

Chile: renewable energy potential

We have an advantaged situation to generate energy based on renewable sources, particularly through technologies derived from the use of solar radiation and wind availability.

27 DE OCTUBRE DE 2022

Histórico: Por primera vez en Chile la energía solar y eólica superan al carbón en la generación de electricidad

El ministro de Energía, Diego Pardow, destacó la continuidad en las políticas de Estado que han permitido descarbonizar la matriz energética.





Desarrollo energético crecientemente renovable

It is expected a steady growth in power generation for the next decades, mainly based on technologies like photovoltaic, concentrated solar power, and wind.

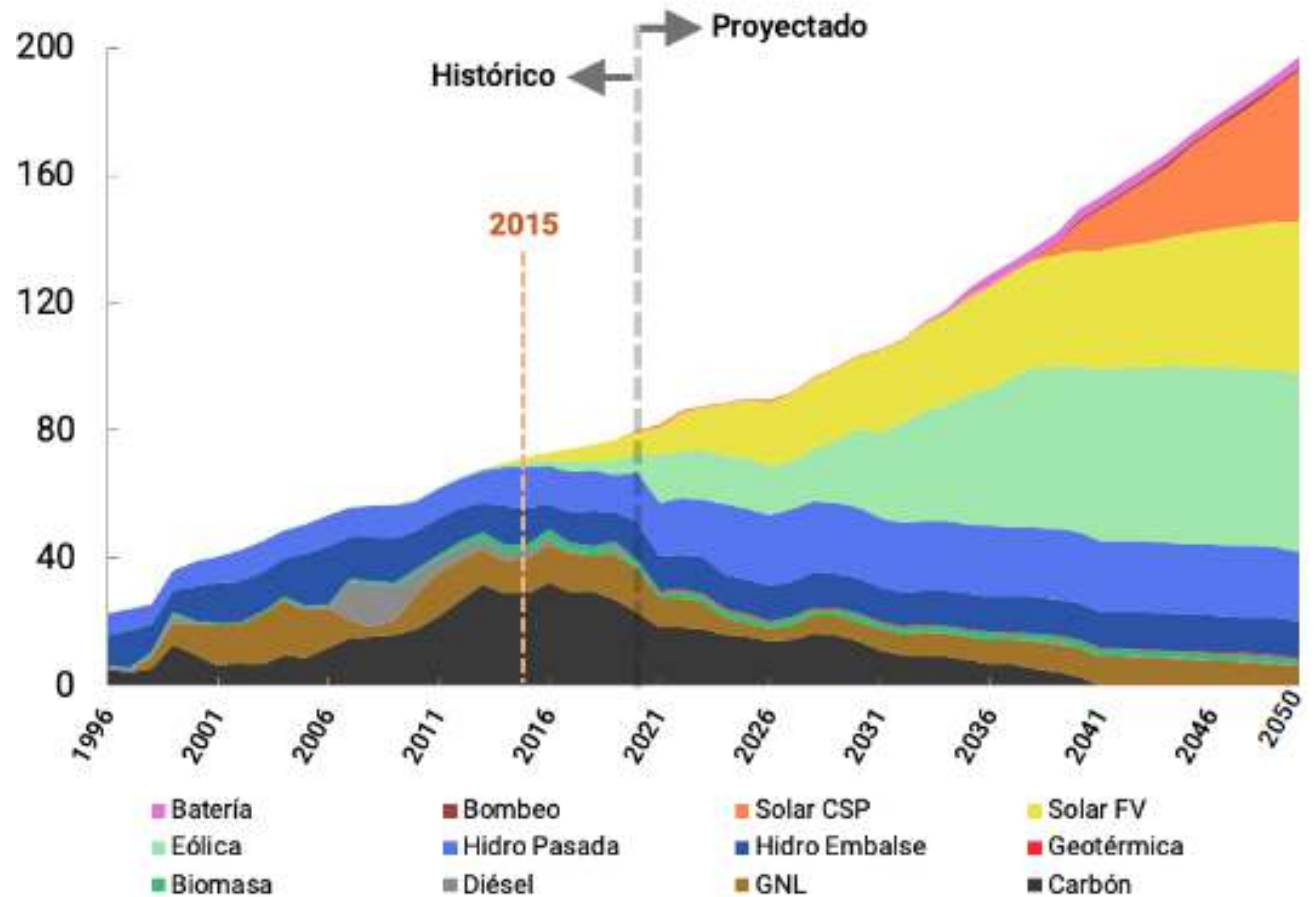



Figura 1. Generación eléctrica por tipo de fuente [TWh], 1996-2050.

Fuente: Comisión Nacional de Energía de Chile y proyecciones del Informe preliminar de la Planificación Energética de Largo Plazo (PELP).



Renewable energy potential points the energy sector as a solution

We have the opportunity to use our renewable energy potential to accelerate the decarbonization of the electricity matrix and develop the green fuels industry.

Agenda de Energía 2022-2026:

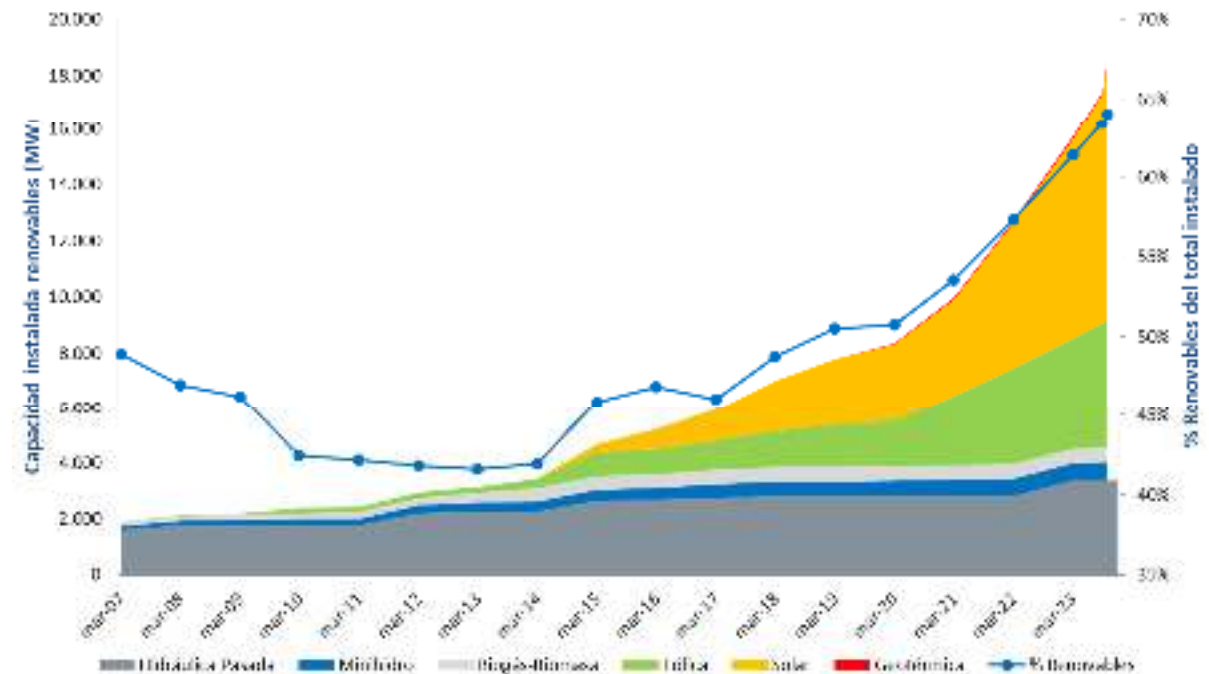
We will transition to a fair, sustainable, resilient, and safe energy system with energy access for all.



Important advances 2007 - 2023

- Installed Capacity: from 10,9 GW to 32,9 GW.
- Installed Capacity - renewables participation: from 47,7% to 63,3%.

Evolución capacidad instalada de renovables entre marzo 2007 y septiembre 2023





September 2023 summary - Antofagasta



8.548 MW

Total installed capacity in operation



48% Renewables

Installed capacity



144 MW

In testing phase



USD 2.274 millions

In investments associated to power plants, energy transmission and hidrogen projects under construction



10 power plants

Under construction



2.222 MW

Net Installed capacity associated to power plants under construction



123 km

Of national system transmission lines under construction



10 projects under environmental evaluation process

Power plants and energy transmission projects



2.958 MW

Installed capacity associated to power plants under environmental evaluation of SEIA



USD 3.652 millions

In investments associated to power plants and energy transmission projects



Antofagasta: Main projects under construction y connection tests

Project	Holder	Phase	Tecnology	Installed Cap. MW	Investment MMUSD
Parque Eólico Horizonte	Colbún	Construction	Wind	812,0	850,0
Parque Eólico Lomas de Taltal	Engie	Construction	Wind	353,4	424,0
PFV Las Salinas	ENEL	Connection tests	Solar	364,0	333,0
Andes IV	AES Andes	Construction	Solar, BESS	130,0	250,0
FV CEME1	Generadora Metropolitana	Construction	Solar	380,0	213,0
Parque Eólico Ckhúri	Mainstream	Construction	Wind	107,2	176,0
Planta Fotovoltaica Tocopilla	Metka	Construction	Solar	227,5	170,0
S/E Monte Mina y línea de transmisión Parinas - Monte Mina	TRANSELEC	Construction	Transmission line, Substation		105,6
FV Elena - Etapa I - Fase I	Ibereolica - Repsol	Connection tests	Solar	67,5	76,8
Subestación Seccionadora Nueva La Negra 110/220 kV	Engie	Construction	Substation		17,8

Source: Own elaboration from information available in CEN (2023), SEIA(2023) and Ministry of Energy (2023).



Antofagasta: projects under enviromental evaluation – September 2023

Name	Holder	Tecnology	Net installed Capacity MW	Investment MM USD
Parque Híbrido Pampas	Energía Wind Pampas SpA	Wind, Solar, BESS	392,0	800,0
Parque Fotovoltaico Cristales	Cristales SpA	Solar, BESS	375,0	710,0
Parque Windo Wayra	EDF en Chile Holding SpA	Wind, Solar, BESS	557,0	623,9
ERNC Loa	ERNC LOA Spa	Wind, Solar	445,0	463,9
Proyecto Alba	Eléctrica Angamos SpA	Molten Salt	560,0	450,0
Parque Fotovoltaico Parina Solar	Parina Solar SpA	Solar	248,0	248,0
Parque Fotovoltaico Terrazas	Andes Mainstream SpA	Solar	155,2	120,0
ERNC Tarapacá - Parte Solar	ERNC Loa SpA	Wind, Solar	226,0	200,0
Traslado y Reposición Subestación Eléctrica Chamy, División Radomiro Tomic	CODELCO Chile, División Radomiro Tomic	Subestación	-	25,0
Ampliación en SE Ana María y Seccionamiento Línea 2x220 kV Frontera-María Elena	TSGF SpA	Subestación	-	12,0

Note (*): Inter-regional projects with Tarapacá region.

Source: Own elaboration from information available in SEIA (2023) y Ministry of Energy (2023).



Plan de Retiro y/o Reconversión de Unidades a Carbón

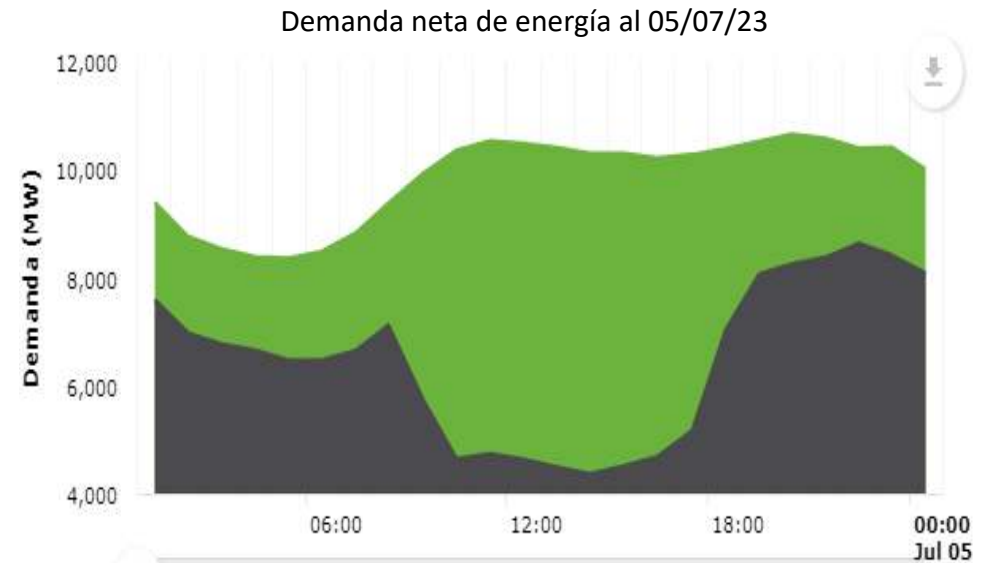
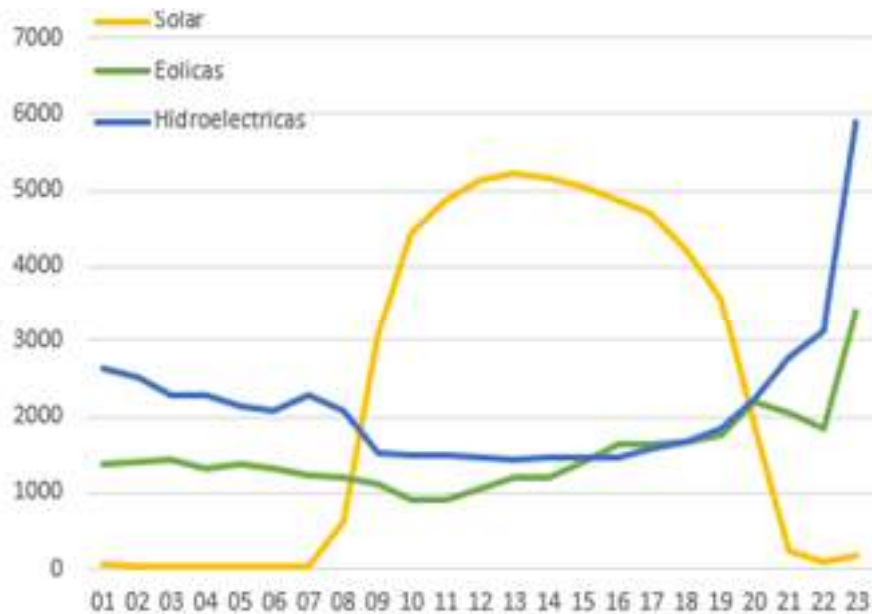


Coal phase out and/or conversion of coal units

- 2019: Signing of agreement between the State and energy companies closure of coal plants:
 - Phase 1 – short term: closure of 8 units (nov. 2022).
 - Phase 2 – mid term: gradual and flexible closure- conversion of remaining units.

However...

Photovoltaic and wind power based electricity generation, is not continuous throughout the day or seasons; and not necessarily fully align with energy demand.



https://www.coordinador.cl/?jav_iWebAncho=1920

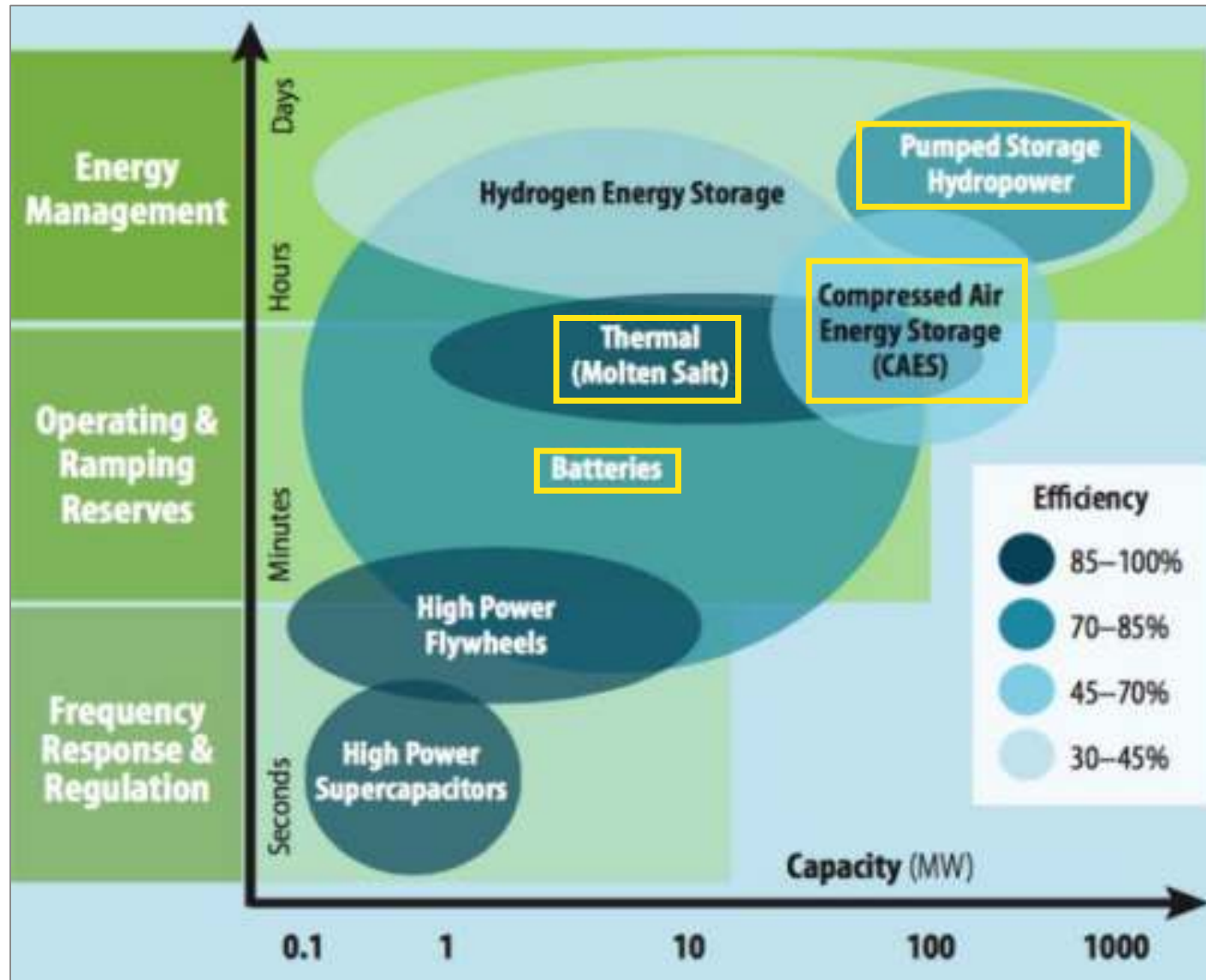


Therefore...

- Thermoelectric power plants must continue operating to ensure the supply of energy in periods when renewable sources are not capable of production.
- Energy storage systems appear as an alternative that can help accelerate the decarbonization of the matrix. Indeed, as they can manage the energy produced, they can provide the security, stability and flexibility that energy systems based on renewable energy requires.

Energy storage systems:

Potential size and expected uses according to technology



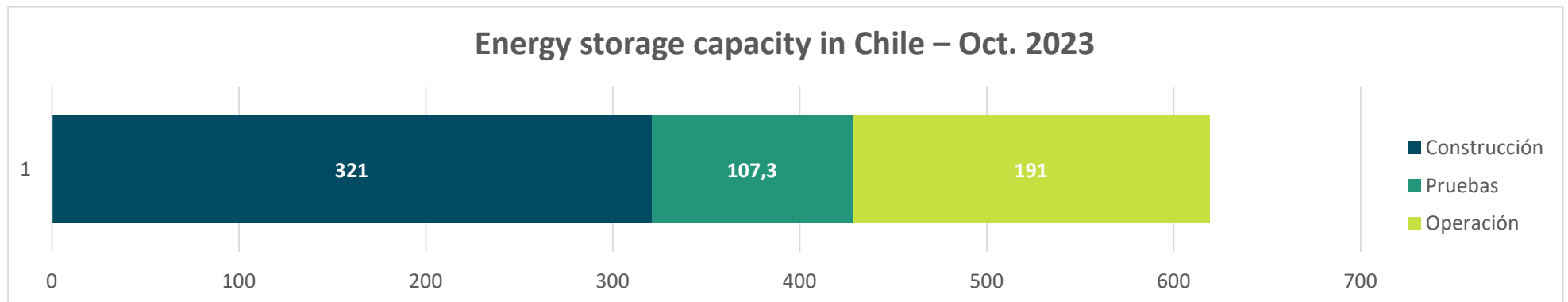


Role of the Ministry of Energy

What is the storage capacity goal established by the state?



**Capacity of 6.000 MW energy storage systems in operation by 2050
(2.000 MW in 2030)**



Role of the Ministry of Energy

What are we doing to achieve the goal?



Ministerio de Energía
C. Cámara de Chile

AGENDA INICIAL PARA UN

SEGUNDO TIEMPO DE LA TRANSICIÓN ENERGÉTICA

Acciones por una descarbonización
acelerada del sector eléctrico

1. Legislative initiatives
 - Ley N°21.505, Storage and Electromobility.
 - Law project that Promotes Renewable Energies (under legislative process).
 - Law project for Energy Transition, transmission as an enabling sector (to enter legislative process).
2. Regulatory initiatives
 - Modification of “Reglamento de Coordinación y Operación del Sistema Eléctrico Nacional”.

Rol del Ministerio de Energía

¿Qué estamos haciendo para lograr la meta?



3. Actions for accelerated decarbonization:

- Energy storage systems promotion
 - ✓ Coordination and Operation Regulations, and storage systems.
 - ✓ Assignment of public lands.
 - ✓ Technical guide for environmental assessment of energy storage projects.

Energy Sector in Chile

Status and projections

Pablo del Canto – Jefe Unidad de Acompañamiento de Proyectos
Ministerio de Energía
Gobierno de Chile

