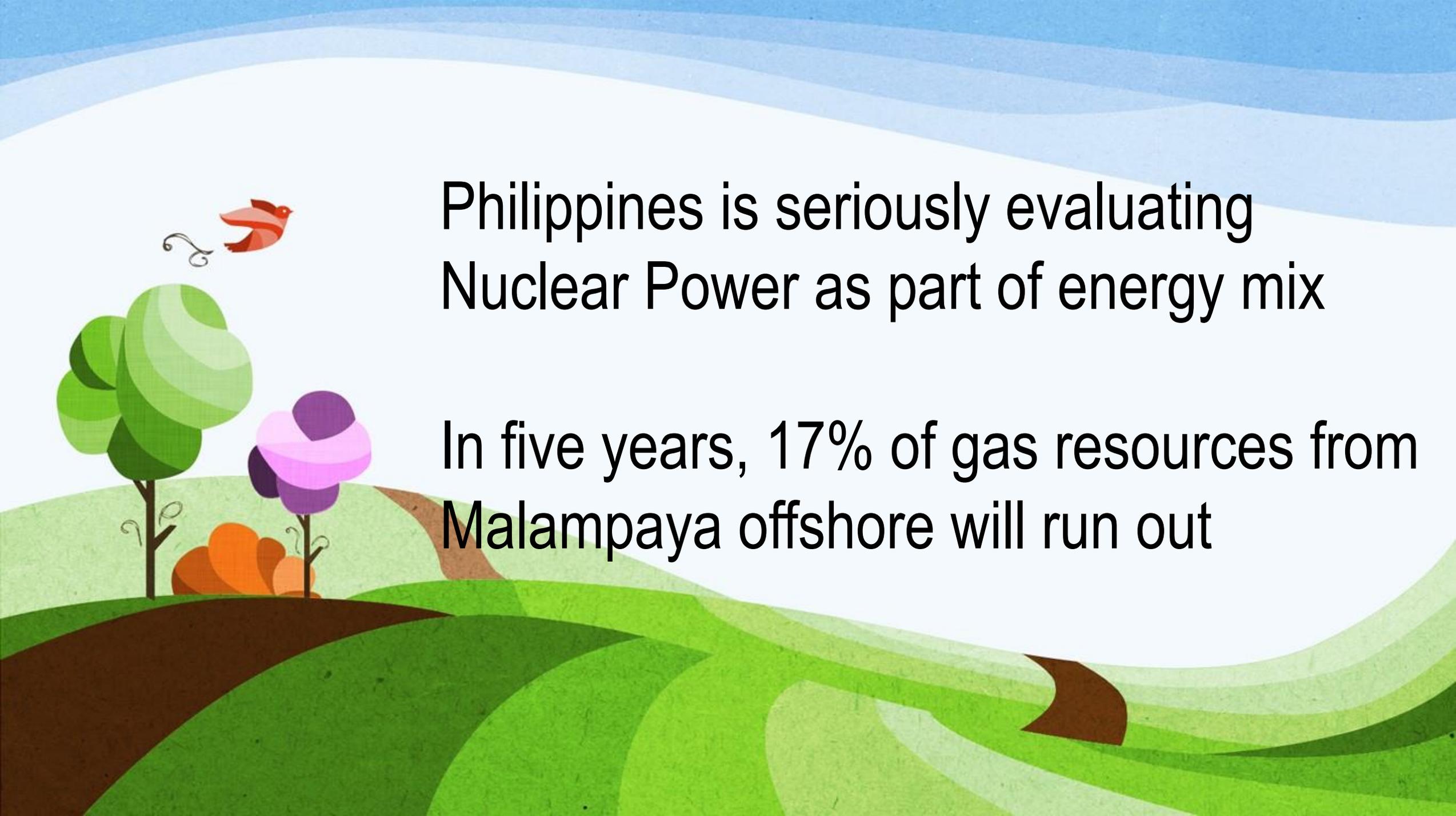
Electricity Supply



Installed Capacity = 21,423 MW



Dependable Capacity = 19,097 MW



Philippines is seriously evaluating
Nuclear Power as part of energy mix

In five years, 17% of gas resources from
Malampaya offshore will run out

A stylized, colorful illustration of a landscape. The foreground features rolling green hills with a dark brown path. On the left, there is a green tree, a purple flower, and an orange flower. A red bird is flying in the sky. The background consists of light blue and white wavy bands representing hills or clouds.

Philippines is very good with renewables:

No. 2 in world in geothermal

Hydropower

Solar power already in mix

But: one of highest costs in consumer power

In the world



With help of Rosatom and Korea, we are
Looking if built 640 MW Bataan

 Nuclear Power Plant can still be rehabilitated

By December 2017, Philippines will have
A Policy Decision wether to consider nuclear
Power in the energy mix.



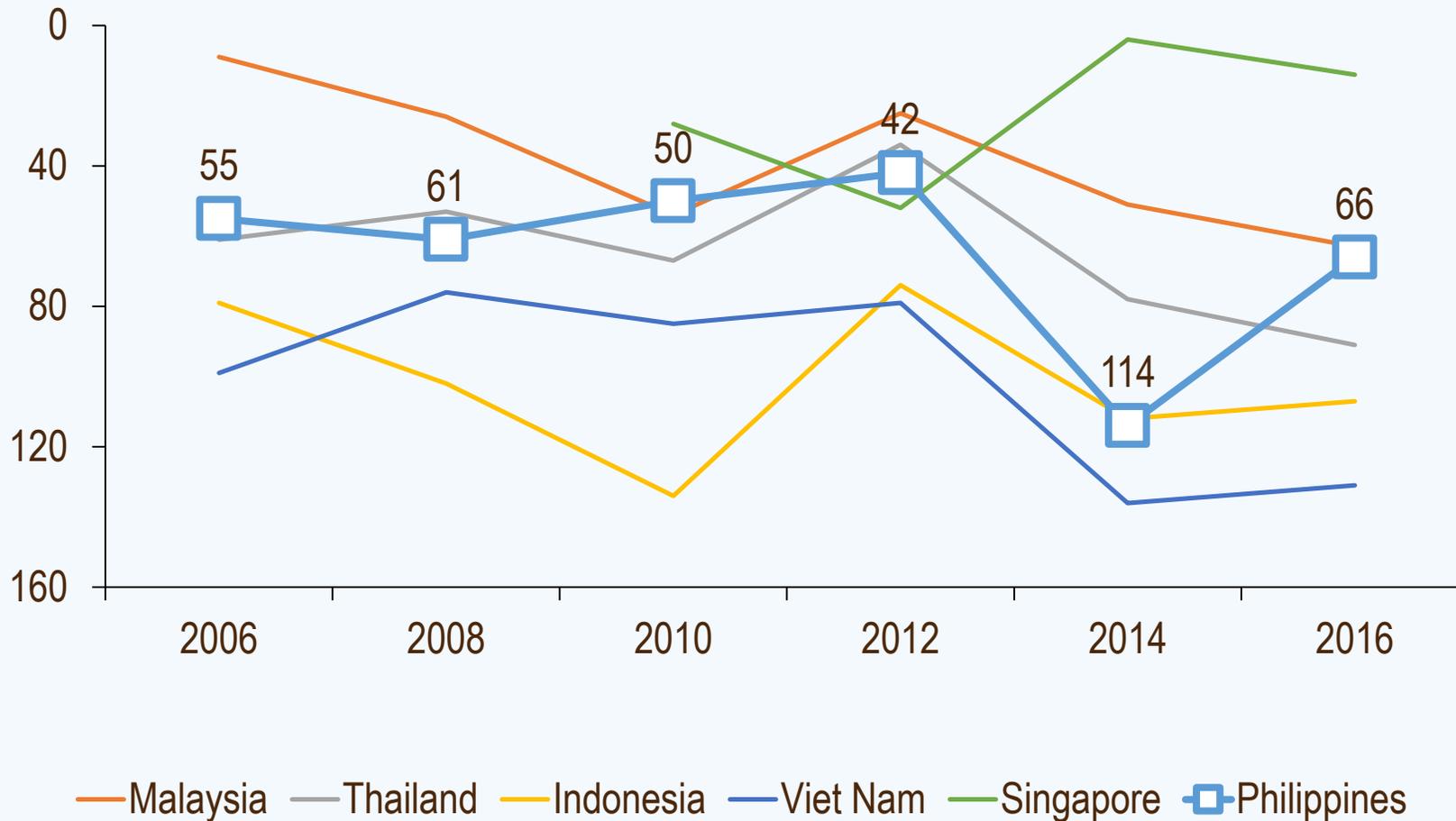
PHILIPPINES:

**Ensuring Ecological Integrity,
Clean and Healthy Environment**

From the Philippine Development Plan 2017-2022



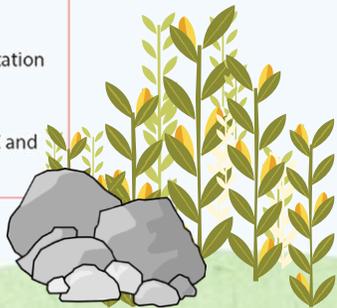
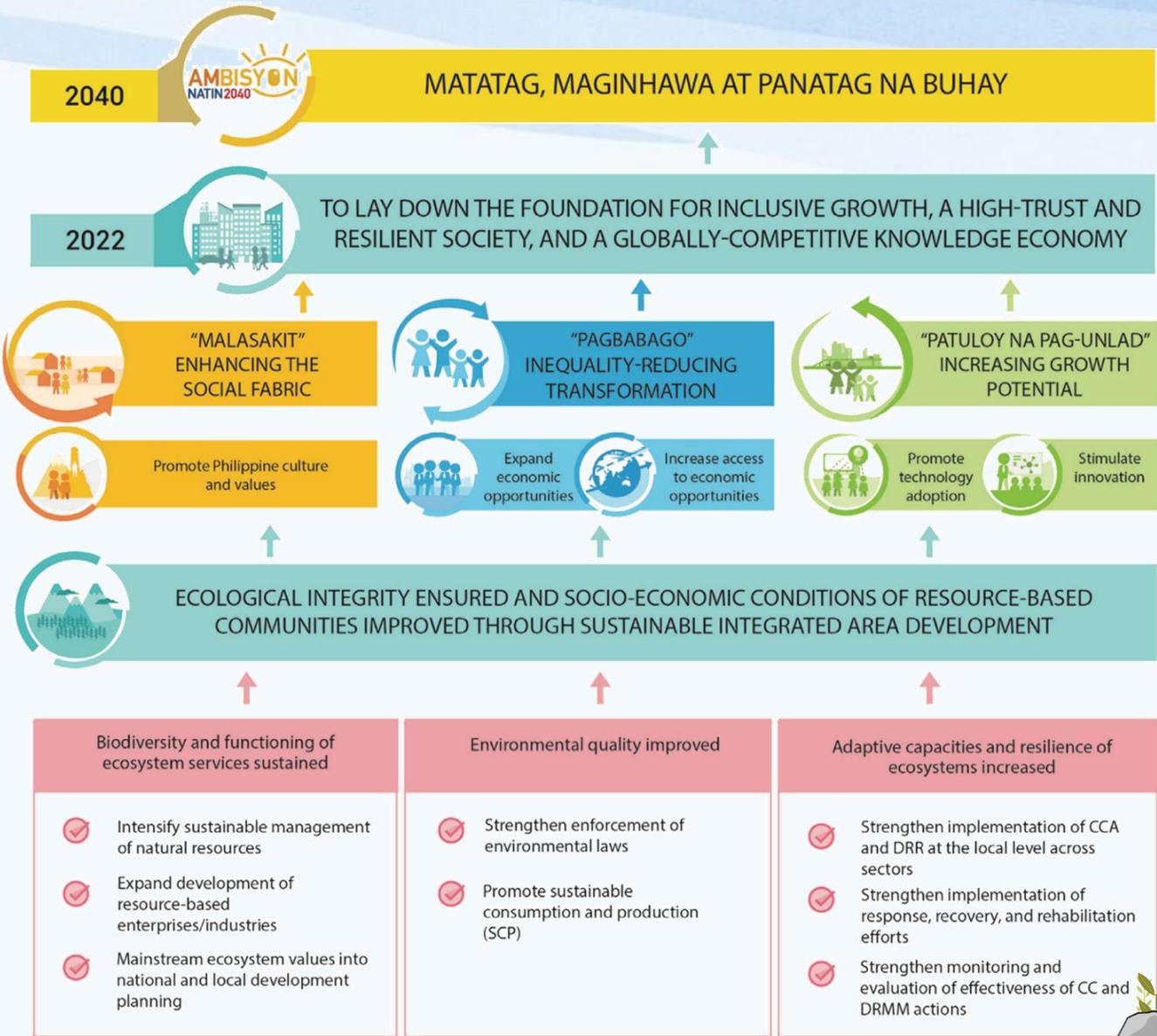
Environmental Performance Index, EPI (ASEAN-6)



Over the past decade, the country's EPI ranking dropped ↓ from 55th in 2006 to 114th in 2014, but recovered ↑ to rank 66 out of 180 countries in 2016*



Strategy Framework to Ensure Ecological Integrity, Clean and Healthy Environment (2017-2022)





Nuclear S&T Applications in Environmental Research

Climate change-resilient agriculture
through mutation breeding,
isotope-based soil, nutrient and water
management,
plant growth promoter from radiation-
modified carrageenan



Isotope hydrology applications in comprehensive groundwater assessment

- Declaration by the National Water Resources Board for the integration of isotope techniques in the Philippine national groundwater assessment program



Isotope hydrology applications in comprehensive groundwater assessment

- Training on modern methods of water resources assessment and management of personnel from national agencies and local water districts as well as scientists from the academe



Air pollution
characterization
and source
apportionment
using nuclear
analytical
techniques



Isotope-based **receptor binding assay** technology for paralytic shellfish poisoning (caused by **harmful algal blooms** or **HABs**), transferred to the Philippine regulatory body—the **Bureau of Fisheries and Aquatic Resources** (BFAR)



The receptor binding assay offers a better alternative to the mouse bioassay currently used by BFAR since it will greatly enhance the early warning and monitoring of harmful algal blooms in the Philippines



Environmental Radioactivity Monitoring:

Monitoring:

- CTBTO
- Establishment of real-time environmental radiation monitoring systems
- Radon monitoring for earthquakes





Marine Radioactivity Studies from the Fukushima Accident:

- ^{137}Cs and ^{134}Cs measurements in seawater
- ^{129}I measurement in coral cores
- Objectives:
To use these radionuclides as oceanographic tracers
For nuclear safety and security

HAINAN

Sanya
三亚市

Paracel
Islands

South
China Sea

IN THE PIPELINE:

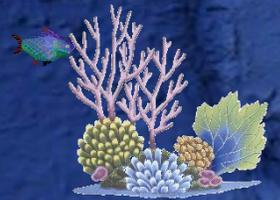


Strengthening Marine Protected Areas to Conserve Marine Key Biodiversity Areas in the Philippines

(Department of Environment and Natural Resources)

Assessment, Characterization, and Apportionment of Sedimentation in SMARTSeas PH Sites Using Nuclear and Isotopic Techniques

(Philippine Nuclear Research Institute)



Highest shorefish biodiversity
8 rare species of corals

Manila



Mindoro



14 species of cetaceans

Philippines



58,400 ha
(42% of PH's mangrove)



Puerto Princesa

El Nido

Palawan



Hawksbill
Green Sea turtles



Cebu

Pulo ng Bohol

Pulo ng Leyte



Cagayan de Oro



Davao

General Santos



Feeding ground of
7 species of whales, 4 dolphins

Vigan Tuguegarao
Luzon

Naga

Legazpi

Malay

Panay

Tacloban

Iloilo

Negros

Mindanao

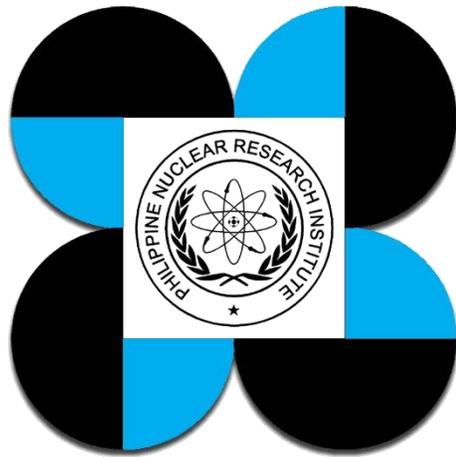
Zamboanga

SABAH

Sandakan

LABUAN





PHILIPPINE
NUCLEAR
RESEARCH
INSTITUTE
OCTOBER 2017

Thank you
Salamat po