Climate Change Country Profile: Philippines

1. Country description

1.1 Geography

- Consists of 7107 islands
- No land boundaries
  - Taiwan to the north
  - Viet Nam to the west
  - China to the north-west
  - Malaysia and Indonesia to the south
- Major islands: Luzon, Visayas, Mindanao

Figure 1. Map of the Philippines

1.2 Demographics

- Population: 85.2 million in 2005
- Annual growth rate: 2.1% in 2004
- Population distribution: 52% in rural areas; 48% in urban areas
- Life expectancy
  Female: 72.5 years
  Male: 67.2 years
- Total fertility rate: 3.2 children per woman
- Crude birth rate: 20.6 per 1000 population
• Crude death rate: 4.9 per 1000 population
• Infant death rate: 13.7 per 1000 live births
• Maternal death rate: 1.1 per 1000 live births

1.3 Economic and industrial development characteristics

• Manufacturing sector $\rightarrow$ 23%–24% GDP (2005)
  - Processed foods
  - Electrical machinery
  - Petroleum products
  - Garments
• Industry $\rightarrow$ 32% GDP (2005)

1.4 Climate (climatic zones, trends in temperature and precipitation)

• Climate: tropical marine
• Dry season: December to May
• Wet season: June to December
• Average annual temperature: 27°C
• About 20 tropical cyclones each year

Figure 2. Observed mean annual mean temperature anomalies in the Philippines from 1951 to 2006 (departures from the 1961–1990 normal values)
Figure 3. Observed mean annual maximum temperature anomalies in the Philippines from 1951 to 2006 (departures from the 1961–1990 normal values)

An increase of 0.3472°C from 1951 to 2006

Figure 4. Observed mean annual minimum temperature anomalies in the Philippines from 1951 to 2006 (departures from the 1961–1990 normal values)

An increase of 0.8904°C from 1951 to 2006. Minimum temperatures increased almost three times more than maximum temperatures.
Environmental hazards

- Typhoons: 20 typhoons per year, generally between July and December
- Storm surges: often accompany typhoons and cause severe damage to coastal areas
- Earthquakes:
  - Located on the geologic fault line
  - At least five quakes a day, most are imperceptible
  - 1990 was strongest
- Tsunamis: Affect the country’s coastal areas up to four metres above sea level (coastal areas of south-west Mindanao are most vulnerable)
- Volcanoes: 200 volcanoes, 17 active, five erupted in the last 25 years (Kanlaon, Bulusan, Mayon, Pinatubo)
- Floods: Flash floods often occur in mountainous areas.

2. Burden of climate-sensitive health outcomes

2.1 Data on current climate-sensitive disease burdens

Climate-sensitive diseases include heat-related diseases, vectorborne diseases, waterborne diseases, diseases from urban air pollution, and diseases related to extreme weathers such as floods, droughts, windstorms and fires.

Effects of climate change on the environment

(1) Natural resources degradation
   - rapid conversion of forest land to urban use
(2) Deterioration of urban environment
   - air pollution
   - poor waste disposal
   - water pollution
   - toxic and hazardous waste disposal
(3) Water pollution
   - weak enforcement
   - domestic, agricultural and industrial
(4) Inadequate institutional capacity

Effects of climate change on health

(1) Increase in vectorborne diseases
   - dengue (Figures 4 and 5), malaria (Figure 6)
(2) Increase in waterborne diseases
   - diarrhoea, typhoid fever (Figure 7), cholera (Figure 8)
(3) Others: upper respiratory tract infection, cataracts, skin cancer, mental health
Figure 5: Dengue cases by month

Fig. 1. Dengue Cases by Month
Philippines, 2007 vs. 2006

![Graph showing Dengue Cases by Month]

Figure 6. Dengue cases by morbidity week

Fig. 2. Dengue Cases by Morbidity Week
Philippines, 2002-2006 vs. 2007

![Graph showing Dengue Cases by Morbidity Week]
Figure 7. Distribution of malaria cases by week (as of 3 June 2007)

Figure 8. Distribution of typhoid fever cases by week (as of 3 June 2007)
Figure 9. Distribution of cholera cases by week (as of 3 June 2007)

Table 1. Ten leading causes of morbidity in the Philippines, 2005

<table>
<thead>
<tr>
<th>Disease</th>
<th>Total number of cases</th>
<th>Number of cases per 100 000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute respiratory tract infection</td>
<td>690 566</td>
<td>828.0</td>
</tr>
<tr>
<td>Bronchitis and/or bronchiolitis</td>
<td>616 041</td>
<td>738.7</td>
</tr>
<tr>
<td>Diarrhoea</td>
<td>603 287</td>
<td>723.4</td>
</tr>
<tr>
<td>Influenza</td>
<td>406 237</td>
<td>487.1</td>
</tr>
<tr>
<td>Hypertension</td>
<td>382 662</td>
<td>458.8</td>
</tr>
<tr>
<td>Tuberculosis, respiratory</td>
<td>114 360</td>
<td>137.1</td>
</tr>
<tr>
<td>Diseases of the ear</td>
<td>43 898</td>
<td>52.6</td>
</tr>
<tr>
<td>Malaria</td>
<td>36 063</td>
<td>43.3</td>
</tr>
<tr>
<td>Chicken pox</td>
<td>30 063</td>
<td>36.0</td>
</tr>
<tr>
<td>Dengue fever</td>
<td>20 107</td>
<td>24.1</td>
</tr>
</tbody>
</table>

2.2 Potential impacts of climate change on health burden, i.e. qualitative and quantitative projections of future health burdens

Information is not available.
2.3 Information on particularly vulnerable populations

Vulnerable populations in the Philippines are senior citizens, children, chronically ill, low income and homeless, subsistence population, disabled and recent immigrants.

3. National programmes and projects

3.1 Programmes to reduce and/or mitigate greenhouse gas emissions

(1) Clean Development Mechanism (CDM) of the United Nations

- Eight waste-to-energy projects in the Philippines
- Emission reduction: about 253,919 tonnes of CO\textsubscript{2} equivalents per year
- Philippines is ranked eighth in the world in terms of number of CDM projects accepted by the United Nations
- 32 CDM projects submitted to Department of Environment and Natural Resources, e.g. waste to energy, renewable energy (wind, geothermal and hydro), cogeneration, composting

(2) Philippine enabling activities for the preparation of the Second National Communication to the UNFCCC Programmes:

- Biofuels programme - bio-ethanol (gasoline), bio-diesel
  R.A. No. 9637: Biofuel Act
  Mandatory mixing in the following amount:
  - 1% biodiesel in Petrodiesel, 5% ethanol in gasoline for first four years
  - 2% biodiesel in Petrodiesel, 10% ethanol in gasoline after four years

- Shift in energy mix from fossil fuels (oil and coal) to renewable sources
  - Present mix: fossil fuels (58.4%), renewable sources (41.6%)
  - Target: fossil fuels (49.2%), renewable sources (50.8%) by 2014

(3) Campaign against Violators of Environmental Standards

- smoke-belching vehicles
- polluting industries

(4) Waste management

- R.A. 9003 Ecological Solid Waste Management Act
  - 1080 open dumpsites nationwide
  - 366 potential sanitary landfills nationwide
- Local government units (LGUs) provide assistance for proper waste management.
3.2 Climate change related studies and projects, including their roles in the Second National Communications

Programmes and projects on environmental health that are directly or indirectly related to climate change are:

- Anti-Smoke Belching & Air Pollution Campaign
- Solid Waste Management Project
- Toxic, Chemical and Hazardous Waste Management
- Red Tide Control and Monitoring Programme
- Integrated Pest Management & Sustainable Agriculture
- Pasig River Rehabilitation Project
- Safe Water & Sanitation Programme
- Control of Tuberculosis & Other Communicable Diseases
- Environmental Management and Pollution Control
- Ecological Solid Waste Management Programme
- Metropolitan Environmental Improvement Programme
- Clean and Green Programme of LGUs

3.3 Further data and research needs on potential health impacts of climate change

- Evaluation of the health effects of climate change: baseline health statistics review
- Review of health and environmental policies
- Review of incidence of environmental disasters

3.4 Current and expected programmes and activities for adaptation to current and projected climate-related health burdens

- Geo-hazard mapping: identify areas that are most vulnerable to landslides and forewarn communities
  - Completed geo-hazard mapping of 27 provinces in the eastern seaboard (most vulnerable to typhoons)
- Monitoring and database system with focus on urban malaria, dengue and air pollution-related diseases
- Implementation of the air pollution regulations
- Risk communication plan, e.g. public information for health practitioners
- Strengthening of existing programmes: Disaster preparedness, Outbreak investigation and response, Health surveillance systems
4. Institutional organization

Key organizations and/or institutions dealing with climate change are shown in Figure 10.

Figure 10. Interagency Committee on Climate Change

5. Issues and challenges

Critical issues and challenges that the country faces in relation to mitigation and adaptation to climate change to reduce health impacts are:

- prioritizing urgent environmental health problems;
- investing in human resources;
- assessing current environmental and health policies;
- disseminating information;
- strengthening intersectoral coordination;
- involving the local people; and
- addressing knowledge gaps.