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Unconventional Energy in Argentinian Andes: Territories of Dependence or Transition?

Sofia Villalba, Alejandra Ise et Luciana Clementi

Introduction

- 1 In the energy transition, states seek to transform their energy systems into more sustainable and inclusive ones. Scenarios of pressure on natural resources and on territories are expected to occur during that process (Honty, 2018). At the beginning of the 21st century, natural gas (least contaminating hydrocarbons), solar and wind resources gain value as a result of technological advances and international prices. Territories with hydrocarbon reserves and renewable potential gain new meaning on a global scale and attract investments. They are thus incorporated into the logics of capitalism, which causes new dynamics.
- 2 In addition to the exploitation of unconventional resources and the use of new technologies, the energy transition involves transformations on a social, cultural, political, economic, and legal level (O'Brien *et al.*, 2015). Historic changes in energy systems have also contributed to territorial transformations. That is why these processes, which take long periods of time, open up opportunities in the territories and, simultaneously, cause tensions on account of the resources valorised, technical capacities, raw materials and equipment, stakeholders' interests, and the ways energy is used.
- 3 Argentina seeks to move forward in the transition from a system that relies heavily on hydrocarbons (50% on natural gas and 30% on oil), and that is complemented by renewables (5%), hydroelectricity (3%) and nuclear energy (2%), towards a more diversified and sustainable system (Secretaría de Energía, 2020). In this framework, mountain territories take centre stage for their unconventional energy resources (UER).

- 4 This paper aims to analyse the transition process in territories of the central Andes, considering the actors and infrastructures associated to UER. The main hypothesis is that regardless of the resource exploited, the projects strengthen the centralised energy system, perpetuate the inherited territorial trajectories, and thus restrict the energy transition to the replacement of energy sources. The paper focuses on the provinces of Neuquén and San Juan where energy and mining activities are predominant, and where gas, solar and wind resources are associated with large investment projects. It is structured in 3 sections. The first one presents the inherited territorial trajectory of Neuquén and San Juan. The second examines two cases, one for each province, where projects that exploit UER move forward. The third section analyses the barriers that hinder the energy transition process.

Materials and methods

- 5 With a focus in the centre of the Andes mountain range, the provinces of Neuquén and San Juan were selected for being territories linked to the exploitation and harnessing of energy resources that are necessary for the transition, as well as for the logics of exploitation of those resources.
- 6 Primary data collected during field work conducted between 2016 and 2018 in the provinces of Neuquén and Buenos Aires was analysed. That data led to the understanding of:
1. unconventional gas production;
 2. strategies, logic and interests of public (National and Provincial States and associated organisms) and private actors (national and foreign companies in the sector of hydrocarbons and renewable energies);
 3. the logistics involved in large-scale energy projects.
- 7 Direct observations were conducted mainly in gas production sites, in harbours that receive equipment and materials, and in the headquarters of government organisms and companies. Between 2016 and 2021, more than 30 non-structured interviews were conducted, both face to face and online, to key informants from Añelo and Neuquén (Province of Neuquén), Las Flores (Province of San Juan), Bahía Blanca (Province of Buenos Aires) and Buenos Aires City. Informants were selected for their role in the projects, the provision of associated services, the regulation and promotion from the government or their place of residence.
- 8 Collected data was complemented with secondary sources of information (academic papers, legal documents, news articles and institutional reports). Qualitative analysis, group debate sessions, and contrast with secondary information were used. Statistics and spatial data, obtained from government organisms, supported the process and enabled the production of thematic cartography using Geographical Information Systems.

Theoretical Framework

- 9 Studies on the energy transition understand it as the shift from a system of centralised energy production with national or global-scale actors and predominance of hydrocarbons, to a system of distributed generation, in which renewable resources and local actors gain relevance. The perspective adopted in this paper is that of transitions

as slow and gradual processes, of spatial and geographical nature, which involve changes on a social, cultural, technological, political, economical and regulatory level (Pelling, 2011; Bridge *et al.*, 2012; Mathieu, 2015; O'Brien *et al.*, 2015).

- 10 Under this conception, energy transitions transform the territories as they not only involve technological innovations and changes in the resources used, they also mean adapting the ways in which societies inhabit, produce, and consume their space. That is why the analysis of the energy transition implies considering the specificities of the territories (Coenen and Hansen, 2015), since transition processes vary according to the space where they take place, depending on the available resources, the demands of the populations, the sensitivity of the environment and forms of governance (Prévôt-Schapira & Velut, 2013; Broggio *et al.*, 2014).
- 11 From this perspective, the particularities of the territories may act as drivers, but, at the same time, as barriers to the progress of the transition. Chabrol (2017) identifies blockages to the energy transition which strengthen path dependence –a situation in which past decisions induce later dynamics that perpetuate the previous system and thus hinder change.
- 12 The centralised and hierarchical structure of the energy system acts as a territorial blockage (Chabrol, 2017). The prominence of the National State and the strong presence of national and foreign companies in the market, and in large exploitation projects, “solidify” the hierarchy and the top-down logic that operates in the sector. This blockage limits the involvement of local actors. At the same time, the pre-existence of national-scale energy infrastructures, developed under the centralised model, leads to a phenomenon of dependence by favouring new dynamics in places close to existing networks (Chabrol, 2017). This material blockage strengthens the centralisation of the system and limits the valorisation of new spaces and resources.
- 13 The energy transition that moves forward in Neuquén and San Juan presents specific traits that call for an analysis on whether or not barriers exist. This way, the logics underlying the ongoing process and its dependence or independence on the centralised energy system could be assessed.

Inherited Territorial Trajectories

- 14 The Andes mountain range, in Latin America, stands out for its abundance of natural resources with potential to be valorised by mining, tourism, agriculture and energy industries. These territories have been historically associated with extractive processes, which gain new centre stage as a result of technological innovation and the changes in the accumulation process (Galafassi & Riffo, 2018).
- 15 In Argentina, extractive activities have historically been incorporated into global networks (Gudynas, 2015). The provinces of Neuquén and San Juan have developed a background in energy and mining, respectively.

Neuquén: Between the Hydrocarbon Imprint, Hydroelectricity, and Tourism

- 16 In the province of Neuquén, in the Northwest of Patagonia, energy activities have a long history, in particular hydrocarbon and hydroelectricity production.

- 17 Exploitation of hydrocarbons starts at the beginning of the 20th century, in the centre of the province, back when those territories still belonged to the National State. Hydrocarbons were discovered in 1918 and their production was promoted through the creation of state-owned company YPF (stands for Fiscal Oil Fields in Spanish). From 1990 onwards, political and economic changes fostered the inclusion of private companies, both national and foreign, in the sector.
- 18 The hydrocarbon trajectory and the associated dynamics have led to the construction of a network of infrastructures, equipment and services that support activities (Villalba, 2020). The territory of Neuquén became strategic for Argentina, as it is the main natural gas producer. Over the last decade, it has contributed to more than 50% of national gas production (Secretaría de Energía, 2020).
- 19 In the South of the province, hydroelectricity is also promoted by the National State through the action of HIDRONOR (state-owned company in the field of hydroelectricity) since 1970. Three hydroelectric complexes that include six dams were built¹. In the decade of 1990, as a result of privatisation, private companies took over the operation of the dams. The electricity produced is fed into the National Interconnected System (NIS) through five extra high-voltage lines of 500 kV that originate in Neuquén. The total installed capacity is over 4,500 MW and accounts for 17.5% of the electricity produced in the country (Villalba & Clementi, 2017).
- 20 To the west of the territory of Neuquén, the landscape dominated by lakes and mountains, is one of the main tourist attractions in the country. National and foreign tourist influx has created the need for diverse economic activities and services (Rodríguez & Di Nicolo, 2019). In addition, the huge bodies of water represent important reserves of fresh water, a strategic resource in the world.
- 21 During the 20th century, Neuquén became a strategic territory for its activities in energy and tourism, which are inscribed in national and global networks. Hydrocarbon production, a key component of the national energy system, flows towards centres of distribution and consumption—mainly located in the Pampas region—to meet the growing energy demands.

San Juan: between wine-growing, hydroelectric dams, and mining

- 22 The province of San Juan is located in the Cuyo region, in the center-west of the country. The mountain geography, the aridity of the climate and water scarcity force the population to settle in one of the five “oases”: capital city and Greater San Juan, Jáchal, Calingasta, Valle Fértil, and Iglesia.
- 23 Since 1880, the main economic activity has been traditional grape farming and wine production, which takes place in the central valleys. The railway and the arrival of immigrants, the promotion from national and provincial States, the consolidation of the internal market, the improvement of the irrigation system, and the incorporation of more land for cultivation favoured the growth of production, mainly in the oasis of Tulum. As a result, San Juan became the second national producer of grapevines, after the province of Mendoza (Borcosque, 2011).
- 24 At the beginning of the 20th century, family-run mining activities centred on non-metallic minerals and building stones begin to be promoted (Narodowski & Garnero, 2010). The mines Minas del Salado, El Fierro, and Arrinquintín are historical examples

of mining experience. In the 21st century, mining takes on new characteristics: metals (gold and silver) are extracted and global companies dominate the activities. In 2005 Veladero mining site was established and large-scale mining began. The province of San Juan, which accounts for 50% of national gold production, thus becomes one of the main exploitation and exports centres (Moscheni, 2019). The territorial trajectory shows the shift from grape farming to mega mining.

- 25 Electricity generation is also confirmed as a relevant activity. The construction of dams on the rivers San Juan and Jáchal, from the late 1970s onwards, ensures water and energy supply. The provinces accounts for 1,434 GWh which are generated in the dams Embalse Quebrada de Ullum, Cuesta del Viento, Los Caracoles, and Punta Negra (Montenegro, 2019). Other available resources begin to be harnessed for electricity generation, such as wind, to provide energy to mining sites in isolated locations, and solar energy, to leverage the more than 2,000 kWh/m²/year of horizontal irradiance (Global Solar Atlas, 2020).
- 26 Irrigation practices in grape farming, mineral extraction, and hydroelectric power generation have in common the use of water in a water-stressed province. As a result, conflicts and debates over the use and sustainable management of water emerge.
- 27 Inherited territorial trajectories in the provinces of Neuquén and San Juan show the inscription of these spaces in global networks. Territories are shaped based on external demands; they valorise new resources, with extra local actors and expanding infrastructures.

Territories Dynamised by Unconventional Energy Projects

- 28 At the beginning of the 21st century, energy leads new territories to be incorporated into global scenarios. Because of their resources, territories become strategic to move forward in the transition process. Natural gas is valorised for being the least contaminating non-renewable resource which contributes to decarbonising the system. The sun, the wind and other renewable resources would make it possible to diversify the energy mix and generate energy *in situ*.
- 29 State incentives and regulations turn Neuquén and San Juan into attractive territories for the development of new energy projects. National and foreign companies enter the local scene to exploit UER, transforming and reorganising the territories.

Añelo and Unconventional Gas Exploitation

- 30 In the 21st century, natural gas, which abounds in Argentina, gains centre stage together with unconventional resources. It is considered a low-carbon and versatile source of energy for its adaptability to different purposes (Carrizo & Forget, 2021). Its production and consumption allow the country to be considered among those with a gas energy mix.
- 31 In the early 2010s unconventional hydrocarbon reserves in the formation Vaca Muerta in Neuquén (which concentrates 30% and 50% of national reserves of gas and oil, respectively) became valorised (EIA, 2013). The possibilities opened up by technological advancements, the international market, and the knowledge about the reserves,

prompted the State to take on a leading role in the sector through the company YPF, and private actors to start new businesses and boost activities.

- 32 Hydraulic fracturing becomes essential for these resources and, with it, water and sand. Equipment and services are also necessary. Logistics and infrastructures to mobilise flows originate a number of projects. The international pipeline Vaca Muerta-Porto Alegre seeks to link Neuquén to the south of Brazil, supplying gas to Argentine and Brazilian networks. The regional project *Tren Norpatagónico* (Spanish for Train of the North of Patagonia) would link Bahía Blanca's harbour to Añelo (centre of Neuquén) to transport imported supplies to the exploitation sites (FARN, 2020).
- 33 Although the megaproject Vaca Muerta (Álvarez Mulally *et al.*, 2017) gains predominance at different scales, on a spatial level it moves forward in the department of Añelo. The head town of the department goes through fast and sudden changes and becomes a centre of services for the hydrocarbon sector. The town attracts local, national, and foreign companies, as well as new residents. The local population seeks to adapt to new dynamics, while facing challenges related to collapsed services and urban facilities, a transformed local economy and multiple changes to urban morphology (Villalba, 2020).
- 34 Unconventional gas exploitation leads to rapid and intense changes in sectoral and territorial dynamics, triggering complex tensions. Environmental (exploitation waste, hazardous materials, risks associated with the activity), social (displacement of native populations, disturbances to local economies) and territorial (land use incompatibility) impacts exist (FARN, 2021). The exploitation of Vaca Muerta, though relevant for the country in terms of energy supply, imposes challenges in the management of the territory of Añelo and the quality of life of its population.

Iglesia and the Harnessing of the Sun and Wind

- 35 In the 21st century, efforts are made to harness wind and solar resources in order to achieve a more diversified and inclusive electric mix. The national state has promoted electricity generation from renewable sources since 2006 (Law 26,190). Through the program *GENREN*, the first large-scale solar and wind power plants were built, in San Juan and Chubut, respectively. Through the program *RenovAr* (Law 27,191/2015), large amounts of renewable energy capacity were awarded to projects to be built in different regions of the country.
- 36 San Juan, with considerable levels of wind and solar resources, seeks to provide the national electricity mix with renewable generation. The *RenovAr* tenders awarded 490 MW of photovoltaic projects in the province, confirming solar energy as the main resource. The State of San Juan, together with the state-owned energy company *Energía Provincial Sociedad del Estado EPSE*—created in 2004—, supports the deployment of photovoltaic energy through a specific solar program (*Programa Solar San Juan*). In 2012 the solar plant San Juan I was built and was the first to be connected to the NIS. The provincial State also plans to set up an industrial facility, integrated with mining activity, for the manufacturing of crystalline silicon ingots, and photovoltaic cells and modules, which are required by the solar industry.
- 37 In the department of Iglesia, in the north-west of the province, solar and wind energy are harnessed. Two large-scale solar plants are located in Estancia Guañizuil², called Iglesia Guañizuil and Iglesia Guañizuil II A. The former, of 80 MW, was awarded to the

Chinese company Jinko Solar³, financial partner of LaderEnergy. The latter, owned by LaderEnergy and Norwegian companies Scatec and Equinor, became the largest solar plant in the province with an installed capacity of 100 MW.

- 38 To the west of the department, Canadian company Barrick Gold—operator of Veladero Mine—added the first wind power generator in 2008. Inhospitable and isolated conditions, at over 3,800 meters (12,467 feet) above sea level, motivated the company to supply part of its energy demand with a 2 MW DeWind turbine. The system used is thus hybrid, wind diesel. The uninterrupted use of the wind turbine led to the consideration of large-scale wind power generation in high-altitude places. In 2011, Barrick Gold built and started operating the wind power plant Punta Colorada in Chilean Andes.
- 39 In both cases, local communities have scarcely been involved. Regarding wind harnessing, few local actors know of the projects. In relation to the solar resource, even if local residents do not participate in the decision-making or implementation of the project, they consider solar plants as a source of employment and an opportunity for the development of the province. In general, temporary positions for the construction phase of the project are filled by local workers. Additionally, new opportunities come up. For instance, Estancia Guañizuil plans to include the solar plants in local tourist circuits as a way of raising awareness about solar energy.

Between Dependence and Transition

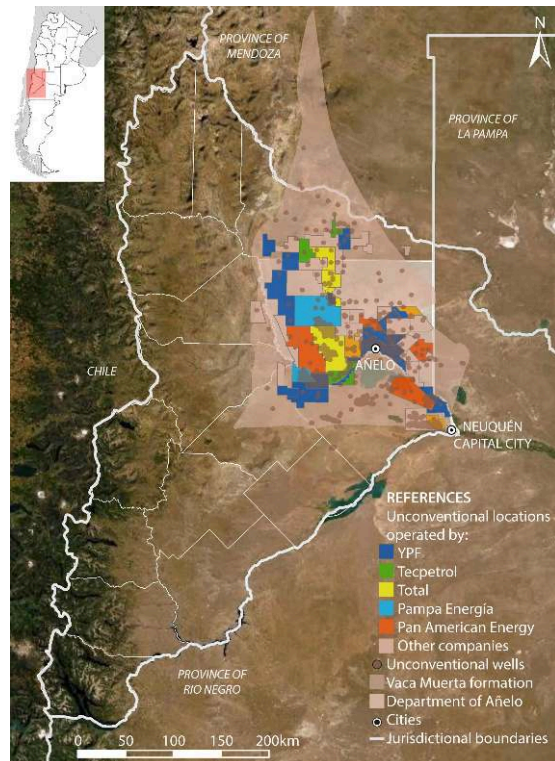
- 40 The spatiality of the transition process manifests in the incorporation of peripheral geographies into the global economy, through the progress of new activities and the use of innovative technologies (Guibert *et al.*, 2018; Schweitzer, 2011). UER and associated projects could incorporate territories into a process of energy transition (Chabrol, 2017). However, the specificities of the territories and the characteristics of the projects reveal barriers that prevent a deep transition process from moving forward.

Predominant Actors in Neuquén

- 41 Unconventional gas exploitation in Neuquén is the basis of the national energy system and satisfies energy demands concentrated in metropolitan areas. The National State has a leading role in the creation of an attractive environment for private investors. In the decade of 2010, new legislation on unconventional hydrocarbons was passed. The State regained 51% of the company YPF, and its leading role in the sector. The State also fostered the activity through the program *Plan Gas*, promoting investments so that companies increase their production (Cacace y Morina, 2019; García Zanotti *et al.*, 2017).
- 42 The government of Neuquén adheres to national promotion schemes and invests in the improvement of existing roads or in building new ones. Additionally, in order to respond to sectoral demands, it elaborates territorial management plans and regulates the use of new spaces for industrial and urban purposes (Villalba, 2020).
- 43 In addition to the leading role of YPF, more than 20 private companies—some of them with a vast background—move forward in the implementation of the projects. Towards the end of the decade of 2010, their activity contributed to reverse the decreasing tendency of national gas production. In 2019, the top five companies in unconventional

gas production were: YPF, Tecpetrol, Total, Pampa Energía and Pan American Energy. The presence of Argentine and foreign capital (Italian, French, Chinese and British) stands out. They set up exploitation sites in different hydrocarbon areas of the province, obtaining permits and/or concessions granted by the State (Figure 1). They multiply the drilling of wells, the construction of facilities, and of pipelines to evacuate their production.

Figure 1: Companies that operate unconventional hydrocarbons in the province of Neuquén.



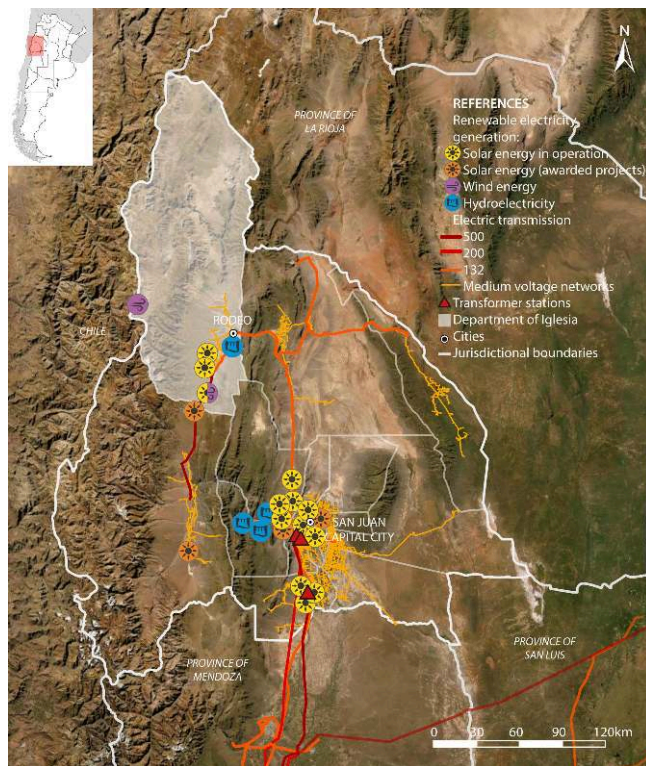
Source: Own elaboration

- 44 The top-down logic that enables the exploitation of unconventional resources, such as gas, requires that local actors allow national energy policy to act in their space (Chabrol, 2017). Historically in Neuquén, the towns of Plaza Huincul, Cutral Co and Rincón de los Sauces were configured with conventional hydrocarbons as their centre. Nowadays in Añelo, extra-local actors and national-scale projects converge around unconventional hydrocarbons and induce new territorial dynamics.
- 45 This logic leads to the strengthening of the centralised energy system, thus creating a territorial blockage to the energy transition (Chabrol, 2017). The harnessing of UER *per se* does not necessarily translate into a local-scale transition. Some territories of Neuquén face several sudden changes and complex challenges as a result of the arrival of extra-local actors and the development of infrastructures to serve national demands. Paradoxically, other territories lack energy networks or have low-quality and expensive energy services. The territorialization of the transition would involve breaking free from the presence of extra-local actors that use peripheral territories to meet centralised demands.

Determinant infrastructures in San Juan

- 46 The harnessing of renewable resources in San Juan is promoted to diversify the energy mix and to continue to meet demands of the Interconnected System. Networks connect and carry energy from producing areas to consumption centres.
- 47 The national electric system began to take shape in the first half of the 20th century as regional systems were progressively interconnected. In San Juan, the first electricity infrastructures were built in the decade of 1910. In the decade of 1950 distribution networks expand towards areas far from provincial urban centres. In the 1970s, through the action of the Provincial Energy Company (EPE, for its name in Spanish), interconnection continues and the areas of Valle de Tulum, and Quebrada de Ullúm are provided with electricity, as well as some industrial and agricultural areas. With the restructuring of the electricity sector in the decade of 1990, networks were left in the hands of private companies (Energía San Juan, 2021).
- 48 San Juan, considered a province “at the end of the power line,” is supplied by a 500 kV line that comes from the south (from the transformer station Gran Mendoza), and flows into the capital city. In addition, another 500 kV line carries energy between Calingasta and Iglesia, in the west of the province. A 132 kV line links the capital city to San José de Jáchal and to Iglesia. Hydroelectric power stations and solar plants, concentrated in the central valleys, are the stars of the electricity generation of the province (Figure 2).
- 49 The existing infrastructure is essential to the installation of renewable energy projects, which require their strengthening and expansion. The solar plant Iglesia Guañizuil required building the transformer station Bauchazeta (132 Kv), and a high-voltage transmission line to connect to the Interconnected System and strengthen the existing electricity network. Other projects include building the transformer station Nueva San Juan, and a new 500 kV line to link San Juan to Rodeo. Plans have been made to continue with a line to link Rodeo to La Rioja.
- 50 Barrick Gold’s wind plant led to other projects. In 2011 the company started operating the wind plant Punta Colorada (20 MW) in Chilean Andes. In 2020 the construction of a transmission line to link the wind plant to Veladero Mine was announced (Bellato, 2020).

Figure 2: Infrastructures and harnessing of renewable energy resources in San Juan



Source: Own elaboration

- 51 The presence of energy infrastructures in a territory is determinant for the installation of new projects. UER seek to adapt to existing networks, maintaining and strengthening the centralised energy system. In San Juan, solar plants are located in close proximity to high or medium-voltage transmission lines. Thus, their connection to the NIS is ensured at a low cost. The wind project, an exceptional case, seeks to meet demands of mega-mining in an isolated location.
- 52 The harnessing of renewable resources is spatially organized in a way that maintains the dependence on the dominant energy system as it takes place close to existing networks and large production and urban centres. In this sense, even though projects harness a renewable resource, infrastructures constitute a material blockage (Chabrol, 2017). In order for a deeper transition to move forward, breaking with the inertia of large infrastructures would open up opportunities for local initiatives that could benefit the communities.

Final Thoughts

- 53 In Argentina, the provinces of Neuquén and San Juan have become spaces linked to extractive activities that seek to meet extra-local demands. At the beginning of the 21st century, gas, sun and wind are valorised as sources for diversifying the energy mix. The transition process moves forward to remote geographies where those resources abound. However, the construction of a more equitable and sustainable system is still a pending issue in the territories.

- 54 The exploitation of unconventional gas in Añelo and the use of solar and wind energy in Iglesia show the materialisation of a top-down logic in which the territories become the object of external projects that use their resources. They are inserted in global scenarios for attracting private, national and international investments. The State supports exploitation activities and the use of renewables, while extra-local actors invest, set up their operating bases, require supplies and equipment. The existing infrastructure is determinant to the location of new projects which strengthen the centralised networks. These logics perpetuate inherited territorial trajectories, in which Neuquén and San Juan were configured as peripheral spaces in service of the National State as suppliers of energy and minerals.
- 55 The cases analysed represent territories that still depend on the centralised energy system. The transformations that occur show a weak transition based on the replacement of sources, dominated by extra-local actors and tied to existing infrastructures. Greater involvement of local communities in the promotion and management of UER, with social, political and economic transformations, could open up opportunities for an equitable, inclusive and sustainable transition, leading to more possibilities and greater benefits for local populations.

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NOTES

1. El Chocón (1200 MW), Arroyito (120 MW), Alicurá (1000 MW), Piedra del Águila (1400 MW), Pichi PicúnLeufú (261 MW) and Planicie Banderita (450 MW) (ORSEP, 2020).
2. Additionally, a hybrid solar-wind power plant is projected to be located in the south of the department (EPSE, 2020).
3. World leading photovoltaic manufacturer.

RÉSUMÉS

In the transition to sustainable energy systems, pressures arise on natural resources and territories. In Latin America, since the end of the 20th century, countries have sought to diversify their energy mixes, promoting the use of unconventional resources. In Argentina, the provinces of Neuquén and San Juan are well endowed with gas, solar and wind resources. There, large exploitation projects reposition the territories on a global and national scale. This paper aims to analyse the transition process in territories of the central Andes, considering the actors and infrastructures linked to unconventional energy resources. The main hypothesis is that regardless of the resource exploited, the projects strengthen the centralised energy system, perpetuate the inherited territorial trajectories, and thus restrict the energy transition to the replacement of energy sources. The methodological approach is based both on primary data—collected through semi-structured interviews and field observations—, and secondary data, obtained from research articles, reports and press releases. The unconventional energy resources and their associated projects in Neuquén and San Juan represent a weak transition in the

territories, given the major role played by external actors and the inertia of pre-existing infrastructures.

En la transición hacia sistemas energéticos sostenibles surgen presiones sobre los recursos naturales y los territorios. En América Latina, desde fines del siglo XX, los países buscan diversificar sus matrices, incentivando el aprovechamiento de recursos energéticos no convencionales. En Argentina, en las provincias de Neuquén y San Juan, con recursos gasíferos, solares y eólicos, avanzan grandes proyectos de explotación que reposicionan a los territorios a escala nacional y global. Este trabajo propone analizar el proceso de transición en territorios de la zona central de los Andes, considerando los actores e infraestructuras vinculadas a los recursos energéticos no convencionales. La hipótesis central es que independientemente del recurso explotado, los proyectos fortalecen el sistema energético centralizado, perpetuando la trayectoria heredada de los territorios, y la transición energética se limita al mero reemplazo de fuentes. El enfoque metodológico se basa en datos primarios, obtenidos de entrevistas semiestructuradas y observaciones en terreno, y secundarios, recuperados de artículos de investigación, informes y notas de prensa. Los recursos energéticos no convencionales y los proyectos en marcha en Neuquén y San Juan reflejan en los territorios una transición débil, ante el protagonismo de actores extralocales y la inercia de las infraestructuras preexistentes.

INDEX

Keywords : Unconventional energy, projects, Andean territories, energy transition, Argentina

Palabras claves : Energía no convencional, proyectos, territorios andinos, transición energética, Argentina

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