



POLICY BRIEFS IN SUPPORT OF THE UN HIGH-LEVEL POLITICAL FORUM 2023

Advancing SDG7 in Latin America and the Caribbean



SDG7 POLICY BRIEFS IN SUPPORT OF THE UN HLPF 2023

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Advancing SDG7 in Latin America and the Caribbean

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KEY MESSAGES

The Latin America and the Caribbean region has made significant progress in terms of access to electricity in recent years, reaching a 96.5 per cent access rate in 2021.

There are, however, still strong inequalities accentuating energy poverty. The most vulnerable fifth of the population has around nine times less access to electricity than the richest.

At the same time, fossil fuels still dominate. In 2021, these constituting 66.8 per cent of the energy mix.

In recent years, energy efficiency has not been increasing, either, except for a slight improvement in the transportation sector, which consumes the largest proportion of fossil fuel energy.

UNECLAC has calculated that an annual investment equal to 1.3 per cent of regional gross domestic product (GDP) over a decade would be necessary to increase regional electrical integration based on a high share of renewable generation (80%), in order to advance towards SDG 7 targets (7.1 and 7.2). This investment would also lead to a 31.5 per cent reduction in carbon dioxide (CO₂) emissions and create 7 million new green jobs, with a corresponding increase in wages and incomes.

The following priority actions therefore need to be taken:

- The promotion of investments that move forward universal access to electricity based on renewables, create jobs, reduce emissions and end energy poverty.
- The development of renewable energy value chains with wide potential in the region, such as solar, wind, hydrogen vehicle (H2V) and battery storage to increase the mix of renewable energy in the mix, as well as to promote the economic recovery of the region.
- An increase in energy efficiency in all sectors of economic activity, including households and buildings, through regulations, financing and technology.

Energy in the UNECLAC region constitutes a development driver based on innovation, efficiency and renewability. It contributes to the economic recovery of the region through the development of value chains, the generation of quality jobs and the reduction of greenhouse gas (GHG) emissions.

Recent external shocks have highlighted the fragility of energy production, particularly in countries that are net importers of fossil fuels and in those with low diversification in their renewable energy matrix. In this context, the UNECLAC region needs to accelerate the transition towards renewable and clean energy sources and further electrify the energy mix. It also needs to enhance potential energy efficiencies and universalize coverage, giving a quality and uninterrupted service to increase resilience and boost energy security.

SUMMARY OF PROGRESS WITH SDG7

SDG7.1: Ensure universal access to electricity and clean cooking solutions

In recent decades the region has made significant progress in terms of access to electricity.

In 2021, 96.5 per cent of the population in both urban and rural areas had access, while the proportion of the population with primary reliance on clean fuels and technology was 62 per cent.¹

However, the COVID-19 pandemic and the war in Ukraine have caused an increase in vulnerability around the region, amplifying inflation through increased costs of energy and transportation for all goods and services. This has affected the most vulnerable quintiles of the population in particular, therefore intensifying energy poverty.²

Vulnerable households are those with the greatest lack of access to quality energy services, due to insufficient accessibility and/or affordability. Most of the 16.1 million people who are not connected to electricity in the UNECLAC region³ 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 nine times less access to electricity than the quintile with the highest income. On average, this gap then triples in the rural population.

As an example, during 2022 the Instituto Clima e Sociedade of Brazil (Institute of Climate and Society [ICS]) and Intelligence in Research and Consulting (IPEC) estimated through a survey that 40 per cent of Brazilians had delayed paying their energy bills. The same study showed that the cost of cooking gas and electricity accounted for more than half of family income for around 46 per cent of Brazilian families in 2022. The same survey revealed that 22 per cent of Brazilians were changing their decision-making when buying some basic foods in order to pay their energy bills.

Indicators prior to the COVID-19 pandemic already showed that households across the region were allocating a high proportion of their spending on fuel. Indeed, this could reach up to 10 per cent of their total expenditure. Electricity can account for up to 5 per cent of household spending, while in most countries the percentage can be up to four times higher for the most vulnerable quintiles. The indigenous and Afro-descendant populations of the region are among the most vulnerable.

At the same time, 78 million people do not have access to clean cooking fuels and technologies.⁴ There are also gender inequalities that are reflected in the impossibility of accessing clean energy sources for cooking and in the acquisition and administration of energy resources such as firewood and biomass for households.

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.

SDG7.2: Increased share of renewable energy in the global energy mix

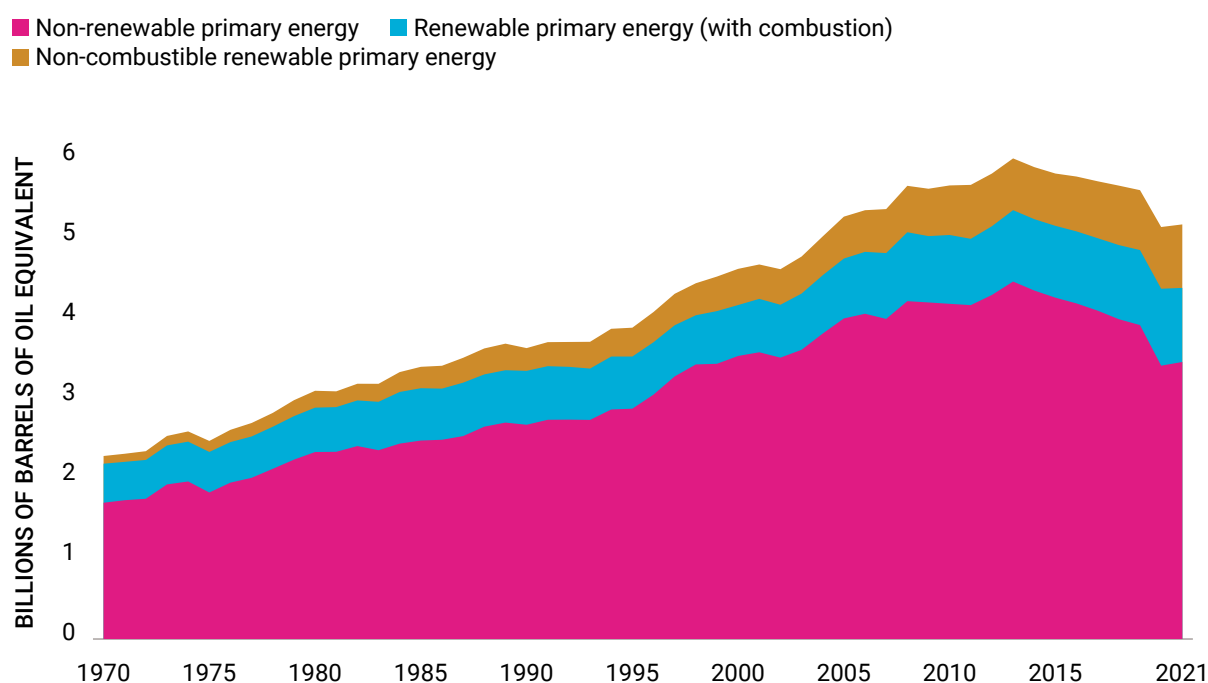
In 2021, the UNECLAC region’s primary energy supply relied predominantly in fossil fuels,⁵ with these constituting 66.8% of the energy mix.⁶ At the same time, previous years showed a stable, constant increase in the supply of renewable sources (Figure 1).

The transport sector is the region’s main final consumer, with a 36 per cent share of total final energy consumption (TFEC) in 2021. This was almost completely based on fossil fuels. The second largest share of TFEC was the industrial sector, with 29 per cent, followed by the residential sector, with 18 per cent. In 2020, the share of renewable energy in the TFEC was 34.2 per cent.⁷

Between 1970 and 2021, the primary supply of energy in Latin America and the Caribbean grew 2.3 times.⁸ This accompanied the expansion of the region’s economy and the needs of its households. Over the same period, the energy intensity of the entire region slowly decreased.

Over the same five decades, the share of renewable energy sources in total primary energy supply grew faster, from 25 per cent in 1970 to 33.2 per cent in 2021. A distinction must be made between types of renewable energy sources, however. Those that require combustion and generate significant emissions – for example, firewood and bagasse – represented 54 per cent of total renewables in 2021. Within clean renewables, hydroelectricity had the greatest weight in the region, with a 26 per cent share, followed by solar, wind, biomass and geothermal, which together represented around 20 per cent.

FIGURE 1. Renewable and non-renewable primary energy supply, Latin America and the Caribbean, 1970–2021



Source: OLADE, 2023; SIELAC online database.

Regarding the region's electricity subsector, although there are many differences between countries, both the supply and the demand for electricity are expected to grow strongly in the years ahead.

In 2021, the level of renewable electricity generation within the energy mix increased to an average of 59 per cent. This growing proportion therefore shows the great potential in the region for a decarbonization of the energy mix.⁹

In particular, during 2021, wind and solar continued to expand. A total of 23.5 gigawatts (GW) of new capacity in electricity generation was installed around the region that year. Of this total, non-renewable thermal power plants accounted for 4.5 GW, wind power plants 5.9 GW, solar photovoltaic (PV) power plants 9.8 GW, hydroelectric power plants 2.423 GW and the rest was composed of renewable, biogas and biomass thermal power plants.¹⁰ This meant 81 per cent of the total was based on renewable energy.

SDG7.3: Energy efficiency improvement

Regional energy intensity decreased by 17 per cent in the three decades to 2020.¹¹ That year, the energy intensity level of primary energy, using constant 2017 GDP at purchasing power parity (PPP), was 3.31 (MJ/US\$).¹²

Transport, which uses 36 per cent of the energy in the region, was the only productive sector that experienced a slight increase in efficiency over the above period. This was in response to the rising relative price of fossil fuels, as well as to technological improvements and stricter regulations.

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 the impact of a series of structural barriers. These include insufficient information, inadequate frameworks for regulation and incentives, lack of access to specialized services and low access to financing. Most energy efficiency measures were implemented in UNECLAC countries after 2010, with around 40 per cent applied in the residential sector.

POLICY IMPLICATIONS AND RECOMMENDATIONS

Renewable and clean electrification of transport

In the UNECLAC region, transportation accounts for the highest share of energy consumption and is almost entirely based on fossil fuels. A high percentage of the region's total GHG emissions from energy therefore come from the transport sector.

Electromobility represents one opportunity to address this and reduce emissions in urban areas in particular. It is estimated that renewable-based electromobility in the UNECLAC region could cut CO₂ emissions by 1.341 billion tons by 2050.¹³ The potential for reducing CO₂ emissions in just four major cities in the region (Bogotá, Buenos Aires, Sao Paulo and Mexico City) would be 80 million tons of CO₂ per year in passenger vehicles and 2.27 million tons in buses. This represents, on average, a reduction of almost 17 per cent of transport sector emissions in each nation.

In the region, 27 out of 33 countries have prioritized the transport sector as key to the achievement of the GHG emissions reduction goals in their Nationally Determined Contributions (NDCs). Most have legislation that encourages the entry and use of electric vehicles. Additionally, they have introduced electric mobility strategies or included mobility strategies in public policy and legislation on products and services related to electromobility – although still on an insufficient scale. Such electromobility strategies have also been introduced within other productive development strategies.

Since 2020, there has also been clear progress in the installation of electric vehicle charging points, both public and private, across the region. In addition, certain new 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.

A complementary public policy to address the challenges of the transport sector should aim at prohibiting the import of used vehicles, which would help avoid the accelerated aging of the vehicle fleet and the maintenance of a high level of emissions. Incentives and economic instruments enabling the acquisition of authorized high efficiency and performance vehicles, including electric vehicles, should be promoted. Other benefits, such as exemptions from parking fees, circulation permits, reduced electricity consumption and other schemes should also be promoted.

The success of the transition to net-zero emissions will be contingent on systemic decarbonization through the electrification of different economic sectors. In parallel, investments in green hydrogen and other low-carbon alternative fuels, such as biofuels, will play a key role in decarbonizing those sectors where this task presents the greatest difficulty.¹⁴

Green hydrogen

To dramatically increase the use of renewables in the UNECLAC region, the development of the new, green hydrogen industry needs strengthening.¹⁵

Green hydrogen is hydrogen produced using renewable energy, such as solar, wind and hydroelectric. These sources of renewable energy are all widely available in the region and often at very competitive prices. Hydrogen is a highly flexible energy source suitable for use in energy intensive sectors, such as heavy industry (cement and steel) and transport (urban cargo, shipping and aviation). Using hydrogen as storage for solar and wind renewables, or as energy in its own right, could therefore contribute to the decarbonization of the energy mix in transport and industry, in particular.

Nowadays, the new hydrogen industry is already developing fast in the region. In 2022, 12 hydrogen energy projects were in operation in Argentina, Brazil, Colombia, Costa Rica, Chile and Peru in sectors such as transportation (buses, trucks and shipping) and reinjection of electricity and mining (replacing diesel). Additionally, there were 71 projects in development in the same countries plus Bolivia, French Guyana, Mexico, Paraguay and Uruguay. Chile, which has the potential to produce 160 million tons of green hydrogen per year, is a leading developer, while many other regional countries have strategies or roadmaps for green hydrogen development, or are in the process of preparing them.

In some countries, however, the price of renewable electricity is not as conducive or viable for hydrogen production. Therefore, a temporary subsidy focusing on kick-starting hydrogen production should be debated.

Critical minerals to increase renewables

To advance renewable energy, the development of infrastructure for production, storage, transmission and the electrification of transport is required. Most clean and renewable energy technologies are intensive in what are known as 'critical minerals',¹⁶ both for the energy transition and for electro-mobility. The energy transition will therefore increase demand for these minerals, which are particularly abundant in the UNECLAC region.

Indeed, Latin America and the Caribbean are home to 51 per cent of the world's lithium reserves, 38 per cent of its copper, 22 per cent of its natural graphite, 39 per cent of its silver and 17 per cent of its nickel, zinc, and rare earths. The region is also responsible for 40.6 per cent of world copper production and 32.2 per cent of world lithium output.

Meeting the objectives of the Sustainable Development Scenario under the Paris Agreement would mean global demand for lithium increasing up to 42 times by the year 2040, taking 2020 as a base year. For graphite, that demand would jump 25 times, cobalt 21 times, nickel 19 times and copper 2.7 times.

According to UNECLAC estimates, the expansion of electrical capacity in Latin America alone, 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, by 2032. To reach this capacity, the region's generation and transmission facilities would require 611,000 tons of copper, 53,300 tons of nickel, 2,500 tons of cobalt and 2,100 tons of lithium between them.

Cross-border power grid interconnection

Between them, the countries of the UNECLAC region boast some of the richest hydro, wind and solar energy resources in the world – resources that are crucial to renewable energy development.

Countries like Brazil, Colombia, Peru and Bolivarian Republic of Venezuela have enormous potential for hydropower development. Argentina and the north-eastern part of Brazil have abundant wind energy resources. The Atacama Desert of Chile has the region's best solar resources.

To effectively tap into these large-scale renewable energy resources, power grid interconnection between the different countries of the region needs to be strengthened. For this, a regional platform for renewable power allocation and dispatching needs to be created. In this way, power generated from hydro, wind and solar energy reservoirs can be delivered to major cities and load centres. A better balance of power supply and demand can be achieved on a country-wide and region-wide basis, with the region also possessing excellent power complementarity among its various renewable energy sources, as well as among its different countries.

As an example, the Belo Monte Ultra-High Voltage (UHV) hydropower transmission project in Brazil has played a crucial role in the effective development and outbound transmission of clean hydropower from the Amazon River, with significant economic and social benefits.

This successful Brazilian case can be replicated and rolled out in other parts of Latin America, further energizing the development of large-scale renewable energy bases in other countries.

It is therefore recommended that a joint assessment of renewable energy resources in the region, such as wind and solar energy, be conducted. Furthermore, collaborative regional power interconnection planning for the medium and long term should be carried out, as well as the promotion of electricity trading, market coordination and integration among different countries. These measures would lay a solid foundation for regional power grid interconnection.

CONCLUSIONS

The UNECLAC region has made substantial progress with SDG7. Access to energy services is relatively high and the proportion of renewable energy within the energy mix has been increasing – although it remains vulnerable to external shocks. On the other hand, multidimensional energy poverty persists and there have been no significant advances regarding energy efficiency. These regional challenges also constitute transformative opportunities, however, in which immediate action must be taken.

At the same time, reducing the costs of renewable and storage technologies is not enough on its own. Effective governance and long-term national energy planning is also required, if the quality of electricity services and energy security is to improve in the face of external shocks. A strengthened regulatory, investment and financing institutional ecosystem is needed to accelerate an inclusive, fair and sustainable energy transition for all.

UNECLAC encourages public policy to be deployed nationally. In this, an investment drive is essential, aimed at generating new green jobs and reducing GHG emissions by increasing renewables, improving infrastructure and establishing universal access to energy services. The latter requires the development of renewable energy value chains and the public and private sectors working and participating together. It also requires the deployment of mechanisms that strengthen regional institutions focused on achieving SDG 7.

ENDNOTES

- ¹ UN STATS (2023), <https://unstats.un.org/sdgs/dataportal> accessed May 2023
- ² The concept of energy poverty refers to the insufficient satisfaction of energy needs. This encompasses standards of equitable access in both quantity and quality. Amongst other factors, this includes standards of lighting, air conditioning, the cooking and maintenance of food, information and communication technologies and affordability.
- ³ OLADE (2022), *"Panorama Energético de América Latina y el Caribe 2022"* ("Energy Panorama of Latin America and the Caribbean, 2022"), The Latin American Energy Organization, Quito, <https://sielac.olade.org/WebForms/Reportes/SistemaDocumental.aspx?ss=7>, accessed May 2023.
- ⁴ UN STATS (2023) and CEPALSTAT (2023), <https://statistics.cepal.org/portal/cepalstat/index.html?lang=es>, accessed May 2023.
- ⁵ OLADE (2023), *"SIEE-LAC Sistema de Información Energética de Latinoamérica y el Caribe"*, ("SIEE-LAC Energy Information System of Latin America and the Caribbean"), The Latin American Energy Organization, Quito, <https://sielac.olade.org/>, accessed May 2023.
- ⁶ Fossil fuel subsidies are still in place in the region. In 10 Latin American countries, hydrocarbons and minerals account for fiscal revenues above 2 per cent of GDP, while this figure is up to 10 per cent in countries such as Bolivia, Ecuador and Venezuela.
- ⁷ UN STATS (2023), accessed May 2023.
- ⁸ This was from 2.280 billion to 5.183 billion barrels of oil equivalent (boe), according to OLADE (2023).
- ⁹ The contribution of the UNCELAC region to global GHG emissions is limited, at around 5–8 per cent. Nevertheless, regional countries have committed to reductions through their Nationally Determined Contributions (NDCs). However, these are being implemented more slowly than the United Nations Environment Programme (UNEP) expected. In the case of the UNCELAC region, investment would have to be multiplied eight times to cover the mitigation needs committed to in the region's NDCs and thus to achieve the 1.5Co goal.
- ¹⁰ OLADE (2022), *"Panorama Energético de América Latina y el Caribe 2022"* ("Energy Panorama of Latin America and the Caribbean, 2022"), The Latin American Energy Organization, Quito, <https://sielac.olade.org/WebForms/Reportes/SistemaDocumental.aspx?ss=7>, accessed May 2023.
- ¹¹ OLADE (2023), *"SIEE-LAC Sistema de Información Energética de Latinoamérica y el Caribe"*, ("SIEE-LAC Energy Information System of Latin America and the Caribbean"), The Latin American Energy Organization, Quito, <https://sielac.olade.org/>, accessed May 2023 and CEPALSTAT (2022), <https://statistics.cepal.org/portal/cepalstat/index.html?lang=es>, accessed May 2023.
- ¹² UN STATS (2023), accessed May 2023.
- ¹³ Diego Messina, Rubén Contreras Lisperguer, René Salgado (2022), *"El rol de las energías renovables en la electrificación del transporte público y privado de las ciudades de América Latina y el Caribe: impactos, desafíos y oportunidades ambientales"* ("The role of renewable energy in the electrification of public and private transport in the cities of Latin America and the Caribbean: Environmental impacts, challenges and opportunities"), UNECLAC, Santiago, www.cepal.org/es/publicaciones/48175-rol-energias-renovables-la-electrificacion-transporte-publico-privado-ciudades, accessed May 2023.
- ¹⁴ OECD and others (2022), *"Perspectivas económicas de América Latina 2022: Hacia una transición verde y justa"* ("Latin American Economic Outlook 2022: Towards a Green and Just Transition"), Organisation for Economic Co-operation and Development, Paris, <https://doi.org/10.1787/f2f0c189-es>, accessed May 2023.
- ¹⁵ In 2021, 95 per cent of the hydrogen supplied globally was produced from fossil fuels, however, and was therefore not 'green'. The UNECLAC region produces 5 per cent of the world's 'grey' hydrogen (made from natural gas reformed by steam). This is used as a raw material in refineries and in the production of ammonia, methanol and steel.



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