Revista AMBIENTE & SOCIEDADE

SciELO

Energy transition in Uruguay: market dominance or public-social power?

Bruno Fornillo [I]

[I] *Investigador del Consejo Nacional de Investigaciones Científicas y Técnicas. Instituto de Estudios de América Latina y el Caribe-Universidad de Buenos Aires, Argentina*

Abstract: The article characterizes the causes that led to the recent incorporation of renewable energy in Uruguay, asks about the predominance of public or private property, the type of decentralization promoted by new energies and characterizes the type of modification of the model of development in the country. One of the objectives of the article is to discuss how the energy transition is conceived in the country and in general. Based on secondary literature and multiple interviews, the central hypothesis is that Uruguay has faced a renewal of its energy matrix, but it has conditions to end up heading toward a just energy transition based on the public-social capacities present in the country.

***Keywords*:** Energy tansition, Uruguay, UTE, development.

São Paulo. Vol. 24, 2021

Special Issue: Energy territories

DOI: http://dx.doi.org/10.1590/1809-4422asoc20190229r1vu2021L1DE

Introduction

Uruguay is a renewable energy world leader. During 2017, the total amount of its electricity supply came from renewable sources (only 2% was thermal energy). The electricity mix —which represents 28.2% of the total energy supply— was composed of hydro (52%), wind (26%), biomass (18%) and solar (2%) powers in 2017[1]. Renewables, mainly hydropower, already accounted for 36% of the total energy mix about 10 years ago, but in 2017 they rose to 64%. In 2005, "black gold" accounted for 55% of Uruguay's total energy supply, falling to 36.4% by 2017 (although oil represents around 40% of the gross supply). In short, these hard facts show nothing but the deep transformation undergone by the country.

Uruguay's total CO2 emissions were on the rise between 1998 and 2012 (8198.80 Gg), when they started to decrease despite GDP growth remained steady. Thus in 2017, the country emitted approximately the same quantity of CO2 as 20 years before: 5837.5 Gg. This significant decrease is the result of virtually zero use or shutting down of fossil-fueled power plants: in 2012 they emitted 2925.2 Gg, but in 2017 the few that still remained emitted only 183.3 Gg. That energy supply was mainly replaced by wind power. In sum, Uruguay accounts for less than 0.1% of global harmful emissions and, in fact, the electricity sector practically does not generate greenhouse gases (GHG).

Uruguay's public sector has achieved a strong predominance by sovereign means: a 1991 law encouraging privatization of public utilities, a tendency seen in most Latin American countries during the neoliberal wave, was knocked down by a referendum in 1992. We must, therefore, highlight the importance of the National Administration of Power Plants and Electrical Transmission (Administración Nacional de Usinas y Transmisiones Eléctricas, UTE). Created in 1912, this state-run enterprise has a deep-rooted tradition in the country as a public pillar for the national power grid. UTE held a legal monopoly over electricity generation, transmission and distribution throughout the country until 1977, when the dictatorship's "Electricity Act" ended its control over generation. However, no private generation actually took over until renewables entered the scene, along with the commercialization of black liquor as pulping mill byproduct, in the last 10 years. While UTE still controls the totality of electricity transmission and distribution as well as 70.3% of hydro, wind and thermal power generation, it buys the remaining 29.7% of electricity generation from private generators.

In this article, we characterize the causes that led to the recent increase of renewables share in Uruguay, we ask about the predominance of public or private property, the type of decentralization promoted by the new energy sources and account for the resulting modification of the development model. In other words, we analyze the elements that evidence a fair energy transition: introduction of alternative sources, and decentralization, deconcentration, decarbonization and democratization of the electrical system. The present work is based on secondary literature and fieldwork conducted in Montevideo city in June, 2018 through interviews to public officials, researchers, trade union leaders,

1 - Unless otherwise specified, data has been taken from different measurements of 2017's domestic energy balance. It should be noted that information provided by the state and the public enterprise is thoughtful and comprehensive.

and executives in major power companies. References on these are listed at the end of the paper (interviewee's names have been modified, but not their positions).

Uruguay bets on renewables

The introduction of renewable energy became a public policy(1) in Uruguay after the development of an energy plan in 2008, and the adoption of a green policy supported by the main political parties in 2010. Since then, the use of alternative energy has been deliberately fostered, and the government took control over this sector management (which was traditionally operated rather autonomously by two big state-owned enterprises: UTE and the oil importer National Administration of Fuels, Alcohols and Portland Cement (ANCAP)). More specifically, the inclusion of renewable energy to the Uruguayan energy mix can be explained by the following reasons: first, given the country's 100% dependence on fossil fuel imports, it would lead to energy sovereignty and reduced commercial vulnerability (especially considering the current global trend toward electrification of mixes). It is important to note at this point that in 2012 the price of the oil barrel rose to USD 120. Second, Uruguay lacked energy stability due to a long-standing structural deficit, which was more serious between 1990 and 2000. During that period, hydroelectric power generation was lower than the average due to its dependence on the weather —hitting very low peaks in 1999, 2004, 2006 and 2008, which forced the country to import large quantities of fossil fuels to meet its demand. This has been reversed over the last years thanks to high hydroelectric power figures. Third, despite the low amount of gas used to generate electricity during 2004, a plan to increase the share of gas in the mix became unfeasible after Argentina stopped being a reliable provider by the middle of the decade. Finally, by diversifying its mix, the country was following the global consensus on the benefits of turning to clean and green energies. In this context, and even though there were attempts to follow any paths at first in order to solve the "energy crisis", a public policy fostering the use of renewables, mainly wind, prevailed in the end.

The success of the Uruguayan bet is undeniable. The country has imported the same amount of oil per year, 1,500 ktep, since 1965 until now. Yet, while in the period 2000-2010 oil represented, on average, 60% of the energy supply —around 20% of total imports—, the percentage has been decreasing until it reached the current 37% —around 10% of total imports— in a context in which the energy demand has increased (though we must mention that the huge increase in "green" biomass derives from paper mills' production and demand). At the same time, the country has managed to have a "100% renewable" electricity mix —considering the large Salto Grande dam as such—, it is one of the nations that includes a large share of wind in it, and everything was achieved in a very short period of time: approximately five years.

Since the outline of the energy plan, wind harvests have been predominantly private, despite the fact that at the outset UTE owned a few small wind farms and its share in new farms has increased over time. In 2012, private generation accounted for 5% of electric power —basically biomass derived from UPM pulping mill. In 2016, private generation climbed to 28%, 72% of which derived from wind. At the beginning of 2018,

6% of Uruguay's total energy supply was generated by wind turbines (1,510 MW), out of which 33.3% (504 MW) are owned (157 MW) or co-owned (347 MW) by UTE(2). Wind harvest is provided as follows: 65% is run by private firms (92% PPA and 8% Spot contracts[2]), while 35% is owned by UTE (7% traditional public investment, 11% trusteeships, 6% leasing, and 11% corporations). In this sense, whether UTE should own and manage the energy income constitutes a fruitful debate.

Investment in wind energy was about USD 3.15 million until 2017, 30% of which was used for logistics, construction and equipment of companies settled in Uruguay (the Uruguayan Wind Energy Association owns 41 firms)(3). However, some companies, either local or multinational, have been more determined. For example, Ventus is a local company that developed 100 MW installed capacity from 12 wind farms. With a USD 200 million investment, it designed the project from scratch, selected the areas of land, sold stakes in the farms to build them, and now manages some of them. Currently, the company is seeking to operate in other LA countries such as Argentina, Bolivia, Colombia or Mexico. Another example is Siemens-Gamesa Uruguay —former Gamesa Uruguay—, a subsidiary of the global company Siemens Gamesa Renewable Energy. It began operating in the country in 2012, and provided up to 240 MW in wind power by settling wind turbines. It is currently involved in the operation and management of different farms. As it can be seen, a series of influential private actors have entered the scene of renewable energies. In fact, they are represented in the Uruguayan Association of Private Electric Energy Generators (AUGPEE), established in 2007, member of the board of Uruguay's Electricity Market Administration (ADME). An array of legal, technical and financial services has also developed around this emerging sector.

Who keeps the renewable energy income?

Several different arguments are usually put forward to explain why a fraction of the generation has been made available for trade in the market. One of them is that the transformation was aimed to take place in a very short period of time and required a high amount of money, and apparently only the private sector could afford both things at the same time(3). A second argument, presented by Esponda and Molinari, is that the private-driven investment was "strongly determined by accounting considerations, on the need of avoiding an increase of fiscal deficit" (4 p14), which would otherwise surge to over 5%, leading the country to lose its investment grade. In other words, due to some accounting issue, public investment would be considered fiscal deficit and Uruguay would scare investors away. A third argument suggests that the aim was to leave some room for private incomes in a field where the public sector is profitable. Within this framework, private wind-derived energy generation has been encouraged by a large series of benefits: long-term contracts with UTE (of 20-year terms and with a mandatory purchase in US dollars of all energy produced) as well as tax exemptions under the investment promotion

2 - The PPA (Power Purchase Agreement) is a purchase agreement or contract between a power producer and a buyer — basically UTE, in this case. On the other hand, the spot market is an open market by which energy is traded without a previous contract. A high proportion of PPAs underline UTE's significance in distribution.

law (exemption of the Income Tax on Economic Activities, IRAE; the wealth tax, import taxes and fees, and value added tax) (4). Those wind farms exempted from the IRAE tax, for instance, show a "discount" of USD 633 million, related to an investment of USD 1,175 million in an average period of 12 years that represents 53% of the investment made. Meanwhile, according to Circular 4/09 of the Commission for the Enforcement of the Investment Law (COMAP), investments made by public enterprises were not eligible for tax exemptions under the investment promotion law. Given these incentives, it was mainly a financial business, since income was guaranteed. In the words of former National Director of Energy, Ramón Méndez, who was also responsible for the energy mix transformation plan, "What we have learnt is that renewable energies are just a financial business. Construction and maintenance costs are low, so the time you provide to investors is very attractive(5)."

In Uruguay there is a general consent, not only among citizens but also among actors in the energy sector, regarding the benefit derived from the state's control over power. Therefore, it is not surprising that this loss in public control has raised some concern. Objections include that the price per MW of wind power is too high (an average of USD 65, while Argentina paid an average USD 41 in 2017's bids), that wind power has priority of dispatch —over public hydro power, for instance—, and that UTE must buy the total amount of energy generated by wind farms, a condition that led it to pay USD 59 million for unused wind energy along with a large quantity of hydro power that was discarded in 2017(6). In other words, some argue that private companies have secured a significant proportion of their energy income to the detriment of the state. In addition, it has been said that the Universidad de la República drew most of the wind maps —and thus, offered an investment and state knowledge for the benefit of private profits— and that UTE has long-standing technical skills and local technical capacity which enables it to cover specific technical requirements or to learn new ones if necessary. Furthermore, the accelerated speed of the shift has made it difficult —if not totally impossible— for local enterprises or providers to design a gradual and long-term business plan, especially when it was not necessary to accelerate the transition in a context in which wind generation prices tend to drop, which create some suspicion of overinvestment(7).

In turn, the "accounting issue" is usually considered as a problem that could have been solved had it been real political commitment (in fact, those who hold the importance of the accounting issue also suggest that the IMF's 2001 recommendations overcome this problem easily). It is true that, as Esponda and Molinari argue, had the investment been directly made by UTE, the enterprise would have gone into substantial debt. But the way it was actually done led to a huge increase of its liabilities in terms of "service concession", which constituted almost 40% of the total in 2015 (indeed it ended up with UYU 34 billion in liabilities due to service concessions against UYU 88 billion in total liabilities). Additionally, note 9.1 of UTE's 2015 accounting statements shows almost USD 7 billion worth in liabilities derived from energy purchase contracts (1,600 of biomass, 4,500 of wind and 800 of photovoltaics) (4).

Maybe the major and most concrete criticism is that UTE offered too many war-

ranties —a business model, a guaranteed return for 20 years, as well as financing backed by its economic and credit strength, in return of losing ownership and income benefits. UTE's financing capacity at an international level has been made possible thanks to its own support, background and financial history. The paradox is that UTE has capital to invest, but its profits are used by the central state to reduce the fiscal deficit and thus present Uruguay as a serious country to the markets. In short, UTE gave all the warranties for a business that ended up belonging to others.

Uruguay's energy incorporation led to an electricity generation surplus in 2017, which was partially sold to Argentina and Brazil, despite energy exports are not a priority for UTE. Since the country meets its demand easily, a massive incorporation of renewable energy does not seem to be a priority in the near future, so any further transformation should be gradual(8). In fact, Uruguay opened a 500-MW combined-cycle power plant in 2018 to exploit iron, a project that was not launched in the end and that is not expected for the short term either. Nevertheless, a potential future increase of renewables may be triggered by different needs, including a rise in the demand or in electromobility —which would mean less oil imports—.

Now, does it make sense to increase private-driven energy generation? The items previously mentioned are the main reasons why the electricity workers' union says electricity generation has been privatized —even though the former Frente Amplio administration argued that only a portion of UTE's overall generation was private and that public control was expected not only to continue, but to have a central role in future energy incorporation(9). Indeed, UTE has slightly increased its presence over the last years. The rise in wind turbines owned by the state-owned enterprise comes after pressure exerted by different actors, some even from within the enterprise, not to hand over the energy income and become subjected to private entities' demands. (In this respect, however, it is usually mentioned that the possibility of a single private player able of concentrating too much power was deliberately discouraged during the first tenders) (10). In any case, none of the alleged private investment incentives —secure financing, promptness, accounting issues— will exist from now on since further incorporations will be gradual, considering the current surplus, and possibly solar-derived, which complements perfectly well with wind power. UTE has invited tenders for the construction of a new 65-MW photovoltaic power plant that, for now, will be managed by UTE. This initiative has been welcomed by workers belonging to UTE's union organization AUTE (Association of Employees of the National Administration of Power Plants and Electrical Transmissions). UTE offers a sound financial history —a significant element to decide its own strategy for the future, which usually represents a serious problem within the renewables scope. In fact, UTE initially built a wind farm so that, provided there had been any pressures or delays, private actors would have known it was capable of doing it on its own. In sum, it is important to highlight that UTE is a key player in Uruguay: it is profitable, backed by a sound history, and has international credit rating and financing capacity. There is no reason why it should lose control over the energy income again.

Centralized and decentralized energy supplies: state, private or social?

In Uruguay, distributed generation has bad press among progressive sectors, from trade union workers (AUTE), officials of the Ministry of Energy, to energy scholars. The reason is twofold. On the one hand, distributed generation, enabled by wind power and the self-supply capacity of paper mills, which also sell their surplus to the national grid, led UTE to lose over generation. In other words, distributed generation is nothing but the way in which part of the public generation became private in Uruguay. On the other hand, this sector is lobbying for greater "market freedom" to sell energy directly to private consumers (leaving UTE aside). They consider self-generation and the sale of energy having an entrepreneurship and "free" nature, immersed in some sort of economic-energetic liberalism that seeks to reduce the state-owned enterprise's central role in generation and distribution. It is important to mention that selling energy in the spot market, which is almost nonexistent in Uruguay, has been unsuccessful for renewables investors. These sectors overtly promote selling energy leaving UTE aside: "Ventus says they can offer a price 25-35% lower [than energy sold by UTE to the industrial sector]" (11 p1). Ventus says it has a share in half of the generation projects and that it has earned autonomy, despite its link with international actors. Another initiative promoted by private actors is the export of energy to neighboring countries, which Uruguay actually did in 2017. In the words of AUTE workers, "Distributed generation comes from this new management of the mix. There are no large power plants, but several wind, photovoltaic or biomass farms spread all over the country. So, one has to build the transmission line. They were going to leave it to private investors, because of investment cuts. UTE had the money to build them, but since it is required to send the money to reduce the deficit, investment was going to come from private actors. They were going to hand over the transmission line to private actors. We prevented that from happening(12)." The particularity of the country is that "public goods" have a lot of weight, backed by strong enterprises, thus the private market has not gained sufficient strength despite the favorable context allowed by regulations. For instance, it is legally possible, although it is not regulated, to contract a private energy provider, but in fact UTE is the only real buyer, who owns and manages transmission lines. In a way, and contrary to what usually happens, the current situation is better than it could be according to the law.

A possible trend in the Uruguayan system is certainly toward a stronger private decentralization. The possibility has legally existed since 1997 under a series of executive orders issued by José Mujica's administration, which have enabled the private sector to compete with UTE. This way to decentralization would lead to the actual commodification of energy and a growing capital influence in concrete terms. Each unit, whether medium or big, with more or less investment capacity —but more than usual investment— would produce its own energy or buy it for a lower price in an electricity market.

In view of this, a decentralization will make sense if it is social-driven, i.e., microgeneration managed by small users. Such is the political sense usually attributed to distributed generation in other parts of the world. There are several objections to this due to different reasons: 1) It is alleged that the scope of the UTE's service does not leave

anybody behind, the line passes through every house, so it would not make sense to decentralize the service even in remote areas; 2) the cost of installing several decentralized solar panels would be higher for citizens than an UTE's concentrated solar installation, and would make no sense given that UTE is a public enterprise; 3) without specific policies, investment would be made individually by high-income sectors, while low-income ones would be left behind. It is more likely that, if generation is left unsupervised, medium to large companies and business, either from urban or rural areas, would be the ones with enough resources to invest in distributed generation. This may turn them into an energy business unit, and would reduce UTE's role as main provider. In fact, this has been the case since the issuing of Executive's order 02/012, which granted tax exemptions to industries investing in microgeneration; 4) smart grids require complex engineering, long hours of work and getting inside the inner activity of a power unit, all of which is unnecessary(13). However, even though all these arguments are valid and reasoned, we believe that if renewables incorporation is not carried out by UTE, it should be in the form of microgeneration carried out alternatively by ordinary citizens, either individually, or through cooperative or community organization.

Arguments in favor of social decentralization are also numerous and diverse: 1) Energy income would return to citizens, as well as the social decision and management of their basic needs even without state control; 2) citizens would get actively involved in the power issue, deciding over their own right to electricity and becoming involved with the environmental and consumption issue; 3) UTE would be able to upgrade and incorporate new technologies, something that has to occur sooner or later; 4) smart grids implementation would provide Uruguay with cross-sectional information, management and consumption control technology, as well as energy sovereignty. The country is actually planning to introduce 300,000 smart meters out of a total of 1.5 million users. The incorporation of information and communication technologies will allow: distribution grids planification and generation forecasting software; electromobility technology, software and devices; management of demand (i.e., smart grids, smart cities) and cloud solutions. Uruguay is moving in that direction, and it should invest in labor-oriented research, development and innovation (RDI); 5) social decentralization can be understood as a citizen-oriented income as opposed to a company-oriented income, and as employment generator. At the same time, the initiative could be coupled, for instance, with UTE's control of solar panels manufacturing and assembling. In this way, it would be possible to create a public-social provision of the new energy paradigm and of the imminent electromobility development. In other words, social decentralization could be the energy foundation of a new postdevelopment model which would benefit civil society. Paradoxically, the country's power tariff cost allows more individuals to enoy the energy supply, while solar thermal power is ideal to reduce consumption.

If we talk about public-social power is because Uruguay offers the stimulating possibility of an articulation between UTE and civil society. Strategically, the system as a whole is following a favorable direction. In short, the lack of fossil fuels will encourage electromobility and a gradual electrification of the mix. Here comes the dividing line, the main debate: whether income appropriation would be private or public, whether technol-

ogy appropriation would be private or public, whether politics in its strong sense would foster a decommodification of energy. In a sense, public policy tends to promote the virtue of the public-social scope of power, but in a disjointed manner: electromobility is being encouraged; there is a program promoting circular economy in the National Directorate of Energy; there was a plan to incorporate solar generation managed by UTE at one point, among other things. However, all these elements lack cohesion as a technology ecosystem, there is little political intention toward a democratization of the power grid, and more importantly, toward an integrated project of a new postdevelopment[3] model and a fair energy transition.

The electrical power system is really universal in Uruguay. In 1975, the electrification rate was 79%, but in 2017 it was almost complete at 99.80%. Therefore, the electricity grid forms part of any power policy in the country. The electricity workers' union even highlights they have promoted an "electrification and social tariff" program through "solidarity squads" that has been welcomed by UTE, boosting workers organization. Nevertheless, a large number of Uruguayans —who pay the highest tariff in South America, set by the Executive and not without "problems"— complain about "energy poverty", since it represents more than 10% of their income (only the richest 20% of the population can be considered technically "excluded" since they spend 9.8% on electricity bills)(14). The tariff is set by the National Executive Power. UTE makes suggestions, but lately the tariff is decided based on macroeconomic variables, regardless of real costs, since —as we have already explained— the state uses it to reduce the fiscal deficit and raise tax revenue. 42% of the energy supplied by UTE goes to residential areas, 19% to medium consumers, and 26% to big consumers(2). However, non-residential users pay less than the rest. This is why it is usually argued that UTE's profits come from lower-income sectors who pay for higher-income ones, when it should be the other way round. In this sense, the tariff is unfair.

Public-social power as creation, innovation and postdevelopment driver

Uruguay has the conditions to undergo a fair transition. The distinctive feature is that the political sector is overdetermined to transform the energy sector. This is supported by and subjected to the predominance of public control, since UTE and ANCAP are state tools and there is no pressure or need to compete against private actors (UTE and ANCAP may even merge in the future, an unheard situation in any other country(15)). This determination is also supported by Montevideo's central power policy direction and by a cross-party agreement on the main points. Besides, there is an automatic trend toward changing the current mix paradigm due to the lack of domestic fossil fuel, and the potential future incorporation of electromobility in order to gain more sovereignty, avoid foreign exchange reserve losses and fight global climate change. In the event both these trends are linked, the challenge consists, then, in ensuring that this political over-

3 - We speak of 'postdevelopment' in terms of dematerialization (more efficiency with less resources), decentralization (democratization and a return to local) and decommodification (dismantling the extended accumulation cycle) as a strategy to achieve prosperity instead of growth.

determination directs the automatic trend toward a fair transition.

Actors of the energy field in Uruguay present a high combination potential. Despite promoting private tenders, the left-wing party Frente Amplio also encompasses politicians who advocate for a stronger public presence. Social Sciences researchers in the Universidad de la República, university of a public nature, also support the current political model (unlike, maybe, the "hard sciences" sector, which has often been at the service of private wind power tenders). Finally, the electricity union AUTE is a spearhead in the energy public control and plays a significant role in the Inter-Union Plenary of Workers. Thus, there is a "political front", a series of labor, political and academic forces —the three most influential actors in politics, public opinion and citizenship in the country— that support public control over energy. In addition, compared to neighboring countries, Uruguay lacks large sectors opposing progressive policies, despite there being a small right-wing sector that proclaims benefits out of free market and competition, and an economic sector composed by small and large companies that have achieved a place in electric power generation.

Yet, we must mention some nuances. On the one hand, it was Frente Amplio itself the one who privatized part of the power generation. On the other hand, the vision inside this political front is not uniform. There is no doubt that AUTE has a clear and comprehensive vision over the public control of energy, but Frente Amplio, the University or even UTE itself are more ambivalent in this respect. This is the reason why it may be interesting to promote spaces for discussion, co-working and general articulation toward the idea of a fair transition, since this does not run smoothly at the moment. At the beginning of 2019, the Executive Power published the 2050 planification strategy "Present and Future of Renewable Energy in Uruguay" (Presente y futuro de las energías renovables en Uruguay), with the participation of many different actors, particularly UTE and the National Directorate of Energy. The text, which does not reflect a public official policy, highlights the need of developing technology for the future and fostering RDI, while reinforces the central role of the public enterprise. But it does not clearly deal with energy income appropriation, public-social linkage based on technology development, or the workers' role(16). However, it is of interest that, since the "progressive sector" is so strong within the energy field, Uruguay still presents privileged conditions for a public-social experiment.

We identify three key lines of action operating at different levels in Uruguay which can be developed: 1) Strongly relate the energy issue with the environmental and postdevelopment narratives; 2) strengthen public control over generation and specific technologies, and promote UTE's technological upgrade; 3) encourage distributed generation and introduction of social-based smart grids as a way of organically appropriating labor and civil society's energy expertise. The possibilities, areas of intervention and consequences of working on each of these lines of action are diverse. Certainly, any initiative toward energy income distribution, the redefinition of an unfair tariff scheme, or power democratization by incorporating residential customers into the decision-making is encouraging. Additionally, Uruguay's singularity enables the possibility, unheard in any other South

American country, of outlining a comprehensive and strategic energy transition plan that allows for public-social control of income, technologies and utility. Finally, we must not underestimate the unprecedented independence conditions offered by a rise in domestic renewables share, considering that —as shown by Reto Bertoni(17)— the energy import model externally hampered Uruguay's growth during the entire 20th century.

Firstly, creating a postdevelopment model and achieving environmental justice requires working on and raising awareness of new emancipation issues. The estimated increase of the demand, projected to be significant until 2035, evidently fails to contemplate policies to reduce or transform the development path. Official projections, based on the year 2015 with 4,500 ktep in use, estimate 6,800 ktep consumption by 2035 —5,800 with efficiency policies. (Projections are calculated with and without the incorporation of a new paper mill, since in the first case, consumption would amount to 7,800 ktep, equal to an extra 13% of energy demand, which would be supplied by the company itself through biomass waste.) It is interesting to notice that, even the most efficient projections do not include advancement toward the electrification of the mix or change in the large share of fossil fuels in it(18). In other words, official estimates do not comprise a decisive energy transition for the future. However, in the long-term, a larger share of renewables should become evident: promoting electromobility would reduce fossil fuels imports as well as consumption in the transport area (main GHG emitter), and would allow a higher energy self-sufficiency.

In the state discourse, the incorporation of renewables basically implies modifying the energy mix under the classic sustainable development pattern to achieve energy efficiency and a potential industry development; i.e., a basic and narrow conception of energy transition. In this sense, the idea of a comprehensive environmental justice under a non-productivism model; the options to increase energy democratization, decommodification of the system or the inclusion of the energy management as a means for a larger-scale social transformation are still pending. A question that underlies this is "Energy for what?", since it makes no sense to reinforce the primary-exporting model. All in all, there are real possibilities to articulate the current conception with that of a radical, comprehensive and fair transition, aimed at reaching a general socio-environmental transition.

In this sense, UTE's greater presence in the generation and manufacturing field results in the consolidation and execution of a public management vision in relation to key actors. UTE's increased public control over energy generation is an achievement of the energy union —it is only fair and promising that AUTE have full say in the company's board. In practice, there is no reason why it should not happen, since UTE guaranteed all the conditions for the generation business which ended up in private hands. In this case, funding problems are smaller than in Argentina or Chile, for instance. Pro-public control allies are strong and participate in the enterprise's board: the electricity worker's union, along with most progressive-thinking sectors within the Universidad de la República. It would be very promising if UTE could control most of the new renewable energy incorporation. At the moment, this incorporation is expected to be solar, so UTE would start controlling, managing and learning to use this type of technology. Undoubtedly, it is im-

portant to underline that any new incorporation should be managed by the public sector.

Within the field of turning resources into energy, a private company has long been trying to assemble solar panels in the mid-western city of Paysandú. If UTE, which is totally capable of doing it, ran this business unit, it would almost control the whole cycle: from the solar source, to technology treatment, to distribution and final consumption. The private-driven, solar panel manufacturing facility, located in the Argentine province of San Luis —LV Energy— generates 12 MW annually, almost the same amount of solar energy Uruguay intends to incorporate per year. A similar consideration could be made regarding biotechnology. In the future, there will inevitably be a deeper interrelation among information technologies, renewables incorporation and the power grid, leading to a struggle between labor expertise and private accumulation. Besides, a growing management of solar power generation and of state-of-the-art information technologies by UTE and its workers would be enough reason to inhibit new incorporations under the aegis of private capital, while generating the required technological pace to avoid it. Moreover, we are talking about an industrial-technological ecosystem that goes beyond service provision —an element of marginal relevance which the promotion of "a national industry" has derived in until now. What is more, solar power is also a privileged way of social access to energy management and generation, so it would be beneficial that UTE could work with civil society, resulting in an eventual dissolution of the state into the society, which is the ultimate goal of politics.

At this point, the intersection between smart grids and social distributed generation opens a debate, basically because it is not a priority for UTE or the state —which has recently released a technical report discouraging and complicating microgeneration(19)—. It is not a priority for AUTE either, which associates distributed generation with large-scale private investment in the grid as well as the loss of the public sector's classic predominance because that is what has happened in practice. In addition, the distributed generation often relates to the asymmetry caused when applied to wealthy, self-regulated spaces, such as joint properties, or the interference over private properties through smart grids. As we have already discussed, the private sector includes both large companies, with potential to develop into large generators, and large private companies that, given certain market conditions, may opt to become self-sufficient or execute a special power purchase contract with another private player. Although these private companies do not have a lot of weight —essentially because UTE controls the grid and more than half of the power generation—, a government with a different vision may change this landscape. The fact that sectors challenging UTE's public dominance favor a line of action that comprises the alleged negative consequences of a private decentralization is precisely the reason why a public decentralization and a technological recentralization can be a strategic alternative plan. Clearly, the question is whether distributed generation will entail a consolidation of private actors and their accumulation, or will instead create a large social mass devoted to self-produce energy as a means toward redistribution. The challenge is to find a way in which decentralization and deconcentration do not endanger UTE's public-social linkage with Uruguayan civil society. We can take into account the link between cooperatives and energy generation. The cooperative movement in general

is quite strong throughout the country —not specifically in the energy sector, but in other areas, such as housing— and it could incorporate energy generation to its operations.

The incorporation of new information technologies and the rise of electromobility will occur naturally in Uruguay, leading to a gradual but steady intensification of the electricity grid. The country's public-social power has the potential to grow in the long run through social decentralization, control of renewable energy technologies, and management of smart grids information technologies. Information technologies will become a top-notch cross-system element within the energy system, allowing strong connections with the state-run telecommunications enterprise ANTEL. The other side of the coin is that UTE could continue losing management over a new smart and decentralized energy pattern, emphasizing the trend followed by a privatization of the power generation. The three perspectives that we have discussed, connected and underlined in this paper form a combined action strategy that can precisely avoid the latter scenario. We will say it one more time: far from replacing UTE's public centrality with a private self-supply generation policy, the key is to replace it by a strategic medium-to long-term policy for public-social decentralization as opposed to capital-driven decentralization, since the former has the potential to avoid the latter. (We must mention that the latest news when we were finishing this paper regarding Lacalle Pou administration's intent of privatization opens a new worrying and uncertain scenario.) UTE has still to gain control of a large portion of the transportation sector, which is currently hydrocarbon-intensive, and it is more likely that distributors become managers of information technologies networks instead of energetic power in the long-term. The goal is, then, that the new-energy paradigm be controlled by the political capacity at citizen level. In short, that the working class be the agents of innovation.

Referências

1. Dirección Nacional de Energía. Política Energética 2008-2030. Montevideo. Recuperado de: https//www.eficienciaenergetica.gub.uy

2. UTE. UTE en cifras 2017. Montevideo, 2018.

3. Fornillo, B. Entrevista a Nicolás Weimberg. MIEM, Montevideo, 2018.

4. Esponda, F, Molinari J. La dimensión contable de la revolución eólica uruguaya. En: 6th Latin American Energy Economics Meeting : 2016, Rio de Janeiro, Brasil.

5. Uruguay destacado en París por el uso de energía renovable. El Observador (Uruguay). 5 de diciembre de 2015. Recuperado a partir de: https://www.elobservador.com.uy

6. UTE pagó unos 59 millones de dólares por energía eólica que no utilizó. El Observador (Uruguay). 4 de enero de 2018. Recuperado a partir de: https://www.elobservador.com.uy

7. Fornillo, B. Entrevista a Patricia Calas. Universidad de la República, Montevideo, 2018.

8. Fornillo, B. Entrevista a Julieta Santibañez. MIEM, Montevideo, 2018.

9. Fornillo, B. Entrevista a Mariana Dieguez, MIEM, Montevideo, 2018

10. Fornillo, B. Entrevista a Jorge Dosil. Gerente de generación eólica de UTE (En: Saraleguy, C. Generación de energía eólica en manos de privados. El Estado y los nuevos desafíos. Tesis (Licenciatura en Desarrollo): Facultad de Ciencias Sociales, Universidad de la República, Uruguay, 2016.)

11. Exceso de renovables: privados solicitan en Uruguay alternativas comerciales. Energía Estratégica (Buenos Aires). 7 de marzo de 2017. Recuperado a partir de: https://www.energiaestrategica.com

12. Fornillo, B. Entrevista a Sabina Reig. Integrante de AUTE, Montevideo, 2018.

13. Fornillo, B. Entrevista a Diego Flores. Grupo Comuna, Montevideo, 2018.

14. Jimenez, R, Yepes, A. Understanding the Drivers of Household Energy Spending: Micro Evidence for Latin America. Washington: Working paper series Nº IDB-WP-805, Banco Interamericano de Desarrollo (BID), 2017.

15. Fornillo, B. Entrevista a Martina Petra. ANCAP, Montevideo, 2018.

16. Dirección de Planificación. Presente y futuro de las energía renovables en Uruguay. Hacia una estrategia nacional de desarrollo Uruguay 2050. Montevideo: Volumen 10, Presidencia, 2019. Recuperado a partir de: https://www.opp.gub.uy

17. Bertoni, R. Energía y desarrollo : la restricción energética en Uruguay como problema (1882-2000). Uruguay: Universitarias; 2011

18. Dirección Nacional de Energía. Prospectiva de la demanda energética. Planificación, Estadística y Balance. Montevideo, 2018. Recuperado a partir de: https://www.miem.gub.uy

19. Olave, M, Giacosa, D, Albornoz, L, Vidal, D, Scarone, M, Sierra W. Desarrollo del autoconsumo de clientes regulados en Uruguay. Montevideo: Mimeo, 2018.

Bruno Fornillo

✉ bfornillo@gmail.com

https://orcid.org/0000-0001-5393-7233

Submitted on: **12/04/2020**

Accepted on: **09/09/2020**

2021;24e:02291

How to cite: Fornillo, B. Energy transition in Uruguay: market dominance or public--social power? **Ambiente & Sociedade.** São Paulo, v. 24, p. 1-15, 2021.

Revista AMBIENTE & SOCIEDADE

SciELO

Transição energética no Uruguai: domínio comercial ou poder público-social?

Bruno Fornillo

São Paulo. Vol. 24, 2021

Dossiê Especial: Territórios de Energia

Resumo: O artigo caracteriza as causas que levaram à recente incorporação de energia renovável no Uruguai, indaga sobre a predominância da propriedade pública ou privada, o tipo de descentralização que a nova energia promove e diagnostica o tipo de modificação do modelo de desenvolvimento no país. Um dos objetivos do artigo é discutir como a transição energética é pensada no país e em geral. Construída com base na bibliografia secundária e em várias entrevistas, a hipótese central é que o Uruguai realize uma renovação de sua matriz energética, mas tem condições de fazer uma transição energética justa com base no poder público-social do país.

***Palavras-chave*:** Transição energética, Uruguai, UTE, desenvolvimento

Como citar: Fornillo, B. Transição energética no Uruguai: domínio comercial ou poder público-social? **Ambiente & Sociedade**. São Paulo, v. 24, p. 1-15, 2021.

DOI: http://dx.doi.org/10.1590/1809-4422asoc20190229r1vu2021L1DE

Revista AMBIENTE & SOCIEDADE

SciELO

Transición energética en Uruguay: ¿dominio del mercado o potencia público-social?

Bruno Fornillo

São Paulo. Vol. 24, 2021

Dossier especial: Territorios de energía

Resumen: El artículo caracteriza las causas que llevaron a la incorporación reciente de energía renovable en Uruguay, se pregunta por el predominio de la propiedad pública o privada, por el tipo de descentralización que promueven las nuevas energías y diagnostica el tipo de modificación del modelo de desarrollo en el país. Uno de lo objetivos del artículo es discutir cómo se piensa la transición energética en el país y en general. Construido en base a bibliografía secundaria y múltiples entrevistas, la hipótesis central es que Uruguay ha encarado una renovación de su matriz energética, pero posee condiciones para terminar por dirigirse hacia una transición energética justa asentada en la potencia público-social del país.

Palabras-clave: Tansición energética; Uruguay; UTE; desarrollo.

Como citar: Fornillo, B. Transición energética en Uruguay: ¿dominio del mercado o potencia público-social? . **Ambiente & Sociedade**. São Paulo, v. 24, p. 1-15, 2021.

DOI: http://dx.doi.org/10.1590/1809-4422asoc20190229r1vu2021L1DE