

ENVIRONMENT ASSESSMENT (SUMMARY)¹

A. Current State of the Environment

1. Nepal is a mountainous country of about 26.6 million people, 80% of whom live in rural areas. Agriculture is the occupation of 76% of the population. The Terai, a lowland plain region, makes up 14% of the country's 147,000 square kilometers (km), with the rest divided between the lower hill (12%), the middle hill (30%), the high mountain (20%), and high Himalayas (24%) regions. Average annual precipitation is 1,630 millimeters and annual mean temperature is 15 degrees centigrade. About 10% of total precipitation falls as snow, and 23% of the country lies above the permanent snowline of 5,000 meters. A total of 5,323 square kilometer is covered by 3,252 glaciers, with an estimated ice reserve of 481 cubic kilometers. The surface water availability is about 225 billion cubic meters per annum, of which only 15 billion cubic meters are used. Of this, 95.9% is used for irrigation, 3.8% for domestic use, and 0.3% for industry. An additional 8.8 billion cubic meters per annum is available as groundwater.

2. The country was covered by 3.6 million hectares forest in 2001. A total of 1.53 million hectares forest has been lost since 1986. The forest cover is decreasing at a rate of 1.7% a year, due mainly to deforestation for fuel wood, clearing for human settlement, and illegal timber trade. Despite occupying only 0.1% of global land area, Nepal is ranked 25th among the world's countries in the richness of its biodiversity. Twenty protected areas covering 19.4% of the country host 850 (9.3%) of the globally available species of birds, 185 of the mammals (4.5%), 100 of the reptiles (1%), 43 of the amphibians (1%), 170 of the fish (1%), 645 of the butterflies (2.6%), and 5,856 of the flowering plants (2.7%). A total of 27 mammals, 9 birds, and 3 reptiles are listed as legally protected species in Nepal. However, survival of the wild flora and fauna are under threat due to widespread deforestation, loss of habitat, and poaching.

3. Nepal has a gross cultivated land area of 2.97 million hectares, 51.5% of it in the Terai. About 1.2 million hectares of this land is irrigated, but only 17% has year-round irrigation. Irrigation intensity is 91% during the monsoon season, 61% in winter, and less than 29% in spring. The country is reeling under a critical power crisis, with only an inadequate 719 megawatt of installed hydropower generation capacity, despite hydro resources estimated to have a potential generating capacity of 43,000 megawatt.

4. About 92.3% of households in rural Nepal and 40.1% in urban areas use firewood for cooking and heating. In terms of emissions, the burning of biomass is the source of 94% of total particulate matter below 10 micron (PM₁₀), of 86% of total suspended particles, of 82% of carbon monoxide, of 94% of nitrogen oxide, and of 80% of sulphur oxide in 2001. Firewood and animal dung supply 87.9% of total energy consumed. In fiscal year (FY) 2004, the demand for firewood was 16.8 million tons, compared with the 6.5 million tons available from Nepal's forests. The ambient air quality in urban areas indicates high levels of PM₁₀ (196–2,104 micrograms per cubic meter), total suspended particles (260–2,222 micrograms per cubic meter), and sulphur oxide (85–140 µg/m³). Emissions from vehicles, industries, brick kilns, and the burning of biomass for cooking are the major sources of air pollution. Although Nepal has recently adopted Euro III standard for vehicles, 1.13 million vehicles of Euro I or below currently ply the country's roads without proper emission control devices. They contributed 37% of total PM₁₀ emissions in FY2011. The Ministry of Science, Technology, and Environment (MOSTE), which is the pollution regulating agency, lacks monitoring equipment, resources, and capacity.

5. Groundwater in districts in the Terai (particularly Nawalparasi, Rautahat, Kailali, and Siraha) is contaminated by arsenic, which exposes 2 million people to health risks. About 1,400 ton of solid waste, 72% of it organic, is generated daily in the country's 58 municipalities at a

¹ This summary is based on the Asian Development Bank country environment note for Nepal, 2012.

rate of 0.25 kilograms per capita per day. Of this only 42% is collected. The collected waste is openly dumped into rivers and forests in the absence of proper landfill sites. The rivers flowing through urban areas, particularly in the Kathmandu Valley, are highly polluted due to the direct discharge of untreated household and industrial sewage and the diversion of water at their sources to meet growing water supply demand. About 80% of the country's people have access to basic water supply, and 43% have sanitation facilities.

6. According to the climate change vulnerability index in 2010, Nepal is the fourth most vulnerable country in the world. The government estimates that 1.9 million people in Nepal are highly vulnerable to the risks of climate change, and an additional 10 million are increasingly at risk. From 1975 to 2005, mean temperature increased at the rate of 0.04 degrees centigrade per year, which is higher than the mean global rate of increase. According to precipitation trend analysis, the annual average precipitation in Nepal is decreasing at the rate of 9.8 millimeter per decade. The climate change projection for 2080–2099 relative to 1980–1999 indicates that the temperature could be warmer by 4.0 degrees in winter and 2.5–3.0 degrees in summer. Climate change impacts are evident through watershed degradation, the drying of water sources, droughts, forest fires, and water-induced disasters.

7. Natural disasters affected 4.7 million people in Nepal during 1971–2010, with floods impacting 3.65 million people, landslides 0.55 million, and earthquakes 0.5 million. The overall death toll from these disasters was 24,747 deaths, with earthquakes claiming 16,521 lives, landslides 4,327, and floods 3,899. Large-scale deforestation and excessive extraction of river bed material have caused widespread degradation of watersheds, particularly in the hilly region, leading to landslides and erosion. The transport of eroded soil and the deposit of sand and sediment on the downstream reaches of rivers in the fertile Terai have caused desertification, river bed aggradations, and flooding, leading to loss of productivity, property, and lives.

B. Government Policy Framework and Strategy

8. The government has a policy and legal framework for environmental management. The country's interim constitution recognizes the right of citizens to live in a clean environment. The National Conservation Strategy for Nepal (1988) promotes wise use of natural resources, and the National Environment Policy and Action Plan (1993) aims for environmentally sustainable development. The government's Three-Year Interim Plan (FY2011–FY2013) aimed to promote green development, climate change adaptation, pollution control, and ecosystem protection. The National Strategy for Disaster Risk Management 2009 aims to establish disaster-resilient communities by mainstreaming disaster risks in development planning. Sector policies and strategies have also emphasized environmental and ecological protection.²

9. The Environmental Protection Act 1997 (EPA) and the Environment Protection Regulations 1997 (EPR) are the major legal tools for enforcing environmental compliance. Government approval of an environmental assessment before implementing any development projects is made mandatory by the EPA and the EPR. The quality of environmental assessments has improved over the years, although monitoring and enforcement has remained critically weak in the absence of institutional capacity and an established monitoring and control mechanism in the government system. The EPA and EPR do not align with new standard legal

² They include the Forestry Sector Policy (2000), the Hydropower Development Policy (2001), the Water Resources Strategy (2002), the Nepal Biodiversity Strategy (2002), the National Wetland Policy (2003), the Irrigation Policy (2003), the Sustainable Development Agenda (2003), the Water-Induced Disaster Management Policy (2003), the National Agriculture Policy (2004), the National Water Plan (2005), the Rural Energy Policy (2006), the Agricultural Biodiversity Policy (2006), the Tourism Policy (2008), the National Strategy for Disaster Risk Management (2009), the Industrial Policy (2010), the Forest Management Strategy (2010), and the National Land Use Policy (2012). They also include the National Adaptation Program of Action (2010), the Climate Change Policy (2011), and the Local Adaptation Plan of Action (2012).

provisions regarding such safeguard issues as climate change and disaster risk management or with international best practices. Other legislation and provisions provide additional legal basis for monitoring and enforcing environmentally sustainable development.³

10. The government has set standards for air quality, vehicular emissions, industrial effluents, and domestic water quality. It adopted air quality and vehicular mass emission standards in 2012 and has drafted national noise standards.

11. The Environment Protection Council and Climate Change Council under the Office of the Prime Minister are the apex institutions, and the MOSTE is the focal ministry for national environmental safeguards. Through its climate change management division, MOSTE formulates national climate change policy and programs. The government approved the establishment of an environment department in the MOSTE in 2013. Nevertheless, environmental units in sector agencies are either inactive or do not exist, and interagency coordination on safeguards is weak.

C. ADB's Experience and Strategy

12. The Asian Development Bank (ADB) has been helping the government achieve sustainable development by supporting the mainstreaming of environmental considerations in economic growth, the reduction of the environmental footprint, conservation of natural resources, and the protection of biodiversity and ecosystem services. Institutional strengthening, capacity development, and country safeguard system improvement for better environmental governance are ADB's priority agendas. Its environment and climate change programs in Nepal cover the country's urgent as well as long-term development needs, in line with the policies of the government. One of the four pillars of ADB's 2010-2012 country partnership strategy (CPS) was promotion of environmental sustainability and climate change adaptation.⁴ Environmental safeguards are mainstreamed in ADB investments through compliance with its Strategy 2020 and its Safeguard Policy Statement (2009).⁵ Mainstreaming will continue to be guided by its Environment Operational Directions, aiming for transition to green growth approaches.⁶

13. In view of Nepal's vulnerability to climate change, ADB has initiated support to build the country's long-term climate resilience. Support was provided to prepare the government's Strategic Program for Climate Resilience. ADB has helped implement two of the program's five components by (i) strengthening the capacity of government agencies by mainstreaming climate change risk management in development; and (ii) building the climate resilience of watersheds in water-stressed mountain ecoregions. Support was also provided for the downscaling of climatic data at the subbasin level for precision in climate friendly infrastructure design. ADB established screening tools for disaster and climate change risks and screened all projects under the 2010–2012 CPS.

14. To promote green growth, ADB supports the government in developing clean and renewable hydropower and alternative energy sources, including solar and solar–wind hybrid systems. It will also help develop improved cooking stoves for rural households that can substantially reduce the use of fuel woods. ADB is also supporting to improve the urban

³ These include the Plant Protection Act (1972), the National Parks and Wildlife Conservation Act (1973), the Soil and Water Conservation Act (1982), the Nepal Water Supply Corporation Act (1989), the Water Resources Act (1992), the Electricity Act (1992), the Forest Act (1992), the Industrial Enterprises Act (1992), the Vehicle and Transport Management Act (1992), the Labor Act (1992), the Local Self-Governance Act (1998), the Aquatic Animal Protection Act (1999), and the Ozone Depleting Substance Consumption Regulations (2001).

⁴ ADB. 2009. *Country Partnership Strategy: Nepal 2010–2012*. Manila.

⁵ ADB. 2008. *Strategy 2020: The Long-Term Strategic Framework of the Asian Development Bank, 2008–2020*. Manila.

⁶ ADB. 2013. *Environment Operational Directions 2013–2020*. Manila.

environment by upgrading water supply and wastewater and solid waste management; and making urban transport more sustainable and energy efficient to improve air quality.

15. ADB collaborates with other development partners in disaster preparedness and response initiatives and plays an active role in the government-led Nepal Risk Reduction Consortium. Of the consortium's five flagships, ADB leads flagship 1 on school and hospital safety program to support structural and nonstructural methods of reducing risks from seismic events. It will help retrofit 275 vulnerable public school buildings by 2014. ADB also supported the government in a quick response to a 2008 flood disaster and the recovery activity.

D. Focus of New Country Partnership Strategy

16. The new CPS will further mainstream safeguards in ADB operations, strengthen environmental governance, and support sustainable and climate friendly development:

- (i) **Environmental safeguards.** ADB will help strengthen the country safeguard system. It will support policy dialogue, institutional restructuring, capacity development, and knowledge management to improve environmental governance. It will encourage the use of a strategic environmental assessment in preparing national and sector plans and policies. It will support the strengthening of a results-based safeguard monitoring, evaluation, and enforcement system by using innovative tools.
- (ii) **Green growth.** ADB will support the creation of a sustainable urban environment through investments in clean water supply and sanitation, solid waste management, and sustainable urban transport. It will support improving energy efficiency by developing hydropower, mini and micro hydro grids, and alternative energy solar and solar–wind hybrid systems. It will support participatory watershed conservation
- (iii) **Climate change.** ADB will support the government in building capacity for mainstreaming environment and climate change issues in national, regional, and local plans and programs. It will support climate proofing of infrastructure, and continue screening projects and programs for disaster and climate change risks by using the disaster and climate change risk screening tool. It will support regional initiatives for transboundary environmental and climate change challenges.
- (iv) **Disaster risk management.** ADB will help strengthen disaster preparedness and response to reduce disaster risks. It will assist in the preparation of water induced hazard maps, vulnerability assessment, and early warning systems, and support the strengthening of policies and programs on integrated disaster risk management.
- (v) **Water resources management.** ADB will establish integrated water resource planning and management systems in important river basins for improved water and energy security, efficiency, and productivity. It will support institutional and capacity building to govern water resources and the river environment through dedicated river basin organizations and associated management systems. It will develop and implement programs to address climate change adaptation and flood and drought mitigation, taking into consideration the water–food–energy nexus.