

Road construction and its harmful effects

Freddy Pattiselanno, Manokwari, West Papua | Fri, 04/20/2012 11:56 AM [A](#) | [A](#) | [A](#) |

It is clear that the largest single threat to biological diversity globally is the outright destruction of habitats, along with habitat alteration and fragmentation of large habitats into smaller patches.

Roads and other linear infra-structure, such as power lines, gas lines, railroads and canals are among the most ubiquitous features of human activity and are known to have severe environmental impact on habitats and ecosystems worldwide.

Roads are considered a major contributor to habitat fragmentation because they divide large landscapes into smaller patches and convert the interior habitat into an edge habitat. Human development brings with it an increase in the number of roads to fulfill transportation needs, but this rise has costly implications for nature.

It comes as no surprise that Thomas Lovejoy, a leading American biologist, pointed out: “Roads are the seeds of tropical forest destruction.”

The aims of road construction have been widely discussed. Trade economists, for example, have written extensively about the link between roads, market access and economic growth, as well as the health of household and national economies in most developing nations.

However, roads pose a particularly challenging problem to those interested in biodiversity conservation in developing countries.

Why are roads so bad for rainforests? First, from a biological perspective, rainforests maintain species that rely on forest-interior and under-storey conditions that are susceptible to the environmental changes associated with roads and clearings.

Second, from a socioeconomic perspective, “almost-developed” nations face rapid economic development and intense natural-resource exploitation that drive an economic impetus for the expansion of roads and infrastructure.

Hence, it is quite right roads are rainforest killers that directly eradicate a myriad of species within and around them. The expansion of roads not only leads to increasing loss of forests at a rate of 50 football fields a minute, but it also spews billions of tons of greenhouse gases into the atmosphere each year.

Road networks in Sumatra covering a total 2,508.5 km are opening up some of the island’s last forests to loggers and hunters. In recent decades, human-wildlife conflicts reportedly happening

more often. This leads to an increasing number of human victims and, at the same time, brings down the number of Sumatran tigers and other species.

In Kalimantan, the development of Malinau, through a large road project, connects Malinau and the upper Baram area in Sarawak and Long Alango on the upper Bahau River at the edge of the Kayan Mentarang National Park.

Ironically, road development also destroyed large areas of wildlife habitats and threatened nomadic and large vertebrates such as the Malayan sun bear, the bearded pig and the orangutan.

On the island of Sulawesi, improvements to the highway connection between North Sulawesi and other provinces of Sulawesi such as Gorontalo and Central Sulawesi has also led to increasing importation of wild meat from other forest landscapes of Sulawesi to meet wildlife-market demand in Manado and Minahasa.

Consequently, the pressure of hunting on wildlife populations such as babirusa (wild boar), anoa, flying foxes and other mammals has elevated over time.

Currently, spatial analysis by Conservation International shows that the development of Papua and West Papua provinces by new road connections reaches 2,700km. In the Bird's Head Peninsula, for instance, 571 km of the trans-West Papua road splits many pristine forests and connects Manokwari and Sorong.

However, despite the tremendous expectation and vast investment for the development, communities in the region still live under the poverty line. But the local media reports that communities whose forests are converted for the development in Kebar are disappointed about the difficulties in hunting deer.

We believe that some land conversions are needed and unavoidable. Land conversion, including road development, is vital to make room for economic activities.

There is no doubt that road access will have significant effects on efforts to fight rural poverty. But in fact, it must be followed by other strategic plans related to an affordable cost of transportation.

Moreover, large amounts of land conversions are poorly planned. So, what can we do to slow the onslaught?

First, a limit on road expansion by maintaining large, road-less areas of intact forest should be among the highest priority, whilst road works and road densities should generally be minimized.

Moreover, managing timber and mining operations to reduce excessive road-building activities should be considered by minimizing construction and closing logging roads after harvest operations.

Improving environmental impact assessments (EIA) for planned roads also must be carried out.

In many developing nations, EIAs focus solely on the roads themselves, completely ignoring the knock-on effects.

Otherwise, new roads will continue to drive rainforest destruction so long as the EIA process is so fundamentally flawed.

Therefore, it is urgent that local government agencies improve their overall coordination for the development planning. For example, institutions like the Public Works Agency, the Regional Environmental Board, the Conservation of Natural Resources Bureau and the Forestry Agency need to sit together in order to further plan road expansion.

Furthermore, the implementation of relevant regulations and strengthened law enforcement is needed to encourage better practices for extraction industries such as logging and mining.

Given the central role of roads in increasing tropical deforestation and atmospheric carbon emissions, emphasizing forest carbon-trading initiatives for limiting and mitigating frontier roads should be a strong priority. Therefore, our participation in nature-based solutions for climate mitigation and adaptation is the right pathway to follow.

REDD funds for example, could be used to help good planning for roads, establish protected areas in advance of road establishment and regulate road access to remote pristine forests.

Actively promoting a limit on frontier roads to some extent may be the most realistic, cost-effective approach to support the conservation of tropical nature and its crucial ecosystem services.

Finally, as Pandora quickly learned, it is far harder to thrust the evils of the world back into the box than to simply keep it closed in the first place.

The writer is a lecturer in biodiversity conservation at Papua State University (UNIPA), Manokwari.