4.6 Peru

4.6.1. Fact Box

<table>
<thead>
<tr>
<th>Total estimated value of natural resources to the economy</th>
<th>MINAM calculated a value of US$15.3 billion for selected ecosystem services in 2009(^1)</th>
</tr>
</thead>
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<tr>
<td>Status of Ecosystem Services</td>
<td>One of the top ten “megadiverse” countries in the world</td>
</tr>
<tr>
<td>Vulnerability to Climate Change and Anthropogenic action</td>
<td>Climate change is a significant threat, as is deforestation, mining, mass tourism and pollution</td>
</tr>
<tr>
<td>National Ecosystem Assessment</td>
<td>Not currently available</td>
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<tr>
<td>Key legislation or planned legislation</td>
<td>2009 amendment to the 2001 MINAM Law No. 27446 on EIA</td>
</tr>
</tbody>
</table>

4.6.2. Abbreviations: Peru

- **BCRP**: National Bank of Peru, *Banco Central de Reserva del Perú*
- **CICTEP**: International Centre of Traditional Knowledge, Ecology and Policies
- **CONAM**: National Environment Authority, *Consejo Nacional del Ambiente*
- **DGEVFPN**: General Directorate for Natural Heritage Assessment, Valuation and Financing, *Dirección General de Evaluación, Valoración y Financiamiento del Patrimonio Natural*
- **INEI**: National Institute for Statistics and Informatics, *Instituto Nacional de Estadística e Informática*
- **MINAM**: Ministry of the Environment, *Ministerio del Ambiente*
- **SEIA**: National Environmental Impact Assessment System, *Sistema Nacional de Evaluación del Impacto Ambiental*
- **SINIA**: National Environmental Information System, *Sistema Nacional de Información Ambiental*
- **VMDERN**: Vice-Ministry for the Strategic Development of Natural Resources, *Vice Ministerio de Desarrollo Estratégico de los Recursos Naturales*

4.6.3. Background

In the past ten years (2002–2012), Peru has had high GDP growth rates, averaging 6.4%, and has made significant advances in social and development indicators. Peru relies significantly on natural resources, with biodiversity sustaining a large part of the population, contributing 22% to Peru’s GDP and 24% to its total exports [139]. In particular, biodiversity supports industries such as fisheries, agriculture, manufacturing tourism and pharmaceuticals. Peru is a lead exporter in organic bananas, coffee and cocoa, it is one of the top fish producers in the world,² and uses over 4,400 traditional plant species for a variety of medicinal, consumptive and cultural uses. 71% of tourists visiting Peru participate in nature-related activities, and around 65% of agriculture depends on local biodiversity resources. Peru also relies significantly on ecosystem services for soil fertility, air quality and water supply.

4.6.3.1. Status of national ecosystems and ecosystem services

Peru is one of the world’s top ten “megadiverse” countries,³ with around 25,000 plant species (of which 30% are endemic), 10% of the world total. In addition, Peru has more fish species than any other country (close to 2,000 species, 10% of the world total), 1,736 bird species (second in the world), 332 amphibian species, 460 mammal species (third in the world) and 365 reptile species. Of these, 222 species are endangered.

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³ [Http://www.conservation.org/documentaries/Pages/megadiversity.aspx](http://www.conservation.org/documentaries/Pages/megadiversity.aspx).
4.6.3.2. Ecosystems vulnerability to climate change and anthropogenic action

The MA sub-global assessment in the Peruvian Andes identified mass tourism and mining as threats to biodiversity and cultural diversity. Additional threats include deforestation, particularly due to illegal mining operations and logging [140], and urban expansion and agricultural development, and the resulting pollution. Hydrological services are particularly threatened, with reported high levels of urban water consumption compared to other South American cities, and high levels of watershed degradation and water pollution.

Peru is ranked the third most vulnerable country in the world to climate-induced disasters, exacerbated by the country’s dependence on agriculture and fishing. Deglaciation is already occurring, which will have a critical impact on water supply for people, agriculture and hydropower. A study by Peru’s national bank (BCRP) shows the negative impact on agriculture, public health, fisheries, hydropower and economic growth in Peru [141] of climate change under a range of scenarios.

4.6.4. Assessing natural capital

4.6.4.1. Institutions and institutional capacity for environmental accounting

The Environment Ministry (MINAM) was formed in 2008, absorbing the previous National Environmental Authority (CONAM) and Protected Areas Authority (SERNANP), among others. Within MINAM is the Vice Ministry for Strategic Management of Natural Resources (VMDERN), whose mandate includes developing the national strategy for the integrated management of natural resources, and overseeing its implementation.

Within VMDERN is the General Directorate of Natural Heritage Assessment, Valuation and Financing (DGEVFPN). The DGEVFPN is primarily responsible for natural resource valuations, and provide data for National Environmental Accounts by undertaking the following activities:

- Natural heritage inventory and valuation methodologies
- Capacity building for economic valuation of natural heritage (composing natural resources, environmental services, and biodiversity) at sector, regional and local levels. This has included capacity building at national

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4 WwW.m illenniumassessment.org.
5 Estimated 66 gallons of water consumed/day/person in Lima, compared to 40 gallons/day/person in Bogotá, http://www.nature.org/ourinitiatives/regions/southamerica/peru/explore/aquafondo-the-water-fund-for-lima.
7 CONAM estimate that the area of glacial ice in Peru decreased by 20% from 1970 to 1997.
level (SNIP), in the Ayacucho, Loreto and Madre de Dios departments (FONDAM-UP), and in the regional governments of Apurímac, Ayacucho and Huancavelica (CTB); see also the new diploma on environmental-economic valuation.8

- Studies on economic valuation
- Studies of public spending on natural resources and biodiversity
- Compensation mechanisms for environmental services

The National Institute for Statistics and Informatics (INEI), is responsible for producing the National Accounts, including the satellite environmental accounts.

4.6.4.2. Ecosystem and ecosystem services assessments
A sub-global Millennium Ecosystem Assessment was undertaken in the Vilcanota sub-region of the Peruvian Andes, a regional biodiversity hotspot with a large number of endemic species, by CICTEP (the International Centre of Traditional Knowledge, Ecology and Policies). It included assessments of cultural services (spirituality), provisioning services (water and food), supporting services (soil and primary production) and agrobiodiversity. As with Colombia and Costa Rica, Peru is also included in the NASCA natural capital project, which maps ecosystem services in parts of Latin America.9 Other regional case studies include ecotourism management in the Cuyas Ayabaca cloud forest, economic valuation of non-timber products in the Tumbes Pacific tropical forest, economic valuation of tourism in the San Martín region, environmental-economic valuation of ecosystem services in the Laguna Morona Cocha basin and economic valuation and assessment of recreation and tourism potential for the development of ecotourism at the Tumbes National Mangrove Sanctuary.10

4.6.4.3. Natural capital/environmental services accounts
Incorporating an economic-environmental valuation of the cost to environmental services and any relevant conservation management or mitigation costs as required for EIAs has taken place for hydrocarbons since 2006 and for mining since 2010.11

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8 Http://www.ecomilenio.es/desarrollo-del-diplomado-valoracion-economica-de-la-biodiversidad-y-los-servicios-de-los-ecosistemas-en-peru/2222.
More recently, in 2011 MINAM produced a first version of a guide on implementing Satellite Environmental Accounts in Peru, *Una Primera Aproximación de la Cuenta Satélite Ambiental* [142], which it hopes will become the basis for a guide for Environmental Satellite Accounts in Peru. It is based on SEEA methodologies, and includes:

- Pilot physical accounts for land and soil, subsoil resources, forestry, fisheries, water and biodiversity
- Pilot accounts for spending on environmental protection
- Pilot environmental-economic integrated accounts
- Methodologies
- Information on data gaps for other accounts such as energy and mining
- A set of 324 environmental indicators
- An action plan on implementing the satellite environmental accounts

MINAE estimated the total value of selected ecosystem services in 2009 to be US$15.3 billion.12 This includes:

- US$2.5 billion from energy and water
- US$8.0 billion from agriculture, forestry and livestock
- US$4.9 billion from hotels and restaurants
- US$864 million from fisheries

### 4.6.5. Governance

**4.6.5.1 Mechanisms integrating natural capital values into policy**

In a pioneering move, from 2011 all environmental impact assessments were legally required to include an ecosystem services valuation. This ensures that the values of environmental services are explicitly considered in any policy change.

### 4.6.6. Current initiatives based on ecosystem services

As with Colombia and Costa Rica, Peru has a number of PES projects, including a number of water funds projects (Box 11 [overleaf]). One such water fund, the Lima water fund called Aquafondo, is supported by The Nature Conservancy, Grupo GEA and the Fondo de Las Américas (FONDAM) and will use contributions from major water users in Lima to finance watershed restoration and conservation activities.13 Other watershed projects include the Watershed Services Incubator project14

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13 Http://www.nature.org/ourinitiatives/regions/southamerica/peru/explore/aquafondo-the-water-fund-for-lima.xml.

launched by the Environment Ministry [96] and the Andead Watershed Project in the Jequelepeque and Piura micro-watersheds of Alto Mayo-Moyobamba, San Martín Department, supported by the German GTZ and CONDESAN. A fee charged to Moyobamba’s water consumers by the municipal water company was used to subsidise upstream farmers willing to change sediment-prone land uses, such as planting shade-grown coffee in previous slash-and-burn areas, which would also improve incomes for these farmers [143].

Other relevant projects include a PES scheme where payments from tourism operators in Peru’s Madre de Dios region are used to finance the conservation of scenic vistas [144], and a joint scheme between Peru and Chile for the management of the Humboldt Current Large Marine Ecosystem. This GEF-funded program focuses on transboundary and ecosystem-based diagnoses that are intended to lead to an ecosystem-based approach.\(^\text{15}\)

**Box 11. Watershed funds**

Watershed funds are a type of PES or PES-like scheme focusing on delivery of hydrological services through the creation of a trust fund financial governing structure. They are based on the premise that practices taken to help conserve ecosystems by people living upstream in a watershed can help maintain a clean, regular supply of water paid for by downstream users (including water utility companies, hydropower companies, irrigation systems and other industries) who depend on these services.

Water users pay money to a water fund, usually a multi-institutional governing body with public and private partners. The water fund invests in the conservation of watersheds, generally aiming to improve or maintain water quality, quantity and regularity of flow for downstream users, improve or maintain human well-being for upstream users and maintain or enhance ecosystem function and biodiversity of the watershed [145]. This creates a long-term, sustainable source of funding and a decision-making body for long-term conservation efforts, and can help to avoid the costs of infrastructure for water treatment.

Water funds are increasingly popular in Latin America, particularly in Colombia and Ecuador. In 2011 seven water funds were operational in the Northern Andes alone, serving over 11 million people and helping to conserve 1.6 million ha of watershed [145]. At the time of the study, six additional water funds were under development, which once operational would serve a further 4 million people and add nearly 1 million ha more of protected watershed.

\(^{15}\) Http://iwlearn.net/iw-projects/3749.
**4.6.7. Legislation**

**4.6.7.1. Policy**

Peru’s National Biodiversity Strategy and Action Plan aims that by 2021, Peru will be the first country in the world to have the most benefits for its population from the conservation and sustainable use of biodiversity and the restoration of all its biodiversity components in order to meet the basic needs and well-being of present and future generations.\(^{16}\)

The National Environment Policy (2009) incorporates the concept of BioTrade as part of a green growth strategy [146].

**4.6.7.2. Legislative process**

Peru is a presidential republic made up of 25 administrative districts called regions. The federal legislature is a unicameral congress, composed of 130 representatives who are elected by popular vote for five-year terms. National legislation is proposed by the executive branch (the President, elected by popular vote for a five-year term, the Prime Minister, appointed by the President, and the council of ministers, also appointed by the President), members of Congress, the Judiciary, autonomous public bodies, municipalities or professional associations. Citizen groups and individuals are also constitutionally guaranteed the right to submit legislation to congress for consideration.

Laws passed by Congress and signed by the President represent the strongest form of legislation in the Peruvian juridico-legal system. Supplemental legislation exist by the way of legislative resolutions, which are employed to ratify international treaties or specify and modify rules and regulations of existing legislation. Likewise the executive branch may issue a “supreme decree” (executive decree), which does not need congressional approval but does require the signature of at least one sitting cabinet minister.

**4.6.7.3. Implementation of international objectives**

Peru is a signatory to the CDB, and as such submitted its *Fourth National Report to the Convention on Biological Diversity* in 2010 [147] and its National Biodiversity Strategy and Action Plan [148].

\(^{16}\) Http://www.cbd.int/countries/profile/default.shtml?country=pe#status.
4.6.7.4. Legislation (planned or in force)

MINAM Law No. 27446, 2009 amendment to the 2001 law
In March 2010, Congress passed a new set of regulations for the 2001 Law No. 27446 on the National Environmental Impact Assessment System (SEIA). This requires all environmental impact assessments (EIA) to include an ecosystem service valuation (ESV) by 2011 [149]. Article 25 includes the requirement for the assessment, conservation and valuation of Peru’s natural heritage, including natural resources, genetic, species and ecosystem biodiversity, and the environmental services that they provide. Article 26 includes the need for EIAs to consider environmental impact, including the costs of mitigation, monitoring, remediation or rehabilitation, as well as the cost of other conservation or management measures that may be applicable, such as compensation. The Peruvian Ministry of the Environment (MINAM) together with Earth Economics are developing a framework to help implement the new law [150].

For a full list of laws relevant to the environment in Peru, see the DGEVFPN website.20

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18 Article 25 of the amendment: Assessment, conservation and valuation of natural heritage, Evaluación, Conservación y Valoración del Patrimonio Natural.
19 Article 26 of the amendment: Economic appraisal of environmental impact of projects, Valorización económica del impacto ambiental de proyectos de inversión.