

ENERGY TRANSITION IN LATAM

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THE ROAD TO NET ZERO



Context

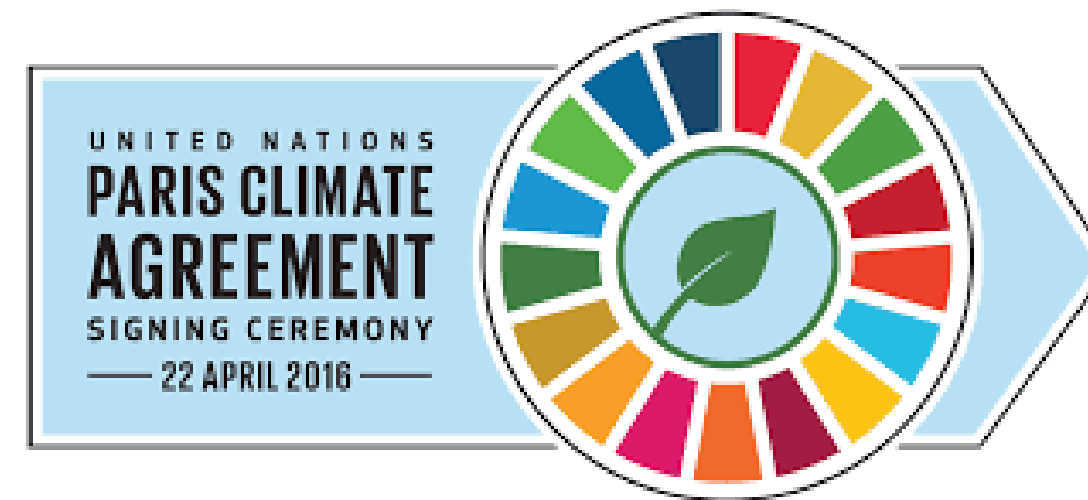
I. The Paris Agreement was ratified by all of LATAM.

Results: sustainable practices and clean energy solutions.

Latin America is a model solution for climate problems.



Paris
Climate
Agreement



Context

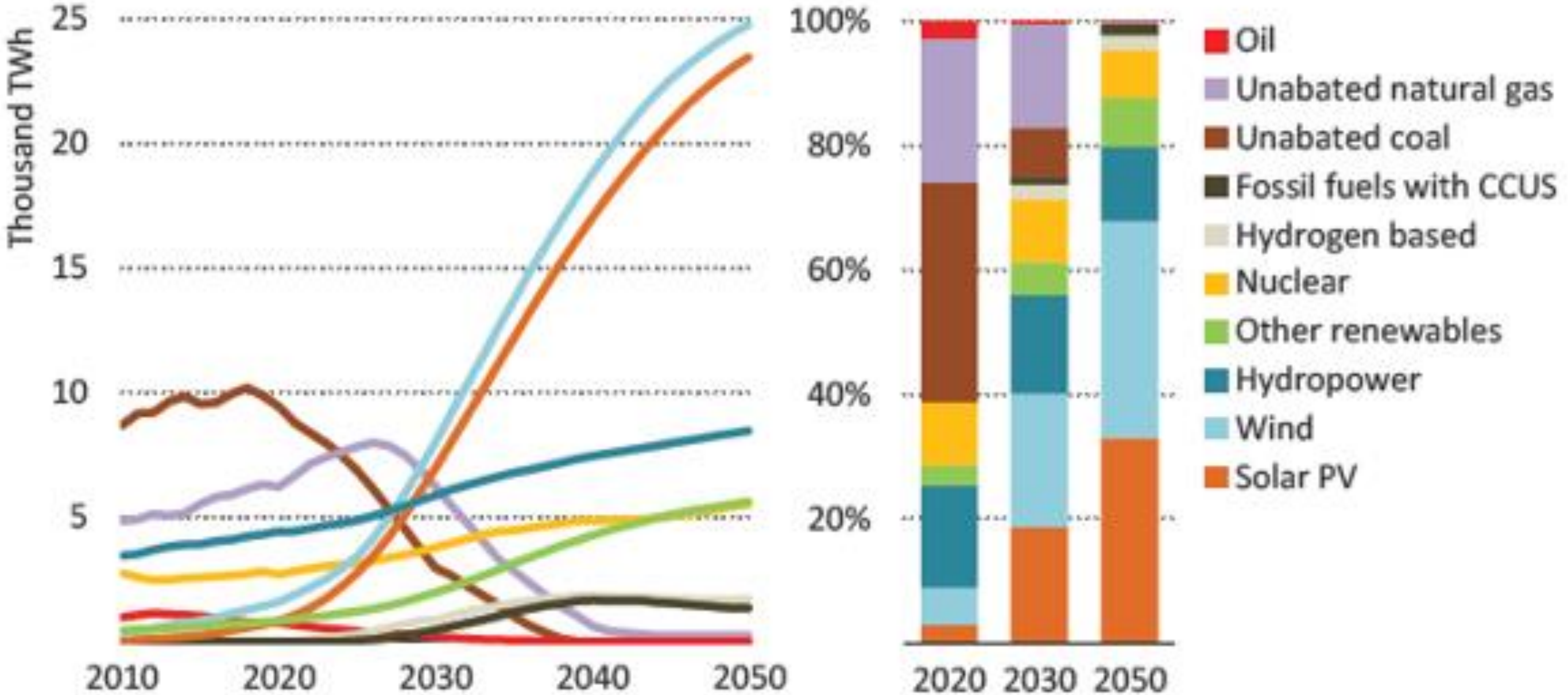
II. Energy generation and transportation account for close to **THREE-QUARTERS** of ALL greenhouse gas emissions.



SHIFT IN ELECTRICITY GENERATION

Shift in Electricity Generation

Global electricity generation by source



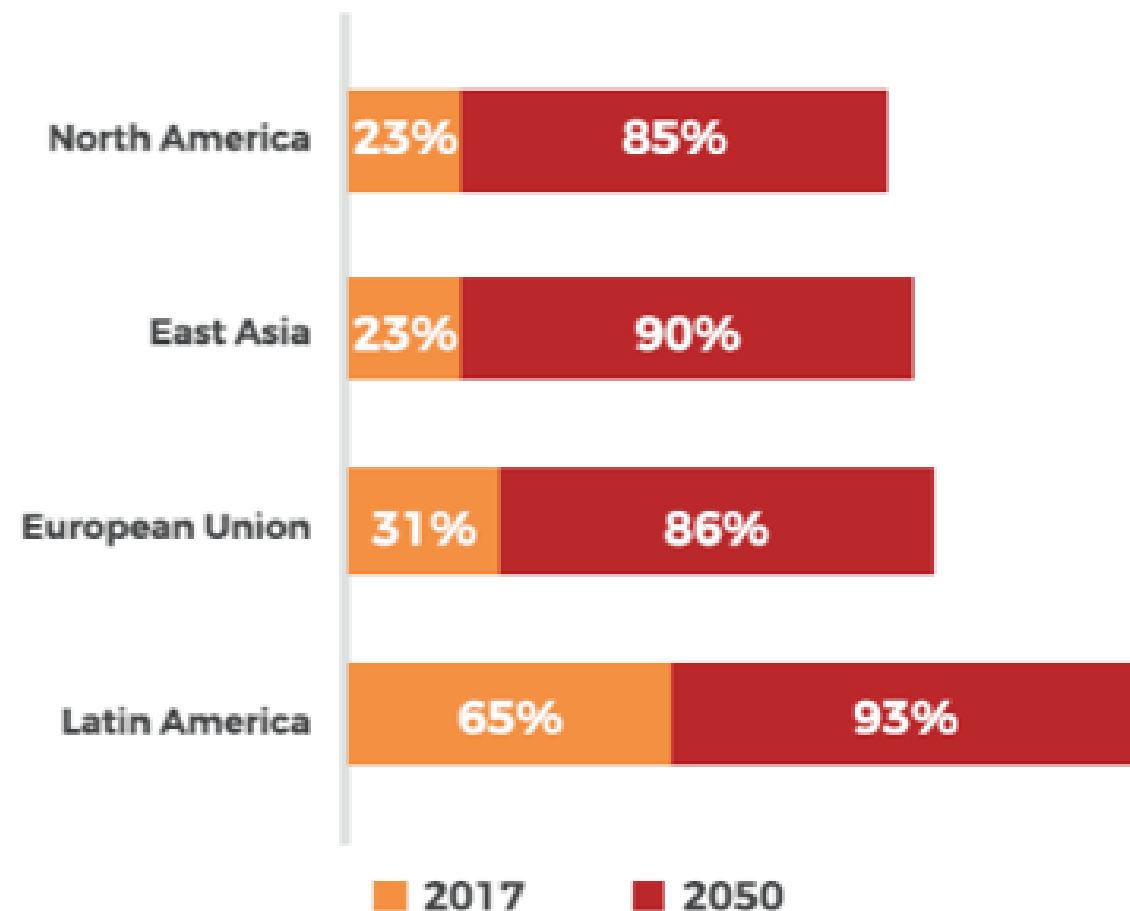
By 2030, over 60% of the total output will come from renewable sources.

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Shift in Electricity Generation

Renewable energy share* in power generation, 2017 vs 2050, by region



Source: Global Renewables Outlook: Energy Transformation 2050

*This includes hydropower

Note: These percentages are based on IRENA's Transforming Energy Scenario, in which the global energy system is aligned with keeping temperatures well below 2°C above industrial temperatures.

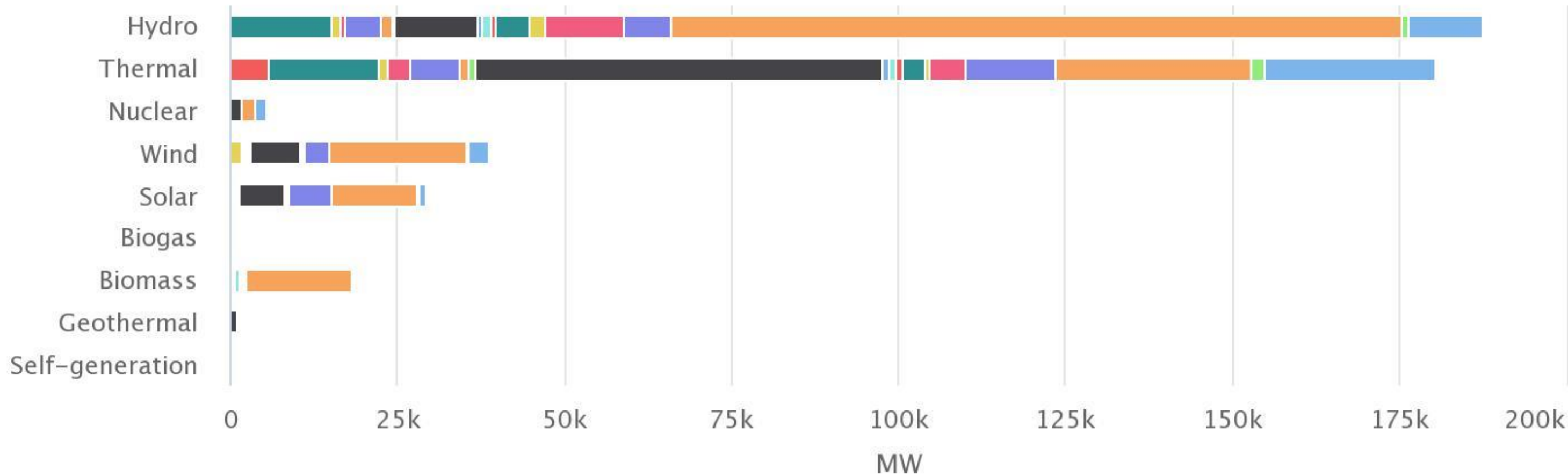
Over 60% of power generation in Latin America come from clean sources.

Latin America has one of the cleanest electricity networks in the world.

Shift in Electricity Generation

Installed capacity of Electric power generation by source

2021



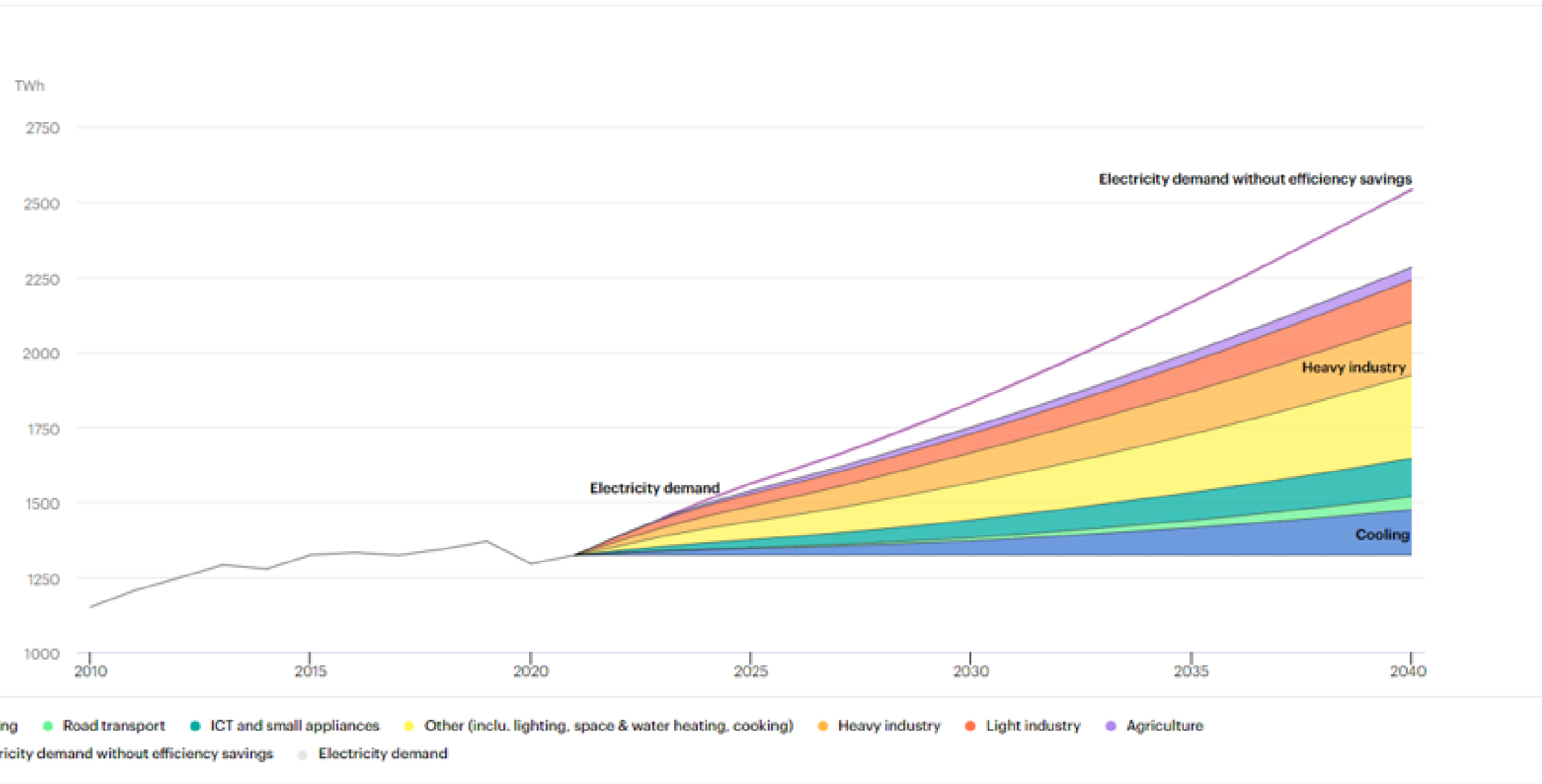
Complementing hydropower and variable renewable energy sources is key.

- Argentina
- Chile
- El Salvador
- Nicaragua
- Uruguay
- Belize
- Colombia
- Guatemala
- Panama
- Venezuela
- Bolivia
- Costa Rica
- Honduras
- Peru
- Puerto Rico
- Brazil
- Ecuador
- Mexico
- Dominican Republic

BNamericas with data from regulators



Electricity demand growth in Latin America 2021-2040



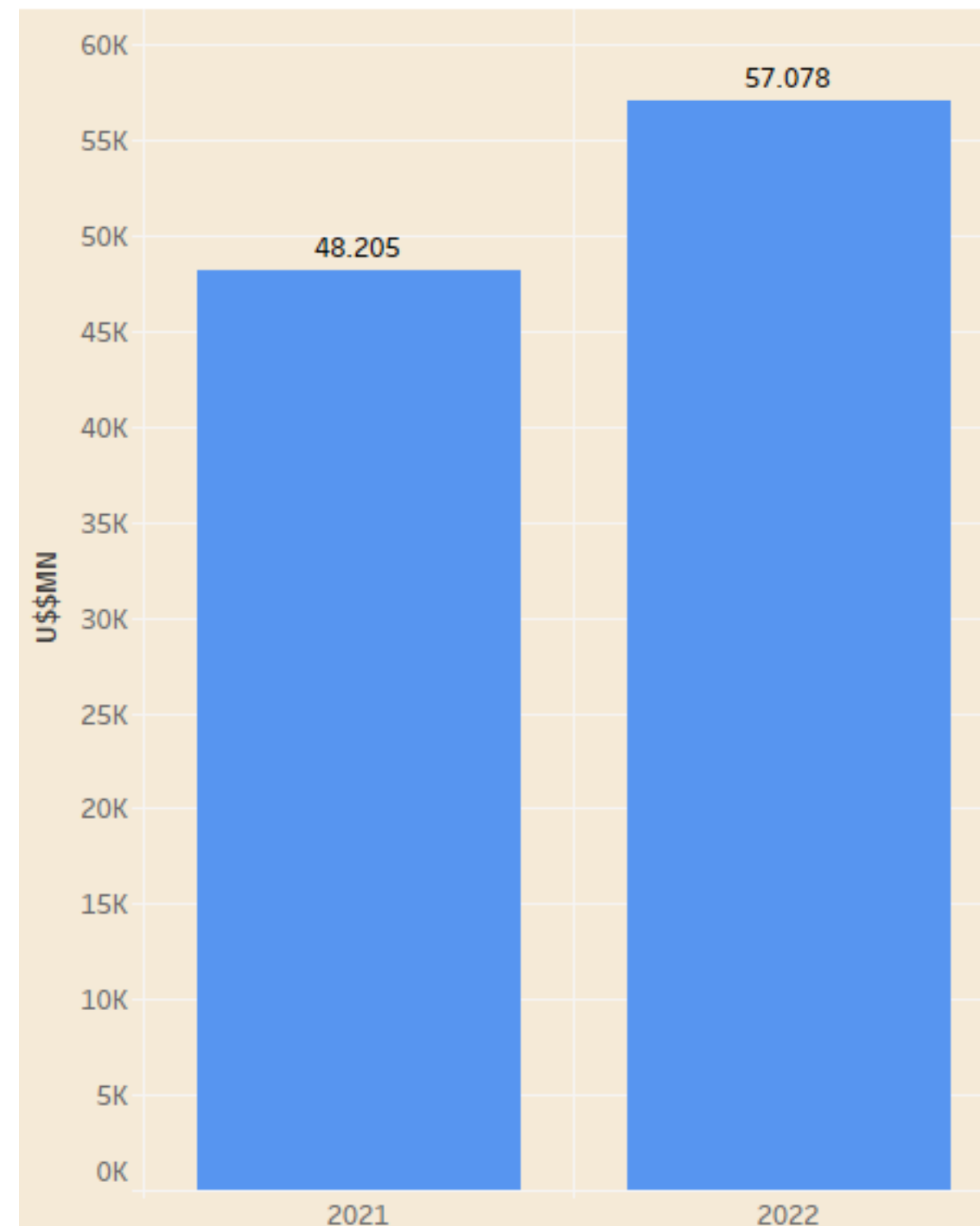
Demand growth projection at an average rate of 2% until 2040.

Driven by expanding population, rising incomes and living standards, and new sources of demand linked to decarbonization.

Electric Power Players: Aggregate Capex



Source: BNamericas
with Data from
Companies



US\$48.21bn in investments
during 2021

2022 projections:
US\$57.08bn in combined
capital investments.



Multi-Year Investment Plans

	Investment Amount (US\$MN)	Year Range	Annual Average (US\$MN)
Enel	49100	2022-2024	16367
Engie ³	15500	2021-2023	5170
Sempra Infrastructure	3000	2022-2026	600
GEB	1100	2022-2025	275
ISA	3380	2022-2026	676
Iberdrola	82000	2020-2025	13667
EDP	26200	2021-2025	5240
AES	4800	2021-2025	960
EPM	5000	2022-2025	1250

Includes players that provide multi-year capex data. Multi-year plans current as of early 2022.

³ Investment amount represents midpoint of forecast range.

Source: BNamericas with data from companies

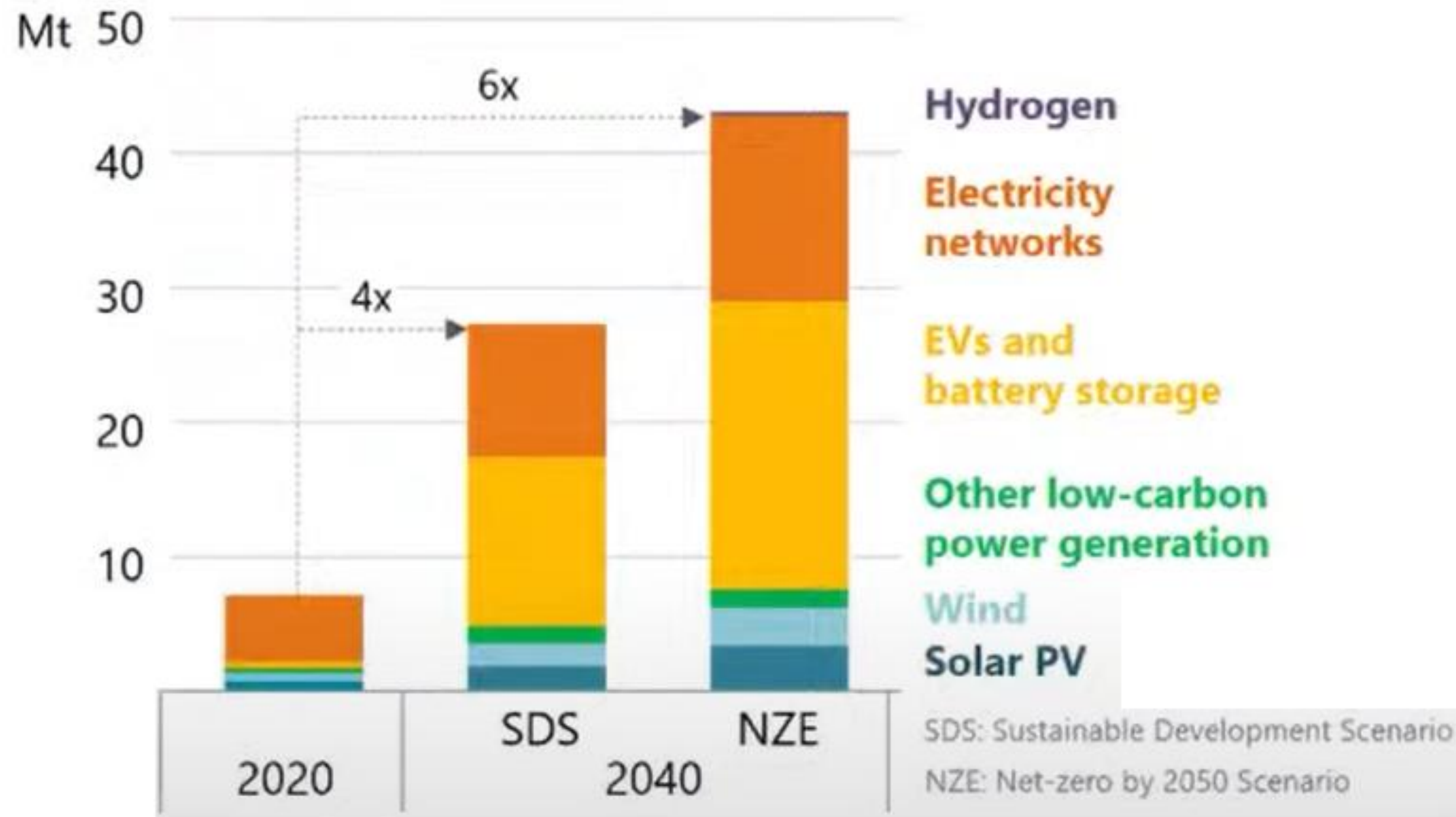
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MINERAL DEMAND FOR CLEAN ENERGY



Growth to 2040 by Sector



To reach net-zero by 2050, will require 6x the current levels of mineral production.

Source: IEA (2021), The Role of Critical Minerals in Clean Energy Transitions

CRITICALS MINERALS NEEDED



Critical Mineral needs for Clean Energy Technologies

	Copper	Cobalt	Nickel	Lithium	REEs	Chromium	Zinc	PGMs	Aluminium
Solar PV	●	●	●	●	●	●	●	●	●
Wind	●	●	●	●	●	●	●	●	●
Hydro	●	●	●	●	●	●	●	●	●
CSP	●	●	●	●	●	●	●	●	●
Bioenergy	●	●	●	●	●	●	●	●	●
Geothermal	●	●	●	●	●	●	●	●	●
Nuclear	●	●	●	●	●	●	●	●	●
Electricity networks	●	●	●	●	●	●	●	●	●
EVs and battery storage	●	●	●	●	●	●	●	●	●
Hydrogen	●	●	●	●	●	●	●	●	●

Relative importance of minerals for a particular clean energy technology:

High: ●

Moderate: ●

Low: ●

Source: IEA (2021), The Role of Critical Minerals in Clean Energy Transitions



Critical Minerals in LATAM



Latin America's mineral-rich countries may become key suppliers for the energy transition.

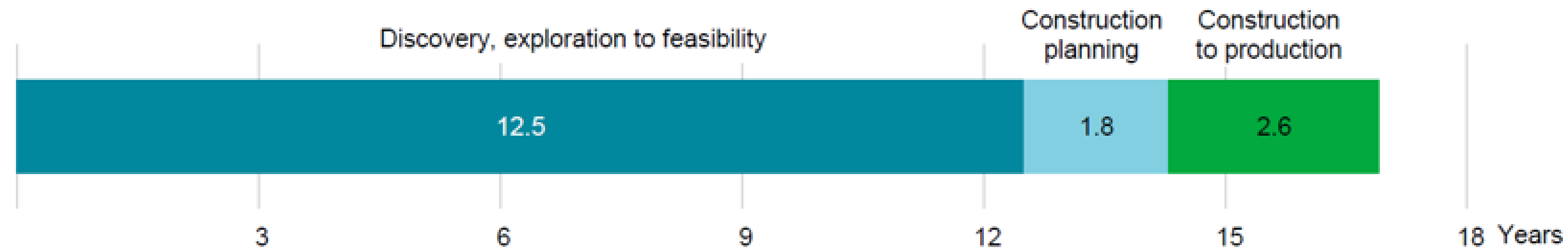
CHALLENGES

CHALLENGE #1

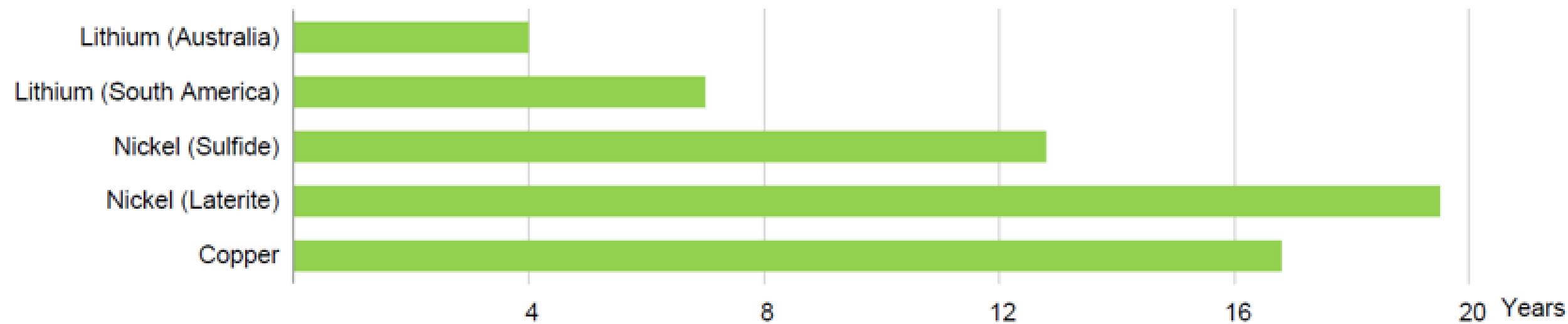
Lead Times

Global average lead times from discovery to production, 2010-2019

Global average, 2010-2019



Average observed lead time for selected minerals (from discovery to production)



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Note: Global average values are based on the top 35 mining projects that came online between 2010 and 2019.
 Source: IEA analysis based on S&P Global (2020), S&P Global (2019a) and Schodde (2017).

Immediate Action is Needed; demand may appear faster than the lead time from discovery to production.



CHALLENGE #2

Water Management



Copper and lithium are water-intensive. 80% of copper output in Chile is produced in areas of high water-stress and arid climates.

CHALLENGE #3

Social License to Operate

- National policies and frameworks.
- Country-specific strategies and climate policies have a key role in this transition to net zero emissions.
- This would benefit the global energy transition by reducing the risks of supply disruptions and mitigating environmental, social, and governance impacts associated with developing the mineral resources needed for clean energy technologies



Latin America as the Supplier of Choice

- Latin America must define a Critical Minerals Strategy.
- Drive cross-country collaboration.
- Essential to economic security.
- A sustainable source of critical minerals for our partners.





THANK YOU

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