

Environmental Updates

June 2019

Designed for use with the Global Development And Environment Institute's
Environmental and Natural Resource Economics textbook

Indigenous Rights and Environmental Issues

Indigenous groups across the world have a long history of discrimination and displacement, with many being forced onto some of the earth's most marginal lands. Though indigenous groups make up less than 5% of the global population, traditional indigenous lands cover 22% of the earth and hold up to 80% of the world's biodiversity.

These groups have a long history of environmental stewardship, passing down and adapting complex techniques for land and water management, agriculture, and animal husbandry from generation to generation. Although they are considered to be crucial to conservation around the globe, indigenous peoples face growing pressure due to climate change and globalization. Two major examples highlight how indigenous ways of life are under attack:

- Displacement due to a growing demand for cropland, cattle ranching, timber products, and mining in the Amazon,

- Disruption of traditional lifestyles by an increase in natural gas extraction and a rapidly changing climate in the Russian Arctic.

Illegal Logging and Indigenous Lands in the Brazilian Amazon

The Amazon is the largest rainforest in the world, home to an estimated 10% of known species on earth. It is also the world's largest deforestation front, with approximately 1.4 million hectares being cleared each year to make way for cropland, cattle ranching, mining, and timber harvesting. Some of this activity is legal and some illegal, with limited enforcement of existing regulations.

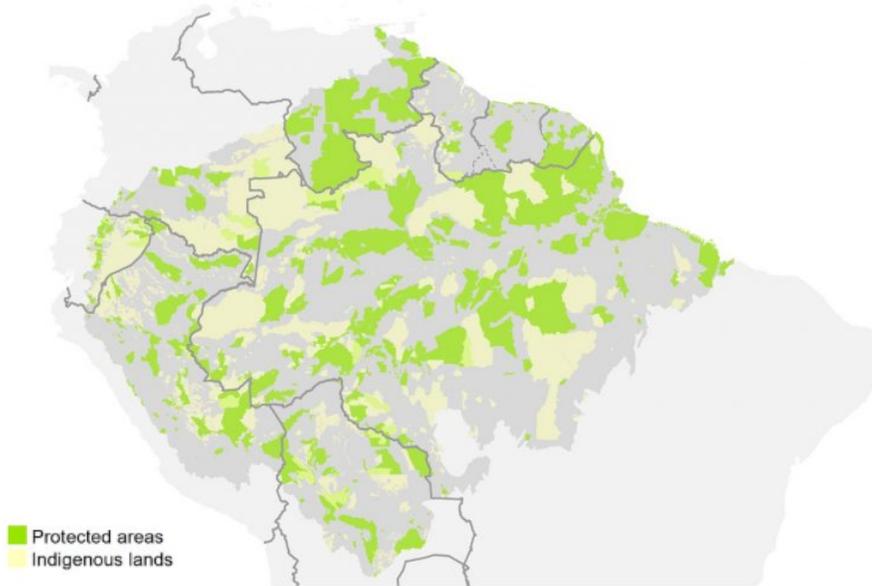
The Amazon is also home to approximately 400 indigenous tribes, who have lived in the region for thousands of years. By some estimates, humans may have been settling in the Amazon for as many as 39,000 years, with some still in isolation from modern society living as nomadic hunter-gatherers. As land is cleared and roads and infrastructure are put into place, these societies are increasingly incorporated into

modern life. Today, many tribes live on designated indigenous lands, combining both traditional and modern ways of life.

These indigenous lands, which make up 31% of the Amazon biome, are designated as such primarily to conserve rights to ancestral lands, but this designation has also proved effective as a way of conserving the forest. In addition to indigenous lands, the Amazon also has separate protected areas managed by the federal government, which make up 25% of the biome. Figure 1 shows designated indigenous lands (yellow) and protected lands (green). These protections are not complete, however, as illegal logging is still prevalent, and as Brazil's new conservative president, Jair Bolsonaro is working to make it harder to define indigenous lands while simultaneously promoting the opening of indigenous lands to commercial activity. Even before Bolsonaro took office the government agency that deals with indigenous rights, Fundação Nacional do Índio (FUNAI), faced funding cuts and layoffs, and has had to close many regional offices. In 2017 alone the

agencies' funding was cut in half. In January of 2019 Bolsonaro signed an executive order that transferred control of the designation of indigenous lands, and the management of protected lands from FUNAI to the Agriculture Ministry. With limited funding combined with decreased authority, enforcing protections over such a widespread land area is nearly impossible.

Figure 1: Protected Lands of the Amazon



Source: Conservation International, (2017)

In the eastern Amazonian state of Maranhão, the Awa tribe, one of the few remaining tribes living in complete isolation, faces pressure from illegal logging encroaching on their lands. The Awa live in the Arariboia indigenous lands, where 75% of the original forest cover has already been cleared. To access the remaining timber stands, illegal loggers use trucks without plates, fake documents, roads hidden under forest cover and

networks of spies and lookouts, sending the timber back to secret sawmills. Due to this invasion, the Awa are considered by Survival International to be Earth's most threatened tribe.

Other surrounding tribes, including the Guajajara have formed a local patrol group known as the Forest Guardians work to prevent illegal logging. The group goes after illegal logging operations by sabotaging their equipment, and chasing them

off of indigenous lands. It is estimated that as many of 80 members of the Guajajara tribe have been killed by illegal loggers since 2000, including one of the Forest Guardian's leaders: Jorginho Guajajara, who was murdered in 2018. With decreased protection from FUNAI, the responsibility to protect indigenous land falls increasing on local groups and the future of tribes like the Awa and Guajajara is at risk.

Gas Extraction, Climate Change and Reindeer Herding in the Arctic

There are over 40 Indigenous groups living within the Arctic, comprising 10% of the Arctic population. Like the tribes of the Amazon, most have been incorporated into modern culture, but there are many that still rely on traditional livelihood activities. For these groups, rights to land and natural resources are crucial for both cultural significance and survival.

For example, the Nenets people of Northern Russia's Yamal Peninsula are reindeer herders who have been making an annual 800-mile migration with their herds through the Russian Arctic for thousands of years. The Nenets rely on reindeer for their meat, skins, and antlers, which are sold and used in traditional medicine. Today the Nenets face dual challenges from climate change and the expansion of natural gas extraction into their territories.

Increased temperatures and a dryer climate are making it harder for the Nenets to make their annual migration across the tundra. In 2016 thawing permafrost resulted in the defrosting of a field of animal carcasses that had been buried during an anthrax outbreak in the 1940s (anthrax is a potentially lethal bacterial disease). As this field defrosted, the anthrax from the bodies was released, killing one child and 2,300 reindeer, and landing a dozen other people in the hospital.

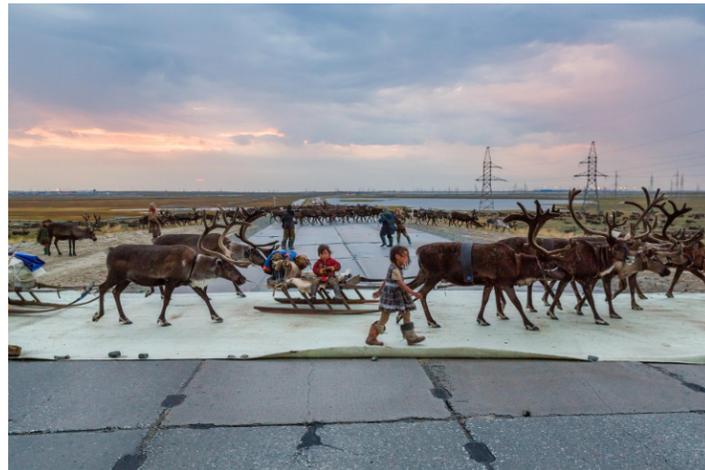
In addition to overall warming, the

increase of extreme weather events due to climate change also poses a challenge to this annual migration. In 2013 and 2014 an atypical spell of warm weather and rain, followed by a deep freeze, created a layer of ice on top of the snow in the reindeer's winter pastures. With this ice layer in place, the reindeer were unable to break through the snow to reach the lichen below that they rely on for food, resulting in the starvation of tens of thousands of animals.

At the same time, Russia has rapidly expanded natural gas production in the Yamal Peninsula. Pipelines, roads, and drilling sites have now popped up in the Nenets' migration path. In order to cross these production sites, the Nenets must coordinate with the state-owned company Gazprom. Figure 2 below shows the "white carpet" that Gazprom puts out to facilitate this crossing, making it easier for the reindeer to pass through their site. This event must be coordinated in advance, meaning the Nenets and their herds are on a strict migration schedule. The crossing also serves as a publicity event and photo op for Gazprom, to show off how well they are coexisting with local wildlife and traditional ways of life. But as more and more roads and lines pop up, the annual migration becomes increasingly difficult, and this traditional way of life is threatened.

Though the specific challenges faced by the groups in the two examples here differ, the overarching challenges of climate change and a growing global economy impact indigenous groups across the globe. These groups are often ignored in traditional economics, as most operate largely outside the formal economy, relying instead on subsistence agriculture, livestock herding, and hunting and gathering.

Figure 2: The Nenets and their animals make the annual migration through a Gazprom gas field



Source: National Geographic (2017), Photograph by Evgenia Arbugaeva

Thus standard economic analysis, including such measures as "willingness to pay," fails as a way to measure economic benefits of indigenous peoples. This makes it harder to quantify the value of indigenous controlled ecosystems and natural resources, as well as the contribution of these groups to society.

To address this, alternative fields of

economics, including ecological economics, attempt to assign value to the services that these ecosystems and groups provide: for example, providing clean air and drinking water filtration by protecting forest lands. This type of valuation often includes non-monetary components as well, such as cultural or spiritual significance and the value of maintaining traditional livelihoods, languages, and farming techniques.

There are sometimes attempts to assign monetary values to these benefits as well. For example, one analysis of

the value of an Indigenous-owned tropical savanna area in northern Australia found that this land provided \$84 million in ecosystem services annually, plus an additional \$4 million in socio-cultural

benefits and capabilities for the 80 individuals who rely on that land. Methods for calculating socio-cultural benefits are varied and complex, and monetization is often controversial, but including these benefits in economic assessments can be an important step in promoting indigenous rights.

This update specifically relates to *Environmental and Natural Resource Economics: A Contemporary Approach* Chapters 4 and 19. For more information about the books, teaching materials, and research, see www.gdae.org

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