The first conservation areas, established from 1918, were the Pyin Oo Lwin Bird Sanctuary and the Shwe U Daung and Pidaung Wildlife Sanctuaries (MoF 2005: 18-19; list of dates of establishment: Myint Aung 2007). However, it was only with the FAO-UNDP National Conservation and National Parks Project (1981-1985) that the foundations were laid for systematic surveys and inventories and the establishment of further national parks and nature reserves, whose purpose, among other things, was to promote more connectivity between 10 biogeographical regions (MoF 2005: 19). In addition, a separate Nature and Wildlife Conservation Division (NWCD) was set up in the Ministry of Forestry. The National Commission for Environmental Affairs (NCEA), an interministerial body responsible for coordinating national environmental policy, was created in 1990 (Myint Aung 2007: 192).

CURRENT PROTECTION

At present, seven national parks, one marine national park, three nature reserves, 29 wildlife sanctuaries and bird sanctuaries have been designated or proposed across the country (41 protected areas are listed in MoPF 2016: 323-325). There are also various wildlife and mountain parks, one wildlife reserve, protected areas and elephant camps. Most conserve terrestrial habitats; very few include inland wetlands, mangrove and marine habitats and caves, with the result that some ecosystems are underrepresented (Myint Aung 2007). In addition to the Botanical Gardens in Pyin Oo Lwin, zoos exist in Yangon, Mandalay and Nay Pyi Taw. The largest conservation area extends across 15,256 square kilometres; however, the majority (14 parks = 42% of all conservation areas) range in size from 51 to 500 square kilometres; only five are larger than 1,000 square kilometres. Moyingyi, Indawgyi and Inle Lake Wildlife Sanctuaries are wintering sites for migratory waterfowl (Myint Aung 2007: 195) but most conservation areas are too small to benefit migratory species.

Special protection arrangements are in place for some species. So far, 39 mammal, 50 avian and nine reptile species have been completely protected, and 12 mammal, 43 avian and six reptile species have been protected (Mehm Ko Ko Gyi/Saw Win 2005: 185). Other species enjoy seasonal protection. Nonetheless, a number of species have now died out, including the Giant Panda (Ailuropoda melanoleuca) and the Rhinoceros (Rhinoceros sondaicus, Rhinoceros unicornis, Dicerorhinus sumatrensis) (Tun Yin 1993: 102, 283).

Most conservation areas are increasingly under threat from the expansion of agriculture, mining and infrastructure. Specific problems include the lack of law enforcement ('paper parks') and management plans, understaffing and inadequate training, (partly illegal) logging and mining, (partly clandestine) hunting of game, poaching, natural and anthropogenic forest fires during the dry season, effects of grazing and removal of forest products, poor border demarcation, underfunding, low level of public awareness to sustainability (Webb et al. 2012 and 2014), low prioritisation of conservation in the context of economic modernisation, the wildlife trade (flora and fauna), mainly across the borders with China, India and Thailand, and, lastly, conflicts in peripheral regions (Hemley/Mills 1999, Myint Aung et al. 2004, Myint Aung 2007: 195-202, Tordoff et al. 2012). New threats include the planned expansion of hydroelectric power generation and several dam projects, posing a risk to riverine landscapes (Taft/Evers 2016), and the challenges associated with climate change (Schmidt 2012, Rao et al. 2013).
MINERAL RESOURCES

Myanmar’s rich mineral resources originate in the specific geological history of Southeast Asia, induced by overall processes of plate tectonic. Three different orogenetic phases determine the main geological units; they took place in different regions. Thus, the mineral resources are distributed unevenly within the country. Usually, three main geological units are distinguished: (A) the Indoburman Ranges in the West (subdivided, from north to south, into the Patkoi Ranges, the Naga Ranges, the Chin Ranges and the Rakhine Yoma), (B) the Innerburman Tertiary Basin and (C) the East Myanmar Units; metamorphic rocks are flanking the Innerburman Tertiary Basin (Bannert/Lyen/Htay 2011: 11). Chhibber (1933) additionally mentions the coastal strip of Rakhine.

Furthermore, four major geotectonic units of Myanmar can be distinguished, (a) the Rakhine Coastal Zone, (b) the Rakhine Chin Ranges, (c) the Inner Myanmar Tertiary Basin (Central Zone) and (d) the Eastern Highlands (Bender 1983). They are usually subdivided into six major tectonic domains, stretching from north to south (Chhibber 1933 and 1934a, Bender 1983). These are, according to ESCAP (1996: 6-20): (1) the subduction zone of the Rakhine Coastal Area which is predominantly made up of Miocene folded, disturbed and structurally deformed sandstones and siltstones. (2) The Rakhine Chin Ranges are mainly built by Tertiary fylsch-like sediments and allochtonic Cretaceous and Triassic rocks and are separated by a major fault system from the (3) Western Inner Myanmar Tertiary Basin (as fore arc), which consists of several long and wide sub-basins, containing up to 10,000 m Eocene/Oligocene to Recent folded sediments. (4) The Central Volcanic Belt of intermediate to acid igneous rocks (Late Mesozoic and Tertiary) stretches over 1,200 km. The ‘young post-Paleocene to Recent volcanics … lie large-ly along parallel N-S linear trends’ (ESCAP 1996: 14); two of them are well-defined, the inner volcanic arc (from Mt. Loi-Mye via Wun-tho, Monywa, Mt. Popa, Pyay) and the eastern volcanic line (close to the Shan-Sittaung Boundary Fault, via Katha, Mandalay, Pyin-mana, Thaton), both with earthquakes and numerous volcanic occurrences, e.g. a large number of hot springs or mud volcanoes (Chhibber 1934a, Bender 1983). Outside of the Central Lowlands, Tertiary or Recent volcanism can be found at Nat Ma Taung (Mt. Victoria) or near Lashio. (5) In the east, the Eastern Inner Myanmar Tertiary Basin (as back arc) follows; it is separated by the Shan Boundary Fault Zone from the (6) Sino Myanmar Ranges (or Kachin-Shan-Tanintharyi Highlands or Eastern Highlands Belt) with mostly folded, partly metamorphosed Palaeozoic sediments. It is part of the land mass of the Indo-Chinese peninsula. They are subdivided in the West Kachin Unit in the north, the East Kachin/Shan Unit (forming the largest unit) and the Kayin/Tanintharyi Unit in the South. They are divided by the Lashio Fault system with its ENE and EW trending faults; the Mogok deposits are located inbetween.

PRODUCTION

Development and production agreements for mineral oil and natural gas fields, gold mines, precious stones and copper and nickel deposits are driven mainly by foreign capital and ventures. Furthermore, key industrialisation processes are based on Myanmar’s own mineral resources. According to Fong-Sam (2016), the most important mineral fuels mined in 2013 were lignite coal (380,272 metric tons), natural gas (12,894 million cubic metres), crude oil (5,875 thousand 42-gallon barrels) and petroleum refinery products (4,000 thousand