UNEP

GEO 5
Global Environment Outlook

Summary for Asia and the Pacific Region

On the Eve of Rio+20

Integrated Resources Management & Enhanced Accountability Critical to Overcoming Degradation & Achieving Sustainability in Asia-Pacific, World's Fastest Growing Economic Region

Inspiring Examples & Innovative Measures Must be Scaled Up to Put Region on a More Sustainable Path

Changing Consumption Patterns, Emissions Reduction & Better Management of Water & Chemicals identified as Priority Issues

Asia and the Pacific is the fastest growing economic region in the world, yet unsustainable growth, population increase, increased consumption and urbanization challenge the region's sustainable development.

Robust governance structures, enhanced accountability and coordinated sustainability approaches need to be integrated across all policy levels, if the region is to overcome environmental challenges, which include rising greenhouse gas emissions, water scarcity, unsustainable consumption and production patterns and the management of chemicals and hazardous waste.

Yet, many countries are adopting innovative policies that can put the region on a more sustainable path: from balancing water management through quotas and pricing in China and the introduction of payments for ecosystem services in Vietnam, to building climate resilience in the Maldives and implementing a national green growth policy in the Republic of Korea.

If scaled-up and accelerated, such measures could assist in a transition to a Green Economy as nations across the globe prepare for the Rio+20 Summit later this month.

The above are among the key findings for Asia and the Pacific from the Global Environment Outlook 5 (GEO 5), which analyses the worldwide state of the environment and tracks progress towards the achievement of agreed goals and targets.

Under a business as usual scenario, Asia-Pacific – often described as the global engine of economic growth - is expected to contribute approximately 45 per cent of global energy-related carbon dioxide (CO_2) emissions by 2030 and an estimated 60 per cent by 2100. However, encouraging signs include voluntary pledges by ten countries to reduce their emissions by 2020.

Meanwhile, intra-regional diversity means that the region is home to the largest emitter of CO_2, China, and the smallest emitters, the Pacific Island nations.

Similarly, water endowments in the region range from the abundant resources of the tropics and the Himalayan snowfields to the highly arid temperate zones and water-stressed small island states.

Balancing water supply and demand and improving the management of water quality and resources are essential to achieving regional and global freshwater goals.

Economic growth in Asia and the Pacific is coupled with an increase in unsustainable consumption patterns and waste production. Changing consumption patterns, which reduces waste from the outset, lies at the core of effective waste management policies in the region.

The sustainable management of chemicals in the region is identified as a key policy concern. While the use of chemicals remains on the increase, the impact of their use on health and the environment is poorly monitored and regulated. Appropriate controls on chemicals production and use and the management of contaminants need to be addressed at the policy and enforcement levels.

Meanwhile, experts agree that improved governance structures and enhanced accountability are critical to addressing environmental degradation and unsustainable development in Asia-Pacific.

On a regional level, GEO 5 pays particular attention to policy approaches, highlighting successful national and regional policies that can be scaled up and replicated elsewhere. Emerging trends and regional priorities for action are analysed and highlighted.

Drivers

Central to the GEO 5 methodology is the concept that environmental pressures can only be effectively tackled if underlying drivers are addressed. Policies are most effective, argues the report, when they pro-actively address the causes of environmental degradation, rather than reacting to the effects.

The drivers of environmental change in Asia-Pacific highlighted in GEO 5 include population, economic growth, urbanization, and consumption and resource use.

Population

According to 2010 estimates by the UN Population Division, just over 3.9 billion people live in the Asia-Pacific region– making up almost 58 per cent of the world's population. Yet, population growth in the region has been steadily declining over the last two decades.

Population density and inequitable resource management have been identified as the root causes of water scarcity, especially in rapidly developing countries.

In China, for example, urban growth has exacerbated a decline in the availability of clean water by overwhelming the water supply and sanitation infrastructure.

Economic Development and Resource Use

At the beginning of the 21st century, the Asia-Pacific region overtook the rest of the world to become the single largest user of natural resources (Resource Efficiency: Economics and Outlook for Asia and the Pacific - UNEP 2011).

As economies in Asia and the Pacific urbanize and industrialize, the use of primary materials (metal ores and industrial minerals, fossil fuels and construction minerals) continues to grow.

According to a forthcoming report by UNEP that examines material flows and resource productivity in the region, the use of materials in the region has more than doubled from 17.4 billion tonnes in 1992 to over 37 billion tonnes in 2008.

Over the last two decades, growth in material use has outpaced GDP growth, leading to a deteriorating trend in materials efficiency overall, despite improvements within individual economies such as China (from 9.4kg per US$ in 2005 to 8.7kg per US$ in 2008).

The report, entitled Recent Trends in material Flows and Resource Productivity in Asia and the Pacific, indicates that most of the increase in material use in the region can be attributed to a small number of countries, most notably China and India.

Japan is the only country to have succeeded in reducing its consumption of materials, since 1992.

Since 2001, China has grown at 10 per cent per year, a seven-year doubling time, and India at 8 per cent per year, a nine-year doubling time - with environmental pressures increasing at approximately the same pace.

As a result, China, whose economy is second only to that of the United States, has become the world's largest CO_2 emitter.

In order to improve their environmental footprint, emerging economies such as China and India will need to improve their annual production efficiency by about 2.9 and 2.2 per cent, respectively. Otherwise, these two economies alone will appropriate approximately 37 per cent of the projected increase in global environmental footprint by 2015.

Energy

The use of fossil fuels is predominant in the Asia-Pacific region, with hydro-electricity, renewables and nuclear energy typically accounting for less than 20 per cent of overall energy use.

According to the Pacific Economic Cooperation Council, oil remains the fuel of choice in most Asia-Pacific economies, accounting for 30-40 per cent or more of energy needs in most economies. The key exception is China, which relies heavily on coal.

Coal production increased by 3-5 per cent per year during 2005-2009, with China experiencing a 16 per cent increase in production during 2008-2009, reaching 44 per cent of the world's total coal production of 3.05 billion tonnes. With rapidly increasing energy demand, however, China became a net importer of coal for the first time in 2007.

Coal constitutes more than 20 per cent of overall energy use in the majority of Asia-Pacific economies, while natural gas typically accounts for 10-20 per cent of the energy mix (China is again the exception, with only 4 per cent of its energy needs met by natural gas).

Urbanization

Urban areas house half of the world's population, utilize two thirds of global energy and produce 70 per cent of global carbon emissions.

In the Asia-Pacific region, rapid economic growth is closely linked with urbanization levels. By and large the more developed countries have relatively high levels of urbanization – for example, high income countries in the region have an average urbanized proportion of 75 per cent, while the LDC's of the region have an average of 27 per cent.

In 2010, 43 per cent of the Asia and the Pacific population lived in urban areas, the second lowest urban proportion of a region in the world; however, in the last two decades the Asia-Pacific urban proportion has risen by 29 per cent, more than any other region – according to ESCAP figures.

South and South-West Asia had the fastest urban population growth rate of all the Asian and Pacific subregions at an average of 2.4 per cent per year during 2005-2010.

State of the Environment - Priority Issues

During regional preparatory consultations for GEO 5, five priority issues were identified for Asia and the Pacific: climate change, freshwater, biodiversity, chemicals and waste and environmental governance.

Climate Change

Asia-Pacific is the fastest growing source of greenhouse gas emissions globally. Rapid economic growth over the past 20 years, particularly in the larger economies, has been accompanied by increasing emissions of greenhouse gases and degradation of natural capital.

A business as usual scenario suggests that the region will contribute around 45 per cent of global energy-related CO_2 emissions by 2030 and an estimated 60 per cent of global emissions by 2100.

Meanwhile, transport-related emissions are expected to increase by 57 per cent worldwide between 2005 and 2030, with China and India accounting for more than half.

Of the ten countries in the world that are most at risk from climate change impacts, six are in Asia-Pacific - including low-lying Pacific island countries, which may eventually disappear due to sea level rise and extreme weather events.

The priority concern for these countries is to build resilience to climate change impacts, especially across the most vulnerable communities.

CASE STUDY: Adaptation policies in the Maldives

International projections indicate that 85 per cent of the Maldives could be below sea level by 2100. The country is among small island states that contribute the least to greenhouse gas emissions, yet are among the most vulnerable to climate change impacts.

The Maldives was the first country to declare its intention to be carbon neutral by 2019 and to view climate change as a critical national development challenge.

Key policy actions:

- Climate-proof ten safer islands to be used as future refuge.
- Integrating climate risk into resilient island planning, which includes coastal afforestation, replenishing natural ridges, climate proofing drainage, coral reef propagation, mangrove planting and beach nourishment.
- Local communities are involved in the planning and decision making processes to improve island resilience.

The global climate change goals for Asia-Pacific (UNFCCC Article 3) target the protection of the climate system on the basis of equity and common but differentiated responsibilities; urging the Parties to take precautionary measures to prevent or minimize climate change and mitigate its impacts.

To achieve these goals, governments will need to implement policies that support carbon neutrality, renewable energy, conservation and efficiency.

Promising examples include:

- China, India and Indonesia have adopted policies to reduce and remove fossil fuel subsidies with the objectives of reducing state budget burdens and environmental damage. Such policies will also provide opportunities for alternative energy development.
- Ten countries have voluntarily pledged greenhouse gas emission reductions, including: Indonesia (26 per cent by 2020) and China (40-45 per cent per unit of GDP by 2020). Other countries include: India, Marshall Islands, Maldives, Mongolia, Papua New Guinea, the Republic of Korea and Singapore.

- Many countries in the region are adopting policies in favour of sustainable land-use management and reduced emissions from deforestation and land degradation - which offer significant potential for mitigating CO_2 emissions.

GEO-5 identifies the following as key policy actions to improve climate change adaptation and mitigation in the region: integrating climate change adaptation and disaster risk reduction, mainstreaming adaptation concerns into development policies and plans, promoting clean energy, eliminating energy subsidies, and enabling economic instruments and innovative financing - including carbon tax, emissions trading, feed-in tariffs and REDD+ (Reducing Emissions from Deforestation and Forest Degradation).

Freshwater

Water endowments in Asia-Pacific range from the highly arid temperate zones and water stressed small island states to water-abundant zones in the Himalayan snowfields and the tropics, often alternating between drought and floods.

The global goal on freshwater selected for Asia-Pacific (the 2002 Johannesburg Plan of Implementation - Paragraph 26 C) targets the improvement of water allocation, conservation of both the quantity and quality of water resources and the safeguarding of ecosystems.

- Global water withdrawals have tripled over the last 50 years to meet the demands of growing populations.
- Agricultural centres in northwest India, northeast China, and northeast Pakistan are dependent on ground water for irrigation. Between 1960 and 2000, global groundwater withdrawals increased from 312 km^3 per year to 734 km^3 per year.
- The number of floods recorded globally between the 1980's and the 2000s increased by 230 per cent while the number of people exposed to floods increased by 114 per cent. Over 95 per cent of related deaths occurred in in developing countries.
- Governments in South and East Asia have improved their disaster preparedness. But the capacity of communities to cope with extreme events is weakening because of inadequate social capacity and increasing flood severity.
- Arid and semi-arid areas are expected to get drier in coming years as higher precipitation intensity is forecast for the northern hemisphere and equatorial areas.

Balancing water supply and demand, through coordination and improved integrated water resources management, is essential to freshwater conservation at the regional and global levels.

Only a handful of countries in the region have established the necessary legal and institutional capacities for the implementation of integrated water resources management. In most countries, water resources are still managed through a sectoral approach.

CASE-STUDY: Balancing water needs through quotas and pricing reform

China's Yellow River exhibited a partial failure to reach the sea in 1972. The annual frequency of cut-off days reached its peak of 226 days in 1997. The severe reduction in flow impaired the health of the river-basin ecosystem and its services.

In response, the government issued annual water-use quotas, a distribution scheme and fee collection rules among provinces. Trade in water user rights between sectors was observed in some provinces.

Implementation of these policies has ensured uninterrupted flow of the river to the sea since 2000 and improved the health of the river basin. Populations of endangered plant and animal species doubled over a five-year period. The number of bird species rose from 187 in 2000 to 283 by 2006.

The following are among the key policies identified by the GEO-5 process to improve freshwater management in the region: the application of adaptive and integrated water resources management; promoting community based management for better water allocation; encouraging rainwater harvesting and storm water management to improve response to water shortage; utilizing economic instruments and approaches to enhance efficient water use; and incorporating ecosystem approaches to water resource management.

Biodiversity

The emerging economies of Asia and the Pacific are exerting considerable pressures on biodiversity and ecosystems. The principle pressures on biodiversity include habitat loss and degradation, overexploitation, alien invasive species, climate change and pollution.

Despite efforts by governments to expand protected areas and encourage innovative policies and financing, the scale of these efforts does not match the extent of biodiversity and ecosystems loss in the region.

- South-East Asia is a primary terrestrial and marine biodiversity "hotspot", yet two thirds of countries in the region have experienced an increase in the number of threatened species between 2008 and 2010 (ASEAN Biodiversity Outlook).
- South-East Asia has lost 13 per cent of its forest area since 1992 (an area equivalent to the size of Vietnam), making it a major contributor to the global deforestation.
- Pressure on forests is caused by the growing population which depends heavily on timber for livelihood; wood for fuel; and new land to convert into agricultural and industrial estates.
- The threat to vertebrates from overexploitation in Asia-Pacific is particularly severe, driven by demand for wildlife and wildlife products from East Asia.

The GEO-5 biodiversity goal for Asia-Pacific emphasises conservation, sustainable use and the fair and equitable sharing of the benefits of genetic resources.

The study also spotlights the need to formally recognize community rights and the stewardship of indigenous and local communities, who live within or on the periphery of protected areas.

CASE STUDY: Payment for ecosystem services in Vietnam and China

- In Vietnam's Lam Dong Province, a forest ecosystem-service payment scheme contributed to improving the lives of over 40,000 rural poor and promoted the conservation of 210,000 hectares of forest. The forest scheme charges tourism operators and downstream water and power utilities for upstream water regulation, soil conservation and landscape preservation.

  By December 2010, payments of more than US $4 million was made to 22 forest management boards and forestry businesses, in addition to 9870 ethnic-minority households, each of which receives US $540-615 annually. Replication of this scheme throughout Viet Nam would strengthen national plans to conserve forests and biodiversity, while increasing incentives and local community participation.
- China is implementing some of the largest payment for ecosystem services schemes in the world. Since 1999, more than US $15 billion has been spent on the conversion of 9 million hectares of cropland to forest and grasslands. Over US $2 billion has been invested, so far, in a forest ecosystem compensation fund, which pays local governments and communities to protect key forest areas, now covering 44 million hectares.

GEO-5 identifies the following key policy actions to improve biodiversity conservation in the region: the improvement of protected area management; encouraging payment for ecosystem management; and ensuring that benefits from genetic biodiversity exploitation accrue to traditional stewards of habitats.

Chemicals and Waste

The Asia-Pacific region is facing rapidly growing challenges in the area of waste and chemicals management, fuelled by economic growth, population increase, rapid industrialization and urbanization.

In low and middle-income countries, volumes of waste continue to grow as waste streams contain larger amounts of hazardous substances.

The global goal for chemicals and waste for the region focuses on life-cycle analysis, transparency and minimization of risk to human health and the environment.

CASE STUDY: Ship breaking in South Asia

South Asia has been the global centre of ship dismantling and recycling since the 1980s, with Bangladesh, India and Pakistan accounting for 70 to 80 per cent of the international market. In Bangladesh alone, the industry provides employment for over half a million people.

Obsolete ships contain a wide range of hazardous materials for which there are no adequate treatment facilities or standard occupational health and safety measures in the South Asian yards.

In 2009, the Bangladesh high court directed that ship breaking yards without Department of the Environment clearance should close within two weeks and ordered new rules to be formulated requiring ship yards to obtain environmental clearance certificates.

The International Convention for the Safe and Environmentally Sound Recycling of Ships (the Hong Kong Convention) was adopted in May 2009 – to come to force in 2015 –requiring that hazardous substances are removed from ships prior to recycling. Signatories will need to revise their legislation and invest in improved procedures and facilities. The convention will require signatories to ensure that ship recycling takes place only in countries that are party to the convention.

According to GEO-5, key policy actions to improve the management of chemicals in the region include: the adoption of policy frameworks that promote waste avoidance and reduction of the production and use of hazardous chemicals; establish systems for product reuse and materials recycling; stimulate markets for recycled materials; set-up safe disposal for hazardous waste; strengthen international collaboration, including technology transfer and financial support; and reinforce systems to control illegal export and import of hazardous chemicals and waste.

Environmental Governance and the Way Forward

Improved governance is critical to establishing accountability as a means of achieving sustainable development.

CASE STUDY: Low Carbon Green Growth in the Republic of Korea and China

Some countries in North Asia have developed green growth approaches that aim to integrate environmental sustainability concerns into overall policy making.

- The Republic of Korea formulated a National Strategy for Green Growth with an overall vision of becoming a global green leader by 2020. Areas of focus include: climate change mitigation, energy independence and creating new engines for economic growth. The strategy is supported by a Green Growth Framework Act and a five-year action plan with specific targets for greenhouse gas emissions reduction and carbon sequestration.
- China developed its twelfth five-year plan for National Economic and Social Development (2011-2015), which stipulates a 16 per cent reduction in energy intensity; a 17 per cent reduction in carbon intensity; a 6 per cent increase in forest stock volume, and a 1.3 per cent increase in forest coverage, relative to 2010 levels.

Key governance recommendations in Asia-Pacific include:

- Integrating sustainability concerns across all policy areas;
- Increased multi-stakeholder participation and capacity improvement;
- Allocating sufficient authority to appropriate levels of government;
- Improved monitoring and data collection;
- Access to information and legal redress;
- Greening fiscal policy;
- Improving compliance and enforcement measures, including environmental courts and dispute settlement mechanisms.

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