Coding the Climate: Digital Colonialism in Global Environmental Governance

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Abstract

This paper explores how digital colonialism reshapes global climate policy by concentrating environmental data and technological control in the hands of powerful tech-corporations. It critiques the marginalisation of indigenous knowledge systems and sovereignty, revealing how

digital infrastructures perpetuate historical inequities under the guise of sustainability and innovation.

Keywords: Digital Colonialism, Climate Governance, Environmental Data Sovereignty, Indigenous Knowledge Systems.

1. **Introduction**

In the digitally interlinked world that we live in, technological innovations and interventions are intrinsic to guiding climate policies and actions. However, with digital progress, there is a parallel emergence of the dangerous trend of “digital colonialism”. Digital colonialism seeks to reconfigure global environmental governance by handing over critical ecological data to dominant tech-corporations, often relegating indigenous knowledge and people in the process.

The emergence of digital colonialism is indicative of the fact that, only a few multinational technology corporations seem to hold the power and control over environmental data and technologies. A good example is that of Amazon’s “ Climate Pledge” to reach net-zero carbon emissions by the year 2040 through investments in renewable energy projects and sustainable business practices. Though laudable, the projects have been vehemently criticised for perpetuating colonialism by involving the extraction of natural resources from tribal lands or the building of renewable infrastructure without any commitment to safeguarding indigenous rights and their knowledge systems. Such failures continue a long-standing pattern of marginalisation that ignores the dignity and command over environmental stewardship by indigenous peoples, who by all means are the principal custodians of biodiversity and climate resilience.Examples like these demonstrate how historical inequities continue to be perpetuated in the garb of climate policy and action. These corporations monopolise important climate data that form the basis of monitoring and mitigation as well as adaptation strategies. In the longer run, they go on to influence monumental climate policies almost exclusively inclined towards a west-centric approach. Resultantly, this suppresses the voices of indigenous and local communities that have for centuries sustainably stewarded the ecosystems.

This new form of colonialism calls for critical reflection since digital technologies have insinuated themselves into environmental governance at various levels, from data collection and storage to policy formulation, often cementing already existing inequalities in power, race, and geography. Therefore, the authors attempt to examine how digital colonialism shapes global climate governance by concentrating environmental data and technological power in corporate hands, marginalising indigenous knowledge systems, and perpetuating historical inequities under the guise of sustainability.

2. **Global South and Digital Colonialism**

Non-consideration of indigenous practices in the design and deployment of Artificial Intelligence (‘AI’)-based forest monitoring tools could lead to misinterpretations of environmental dynamics and unintended consequences, including the criminalisation of certain customary land and forest management practices. The marginalisation of indigenous perspectives in the development of AI and algorithmic systems reflects a broader pattern of technological design rooted in Global North epistemologies. This dynamic perpetuates a form of digital neo-

colonialism; wherein environmental surveillance technologies reinforce existing power imbalances and further erode indigenous knowledge systems and land stewardship practices. For instance, India's ambitious Smart City projects epitomise the digital colonialism dilemmas in urban and environmental planning. Particularly in Mumbai's Aarey Colony, infrastructure development aimed at technological modernisation has trespassed on *adivasi* (tribal) lands leading to displacement and disruption of traditional lifestyles deeply intertwined with ecological well-being. These projects have fashioned themselves on high-level climate models and data analytics, which have hardly fitted the local ecological contexts and indigenous knowledge systems. Consequently, the *adivasi* communities find their rights over land and natural resources degraded, entirely sidelined in climate adaptation and sustainability frameworks that prioritise technology-led modernisation over culturally and environmentally grounded approaches. This, in turn leads to exclusionary urban policies that marginalise those most dependent upon and knowledgeable of natural ecosystems, drawing further attention to the dissonance between technocratic climate governance and indigenous environmental justice. Similarly, in Kenya, advanced AI-based tools such as M-Situ are deployed to track illegal logging through detection of the chainsaw, fire, and disturbances to the forest. It provides an agency for real-time engagement with the most activities threatening the forests and thus allows swift alerts to forest rangers for effective intervention. However, while high-tech, this approach, more often than not, ignores traditional ecological knowledge, such as controlled burning, which is important for the therapeutic conservation of forest health, biodiversity, and fire control.

India and Kenya serve as compelling case studies from the Global South, where digital colonialism intersects with climate governance. Both countries showcase ambitious technological interventions in environmental management, yet reveal how such innovations often marginalise indigenous communities, raising critical questions about data sovereignty, equity, and the neo-colonial dynamics of digital development as well as echoing the need for addressing gaps in the existing legal and policy frameworks.

3. **Legal and Policy Gaps in Addressing Digital Colonialism**

There is a pressing need to address the legal and policy gaps that allow digital colonialism to persist unchallenged. This includes developing regulatory frameworks that are responsive to the sociotechnical complexities of AI and that centre the rights and knowledge systems of historically marginalised communities.

1. ***Promotion of indigenous sovereignty on environmental data***

The innovative technological solutions displayed at the 28th United Nations Climate Change Conference ('COP28') were almost extravagantly hailed as corporate-led responses to the challenge posed by climate change. The most high-profile example was Microsoft's "Planetary Computer," which would aggregate large volumes of environmental data and facilitate all sorts of sustainable efforts via AI-dependent cloud computing. Although such platforms offer robust analytical capability to a user, the pre-eminence raises issues about data governance,

ownership, and inclusivity, which have become increasingly serious. Placing environmental data in unaccountable corporate systems risks digital colonialism, excluding indigenous voices and reinforcing global inequities without consent, transparency, or benefit-sharing frameworks.

In opposition to these models, generations of indigenous Latin Americans have relied on *Buen Vivir* for a more collective, holistic view of what it means to manage the environment and sovereignty over data. *Buen Vivir* embodies all the indigenous philosophies that recognise the necessary balance between welfare and the interrelationship with nature, in terms of collectivising the ownership and decision governing environmental data, ensuring it meets community values and requirements, rather than profit or external control of this information.The authors propose that incorporating indigenous social philosophies such as *Buen Vivir* into climate policy can thus serve as a pathway toward dismantling digital colonialism while asserting indigenous independence over both environmental data and decision-making, leading to truly inclusive, just, and culturally appropriate climate policies.Additionally, international frameworks like the United Nations Digital Commons offer a subject-oriented solution to digital colonialism by treating environmental data as global public goods. These frameworks empower indigenous and local communities with data ownership, enabling equitable participation in climate governance and helping to redress digital inequalities and corporate control over environmental knowledge.

2. ***Community-Led Change: Grassroot Indigenous Movements in Resisting Digital Colonialism***

Be it their concerns about traditional knowledge or them being part of the technological solutions for climate issues, indigenous people experience exclusion from environmental governance, and they seldom get included in the climate change debate. In this context, it would not be an exaggeration to opine that one of the most vital legal instruments are those that confer rights upon forest-based communities such as Scheduled Tribes or Other Traditional Forest Dwellers to access, manage, and conserve forest resources. These instruments also recognise community forest rights and indigenous laws over lands subjected to customary use, thereby forming a basis for assertion of tribal sovereignty over both knowledge and governance of the environment. For instance, the *Gond* community in Pachgaon village of Maharashtra in India has very effectively influenced provisions of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006which has enabled them to start claiming title over a thousand hectares of forest land. They have started adopting sustainable bamboo harvesting techniques for their economic benefit while being part of forest conservation. Such success stories bring to light the importance of legal recognition in enabling indigenous environmental governance and resisting digital colonialism through the community-level assertion of data and land rights.

It is important to note that most of the adaptive and mitigation strategies often target male-centred industries, thus marginalising women. However, indigenous women are strong participants in grassroots movements focusing on such aspects of climate justice. Therefore, indigenous women could contribute great share of insight into the issues of sustainable ecological management and safeguard of community rights. Recognising and integrating the

knowledge and activism of indigenous women will make a significant contribution towards guaranteeing an ideally holistic and gender-just environmental governance that recognises and celebrates cultural diversity while delivering fair solutions in terms of climate.

4. **Conclusion**

Amidst the fast-growing climate crises, digital colonialism has become an immediate concern. Monopolisation of environmental data by tech-companies while ignoring indigenous knowledge systems is not only concerning but calls for justice and equity-based legal and policy frameworks that would ensure indigenous participation in environmental governance. Incorporating indigenous knowledge systems into environmental decision-making would not just safeguard the rights of indigenous groups but also help in building equitable and sustainable climate change policies that would not benefit selectively, but comprehensively.

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