

Energy, electricity and climate change

Pillars of a sustainable recovery and a carbon neutral Chilean economy

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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

As of September, 2020:

The yearly cumulative electricity sales are

only 0,2% below

the same period of 2019.

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).

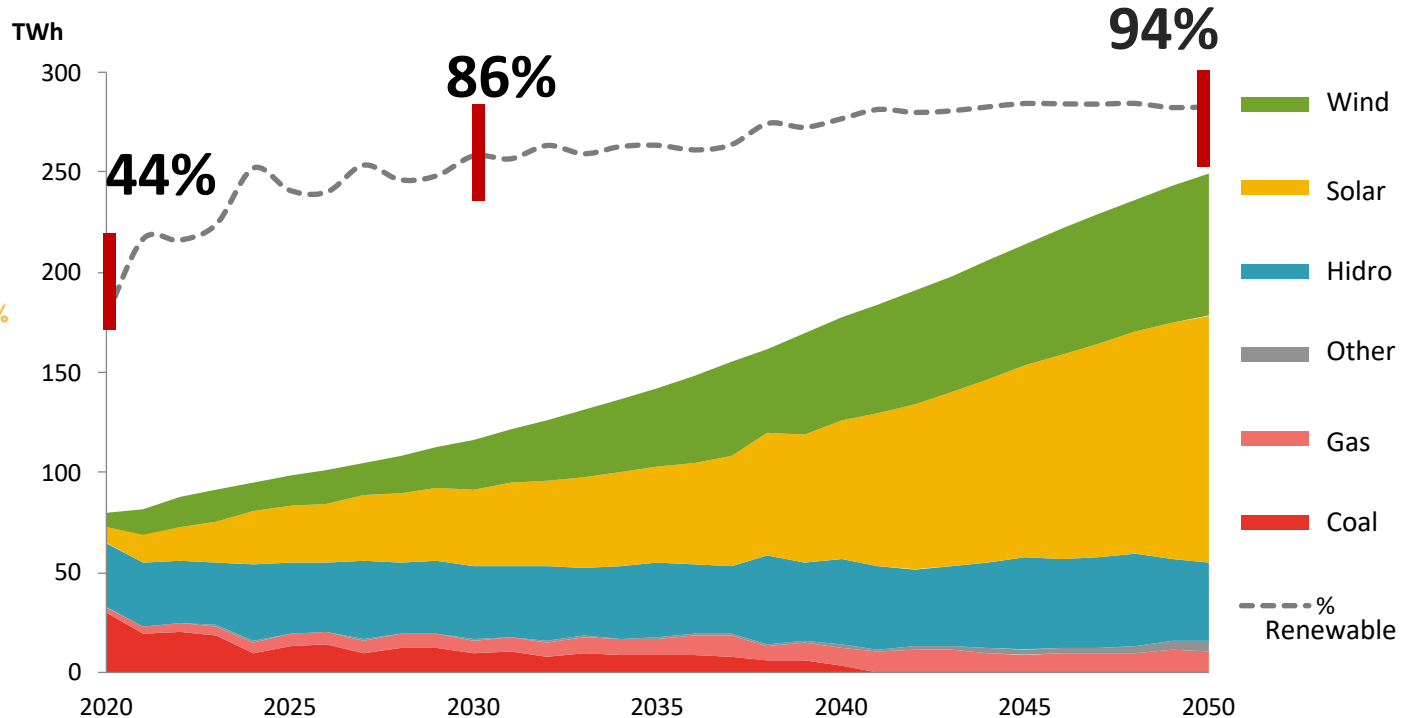
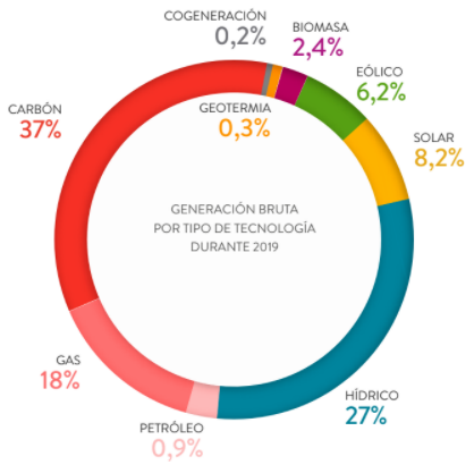
99% of all new power generation projects under environmental assessment are renewable, totalling **13.000 MW**

and **18.000** million dollars in investment.

The future of Chilean power generation is renewable, essential to decarbonize our economy

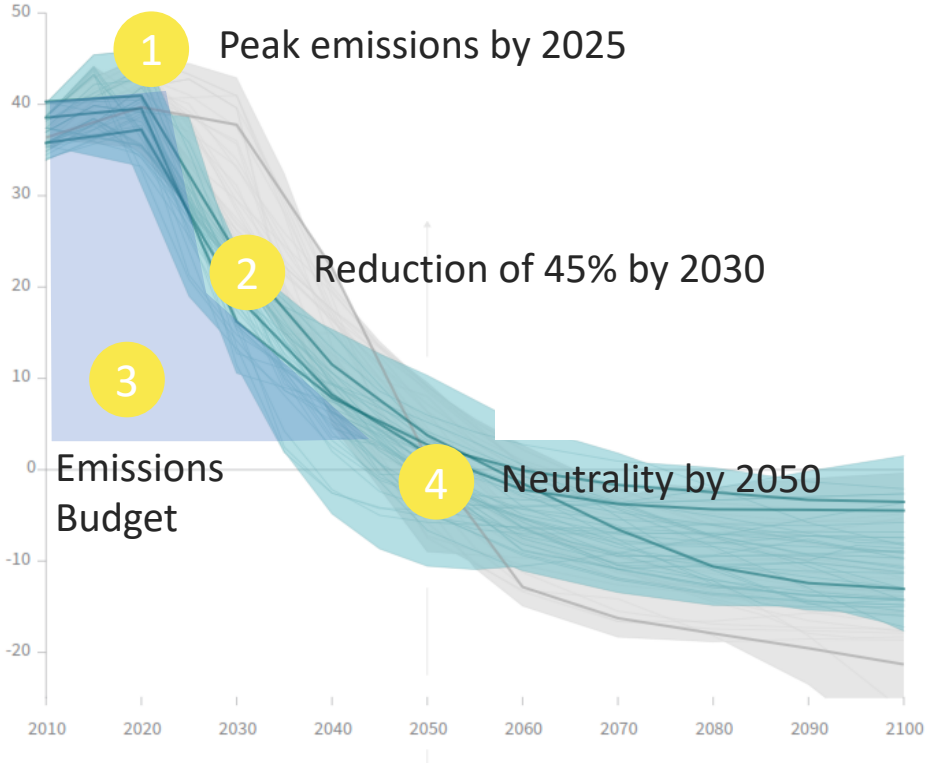
Power generation will triple from 77 TWh to +220 TWh by 2050, almost 100% renewable

In 2019, 37% of power generation came from coal



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

New Chilean NDC 2020

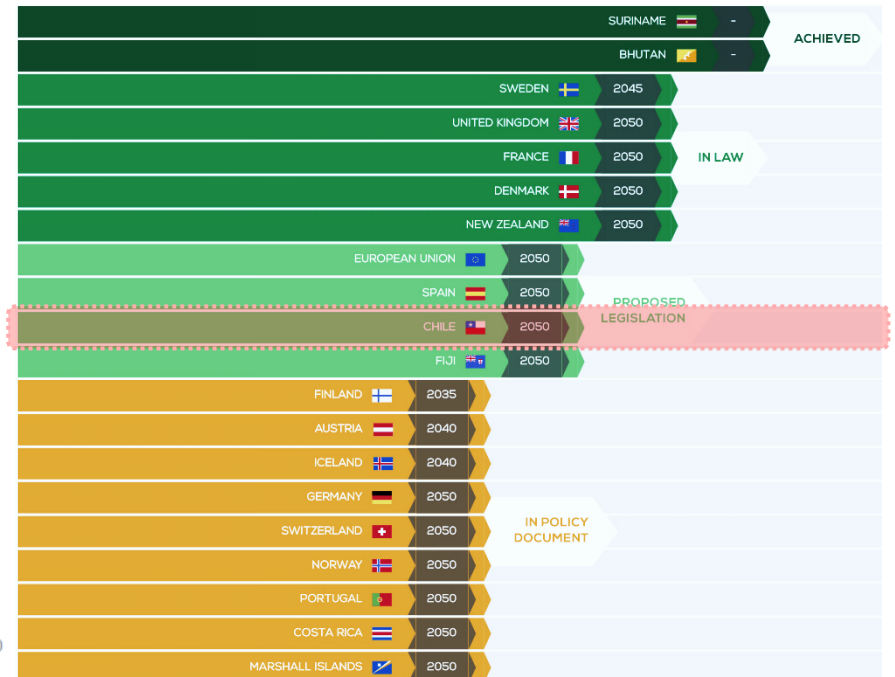


Source: Adapted from Chile's NDC (2020) and IPCC (2018)

Carbon neutrality by 2050 proposed in Climate Change Law

ENERGY & CLIMATE INTELLIGENCE UNIT

NET ZERO EMISSIONS RACE



4 Source: Energy & Climate Intelligence Unit (2020)

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

1,7 GW out of 5 GW will shut down by 2024. Coal operation will cease by 2024 at the latest.



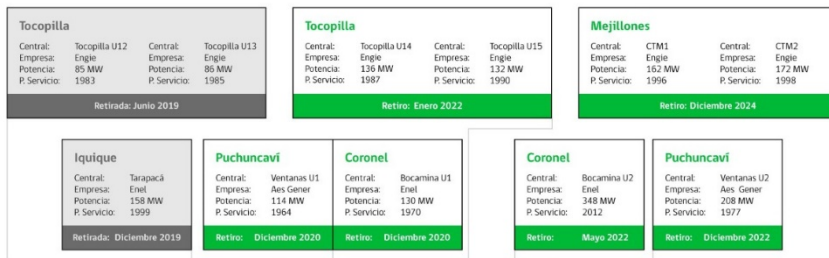
GOBIERNO Y GENERADORAS ANUNCIAN FIN DE NUEVOS DESARROLLOS DE PLANTAS A CARBÓN

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.



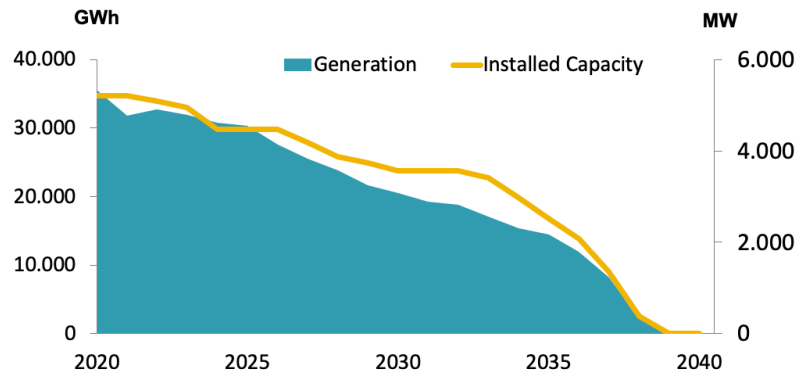
CIERRE DE LAS CENTRALES A CARBÓN Cronograma Primera Fase 2019-2024

Primera fase: 1.731 MW



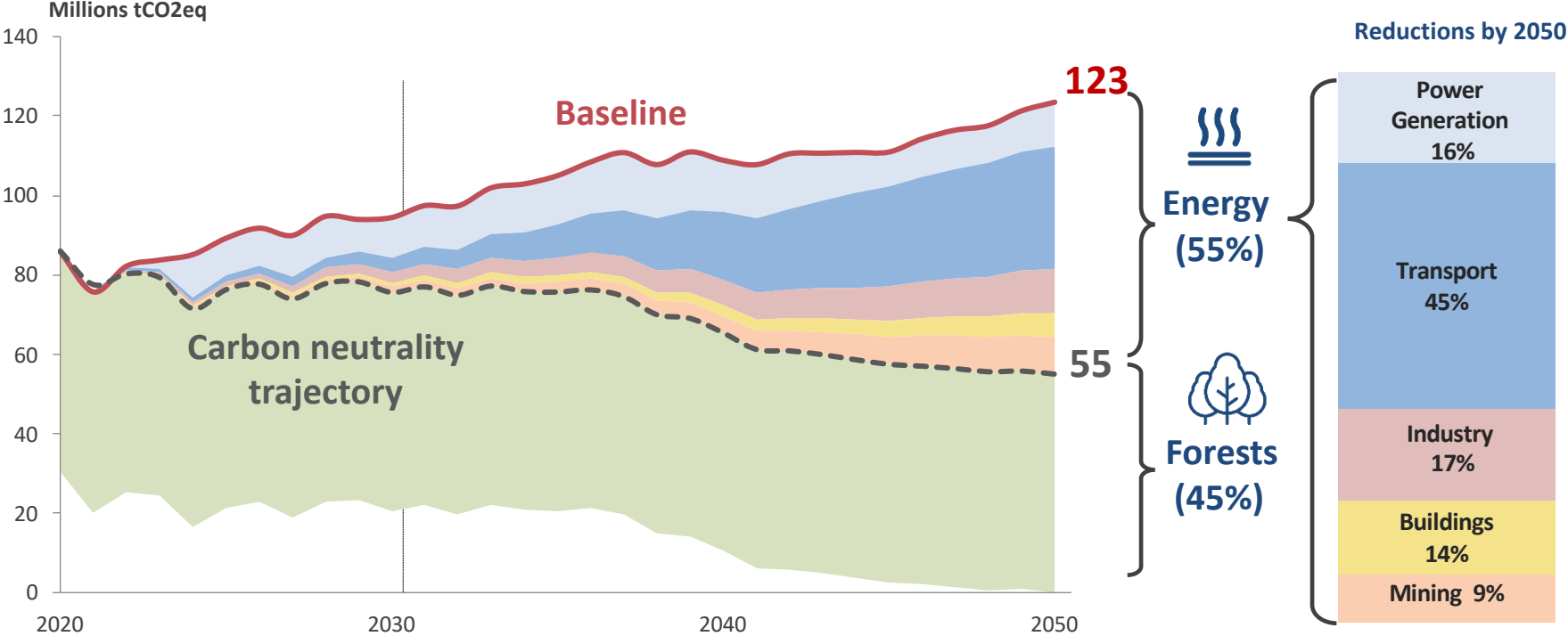
Fuente: Ministerio de Energía

Actualizado a Mayo 2020



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

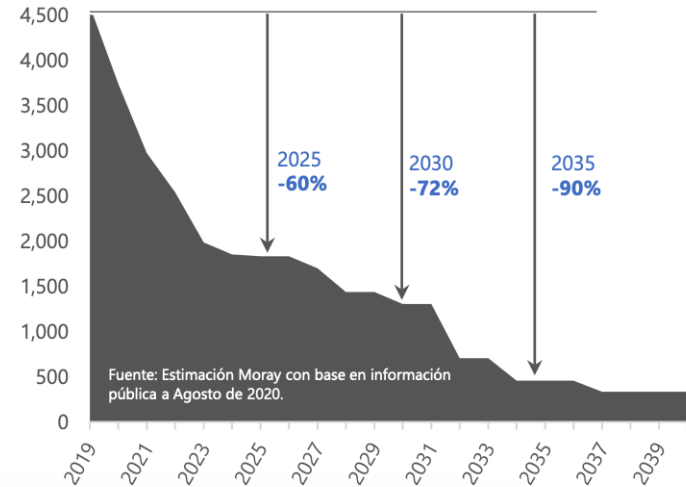


Source: Trajectories of the Energy Sector to Carbon Neutrality (Chilean Association of Power Generators, E2Biz) 2019

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



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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

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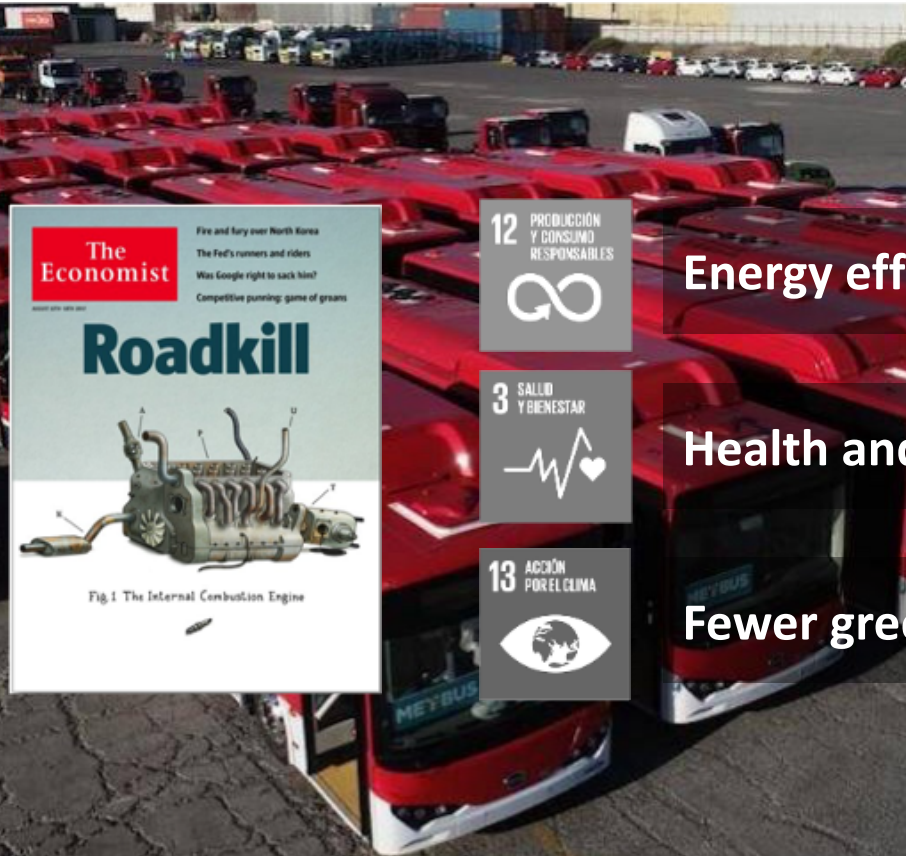


Solar salts, copper and lithium, key resources for a net zero economy through renewables, energy storage and electric mobility are a great opportunity for the Chilean mining industry
Chile produces a third of world copper and and has the largest and highest quality lithium reserves.



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.



Energy efficiency



Health and decontamination



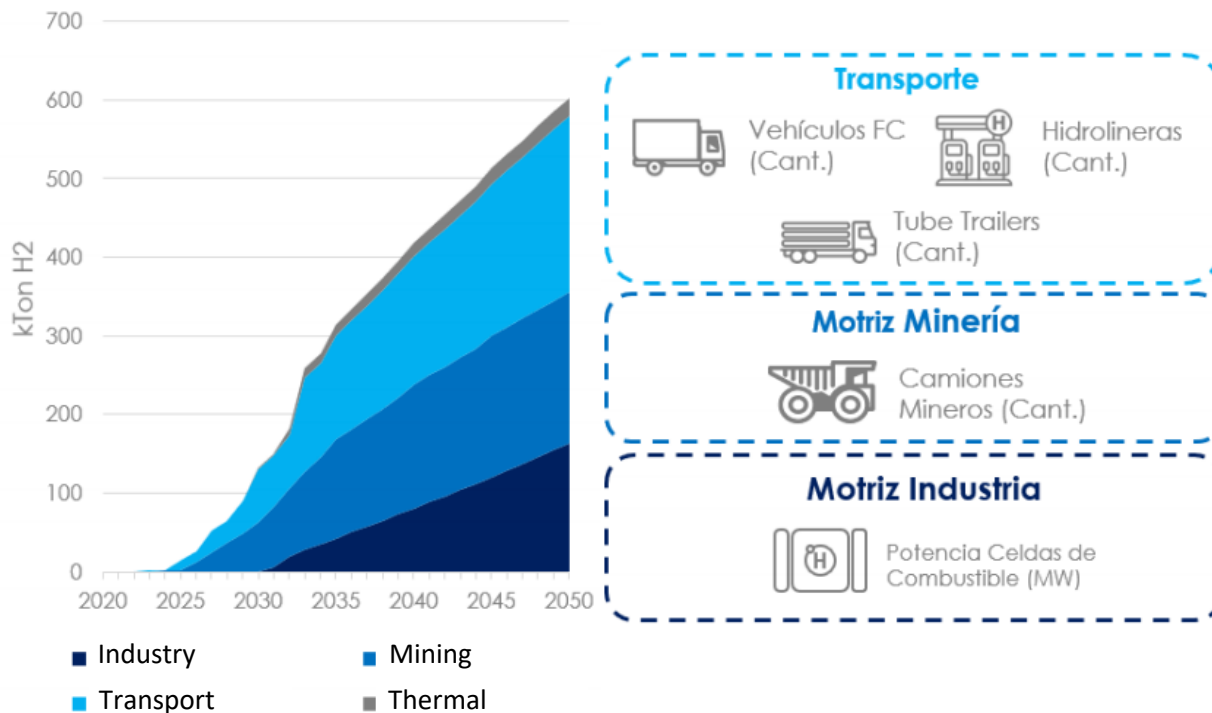
Fewer greenhouse gases emissions



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

The modernization of the distribution industry should improve quality of service and help to sustain the energy transition and decarbonization of energy demand

- Increased competition in the energy retail market (“Right to Electric Portability” bill)
- Separation of grid management and the introduction of energy traders
- Independent entity to manage customer’s data
- Supply reliability, quality of service and digitization
- Distributed energy resources (Electromobility, storage, rooftop PV and others)



Renewable energy (also) face sustainability issues



Resource location

Transmission lines

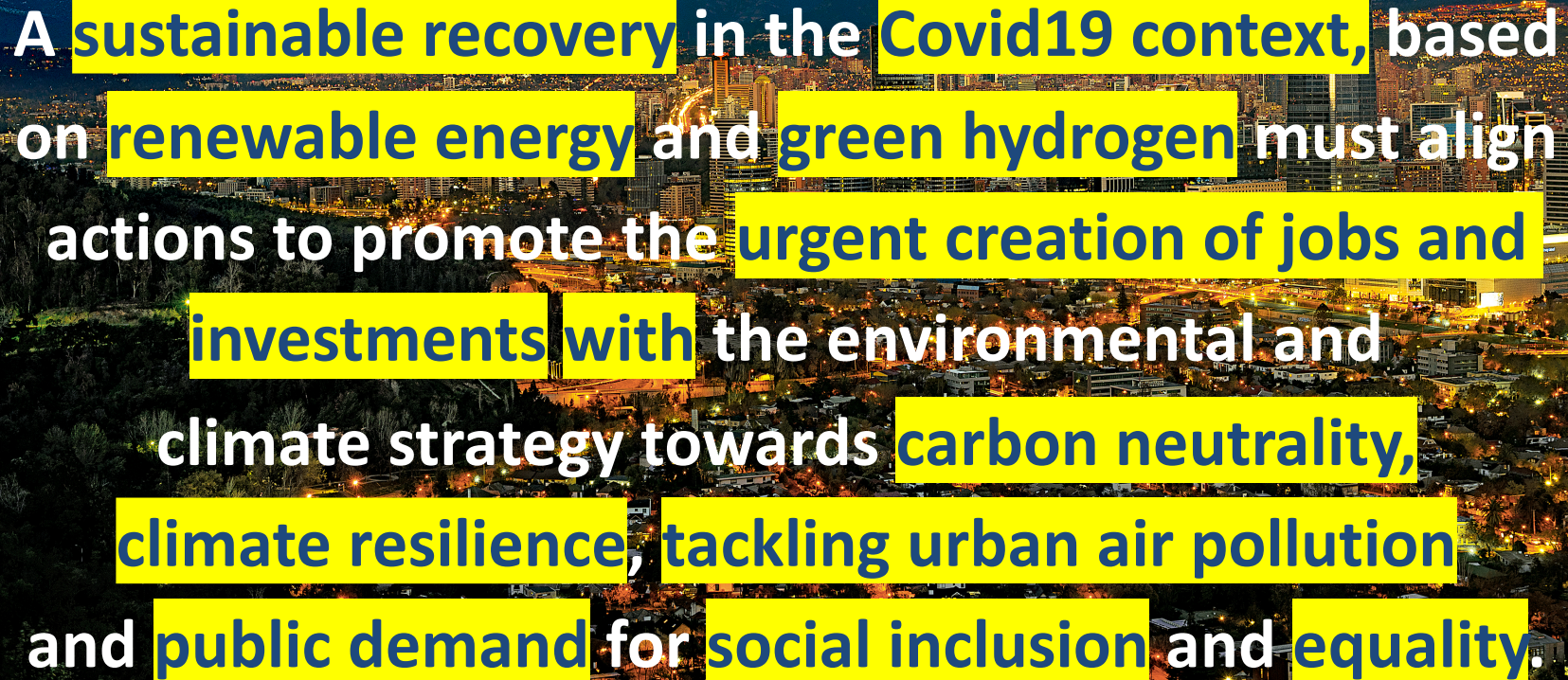
Local communities

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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