

# Chapter 11

## The Impacts of Climate Change on Food Security and Management in Papua New Guinea

**Akkinapally Ramakrishna**

*National Agricultural Research Institute (NARI), Papua New Guinea*

**Sergie Bang**

*National Agricultural Research Institute (NARI), Papua New Guinea*

### ABSTRACT

*Papua New Guinea is highly vulnerable to the impacts of climate change since it encompasses 17,000 km of coastline, 600 low-lying islands, and 2,000 coastal villages. It is vulnerable to sea-level rise and other manifestations of climate change. Climate change provides new and unprecedented challenges that demand equally new and urgent efforts to meet them. Research and development efforts are taking rapid strides forward in understanding what is going to happen to farming, fishery, and forest systems as the climate changes. The interactions that will occur with other global changes within this complex and dynamic situation, as well as the trade-offs between food security, livelihoods, and environmental security are also being studied. PNG is engaging new strategies, forging new partnerships and truly integrating approaches. Climate change risks are effectively mainstreamed in development planning at all levels to build in adaptation and mitigation measures. This chapter looks at these new strategies.*

### GEOGRAPHY AND SOCIOECONOMIC SITUATION

Papua New Guinea (PNG) occupies the eastern half of the rugged tropical island of New Guinea, sharing a border with the Indonesian province of West Papua to the west. Australia to the south, the Solomon Islands to the east and the Federated States of Micronesia (FSM) to the north. PNG is located in the so-called “Pacific Ring of Fire” and has active volcanoes, experiences significant earthquakes and mudslides, and its coastal areas are prone to tsunamis and floods. Apart from the island of New Guinea,

DOI: 10.4018/978-1-5225-5487-5.ch011

the country has four large islands (Manus, New Ireland, New Britain, and Bougainville) and some 600 small islands lying between the Coral Sea and the South Pacific Ocean (Figure 1). The total land area is 465,000 square kilometers (km<sup>2</sup>). It has an exclusive economic zone of 2.4 million km<sup>2</sup>, which encompasses 17,000 kilometers of coastline and almost 2,000 coastal villages, with a rural population of nearly 500,000 people. Communities in PNG have developed more than 850 languages, as well as unique customs and traditions (Chalapan et al. 2000). According to the Asian Development Bank (ADB), PNG has an estimated population of 7.06 million with annual growth of 2.8% (2009–2011) (ADB, 2012). Overall population density is low, although pockets of overpopulation exist.

PNG's mainland has one of the most rugged terrains in the world, possessing a central mountain range which is highly dissected, with the highest peak rising to 4,350 meters (Mt. Wilhelm), while the smaller islands have high volcanic mountains and low lying coral atolls. Ecosystems range from mountain glaciers to humid tropical rainforests, swampy wetlands, and pristine coral reefs. Much of the terrain is characterized by steep gradients, fast flowing rivers, and swamps, with some parts of the country subject to active volcanic activities, landslides and tidal waves. PNG is a country of considerable biodiversity, estimated to contribute 5%–7% of global biodiversity (Chalapan et al. 2000). However, although biodiversity is outstanding with many species endemic, much of the land and habitats have been modified by erosion and land clearing, mainly from traditional agricultural systems and timber harvesting. PNG is rich in natural resources, including gold, copper, timber, agricultural products and—most recently—oil and natural gas. About one fifth of the land is subject to inundation. Of the country's total land area,

*Figure 1. Map of Papua New Guinea*



21 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:  
[www.igi-global.com/chapter/the-impacts-of-climate-change-on-food-security-and-management-in-papua-new-guinea/201701](http://www.igi-global.com/chapter/the-impacts-of-climate-change-on-food-security-and-management-in-papua-new-guinea/201701)

## Related Content

---

### Ecological Condition of River Basins of Western Polesie of Ukraine

Ttiana Basiuk, Igor Gopchak and Artem Yatsyk (2023). *Handbook of Research on Improving the Natural and Ecological Conditions of the Polesie Zone* (pp. 384-401).

[www.irma-international.org/chapter/ecological-condition-of-river-basins-of-western-polesie-of-ukraine/324051](http://www.irma-international.org/chapter/ecological-condition-of-river-basins-of-western-polesie-of-ukraine/324051)

### Carbon Financing and the Sustainable Development Mechanism: The Case of China

Poshan Yu, Yuewen Weng and Aashrika Ahuja (2022). *Handbook of Research on Energy and Environmental Finance 4.0* (pp. 301-332).

[www.irma-international.org/chapter/carbon-financing-and-the-sustainable-development-mechanism/298755](http://www.irma-international.org/chapter/carbon-financing-and-the-sustainable-development-mechanism/298755)

### Leachate Generation, Transport, and Control

Mohamed Shahrir Mohamed Zahari, Shahrul Ismail and Izan Jaafar (2016). *Control and Treatment of Landfill Leachate for Sanitary Waste Disposal* (pp. 115-144).

[www.irma-international.org/chapter/leachate-generation-transport-and-control/141850](http://www.irma-international.org/chapter/leachate-generation-transport-and-control/141850)

### Monitoring Changes in Urban Cover Using Landsat Satellite Images and Demographical Information

Prashant K. Srivastava, Swati Suman and Smita Pandey (2017). *Environmental Issues Surrounding Human Overpopulation* (pp. 89-103).

[www.irma-international.org/chapter/monitoring-changes-in-urban-cover-using-landsat-satellite-images-and-demographical-information/173307](http://www.irma-international.org/chapter/monitoring-changes-in-urban-cover-using-landsat-satellite-images-and-demographical-information/173307)

### Pesticide Analysis Techniques, Limitations, and Applications

Ebru Kafkas, Nebile Daglioglu, Nigar Yarpuz-Bozdogan and Mozghan Zarifikhosroshahi (2019). *Handbook of Research on the Adverse Effects of Pesticide Pollution in Aquatic Ecosystems* (pp. 301-317).

[www.irma-international.org/chapter/pesticide-analysis-techniques-limitations-and-applications/213512](http://www.irma-international.org/chapter/pesticide-analysis-techniques-limitations-and-applications/213512)