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Walking the Last Mile Together: Amazonian Diplomacy for Energy Transition

Luiz Enrique Vieira de Souza
Alina Mikhailovna Gilmanova Cavalcante
Márcio Giannini
Rodolfo Gomes

Abstract: This study explores the challenges of energy transition within Amazonian diplomacy, focusing on policy gaps and political discourse. In light of these issues, we argue that the Amazon Cooperation Treaty Organization should establish mechanisms to help its members achieve universal access collaboratively. Our findings emphasize Brazil's central role and outline pathways for expanding sustainable energy access across the region.

Keywords: universal access to electricity; energy transitions; Amazon Cooperation Treaty Organization; multilateralism; Equatorial Margin.

Caminhando juntos a última milha: diplomacia amazônica para transição energética

Resumo: Este estudo explora os desafios da transição energética dentro da diplomacia amazônica, com foco em lacunas políticas e no discurso político. Diante dessas questões, argumentamos que a Organização do Tratado de Cooperação Amazônica deve estabelecer mecanismos para ajudar seus membros a alcançar o acesso universal de forma colaborativa. Nossas conclusões enfatizam o papel central do Brasil e delineiam caminhos para expandir o acesso sustentável à energia na região.

Palavras-chave: universalização do acesso à eletricidade; transições energéticas; Organização do Tratado de Cooperação Amazônica; multilateralismo; Margem Equatorial.

With more than 50 million inhabitants, the Amazon Rainforest covers an area of 7 million square kilometers, spanning eight independent states and one French overseas department. This international biome traverses cosmopolitan territories, as it is home to 420 indigenous peoples who communicate in more than 370 languages. Its forests harbor 25% of all plant and animal species and account for 15% of the Earth's photosynthesis (OTCA 2023a). Preserving this ecosystem is a matter of global security because it enhances climate sustainability, regulates hydrological cycles, retains soil nutrients, and facilitates pollination, among other functions. The World Resources Institute estimates that the indigenous territories of Bolivia, Brazil and Colombia alone would provide ecosystem services worth more than US$ 1,530 billion over the next twenty years (WRI 2016).

Due to common challenges regarding forest preservation and the valorization of sociobiodiversity, Amazonian countries seek to strengthen ties and promote regional cooperation[1]. After fourteen years without meeting, the Summit of the Amazon Cooperation Treaty Organization (OTCA) convened in August 2023 in the city of Belém. Despite few ongoing projects, chancellors, ministers and heads of State have engaged in building an "Amazonian diplomacy", as we will detail in section 2, to formulate sectoral policies to combat environmental crimes and enable projects for a decarbonized prosperity. The transition to a new low-carbon economy presents both opportunities and challenges for achieving sustainable development.

1. The scope and the extension of the use of the terms "forest preservation" and "valorization of sociobiodiversity" by OTCA members, for instance, are not discussed in this paper. The authors only highlight the importance of paying attention to the subtleness and frequently unveiled discursive meanings in the political and diplomatic arena.

Luiz Enrique Vieira de Souza *is a social scientist with a PhD in Sociology from São Paulo University (USP). He worked at the Center for Environmental Studies and Research, Campinas State University (UNICAMP), at the School of Electrical Engineering (Beijing Jiaotong University) and at the Bahia Federal University (UFBA). His research focuses on Environmental Sociology and Energy Transition.*

Alina Mikhailovna Gilmanova Cavalcante *holds a PhD in Social Sciences from Campinas State University (UNICAMP). She conducted research on Concentrated Solar Power at the Institute of Electrical Engineering, an institution affiliated with the Chinese Academy of Science. She has expertise in the areas of Energy Transition and Gender Studies.*

Márcio Giannini *graduated in Economics from the Rio de Janeiro Federal University (UFRJ) with a Master's and a PhD in Energy Planning, in addition to being a visiting scholar at the University of California (Berkeley/USA) in 2015 and visiting researcher at the University of Birmingham (UK) in 2022.*

Rodolfo Gomes *is a mechanical engineer with a Master's degree in Energy Systems Planning from the State University of Campinas (UNICAMP) with over 20 years of experience in Energy Efficiency and Renewable Energy Policies for a sustainable world. He is a researcher and executive director of the NGO International Energy Initiative in Brazil.*

However, equity must be a key consideration. If the focus is solely on the provision of new technologies, local and regional social asymmetries may be exacerbated.

This paper discusses the results of an investigation on energy transition in the context of Amazonian diplomacy. Policies to universalize access to electricity and promote renewable energy sources are cross-cutting with nearly all the goals of the 2030 Agenda and its Sustainable Development Goals (SDGs). Nonetheless, these policies were not included in the final declaration of the Amazon Summit or the XIV Meeting of OTCA Foreign Ministers. Why have member countries not signed cooperation agreements to "ensure affordable, reliable, sustainable and renewable energy for all" (SDG 7)? We discuss some of the deficiencies in transnational energy planning, as well as conflicting views on the role of Amazonian diplomacy.

> *Preserving [the Amazon Rainforest] ecosystem is a matter of global security because it enhances climate sustainability, regulates hydrological cycles, retains soil nutrients, and facilitates pollination, among other functions.*

For this research, we relied on reports and scientific articles about energy transition in the Amazon, especially on the Brazilian government program for universal access to electricity (*Light for All*). We also made requests via the Access to Information Act to the Ministry of Mines and Energy (MME) and the Ministry of Foreign Affairs. Next, we conducted semi-structured interviews with two Itamaraty career diplomats, one member of the MME, one expert linked to a public research institution on energy and environment, and one member of a non-governmental organization that carries out renewable energy projects in the Amazon. Based on this information, we interpreted the meaning of the political speeches at the Amazon Summit and the main synthesis documents of OTCA in 2023, namely the *Belém Declaration* and the *Brasília Declaration*.

The conclusions of this study reveal more about Brazil than its partners. Despite the careful assessment of energy policy and the electricity sector in OTCA countries, our research paths and network lead us to analyze the Brazilian scenario in more detail. However, as our approach is fundamentally relational, this article should serve as a stimulus for a research agenda that approaches Amazonian diplomacy with emphasis on the perspectives of other countries and non-governmental agents and what they can offer for understanding the energy transition in Amazonian territories.

In the following section, we present a definition of what we mean by "Amazonian diplomacy". Next, we analyze current disagreements over the hydrocarbon economy and the main strategies underlying oil politics in OTCA. While in Colombia and Ecuador people voted against oil exploration in the Amazon, governments in other countries disconnected energy policy from the set of causes leading the forest to its "tipping point". Representatives did not succeed in approving alternative energy cooperation projects based on renewables and, consequently, reducing deforestation is the main action against climate change within OTCA.

Finally, we analyze how photovoltaic energy systems and lithium batteries could contribute to transnational programs for electricity access in remote regions. Based on recent data on the universalization of access in the OTCA countries, we discuss the possibilities for coordinated actions to expand and decarbonize the electricity sector in the Amazon. In all OTCA States, over 90% of the population have access to electricity, but the numbers are invariably lower in rural areas. Like Brazil, the "last mile" towards universal access in partner countries lies mainly, or to a large extent, within the Amazon. Thus, we present policy suggestions for the Permanent Secretariat of OTCA to form a working group to address universalization from a cooperative and cosmopolitan perspective.

AMAZONIAN DIPLOMACY AND ENERGY TRANSITION

For analytical purposes, we articulate the concept of "Amazon diplomacy" on two levels. In a broader sense, this idea refers to the strategy of using the global ecological relevance of the world's largest rainforest as a geopolitical platform to enhance national interests in bilateral and multilateral forums (Abranches 2020). As an instrument of "soft power", the Amazon Rainforest has strengthened Brazil's image and subsidized its foreign politics, allowing the country, even with limited military power and low industrialization, to establish itself as one of the most active voices in the Global South.

Brazil's position as an "environmental powerhouse" has helped it to assume a prominent position among developing countries, urging developed nations to cancel the debts of poor countries, to comply with the Paris Agreement, and reform the UN Security Council. Not by chance, the levels of deforestation during the Bolsonaro government contributed for deviating the country from its tradition of "soft power" and for its farthest-reaching international isolation since redemocratization in 1984 (Toni; Chaves 2022).

However, the Brazilian Ministry of Foreign Affairs attributes a stricter meaning to the term "Amazonian diplomacy", which is the second analytical level

of the concept. It refers to the negotiations within the framework of OTCA as a socioenvironmental bloc. Member countries have different perspectives and realities regarding the forest, but their governments intend to rely on this institution to give volume, visibility and direction to "Amazonian issues".

Since the foundation of the Amazon Cooperation Treaty in 1978 and its restructuring as OTCA in 1998, member countries have predominantly constructed national agendas for the forest. Progress in the regulatory frameworks for joint initiatives and the allocation of resources has been modest, serving "much more for the exercise of diplomatic rhetoric on Amazonian issues than for effective cooperation among member States" (Filippi & Macedo 2021: 207). In the context of the sharp rise in deforestation during Bolsonaro government, member States signed the *Pact of Leticia* (Colombia) in 2019, which included measures for sustainable development, but civil organization societies and social movements criticized inaction and depicted this pact as "nothing more than a wish list" (Conectas 2021).

Amazonian diplomacy exists as a relational dynamic in which agents construct their positions based on their interests and how they reconfigure vis-à-vis the interests of other agents.

In the transition to his third term, Lula convened a summit with the prospect that OTCA would come to express the political profile of Amazonian issues at regional and global level (Agência Brasil 2023). A *"unison voice"* for the Amazon should express the horizontal relations between member States and consensus as a premise for its political deliberations. This slogan reflected the strategy of projecting OTCA as an international bloc with greater bargaining power and sphere of influence than its members could achieve on their own (OTCA 2024).

As guest countries to the summit, OTCA invited São Vicente and the Grenadines, Congo, Democratic Republic of Congo, Indonesia, France (for French Guiana), Germany, and Norway. The participation of other rainforest countries represented an "attempt to build multilateralism in practice"[2]. Their presence would prepare negotiations for the Three Basins Summit (Amazon/Congo/Borneo-Mekong-Southeast Asia), held from October 26 to 28, 2023, in Brazzaville, capital of Congo, where they later ratified common positions on preservation, water resources and biodiversity (Sommet 2023). Germany and Norway attended the event as

2. Interview with Itamaraty career diplomat, February 19, 2024.

observers in their capacity as donors to the Amazon Fund. With this gesture, OTCA recognized the importance of such investments, but also reiterated the demand for developed countries to increase their contributions.

Amazonian diplomacy exists as a relational dynamic in which agents construct their positions based on their interests and how they reconfigure vis-à-vis the interests of other agents. Historically, Amazonian peoples have claimed the right to participate in the formulation of policies that affect their territories; therefore it would be a conceptual and analytical mistake to restrict this field to the interventions of Nation-States within OTCA. Forest communities have forged bonds of solidarity and alliances that empower them to voice their demands and achieve international prominence. Thus, the *Amazon Dialogues*, which took place in the week preceding the Summit, were a constitutive part of Amazonian diplomacy, wherein they appealed to ancestral tradition and indigenous networks to pressure for the preservation of the rainforest and their worldviews.

At the end of the *Amazon Dialogues*, over 140 forest peoples and civil society organizations signed a letter addressed to the presidents of Amazonian countries and their respective ministries of Foreign Affairs. The signatories demanded the "effective participation of Amazonian peoples in the entire energy production chain, as part of the planning, management, and governance processes for a just and popular energy transition" (§7). Their formulations corroborate the idea that "the environmental and social costs of oil exploration in the Amazon outweigh the economic benefits generated" (§3), establishing connections between "eliminating deforestation and exiting oil exploration" (§6). The petition calls for an end to new oil research and exploration in the rainforest (§3) and expresses support for organizations fighting against the expansion of hydrocarbons off the coasts of Brazil and Guyana, and for the "yes" vote in Ecuador's referendum "to leave the oil in the Yasuní megadiverse zone underground" (§4). Finally, it demands "reparations" for the peoples and territories already affected by hydrocarbon activities (§3).

The Amazon Summit concluded with a "Declaration" of one hundred and thirteen paragraphs, in which OTCA States reaffirmed common principles and outlined measures for forest preservation, climate regulation, biodiversity, water resources and soil quality. However, this document addresses energy questions in only three paragraphs. The twenty-first reiterates the importance of strategies, programs and projects for the development and strengthening of science, technology and innovation aimed at "the sustainable use of fauna, flora and territory, the human right to food, the *energy transition* and health [...]". It lists energy transition as one of the priorities of OTCA's scientific and technological agenda, without providing a precise characterization of its content or the projects to make it happen.

Later on, the document proposes coordinated actions to "guarantee the human right to drinking water and sanitation, secure water-related ecosystems and their healthy balance with food and *energy needs*" (§ 29). Based on the reciprocal influence of their biophysical cycles and processes, the *Declaration* reinforces the work of public managers who approach energy in association with policies for water and food security (Rodrigues 2017). Finally, the seventy-ninth paragraph affirms that member States must initiate a "dialogue on the sustainability of sectors such as mining and hydrocarbons in the Amazon Region within the framework of the 2030 Agenda for Sustainable Development and their sovereign national policies."

OTCA formally acknowledges the demands of the Amazonian peoples but does not commit to meeting them. With respect to the energy transition, there exists a notable disparity between the Peoples' Charter and the Belém Declaration, particularly concerning the most contentious issue of the Summit: the exploitation of hydrocarbons.

This shows that OTCA formally acknowledges the demands of the Amazonian peoples but does not commit to meeting them. With respect to the energy transition, there exists a notable disparity between the Peoples' Charter and the Belém Declaration, particularly concerning the most contentious issue of the Summit: the exploitation of hydrocarbons. In the next section, we interpret such disputes in the light of the economic importance that each member attaches to oil, gas and minerals in their respective Amazonian territories, as well as their domestic social pressures for a decarbonized energy sector. Elections and referendums turned into an uncertain arena for oil enthusiasts, and "progressive" governments face accusations of science denialism for insisting on the hydrocarbon economy as a guarantor of social development.

ENERGY TRANSITION AS "PROGRESSIVE" FORM OF DENIALISM?

All OTCA States exploit hydrocarbons in their Amazonian territories. However, as the climate crisis worsens and forest peoples protest against the impacts of these activities, investments in oil have become the main political divide in the Amazon Summit. To understand this dispute, it is not enough to measure the importance

of such resources in each country. It is necessary to interpret and contextualize the official discourses on energy transition, verify their levels of popular support, and then outline the geopolitics of oil in the Amazon. For analytical purposes, let us take the examples of Guyana and Ecuador. These are less populous countries with smaller territorial extensions, but because they represent almost diametrically opposed trajectories, comparing them will help to situate other countries.

Guyana was a latecomer to "petropolitics" because it was only in 2015 that the country discovered it was sitting on a "winning lottery ticket". With only 800,000 inhabitants, its verified reserves achieved 11 billion barrels–approximately 75% of Brazil's oil reserves. This positioned Guyana as the tenth-largest oil producer, gaining prominence on the global economic stage. In 2022, it was the fastest-growing economy (62%), while its per capita income reached US$ 18,199, nearly three times the US$ 6,477 recorded in 2019 (Prazeres 2024).

With this influx of resources, the government has boosted primary infrastructure, but critics argue that the current development model has deepened inequalities between Indian and African descendants (Cordis 2021; Wilburg 2024). The latter would have benefited less in terms of employment and income, but have been more affected by inflation following the oil boom. On the other hand, the increase in revenue masks external dependence. Investments for exploration come from foreign companies such as Exxon Mobil (EUA), CNOOC (China), Repsol AS (Norway), among others. According to participation contracts, companies paid 2% royalties to Guyana, while the average rate in developing countries is 16% (Wilburg 2024).

In Ecuador, the referendum about oil exploration in Yasuní National Park confronted the population with the impasses of the 2008 Constitution and extractivism dependence. A few days after the Amazon Summit, 59% voted to halt activities of the state-owned Petroecuador in Block 43 ITT, one of the most biodiverse regions on the planet and home of isolated indigenous groups along the border with Peru (Santos 2023). The significance of this vote is historic, as Ecuador became the first country to decide by popular referendum to keep oil underground. It signifies the democratization of crucial environmental decisions and calls into question the assumptions of political groups that had assumed popular support for developmentalist models.

Pioneeringly, Ecuador's Constitution drew inspiration from the worldview of Andean peoples to assert principles such as plurinationality, interculturality, ancestral knowledge, juridical rights of nature and "buen vivir" (Sumak Kawsay). However, despite criticism of the ethnocentric foundations of neoliberalism, the country failed

to address its dependency on oil. It became the main (and almost exclusive) source of revenue to finance the investment cycle that would reduce poverty from 36.7% to 22.5% between 2006 and 2016.

Then-President Rafael Correa adopted a nationalist perspective, revising the participation contracts so that the State would appropriate over 80% of the oil revenues. He proposed an agreement, in which Northern countries would compensate Ecuador with US$ 3,6 billion, i. e. 50% of the market value of Block 43 ITT reserves, so that the country would give up prospecting in the Yasuní Park (Santos 2020). As Northern countries did not adhere, Correa abandoned his commitment not to explore hydrocarbons in the Amazon, bearing the cost of alienating indigenous populations from his political base of support.

Indeed, even the big oil companies have realized that it is better for their interests to avoid the wear and tear of openly denialist positions and now prefer to talk about 'transitions'.

The referendum on Yasuní plays an important role in Amazonian diplomacy because it removes Colombia from a position of isolation in the debate on energy transitions. In 2022, Gustavo Petro was elected president with a platform focused on poverty reduction, guerrilla pacification and mitigation of climate change. Although the mining and energy sectors account for 7% of GDP, 33% of foreign investment, 56% of exports and 500,000 formal jobs, Colombia became the first non-island country to sign the Treaty on the Non-Proliferation of Fossil Fuels at COP28 (Dubai). To achieve this objective, the government intends to finance renewable energy initiatives using resources from sectors other than fossil fuels, such as tourism (MinEnergia 2024).

This decision was an offshoot of Colombia's position at the OTCA's Summit, when Gustavo Petro invoked the authority of science to advocate for an agreement not to explore oil in the Amazon: "[Right-wing] governments have an easy escape route, which is denialism, denying science. For progressives, it is very difficult. It then generates another kind of denialism: talking about transitions" (Vick 2023, our translation). Indeed, even the big oil companies have realized that it is better for their interests to avoid the wear and tear of openly denialist positions and now prefer to talk about 'transitions'.

Petro has pinpointed the contradiction of the governments seeking to legitimize coastal oil exploitation in the Equatorial Margin, which ranges from Guiana to the

Brazilian State of Rio Grande do Norte. They attach a morally negative value to emissions from deforestation, but not to emissions from the energy sector. In this sense, they become entangled in denialism, since not only deforestation, but also climate change are pushing the Amazon to its "tipping point", which could undo all the States' efforts to keep the forest standing. This is not a proposal to abandon fossil fuels "overnight", but to present an energy plan in which "transition" does not figure as a convenient term for "postponing decisions that are fundamental to life".

Obviously, these criticisms caused tensions in Brazil because, with the new Growth Acceleration Program (PAC), the government plans to invest up to R$ 355 billion in oil and gas. An important part of this strategy is to prospect and explore deposits in the Equatorial Margin, consisting of 42 wells, divided into five sedimentary basins (Petrobras 2024). Researchers from the Climate Observatory and the Institute of Energy and Environment suggest that Brazil could potentially produce between 10 and 30 billion barrels of oil in this area. If all this oil were burned, it could result in the emission of 4 to 13 billion tons of CO_2 and potentially cancel out the climate benefits of zeroing deforestation (Almeida 2023; Unisinos 2023).

The controversy surrounding the exploration of block FZA-M-59, situated at the mouth of the Amazon, is particularly intense because it can open a perilous precedent. This area holds ecological significance as it lies close to Brazil's largest concentration of mangroves (87%), covering an area spanning 12,114 square kilometers. These mangroves are crucial for the economic activities and food security of communities in Maranhão, Pará, and Amapá (ICMBio, 2018). In contradiction to the Ministry of Mines and Energy, the Brazilian Environmental Institute (IBAMA) claimed "technical inconsistencies" and rejected Petrobras' request to carry out maritime drilling activities in block FZA-M-59. In January 2024, IBAMA calculated the environmental impact of this project as *maximum*, while Petrobras classified the agency's analysis as "subjective".

Compelling IBAMA to issue the license might have political consequences both domestically and internationally. It might erode the government's image in the eyes of the indigenous and other traditional communities in the region. In a scenario where these communities decide to confront the government to ensure non-exploitation of the Amazon Mouth Basin, the Brazilian government would most likely lose ground in Amazonian diplomacy. COP30 could then represent the erosion of international prestige, rather than the consecration of Brazilian foreign policy and soft power.

Finally, Gustavo Petro's speech had repercussions because the political and scientific objections originated from a Southern nation that emits 1,52 tons of

CO_2 per capita, less than Brazil's 1,92 tons (Global Economy 2020). To position himself as a global environmental leader, Petro relies on the institutional framework of Amazonian diplomacy to dispute with Lula the role of South America's environmental champion.

In any case, there is no clear reason why disagreements about oil and gas should paralyze cooperation among OTCA countries for transitioning to cleaner energy. Instead, we show that they face common difficulties in universalizing access to electricity, particularly in Amazonian departments. Cooperation would be an opportunity to "walk the last mile together", overcoming the challenges of energy poverty[3] in the remote areas of the forest.

A POSITIVE AGENDA FOR BOOSTING ENERGY TRANSITION AND UNIVERSALIZING ELECTRICITY ACCESS IN THE AMAZON

The Brazilian Amazon is abundant in natural resources and exports electricity to urban centers outside the North region. However, even though it provides various inputs for increasing productivity and generating wealth, the region still has the lowest rates of human development. The tension between "scarcity" and "abundance" has been accentuated by the construction of large hydroelectric dams in the last two decades, while local communities live in poverty, darkness or precarious access to electricity and basic social rights. This situation stimulates an energy transition scenario that is unfair and excluding, since local people bear the environmental impacts of the energy infrastructure, but do not have electricity or the support to use energy in ways that maximize its economic and social benefits.

Social inequalities prevalent in the region mirror the antagonistic dynamics of countries in the Global South. These countries have plenty of natural resources, yet they face significant challenges in providing essential public services, including access to electricity, water, sanitation, health care, and education. If this dichotomy is not addressed, Amazonian diplomacy will not alter the objective reality of poverty and scarcity experienced by local communities. The tension between scarcity and abundance can result in fragmented diplomacy, whereby Amazonian countries, despite sharing common realities, may follow divergent interests that impede the advancement of comprehensive and sustainable public policies. Without focusing on social rights, local people will not be properly integrated in the political process and Amazonian diplomacy may degenerate into top-down international politics.

3. Energy poverty is defined as the lack of connection to an electrical grid, mainly in rural areas, and the consequences of the use of firewood for cooking (Pereira et al. 2010).

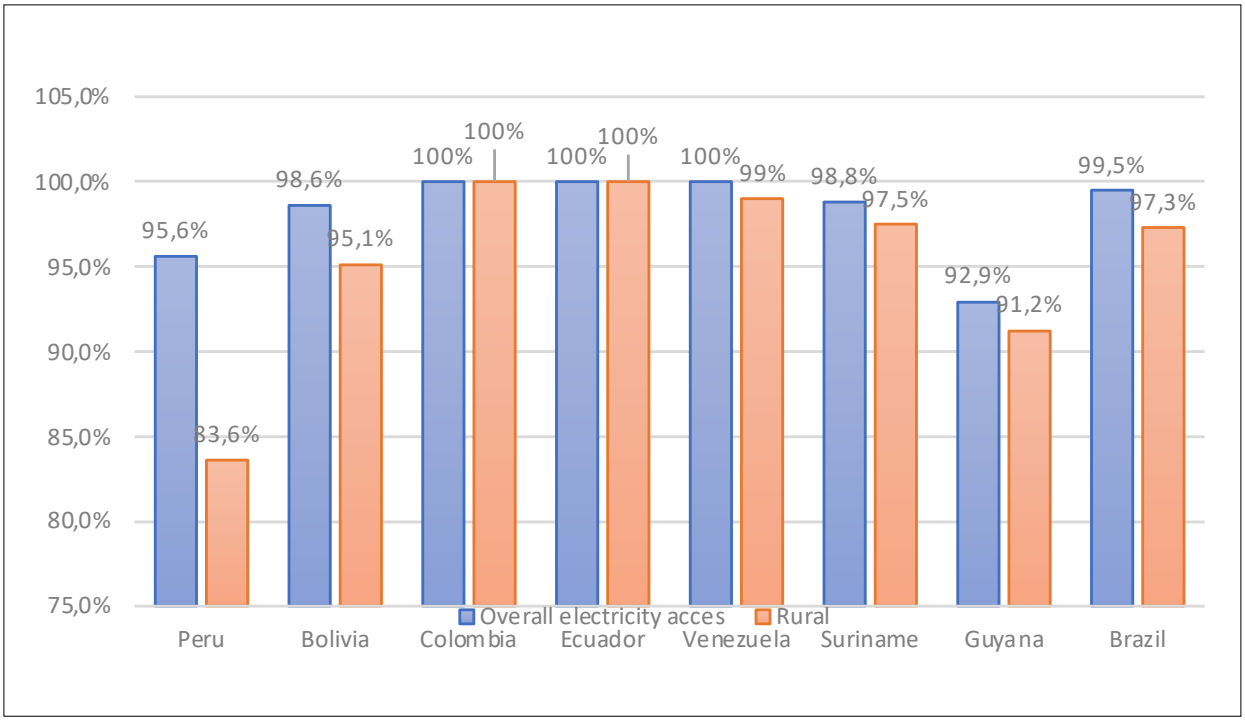
At the cost of the displacement of indigenous peoples and impact on biodiversity, recent energy planning has intervened in the Amazon Basin rather in accordance with energy security than with the principles of energy transition. Climate Policy Initiative (2022) estimates that the Amazon region accounts for over 27% of Brazil's electricity generation, hosting four of the five main hydroelectric plants. However, despite its significant contribution, the region consumes only 11% of the national power generation. According to research conducted by the Institute of Energy and the Environment (IEMA 2022), 19% of the population living in indigenous lands lack access to electricity. Basic energy infrastructure deficiencies affect 22% of conservation units (under Law 9985/2000) and 10% of rural settlers.

The tension between scarcity and abundance can result in fragmented diplomacy, whereby Amazonian countries, despite sharing common realities, may follow divergent interests that impede the advancement of comprehensive and sustainable public policies.

Nevertheless, the debate on 'energy poverty' concerns not only access but also the quality and regularity of electricity supply once communities have attained this right. This issue has not been well enforced in remote and isolated communities yet, and the inadequate monitoring of energy stability and quality undermines programs like 'Light for All' (GOMES et al. 2022). The lack of regular electricity disrupts many aspects of daily living and social development:

- the emergence of small businesses and consequently limits local opportunities;
- it hinders commercial activities, restricts the operational capacity of small enterprises, increases operational costs, and reduces productivity;
- the use of alternative energy sources such as candles or lamps heightens the risk of fires and domestic accidents;
- dependence on diesel generators exacerbates air pollution and directly affects the availability of health services in the community;
- medical equipment, including vaccine refrigerators, ventilators, and other devices, may not function reliably, compromising medical care and the response to health emergencies in the region.

The lack of access and other aspects of energy poverty are common realities for other OTCA members. The map below shows that Guyana has the lowest overall electricity access, while Peru presents nethermost records in rural areas. Less than 20% of the 2,703 native communities in the Peruvian Amazon are connected to the public grid, although at least 840 already use communal energy sources such as generators or solar panels to compensate for this gap (Ñiquen 2023). Local as well as international companies are driving the integration of PV systems in the Peruvian Amazon, but 1,675 educational institutions in this region still have no access to any form of energy services. In the case of Bolivia, the less privileged state is Potosí, but Pando and Beni in the Bolivian Amazon present access rates below the national average.



Graph 1: Electricity Access in OTCA Countries. Source: elaborated by the authors based on data from https://datos.bancomundial.org/.

For the Bolivian government, expanding the electric grid with the aim of achieving universal access by 2025 is part of its strategy for eradicating extreme poverty (World Bank 2020). Therefore, it has implemented several initiatives, such as the "Living with Dignity" (*Electricidad para Vivir con Dignidad*, PEVD), which contributed to increase rural electrification from 33% in 2005 to 73% in 2016, representing circa 746,000 new households benefited. Hinestroza-Olascuaga and colleagues (2021) doubt that the government will universalize access by 2025, but they suggest that electrification efforts should prioritize poor communities, as it has the greatest impact on their social development.

Colombia and Ecuador have the highest levels of energy access. However, both countries plan to achieve universal energy access only by 2030. Researchers argue that they must address the 'last mile' of electrification in remote areas of the Amazon. Nonetheless, this effort needs to consider comprehensive aspects of energy poverty, as there are communities with off-grid electricity access where supply is often limited to less than six hours per day[4] (Garces 2021).

Finally, policy-makers must consider other factors alongside costs, such as the social acceptance and environmental impacts of renewables. According to IDEC's report, Brazilian indigenous families prefer PV panels with batteries, considering this system better adapted to their needs. They are easy to install, maintain, and offer greater electricity security compared to diesel generation, which can experience disruptions in supply (IDEC 2021). However, the manufacturing of photovoltaic panels and lithium batteries increases the demand for mineral extraction and rare earths. Thus, sustainability and social factors of mineral exploitation must be taken into account, especially in ecologically sensitive biomes and vulnerable communities (Pyl et al. 2024).

Based on this shared reality, some policy proposals could be outlined. OTCA countries could commit to jointly covering the "last mile". This would entail an international effort to ensure that local populations enjoy the rights established by SDG 7 and provide energy input for other projects implemented by OTCA in the future. Affordable and clean energy is integral to several goals in Agenda 2030, such as poverty eradication, climate action, good health and well-being, clean water and sanitation, decent work and economic growth, as well as gender equality. Indeed, studies have shown that women remain the most important decision-makers and laborers for household and small-scale livelihood-related energy use. Therefore, small-scale energy systems benefit more women and reduce the inequality gap (Buechler et al. 2020). Very often, PV systems in the Amazon region enable women to pursue local business, improve the quality of their work, and become more competitive in the market (ENDEV 2024).

Sociotechnical artifacts that promote education, health and more efficient communication are dependent on electricity. Bioeconomy programs must rely on secure energy sources to develop economies of scale and new value chains too. *Therefore, we argue that the Permanent Secretariat should establish a Working Group to exchange and foster experiences on the access to electricity in remote areas of the Amazon.* This group could discuss their specific realities and technical challenges, compare guidelines

4. Despite existing incentives that still prioritize the use of diesel generators through costly supply-side subsidies, Colombia has introduced tariff incentives for distribution network operators to implement renewable energy projects in rural areas where connecting to the main grid is not economically viable (IEA 2024).

and regulations for the electricity sector, and identify legal mechanisms that have facilitated or hindered project development. OTCA could also leverage Amazonian diplomacy to secure funding for subsidizing the energy transition in the region. These resources could procure sustainable equipment, such as photovoltaic panels paired with batteries, and machinery that enhances the socially and economically productive use of electricity. The installation and operation of such devices could be jointly monitored, with technical assistance and training provided to residents for minor repairs. This Working Group could serve as a platform for exchanging expertise and improve the learning process. They could assess the environmental impacts of mining resources for renewable energy technologies in the forest and improve procedures for equipment disposal at the end of its life cycle.

By promoting a just, inclusive and people-centered energy transition, OTCA would gain legitimacy regionally as well as internationality because traversing the last mile in the Amazon together might be an example of multilateralism and energy cooperation for other tropical rainforest countries in Sub-Saharan Africa and Southeast Asia.

Climate security and forest conservation demand cooperative policies for their effectiveness. Thus, a positive agenda based on the deployment of renewable energy for the universalization of electricity would contribute to strengthen Amazonian diplomacy and make OTCA's directives more coherent with the demands of forest peoples. By promoting a just, inclusive and people-centered energy transition, OTCA would gain legitimacy regionally as well as internationality because traversing the last mile in the Amazon together might be an example of multilateralism and energy cooperation for other tropical rainforest countries in Sub-Saharan Africa and Southeast Asia.

FINAL REMARKS

Historically, OTCA meetings take place shortly before international conferences on climate and the environment. On these occasions, Amazonian diplomacy forms a socio-environmental bloc, from which its member countries seek greater projection and influence than they could achieve based solely on their respective political capitals. Nevertheless, the contradiction of OTCA as

an international cooperation institution lies in the fact that, thirty-five years after its foundation and almost twenty years after its reorganization, it has not yet accomplished significant projects to legitimize itself as an active instance for the transnational governance of the Amazon. As a rule, Amazonian diplomacy recedes after international conferences, dialogues cool down, and resources diminish. Policies are once again formulated within territorial boundaries, with limited state capacities and objectives that may be exclusively national.

As far as energy cooperation is concerned, the Amazon countries have so far signed bilateral agreements for the trade of fossil fuels, such as the Brazil-Bolivia gas pipeline and the transmission lines between Venezuela and Roraima. Since the Amazon Summit, however, the exploitation of fossil fuels has become the main divide within OTCA. In this article, we draw attention to three aspects of this controversy:

1. The political standing of Colombia and Ecuador are highly unprecedented because they are countries where the decision to restrict oil exploration was the result of popular deliberation. This shows that growing sectors condemn the environmental impacts of previous policies and no longer believe that oil alone is capable of eliminating historical inequalities and raise them to the level of high-income countries;
2. Oil exploration confronts OTCA with ethical and epistemological dilemmas that are explicit in the idea of "tipping point". The *Belém Declaration* points to the need to articulate science with ancestral and traditional knowledge. However, while invoking the legitimacy of scientific knowledge to confront deforestation, supporters of oil exploration shy away from the causal relationship that points CO_2 emissions as another causal factor that could irreversibly lead the forest to lose its ecological characteristics. At this stage, the epistemological validity of science is suspended and political discourse returns to its starting point, i. e. invoking the legitimacy of development, the principle of differentiated responsibilities or some other non-scientific arguments;
3. This controversy leaves the role assigned to traditional peoples in Amazonian governance even more uncertain. The *Belém Declaration* states "effective solutions to the problems of the Amazon Region can only be achieved with the full and effective participation of its populations, both urban and rural, sub-national governments, civil society, with emphasis on indigenous peoples and local and traditional communities (...)". However, the contrast between the demands presented in the *Charter of the Peoples of*

> *the Earth* and the outcome of the Summit indicates a rift between OTCA and the Amazonian population regarding the energy transition. This is not a secondary problem, since the legitimacy of the Amazon bloc at international conferences depends on the perception that OTCA also incorporates the views of indigenous and traditional populations.

Throughout this article, we have worked on the premise that the disagreement over Amazonian oil should not prevent OTCA from establishing joint initiatives on the development of renewable energies. The Amazon countries share some similarities when it comes to electricity access, as in almost all of them more than 95% of the population have already basic energy services. In these countries, electricity access rates are always lower in rural areas and most of their "last mile" remains in Amazon districts. This means that OTCA could establish mechanisms for its members to achieve universalization collaboratively.

In the previous section, we listed possible actions to make this cooperation happen. It is essential that any Working Group for the democratization of access engage in permanent dialogue with Amazonian communities in order to organize its tasks in light of people's actual needs. Collaborative universalization would be a historic accomplishment for each of the countries and for strengthening Amazonian diplomacy. However, it would be deceptive to consider this goal merely from a quantitative point of view. One hundred percent access will not be of due importance in the lives of these communities if the energy transition does not focus on the specific priorities and aspirations of each village. Access to electricity must serve to facilitate the achievement of other rights so that the Amazon would no longer be depicted through the lens of 'scarcity.'

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For a positive agenda on energy cooperation, OTCA countries must balance the principles of national sovereignty with political cosmopolitanism. Its foundation aimed at ensuring sovereignty against possible external threats, but current priorities display a more comprehensive agenda, and convening OTCA only in the run-up to environmental conferences may delegitimize this institution if it fails to devise and

implement transnational projects fostering enduring cooperation. The absence of guidelines for energy transition was a gap in the Belém Declaration that OTCA must address to prevent energy policies in the Amazon from being guided solely by national criteria. These police suggestions might as well enhance learning processes and serve as a showcase for energy cooperation among other tropical forest nations in Africa or Southeast Asia.

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