

THE DANGERS OF BURNING THE PEAT FOREST
A NATIONAL ECOLOGICAL TREASURE IN INDONESIA

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Deforestation and Burning threats

Peat, commonly known as *Gambut* in Indonesia, a unique ecosystem treasure of the country, taking millions of years for *Mother nature* to form, is being threatened with extinction within only a couple of years. The peat or gambut forest, usually thick and dense, presenting a dangerous and mysterious environment, has for years remained undisturbed. Obviously, the seemingly treacherous environment together with known health risks, such as malaria, has scared the people from opening the woods for use in *ladang* or *sawah cultivation*. However, the discovery of fossil fuel (oil) during the Dutch colonial time has broken the mystique of the gambut forest, providing the initiative for clearing the forest further. Due to socio-economic stress in the rapidly developing Indonesia, the gambut forest is cleared today to make place for oil palm plantations to produce palm oil in huge demand by U.S. and European industries. *Accacia* is planted for the pulp, needed by the paper, plastic and rayon industry. Valuable timber is harvested by the logging industry and in the process many important tree species are lost forever, never to be replaced again. The government also has a stake by committing its transmigration program using lands cleared from the gambut forest, a program based on a sustainable self supporting form of agriculture by requiring planting their own food crops, especially upland rice as *lading* and the more favored lowland rice as “*sawah*” crops. Deforestation and burning on a grand scale used in all the operations are degrading the health of the environment and destroying the living conditions of the people. As soon as the rainy season ends, the people in the gambut regions and surrounding areas in Sumatra and Kalimantan are

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suffocating from the black smoke produced by huge forest fires, burning seemingly out of control. Air transport is delayed because of very low visibility at major airports, such as in Medan, Pekanbaru and Palembang, and also in neighboring Singapore. Emission of carbon dioxide (CO₂) also contributes making global warming worse. After the forest fires are finished, burning of the peat (gambut) soil continues underground until all organic matter has completely burned into ashes. Much has perhaps been published before by the press-media, but the information has not attracted the proper attention of the public, and of the proper authorities at various government institutions. This article is presented, therefore, focusing on the disaster and great loss when gambut is burned and has disappeared forever to never return on Indonesian soil. Such a loss is so great that it cannot be measured using the scale of human material wealth.

Properties of gambut soil affecting the health of the ecosystem

To keep the discussion short, the materials will be limited to three groups of properties related to Physical, Chemical and Biological properties of peat or gambut soil. It has to be realized that peat or gambut soil is composed mainly of organic matter, hence all properties discussed are in essence emanating from the organic matter content.

Soil Physics: Gambut acts as a giant *sponge*, which scientifically means that it has a large *adsorption capacity for water*, hence is effective in “flood control” because large amounts of water from floods can be adsorbed. It is also known to filter out silt and fine sand from water, a process known as the “*filter effect*.” The above properties determine the health of the hydrology of the ecosystem in the area, which will be destroyed when gambut is burned off.

Soil Chemistry: The soil’s large *cation exchange capacity (CEC)* protects fresh water in the area from becoming “salty” by contamination with seawater. The CEC adsorbs sodium (Na) from the infiltrating sea water, a process similar to a process called *desalinization* of seawater.

Soil Biology: The gambut forest is home for a variety of plants and animals, determining the unique *biodiversity* of the gambut ecosystem. For instance, the *orang utan* is a good and most popular example, but so is the *Proboscis monkey*, who finds shelter and its particular food growing only in the swamp forest of the gambut region of Kalimantan. Additional examples are the *hawk eagle*, clouded *leopard*, and the *pigtail macaque*, just to name another few. These animals and many others are now threatened with extinction as are also many plant and tree species by the massive deforestation and forest fires as going on uncontrolled today. The animals will not survive in an “oil palm habitat.”

Socio-geologic impact of gambut on on prosperity of the region

The theory in soil chemistry and the principles of geology suggest that oil (fossil fuel) is formed from organic matter by a transformation process called *metamorphism*. The process is believed taking place very slowly, through transformation first into a series of intermediate products, such as lignite (leonardite), bitumen, asphalt, soft coal and so on, over a period of millions of years. The sequence of transformation can be illustrated as follows: *Dead organic matter* → *peat (gambut)* → *lignite* → *bitumen* → *coal* → *oil*. The coal deposits in the mines of Umbilin, West Sumatra, and Tenggaraong in East Kalimantan indicate that transformation by metamorphism has reached only the stage of formation into coal. It is no wonder now why the author considers the gambut or peat lands of Indonesia “national ecological treasures” in need of serious attention and proper management. The oil fields, located specifically in the gambut swamps of Riau, Jambi, Palembang, of the coastal plains in east Sumatra, and those in the regions of Balikpapan and Tarakan on the east coast of Kalimantan, have contributed to increased prosperity in Indonesia, and specifically to the regions with the oil wells, as reflected by today’s glitter and glamour from the cities of Pekanbaru, Palembang, Samarinda and Balikpapan.