Climate Change Country Profile:
Federated States of Micronesia

1. Country description

1.1 Geography

- Location: north Pacific Ocean; north-east of Indonesia
- Four major island groups: Kosrae, Pohnpei, Chuuk and Yap
- Made up of 607 islands
- Land area: 702 km$^2$
- Coastline: 6112 km
- Terrain: islands vary geologically from high mountainous islands to low, coral atolls
- Land elevation: lowest point is sea level; highest point is 791 metres
- Natural resources: forests, marine products, deep sea-bed minerals and phosphate

Figure 1. Map of the Federated States of Micronesia
1.2 Demographics

- Population: 107,862 in July 2007
- Chuuk: 53,595 (50%)
- Pohnpei: 34,486 (32%)
- Yap: 11,241 (11%)
- Kosrae: 7,686 (7%)
- Population distribution: 17% (18,000) live in the outer islands/atolls

Figure 2. Population projection for the Federated States of Micronesia

Source: World Bank data

1.3 Economic and industrial development characteristics

- Natural resources and environment are the country’s living wealth.
- Economy is small and largely dependent on foreign aid.
- Dominated by large public sector
- Main industries: fisheries, agriculture and tourism
- Gross domestic product: government (42%), wholesale/retail (22%), subsistence (16%), fisheries (2%), tourism (2%), commercial agriculture (1%), others (15%)
1.4 Climate (climatic zones, trends in temperature and precipitation)

- Tropical; heavy year-round rainfall, especially in the eastern islands (Pohnpei & Kosrae)
- **Average annual rainfall**: 110–400 inches per year (110 in Yap and Chuuk to 400 in Pohnpei and Kosrae)
- **Trade winds**: prevail from November to April
- Periods of weaker winds occur from May to November
- **Natural hazards**: storms and typhoons (June to December), more severe in the western islands (Yap and Chuuk)
- Periods of drought and excessive rainfall associated with El Niño
- The likelihood of many disasters will increase as a consequence of climate change.
- The following climate conditions are potential sources of risk to human health: extreme rainfall events, drought, high sea levels, strong winds and extreme high air temperatures.
- The climate risk profile for the Federated States of Micronesia shows that (1) rainfall, (2) wind, (3) temperature and (4) sea level extremes will all increase as a result of global warming, as will the (5) frequency of drought.

1. (1) Rainfall

- Using data for Pohnpei, Figure 3 illustrates how the likelihood (0 = zero chance; 1 = statistical certainty) of a daily rainfall of 250 mm will increase over the remainder of the present century.

**Figure 3. Daily rainfall predictions for Pohnpei**

![Figure 3. Daily rainfall predictions for Pohnpei](image-url)
• **Figure 4** below depicts the impact of global warming on the likelihood (0 = zero chance; 1 = statistical certainty) of an hourly rainfall of 200 mm for Pohnpei. Values for present day were based on observed data for 1980 to 2002, with gaps.

**Figure 4. Hourly rainfall predictions for Pohnpei**

(2)  **Drought**

• Figure 5 presents, for Pohnpei, the number of months in each year (1953 to 2003) and each decade for which the observed precipitation was below 5%. A monthly rainfall below 5% is used as an indicator of drought.

**Figure 5. Prevalence of drought in Pohnpei (1953–2003)**
(3) **High sea levels**

- Figure 6 shows daily mean values of sea level for Pohnpei, relative to mean sea level. There is large inter-annual variability in sea level. Low sea levels are associated with El Niño-Southern Oscillation (ENSO; commonly referred to as simply El Niño), while exceptionally high sea levels occurred in October 1988. The sea level elevations are relative to surveyed mean sea level.

**Figure 6. Daily mean values of sea level for Pohnpei (1974–2003)**

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**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 weather conditions such as floods, droughts, windstorms and fires.

(1) **Vectorborne diseases**

- Zika outbreak in Yap (2007)
- Malaria is a concern.

(2) **Waterborne diseases**

- Respiratory diseases (acute respiratory infections [ARI])
- Landslides caused 20 deaths in Pohnpei (1997) and 40 deaths in Chuuk (2002)
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

(1) Outer-island people are most vulnerable because:

- they are isolated by distance and by infrequent and unreliable sea and air transportation;
- they have poor access to basic education, health and other services; and
- they are adversely affected by rises in sea level and other extreme climate events:
  - salt water intrusion into groundwater lenses (water security),
  - destruction of taro patches and other food supply (food security), and
  - population displacement and resettlement.

(2) Populations living at the coastlines are vulnerable because of:
   erosion of coastlines, and
   high tides.

(3) Most communities in the Federated States of Micronesia are at risk from natural disasters and climate change.

3. National programmes and projects

3.1 Programmes to reduce/mitigate greenhouse gas emissions

Information is not available.

3.2 Climate change related studies and projects, including their roles in the Second National Communications.

- Climate-proofing project
- Environmental analysis project (climate change risk profile)
- Renewable energy projects
- Second National Communication (underway)

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

- Data and research strongly linking climate change and variability to diseases – communicable and noncommunicable – for improved and better strategies for intervention and emergency preparedness
3.4 Current and expected programmes and activities for adaptation to current and projected climate-related health burdens

- Climate-proofing the national Infrastructure Development Plan (IDP)
- Project Environmental Impact Assessment (EIA) process
- Implementation of infrastructure projects
- Public awareness on climate-related health issues
- Community involvement in planning
- Disaster and/or emergency preparedness

4. Institutional organization

Key organizations and/or institutions dealing with climate change are:

- environment offices at national and state levels (lead agencies); and
- other sectors: health, agriculture, foreign affairs, transportation, finance, planning.

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:

- adapting to consequences of climate change;
- protecting people in the outer islands; and
- educating communities on climate change and its consequences.