

SDG7 Technical Advisory Group

Policy Brief on Advancing SDG7 in Latin America and the Caribbean

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Lead author: UN ECLAC

SDG 7 LATIN AMERICA AND THE CARIBBEAN POLICY BRIEF

ECLAC contribution to the HLPF

Energy in LAC region constitutes a development driver based on innovation, efficiency and renewability that contributes to the economic recovery of the region with the development of value chains, the generation of quality jobs and the reduction of GHG emissions.

Recent external shocks highlighted the fragility of energy production, especially in countries that are net importers of fossil fuels and in those with low diversification their renewable energy matrix. In this context, LAC needs to accelerate the transition towards renewable and clean energy sources, electrify the energy matrix, enhance the potential of energy efficiency and universalize coverage with quality and without intermittencies to increase resilience and, therefore, energy security.

1. Challenges to promote sustainable and inclusive energy transition in LAC

1.1 Access to electricity services and energy poverty in Latin America and the Caribbean (Target 7.1)

The region shows significant progress in access to electricity in recent decades, reaching 97.6% of the population in 2021 (OLADE, 2022), while access to electricity from clean energy sources was close to 88% in 2020 (UN STATS, 2023). However, the impacts suffered during and after the pandemic and the war in Ukraine have resulted in an increase of vulnerability and have amplified inflation through the costs of energy and transportation of goods and services, specifically affecting the most vulnerable quintiles of the population. And thus, intensifying energy poverty¹.

Vulnerable households are those with the greatest lack of access to quality energy services, due to accessibility or affordability problems. Most of the 16.1 million people who are not connected to electricity in LAC (OLADE, 2022), live in rural and remote areas where the costs of extending networks and infrastructure are high. In addition, the most vulnerable quintile of the region has 9 times less access to electricity than the one with the highest income, this gap is triplicate in the rural population. At the same time, 78 million people do not have access to clean cooking fuels and technologies (UN STATS and CEPALSTAT, 2023).

Indicators prior to the pandemic already showed that households allocate a high proportion of their spending to fuel, which could reach up to 10% of total spending. Electricity can reach up to 5% of household spending, and in most countries the percentage can be up to 4 times higher. The region's indigenous and Afro-descendant populations are among the most vulnerable. There are gender inequalities that are reflected in the impossibility of accessing clean energy sources for cooking and in the acquisition and administration of energy for the households (firewood, biomass).

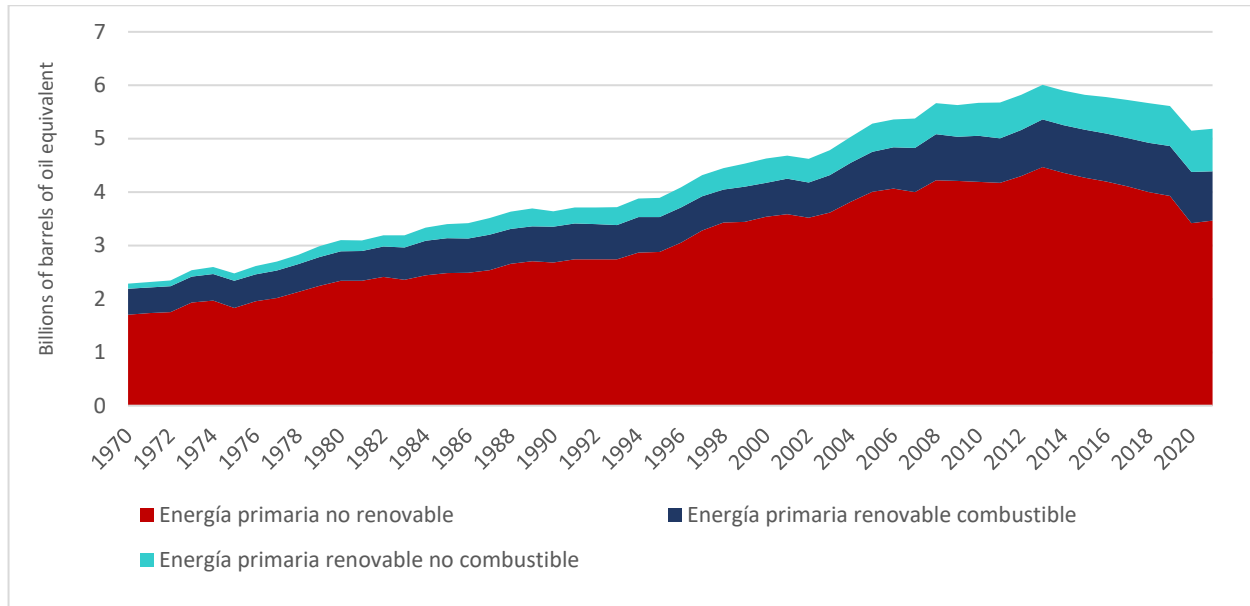
To overcome energy poverty, it is important to improve not only the quality of access but also to ensure reliability in sustainable sources for the most disadvantaged and remote sectors.

1.2 The rapid growth of renewables in a remaining fossil fuel matrix (Target 7.2)

In 2021 Primary Energy Supply relied predominantly in fossil sources (66.8%) (OLADE, 2023) although a rapid increase in renewable sources can also be seen (Graph 1). Transport is the main final consumer (36%), almost completely based on fossil fuels, followed by industries (29%) and the residential sector (18%).

¹ The concept of energy poverty refers to the **insufficient satisfaction of energy needs**, which encompass standards of equitable access both in quantity and quality (lighting, air conditioning, cooking and maintenance of food, information and communication technologies, and affordable rates, among others).

Graph 1. Latin America and the Caribbean: renewable and non-renewable primary energy supply, 1970-2021



Source: OLADE, 2023: SIELAC online database.

The primary supply of energy in Latin America and the Caribbean grew 2.3 times² in the last 50 years, accompanying the expansion of the economy and the needs of households, while the energy intensity of the GDP of the entire region has slowly decreased.

During the same period, the share of renewable energy sources in total primary energy grew faster reaching 33.2% in 2021. The renewable energy sources that have the greatest weight in the region are hydroelectricity (75%) and then solar, wind, biomass and geothermal (which together represent 25%). Within renewable energy sources, a distinction must be made in the region between a) those that require combustion and generate a certain degree of emissions, i.e., firewood and bagasse, because they represent more than the half (56% of renewables by 2021).

The electricity subsector, with a growing proportion of renewable sources, has a great capacity to decarbonize³ the energy matrix in the region. The current level of renewable electricity generation in the region reaches an average of 59% by 2021. Although the values are highly heterogeneous between countries, both the supply and the demand for electricity are expected to grow in LAC, with a strong expansion of its capacity expected. renewable portion.

During In 2021, renewables and in particular wind and solar continued to expand further, in total 23.5 GW of new capacity for electricity generation were installed, with 81% based on renewable energy. Of this total, 4.5 GW correspond to non-renewable thermal power plants, while 5.9 GW to wind power plants, 9.8 GW to photovoltaic power plants, 2,423 GW to hydroelectric power plants, and the rest to renewable thermal power plants (biogas and biomass). (OLADE, 2022).

² From 2,280 million to 5,183 million barrels of oil equivalent (OLADE)

³ As is known, LAC's contribution to global GHG emissions is limited (5-8%), but countries have committed reductions through NDCs, but these are being implemented more slowly than expected by UNEP (2022). In the case of LAC, the investment efforts would have to be multiplied by 8 to cover the mitigation needs committed in the NDCs and thus achieve the goal of 1.5 degrees (Ibid).

1.3 Energy intensity and efficiency and its effects on production and industrial processes (Target 7.3)

Regional energy intensity has decreased by 17% in the last three decades (OLADE 2023, CEPALSTAT 2022). Transport is the only sector that has experienced a slight increase in efficiency, in response to rising relative prices of fossil fuels, as well as technological improvements and stricter regulations. It is important to highlight that transportation uses 36% of the energy in the region. On the other hand, the manufacturing industry, agriculture and commerce present a slight downward trend in their energy efficiency. This lag is partly explained by a series of structural barriers that include insufficient information, inadequate regulatory and incentive frameworks, lack of access to specialized services, and low access to financing. Most energy efficiency measures were implemented in LAC countries after 2010 and around 40% are applied in the residential sector.

4. Strategic opportunities for the energy transition in LAC

4.1 Renewable electrification of transport

Transportation accounts for the highest energy consumption and is almost entirely based on fossil fuels. Thus, GHG emissions from transport represent a high percentage of total emissions from energy. At the same time, electromobility represents an opportunity to reduce emissions in urban areas. It is estimated that renewable-based electromobility in LAC could avoid around 1,341 million tons of CO₂ in 2050 (ECLAC, 2022). The potential for reducing CO₂ emissions in 4 important cities in the region (Bogotá, Buenos Aires, Sao Paulo, and Mexico City), reaches 80 million tons of CO₂ per year in passenger vehicles and 2.27 in buses. This represents, on average, a reduction of almost 17% of national emissions from the transport sector.

In the region, 27 of the 33 countries have prioritized the transport sector as a central element to achieve their GHG emissions reduction goals in the Nationally Determined Contributions (NDC). Most have legislation that encourages the entry and use of electric vehicles. Additionally, they have included mobility strategies, ie, through public policy and legislation on products and services related to electromobility, although still on an insufficient scale; in the electric mobility strategies themselves; or within productive development strategies. Since 2020 there has been clear progress in the installation of electric vehicle charging points (both public and private). In addition, certain companies are *retrofitting* buses and vehicles that have reached the end of their useful life, adapting electric motors and in some cases manufacturing them for new mobility solutions.

4.2 Green hydrogen

To promote renewables in LAC, it is necessary to strengthen the development of the new green hydrogen (H₂V) industry⁴, which is produced with renewable energies such as solar, wind and hydroelectric, highly available in the region and at very competitive costs. H₂V is a highly flexible energy source suitable for its use in high energy intensity sectors, such as heavy industry (cement and steel) and transport (cargo, shipping, and aviation). Therefore, using H₂V as a storage of solar and wind renewables, or as energy, contributes to the decarbonization of the electrical matrix, transport, and industries.

The H₂V industry is strongly starting its development in the region. In 2022, 12 H₂V projects are counted in operation in Argentina, Brazil, Colombia, Costa Rica, Chile, and Peru, using H₂V in transportation (buses, trucks, and shipping), reinjection of electricity and mining (replacing diesel). Additionally, there are 71 projects under the development phase in the same countries as well as in Bolivia, French Guyana, Mexico, Paraguay, and

⁴In 2021, 95% of the hydrogen supplied globally will be produced from fossil fuels, not green. LAC produces 5% of the world's gray hydrogen (from natural gas reformed by steam), used as raw material in the production of ammonia, methanol and steel, and in refineries.

Uruguay. Countries are developing this industry, led by Chile, with a potential to produce 160 million tons of H₂V per year. Large part of the countries in the region have strategies or roadmaps for the development of H₂V or are in the process of preparing them.

H₂V constitutes a very important innovation industry for the energy transition in the region that has a large supply of renewable energy, technological and engineering capacity to develop and capture added value throughout its entire value chain, which is the great challenge to decarbonize, promote the energy transition and at the same time reactivate the economies.

4.3 Critical minerals to increase renewables

To advance towards the renewable energy matrix, the development of infrastructure for production, storage, transmission, and the electrification of transport is required. The main clean and renewable energy technologies are more intensive in minerals, called 'critical'⁵ for the energy transition, as well as for electromobility.

The energy transition will increase the demand for these minerals, which are particularly abundant in LAC. The region is home to 51% of the world's lithium reserves, 38% of copper, 22% of natural graphite, 39% of silver, 17% of nickel, zinc, and rare earths. The region is also responsible for 40.6% of world copper production and 32.2% of lithium⁶. It is estimated that, in the Sustainable Development Scenario to achieve the objectives of the Paris Agreement, the world demand for lithium can grow up to 42 times by the year 2040, taking 2020 as the base year, that of graphite 25 times, cobalt 21 times, nickel 19 times and copper 2.7 times (IEA, 2021).

According to ECLAC estimates, the expansion of electrical capacity in Latin America by 2032, guided by renewable sources and in a scenario of regional integration, will require 47 GW and 75 GW of solar photovoltaic and wind generation, respectively. To reach this capacity, between the generation and transmission facilities, a demand of 611 thousand tons of copper, 53.3 thousand tons of nickel, 2.5 thousand tons of cobalt, and 2.1 thousand tons of lithium are projected⁷.

Conclusions

Latin America and the Caribbean presents substantial progress with respect to the overall achievement of SDG7, access to energy services are relatively high and the proportion of renewable energy within the energy matrix increased significantly (although remains mainly fossil and vulnerable). On the other hand, multidimensional energy poverty persists and there are no significant advances regarding energy efficiency, these regional challenges also constitute transformative opportunities in which immediate action must be taken.

Reducing the costs of renewable and storage technologies will not be enough if there is no effective governance and long-term national energy planning that improves the quality of electricity service and increases energy security in the face of external shocks. It is necessary to have a strengthened regulatory,

⁵ The minerals that are critical considerations vary in each country or institution that analyzes the subject. In addition, the minerals that are treated as critical for the energy transition are referred to as "strategic" in many countries in the region, due to their relevance and weight in national development.

⁶ In copper production, the contributions of Chile (26.7%) and Peru (10.5%) stand out as the first and second largest producers in the world, respectively. In the case of lithium, Chile is the second largest producer (24.8%) and Argentina the fourth (5.9%).

⁷ The projections refer to the Connected Renewable Energies Scenario (CORE), more optimistic, with high integration of intra-regional transmission and with a high proportion of renewable energies, which would make it possible to reach 80% renewables in 2032. See more in Leañez, F. (2022), Material intensity in the energy transition of Latin America: estimates based on a South American energy integration scenario, Project Documents (LC/TS.2022/46), Santiago, Chile, ECLAC.

investment and financing institutional ecosystem, which accelerates the inclusive, fair, and sustainable energy transition for all.

ECLAC proposes public policies to be deployed nationally, among which the investment drive is essential, aimed at generating new green jobs and reducing GHG emissions by increasing renewables, improving infrastructure and universal access to energy services. The latter requires the development of renewable energy value chains, the work and participation of public-private cooperation, and the deployment of mechanisms that strengthen regional institutions focused on achieving SDG 7.

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