Philippines (Republic of the)

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Location and area

The Philippines is a republic in the western Pacific Ocean, made up of the Philippine Islands. Situated about 1,200 km east of the coast of Vietnam, the Philippines are separated from Taiwan on the north by the Bashi Channel. The republic is bounded on the east by the Philippine Sea, on the south by the Celebes Sea, and on the west by the South China Sea. The total area of the Philippines is about 300,000 km^2.

Topography

The Philippines are the most northerly island group of the Malay Archipelago, extending about 1,850 km between Borneo and Taiwan with an east-west extent of 1,100 km. The group comprises about 7,100 islands, with eleven of them (Bohol, Cebu, Leyte, Luzon, Masbate, Mindanao, Mindoro, Negros, Palawan, Panay, and Samar) having an area of more than 2,500 km^2 each.
The islands, of volcanic origin, are the summits of a partly submerged mountain mass.
On the smaller islands the mountains are the principal topographical feature. The larger islands, particularly Luzon and Mindanao, also contain broad plains and level valleys in the interior. Large rivers traverse the principal islands.

Climate

The Philippines are within the Tropics and have a mean annual temperature of about 27° C. Rainfall averages about 2,000 mm a year in the lowlands and falls primarily during the rainy season (May to November).

Land use

Forests cover about 20 % of the total area of the Philippines. Mangrove trees and nipa palms grow in coastal swamps. About 44 % of the working population is engaged in agriculture. The most important subsistence crop is rice (Microsoft Encarta Encyclopedia 2002).

Peatlands

In a study on the potential of the 70 km^2 large Sab-A Basin in Leyte, of which 10 km^2 was cleared and drained for agriculture and 60 km^2 remained as jungle, the presence of organic soils was indicated (Rotor 1981). Quodala & Bardelosa (1981) reported on research in a some 100 ha large area in Leyte, where in 46 drill holes an average peat thickness of 5.3 m was found under an average overburden of mineral soil of 1.4 m (cf. Oravainen et al. 1993). These reports are probably the source of the information that the Bureau of Energy Development of the Ministery of Energy provided to Bord na Mona (1985). Bord na Mona (1985) estimated the peatland area of the Philippines on 60 km^2 and mentioned an average peat depth of 5.3 m in a depth range of 0.5 – 12 m. Shrier (1985), referring to Bord na Mona (1985) then mentions 60 km^2 of “mire area” and “peat deposits” in the Philippines based on – as he says – results from surveys from 1980-81.

Andriesse (1988) uses this figure for the extent of organic soils, whereas Schneider & Schneider (1990) and Pfadenhauer et al. (1993) use it for peatlands.

Oravainen et al. (1992) and Klemetti et al. (1996) classify the "swamps" resp. the "mires" of the Philippines into two types:

- Inland "mires" in lacustrine and fluviatile environments, generally located in major basins (e.g. Agusan-Davao Basin), intramontane basins, and lowland areas near lakes and rivers;
- Coastal swamps in lagoonal, estuarine, and deltaic environments. These include a.o. mangrove swamps and nipa swamps.

Oravainen et al. (1992) and Klemetti et al. (1996) give various figures for the "marshy and swampy area", "mire" and "peatland" area. On the basis of Land Use Maps (Swedish Space Corporation 1988) they arrive at a "marshy and swampy" resp. "mire" area of 1,035 km^2, on the basis of topographic maps compiled in 1947-1953 at an area of 2,388 km^2. These studies covered both existing and former "marshy areas" resp. "mires" in the provinces of Pangasinan, Cagayan, Pampanga, Laguna, Rizal, Camarines Sur, Samar, Leyte, and Agusan del Sur.

Table 1: Occurrences of marshy and swamp areas (in ha) based on Swedish Land Use Maps (Swedish Space Corporation 1988) (after Oravainen et al. 1992).

Province	ha
Cagayan	300
Nueva Ecija	100
Aurora	1,000
Laguna	600
Occidental Mindoro	100
Rizal	300
Camarines Sur	800
Leyte	900
Northern Samar	300
Agusan del Norte	600
Agusan del Sur	12,900
South Cotabato	200
Lanao del Sur	100
Maguindanao	62,500
North Cotabato	20,000
Sultan Kudarat	2,800
Total	103,500

Table 2: Occurrences of swamp areas (in ha) based on topographic maps (1947-1953) (after Oravainen et al. 1992.

	ha	
Luzon		
Buguey	2,900	
Camalaniugan	3,600	

Gattaran	250	
Roxas	10	
Cabatuan	10	
Dikabasan	530	
Manila	23,380	
Tarlac	43,700	
Total	74,380	
Samar		
San Isodro	210	
Burgos	260	
Santa Elena	170	
Ormoc City	26,900	
Calbagoy City	13,550	
Total	41,090	
Mindanao		
Davao City	18,250	
Bulvan	53,250	
Cotabato City	47,190	
Talacogan	4,600	
Total	123,290	
Grant total	238,760	

These data form the basis for the range of 1,040–2,400 km^2 that Rieley et al. (1996a) present for the extent of "peat swamps" in the Philippines and that Rieley (1997) presents for the area of "undisturbed peatland".

Oravainen et al. (1989, 1992), however, performed a more detailed study in 621 km^2 of these "swamps" / "mires" in 1989. In 4 out of 8 investigated areas they found 107 km^2 of "peatlands" with a minimum peat thickness of 0.3 m. The peat layers alternated with thin layers of clay, and – in case of Sta. Teresita on Cagayan – were also overburdened with a (up to 3 m thick) layer of clay. The thickest peat layers were found in Agusan del Sur on Mindanao (5.0 m) and Tacloban on Leyte (7.0 m)

According to the interpreted World Soil Map (Van Engelen & Huting 2002) 853 km^2 of histosols exist in the Philippines and 9,284 km^2 of gley soils.

Mire and peatland losses

According to Geoanalytics (www.geoanalytics.com/bims/bims.htm) freshwater swamps originally (i.e. before the influence of humans) covered 14,460 km^2 against currently 802 km^2.

Mangroves, which covered some 4,480 km^2 in 1920, have been depleted both by legal and illegal felling over the last 60 years. Some 1,461 km^2 of mangroves remained in 1978, but only 1,190 km^2 remained in 1990. Currently 1 093 km^2 survive (www.geoanalytics.com/bims/bims.htm, www.earthisland.org/map/mngec.htm#Status,

Chatterji 2000). Many mangroves were lost because of the construction of shrimp and milkfish ponds (Zamora 1984, cited in Klemetti et al. 1996).

Most of the peatlands described by Oravainen et al. (1989, 1992) and Klemetti et al. (1996) had been prepared for agricultural use. The areas with a thin peat layer are used for the cultivation of rice, whereas the areas with deep peat layer have „no special use at present“.