Adaptation and Adaptive Capacity

Adaptation is defined by the IPCC as the adjustment in natural or human systems in response to actual or expected climate stimuli or their effects that moderates harm or exploits beneficial opportunities.

Adapting to the adverse effects of climate change is, along with mitigation, a major area of action for Parties under the UN Framework Convention on Climate Change. The world is already experiencing changes in mean temperature, shifts in the seasons, and an increasing frequency of extreme weather events. These are set to continue, for the global climate system has great inertia. Adaptation is therefore essential.

The new climate deal to be agreed at Copenhagen should aim to stabilize and reduce greenhouse gas concentrations in the atmosphere at a level that should allow communities and ecosystems to adapt naturally climate change and viable economic development to continue in a sustainable manner.

Climate change is also a matter of development, as the poorest are those with the lowest adaptive capacity and stand to suffer the most. Climate change impacts livelihood, food security and could in the long run stunt the economic development of entire communities.

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The pioneering work on Lombok needs to be supported by capacity building to equip local authorities with the necessary skills and expertise needed to carry out the implementation of adaptation strategies already incorporated in the development plan. Making the necessary funds available to finance the work is therefore key to promote adaptation.

Unless efforts are made today to stabilize and subsequently reduce global greenhouse gas emission—action including achieving an ambitious global climate agreement at Copenhagen—the impacts of climate change will become increasingly severe and irreversible. Islands like Lombok stand to suffer the most from the devastating impacts of climate change. Reducing vulnerability and adapting to the impacts is key to the survival of these communities.

Adapting to the impacts of climate change, in particular, is an uphill challenge, yet actions taken at the local level such as a study conducted in Lombok indicate that many small island communities are highly encouraged and should be supported by actions taken on the national and regional level under the new climate deal to be sealed in Copenhagen.

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Climate Change Impacts in Indonesia

Overall in Indonesia, the observed and projected impacts of climate change include an increase in the severity of droughts, flooding, fires, coral bleaching, the gradual rise in sea levels, and the increase in frequency of extreme weather conditions including storms, which will be destroying natural and human-made systems in the area.

Increased rainfall during the wet seasons may lead to high floods, which could displace populations and result in damages to homes, buildings and infrastructure. Climate change will profoundly affect biodiversity, water resources and the economy in the country, all of which in turn will impact its people as hundreds of millions depend on resources, goods and services for their livelihood.

The impacts of climate change will also increase the pressure on Indonesia’s forest, coastal and marine ecosystems caused by illegal and destructive logging, overfishing and overexploitation of natural resources.

Agriculture

The province is one of the country’s main crop producers, particularly rice. Annually, West Nusa Tenggara produces more than 40 thousand tons of rice, with most of the yield produced on Lombok Island. Yet around 16 percent of all paddy fields on the island are rainfed and would be greatly affected in times of longer droughts and diminishing precipitation. The rice is naturally affected by water scarcity as a direct result of rising temperatures and the destruction of forests protecting the watershed areas. Conservation estimates reveal that the risk of crop failure in the island’s planting and flowering phase due to shifting climate patterns and fluctuating rainfall intensity doubles after 2040. Extreme weather events such as storms and long droughts exacerbated by the changing climate also remain a significant threat to the harvest.

Coastal & Marine

In the sector of Coastal and Marine, based on conservative estimates, the study found that Lombok would lose up to 1,500 m2 of its coastal area by 2030 due to sea level rise. This would lead to a wave of population displacement and significantly alter coastal ecosystems. In another scenario that incorporated the hazards of extreme weather events spurred by increased sea surface temperature and higher frequencies of El Niño and La Niña, it is projected that up to 43 thousand people are at risk of being homeless by 2030. Higher sea temperature also puts coral reefs adjacent to the island at risk to bleaching.

Water

Based on a study at four key river basins, the island is projected to experience a massive decline in ground- and surface-water reserves by 2030. The study found that water reserves could fall by up to 5 billion cubic meters, which is equivalent to more than three times the amount needed to meet the current demand. With population rise and an increase in water-intensive agriculture and tourism, and given the current state of water pollution, access to clean drinking water for the island’s agriculture, industry and household consumption could become critical before 2030. Generally, falling precipitation levels and higher evaporation levels add more pressure to limit diminishing water resources.

Making a Case for Lombok Island

Already, effects of the changing climate are being felt in Lombok Island. The island, which lies on the slightly eastern part of the Indonesian archipelago, spans up about 83km from west to east and about the same form north to south, with lath evergreen landscapes and parts, which are chemically dry.

Droughts, particularly in the south and west, can last for months, causing crop failure and famine. Changes in the climate exacerbate this condition as it influences the island’s average temperature and precipitation pattern. The average temperature and precipitation pattern of the island rose from the range of 26,5°C – 27°C in 1948 to the range of 28°C – 28,5°C in 2007. Together with the destruction of forest protecting most of the island’s watershed area, this has led to the diminishing of water springs and a significant reduction of surface water as evaporation levels increased. The rise in temperature may have also played a role in changing rain patterns and the increased intensity of storms, which has contributed to the heavy run-off, such as the flash floods on the island in early 2007. Together with the destruction of forest protecting most of the island’s watershed area, this has led to the diminishing of water springs and a significant reduction of surface water as evaporation levels increased. The rise in temperature may have also played a role in changing rain patterns and the increased intensity of storms, which has contributed to the heavy run-off, such as the flash floods on the island in early 2007. Together with the destruction of forests in the island, this has led to the diminishing of water springs and a significant reduction of surface water as evaporation levels increased.

The island’s highest peak is Gunung Rinjani, at 3,726 m.

Source Official Data West Nusa Tenggara Provincial Government

Assessing Impacts and Vulnerabilities

The vulnerability assessment focused on three sectors, namely Water, Coastal and Marine, and Agriculture. To produce the projections for 2020 and 2050 for these sectors, different areas in the island were selected, against which three different IPCC climate scenarios were run against. The baseline used in this study is that of 1961-1990. Overall, the study projected a rise in average temperature by 2-3°C by 2070-2100.

Engaging Stakeholders

In April 2007, WWF Climate and Energy Program initiated activities to mainstream climate change mitigation and adaptation in West Nusa Tenggara province. The initiative was carried out in collaboration with the government, influential and adaptive NGOs, academia, to “Mainstream Climate Change Mitigation and Adaptation in West Nusa Tenggara” and promptly began working climate change mitigation and adaptation in the workplan of its various sectors.

Mid 2008, WWF expanded its collaboration to include the Ministry of Environment and GTZ. The Ministry gave directions on the central government policy, such as understanding climate change impacts and how to address them, including making available high-quality information to stakeholders, and integrating and mainstreaming climate change into development planning.

GTZ supported expert workshops and facilitated workshops and discussions to develop the projection of impacts, sea level rise, impacts on coastal, marine and forest ecosystem water resources, and agriculture. Strategies formulated based on the assessment were mainstreamed in the Provincial Mid-Term Development Plan (2008-2014).

Climate change workshop for local government stakeholders particularly on adapting to the impacts of climate change in Lombok Island and West Nusa Tenggara province.

Managing the impacts of climate change

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