



Generadoras de Chile

Energy, electricity and green hydrogen and the road to carbon neutrality

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Chilean Norwegian Green Hydrogen Forum

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Through the pandemic, the Chilean electric power industry has shown great resilience, and has shown to be a fundamental pillar for a sustainable recovery

In 2020

The yearly cumulative electricity sales were

0,2% above

the same period of 2019, despite the effects of the pandemics.

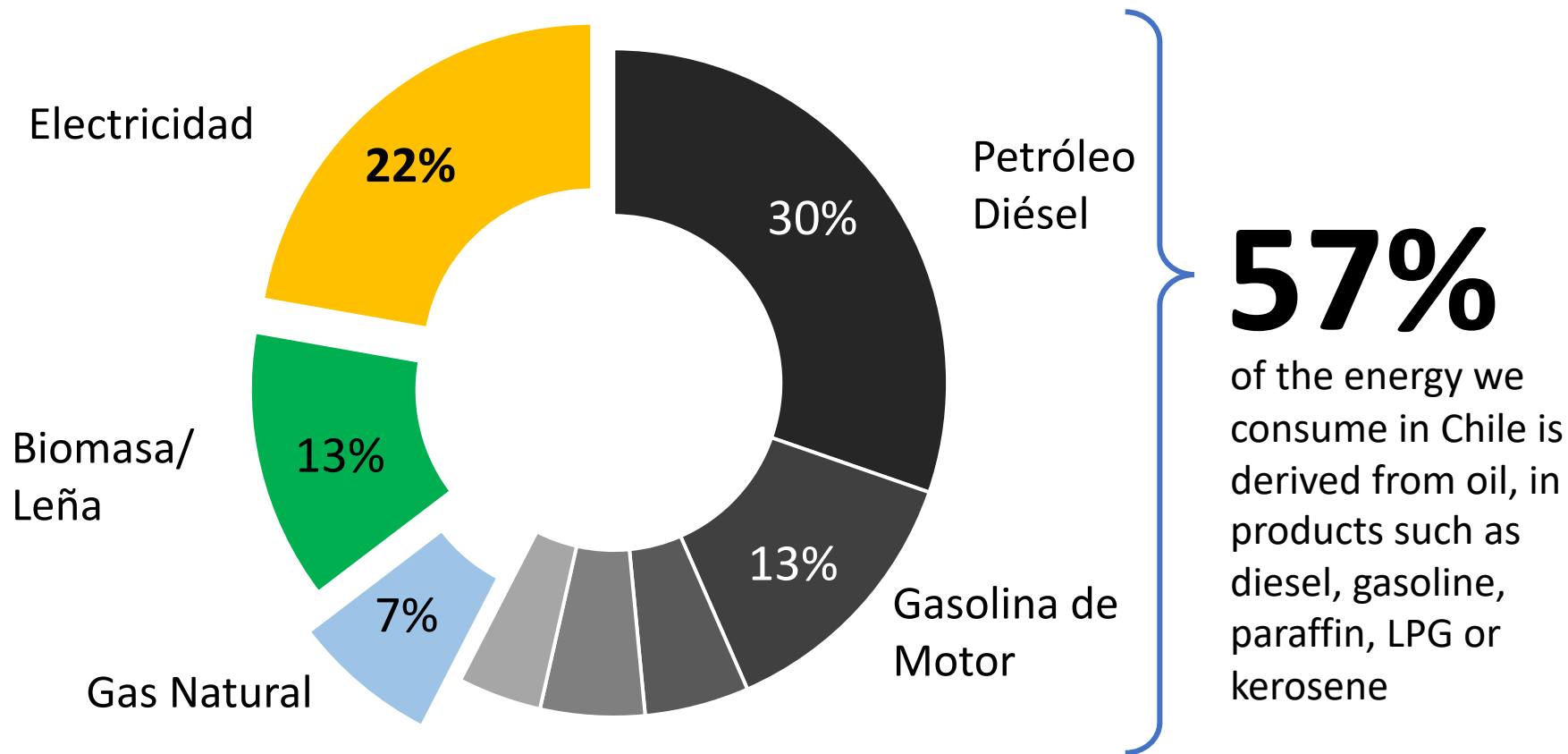
There is an all-time record of projects under construction, for ~ **7.400 MW**

(**+94%** compared to February 2020, and **+140%** compared to September 2019).

99% of all new power generation projects under environmental assessment are renewable, totalling **13.000 MW**

and **18.000** million dollars in investment.

Only 21% of final energy demand in Chile is electricity ¡30% is diesel!



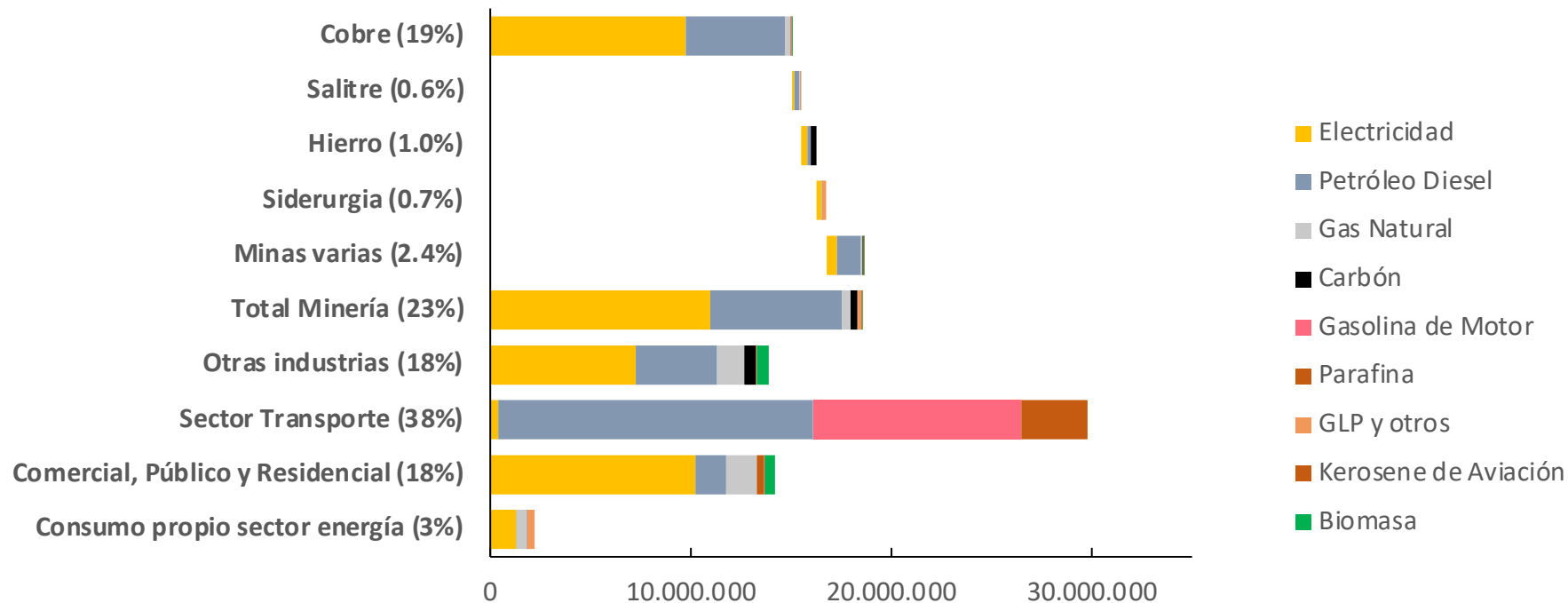
Source: Balance Nacional de Energía, Chile, 2017

Otros derivados del petróleo

By end use transport followed by mining are the main GHG emitters

Renewable electricity and the replacement of diesel will enable clean transport and “green mining”

CO2eq emission by end energy consumers

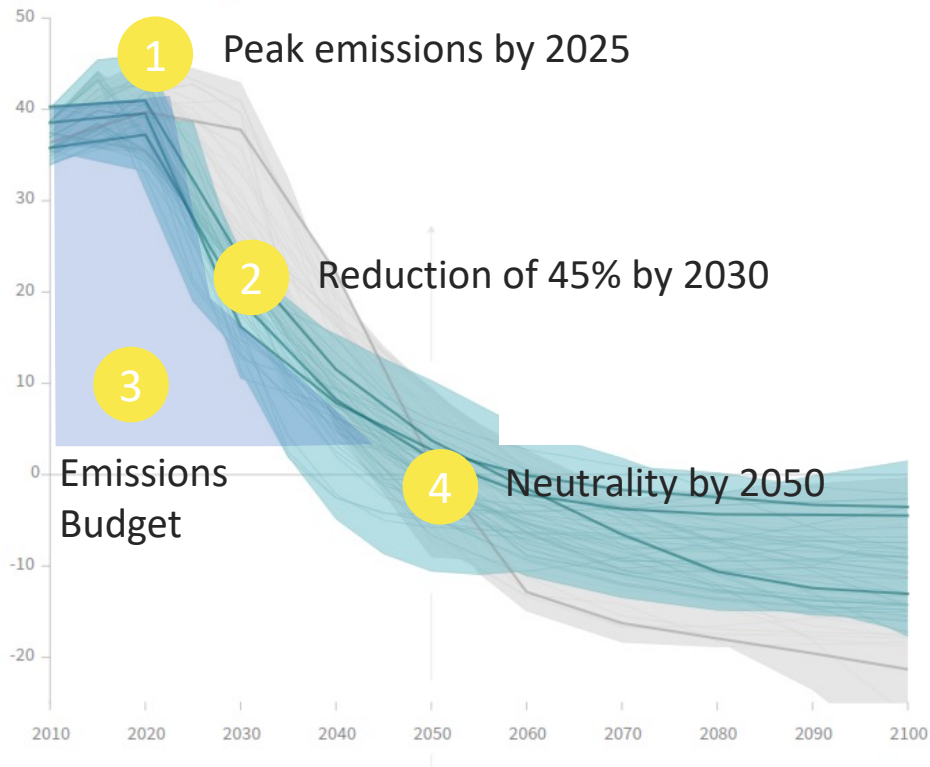


Fuente: Elaboración propia a partir de Balance Nacional de Energía 2017, Ministerio de Energía. Factores de emisión de electricidad promedio SEN 2018

Nota: Porcentajes de emisión expresados sobre el total de emisiones del sector energía fósil. No se incluyen emisiones GEI “no energía” como agricultura, residuos o procesos industriales.

Chile's commitments seek to be aligned with science and the 1,5°C target

New Chilean NDC 2020

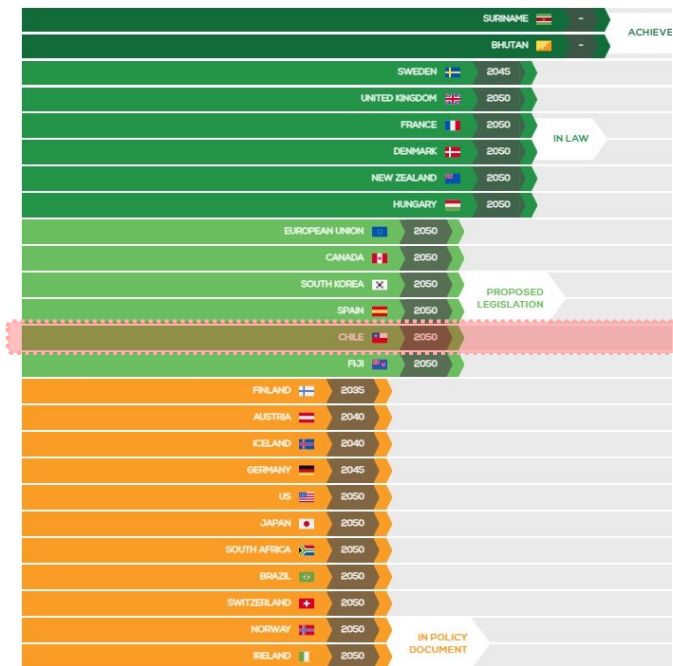


Source: Adapted from Chile's NDC (2020) and IPCC (2018)

Carbon neutrality by 2050 proposed in Climate Change Law

ENERGY & CLIMATE INTELLIGENCE UNIT

NET ZERO EMISSIONS RACE



Source: Energy & Climate Intelligence Unit (2020)

Chile is the first emerging country of the world to agree on coal phase out plan

2,5 GW out of 5 GW will shut down by 2024. Coal operation will cease by 2040 at the latest.



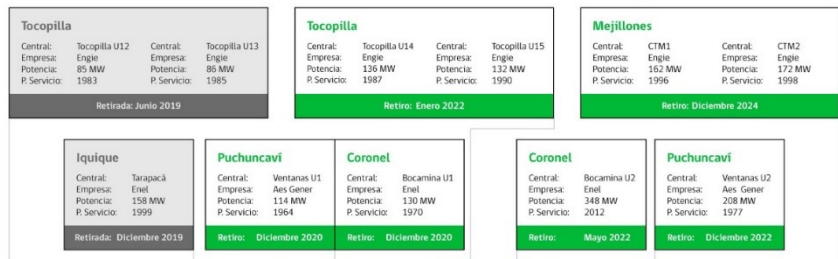
GOBIERNO Y GENERADORAS ANUNCIAN FIN DE NUEVOS DESARROLLOS DE PLANTAS A CARBÓN

Se constituye además un grupo de trabajo para analizar y definir condiciones y un cronograma para el cese programado y gradual de generación eléctrica a carbón en el marco de la Política Energética 2050.



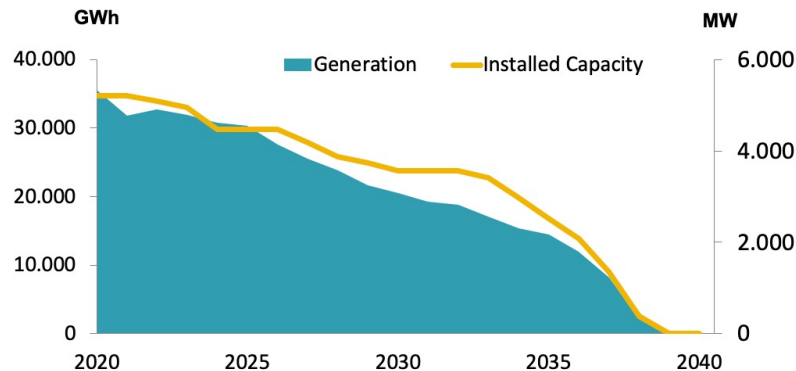
CIERRE DE LAS CENTRALES A CARBÓN Cronograma Primera Fase 2019-2024

Primera fase: 1.731 MW



Fuente: Ministerio de Energía

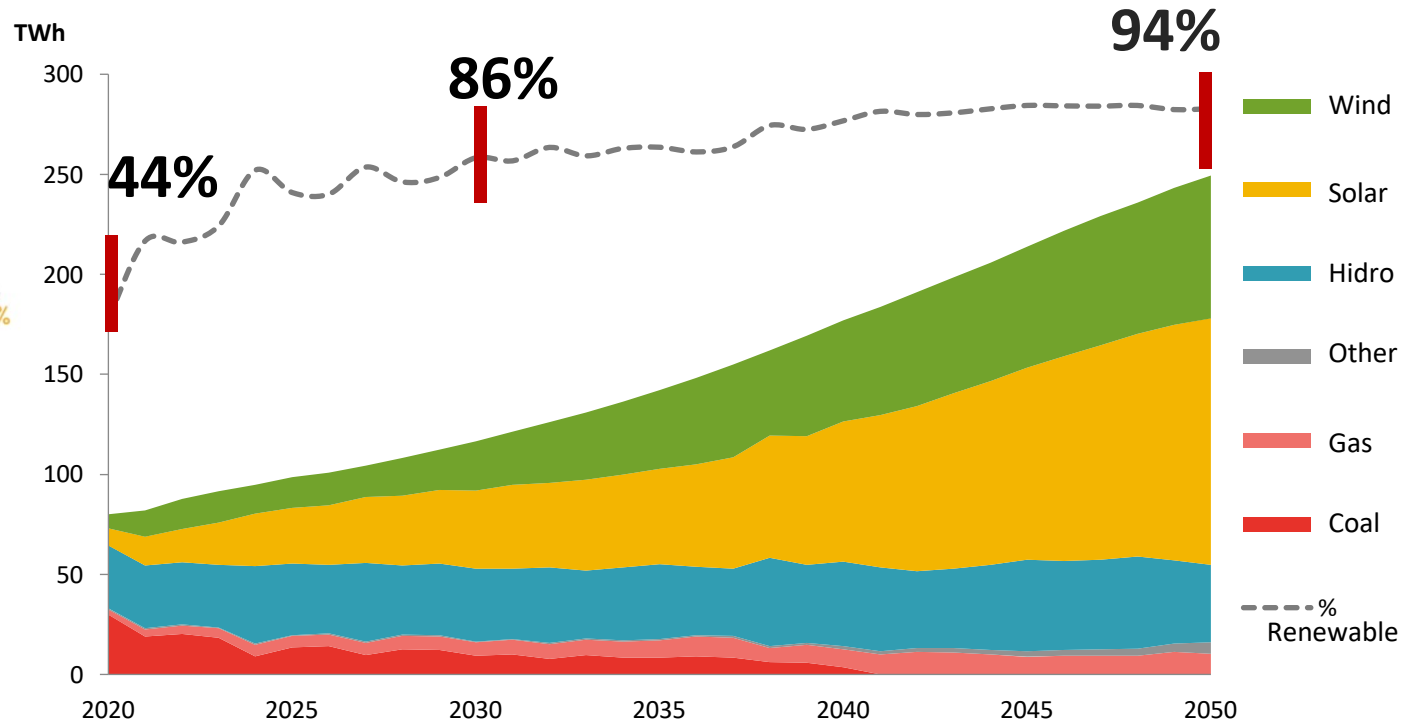
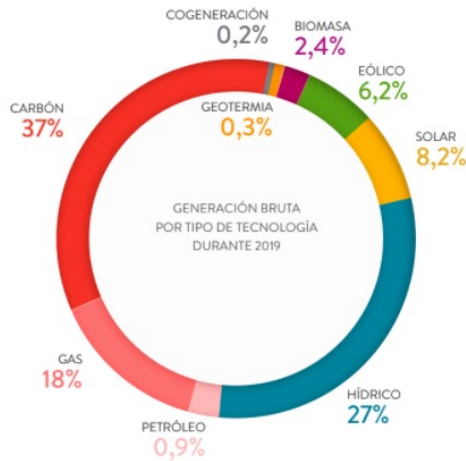
Actualizado a Mayo 2020



The future of Chilean power generation is renewable, essential to decarbonize our economy and to produce green hydrogen

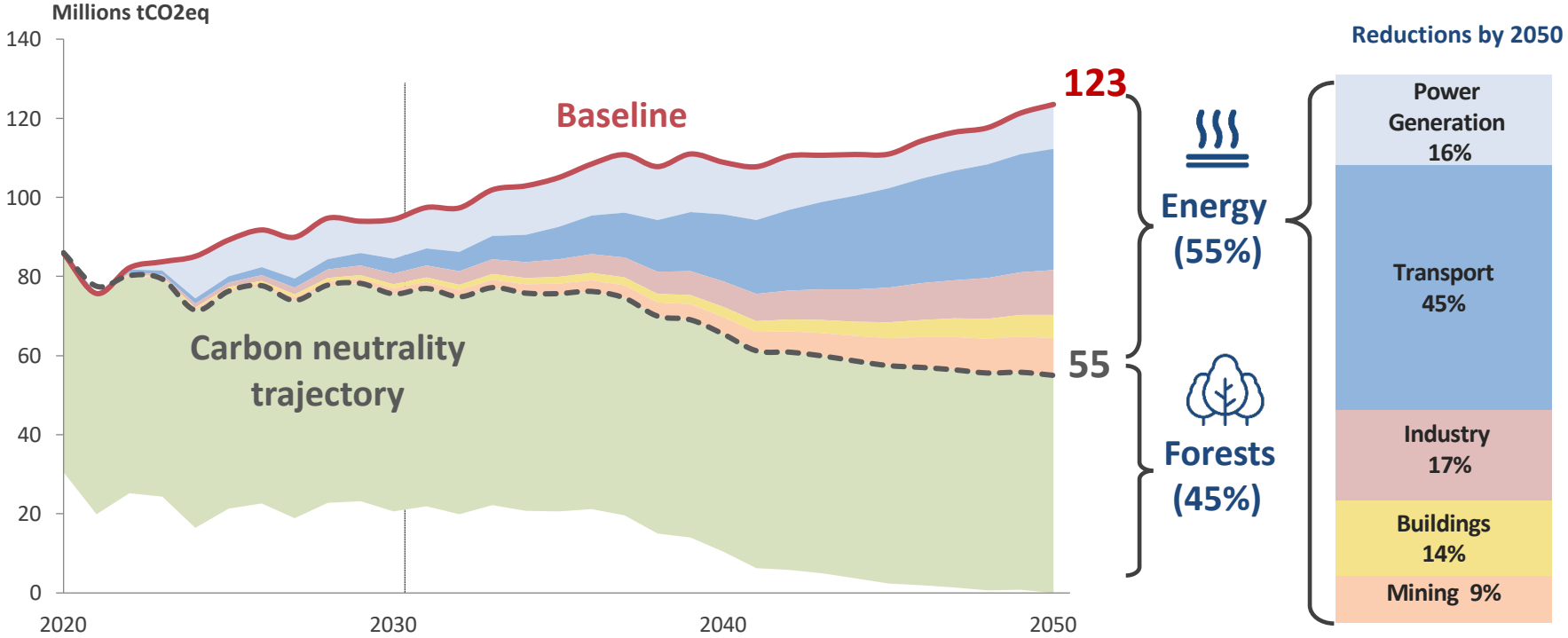
Power generation will triple from 77 TWh to +220 TWh by 2050, almost 100% renewable

In 2019, 37% of power generation came from coal



Carbon neutrality implies a profound shift in the energy sector, based on efficiency, electrification and green hydrogen, while maintaining forest carbon capture

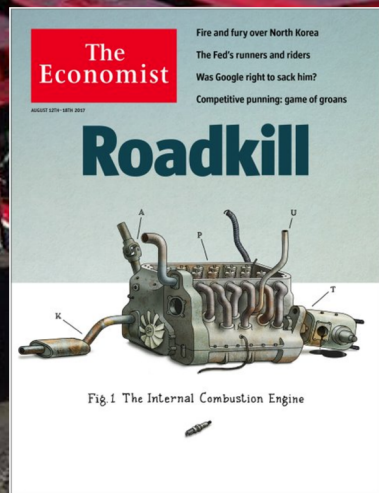
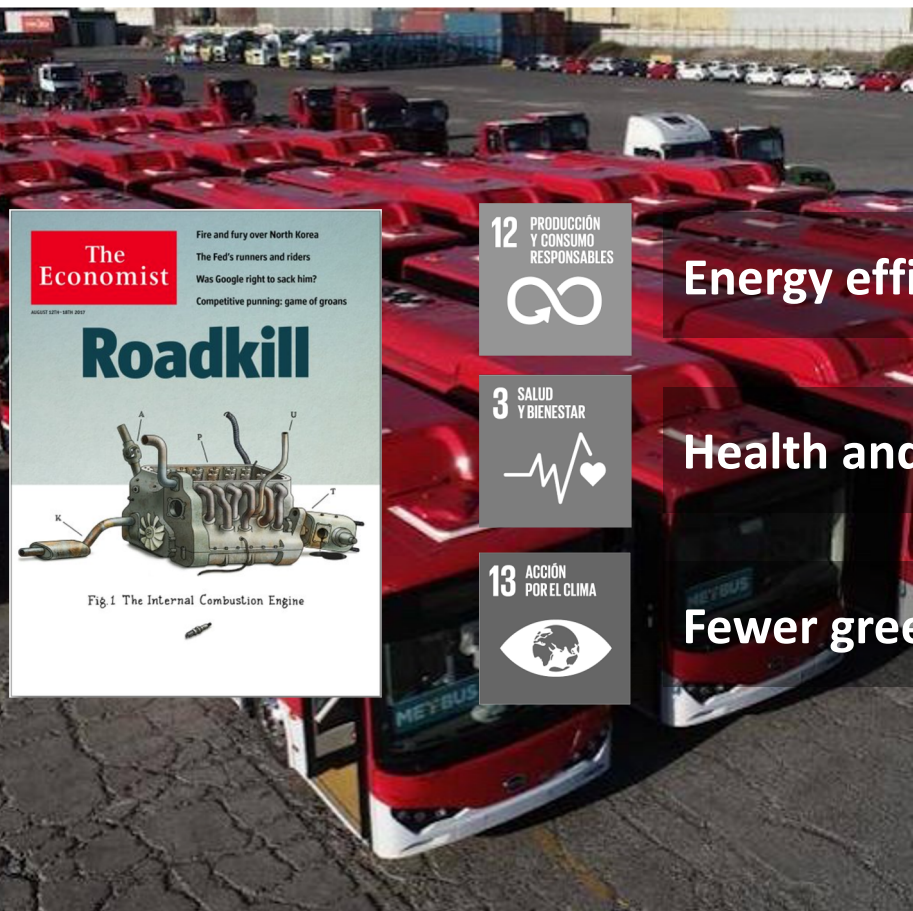
In the 2020-2030 period, power generation sector will contribute with over 60% of Chile's GHG emission reductions



Source: Trajectories of the Energy Sector to Carbon Neutrality (Chilean Association of Power Generators, E2Biz) 2019

The future of transport and mining will be electric and/or green hydrogen

Today there are more than 760 electric buses in public transport, probably the largest fleet out of China.



12 PRODUCCIÓN Y CONSUMO RESPONSABLES



Energy efficiency

3 SALUD Y BIENESTAR



Health and decontamination

13 ACCIÓN POR EL CLIMA



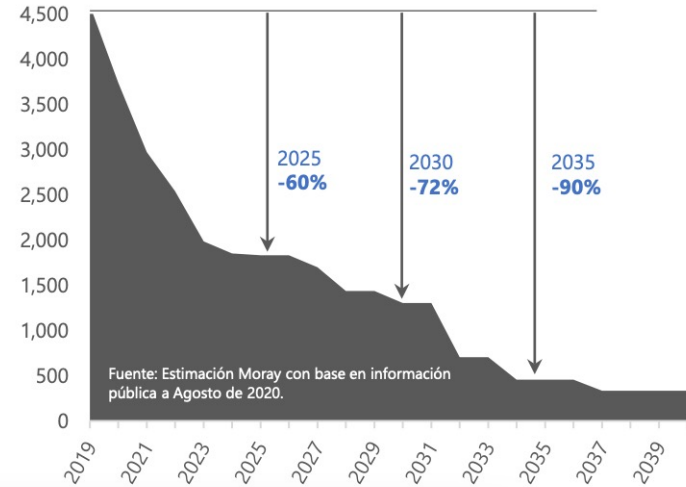
Fewer greenhouse gases emissions



Chilean mining industry is moving fast towards a renewable electricity supply

- Since 2017, PPA's are being renegotiated as to change coal-based power supply contracts for renewable ones. **This is a growing trend through the entire industry.**
- BHP recently announced that it would pay **840 million USD to end a coal PPA** with AES Gener ahead of schedule.
- The reduction in coal-based PPA contracts is expected to reach **60% by 2025** and **90% by 2035**.

Coal-based PPA's of the mining industry



More in News, Power Plants, Inverters, Projects, Markets & Finance, Companies, Financial & Legal, Americas

Enel plants to power Anglo American's full renewable switch in Chile

By José Rojo Martín | Jul 30, 2019 11:26 AM BST | 0

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COMMODITIES NEWS | AUGUST 8, 2020 / 10:28 AM / UPDATED 3 MONTHS AGO

BHP to pay \$840 million for early end to thermoelectric contract in Chile

By Reuters Staff

1 MIN READ



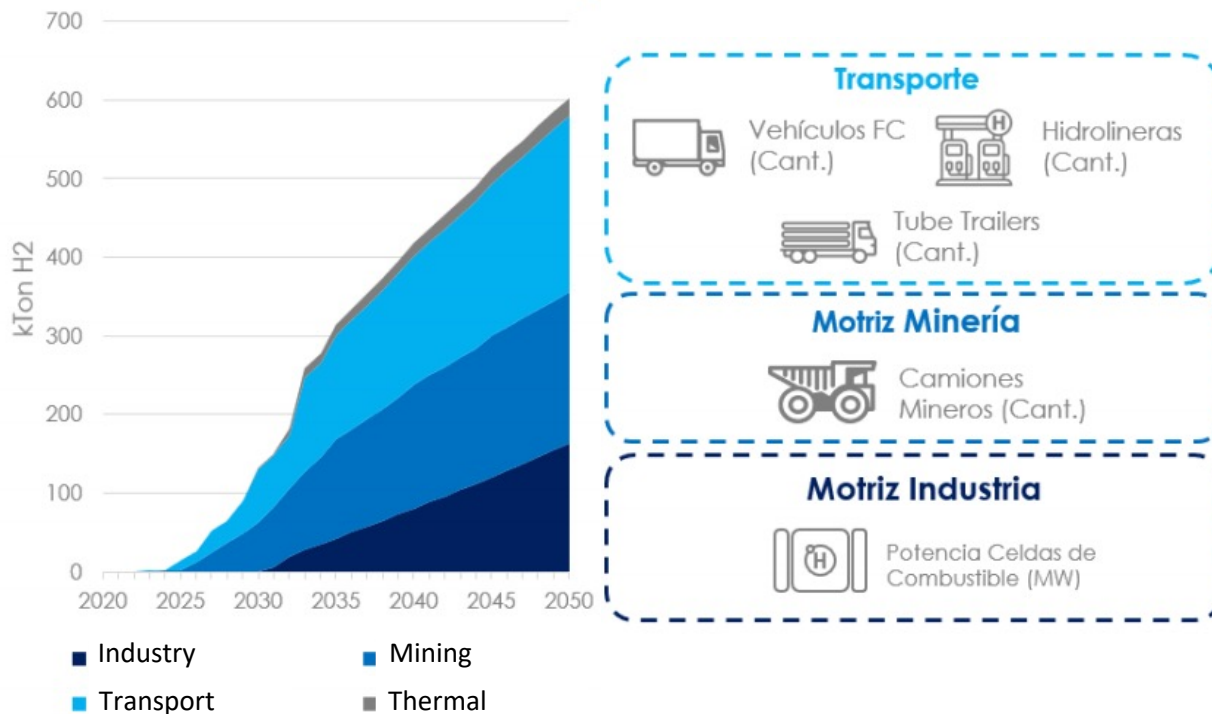
Solar salts, copper and lithium, key resources for a net zero economy through renewables, energy storage and electric mobility are a great opportunity for the Chilean mining industry
Chile produces a third of world copper and has the largest and highest quality lithium reserves.



Green hydrogen will require large amounts of renewable power

Local demand will be mainly composed by transport, industry and mining

Local demand for green H₂ based on a carbon neutrality trajectory between 2020 and 2050



600 kTon of Green H₂ are required by 2050.

This is equivalent to **20** TWh, which is over 25% of all the yearly power generation of the entire Chilean power system, as of today.

The massive deployment of new renewable power along with the coal phase out will require important new expansions of the transmission system

As of September 2020:

46

transmission projects under construction

820

million dollars in investment under construction

767

km of lines under construction

HVDC

Long-term auction of Chile's first

transmission line 1.500 km in length and an est. cost of 1 billion dollars connecting the Atacama desert with Santiago due in 2030

Renewable energy (also) face sustainability issues



Resource location

Transmission lines

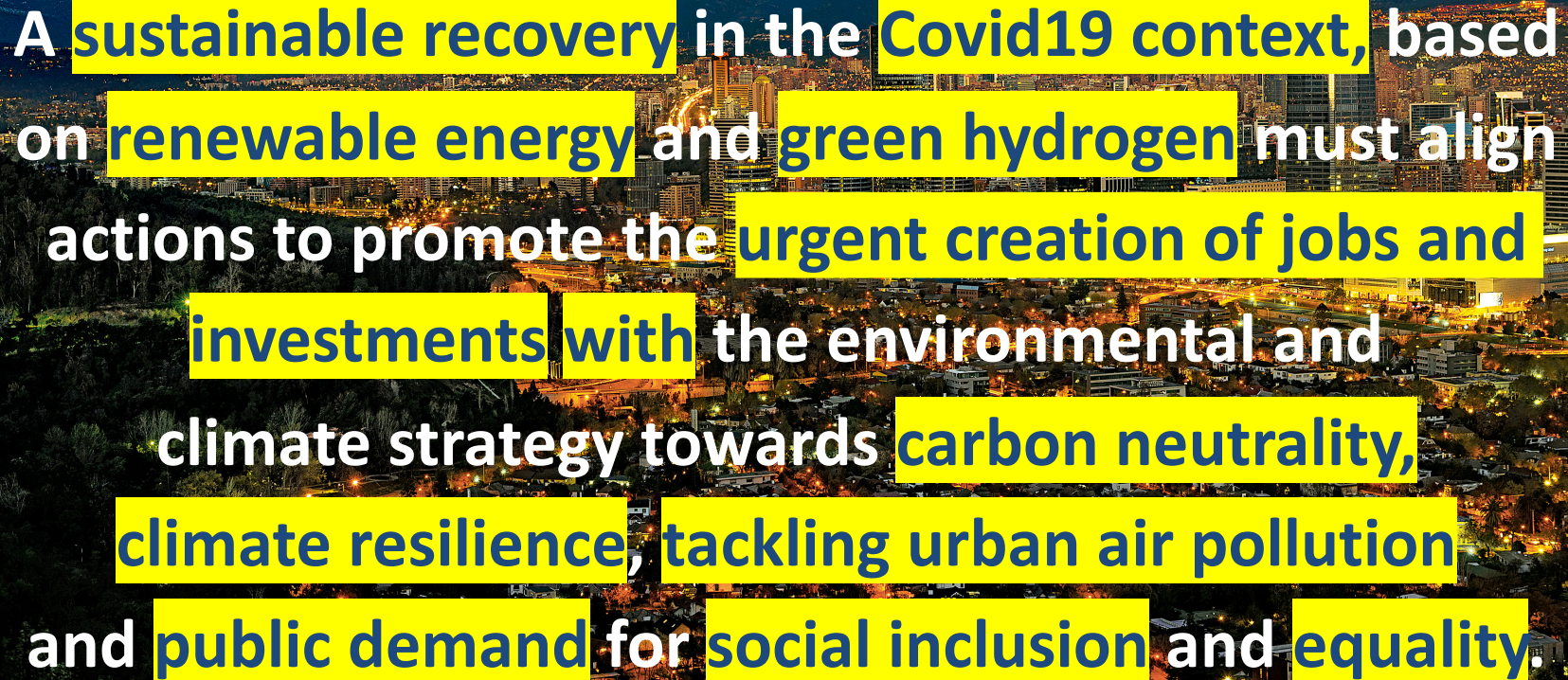
Local communities

Indigenous rights

Decentralization

Territorial planning

Biodiversity



A sustainable recovery in the Covid19 context, based on renewable energy and green hydrogen must align actions to promote the urgent creation of jobs and investments with the environmental and climate strategy towards carbon neutrality, climate resilience, tackling urban air pollution and public demand for social inclusion and equality.



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Thank you!

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