ENERGY IN LATIN AMERICA: FROM BUSINESS TO THE COMMONS

A study on renewable energy experiences in the region

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Elisangela Soldateli Paim

ROSA LUXEMBURG FOUNDATION

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FOREWORD

This Rosa Luxemburg Foundation (RLS) publication is a product of the collective work of its offices in Buenos Aires/Argentina, Mexico City/Mexico, Quito/Ecuador and São Paulo/Brazil, and presents the first results of the mapping carried out during 2018 of alternative projects for generating renewable energy at a local level, in nine Latin American countries[1].

At the beginning of the research, these offices – supported by the regional coordination – set out their objectives in terms of understanding the processes of socio-ecological and just energy transition and contributing to their strengthening. This proposal is part of RLS's "Energy and Climate Programme" for Latin America. It falls within a perspective that conceives of energy as both a necessity and a right, which must be de-commodified and addressed outside the logic of financial speculation, given that it is a fundamental element for the reproduction of life. In this regard, RLS considers the "local" as a privileged space to discuss power relations, where the formulation of policies related to the commons can go beyond the limits of the market, and even of state institutions.

In support of the diversity and political richness of the experiences visited, in diverse national contexts, we present this analytical work as the first part of a process of political education being carried out in conjunction with organizations and social movements with which we have been working in the region. In this context, and considering the more than 700 projects that were included in the mapping phase, for this publication we have selected the following experiences: the Solar Bakery in the Várzea Comprida dos Oliveiras community (State of Paraíba/Northeast Brazil); the supply of 54kW of electricity through small community hydroelectric plants, led by the association *Luz de los héroes y mártires de la resistencia* in the Union 31 de Mayo community (San Miguel de Uspantán – Quiché/Guatemala); the solar supply system for the community plant nursery of the *Asociación Municipal de Mujeres Campesinas de Lebrija*, promoted by the *Colectivo de Reservas Campesinas de Santander* (Colombia); and the case of the public company *Administración Nacional de Usinas y Transmisiones Eléctricas* (UTE) in Uruguay.

RLS is one of six political foundations in Germany. It honours the trajectory, political reflections and dreams of Rosa Luxemburg, a socialist, militant, Polish, Jewish, migrant and Marxist woman, who lived and fought in Europe from 1871 to 1919. On January 15th, 1919, Rosa and her comrade Karl Liebknecht were murdered in Berlin by far-right paramilitaries.

RLS's international work is aimed at political education by means of a critical analysis of society, supporting the idea of democratic and social emancipation, and education for political action. So, our fields of cooperation include social and democratic participation, commitment to peace, equality and understanding among peoples to achieve social justice and coexistence in solidarity. Our principles are rooted in

1 The Mexico office supervised the work in Mexico, Guatemala and Costa Rica. The cases in Ecuador and Colombia were accompanied from Quito. The São Paulo and Southern Cone offices oversaw the work in Argentina, Chile and Uruguay.

Rafael Álvarez Doménech (Fundaexpresión)

democratic socialist thought, internationalism, anti-fascism and anti-racism. In this context, the Foundation – which is close to the German Die Linke party (The Left) – works with different organizations, leftist foundations, trade unions, women's organizations and social movements. It has offices in 28 countries in four continents.

Lastly, it is important to mention that this work would not have been possible without the cooperation of the organizations, community associations and institutions visited, as well as the systematic collection of information and fieldwork done by the following researchers: Bruno Fornillo (Doctor of Social Sciences from the University of Buenos Aires, and of Geopolitics from Paris 8 University); Fabrina Furtado (Professor of the Department of Development, Agriculture and Society at the Federal Rural University of Rio de Janeiro); Juan Pablo Soler (Chemical Engineer and specialist in energy and society); and Sandra Rátiva Gaona (Colombian activist, Master in Sociology from the Benemérita Universidad Autónoma de Puebla, and member of the Onergia Cooperative). Also crucial in this process was the work carried out by regional coordinator during 2018, Diego di Risio (RLS Buenos Aires office), and project coordinators Carla Vazquez (RLS Regional Office for Mexico, Central America and the Caribbean), Laura Rodriguez (Andean Regional Office) and Verena Glass (Regional Office for Brazil and Paraguay). Since 2019, the Energy and Climate programme has been coordinated at the regional level by Elisangela Soldateli Paim.

ICMbio Prado/ BA

Curumu without oil

INTRODUCTION: ENERGY AS A CONCEPT AND BATTLEGROUND ON A GLOBAL SCALE

The world is in a state of crisis, characterized not only as a crisis of the capitalist system, but as a crisis of civilization, i.e., a crisis in the patterns of power and knowledge. In addition to the exploitation of workers, women, Afro-descendant populations and other non-capitalist civilizations (such as indigenous and traditional civilizations), the metabolism of the planet is under threat. This is a systematic process of appropriation and expropriation that generates and deepens socio-environmental conflicts – conflicts over the access, use and appropriation of the material and symbolic world –, putting humanity as we know it at risk. Today we face the consequences of climate change, desertification, air, water and land pollution, thus affecting our food and all living systems on which life depends. This is mainly due to the overexploitation of land, water, fisheries and timber, and the absence or loosening of environmental and human rights laws. This is a context aggravated by the advance of far-right movements and governments that underpin discourses and policies that articulate the radical liberalization of corporate action with anti-environmentalism and the stigmatization of non-capitalist peoples and experiences relating to the commons or public policies.

In this scenario of human rights violations and environmental collapse, despite the denial of the far-right, anthropogenic climate change is characterized as one of the greatest challenges of our time, a problem that must be confronted urgently. Climate change has unquestionably devastating consequences: loss of biodiversity and productive areas, as well as melting glaciers and polar ice caps, heat and cold waves, floods, hurricanes and unprecedented wildfires; all phenomena that have also generated starvation, loss of territories, forced migration, i.e. refugees/climate refugees, and deaths, especially among the most vulnerable populations in the Global South.

The main cause identified in these processes is the capitalist mode of production and consumption, which depends on the overexploitation of fossil fuels and on deforestation. Climate change shows us the importance of urgently transforming the modes of interaction between social practices related to the appropriation of matter and energy, and climate processes. However, the dispute between different diagnoses and the emerging measures aimed at building a new international climate regime have failed to overcome neoclassical economic thinking and practices. The dominant solution to the problem – characterized as mitigation, based on the neoliberal project for the commodification of the commons – is aimed, in a reductionist manner,

at the measurable decrease of greenhouse gas emissions. This has been mainly carried out through mechanisms such as the payment for environmental services, technological adjustments, the logic of compensation through terminology such as low-carbon economy and agriculture and, increasingly, corporate appropriation of the notion of renewable energy.

Thus, the hegemonic construction of the environmental/climate problem de-politicizes the debate and weakens the complexity of the climate system. In other words, rather than considering all the elements present on the earth's surface and the numerous interactions between them, it boils the question down to the carbon metric. We perceive climate change as one of the dimensions of the civilizational crisis, a consequence of the hegemonic model of energy production and consumption, especially of fossil fuels, and the current food regimes[2] based on the action and power of agribusiness corporations. In Latin America, the hyper-concentration of land, water and biodiversity in the hands of large economic groups intensifies the hoarding and expropriation of lands and territories, communities and populations. This results in the dismantling of non-capitalist ways of life, of knowledge, of production and of living with nature. This process, associated with the growth of agribusinesses, mining, energy production and related infrastructure, such as the expansion of ports, roads and pipelines to facilitate the movement of commodities, is devastating to the quality of life and living conditions of communities. At the same time it enhances social and territorial conflicts, and the criminalization of social organizations[3].

1.1 RLS's PROJECTION

In its ideal format, RLS understands a local alternative energy generation project as one that is based on the use of unconventional renewable energy (photovoltaic, wind, small-scale hydroelectric, biomass etc) without environmental degradation and which contributes to guaranteeing de-commodified, universal and fair access to energy by the population and/or by nearby sustainable productive ventures. In this sense, the project must be for the collective and/or public benefit, and must be governed by a democratic and non-discriminatory process both among its members and in its relations with the community.

Such a project is in line with the broader view of environmental and energy sovereignty, justice[4] and democracy[5], with the notion that energy is a right – and therefore must be de-commodified – and of collective benefit, produced in a sustainable and fair way along global value chains. Such a focus does not exclude other fronts that are strategic for popular sectors, such as with food or technological sovereignty, but seeks to integrate and establish a dialogue with them.

2 "Food regime" refers to how foodstuffs are used on a global scale in the process of accumulation. For more information, see: McMICHAEL, Philip. "Regímenes alimentarios y cuestiones agrarias". Mexico: Universidad Autónoma de Zacatecas/Miguel Ángel Porrúa, 2015.

3 The projects of the South American Regional Infrastructure Integration Initiative (Iniciativa para la Integración de la Infraestructura Regional Sudamericana – IIRSA) are included in this framework. Launched in 2000 by the twelve South American governments, it had the technical and financial support of the Inter-American Development Bank (Banco Interamericano de Desarrollo – BID), the Andean Corporation Fund (Corporación Andina de Fomento – CAF) and the FONPLATA – Development Bank. The Brazilian Development Bank (Banco Nacional de Desenvolvimento Econômico e Social – BNDES) also provided considerable resources. Since 2011, the South American Council on Infrastructure and Planning (COSIPLAN) has been responsible for IIRSA's portfolio of ventures. The Mesoamerica Integration and Development Project articulates ten countries (Belize, Colombia, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama and the Dominican Republic). In April 2007, it was launched as a restructuring of Plan Puebla Panama.

4 https://www.rosalux.de/fileadmin/rls_uploads/pdfs/Analysen/Analysen44_Fossil_Fuels.pdf

5 https://www.rosalux.eu/fileadmin/user_upload/vie13_papers.pdf

Faced with this scenario, and based on the hypothesis that there are various initiatives against the capitalist reality[6] or that navigate outside of it, RLS conducted in 2018 a "Mapping of alternative local manufacturing and energy generation projects" in nine Latin American countries through the work of different researchers. Firstly, the process sought to produce a document with secondary data that brought together various initiatives of alternative local manufacturing and energy generation projects. Then, based on a subsequent selection from the mapping, a more detailed analysis of projects and initiatives chosen was carried out through fieldwork and other research tools. The fieldwork prioritized participant observation and emphasis on qualitative aspects, using in-depth and semi-structured interviews with key players in the projects and/or externally. Finally, analyses were developed, and internal and/or public project-related documents collected.

With this process we seek to disseminate the existence of practices focused on counter-hegemonic values and the decentralization of energy, capable of questioning the orientation of the energy system and the logic of accumulation as a whole, giving space and voice to community-related autonomy and democratic self-organization. We hope that this material will also serve to collaborate with the processes of political education and networking between organizations and RLF's regional work towards socio-ecological transitions and so many other struggles we face on the continent.

1.2 THE LIMITS OF ECONOMIC ENERGY TRANSITION

There is an apparent consensus at the United Nations (UN) that the energy sector is the largest contributor, globally, to greenhouse gas emissions (GGE) – approximately 35% of total emissions in 2010 – and therefore an energy transition is necessary. By energy transition, the UN understands the path towards building energy systems that guarantee sustainable energy and involve energy efficiency, end energy poverty and use renewable energy sources to achieve universal access and a reduction in emissions[7]. Energy sources considered renewable are hydroelectric, wind, bio-energy, solar and geothermal energy. Despite the existence of isolated initiatives that seek to reduce investments in fossil fuel energy and diversify energy production, hydrocarbons and coal predominate in the discourse and practices of dominant agents, i.e., states and corporations.

The global energy matrix remains dominated (81.3%) by fossil sources. The increase in gas production in 2018 resulted in an increase of 0.5% in energy-related carbon dioxide emissions, led by the United States, Canada and South Korea. In Latin America, oil continues to account for the highest proportion of energy produced (40%), followed by natural gas (23%) and agrofuel and biomass (21%). The main producers of this source of energy in 2017 were Brazil (37%), Venezuela, Colombia, Argentina, Trinidad and Tobago and Ecuador, with 88.8% of the energy generated in the region[8].

In terms of consumption, in 2017, with just 4.3% of the world's population, the United States consumed 16% of the energy produced in the world. On the other hand, despite having 18% of the population, China consumed 22% of the world's energy, and India, 6%. Next in line were Russia, with 5.2%, and Japan, with 3.1%. Latin America and the Caribbean, Africa and the Middle East are the regions with the lowest levels of total energy consumption in the world[9].

This disproportion between energy production and consumption occurs in the context of an expansion of the energy frontier, where new and dangerous technologies are allowing companies and states to exploit more resources

6 https://www.rosalux.de/fileadmin/rls_uploads/pdfs/sonst_publikationen/strategies_of_energy_ democracy_Angel_engl.pdf

7 https://unfccc.int/news/acceleratedaction-on-energy-needed-to-implement-paris

8 https://www.iea.org/statistics/balances/

9 https://webstore.iea.org/download/direct/2710?filename=world_energy_balances_2019_overview.pdf

than the planet can bear[10]. From this point of view, and on a wide scale, there arises the challenge of deciding where and how to leave gas, crude oil and coal underground, decentralizing and diversifying the production of energy, in particular by private companies, in a scenario of geopolitical control over natural resources and the global capitalist logic of maximizing and legitimizing profits. Another part of the challenge requires the development of socio-economic alternatives in sites of fossil fuel extraction that can offer decent work in activities that are more harmonious with the productive vocations and ecosystems of territories affected by extractivism.

On the other hand, renewable energy sources are themselves causing socio-environmental problems. Among these, we highlight the negative impacts of hydroelectric power stations that call into question their supposed renewability, by privatizing water, displacing populations, flooding forests, affecting the climate, damaging biodiversity, impacting on urban life and many other problems. In the case of agro-fuels, in addition to the loss of land, the use of agro-chemicals and other environmental problems, these fuels lead to precarious working conditions, including reports of contemporary forms of slave labour and the permanent violation of food sovereignty in affected communities. The privatization of territories and the conflicts caused by the construction of wind farms also reflect the need to question, not only the source or technology used in energy production, but particularly the social processes involved in the appropriation and use of energy.

It is therefore necessary to question the concept of energy itself and, and more specifically, that of renewable energy. This implies an analysis not only of the type and quantity of energy produced, but also of territorial needs and possibilities, and the different effects on territories and peoples. This shows that scientific and political recognition of the importance of energy transition and the use of renewable energy has ultimately led to corporate appropriation of climate problems. In addition to mastering geo-engineering and the implementation of mechanisms that commodify nature – such as reducing emissions due to deforestation and forest degradation (REDD+), carbon bonds and other forms of carbon or biodiversity offsets – corporations also currently dominate the field of renewable energy. In practice, this means further centralization and private appropriation of energy generation and transmission, and the intensification of territorial and environmental conflict. Structurally, this process reproduces the hegemonic logic of development as a linear path, a progressive trajectory judged according to the criteria of Western industrialized nations, but which all peoples of the world must follow and aspire to, having as one of its symbols the permanent and unrestricted consumption of energy[11]. Thus, the important thing is to conceptualize energy as a social relation, rather than as a physical product or capital. To this end, it is necessary to ask strategic questions that may guide analysis and action. Why do we produce energy? For whom? What for? Depending on what needs? How? Who manages, decides upon and controls the process? With what technology? With whose technology? Conceived on the basis of what worldview? Asking ourselves these questions means thinking about the energy transition critically, considering the relationships of power, labour, gender, race, ethnicity and generation; the use that is made of energy; its impact on territories and populations; its relations with other public policies, not only relating to energy, but also to environmental, social and human rights; and also to contest narratives and policies around what energy is, what renewable means and to reclaim the notions of public sphere and the commons.

10 For some researchers, in addition to the effects of climate change in the region, Latin America's energy policy is undergoing structural changes as a result of the exploitation of shale gas in Argentina, new deep-sea gas wells by Ecopetrol and Anadarko in the Colombian Caribbean, and pre-salt reserves in Brazil, among others.

11 For more information on the concept of development, see: http://www.burmalibrary.org/en/the--archaeology-of-the-development-idea

GettyImages

Getty Images

2. THE GEOPOLITICS OF ENERGY IN LATIN AMERICA: MAPPING EXTRACTION AND DISPLACEMENT

For years now, extractive activities – the territorial expansion of mining, agro-industry, monoculture tree plantation and oil and gas exploration, among others – as well as infrastructure and relative industrialization projects, have been a priority in the Latin American state-driven accumulation model. Since the 1990s, extractive industries have taken on a central role in the region's political economy. Although many current projects are rooted in earlier times of military dictatorships, dependence on extractive industries became more relevant during the period of economic liberalization, especially after the dominant neoliberal rhetoric on the virtues of the free market and the international insertion of Latin American capitalism.

In the 2000s, Latin America consolidated itself as an important leader in the intensification of industrial extractivism and the incorporation of territories into these activities. To this end, different States endeavoured to create favourable conditions to attract international investment, resorting to labour and environmental deregulation and ensuring a strong presence of the business sector in the political sphere. This was done through concrete procedures such as the fragmentation and loosening of environmental legislation, or neglect in its application, the dismantling of environmental agencies and the criminalization of social resistance. Furthermore, this process has witnessed the multiplication territorially-based actions meant to legitimize the corporate presence, with its own spatial practices, aimed at commodity production.

The dominant narrative has been that "neo-extractivism", a phase of Latin American capitalism centred on exports of commodities with an active role played by the state[12], has been responsible for guaranteeing the necessary resources to finance social policies. Despite this, profits and interest rates related to rising commodity prices have increased in countries that depend on this sector, thus attracting foreign capital and appreciating national currencies, which eventually led to current account

12 For more information on the concept, see: ACOSTA, A. Extrativismo e neoextrativismo: duas faces da mesma maldição. DILGER, G.; LANG, M.; PEREIRA FILHO, J. (eds.). Descolonizar o imaginário: debates sobre pós-extrativismo e alternativas ao desenvolvimento. São Paulo: Fundação Rosa Luxemburgo/Editora Elefante, 2016.

deficits[13]. Even in times of booming commodity prices, the balance of trade surplus was not enough to cover the services deficit. The balance of services in Latin America tends to be structurally weak. In the case of Brazil, for example, only in the period 2003/2007 of the administration of President Lula da Silva did the trade surplus exceed the services deficit. In other words, more was paid than was received, but external insertion in a subordinate manner continued, without any changes or revisions[14].

In energy terms, this model represents intensified exploitation of hydrocarbons and the construction of large hydroelectric dams. With some national variations, the region's energy matrix followed the global trend, with oil as its main source. Despite the fact that the region as a whole does not have the largest oil reserves in the world, the geopolitical importance of the region was (and is) related to the supply of energy to the Global North and to China, and to being a space for investment and of interest to their energy corporations. In this regard, Spanish companies have taken over the leadership of the conventional energy sector in Latin America, and Chinese companies are expanding[15]. Take Brazil, for example. In recent years, foreign companies, especially of Chinese origin, have been the main buyers of electricity generation, transmission, distribution and marketing assets[16]. Also falling within this context are the attempts by the United States to control oil reserves in Venezuela: the United States' domestic production continues to fall[17] and Venezuela, with 300,878 million barrels of proven reserves, has the largest oil reserves in the world (20%). It sends 600,000 of the more than 1 million barrels it produces per day to its northern neighbour. In Brazil, crude oil extraction has been growing over the past four years and reached 48% of the region's production in 2017[18]. This is why the interest of foreign corporations in Brazilian reserves also has increased. The list includes multinationals such as BP, Chevron, ExxonMobil, Shell, Total and Petronas, as well as Petrobras[19].

With this frame of reference, the advance of the extractive frontier hand in hand with social, labour, geological and environmental conflicts and disasters has led some researchers to refer to this process as "extreme energy".[20] In order to sustain the energy matrix and its dependence on hydrocarbons, new technologies and forms of extraction are increasingly used. These include extracting from compact sedimentary formations, extracting heavy and extra-heavy crude oil, tar sands, fracking, improved hydrocarbon recovery by applying biotechnological developments in depleted wells and deposits at sea, increasingly farther from the coast, in deeper waters etc. In addition, the continuity of the "traditional" way of expanding the energy frontier means the invasion and private appropriation of land and the commons belonging to peasants, indigenous peoples, Afro-descendants, artisanal fishermen/women, and small-scale farmers. In other words, it is an energy matrix that destroys or renders traditional, non-capitalist ways of life impossible, which deepens environmental degradation and the violations of ecosystems, and is the main cause of the climate crisis. Even so, many of the region's governments continue placing their bets on this very same energy matrix.

13 Governments' current account consists of goods (the balance of trade) and services, which involve the revenues and payments made by a country with the rest of the world in terms of services, such as business services, transport, tourism, insurance and financial services, including fees paid to foreign investors.

14 PAULANI, Leda. Acumulação Sistêmica, Poupança Externa e Rentismo: observações sobre o caso brasileiro. Estud. av. Vol. 27, no. 77, São Paulo, 2013. Link: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0103-40142013000100018

15 For more information on Spanish corporations, see: http://omal.info/IMG/pdf/atlas_de_la_ energia_final_1_web_.pdf. On Chinese corporations, see: https://fase. org.br/wp-content/uploads/2017/06/A-geopolitica-deinfraestrutura-da-china-na-America-do-Sul.pdf

16 https://gei-sa.fgv.br/sites/gei-sa.fgv.br/files/u49/ go_estudo_concorrencial_energia_fgv.pdf

17 https://www.brasildefato.com.br/2019/02/06/noverazoes-pelas-quais-os-eua-perseguem-o-governoda-venezuela/

18 https://webstore.iea.org/download/direct/2710?filename=world_energy_balances_2019_overview.pdf

19 https://epocanegocios.globo.com/Brasil/ noticia/2019/09/megaleilao-do-pre-sal-tem-14- empresas-interessadas-saiba-quais-sao.html

20 http://www.oilwatchsudamerica.org/images/stories/2017_boletin_Extrema.pdf

Movimiento Ríos Vivos, Juan P. Soler

The Hidroituango Hydroelectric Dam, in Colombia, generates irreversible impacts threatening the livelihood of communities in the region (25/05/2018).

Along the same lines as Southeast Asia and Africa, Latin America is experiencing an accelerated expansion in the construction industry geared to hydroelectric dams. Regarding energy use, data relating to the continent reveal the following: in the case of Brazil, despite the fall in hydropower due to hydrological conditions, in 2017 the production of energy through water sources accounted for 65.2% of the electricity matrix. In the same year, the expansion of wind power meant that renewable energy reached 80.4% of the matrix. In Uruguay, 52% of the electricity comes from water sources; 26%, wind; 18%, biomass; 2%, solar; and 2%, fossil. In Mexico, 21.11% of electricity results from so-called clean technologies. In Colombia, hydropower accounts for between 70% and 80% of electricity generation, depending on variations in climate and hydrological patterns, while the remaining 30% is distributed among thermal sources (natural gas, liquid fuels and coal) and, to a lesser extent, unconventional renewable energy sources.[21]

The construction of large energy projects, as well as the extractive industry, causes violent environmental conflicts to erupt. The "Environmental Justice Atlas", a research project based on a collaborative map developed at the Institute of Environmental Science and Technology (Institut de Ciència i Tecnologia Ambientals – ICTA) of the Autonomous University of Barcelona, currently documents some 2,700 environmental conflicts around the world. Of these, 364 cases are disputes over water in the Brazilian Amazon region, as well as in Guatemala, Peru and Bolivia, among other Latin American countries[22]. In all the cases, projects were initiated without consulting the peoples affected or giving them veto rights, which causes the displacement of indigenous peoples and riverine, traditional and peasant populations, as well as animals. This results in biodiversity loss, increased emissions due to the destruction of forests and other natural areas, health problems and disorganized urban growth.

Despite being a long-standing process, there is now a boom in dam construction in the region. Recent cases include Belo Monte in Brazil, the third largest hydroelectric plant in the world, and *Hidorituango* in Colombia, both with irreversible impacts. For instance, *Hidorituango* had to close one of its gates, which reduced the flow of the Cauca River and became a threat to the survival of the communities in the area, which call for the suspension of the environmental license of the dam[23]. In the case of *Belo Monte* and the gold mine *Belo Sun* gold, located in the southwest of the Brazilian state of Pará, part of the Amazon region – one of the most

21 http://www1.upme.gov.co/DemandaEnergetica/INTEGRACION_ENERGIAS_RENOVANLES_WEB.pdf

22 https://ejatlas.org/

23 https://censat.org/es/analisis/hidroituango-unanalisis-del-desastre-8338

bio-biodiverse regions in the world –, tens of thousands of indigenous and traditional peoples were affected and lost their livelihoods, which were based on fishing. Municipalities and indigenous lands located in the area under the projects' influence are facing record levels of deforestation, and the city of Altamira suffers with explosive population growth[24].

Hand in hand with these abuses, hydroelectric resistance movements are growing in the region. These include the Movement of People Affected by Dams (*Movimento dos Atingidos por Barragens* – MAB) in Brazil, the Latin American Movement of Peoples Affected by Dams (*Movimiento Latinoamericano de Afectados por las Represas* – MAR) and various other organizations in each country.

Two other important examples of violence related to the construction of hydroelectric plants are the cases of *Chixoy* and *Xalalá* in Guatemala. The *Chixoy-Pueblo Viejo* hydroelectric project built during the early 1980s dictatorship in Guatemala and financed by the Inter-American Development Bank (IDB) flooded 23 villages, forcibly displacing more than 3,500 members of Mayan communities, and effecting approximately 6,000 families. In addition to the loss of their lands and livelihoods, families that tried to resist or demand better compensation were massacred, tortured, and abducted[25]. The Rio Negro massacre resulted in the murder of 444 people, the torture and forced recruitment of young people, and the enslavement of 18 girls by military and paramilitary forces. Only 23 families survived[26]. The *Xalalá* hydroelectric plant (part of the Plan Pueblo Panama, an enormous infrastructure integration project designed to favour big business in an area consisting of the nine states in south-south-east Mexico and the seven Central American countries), which remains a focus of resistance, is planned to be constructed in the Chixoy river, in two of the most impoverished municipalities in the country, Quiché and Alta Verapaz, territories inhabited mainly by the indigenous Maya Q'eqchi. 31.8 km2 may be flooded, displacing twelve indigenous communities[27], with more than 2,000 people, impacting the livelihoods of 8,000 Maya Q'eqchi people[28].

Despite this violent reality, Latin America has been characterized as "a region rich in renewable resources with a long tradition of hydropower and biomass projects"[29], because it accumulates in its sources a quarter of the primary supply, double the global average[30]. Recently, countries such as Uruguay, Chile, Brazil and Costa Rica have made progress in implementing policies and projects that seek to diversify the energy matrix. Specifically, Chile, Brazil and Uruguay have taken a state policy decision towards the incorporation of unconventional renewable energy in its electricity matrix and energy system in general.

In the case of wind farms, the same practices are imposed as those used in conventional energy projects: privatization of territories and of water; environmental deregulation; violations of labour rights; sexual exploitation of girls and women; noise, soil and water pollution; accidents, as well as other environmental conflicts. There are several examples in Brazil, especially in the northeast of the country, where many coastal communities are being deprived of access to their spaces of production and reproduction, occupied by immense wind farms[31].

In Chile's *Chiloé* archipelago, since 2010, the Chilean-Swedish company Ecopower has planned to install the Chiloé Wind Energy Project. A total of 42 wind turbines with capacity of 100.8 MW will be installed in over 1,000 hectares of the Quilo-Mar Brava area,

24 https://www.socioambiental.org/pt-br/dossie-belomonte

25 https://www.internationalrivers.org/es/campaigns/represa-chixoy

26 https://ejatlas.org/conflict/chixoy-dam-guatemala

27 https://ejatlas.org/conflict/proyecto-hidroelectricoxalala

28 https://www.internationalrivers.org/campaigns/xalala-dam

29 https://ri.fgv.br/geopolitica-das-energias-renovaveisda-america-latina

30 http://www.irena.org/-/media/Files/IRENA/Agency/ Publication/2016/IRENA_Market_Analysis_Latin_America_2016.pdf?la=en&hash=6D59BCB8265FBECCE7FC2992C38458E1FF6796C6

31 https://cadernosdoceas.ucsal.br/index.php/cadernosdoceas/article/view/236/209; http://cersa.org.br/energia/eolica/moradoresquestionam-instalacao-de-parques-eolicos-nacomunidade-redinha/

impacting some 5,000 people, including the *Huilliches* groups, of the Mapuche people[32].

In the municipality of *La Guajira*, Colombia, a perplexing transformation of the territory is advancing without the indigenous communities of the *Alta Guajira* Reserve being properly consulted, let alone informed. This involves 65 large wind farm projects, some of which will begin operations in 2022, with an initial investment of US$6 billion by European multinationals and a number of Colombian private companies, in order to install more than 2,000 wind turbines and produce 6 GW for the national grid[33].

In August 2013, a wind farm located in the Abra del Betete area, in Sierra de las Animas, Maldonado municipality (Uruguay), was involved in a conflict because residents claimed that it would impact tourism and the ecosystem, in particular birds[34]. Despite this, although the project has not yet been implemented, it was approved by the Maldonado Municipal Board.

Conflicts resulting from agro-fuels are well documented throughout Latin America. It is never too much, however, to go over the most common and recognised problems. These include the replacement of local crops with energy monoculture plantations and threats to agricultural biodiversity. Also threatened are the extensive traditional knowledge and skills of small-scale farmers in the management, selection and storage of local crops, which is a direct attack on their food sovereignty. Additionally, a good number of corporations buy, occupy or grab land for plantations leading to increased concentration of land. The plantations deplete or degrade natural resources, are associated with deforestation and intensive use of agrochemicals, and negatively affect communities that depend on forests for their livelihood. The cultivation of sugar cane and palm oil has also been linked to unjust and unsanitary working conditions, including child and forced labour[35].

32 https://ejatlas.org/conflict/chiloe-wind-power-projectin-mapuche-territory

33 http://www.indepaz.org.co/wp-content/uploads/2018/10/EL-VIENTO-DEL-ESTE-LLEGA-CON-REVOLUCIONES.pdf

34 "Ladran, Sancho." *La Diaria* (16/10/2013).

35 https://reporterbrasil.org.br/agrocombustiveis/espanhol.php

VIOLENCE IN THE COUNTRYSIDE

It is never too late to remind ourselves that Latin America is considered one of the most dangerous regions for land rights and environmental activists. According to the Global Witness (GW) register, more than half of all killings of land rights and environmental activists during 2018 occurred in Latin America, the region most steadily affected since the publication of such data began in 2012. Between 2012 and 2017, Brazil had the highest number of murders of leaders defending their land and territories; in 2017 alone, there were 70 assassinations. In 2018, this number dropped to 20, surpassed by Colombia with 24 murders (behind only the Philippines with 30). The situation in Guatemala is alarming: the number of cases went from 3 in 2017 to 16 in 2018, which, considering the country's population, made it the most dangerous country in 2018. In Mexico, at least 14 land rights and environmental activists were killed in the past year. What is happening in Colombia also draws our attention because the violence persists even after the peace agreement signed on November 2016 between the government and the Revolutionary Armed Forces of Colombia (FARC). Since then, there have been 623 murders of peasants, community leaders, indigenous people, Afro-descendants, trade unionists and human rights advocates; 132 of the cases occurred in 2016, 208 in 2017, 282 in 2018 and 112 in 201936.

In Brazil, the Pastoral Land Commission (*Comissão Pastoral da Terra* – CPT) – which monitors violence against peasants, the landless, indigenous and traditional communities and not only "land rights and environmental activists" like GW – recorded 28 murders in rural areas in 2018. There was an increase of 4% in relation to the number of conflicts in 2017, implying more than one million people impacted by approximately 1,500 conflicts, where cases of violence against women totalled 482, the largest number in 10 years[37].

36 http://www.indepaz.org.co/wp-content/uploads/2019/07/Informe-parcial-Julio-26-2019.pdf

37 https://www.redebrasilatual.com.br/cidadania/ 2019/04/quase-1-milhao-de-pessoas-e-1-500-conflitos-no-campo-em-2018/

Verena Glass

Indigenous peoples and traditional communities have their livelihoods threatened and/or destroyed by mining-energy plants such as Belo Monte and Belo Sun (2012).

In this section we have dealt with territorial conflicts and the impact on people's lives and their human rights resulting from extractive projects. However, it is women and their lives that are affected most cruelly by these manifestations of violence.

2.1 IMPACT ON WOMEN'S LIVES: EXPROPRIATION AND EXPLOITATION OF TERRITORY-BODY-LAND

It is important to mention that extractive projects – oil, hydropower and mining –, as well as wind farms, have a different impact when gender and race are considered. On the one hand, forced displacements from their territories, directly or indirectly, destroy the livelihoods of communities, or makes living unviable due to air, water and land pollution, the spread of disease, water scarcity and the lack of sanitation and food. They increase women's workload, especially black and indigenous women, as a result of the sexual and racial division of labour. Women bear the greatest burden in the care of children, the elderly and the sick. They need to ensure food security and maintain domestic work in polluted contexts. In these situations, women are often held accountable for not meeting the needs of their families, in addition to the invisibility of domestic and care work.

On the other hand, these types of projects dispute land and territory, where in most cases traditional and indigenous communities live, produce and reproduce. These are projects that demand speed and selectivity, destroying everything in their path, including, and above all, the space and time of women in communities. The agro-ecological work carried out by these women in rural areas, requires another temporality and relationship with the land and the community. Generally, it is work that women carry out without leaving their homes, a condition which is directly affected by large projects. It is also a type of work where women have the power to make decisions. But with the increase in demand related to care activities and the maintenance of life, now more polluted and precarious, women are left with little or no time to do the agro-ecological work that they had always done. Thus, energy projects lead to the loss of women's financial autonomy, but also the autonomy to decide what and how to produce. As such, these are projects that generate the expropriation of collective territories, break the fabric of communities, threaten community relations, women's well-being and their relationship with their territories, which, for them, promote

life. Ultimately, these projects threaten the very existence of these women[38].

Women also face greater obstacles in rebuilding their livelihoods after being affected by a large project. In addition to the impacts suffered, they must claim their right to be recognized as affected. In several cases, in the compensation and reparation process – which is already difficult for males in this system – women are not recognized as affected due to a lack of land ownership deeds and the actions of land grabbers, as well as the informality and invisibility of their work. This is symbolical and manifests itself materially at the same time, perpetuating the imposed relationship of women's dependence on men, where the male decides, rules and is the ultimate provider.

At the same time, these projects both generate and increase different types of violence. There are many cases of assassinations of community leaders involved in struggles to defend their territory, such as of the indigenous Lenca leader and co-founder of the Civic Council of Popular and Indigenous Organizations of Honduras (*Consejo Cívico de Organizaciones Populares e Indígenas de Honduras* -COPINH), Berta Cáceres, murdered on March 3, 2016, for resisting the construction of the Agua Zarca dam in the Rio Blanco community, in northwest Honduras.

The increase in domestic violence is also alarming, making evident how existing hierarchies are perverse and authoritarian. When men lose their jobs – be it because they are temporary and easily replaceable, or due to problems in building work, such as in cases of burst dams or other environmental crimes, or by the loss of land – the feeling of uselessness falls on women, which continue to resist and struggle to keep what is left of their home, communities and territories. With the invasion of these projects, other mechanisms invade the territories, such as the destruction of the community fabric and the imposition of an increasingly individualistic logic, valuing the nuclear family in place of the community fabric, the separation between what is public and private, and the de-politicization of the private sphere. These are common features of capitalist, western, white, patriarchal, heterosexual, colonial societies, which weaken community "control" in favour of behaviours considered "individual"[39]. In this sense, women lose the protection and "oversight" of the community, while, as is the case in our societies, domestic violence continues to be regarded as a pathological problem, as a family issue and not structurally related to state violence, economic violence and political violence.

Sexual exploitation is also one of the obvious aspects of major energy projects. The onset of building works, in general, leads to processes of sexual exploitation of adolescents and children in vulnerable situations, often encouraged by the companies themselves [40]. Sexual exploitation is an instrument of domination of women and control of construction workers or even a subordinate "possibility" of "inclusion" of women and girls into the chain of production. Through cases of unwanted pregnancies, they establish what has become known as the children of oil, dams and mills. This also leads to psychological illnesses in women, due to the loss of their daughters to violence. Women who do not lose their lives, lose their right to come and go, to feel safe, to have confidence, build relationships and to fight. The violence is marked by impunity, negligence and limitations in the defence and protection structure for victims, by a profound relationship with political forces, local police and businessmen, as well as by the historical naturalization of the problem[41].

In the process of mapping out renewable energy projects in communities, we found various cases in which leadership was held by women, especially in projects where energy generation is related to agro-ecology. This is the case of the solar supply system for the community

38 CABNAL, Lorena. Feminismos diversos: El Feminismo Comunitario. ACSUR: Las Segovias, 2010. Available at: http://www.calameo.com/books/002488953253b6850c481

39 SEGATO, Rita. Gênero e colonialidade: em busca de chaves de leitura e de um vocabulário estratégico descolonial. E-cadernos ces [online], 18, 2012.

40 http://g1.globo.com/pa/para/noticia/2014/06/ works-of-belo-monte-incentivaram-industry-of-sex-not-para-diz-estudo.html

41 FAUSTINO, Cristiane; FURTADO, Fabrina. Mineração e Violações de Direitos: o Projeto Ferro Carajás S11D, da Vale S.A. Plataforma Dhesca, 2013.

nursery of the *Asociación Municipal de Mujeres Campesinas de Lebrija* in Santander, Colombia, and of the Solar Bakery of the *Bolo das Oliveiras* women's group in Brazil – both cases will be described below. This also applies to another experience in Brazil: solar energy for an agro-industrial venture that processes Amazonian fruits in the Surucuá community, in the Tapajós-Arapiuns extractive reserve in the Amazon state of Pará. The project located in this community, which is not connected to the local electricity grid, is managed by the Associação Comunitária de Produtores Agroextratores de Surucuá (AMPROSURT), in particular by the Agro-ecology Group, made up of 12 women from the community. Its objectives, based on the agro-industrial structure that operates thanks to the implementation of the mini photovoltaic plant, is to generate income for the community, but also to improve families' food and quality of life.

What we perceive in these cases is that projects are collective managed, relying on the time and dedication of the women involved, also largely responsible for domestic tasks and caring for children, the sick and the elderly. In most cases, agro-ecology-energy related projects are led by women, who express greater concern over the quality of the food they provide for their families and their community. In some cases, they also face resistance from their husbands or other relatives. At the same time, as a result of the implementation of extractive projects, women begin to organize activities, make decisions, and question gender relations within their own cultures in a more collective and public way. These are ways of restoring their social position within their community, their identities, as well as challenging the structures of domination in society.

2.2 RENEWABLE ENERGY IN LATIN AMERICA: EXCLUSION, INEQUALITY AND CORPORATE APPROPRIATION

Whilst capitalist modernity moves forward with intense energy use – from industry, transport and other forms of consumption to the new electronic currencies like Bitcoin[42] – especially among the countries of the north and the elites of the south, millions of people lack sufficient access to energy to satisfy the basic elements of modern life, such as a refrigerators, work tools, access to information or education. Online games and heated pools in California, for example, consume more energy than an entire country in Africa, Asia, Latin America or the Caribbean, such as Colombia, Uruguay, Costa Rica, El Salvador and Haiti, reflecting a situation of profound energy inequality[43].

In short, it is not just a matter of producing energy, but of ensuring its fair distribution.

Even so, governments in Latin America and the Caribbean – in particular Brazil, Chile, Colombia, Honduras, Mexico and Uruguay – proudly affirm that they are the countries that use the most "renewable" energy in the world to generate electricity. However, according to data from the Latin American Energy Organization (*Organización Latino-Americana de Energía* - Olade), while energy consumption grew by 54% in the last decade and a half, concentrated in Brazil, Mexico, Colombia, Argentina and Chile (80%), the region still has a high level of energy exclusion, where around thirty million people do not

42 A virtual currency is also known as crypto-currency. Transactions are made by sending coins from one person to another over the Internet. In this model, the validity of all transactions must be verified and confirmed by all grid participants, which take place in complex computing operations requiring high-level processing and, consequently, higher electricity consumption. Bitcoin's annual energy consumption rate is equivalent to 3.5% of all energy consumed annually in Brazil, up to three times the energy consumption in Paraguay during the same period. For more information, see: http://g1.globo. com/tecnologia/blog/seguranca-digital/post/entenda-por-que-o-bitcoin-desperdica-energia-eletrica. html

43 https://outraspalavras.net/mercadovsdemocracia/a-esquecida-questao-da-desigualdade-energetica/

Fabrina Furtado

In the Brazilian Amazon, communities continue to lack access to energy. Women of the Community of Surucuá seek to change this reality (2019).

have access to electricity. In specific numbers this is 4% of the region's population, which according to data from the Inter-American Development Bank (IDB)[44] is distributed as follows: Haiti (7.5 million), Peru (3 million), Argentina (2.1 million), Bolivia (1.8 million), Brazil and Colombia (1.7 million each), and Guatemala (1.6 million).[45]

Another important factor is the poor quality of the public service provided, in terms of the number and duration of power shortages. The waste of electric energy during transmission is also a problem that must be faced (and solved) in the region. In Argentina, 15% of the energy transmitted is lost, in Brazil, 16%; Colombia, 11%; Ecuador, 13%; Guatemala, 9%; Mexico, 14%; Honduras, 25%; and Haiti, 60%[46]. It is also worth mentioning that, in terms of installed electrical capacity, the market is highly concentrated. Brazil, for instance, in addition to having the most valuable oil company in the region, Petrobras, followed by Colombia's Ecopetrol and Chile's Copec, also has the largest power company, Eletrobras[47]. A study published by the Getulio Vargas Foundation (FGV), a national private education institution, shows that since 2016, more than 15 merger operations have taken place in the electricity sector, totalling almost R$ 86.2 billion in value. Of this total, 95.2% – worth R$ 80.5 billion – was made up by foreign capital[48]. Energy in the region is clearly a battleground for gigantic corporations, especially Spanish ones: Iberdrola established itself as the first private energy producer in Mexico, including wind farms; and in 2015, Gas Natural Fenosa

44 https://exame.abril.com.br/economia/trinta-milhoes-de-latino-americanos-carecem-de-luz-eletrica/

45 It is important to note that according to the Brazilian Institute of Geography and Statistics (IBGE), in 2000 there were about 2 million rural homes in the country, with approximately 10 million people, without access to the public electricity distribution service, especially in the Amazon region. Many of these families use diesel generators that are highly polluting, have a high cost, cannot guarantee access and do not function continuously (Campanha Energia para a Vida, 2019).

46 https://datos.bancomundial.org/indicador/EG.ELC. LOSS. Zs

47 https://exame.abril.com.br/mercados/brasileiras-lideram-a-lista-das-mais-valiosas-na-america-latina/

48 https://gei-sa.fgv.br/sites/gei-sa.fgv.br/files/u49/ go_ estudo_concorrencial_energia_fgv.pdf

bought the largest energy company in Chile, the General Electricity Company (Compañía General de Electricidad – CGE), for 2.6 billion euros, to cite a few examples[49].

As mentioned before, large corporations also operate in the "renewable" field. In the context of energy related debates in the United Nations Framework Convention on Climate Change (UNFCCC), more specifically on energy transition, transnational corporations are undertaking aggressive actions, aligned with the governments in office, in order to regulate renewable energy for foreign investment and the extractive industry. Latin America has thus become the new "El Dorado" of renewable energy: various transnational corporations are settling in the region and several oil and energy companies are beginning to create renewable energy sectors, while others promise to use only renewable energy in their production chains[50]. It is clear how corporations, hand in hand with states, understood (and made the most) political gain and market prospects in this process[51].

Following the same logic, investment funds are also starting to operate in the field of renewable energy in the region. This is the case, for example, of Canada's Brookfield Asset Management, a "world leader in alternative asset management", which owns businesses in hydroelectric, wind, solar generation, energy storage and distribution[52]. Another example is the financial group Granito which, at the end of 2018, signed an agreement with US General Electric (GE) and established a partnership for the development of high-quality solar power plants in Latin America[53].

In order to demonstrate that renewable energy is not the same as energy democracy, the Uruguayan case[54] is emblematic. Almost half of its electricity comes from wind and solar sources, and the country can rely on a core politico-ideological bloc prone to committing to truly innovative policies in the energy field. However, by allowing private companies to advance their control of the energy sector, importing inputs instead of manufacturing locally or using local knowledge, the country has experienced astronomical increases in the domestic energy price, becoming the most expensive in Latin America[55].

Similarly, although many countries in the region already have policies and programmes to promote the use of unconventional energy and/or create renewable energy agencies and institutions, there are few incentives for micro and small generation of unconventional renewable energy. In this sense, countries such as Brazil, Colombia and Argentina are establishing distributed generation policies, under a model that has been called net billing, where end-users can offset electricity purchases using the production of generation systems distributed elsewhere, receiving credit or a payment for the net excess electricity that is generated and pumped back into the grid.

The initiatives in place are recent, making an in-depth analysis of their effects difficult. However, it is important to mention that there are limits

49 http://www.knowledgeatwharton.com.br/article/ setor-eletrico-latino-americano-objeto-de-desejo-dos-gigantes-da-energia/

50 https://brasil.elpais.com/brasil/2018/11/15/economia/1542293699_535260.html

51 Petrobras, in Brazil, is no longer considered an oil company, but an energy company whose purpose is to "provide the energy that drives people and companies to realize their potential". This was done firstly by diversifying the company to operate in the production of agro-fuels. Later, in late 2018, Petrobras announced a joint venture with French oil company Total to develop solar and wind projects in Brazil (ENVIRONMENT ENERGY, 2008). Another example is the mining company Vale which also operates in the field of agro-fuels and is also in the process of defining a target to meet all its demand for electricity through renewable energy, especially solar and wind, announced also by companies such as Coca-Cola, Facebook and AbInBev (REUTERS, 2018).

52 Alternative assets including natural resource-related commodities, land and agricultural infrastructure have easily become a new and promising frontier for investors in the region. For more information, see: JUNIOR, Orlando de Aleixo Barros. Real estate caipira: investimento em terras pelo Brookfield Asset Management Inc. 2019. Dissertação (Mestrado em Ciências Sociais em Desenvolvimento, Agricultura e Sociedade) – Universidade Federal Rural do Rio de Janeiro.

53 https://granito.group/latest_news_details.php?id=156

54 http://ieefa.org/ieefa-update-a-renewable-energy-revolution-in-uruguay-for-all-the-world-to-see/

55 http://www.opsur.org.ar/blog/2017/10/17/uruguay-una-alternativa-energetica-no-tan-limpia/

to a policy of energy decentralization under the control of capital, based on the logic of the market. In most cases, there is strong resistance from utility companies that claim that they are not being financially compensated for the energy injected and travelling through their power grid.

On the other hand, in a context where the logic of compensation has established itself as a central mechanism for corporations to continue to operate as usual, legitimizing their actions with the use of environmental narratives while creating new mechanisms of accumulation, there is always a risk that distributed generation will also be appropriated by capital to meet their "renewable energy use goals" and to offset the effects of conventional energy exploitation elsewhere. Thus, attention must be paid to the creation of Renewable Energy Certificates (REC), a market mechanism based on the compensation logic related to certified emission reductions (CERs) from the carbon market and REDD. Through RECs, companies receive energy in the traditional way and acquire the volume of energy equivalent to consumption through certificates, which can be sold on the open market as an energy commodity. That is, in addition to involving large hydroelectric plants and wind farms, with all the impacts already mentioned, with this instrument, companies do not need to change their production chain and/or energy consumption. They buy the right to continue to use or produce energy from hydrocarbons. In Latin America, six countries have plants registered in the global system that allows trade in renewable energy certificates, the International REC Standard Platform: Mexico, Guatemala, Honduras, Colombia, Chile and Brazil. In total, there are 66 registered power generation units: 37 wind power plants; 20 large and small hydroelectric plants; 6 photovoltaic solar plants; and 3 biomass plants. In the last four years, more than 2.6 million RECs have been issued and marketed in Latin America, chiefly in Colombia and Brazil[56].

Thus, the challenge is to confront these instruments and ensure the generation of energy in a decentralized, popular and just way. Another issue to be faced is the absence of funding mechanisms for communities, even though many of the countries have implemented financial incentives such as tax breaks for the purchase and import of equipment and created specific funds. In Colombia, for example, the Unconventional Energy and Efficient Energy Management Fund (*Fondo de Energías No Convencionales y Gestión Eficiente de la Energía* – FENOGE) was created. And, according to a study by the United Nations Environment Programme (UNEP, 2016), in 2015 Brazil was among the ten largest renewable energy investors in the world. The National Economic and Social Development Bank (*Banco Nacional de Desenvolvimento Econômico e Social* – BNDES) allocated around US$7 billion to renewable energy. At the time, BNDES was the fourth most active development bank in the world in terms of financing renewable energy projects. At the international level, there are several renewable energy financing initiatives: the World Bank, the Inter-American Development Bank, the BRICS Development Bank (Brazil, Russia, India, China and South Africa) etc. However, these institutions base themselves on the notion of a low carbon economy and sustainable infrastructure, including large hydroelectric plants, wind farms and solar parks, with the participation of private companies.

In addition, the conditions, criteria and bureaucratic process for accessing resources end up being directed to medium and large projects or to private companies, whilst communities, social and collective movements encounter various obstacles. This is also true for projects funded by private companies that seek to offset the negative impacts of their activities or gain legitimacy with impacted communities. This was the case of the project involving the Movement of People Affected by Dams (MAB) and the energy company Eletrosul in the state of Santa Catarina, in the south of Brazil. Local communities are still waiting for the second phase of the project "Alto Uruguai: citizenship, energy and environment", which should have ensured the generation of electricity by bio-gas digesters – in 2010. According to Eletrosul, this did not happen due to financial problems, but for the MAB, changes in government made it impossible to continue the project; the company stopped the flow of funds. Thus, the expected productivity and

56 https://pagina22.com.br/2018/10/02/cresce-demanda-por-certificados-de-energia-renovavel-na-america-latina/

Instituto Terramar Archive

Municipality of Aracati / Ceará wind farm: impacts are denounced by the João do Cumbe community.

environmental benefits have not yet arrived for the communities, which is why they continue with their resistance processes.

With these reflections, we do not intend to eliminate the importance of distributed generation, especially as an important source of income for many communities, strengthening cooperatives and collective initiatives, but rather point to the limits of market-driven instruments and corporate and capital appropriation and control of related processes. As such, it is important to strengthen policies that seek to ensure the installation and financing of decentralized community projects as a right for communities and populations.

Carla Vázquez

Micro hydroelectric plant managed by the Union 31 de Mayo Community, in Guatemala, strengthening the fight in defence of the territory.

3. UNCONVENTIONAL RENEWABLE ENERGY IN LATIN AMERICA:

ORGANIZATIONS AND COMMUNITIES RESISTING AND BUILDING IN BRAZIL, COLOMBIA, GUATEMALA AND URUGUAY

As mentioned in the introduction, research on unconventional renewable energy in Latin America was conducted through a mapping of renewable and fair energy initiatives. More than 700 public/community initiatives were found in the 9 countries studied – Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Guatemala, Mexico and Uruguay –, many of which involve, in addition to education activities and political advocacy, the installation of several social technology units in different communities. Solar energy is the most widely used source in the projects mapped in this study, followed by bio-gas digesters. Cases of small hydroelectric power plants were also found.

It is worth mentioning that collective actors such as the Semi-Arid Renewable Energy Committee (*Comitê de Energia Renovável do Semiárido* – CERSA), in Brazil, and the Centre of National Health, Environment and Work (*Centro Nacional Salud, Ambiente y Trabajo* – Censat/ Friends of the Earth Colombia), conduct training on environment, climate and energy issues with various organizations and social movements in their networks. For these collectives and others, such as MAB or the *Colectivo de Reservas Campesinas de Santander*, renewable energy is part of a larger process of resistance against large hydroelectric projects and wind farms, as a means to build a popular energy project.

It is in this context, we selected four cases to briefly narrate their experiences as a way of disseminating their forms of organization and the struggle they pursue for their right to community or public energy and environmental justice. In Brazil, the *Várzea Comprida dos Oliveira* community was chosen for promoting forms of existence in a semi-arid climate, combating climate change and decentralizing energy production through collective management. At the same time, the initiative connects energy, an agro-industrial enterprise and income

generation managed by women, with the technical-political support of CERSA, in addition to other important national connections.

In Colombia, we selected the case of the solar energy project in a plant nursery, carried out by the *Asociación Municipal de Mujeres Campesinas de Lebrija* (AMMUCALE) and residents of El Aguirre, through the *Colectivo de Reservas Comunitarias Campesinas de Santander* (CRCCS). In this initiative, solar energy production also relates to the agro-ecological production of a community seeking energy sovereignty, food sovereignty, gender justice and better conditions in order to stay on their territory.

In Guatemala, the community energy project *Luz de los Héroes y Mártires de la Resistencia* takes place within a historical process of indigenous community struggle in defence of their territory and resistance to capitalism.

Uruguay is the only case involving a public company, the Administración Nacional de Usinas y Transmisiones Eléctricas (UTE). This project was chosen to help us reflect on the notion of the "public" and the importance of the organization of workers in defence of the public role in the energy sector.

3.1 SOLAR BAKERY - BRAZIL

In 2016, the Rural Community Residents Association of *Várzea Comprida dos Oliveiras (Associação dos Moradores da Comunidade Rural da Várzea Comprida dos Oliveiras* – ACRVCO), in partnership with the Semi-Arid Renewable Energy Committee (Comitê de Energia Renovável do Semiárido – CERSA), secured funding of R$30,000 (approximately US$7,300) from the Casa Socio-Environmental Fund57 and the Caixa Socio-Environmental Fund[58]. This was done through a programme called "Strengthening communities in the pursuit of sustainability" by

CERSA

Solar Bakery in Brazil's northeast generates income, strengthens agro-ecology and guarantees women's autonomy (2019).

establishing the "provision of photovoltaic technology in a community agro-industrial venture" (in this case, a bakery). The Solar Bakery Project in the community is carried out in the context of other initiatives such as agro-ecological production, water reuse technology, bio-digesters and the solidarity economy.

CERSA is part of the Climate Change and Social Justice Forum (*Fórum de Mudanças Climáticas e Justiça Social*) and the Front for a New Energy Policy for Brazil (*Frente Por Uma Nova Política Energética para o Brasil*), founded in July 2014 on the basis of concerns by environmental activists, researchers and members of non-governmental organizations relating to the Brazilian semi-arid regions, in the northeast of the country. Its studies relate to the high levels of sunshine in the region, considered a privileged potential to generate electrical and thermal energy. The committee's mission is to transform the sun into the main source of energy for the region, and therefore actively promotes its use. In addition, it disseminates knowledge on climate change, the Brazilian energy matri, and the installation of social technologies such as photovoltaic panels and bio-fuel digesters in various communities. Also, through political engagement, it seeks to implement public policies to decentralize energy production. Currently, it is present in the municipalities of Souza, Pombal and Patos, in the north-eastern state of Paraíba, carrying out political education with youth, social movements and communities, and installing photovoltaic systems in public schools, community agro-industrial units, universities, churches and cemeteries. It also networks with organizations in other states, disseminating and reproducing its experience.

57 The Casa Fund aims to promote conservation and environmental sustainability, democracy and social justice through support for and the strengthening of civil society initiatives in South America.

58 The Caixa Fund supports socio-environmental projects, in conjunction with public bodies and private entities, which aim at the integrated and sustainable development of low-income populations.

The "Solar Bakery" is managed by the Association of Women of the *Bolo das Oliveiras* group and is one of CERSA's projects. It was initiated in May 2016 through capacity-building activities on climate change, renewable energy and the solar potential of the semi-arid region. The project began with technical training on how to install and use solar energy for members of the community, particularly the youth, provided by the Federal Institute of Paraíba, with the support of the "Programme for Social Action and Public Policy" (*Programa de Ação Social de Políticas Públicas* – PASPP) of the Social Action Programme of Cajazeiras Diocese (*Programa de Ação Social* – ASDICA).

Currently, the Solar Bakery is operated by 19 women, working in three teams on a collectively decided shift pattern. It produces approximately 600 kilograms of products per week, more than 400 kilograms of which are delivered to the municipality through the National School Food Policy (PNAE) as school snacks. According to PNAE, 30% of all acquisition of foodstuffs for schools should come directly from family farming. The rest of the products are sold in the community. In addition to bread and biscuits, various types of puddings are also produced with ingredients and flavours typical of the region such as corn, carrot, manioc and milk. The revenue from sales is used to cover production costs and the surplus is shared equally among the women. So far, there has not been a single month with a shortfall; on the contrary, it is always possible to pay all expenses and share the surplus.

The *Várzea Comprida dos Oliveiras* community is located in the municipality of Pombal, in the highland of Paraiba, in the Brazilian semi-arid region. The region is characterized by an arid climate, with high temperatures, and insufficient and irregular rain. Soils are unsuitable for agricultural activity, due to the risks of desertification – a phenomenon that causes impoverishment and decreasing moisture in sandy soils. This region is also characterized by high levels of inequality in terms of access to land[59]. Due to policies to address climate change and promote clean energy associated with development, the north-eastern region of Brazil is now home to several large wind farms that threaten the biodiversity of the Caatinga biome. Some of the problems identified as a result of these farms include deforestation to open routes used by trucks carrying turbine propellers, bird mortality, drying up of water wells for use in the construction of wind tower bases, occupation of family farming areas, expulsion of populations from their territories, increase in the value and concentration of land, and the fragmentation of communities[60].

59 http://www.asabrasil.org.br/semiarido

60 http://cersa.org.br/energia/eolica/moradores-questionam-instalacao-de-parques-eolicos-na-comunidade-redinha/

The system, which today runs on 12 solar panels, produces 400KW of energy per hour, with an installed power of 3.2kWp and generating a power reserve, which, in accordance with Regulation 687/2017 of the National Electric Energy Agency (ANEEL), is maintained as credit by the company ENERGISA. In other words, the energy is inserted into the power grid and because generation is greater than consumption, the credit can be used in the months when consumption is greater or maintained as a balance for up to five years.

In 2018, a bio-fuel digester was installed in cooperation with the Campina Grande Federal University, through the program "Incubator for Agro-businesses by Cooperatives, Community Organisations, Associations and Rural Settlements in Paraiba" (*Incubadora de Agronegócios de Cooperativas, Organizações Comunitárias, Associações e Assentamentos Rurais da Paraíba – IACOC*). The bio-fuel digesters guarantee the production from bovine manure of 7 or 8 biogas bottles per month, which is used to supply half of the gas used in the bakery's ovens and also produces fertilizer for agricultural production. Biogas is obtained through the process of decomposition of organic matter, by bacteria. The investment of R$8,000 (approximately US$4,000) was guaranteed by IACOC, covered over two or three years. The bio-fuel digester, in addition to saving gas in the kitchen and generating fertilizer, improves the production of plant crops and eliminates the use of agrochemicals and firewood extracted from the Caatinga biome, also reducing the emission of methane gas, which contributes to climate change much more than carbon dioxide.

Considering the need to coexist with extreme droughts, water crises, the devastation of the Caatinga, the causes and implications of climate change in the region, and the fact that it has one of the highest solar radiation rates on the planet, the potential for the production of solar electric and thermal energy is constantly under discussion by social organizations such as CERSA. In this context, the generation of renewable energy as a means and not and end in itself is, for women in the community, one of the various instruments used to generate income in

CERSA

Semi-Arid Renewable Energy Committee helps build the community Solar Bakery: "from a sun that punishes to a sun that generates life" (2019).

a sustainable and fair way. The energy produced is for collective use and benefit. It also has a political-pedagogical potential to discuss the relation between society and nature, climate change, the energy matrix, the development model imposed on communities and the political participation of women. The possibilities found are agro-ecology, the solidarity economy and decentralized and autonomous energy production. According to Júlio César Nóbrega Gadelha of CERSA: "If it were not for this energy, the women would not have the financial conditions to maintain the bakery working"[61].

In conclusion, it is important to emphasize the importance of women's leadership in this process: a community project that is managed, run and implemented by them. Women who, in addition to the domestic workload, care for their daughters, sons and others in the community, participate in meetings, training processes and are involved in most of the projects mentioned. These are women who "value work and being together", "who rely on collective management and networking between communities in the region and various support associations that are crucial for maintaining and strengthening their struggles". This is a group of women who believe in their work and their place, both individually, collectively and as a rural community.

61 According to an interview conducted on 20/08/2018

Rafael Álvarez Doménech (Fundaexpresión)

Rafael Álvarez Doménech (Fundaexpresión)

Workshop on energy, in Aguirre

Rafael Álvarez Doménech (Fundaexpresión)

Energy project in Colombia helps improve women's living conditions and guarantees food sovereignty.

3.2 SANTANDER PEASANT RESERVES COLLECTIVE AND LEBRIJA PEASANT WOMEN'S MUNICIPAL ASSOCIATION (AMMUCALE): SOLAR ENERGY FOR A COMMUNITY PLANT NURSERY – COLOMBIA

The solar power generation project is aimed at guaranteeing self-consumption, in particular at meeting the demand of a community plant nursery, in which forest plants and trees for timber are grown for members of the Lebrija Peasant Women's Municipal Association (AMMUCALE) and residents of the Vereda El Aguirre. The solar project is implemented by the Santander Peasant Reserves Collective (CRCCS), a subsidiary organization of which AMMUCALE is a part[62].

AMMUCALE has several areas of work: rural planning, social and technical experience training, dissemination and multiplication of knowledge with their associates, social and political representation for the communities, implementing practices in the reserves, and coordination with authorities, mayors and local and regional organizations. In addition, the Association is also engaged in raising chickens, agro-ecology products and seedlings as the community's strategy of production and reproduction.

The nursery's job is to germinate, transplant and guard native species. The specific objective of the project is to provide electricity supply to the water pumping system to water the community nursery of approximately 80 square metres, where 2,000 seedlings are grown monthly for two zones designated for the preservation of water springs, reforestation and wood production (including firewood). Initially the seedlings were watered manually, using buckets, which took up about an hour and a half a day of the women's time.

62 In 2008, several peasant associations and community groups formed the CRCCS, which aims to enhance the role of peasant families in the community conservation of the forest, its biodiversity and water as common goods, promoting territorial work among families in the municipalities of Suratá, Matanza, Floridablanca and Lebrija. The Collective focuses on the collective and permanent construction of knowledge based on popular peasant knowledge, the exchange of experiences between rural villages and the appropriation of specific technologies with the training of community leaders as peasant promoters. In addition, the rural and community reserves represent spaces for learning, research and strengthening of the environmental and cultural heritage of the rural territory.

While the production of solar energy is meant to ensure the functioning of the nursery, the project has other important effects on the communities' quality of life. First, it improves the working conditions of women, who, owing to the sexual division of labour, are overloaded with domestic and community activities, as well as held accountable for ensuring the food sovereignty of their communities. So with solar energy, the time that was spent transporting water can be invested in other individual and collective activities – such as rearing chickens, agro-ecological farming, plant care, beekeeping, among others – contributing to local food sovereignty. Many of the women interviewed affirmed that they are responsible for food, the house and the children. Thus, the projects represent the close relationship between energy sovereignty, food sovereignty and gender justice. At the same time, CRCSS seeks mechanisms to diversify the relationships between rural and urban areas through the direct commercialization of products, with initiatives that allow people in the city to visit farms and territories within the framework of an opportunity to transform the social relations of consumption and production, based on a non-commercial logic.

Since its beginning, the project has sought to generate better conditions to enable the communities to stay in their territories, not only by providing food, but also by the concern with the quantity and quality of water in the community and in its relationship with other agro-ecological processes. For CRCCS, the driving organization of this project, water and energy are commons that must be guaranteed to all forms of life in the territory. Furthermore, the management of the project is democratic, and the participation of all associations making up CRCSS is sought.

The solar pumping experience is conceived as a step towards guaranteeing this right at a community project level within a logic other than for profit or commercialization. In this context, CRCSS and AMMUCALE are carrying out a campaign for the defence of water as a common and public good, against privatization. This campaign gains special force in the context of the municipality of Lebrija, where the pineapple monoculture plantation generates deforestation and the deterioration of the river basins, whilst the poultry and pork industries utilize local spring sources to privately consume the water and then dump their waste back into the streams in the area[63].

It is worth noting that as a process aimed at environmental preservation, some of the questions raised by AMMUCALE's representatives during the interviews were: What minerals do the solar panel use? Where do they acquire them from? What effects do surrounding communities suffer? In addition to these concerns, another one related to solar panels that arose in the research, is around the disposal of equipment after the end of their life cycle. Although the photovoltaic panel has a durability of 25 years, the lack of guidelines on waste disposal is a problem to consider and that raises concerns in the community. Some research points to the possibility of recycling solar panels, but public policies are lacking in addressing the disposal, collection and possible recycling of these materials[64].

Another key point to highlight is that, as cited in the section about the Movement of People Affected by Dams – MAB, in Brazil, one of the motivations for installing a solar-powered water pump was that communities did not want to use energy from the interconnected system coming from hydroelectric plants, considered to be dirty energy. Here we find an example of a project that, in addition to demonstrating the absence of information on the production and disposal processes of solar panels, is also related to the resistance to the construction of hydroelectric dams. This shows us that there are other possibilities for energy production and that the use of other sources may be more viable, considering the productive activities that exist in each territory.

63 Rural Press Agency (2006). Tenth anniversary of the Lebrija Peasant Women's Association, in Santander. Available in: https://prensarural.org/spip/spip.php?article123

64 Among the studies found we can cite one in particular carried out by the University of São Paulo (USP); for more information: University News Agency. Research points to an accessible route to recycle Solar Energy Panels. 2018. Available at: https://paineira.usp.br/aun/index.php/2018/11/12/ pesquisa-aponta-rota-acessivel-para-a-reciclagem-de-paineis-de-energia-solar/.

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Landscape close to the Community Union 31 de Mayo, Quiché department, Guatemala.

3.3 *Luz de los Héroes y Mártires de la Resistencia* – Micro Hydroelectric Power – Guatemala

The community energy project *Luz de los Héroes y Mártires de la Resistencia* (Light by Heroes and Martyrs of the Resistance) has been managed by the Unión 31 Mayo community in the region of Reina, located in the municipality of San Miguel de Uspantán, Quiché department, Guatemala. It generates and distributes energy through (micro) hydroelectric plants for a community of 760 families, located about 280 kilometres from the city of Guatemala, but whose access is restricted by the geographical and morphological conditions of the region.

Located on the foothills of the Sierra de Chama, the Unión 31 de Mayo community enjoys an exuberant landscape where water in the form of rivers, streams, creeks, waterfalls, fog and rain, provides the necessary conditions for the production of hydroelectric energy. However, the most important feature of this organized community around energy production and distribution is its history.

The community Union *31 de mayo* is a Community of Population in Resistance (*Comunidad de Población en Resistencias – CPR*) resettled after peace negotiations between the state of Guatemala and the Guatemalan Revolutionary National Union (*Unión Nacional Revolucionaria Guatemalteca – UNRG*). The CPRs were large groups of people, mainly Indigenous Mayan, who faced repression by the Guatemalan army and government in the war against the insurgencies in the 1980s, and were obliged to abandon their communities and territories, enter the forests of the Guatemalan mountains, and lead a semi-nomadic life there. Despite the difficulties, the CPR remained in the mountains hidden, sustaining and building new bonds and communities. In the case of the CPR 31 de Mayo, this process lasted approximately

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Hydroelectric power plant in San Miguel de Uspantán, Guatemala.

14 years and ended with its final settlement in the region of Reina in 2000.

Self-organization and self-constitution as a community in the difficult living conditions of the mountains, plus the ancestral traditions of community life led by the Mesoamerican indigenous peoples, shows us that the *Unión 31 de Mayo* community has a dynamic capacity for management and social organization, and without these skills, the development of the community's energy project would not have been possible.

Together with this community are the communities of *La Gloria, La Taña* and *Lirio-Putul*, which, encouraged and accompanied by the ecologists of the Madreselva Collective, have also installed and are currently managing turbines to generate hydroelectric power. The relationship between the four communities is determined by their history in the armed conflict. All four were victims of it and went through the resettlement process. The Madreselva Collective – a Guatemalan civil society organization founded more or less officially in 1996 that focuses on supporting communities and organizations defending their territories – was instrumental in this process. Madreselva has provided the technical, legal, accounting and social support for the implementation of the turbines in the communities.

The region where the *31 de Mayo* community settlement process took place was historically abandoned by the state, where large landowners and intermediary merchants have promoted the monoculture of cardamom since the 1970s, pressuring families to sow and harvest this product without great possibilities of demand. Communities face a precarious situation of vulnerability from the few cardamom buyers that arrive in the region, with prices lower than in other regions, facing problems with transport and commercialization. It is a region with structural problems of access to basic rights such as health and education, combined with state abandonment and the formal incorporation of peasant production into exploitative circuits that reproduce structural exclusion.

In addition to this situation, the region has been designated in national projects as a large-scale hydropower producing zone. This is why the *Chixoy* and *Xalalá* dams were built, for example, which unleashed resistance processes among communities confronted with further threats of forced displacement and consequent abandonment of their territory.

In this context, in 2000, accompanied by the *Canarias Siembra* Civic Association (*Asociación Civil Canarias Siembra*), a Spanish organization with an important tradition of self-management,

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the Unión 31 de Mayo community began debates on access to energy. Through a participatory diagnosis around the needs and desires of the community, electrification was considered as a necessity associated with the possibility of having a health centre, a school to educate girls and boys and to address the difficulties of overworked women. Other related topics were also covered, such as access to water and the arrangement of community access paths. Energy production then advanced with collective work to extend the two kilometres of the canal, build the engine room, acquire the turbine and to extend the power distribution grid among the homes of the community. It is clear that it was not a simple process. It took several years, with moments of tension and conflict. The last stage began with the invitation to *Madreselva* to restore and reactivate the project between 2009 and 2010.

Since 2010, the support of *Madreselva* has become permanent and has resulted in the consolidation of the Light by Heroes and Martyrs of the Resistance Association, which manages resources and maintains an administrative, technical and financial organization, recognized by the whole community. It is essential to note that the energy project is at the heart of community organizational life and, based on their achievements, the community reaffirms itself and remains focused in defence of their territory and confronting capitalism, which takes the form of large hydroelectric plants over there.

Investments to guarantee the installation and improvements in the project were made by various organizations and individuals who supported the project, as well as the manual and skilful work of the community. The board of directors, who meet at *31 de Mayo*, work through a permanent process of self-management and self-financed the expansion of its generation system. This community does not rely on external debts related to the turbines, nor does it have subsidies, but is economically profitable since it covers its costs and generates a surplus.

The community counts on technical advice from external engineers, who are hired by the cooperating organizations. However, they also seek to implement professional-level training processes so that members of the community can be electricians and do this kind of work in

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AUTE workers demand the reduction of electricity tariffs and defend the public role in the sector

the future, thus overcoming external dependence whilst creating other sources of income. It is also hoped that, with energy production, the community will be able to produce other types of crops and forms of subsistence capable of overcoming dependence on cardamom and strengthening the community in the face of capital's threats to their territory imposed by the Xalalá project, for instance. Beyond these specific objectives, the "Light by Heroes and Martyrs of the Resistance" is a project coordinated within a process of anti-capitalist resistance. Through self-organization and networking with surrounding communities, it seeks to replicate itself and even achieve community interconnection.

3.4 *Administración Nacional de Usinas y Transmisiones Eléctricas (UTE) and Agrupación de Funcionários de la UTE–* Uruguay

Uruguay is one of the few countries in Latin America where all the transmission and distribution of electricity, as well as 70.3% of the generation, whether hydraulic, wind or thermal, is in the hands of a public company – *Administración Nacional de Usinas y Transmisiones Eléctricas* (UTE). A company of great importance in the country, UTE is considered the public pillar of the national energy system. The company buys 29.7% of the remaining electricity from private producers that have emerged since the 1997 law that partially deregulated the field of generation. Currently, Uruguay is a major producer of renewable energy. At the beginning of 2018, 6% of its total energy was generated by windmills (1510 MW), of which 33.3% (504 MW) are owned (157 MW) or co-owned (347 MW) by UTE.

On the other hand, for the electrical energy matrix – which accounts for 28.2% of the total – in 2017, hydroelectric generation accounted for 52%, wind for 26%, biomass for 18%, solar for 2% and fossil fuels for another 2%. Currently, the electricity sector in Uruguay emits virtually no greenhouse gases because it is 98% renewable (the 2% of fossil energy functions as a steady, back-up generation). As of 2016, Uruguay was recognized as one of the only countries in the world that could have a biomass supply similar to that of fossil fuel in its overall energy matrix (37% each item). In this context, the country contributes with less than 0.1% of global emissions[65].

65 . https://www.miem.gub.uy/noticias/ben-2017-arrojodatos-ineditos

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Workers in the electricity sector in Uruguay give new meaning to the "public" in practice.

Uruguay expanded its economy and energy demand, whilst maintaining its emissions stable, making it a distinctive case globally. Whilst it works for energy replenishment, it does not touch the core of its development model. Such a vision, well versed in environmental or sovereignty questions, in practice implies that renewable fuels have been able to segment from other programmes, its main aim being to attract foreign investment (without impacting the fiscal deficit and, therefore, the ability to access credit), in addition to reducing the balance of trade deficit. While it expects to grow in terms of demand, a full transition or electrification is not planned.

The regulatory scheme implemented for renewables in recent years has meant that wind energy is dispatched as a priority, while hydraulic sources, controlled and owned 100% by the state, are being relegated. As a result of how these priorities are set, there is a surplus of electricity generation, a result of poor planning and a niche corporate revenue, which is exported to neighbouring countries.

It is important to mention that the expansion of the generation structure has rested on outsourced labour. Also, the policy – originating in the Executive Branch – that drove the entry of renewables came about in conjunction with greater centralization and reduced autonomy for public companies. The business model is largely financial because it produces relatively insured profits over 20 years. But the problem is that this is sustained by Latin America's most expensive tariffs, where almost all of Uruguay's population spends more than 10% of their income on energy costs.

The experience of distributed generation (the vector for the entry of wind farms and pulp mills) is evaluated negatively by the union and other progressive sectors, since power is taken away from the public sector. These business sectors then avoid the UTE by marketing energy directly to the user. In this context, the role of the *Agrupación de Funcionários de la UTE* (AUTE) is evident, with representation in various departments, as well as in the public companies' joint trade union board. In addition to purely union

issues, they have achieved various victories, such as curbing public-private partnership contracts for high-voltage lines, conducting campaigns denouncing high tariffs and defending the public role in regard to access to water. AUTE also wants a seat on UTE's board. This trade union vision is the most radical element of a broad social base that defends the public role in the energy sector.

AUTE emerged in 1949 and has a rich tradition in the country, as the backbone to organizing public company unions and the creation of the National Workers' Centre (*Central Nacional de Trabajadores – CNT*) in 1966, when the main leader of AUTE became its vice-president. It currently has 6667 workers, 5005 of whom are men and 1662 are women. The vast majority work in operational areas. The Union enjoys a high membership rate66 (more than75% of the company's workers), representing a diverse workforce made up of electricians, engineers, lawyers, doctors etc. It is present in Uruguay's 19 municipalities; in addition to the headquarters in Montevideo, there are 10 offices in different parts of the country.

The union is currently led by 12 August 1959, a political group whose name relates to UTE's first general strike that stopped the country and left it in the dark. In fact, it is a group that seeks to assert the union's hardened history, identified with proletarian internationalism, the absence of hired trade unionists – so they cannot be external to workplaces – and class independence, all original elements of a cohesive unity. But it also rescues the history of resistance to dictatorship, when they staged strikes and occupied public buildings, suffering imprisonment and the disappearance of comrades. AUTE defines itself as an open-door union, one that goes beyond classic trade union demands, such as wages, to put broader demands on the table: lowering tariffs, solidarity with outsourced colleagues or action on a territorial scale with the solidarity brigade, which addresses energy-related social problems. It is a trade union that has also incorporated the discussion on gender issues: under the slogan "For a society in which we are socially equal, humanly different and totally free" they organize the AUTE women's national meeting annually.

Part of the union's struggle is focused on the recurrent outsourcing of company activities, leading to poor working conditions, whether in commercial management or in the maintenance of wind farms. A tragic point in this regard was the death of an operator of an outsourced company while performing maintenance tasks in October 201467. While such workers are not formally part of AUTE, they have formed their own organization, the Single Union of Outsourced Teleprocessing Workers (*Sindicato Único de Trabajadores Tercerizados de Telegestiones – UTE-SUTTTU*). Their actions are supported by AUTE, and both argue that budget cuts prevent the entry of new workers regardless of high demand68. All the maintenance of the mills is outsourced, even of those owned by UTE. Hence the union's intention to ensure at least the maintenance of their own mills, like those in Sierra de Caracoles field, in Maldonado, for example.

In conclusion, it is important to emphasize that in Uruguay there is an abundant number of small organizations and community-based networks prioritising work on energy. As such, in locations where the national energy company has not yet arrived, communities have created "Energy Brigades" to pressure the government to ensure access to energy.

66 . https://portal.ute.com.uy/sites/default/files/generico/UTE_Cifras_2017.pdf

67 . UTE workers strike for the death of outsourced company worker ("Paro de funcionarios de UTE por muerte de trabajador de empresa tercerizada") Network21 (20/10/14). Available in: www.lr21.com.uy

68 . Outsourced UTE workers strike and don't perform any business management ("Tercerizados de UTE paran y no realizan ninguna gestión comercial") El País (15/9/2017). Available at: www.elpais.com.uy

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4. BY WAY OF CONCLUSION: A CASE FOR A POPULAR ENERGY PROJECT

This publication has sought to present some of the structural elements found in the RLF's research "Mapping of alternative local manufacturing and energy generation projects in Latin America", which contribute or represent an obstacle to the strengthening of renewable energy initiatives built and implemented by groups and communities, capable of deepening the path to an energy transition with renewable sources and environmental justice. In this process, we prioritized the mapping of public and community projects, understanding the "local" or the territories as a privileged – though not exclusive – ambit to discuss power relations. This includes an understanding that large-scale renewable energy for extractive industries and/or megaprojects is the opposite of creating energy projects that are popular, decentralized and with autonomy for communities.

The analysis presented was conducted on the basis of reflections on the geopolitics of energy in the world and in Latin America. We also addressed topics such as the development model based on exploitation, the advance of what has been referred to as "extreme energy", the field of dominant renewable energies and the effects of such processes in terms of environment and territorial conflicts. We highlighted the impacts on and resistance of women: peasants, indigenous, quilombolas and fisherwomen in the different territories. This reflection helped us analyse four unconventional renewable energy cases chosen from more than 700 projects mapped in nine Latin American countries. These projects were chosen for their diversity in geographic terms, due to the agents involved and the processes of organization of resistance. Also because they help us reflect on the limits and advances of community struggles against major energy projects, on the construction of energy sovereignty and justice, and the role of women in their territories. So without devaluing the importance of the other projects investigated, some of which we have tried to present throughout the text, we have brought forth the cases of a solar-powered bakery in Brazil, a micro-power project in Guatemala, the experience of using solar panels for the water supply of a community plant nursery in Colombia and the trajectory of Uruguay's public company of electricity generation and transmission.

Despite the differences and complexities specific to each reality, the different levels of organization and the political context of the communities and actors, the research process presents us with some common points. We have, first and foremost, a narrative dispute. What is energy and what makes it renewable? What dominates the vision and, therefore, the actions of the dominant actors – State and corporate – is a

reductionist and market-driven perspective of the problem. Energy, regardless of its source, is generated by an agent disconnected from its consumers (as we are considered, in contrast with the idea of subjects of rights) and local and territorial dynamics, inserted into a field of multiple conflicts and national, regional and international division of labour, where ultimately, energy is an end for capitalist accumulation.

It is therefore not surprising that, for these agents, hydropower, for example, is considered renewable despite the various negative environmental and social effects caused by such projects. This is also the case for wind farms, despite having displaced and generated conflicts with various communities. Even so, they are considered renewable in the strictest sense of the word.

However, the communities, organizations and movements that fight against these projects and in favour of the construction of other logics, argue that for energy to be renewable it is not enough for its source (water, air, winds) to be renewable. Projects need to be built and implemented in such a way that they have lasting effects on the commons, including its sources, as well as on the populations that relate to these commons to produce and reproduce. But even in the case of solar energy, we have not found public policies on important points raised by communities such as how solar panels are produced, knowledge of the technology and what do with the batteries and panels once their life cycle is completed.

In this sense, the organizations and networks that connect around the issue of energy prefer to refer to "renewable and just energies, for the needs of peoples and communities". This narrative dispute is important not only because it restores whether we perceive energy as corporate property or as a common right, but also questions how and by whose hands it is designed, implemented and legitimized. In other words, we need to change the concept and vision of energy, which includes knowing what kind, how much and who needs it, as well as promoting reflections on energy in the territories, for the peoples and with their participation.

Based on the dominant definition of renewable energy, policies generally favour the big players or encounter other obstacles in the process of implementation. There is no long-term vision by the state or appropriate mechanisms for supervision and control, whilst there are processes in place for legitimizing the extractive industry and agri-business, made possible by deregulating environmental and community rights across the continent. This process allows the advance of an extractivist capitalist logic of "extreme energy" in a context of inequality and energy exclusion. In the Amazon, for example, thousands of indigenous, riverine and traditional villages lack access to energy. As a result, people rely on diesel energy, which is costly and emits greenhouse gases, impacting family budgets and generating inequality within the community between those who can afford it and those who cannot.

Energy exclusion and inequality makes access to information and communities' work more difficult. The latter is especially the case as regards women, historically responsible as they are for domestic work, food production and the expansion and strengthening of agro-ecological production systems. This is why many of these communities perceive energy as a basic and collective right, necessary for a meaningful reproduction of life, both as a means, to ensure access to water and food, and as an end in terms of work and income.

There is also an individualized perspective that structures and underpins dominant policies, and state action, which, when it is not destroying the communal, makes communitarian lifestyles unviable. Thus, political processes make it difficult for communities to access policies that strengthen a collective, common logic, especially considering the absence of renewable energy policies specifically aimed at communities. The technology-power-capital linkage is central when we consider that despite the existence of different sources of funding, for example, communities encounter several obstacles to ensure access. The bureaucratic process, criteria and requirements tend to be the same for market players as for communities, where the market logic is not yet dominant.

Communities also encounter obstacles to ensure adequate technical assistance relevant to their realities, or political advice that considers their material and cultural conditions, as well as their need to be able to collectively appropriate and maintain social technologies for their autonomy. This would be process capable of providing not only information on equipment and techniques but that is also able to advise on the importance of renewable energy, environmental and climate issues, and establish connections between energy, family farming, inequalities and power relations such as race and gender. In other words, it is a question of going beyond an individualized technical assistance, one that is limited to the application of a technology by technical means, towards a collective training process, of exchange between the "technical" and communities, focused on the rural reality of the commons.

In this sense, we witness the growing role of large corporations in the field of renewable energy, including unconventional solutions. These are energy companies that open departments and branches to incorporate such projects, new companies that are created to focus only on renewable energy, but also investment funds. Furthermore, industry associations are also created, to better influence politics and guarantee a presence in key political spaces and ensure funding. Thus, the field becomes even more concentrated, deepening the inequality of power.

Therefore, "alternative" projects that exist are small and produce little energy in relation to the sector as a whole. They are unable to transform the power structure of the energy sector, including the power structure of renewable energy, if the only point considered is the amount of energy produced. This should not, in fact, be their responsibility. However, these projects harbour great potential, on various fronts: fighting over the narrative on energy; deepening the debate on the environment, climate, and energy; and improving production, generating incomes and ensuring the quality of life and autonomy of communities. They are processes that in the long run can dispute unequal relationships of knowledge and power.

It is important to remember that in Latin America, as in many other places in the world, we are in a political context of serious violations and political setbacks. But we are also referring to a region of resistance to the advance of liberal authoritarianism across the world, where there have been important achievements by movements and communities through various struggles. We also know that many are currently being interrupted or threatened, and that resistance is being carried out in a context of deepening conflict. Even so, and against all the adversities of far-right, neoliberal and authoritarian governments, of environmental and rights deregulation, consequently deepening conflicts, we find various community projects, in contexts of struggle and resistance, defending non-capitalist ways of life. The amount of energy produced by individual projects may not be large, since these are mostly small projects. However, in most cases, the energy generated is linked to important processes such as generation of incomes, agro-ecological production, among other fronts of struggle, such as those against hydroelectric dams and wind farms. That is, the communities, movements and organizations involved utilize renewable energy as an instrument of resistance, income-generation, mobilization and political education.

These processes also demonstrate how hegemonic energy projects are harmful, cause conflicts, lead to irreversible environmental impacts and privatize profits whilst handing over to society as a whole the economic, social and environmental costs. They disseminate the idea that it is possible, through specific projects, to reflect on energy production not as an electricity package of hydroelectric, nuclear or thermoelectric power, previously planned by energy sector engineers and technicians, but instead can be generated by different sources, on a micro level, in the context of small regions, localities and/or communities, with the participation of various social actors. In some cases, such as in Brazil, Mexico and Argentina, we even find the development of low-cost social technologies with the potential to rapidly expand, both on a public and community level. This demonstrates that it is possible to produce energy as a common right, based on local demands and potential,

to transform environmental problems into solutions, and build collective, innovative and radical work methodologies, to build a popular energy project that is not only necessary but possible. It is about building a project capable of transforming society through a discussion on energy and by strengthening the experiences of resistance by populations in their territories against corporate appropriation and control of the commons.

Lastly, it should be noted that the focus on unconventional renewable energy does not exclude other discussions in this complex field of relations between energy, nature and society. As we address projects and processes that connect the generation of public and community energy, in a decentralized way and based on collective management, alongside resistance in defence of non-capitalist territories and lifestyles, advocacy, mobilization and political education, we hope to complement other strategies. In this sense, these projects go hand in hand with initiatives that focus on energy conservation or the transition from the extractive to the post-extractive stage, and other nodes in the energy value chain and energy system – also a priority in the long term. In short, all these manifestations of resistance complement one another and relate to other forms of struggle for energy, food and environmental justice and sovereignty.

This publication presents structural elements found in the research "Mapping of alternative local manufacturing and energy generation projects in Latin America", carried out by the offices of the Rosa Luxemburg Foundation in Latin America. In this context, facts that contribute to or represent an obstacle to the strengthening of renewable energy initiatives built and implemented by groups and communities, capable of deepening the path to an energy transition with renewable sources and environmental justice, are analysed. In this process, we prioritized the mapping of public and community projects, understanding the "local" or the territories as a privileged – though not exclusive – ambit to discuss power relations. This includes an understanding that large-scale renewable energy for extractive industries and/or megaprojects is the opposite of creating energy projects that are popular, decentralized and with autonomy for communities.

In this work, more than 700 public/community initiatives were mapped in the 9 countries studied (Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Guatemala, Mexico and Uruguay), many of which involve, in addition to education activities and political advocacy, the installation of several social technology units in different communities. Solar energy is the most widely used source in the projects mapped in this study, followed by bio-digesters.

In Brazil, the *Várzea Comprida dos Oliveiras* community was chosen for promoting coexistence with the semi-arid climate, combating climate change and decentralizing energy production through collective management. At the same time, the initiative relates energy, agro-industry and income generation under women's leadership, and has the technical-political support of the *Comitê de Energia Renovável do Semiárido* (CERSA), as well as other important national networks. In Colombia, we selected the case of a solar energy project for a plant nursery, developed by the *Asociación Municipal de Mujeres Campesinas de Lebrija* (AMMUCALE) and inhabitants of El Aguirre, through the *Colectivo de Reservas Comunitárias Campesinas de Santander* (CRCCS). In this initiative, solar energy production is also related to the agro-ecological production of a community seeking energy sovereignty, food sovereignty, gender justice and better conditions to remain in their territory. In Guatemala, the community energy project *Luz de los Héroes y Mártires de la Resistencia* takes place in a community with a rich history of struggle in defence of the territory and resisting capitalism. With the generation of energy – through a micro hydroelectric plant – 760 families from the *Unión 31 de Mayo* community receive electricity supply in a region where access is restricted by the geographical and morphological conditions of the Sierra de Chama. Uruguay is the only case involving a public company, the *Administración Nacional de Usinas y Transmisiones Eléctricas* (UTE). It was chosen to help us reflect on the public sphere and the importance of the organization of workers in defending the public role in the energy sector.

With this work, the Rosa Luxemburg Foundation seeks to disseminate concrete experiences, counter-hegemonic perspectives and assessments on energy decentralization capable of disputing over the orientation of the energy system and the logic of accumulation as a whole, in order to make room for autonomy, democracy and community self-organization.