



Philippine Vulnerability Assessment and Adaptation Experience

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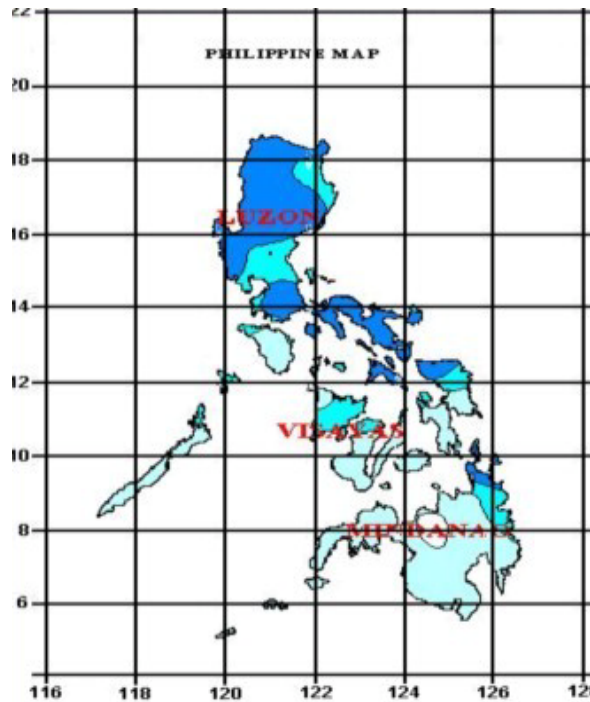
N Philippines



National Context

- **Location:** Southeastern Asia, archipelago between the Philippine Sea and the South China Sea
- **Area:**
 - total:* 300,000 sq km
 - land:* 298,170 sq km
 - water:* 1,830 sq km
- **Coastline:** 36,289 km
- **Population:** 87,857,473 (estimate as of July 2005)

National Context



Legend:



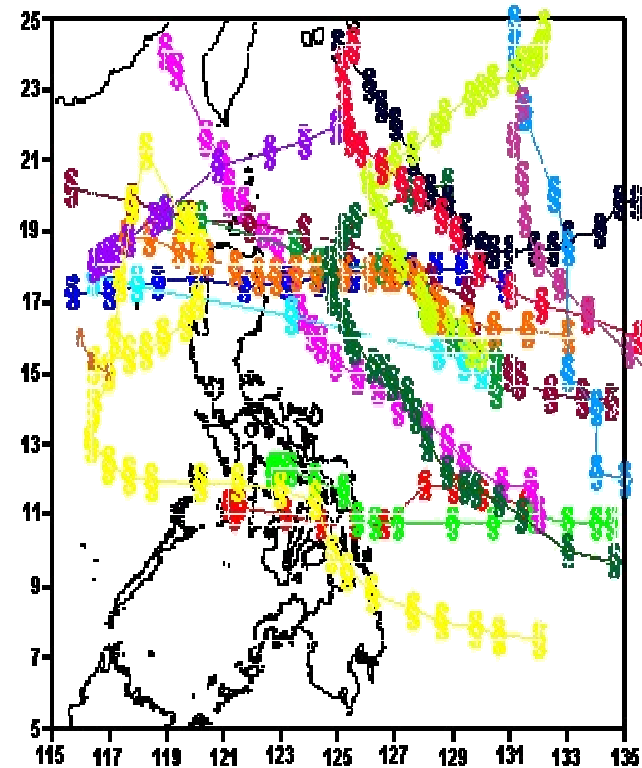
Source: DOST-PAGASA website

- Located in a tropical region that experiences rainy and dry seasons due to variations in the trade wind intensity and tropical convergence activity
- Economic activities are already perturbed by abrupt seasonal and annual changes in precipitation and temperature



National Context

- An average of 20 tropical cyclones per year visits the Philippine area of responsibility
- Exposed to a variety of climate risks and extreme events such as droughts and floods



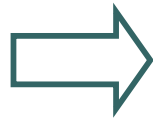
TRACKS OF 1996 TROPICAL CYCLONES
THAT ENTERED
THE PHILIPPINE AREA OF RESPONSIBILITY
(PAR)

Source: DOST-PAGASA website

National Priorities

○ Vulnerability and Adaptation Assessments

Five economic sectors included in the V&A Assessments



Agriculture
Water resources
Coastal resources
Human health
Forestry



Observation: studies were limited; pilot areas and results need to be validated

Recommendation: undertake more V&A studies



Simulation Models Used

- ✓ **General Circulation Models selected and used for the analysis of future climate scenarios in V&A Assessments**

GCM Selection Process

Existing estimates of precipitation and temperature under 1 x CO₂ (present condition) compared with existing climatic normal



Comparisons based on large-scale temporal and spatial distribution of precipitation and temperature



Spatial and temporal variations in temperature and rainfall due to the doubling of CO₂ derived using simulation results of four GCMs:

- ✓ **Canadian Climate Center Model (CCCM)**
- ✓ **United Kingdom Meteorological Office Model (UKMO)**
- ✓ **Geophysical Fluids Dynamic Laboratory Model (GFDL)**
- ✓ **Goddard Institute for Space Studies (GISS) Model**
 - for the agricultural sector



Simulation Results

○ **Agriculture**

- General increase in yield for rice while maturity period has decreased
- Decrease in yield for corn

○ **Water Resources**

- Vulnerability studies were done only for two major water resources and results showed that the Angat Reservoir and Lanao Lake will be seriously affected



Simulation Results

○ **Forestry Sector**

- Predictions indicate that changes in rainfall pattern may increase rate of conversion of forests to agricultural land due to human migration from areas degraded by drought and erosion to more productive forest lands
- Decrease in soil moisture in drier areas may accelerate forest loss
- Increase in precipitation beyond evaporation demand could increase runoff resulting in soil erosion and flood occurrences
- Local biodiversity will also decrease through extinction and inhibition of re-immigration from adjacent areas



Simulation Results

○ Coastal Resources

- Many areas along the coast will succumb to a one-meter sea level rise

○ Health

- There is an indicative trend of about 10% to 58% association between climate change and health as indicated by disease incidences



Issues and Concerns

- **Uncertainties on the use of simulation models (GCMs):**
 - The models have weaknesses in coupling the land surface and atmospheric hydrological cycles simulation of regional climate and extremes, particularly with regard to precipitation
 - The spatial resolution of current GCMs is too coarse to capture local changes in precipitation and temperature
 - There are uncertainties in the projected climate scenarios in terms of changes in temperatures, rainfall amounts, solar radiation, etc.
 - Discrepancies exist between simulation and observed climate because even variability in the climate is also, as yet, not well simulated



Issues and Concerns

- **Vulnerability assessment and adaptation studies conducted were limited**
 - Knowledge on current and future vulnerability is inadequate
 - Risk associated with climate change in relation to extremes and variability have not been assessed
 - Lack of assessment in the adaptive capacity of communities and the country to deal with climate risk
 - Studies were mainly impact assessments based on climate scenarios, with less consideration of the impacts in the human dimension



Way Forward

- Strengthen systemic, institutional and individual capacity of stakeholders to further assess vulnerability and adaptation to the impacts of climate change
- Capacity building is needed to develop adaptation including climate variability, risks and extreme events, in priority systems at the national and local levels
- Development of a strategic adaptation framework of policy interventions in the national context



Way Forward

- Harmonization and integration of adaptation to climate change within the normal business of sustainable economic development
- Assess all determinants of vulnerability, including the adaptive capacity of the priority systems
- Use risk assessment approaches for managing uncertainty in planning
- Development of adaptation strategies taking into consideration different planning horizons and spatial scales to meet the differing needs for financial, technical and policy instruments



Thank you and good day!

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