ИННОВАЦИОННАЯ ЭНЕРГЕТИЧЕСКАЯ ПОЛИТИКА ПО РАЗВИТИЮ ВОЗОБНОВЛЯЕМЫХ ИСТОЧНИКОВ ЭНЕРГИИ В СТРАНАХ ЛАТИНСКОЙ АМЕРИКИ И КАРИБСКОГО БАССЕЙНА

Никитина А.С.

кандидат социологических наук, старший преподаватель кафедры управления персоналом Уральского института управления – филиала, Российская академия народного хозяйства и государственной службы при Президенте Российской Федерации (Россия), 620990, Россия, г. Екатеринбург, ул. 8 марта, д. 66, alena.nikitina@uapa.ru

Ибарра П.-Ч.

помощник Посла Республики Эквадор в России, аспирант, ассистент кафедры административного и международного права, Белгородский государственный университет (Россия), 308015, Россия, г. Белгород, ул. Победы, д. 85, alena.nikitina@uapa.ru

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Цель. Анализ государственной инновационной энергетической политики «Зеленая экономика» стран Латинской Америки и Карибского бассейна и поиск источников инвестирования, необходимых для реализации исследуемой энергетической политики.

Методы. Исследование базируется на методах сравнительного анализа государственных экономических инструментов, используемых для поддержки и развития возобновляемых источников энергии в странах Латинской Америки и Карибского бассейна. Для проведения расчетов использовались методы экономико-статистического анализа.

Результаты и практическая значимость. Выявлены тенденции развития инновационной энергетической политики, в частности, в направлении развития возобновляемых источников энергии в странах Латинской Америки и Карибского бассейна. Определены наиболее эффективные источники инвестирования латиноамериканской энергетической политики. Сформулированы рекомендации по успешному переходу к инновационной энергетической политике.

Научная новизна. Предложены оригинальные суждения по развитию возобновляемых источников энергии в странах Латинской Америки и Карибского бассейна. Доказана перспективность применения новых каналов финансирования энергетической отрасли на латиноамериканском рынке. Представлены практические рекомендации по оптимизации энергетической политики.

Ключевые слова: инновация, инновационная энергетическая политика, возобновляемые источники энергии, Латинская Америка, Карибский бассейн.

INNOVATIVE ENERGY POLICY ON DEVELOPMENT OF RENEWABLE ENERGY SOURCES IN LATIN AMERICA AND THE CARIBBEAN

Nikitina A.S.

Candidate of Science (Sociology), senior lecturer of the Personnel Management Department of The Urals Institute – Branch of the Russian Presidential Academy of National Economy and Public Administration (Russia), 66 8 Marta str., Ekaterinburg, Russia, 620990, alena.nikitina@uapa.ru

Ibarra P.-Ch.

Assistant of Ecuador Republic Ambassador in Russia, post-graduate, assistant of the Administrative and International

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Law Department, Belgorod State University (Russia), 85 Pobedy str., Russia, 308015, alena.nikitina@uapa.ru

Purpose. Analysis of state innovative energy policy "Green economy" of Latin America and the Caribbean and search of the investment sources needed for implementation of the researched energy policy.

Methods. The research rests on comparative analysis methods of public economic tools used for support and development of renewable energy sources in Latin America and the Caribbean. The authors used economic-statistical analysis methods for performing calculations.

Results and practical importance. The authors identified development trends of innovative energy policy, in particular, in development of renewable energy sources in Latin America and the Caribbean; determined the most efficient sources for investing Latin-American energy policy; spelled recommendations on successful transition to innovative energy policy.

Scientific novelty. The authors proposed original judgment on development of renewable energy sources in Latin America and the Caribbean; proved prospective viability of using new financing channels of the energy branch on a Latin-American market; introduces practical recommendations on energy policy optimization.

Key words: innovation, innovative energy policy, renewable energy sources, Latin America, the Caribbean.

The transition from coal economy to a green economy is not going to do it automatically. The process requires significant investments, as this will involve modifying patterns of production and consumption, but also the direct intervention of the state in which public policies have a central role to play. In this section we will focus on public policies that could be developed to promote the transition to a green economy and proceed to present an overview of the types of investments that the region needed to realize the potential of going to a green economy.

This document describes three policy instruments that have been used to support the development of renewable energy in the world and Latin America could take to boost your resolute transformation towards a green economy are identified.

First is regulatory policy, which relies on instruments such as guaranteed prices, or allocation of market shares through quotas or government mandates. For example, we refer to feed-in tariffs, quota obligations on electricity (utility quota obligation) network measurements (net metering) marketable obligations and mandates or renewable energy certificates.

Second is fiscal policy, which uses incentives and subsidies. Its goal is to reduce costs and improve the relative competitiveness of renewable energy technologies through capital grants, allowances and rebates, tax incentives and payments to renewable energy production.

Third are the direct government funding, where the availability of funds for the development of renewable energy sources is essential to the continued growth of the same. There are two methods of public financing in which governments assist in the allocation of capital necessary to the renewable energy sector, in public investment at subsidized rates through loans, grants or public tenders to favor the use of renewable energy.

In Latin America, as elsewhere in the world, the number of countries that have implemented policies to encourage and stimulate the generation and production of renewable energy has increased steadily and the policy instruments used for this purpose are become more sophisticated over time and to the extent that major elements has analysis and technological advancement.

In early 2011, according to the Renewable 2011 report published by REN21, 17 countries in Latin America used some type of policy to support renewable energy generation, for which have been implemented in all 61 building measures to this end. The policies most used were: tax incentives (30 measures), followed by regulatory policy (17 steps) and finally public funding (14 measures) [1]. Meanwhile, in the case of Barbados, Cuba, Grenada, Guyana, Haiti, Jamaica, Paraguay, Suriname and Venezuela is not the application of such policies is recorded.

In terms of policy instruments applied by countries, Argentina has the leadership to implement 7 of the 12 instruments analyzed, followed by Peru with 6 and El Salvador to 5. In general, the Latin American average is 4 instruments per country [3].

As shown in the above summary table, there are still a number of regulatory instruments that have been little explored in ALC, namely, mandates and obligations for the use of renewable energy in heating and tradable renewable energy certificates, which shows that until now no country has implemented FTAs [2]. Additionally, portfolio standards for renewable or share of renewable, the regulation requiring that a minimum percentage of sale or installed capacity is provided by renewable energy) and network measurements are currently underutilized in LAC since only two countries (Chile and Uruguay) use the first instrument and 2 other (Mexico and Guatemala) the second.

Investment Flows in renewable.

It is essential that Latin America as a region to in-

vest in the development of renewable energies. As noted by both the (United Nations Environment Program), UNDP and the OECD, this investment will be the best way to ensure that growth and jobs are maintained, as this will increase the chances of natural resources maintained for the use of future generations. We examine where the region is in terms of its investments in renewable energy.

In 2010, total investments in renewable energy in LAC were 13.1 billion dollars, ie about 9.2% worldwide. This placed it in terms of blocks, in fourth place, still far from North America, Europe and Asia / Oceania.

In regional terms, Brazil's share is 52.7%, Mexico 17.7%, 7.3% Chile, Argentina and Venezuela 5.0 5.6% of total investments in renewable energy in 2010 [4].

The largest increase in Latin America was achieved by Mexico (348%). This growth was the result of successful financing of large wind projects and geothermal project, due to the government announcement to increase renewable energy targets of 3.3% to 7.6% in 2012 [5]. Investment in Argentina increased 568% to $ 740 million investment in Peru doubled to $ 480 million and Chile showed an increase of 21% to $ 960 million.

The spectacular performance of Brazil in renewable energy investments is the result of a financing policy focused by its development bank (BNDES). The result of this funding policy, in 2010, was the second BNDES development bank in the world to finance renewable energy projects ($ 3.1 billions), just below the European Investment Bank ($ 5.4 billion USD) [6]. The activity of the BNDES in 2010, double the level recorded in 2007, however, its record high was reached in 2008 when investments in the ethanol sector were at their peak.

Investments in renewable energy have generated significant economic benefits to private industry in the region. For example, Brazilian companies are emerging as major producers of solar water heaters, product promotion policies that sector. In 2010, Brazil's production of solar panels reached nearly one million square meters, ie an increase of 20% compared to previous years. Now the industry is approximately 200 manufacturers and 1000 installers.

Brazil ranks third in the world market for solar water heaters. In 2010, they were installed 1 million square meters of solar collectors. In Germany, 1.2 million were installed and in China was 50 million square meters. Brazil has a long history since 1994, mainly in social applications and public lands. The big driver of these technologies is the state power company, which generally donates computers to poor families. This company is obliged to spend 0.5% of their earnings (or revenues) for social applications for energy efficiency. For this efficiency are two main programs: the installation of solar water heaters and refrigerators change. Moreover, the federal government under the "Minha Casa, Minha Vida" program gives high quality heaters. Families who are not poor have the option of financing for 15 years [7]. This Brazilian social program plans to install 300 to 400 thousand solar water heaters in public housing. The goal of the Brazilian government is to achieve 15 million m2 of solar collectors in 2015, to a current total of 6 million m2 in 2010 [8].

In Brazil, biodiesel production increased 50% in 2010, mainly in response to a mandate from the national biodiesel blend of 5% which was established in January 2010. By the end of 2010, there were 68 biodiesel plants operating in Brazil. The largest companies in the country are Granol, Brazil Ecodiesel Caramuru ADM Petrobras and Brazil [9].

One of the fastest growing industries of biodiesel is in Argentina, where 23 suppliers of this product have responded to the need to enhance national mix of B5 to B7. The sector's growth was driven by the depreciation of the peso and a strong crop of soybeans. The largest companies in Argentina are YPF, Shell, Petrobras and That.

In Brazil, the developer Curcas led coalition launched the largest plant for aviation bio-kerosene in the world along with BP, Airbus, TAM Airlines and Brazil Ecodiesel. The producers of advanced biofuels such as Amyris, ClearFuels, Sapphire Energy, Solazyme and Solena Fuels has focused his attention to aviation fuels.

An additional benefit of investment in renewable energy is creating jobs. In 2010, it is estimated that more than 3.5 million people were employed in the renewable energy industries. In Brazil, these benefits can be seen in the biofuels industry with nearly 730,000 jobs in the plantations of sugarcane and ethanol production, ie about 50% of employees in the world working in this sector. In the wind sector, Brazil employs 14,000 workers [10]. Therefore, the renewable energy industry is very important for countries that encourage and make it grow, and a sector that is just in the process of developing employer sector.

PROPOSALS AND RECOMMENDATIONS TO SUPPORT THE TRANSITION TO A GREEN ECONOMY IN LATIN AMERICA

Latin America and the Caribbean must find a way to move towards a green economy. There seems to be a better option for sustained and sustainable growth. There is consensus that carbon based economy is reaching its limits and its effects on the quality of life of the population have led to exacerbate poverty and inequality in Latin America.

The region has inputs in the energy sector to move towards that goal. To do so requires the direct intervention of the state through a series of public policies that facilitate and encourage the transition. But it is not only the transition to a green economy: the issue is the need to make this an inclusive transition. Latin America can not move forward without reducing the large gaps of inequality. The passage of a marón economy to a green economy will in-

volve adjustments that might result in unemployment from the processing activities of carbon-intensive production to an economy with a technology that favors renewable energy. This transition process can be expensive to the most vulnerable sectors of society. Are required by the state policies are in place to ensure adjustments in employment and training for the workforce has the possibility to perform in the green economy. Equally important will cater to those sectors that might lose their viability (the intensive use of fossil fuels) by adopting new technologies and cleaner energy.

Then the Permanent Secretariat offers a series of proposals to ensure that the region has more elements of analysis on the subject. In particular, it is of relevance and urgency to consider the region's own characteristics, and individual countries, as well as its potential to move towards a green economy as effectively as possible from their own potential and incorporating its programs and policies, the concept of green economy.

The proposals made by the Permanent Secretariat in this document to support the region aimed at promoting discussion and development of policies and programs that have a high impact and sustainability over time. The following areas of action are considered:

1. Inventory of basic elements needed for creating a green economy. Contrasting definitions and concepts of green economy and green growth from its normative and positive definitions and provide elements that can support a redistributive green economy in the region.

2. Develop the array of green energy at the regional level to develop policies that support the transition to a green economy redistributive. This will definitely be the staple as an input for each country in the region to convert to a green economy Having said die also will identify where it should target the efforts of public policy in regulatory terms, and in terms of investments to be made. Also those countries with the best green energy matrix may be developing their sectors to participate in the transition from other countries, which would open business opportunities and jobs.

3. Conduct a study on natural capital in LAC and its relation to the carbon energy sector in order to identify the potential of the region to move towards a green economy.

4. Define subject areas and projects where you can add the comparative advantages of each country and region to develop proposals that will lead to the adoption of mechanisms that lead us to adopt a green economy.

5. Conduct a study to propose mechanisms for monitoring of projects and programs that support the efficient use of energy as well as the establishment of indicators to assess their effectiveness for the transition to a green economy.

6. To promote actions among LAC countries for coordination between the responsible national institutions, enabling the exchange of information and experience on implementation-oriented economies in the region are sustainable in the long term programs.

7. To propose the development of sectoral programs for industries such as steel and transport in each country with the participation of ministries and agencies responsible for the energy sector and associations and chambers of the productive sector, so as to promote comprehensive policies that lead to adoption of green economies.

8. Identify innovative funding sources to develop new projects, as well as tax incentives and subsidies to promote the use of technologies that support a green economy.

9. Develop South-South and triangular cooperation based on an analysis of supply and demand existing experiences towards the adoption of a green economy and from renewable energy potential that already have the various countries of the region.

10. Dissemination of programs and projects focused on the green economy in the region, to promote successful experiences, identify challenges and refocus existing programs.

SELA can be ideal for domestic managers of the different policies and areas involving the transition to a green economy partner. SELA, as a space for discussion and analysis on this subject, can be a facilitator to promote expert analysis, so that they can get specific recommendations, always considering the development of inclusive policies. This SELA could perform the following activities:

1) Seminars for trend analysis and conceptualization of the green economy to clarify proposals and ideas, both government authorities and productive, academic and civil society sectors.

2) Conduct studies that provide elements of analysis to countries that seek changes in tax, energy, agriculture, education, science and technology and environmental policies, among others, and adopt best practices that will actually enable the transition to a green economy inclusive.

3) Convene experts to allow a debate to take place and proposals that support the systematization of information through indicators, which in turn allow better assessment of the impact of the green economy in every country in Latin America to develop and Caribbean.

4) Prop the outreach work programs that exist in the region to support the transition to a green economy in the SELA website.

CONCLUSIONS

UNEP (United Nations Environment Program) found that a green economy values and invests in natural capital to generate the same level of growth and employment than a brown economy performing better than this medium and long term and generating significantly greater

environmental and social benefits. For its part, the OECD focused their discussion on green growth as a new form of production in order to sustain economic growth and maintain living standards achieved. Contrasting these definitions, one could point out that both concepts are integrated and share the same theoretical and factual bases. However, green growth emphasizes incentives and the search for new sources of growth through innovation, productivity, new markets, trust and stability, while the green economy gives priority to the role of government, the framework regulatory and legal momentum to both private and public investment and its effects on certain sectors.

Furthermore, the paper the concept of the green economy as a redistributive mechanism or instrument discussed for achieving sustainable development. What the Permanent Secretariat is intended to provide the experience that Latin America already has from decades of analysis of the causes of growth and redistribution effects. Whereas Latin America is the most unequal region in the world, SELA considered not enough to seek to move towards a green economy, but the process should be such that the gaps of inequality can actually be reduced. Here, the green economy has to focus on the economic imbalances of income and opportunities for the countries of Latin America.

To address these imbalances and lags present in America Latina, SELA recognizes that go towards a green economy is no easy task, so it requires assistance from the public and private sectors to carry heavy investment, which will surely have to look beyond the local level and resort to sources of international economic and technical cooperation. It also requires a set of public policies that promote the transition but also cushion the adjustments resulting from the transition. The move from a carbon economy to a green economy will not do automatically. The process requires significant investments, as this will involve modifying patterns of production and consumption, but also the direct intervention of the state in which public policies have a central role to play, particularly fiscal, regulatory and financing. The state must develop policies and programs to ensure the best way to avoid severe mismatches in labor markets that might be generated when you move toward new forms of production. In this regard it is of vital importance that the State provides mechanisms for workforce training and retraining of field production, fisheries, industry and various service sectors.

No doubt that Latin America has an energy mix that could very well move towards an array of renewable and clean energy, but there is certainly need for investment. Today clearly dominates carbon energy ie oil, natural gas and coal which are important generators of CO2. In fact, there are 5 countries in Latin America where the primary energy supply is already fully renewable, namely, Grenada, Guyana, Haiti, Panama and Paraguay. In terms of green energy Paraguay, Costa Rica, El Salvador, Panama and Uruguay have an offer greater than 30% green and renewable energy. The challenge is to change the energy matrix composed of carbon to renewables; as seen, some countries have already done. The region has the potential to convert its energy from coal to green if you want to go to a green economy with new technologies and production methods. The coal-based economy is reaching its limits and its effects on the quality of life of the population have led to exacerbate poverty and inequality in Latin America. What does not seem feasible is to maintain the status quo.

This document SELA has sought to contribute to the debate and to inform the countries in their definitions of public policy. The proposals will be refined as we go implemented. The process has already started, but it takes a major boost from the state policies and targets already defined. Latin America and the Caribbean can not afford to fall behind in this movement, much less leave behind large segments of the population, making it more urgent consideration to a green economy with a real social face.

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