

## ENVIRONMENT ANALYSIS<sup>1</sup>

### A. Key Environment and Natural Resources

1. Myanmar's economic development and its people's livelihoods largely depend on the country's bountiful natural resources. Despite the low level of industrialization and the low population density, Myanmar's environment is threatened by human activities and climate change.

2. Myanmar's forest cover and quality have steadily declined over the last 30 years, although it remains higher than other countries in the Greater Mekong Subregion (GMS). Forest cover decreased from 61% of the land area in 1975 to 49% in 2006. Natural forest loss averaged 392,540 hectares annually during 1989-2006, representing a major acceleration in forest cover loss.

3. Unsustainable extraction activities put significant pressure on forests. While the government has long practiced sustainable forest management, available data show that commercial logging operations have consistently exceeded the annual allowable cut. Illegal logging in remote and difficult-to-monitor areas, conversion of forest to agriculture, commercial agriculture, and extraction of fuelwood are additional pressures on forests. Fuelwood extraction, which accounted for about 92% of total wood removal in 2000, is significant compared to roundwood removals as more than 80% of total primary energy in Myanmar is still supplied by fuelwood.

4. To address deforestation, the government has established forest reserves with a policy target of 30% of the total land area. Starting from a base of 15% in 1985, protected forest increased to about 26% in 2006. Expenditure on forest conservation also increased in response to the threat of forest depletion, with annual spending growing almost 90 times in nominal terms during 1988–2007. Forest plantations received about 27% of the total annual budget in 2007; other forest management activities received smaller shares of the budget (e.g., natural regeneration expenditure was 1.87% and forestry research and forestry training expenditure was 1.79%). Forest management has been strengthened through the adoption of sound policy and institutional measures. A 30-year forestry master plan formulated in 2002 addressed principle shortcomings in forest management and gave greater attention to elements such as forestry extension, community forestry, agro-forestry, fuelwood energy savings, and human resource development.

5. Land degradation, particularly soil erosion in upland agricultural areas and dry zones, is an increasing problem in Myanmar. Vulnerable farming area as a percentage of the country's total cultivated area was estimated at 33% in 2008. Natural processes in vulnerable farming areas are aggravated by human interventions such as excessive forest harvesting, mono-cropping practices, and shifting cultivation. Growth in the upland human population is a key pressure that is closely correlated with land degradation and land productivity changes. From

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<sup>1</sup> This assessment summarizes and updates Myanmar's natural resources and environment status and trends, as documented in the government's national environmental performance assessment report, 2007–2010, which was prepared under regional technical assistance provided by the Asian Development Bank. See Asian Development Bank. 2005. *Core Environment Program and Biodiversity Conservation Corridors Initiative in the Greater Mekong Subregion*. Manila (RETA 6289).

1980 to 2008, the upland population increased by 7 million to 17.5 million people, or about 30% of the national population.

6. To address land degradation, the government is promoting various conservation and land rehabilitation programs. Targets have been set for the reclamation of permanent sloping agriculture land and slash-and-burn areas to safeguard productivity. Despite such initiatives, areas treated under land rehabilitation program have lagged behind total crop sown areas. The growing population in upland areas has resulted in a large expansion in crop sown areas, while multiple cropping has become more common and conservation programs have not kept pace. While total crop sown areas increased from 10.5 million hectares in 1985 to 22.3 million in 2008, rehabilitated agriculture land as a percentage of the total crop sown area dropped from 12% in 1975 to 3% in 2008. If the decline in funding for conservation and rehabilitation measures is not reversed, the problem of land degradation and vulnerable farmland will worsen. The government recognizes that more work is needed to safeguard the productivity of upland farms under pressure from growing populations through extension support on soil conservation methods and provision of related technologies to farmers.

7. Climate change only recently became a high priority in Myanmar. The government's perspective changed fundamentally in 2008 after tropical Cyclone Nargis caused catastrophic destruction and loss of lives and livelihoods. Myanmar's vulnerability to climate change is now widely recognized. Potential climate change impacts on Myanmar include incremental sea-level rise, saltwater intrusion, loss of mangroves, higher incidence of droughts, loss of biodiversity and ecosystems such as wetlands, and loss of land resources. Myanmar is already experiencing some effects of climate change: a clear trend in rising temperatures, shorter monsoon duration, and greater frequency of intense rainfall and severe cyclones along Myanmar's coastline.

8. While climate change is mainly related to global phenomena, national actions in Myanmar are contributing to both climate change and the country's vulnerability in terms of human health impact, agricultural security, and loss of biodiversity. Deforestation is of particular concern as decreasing forest cover and quality reduce adaptive capacity and the potential to absorb greenhouse gasses. Forest fires represent an additional climate change pressure, especially in the dry forests that dominate the central part of the country.

9. The government is responding to climate change risk and vulnerability, quickly putting in place a national plan for disaster risk reduction. Although the government has not set a national policy target, Myanmar has made several international commitments, including the United Nations Framework Convention on Climate Change ratified in 1994 and the related Kyoto Protocol ratified in 2003. Mitigation and adaptation measures encompass various policies, plans, programs, projects, and activities. Generally, the government is devoting attention to improving understanding of climatic conditions and trends, and the links to underlying pressures such as deforestation. Targets and objectives for increasing forest plantation and promoting the use of alternative fuels are also being set.

10. Myanmar's rising population and accelerating economic development are generating increasing volumes of solid waste. This represents a challenge to municipalities concerned about the environmental and human health consequences of inadequate waste management practices. While solid waste generation per capita has remained constant or declined in large cities such as Mandalay and Yangon, total waste generation is increasing as urban populations expand. About 22% of municipal solid waste in Myanmar is recyclable; the remainder is

managed through other disposal methods, predominantly open landfills and to a lesser extent incineration.

11. Urban solid waste management can be improved considerably. While the expenditure on waste collection and disposal in large cities has generally been satisfactory, additional spending is needed to improve long-term waste management nationally. More spending on waste collection vehicles will be required to improve coverage and efficiency, while investment is needed in more modern and reliable disposal systems, including replacing open dumps with sanitary landfills and installing environmentally appropriate incineration plants. An expansion of solid waste collection and disposal to other cities is also needed as the situation remains unsatisfactory in second-tier cities and towns where performance has stagnated or even deteriorated slightly.

12. Myanmar has a rich natural capital endowment, encompassing significant ecological biodiversity features such as (i) wet and dry evergreen forests in the southern part of the country, (ii) deciduous dipterocarp forests and thorn scrub in the central part, and (iii) sub-alpine forests in the north. Large, slow-flowing rivers and lakes support extensive freshwater ecosystems, while expansive seacoasts with tidal mangroves sustain vital marine ecosystems.

13. Myanmar's biodiversity is under increasing threat, especially in the Indo-Myanmar hot spot where economic development and human population growth is placing pressure on natural habitats and species populations. The major contributors to biodiversity loss are (i) the conversion of closed forests for other land uses, (ii) shifting cultivation, (iii) weak regulation and control of commercial exploitation and trade in endangered flora and fauna, and (iv) lack of sufficient environmental impact assessment and integration of biodiversity concerns into development activities affecting land use change. Forest degradation is particularly important in terms of terrestrial biodiversity, potentially affecting about 36% of threatened mammals and birds. In addition, the loss of wetlands and grasslands is threatening bird species. For example, mangrove forests declined 72% from 253,018 hectares in 1924 to 71,716 hectares in 2008.

14. The government has responded to biodiversity loss primarily by establishing protected areas. To promote the conservation of the biological diversity of ecosystems, habitats, and biomes, the government in 1980 set a national policy target to establish a network of protected areas covering 5% of the country's total area by 2010. The protected area network expanded steadily, particularly during 1996–2004, and now comprises 34 protected areas equivalent to 4.35% of total land area. The government has also been increasing efforts to prevent illegal wildlife trade. In 1997, Myanmar acceded to CITES, an international treaty to protect wildlife against exploitation. The government has been taking action to minimize or prevent illegal wildlife trade through its law enforcement departments.

15. Mining has become one of the country's key development sectors in recent years, attracting considerable foreign investment and generating important export earnings. Myanmar is endowed with a variety of mineral resources as well as high-quality gems and precious stones. Exploitable reserves of industrial minerals are also available. Mining production grew at an average rate of 15.5% a year during 2001–2006, faster than gross domestic product growth.

16. Awareness of environmental disturbances caused by mining is increasing, but this has not been accompanied by substantive regulatory responses. While Myanmar lacks a national policy target for environmental improvement in the mining sector, some relevant sector policies exist. The 1994 Mines Law is intended to protect against the environmental damage caused by mining operations, and to restrict mine operators from conducting any activities that may have

detrimental effects on the public. All mines are supposed to be subject to regular inspection, monitoring, and reporting. However, training of personnel to monitor the mines is inadequate, and the air and water quality data needed to assess the impacts and effectiveness of control and mitigation measures are limited. Recognizing these limitations, the government is devoting more attention to monitoring of environmental quality in mining areas. The mining industry is also being required to improve environmental data acquisition and reporting, ensure compliance with applicable industry standards, and adopt best practices.

## **B. Policy and Institutional Framework**

17. The government is working to put in place the policies, laws, and regulations needed to properly manage the country's natural resources and environment. These encompass (i) environment policy and legislation, (ii) a sustainable development strategy, (iii) forest policy and master planning, (iv) a biodiversity protection area system, (v) soil conservation and land rehabilitation programs, (vi) disaster risk reduction planning, and (vii) mining legislation. The challenge now is to build on this policy base through improved implementation, which will require significant strengthening of financial and human resources, as well as greater awareness of environmental issues.

18. The recent formation of the Ministry of Environmental Conservation and Forestry demonstrates the government's commitment to improving the planning and management of natural resources and the environment. The 2012 Environment Conservation Law provides the legal basis for implementing a range of enhanced environmental management measures. Attention now needs to shift to drafting corresponding regulations to enact legislation, including regulations and technical guidelines on environmental safeguards and pollution abatement. Developing such regulations and guidelines, and creating the enabling conditions for their effective implementation, will require substantial effort and technical expertise. In addition, government capacity to undertake environmental monitoring will need to be built and institutional links forged to ensure necessary interagency coordination on environmental management.

## **C. The Way Ahead**

19. The natural environment in Myanmar remains generally pristine, reflecting the vastness of the resources, the area they cover, their inaccessibility, and the isolation of the country both physically and (until recently) economically. Myanmar still contains some of the most unique physical and biological natural resources in Southeast Asia and the world. Fledgling policies are in place to protect these resources, but serious pressures have been placed on them recently and these are likely to intensify. The financial, human, and logistical resources available to counteract these pressures are limited, even with the expectation of international support. A pragmatic approach for preserving and conserving the country's natural resources and environmental values may be to identify priority areas, hot spots, and sectors (e.g., mining, hydropower development, forestry) and ensure that policies, laws, and regulations are applied and enforced. Coverage can then be expanded in the medium term.

20. Considerable scope exists for sustainable and inclusive development of Myanmar's natural resources through pursuit of a green growth pathway, characterized by resource efficiency, sustainable consumption and production, and climate change resiliency. The Government has responded to date through putting in place policies needed to properly manage the country's natural resources and ensure environmental protection. There exists the

opportunity to now build on the Government's new policy and legal framework in terms of promoting integrated national and sector planning processes, enhancing forests and water resource preservation and conservation, and strengthening safeguards application through elaboration and implementation of environmental regulations and guidelines.