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Eduardo S Brondizio, François-Michel Le Tourneau

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INSIGHTS

PERSPECTIVES



ENVIRONMENT

Environmental governance for all

Involving local and indigenous populations is key to effective environmental governance

By **Eduardo S. Brondizio**^{1,3} and **Francois-Michel Le Tourneau**^{2,3}

In a world increasingly thought of as overpopulated, sparsely populated spaces remain a dominant feature: ~57% of Asia, ~81% of North America, and ~94% of Australia have population densities below 1 person per square kilometer, equivalent to the population density of most of the Sahara desert (1). These vast, sparsely populated landscapes include rural settlements, towns, agricultural spaces, extractive economies, indigenous lands, and conservation areas. They are crucial for climate change adaptation and mitigation, from carbon se-

questration to provisioning of water, food, and energy to cities. Yet governmental and nongovernmental initiatives tend to mostly pay lip service to the diverse views and needs of their populations. Without more inclusive governance, attempts to mitigate and adapt to climate change and conserve ecosystems will be compromised.

To be politically legitimate and long-lasting, incentives and regulations for better conservation and climate change mitigation must engage with the claims, rights, and knowledge of local and indigenous populations (2), which may be spread over immense and distant territories. The importance of local and indigenous populations in governing

ecosystems and biodiversity and in meeting global climate change mitigation goals has been firmly asserted in international conventions such as the Convention on Biological Diversity [CBD article 8(j)], the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (3), and in agreements and commitments made at the COP21 climate meeting in Paris in 2015. How-

¹Department of Anthropology, Center for the Analysis of Social-Ecological Landscapes, and Ostrom Workshop in Political Theory and Policy Analysis, Indiana University, Bloomington, IN 47405, USA. ²Center for Research and Documentation on the Americas, Paris 3 Sorbonne Nouvelle University and CNRS, 75007 Paris, France. ³Institut des Ameriques, 92170 Vanves, France. Email: ebrondiz@indiana.edu



Inclusive governance. Local and indigenous populations in many sparsely populated regions around the world—such as the Tibetan plateau—must be involved in environmental governance.

ever, efforts to overcome asymmetries in political voice, social conditions and needs, and to ensure coparticipation in decision-making have largely remained rhetorical.

Sparsely populated areas are not necessarily pristine (4). They are also important sectors of agriculture and animal husbandry and of various small and large extractive industries. They are home to indigenous groups, rural communities, farmers and ranchers, and small and medium-sized towns with widely varying values, priorities, and cultures. This variability must be addressed for large-scale environmental policy to advance. Although these populations have become players in the territorial governance of a wide array of ecosystem services provision, including water, food, conservation, and carbon compensation schemes, unequal benefit sharing remains the reality for many (5, 6).

Sparsely populated areas often receive limited investments in human capital and infrastructure. Locally produced and extracted

resources are usually transformed in distant metropolises, where value aggregation takes place, leaving behind social costs and often insolvent public administrations. Having limited access to social services and infrastructure and lacking employment opportunities, young generations migrate and circulate in search of opportunities in expanding regional urban centers. Yet sparsely populated areas are increasingly targeted to meet national and global conservation and climate mitigation goals (7, 8), and local and indigenous populations, many of which are poor (9), are expected to take on growing responsibilities as environmental stewards.

For instance, to meet the global conservation goals specified in the CBD's Aichi Target 11, an increase of ~3% in total terrestrial and inland water protected areas is called for during the next 4 years, representing more than 3 million km² (8). Most of these areas will be in regions of Africa, Latin America, and Asia that local and indigenous populations depend on for resources, agriculture, and husbandry. This expansion implies strict restrictions on, or abandonment of, land-use systems that have in many cases coevolved and contributed to the long-term health and diversity of regional ecosystems.

Examples of questionable environmental and social outcomes of top-down conservation expansion policies abound. For example, since the 1990s, the implementation of grassland management policies imposed on 1.5 million km² of the Tibetan plateau by the Chinese government—including large-scale conservation areas, restriction on nomadic lifestyle and resettlements, fencing grasslands, and limiting herd size—has threatened the livelihood of millions of pastoralists whose grazing systems have coevolved with grassland species. Compounded by climate change, infrastructure development, and pollution, this type of centralized “one size fits all” approach to environmental management also leads to mixed and concerning environmental outcomes, including the possibility of speeding up the release of grassland carbon stocks and potentially threatening the water supply of Asia's largest rivers, upon which 1.6 billion people depend (10).

As demands for both commodities and conservation grow, so do mismatches in land use, property regimes, and governance arrangements, undermining the sustainable governance of landscapes (11, 12). For instance, although indigenous, sustainable-use, and conservation areas have expanded to cover more than 40% of the Brazilian Amazon today, they are increasingly surrounded and undermined by large-scale agriculture and ranching, logging, and energy and mining extraction. Although effective in buffer-

ing deforestation, these areas are becoming islands of cultural and biological diversity, undermining their social and environmental effectiveness (13). New approaches are needed to reconcile conservation goals, expanding resource economies, and the role of local and indigenous populations in landscape governance (8, 11, 12).

To be effective, environmental governance solutions must involve local and indigenous populations (2), and national goals and international commitments must be reconciled with local and indigenous needs and cultural perspectives, as varied as they may be. Approaches and programs that bridge diverse constituencies in resource governance are emerging in many parts of the world, including rural regional governance in the United States, multifunctional landscapes in different parts of Europe, cities protecting common watersheds in the Andes, and comanagement systems in the tropics.

For instance, collaborative efforts between scientists, policy-makers, and locals are pointing to new ways of conceiving and implementing programs that combine poverty alleviation and conservation across large pastoral ecosystems of East Africa (14). Large international networks, such as the Global Landscape Forum led by the Center for International Forestry Research, are also bringing together a wide range of stakeholders to share ideas, propose solutions, and make commitments for the inclusive management of landscapes. Such efforts, if connected with national policies and international mitigation programs, can help to meet climate change mitigation and conservation objectives and move us closer to meeting the challenges of the United Nations' Sustainable Development Goals. ■

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