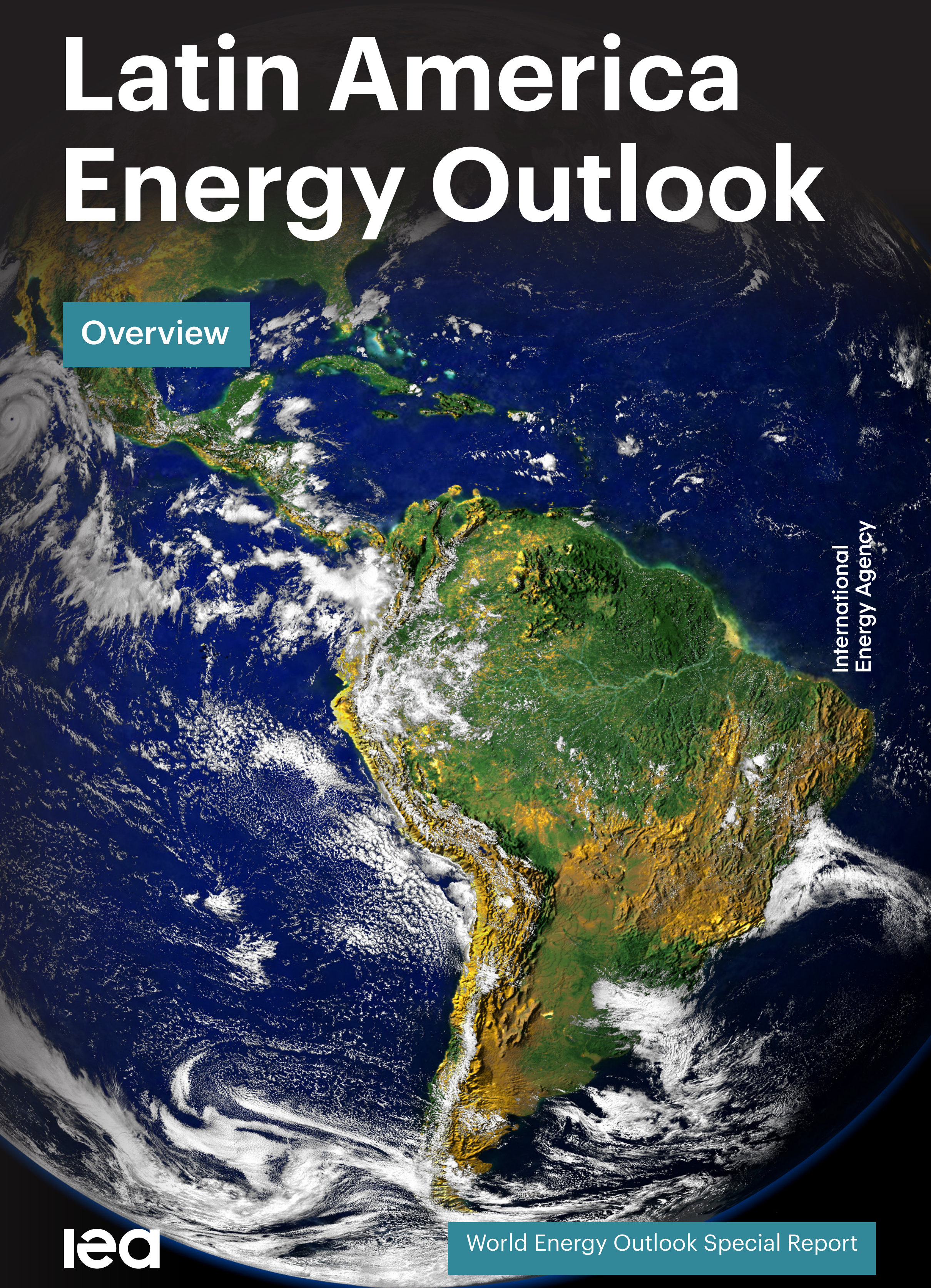
Latin America Energy Outlook

Overview



International Energy Agency

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World Energy Outlook Special Report

INTERNATIONAL ENERGY AGENCY

The IEA examines the full spectrum of energy issues including oil, gas and coal supply and demand, renewable energy technologies, electricity markets, energy efficiency, access to energy, demand side management and much more. Through its work, the IEA advocates policies that will enhance the reliability, affordability and sustainability of energy in its 31 member countries, 13 association countries and beyond.

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Latin America and the Caribbean

HIGHEST

share of renewables in electricity generation in the world

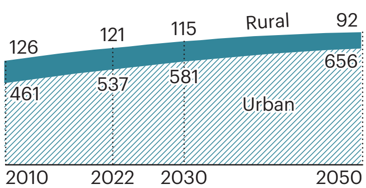
15%

of global oil and gas resources

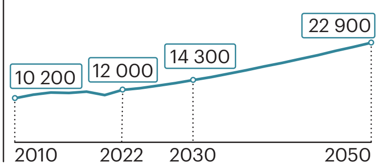
OVER 1/3

of global silver, copper and lithium reserves

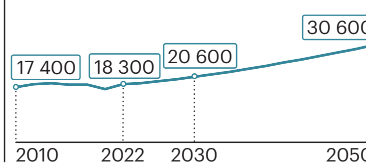
Population Million people



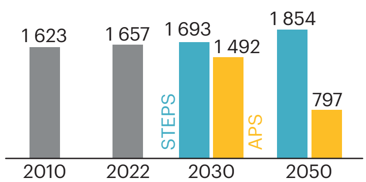
GDP Billion USD (2022, PPP)



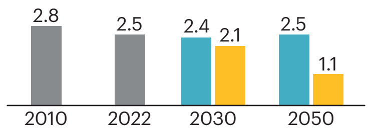
GDP per capita USD per capita (2022, PPP)



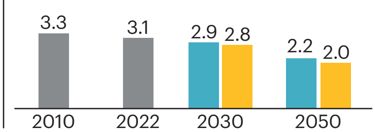
CO_2 emissions Mt CO_2



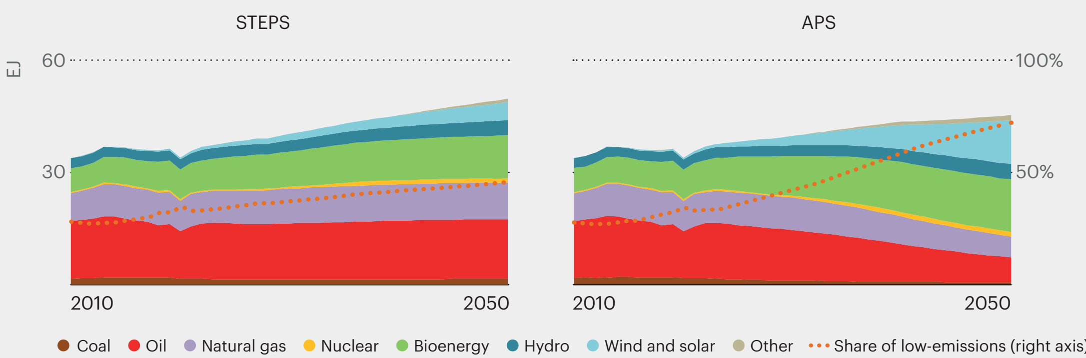
CO_2 emissions per capita t CO_2/capita



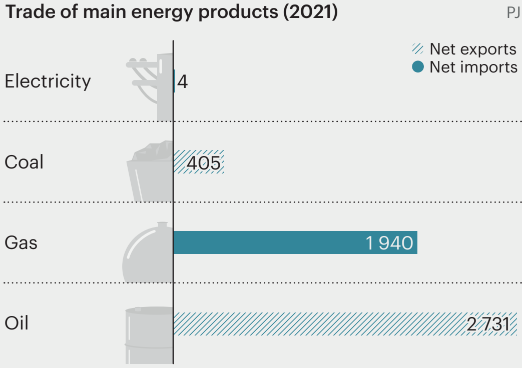
Energy intensity GJ per thousand USD (2022, PPP)



Primary energy supply and share of low-emissions sources



Trade of main energy products (2021) PJ



Trade of non-energy products (2021) Billion USD

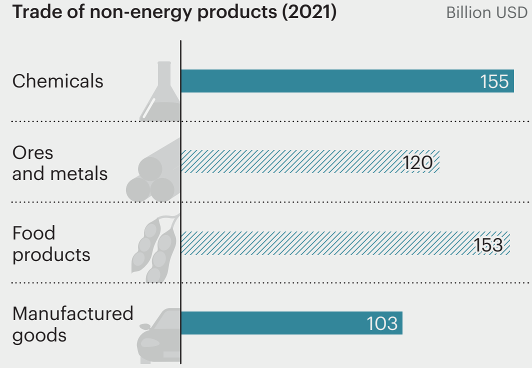


Table 1 ▹ Recent policy developments in Latin America and the Caribbean

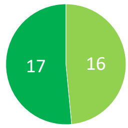
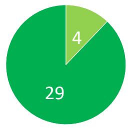
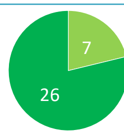
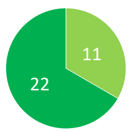
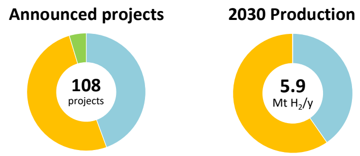
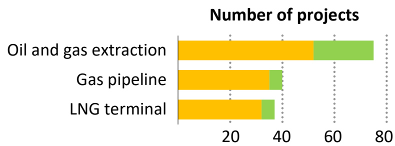
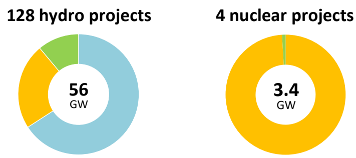
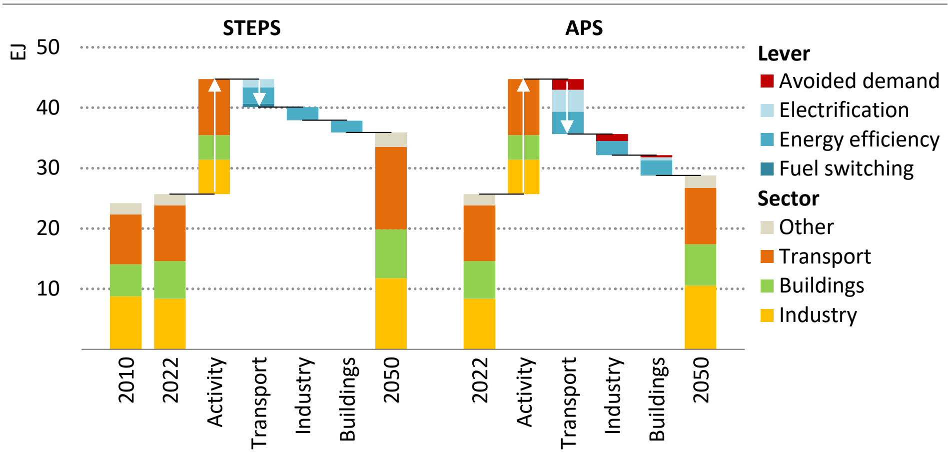
Policy				
Economy-wide measures	Climate commitments: Net zero emissions target		**Country Targets** With Without	Represents 60% of total CO_2 emissions from fuel combustion and 65% of total GDP Target for mid-century (or earlier)
	Climate commitments: Nationally Determined Contribution (NDC)		**Country NDCs** Initial Updated	1.7-1.8 Gt CO_2 emissions from fuel combustion by 2030 (+13-18% increase from 2022) Target for 2030
Access (SDG7)	Clean cooking		**Country Targets** With Without	11% of the LAC population lacks clean cooking access (12 out of 33 countries have already reached 95% access rate)
	Electricity access		**Country Targets** With Without	3% of the regional population lacks electricity access (24 out of 33 countries have already reached 95% access rate)
AFOLU	Eight countries with targets to end or to mitigate deforestation (Brazil, Chile, Colombia, Costa Rica, Dominica, Guatemala, Mexico and Suriname).			
Environmental governance	Fifteen countries ratified the Escazú Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters (Antigua and Barbuda, Argentina, Belize, Bolivia, Chile, Ecuador, Grenada, Guyana, Mexico, Nicaragua, Panama, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines and Uruguay).			
Hydrogen	Eight countries have a hydrogen strategy (Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Panama, Uruguay), and four countries have announced a hydrogen strategy but are still in the preparation phase (Bolivia, Paraguay, Peru, Trinidad and Tobago).			
Power	Twenty-four countries have renewables targets (Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Grenada, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Peru, Saint Lucia, Uruguay and Venezuela).			
Transport	Sixteen countries have electric vehicle policies (Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Mexico, Nicaragua, Panama, Paraguay, Trinidad and Tobago and Uruguay).			
Buildings	Fourteen countries have energy-related building codes (Antigua and Barbuda, Argentina, Barbados, Brazil, Chile, Colombia, Costa Rica, Cuba, Ecuador, Jamaica, Mexico, Panama, Paraguay and Peru). Seventeen countries have minimum energy air conditioning (Argentina, Brazil, Chile, Costa Rica, Cuba, Ecuador, El Salvador, Honduras, Jamaica, Mexico, Nicaragua, Panama, Peru, Saint Lucia, Trinidad and Tobago, Uruguay and Venezuela).			

Table 2 ▻ Major infrastructure projects in LAC

	Projects	Countries
Low-emissions hydrogen		Argentina, Barbados, Brazil, Chile, Colombia, Costa Rica, Dominica, Mexico, Panama, Paraguay, Peru, Trinidad and Tobago, Uruguay.
Oil and gas		Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago.
Dispatchable low-emissions power plants		**Hydro**: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Guyana, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru. **Nuclear**: Argentina, Brazil, Mexico.
Large-scale CCUS	1 BECCS project in Brazil: Lucas do Rio Verde (0.4 Mt CO_2 removal per year).	
Interconnections	Four projects under construction or in financing phase: Argentina-Paraguay (270 MW); Peru-Ecuador (600 MW addition); SIEPAC expansion (from 300 MW to 600 MW); SIEPAC-Colombia high voltage direct current (400 MW).	

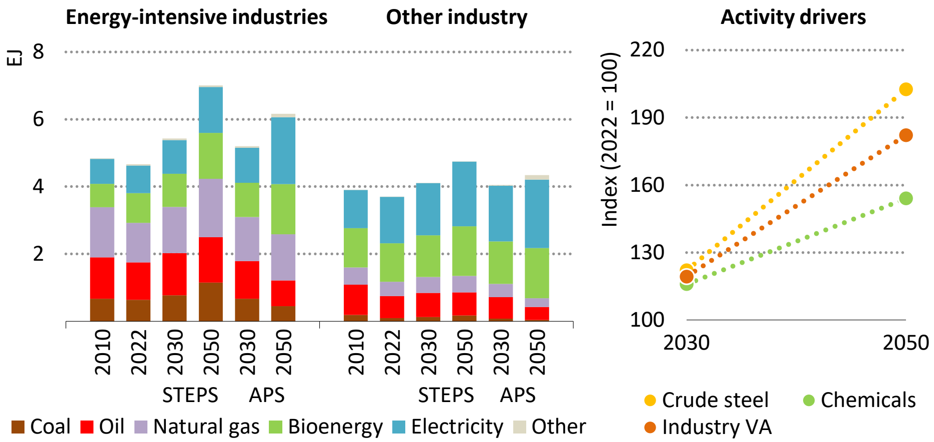
Status Concept Feasibility study Under construction

Figure 1 ▻ Final energy consumption by scenario in LAC



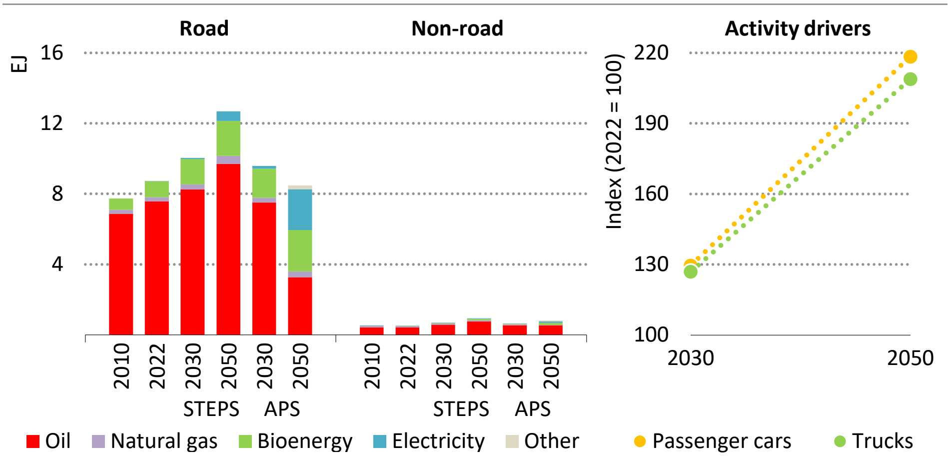
- Rising transport demand and re-industrialisation push total final energy consumption up by 40% in the STEPS and over 10% in the APS by 2050.
- In both scenarios, energy efficiency moderates this growth in all sectors. In the APS, electrification plays a key role in tempering this growth in the transport sector.

Figure 2 ▹ **Fuel consumption in industry by type and scenario in LAC**



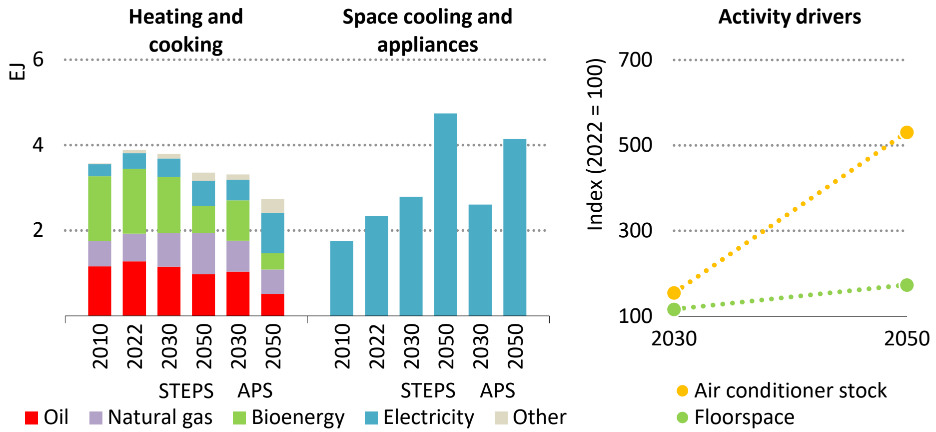
- Re-industrialisation boosts growth, with the aluminium, iron and steel, and chemicals sub-sectors leading the way. This increases energy consumption in the sector.
- Bioenergy plays a key role in both scenarios and electricity use also rises. The share of natural gas remains constant at just below 20% in the STEPS and declines in the APS.

Figure 3 ▹ **Fuel consumption in transport by type and scenario in LAC**



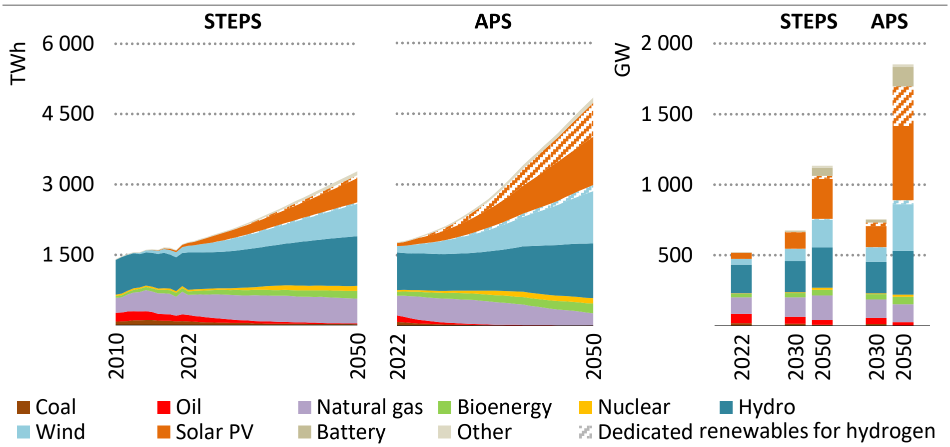
- Oil accounts for 86% of energy consumption today in the transport sector, compared with 91% globally.
- Road activity doubles by 2050. In the APS, growing use of electricity and bioenergy leads the share of oil in road transport to decline below 80% by 2030 and around 40% by 2050.

Figure 4 ▷ Fuel consumption in buildings by type and scenario in LAC



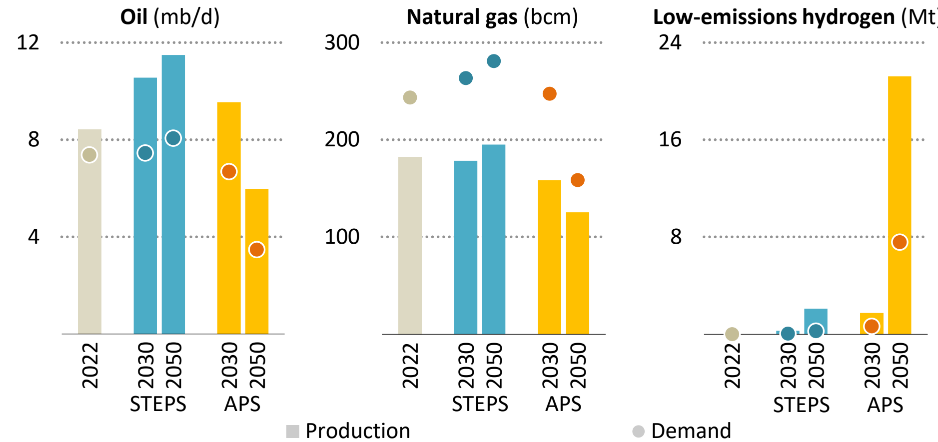
- Over 10% of the LAC population lacks access to clean cooking today. Their reliance on bioenergy for cooking is a major cause of household air pollution and leads to nearly 82 000 premature deaths per year.
- Rising incomes prompt increases in the ownership of appliances and air conditioners, which are the main drivers of electricity consumption growth in the buildings sector.

Figure 5 ▷ Electricity generation and capacity by fuel in LAC



- Today, most electricity in the region is from hydropower and natural gas, but solar photovoltaics (PV) and wind provide the bulk of capacity additions in both scenarios.
- In the APS, renewables meet all new electricity demand, reducing the need for natural gas and displacing almost all generation from coal and oil.

Figure 6 ⊳ **Fuel demand and production by scenario in LAC**



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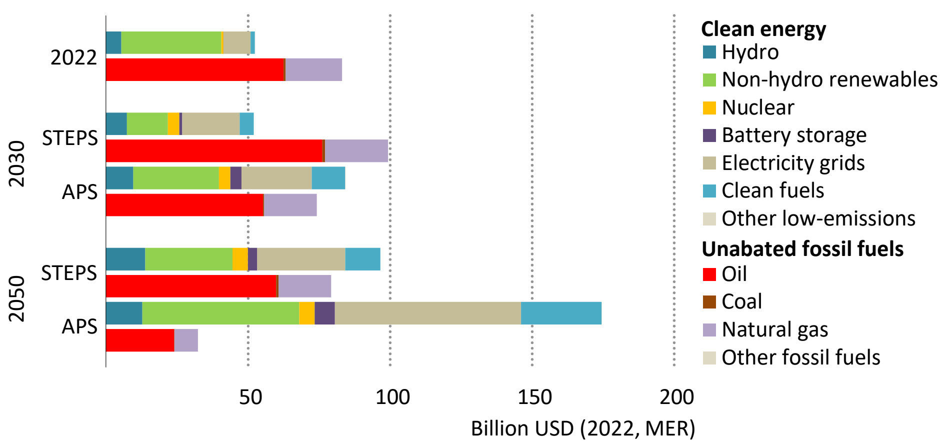
- In the STEPS, oil production outstrips demand and net oil exports triple to 2030. The region remains a net importer despite natural gas production increasing in the long run.
- In the STEPS, low-emissions hydrogen production sees modest growth from near zero. In the APS, it reaches nearly 2 million tonnes (Mt) in 2030 and more than 20 Mt in 2050.

Figure 7 ⊳ **Annual investment in energy supply by type and scenario in LAC**



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- In the STEPS, fossil fuels account for most energy supply investment in 2030. In the APS, investment in clean energy supply overtakes those for fossil fuels by 2030.
- Investment in clean energy supply reaches 0.8% of GDP in the STEPS and over 1% in the APS by 2030, increasing to nearly 0.9% and 1.6% respectively by 2050.

Notes

Units

Area	ha	hectares
Distance	km	kilometre
Emissions	Gt CO_2	gigatonnes of carbon dioxide
	Mt CO_2	million tonnes of carbon dioxide
	Mt CO_2-eq	million tonnes of carbon-dioxide equivalent (using 100-year global warming potentials for different greenhouse gases)
	t CO_2-eq	tonnes of carbon-dioxide equivalent
Energy	EJ	exajoule (1 joule x 10^{18})
	PJ	petajoule (1 joule x 10^{15})
	TWh	terawatt-hour
	Tcal	teracalorie (1 calorie x 10^{12})
Gas	bcm	billion cubic metres
	bcm/d	billion cubic metres per day
	mcm/d	million cubic metres per day
Mass	kg	kilogramme
	kt	kilotonnes (1 tonne = 1 000 kg)
Monetary	USD million	1 US dollar x 10^6
	USD billion	1 US dollar x 10^9
Oil	mb/d	million barrels per day
	b/d	barrels per day
Power	GW	gigawatt
	MW	megawatt
	kV	kilovolt

Terms

Activity drivers for industry include production levels (Mt) and value added (USD 2022, PPP); for transport, vehicle-kilometres (km) for passenger cars and tonne-km for trucks; for buildings, air conditioning (million units) and floorspace (million square metres). The activity numbers presented correspond to the Stated Policies Scenario (STEPS) indexed on the 2022 value.

Bioenergy refers to bioenergy and waste.

Clean fuels refers to biofuels, hydrogen and hydrogen-related fuels.

Daily average electricity load profiles do not factor in electricity demand generated by dedicated renewable sources connected to electrolysers, and they also do not consider the influence of demand-response mechanisms.

Energy-intensive industries include chemicals, iron and steel, non-metallic minerals (cement and other), non-ferrous metals (aluminium and other) and pulp, paper and printing.

Heating and cooking in buildings refers to energy demand for space and water heating, and cooking.

Hydrogen demand excludes both hydrogen exports and the hydrogen used for producing hydrogen-based fuels which are exported.

Investment data are presented in real terms in year-2022 US dollars.

Large-scale CCUS projects refer only to facilities with a planned capture capacity higher than 100 000 tonnes of CO_2 per year.

Low-emissions hydrogen projects considered are those with an announced capacity for 2030.

Non-road transport includes rail, domestic navigation, domestic aviation, pipeline and other non-specified transport.

Other for power generation and capacity refers to geothermal, concentrated solar power, marine, non-renewable waste and other non-specified sources.

Other for final consumption in sectors refers to non-renewable waste, hydrogen, solar thermal and geothermal.

Other in a sector category refers to agriculture and other non-energy uses.

Other fossil fuels in energy supply investment refer to non-renewable waste and other supply sources.

Other fuel shifts include bioenergy, nuclear, solar thermal, geothermal and natural gas.

Other industry refers to the construction, food and tobacco, machinery, mining and quarrying, textile and leather, transport equipment, wood industry branches and remaining industry.

Other low-emissions in energy supply investment include heat pumps, CCUS, electricity generation from hydrogen, electricity generation from ammonia and direct air capture.

Road transport includes six vehicle categories (passenger cars, buses, two/three-wheelers, light-duty vans and trucks, and medium and heavy trucks).

SDG 7 refers to Sustainable Development Goal (SDG) 7: "ensure access to affordable, reliable, sustainable and modern energy for all", adopted by the United Nations in 2015.

Solar potential data is calculated based on the average potential at national level assessed in kilowatt-hour per kilowatt peak per day (2020).

Regional energy profile

Total final consumption includes consumption by the various end-use sectors (industry, transport, buildings, agriculture, and other non- energy use). It excludes international marine and aviation bunkers, except at world level where it is included in the transport sector.

Acronyms

Scenarios: **STEPS** = Stated Policies Scenario; **APS** = Announced Pledges Scenario.

AFOLU	agriculture, forestry and other land use
BECCS	bioenergy with carbon capture and storage
CCUS	carbon capture, utilisation and storage
CNG	compressed natural gas
EV	electric vehicle
GDP	gross domestic product
GHG	greenhouse gases
H_2	hydrogen
HVDC	high voltage direct current
ICE	internal combustion engine
MEPS	minimum energy performance standards
MER	market exchange rate
NDC	Nationally Determined Contribution
PPP	purchasing power parity
PV	photovoltaics
SDG	Sustainable Development Goals
VA	value added
ZEV	zero emissions vehicle

The policy tables include existing policies and announcements as of the end of September 2023. The same applies to the tables of existing and announced projects.

The IEA does not use colours to refer to the various hydrogen production routes. However, when referring to specific policy announcements, programmes, regulations and projects where an authority uses colour to define a hydrogen production route, e.g. green hydrogen, we use that terminology to report developments in this review.

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