



4th International Forum on Long-Term Scenarios for the Clean Energy Transition

Chilean experience in implementing participatory and consultation processes for developing LTES

Alex Santander G.

Head of Energy and Environmental Policy and Studies Division

Ministry of Energy, Chile | December 9th, 2022

Chilean Energy Policy

National Policy to 2050. Launched first time in 2015 and updated recently in 2022.



2015-2021



Updating 2022

Citizen participation in the construction of public policies

Citizen participation has been installed as a **fundamental principle** and a **differentiating seal** of the Ministry of Energy of Chile for the elaboration of its **public policies**



Fuente: Protesta Patagonia Sin Represas, Santiago 2011, <http://www.tompkinsconservation.com/>

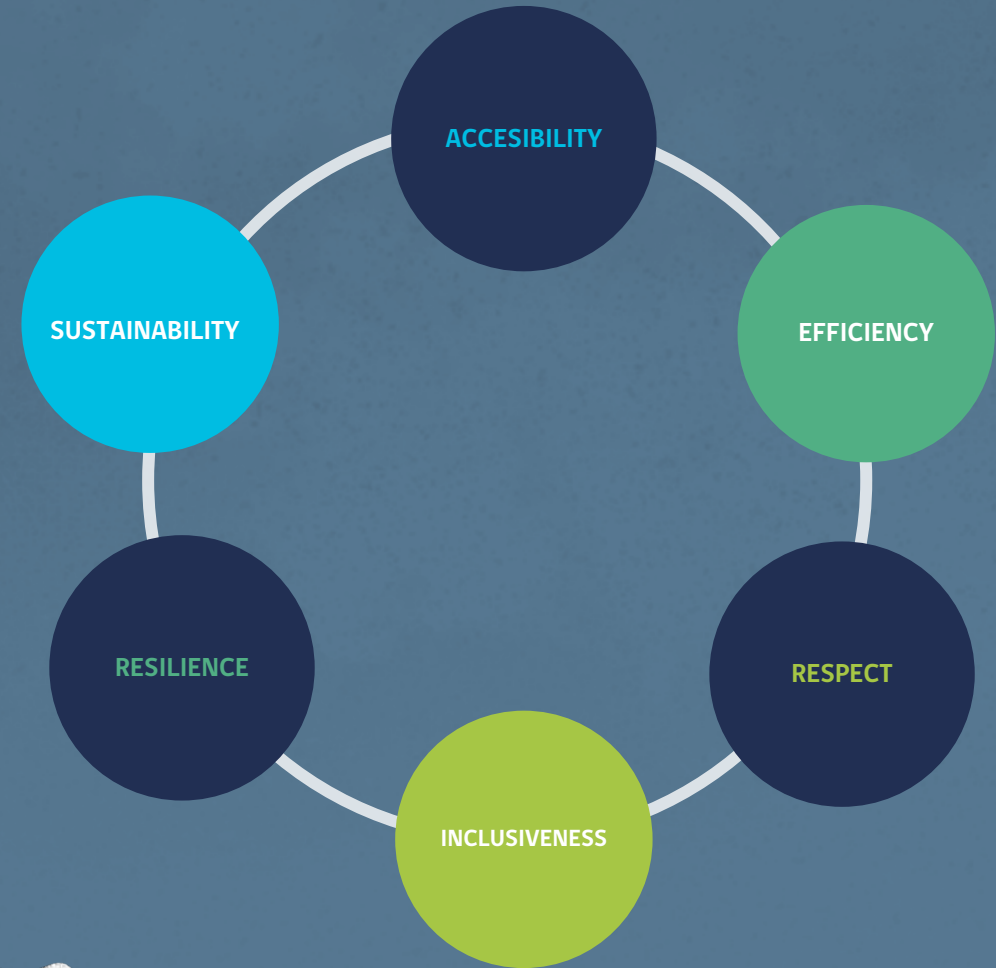


Talleres ciudadanos 2019, Ministerio de Energía



shared long-term VISION

Our shared vision is of an energy sector that is **sustainable, efficient, inclusive, resilient, accessible and respectful** of human rights and the diversity of cultures in our territory. A sector that is the country's great driver for **sustainable development**, that allows us to live better and that puts the **well-being of people and their communities in the different territories of the country at the center.**





Some goals

of our National Energy Policy

(total: 66 goals)

- 100% net zero emissions to 2050 in electric generation and 80% in renewables in 2030
 - 60% lower annual GHG emissions in the energy sector by 2050, compared to 2018, which will enable carbon neutrality to be achieved by 2050.
 - Carbon price of at least US\$35 per tone of CO2 equivalent by 2030
 - 100% access to electricity for all households by 2030 and clean, low-emission energy to meet heating, hot water and cooking needs by 2040
 - 1-hour maximum average unavailability of electricity supply in the country by 2050, with lower level of dispersion at the communal level in relation to 2021
 - 25% improvement in the energy intensity of large energy consumers by 2050, compared to 2021.
- 100% of energy sector policies and instruments are designed, implemented, monitored or evaluated considering participatory processes appropriate to the instrument in question, inclusive and inclusive, by 2050.

Short-term priorities

SHORT-TERM



PRIORITIES MAINTAINED: Access to quality energy, security, climate crisis

NEW EMPHASES: feminism, decentralization, just transition y decent jobs

LONG-TERM



MAIN **ASPECTS** OF THE ENERGY POLICY

1

Citizen participation is fundamental for the construction of public policy:

it provides legitimacy and allows working with a long-term horizon.

2

There is a need to balance the role of the state and the market:

the State / Government must play an active role, the private sector also has a role to play.

3

Renewable energies and sustainable development represent an opportunity:

for a better quality of life for all in harmony with the environment.

COOPERATION IS ESSENTIAL

- **Carbon neutrality**

- Energy efficiency
- Green hydrogen
- Electromobility

- **Zero-emission electric system**

- Phase-out of coal-fired power plants
- Thermoelectric reconversion
- Innovation to incorporate new technologies that support the security of a highly renewable electricity system.

- **New development model**

- Pilots and demonstration technology projects
- Equitable access to quality energy
- Technology transfer
- Mission oriented innovation

- **Territory and sustainability**

- Territorial planning
- Strategic Environmental Assessment

Long-Term Energy Planning

Energy Planning considering Citizen Participation: Optimization Models at the Service of a Better Electrical Infrastructure Expansion for Chilean Society



Session 2022

10424
SC C1

PS3 - Planning Under Uncertainty and With Changing External Constraints

Energy Planning considering Citizen Participation: Optimization Models at the Service of a Better Electrical Infrastructure Expansion for Chilean Society

Alex SANTANDER (*)
Ministry of Energy
Chile
asantander@minenergia.cl

Juan Carlos ARANEDA
National Electric Coordinator
Chile
juan.araneda@coordinador.cl

SUMMARY

Next years and decades we will live an energy transition with an unprecedented strong and speed, with the responsibility to improve people's quality of life and avoid harmful effects of climate change. Energy sector plays a main role to achieve a sustainable future. Considering this, the challenge is political because it must consider social, environmental, and economic aspects, so that is the reason why Chile has decided to do an energy planning process considering a wide citizen participation, where optimization models, technique and technology in general are available at the service of society. Technology for a better and just future for everyone.

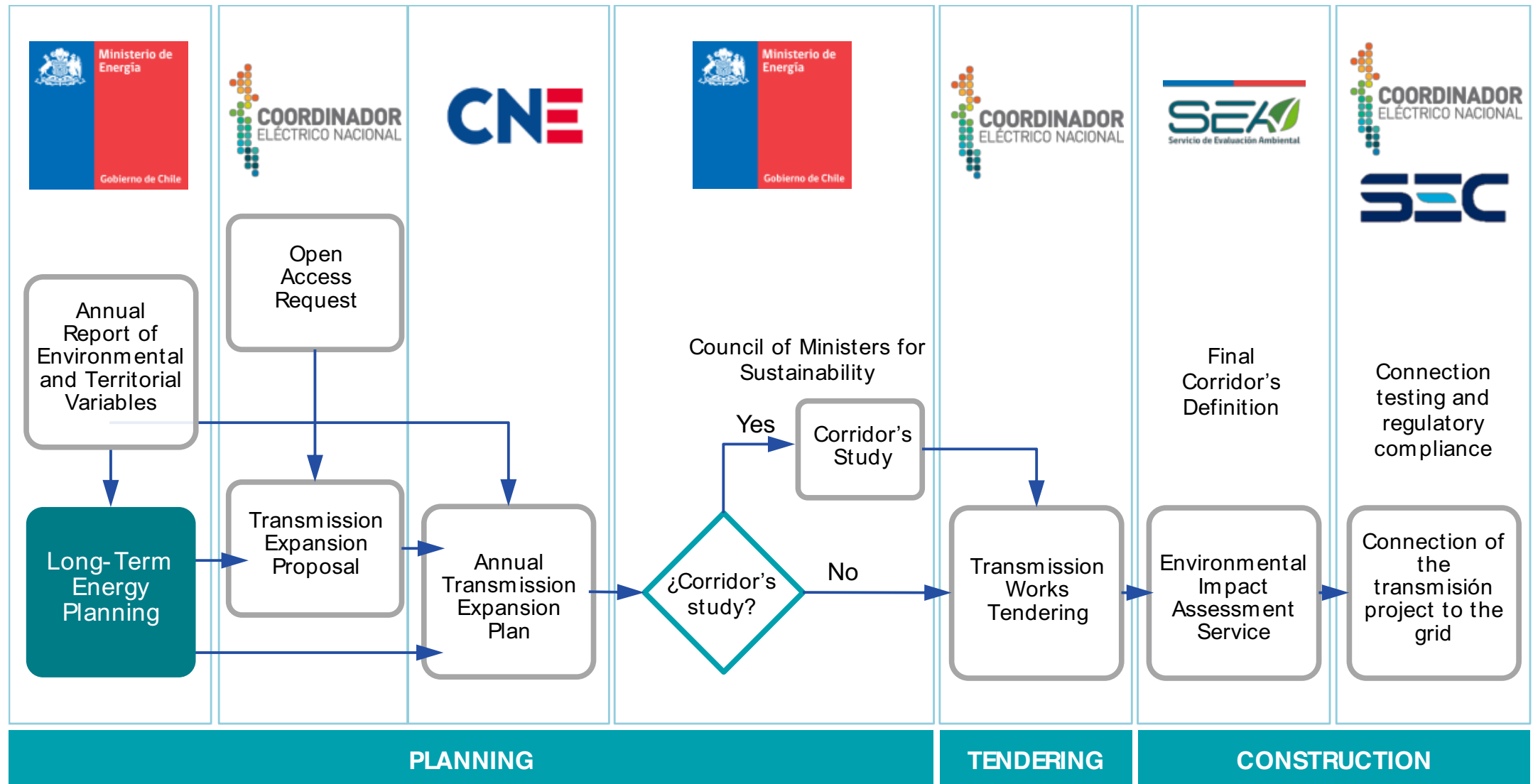
This paper presents the application and general methodology of the electricity planning process defined in the Chilean Electricity Law since a legal modification in 2016. This process begins with a Long-Term Energy Planning (LTEP), developed every 5 years, and led by Ministry of Energy, in coordination with different organism from different sectors, including the National Energy Commission (regulatory body) and the National Electrical Coordinator (the independent system operator - ISO). This process must consider at least 30 years as a planning horizon and a citizen participation that highly involves in a joint projection of energy sector.

A paper was published in CIGRE Session 2022



https://drive.google.com/file/d/17lB9OBD3wvAkM_twWRQ_QvQtGKdyt1Be/view?usp=sharing

Transmission system expansion process



LTEP: Strong institutionality

Long-Term Energy Planning Ministry of Energy

Citizen Participation Registry

- People
- Organizations

Open and voluntary registration

Gender perspective

Regional representation and decentralization

Electrical Core Team

- National Energy Commission
- Superintendence of Electricity and Fuels
- National Electric Coordinator

Technical Support Group

- Academy
- Research Centers
- Consultancy

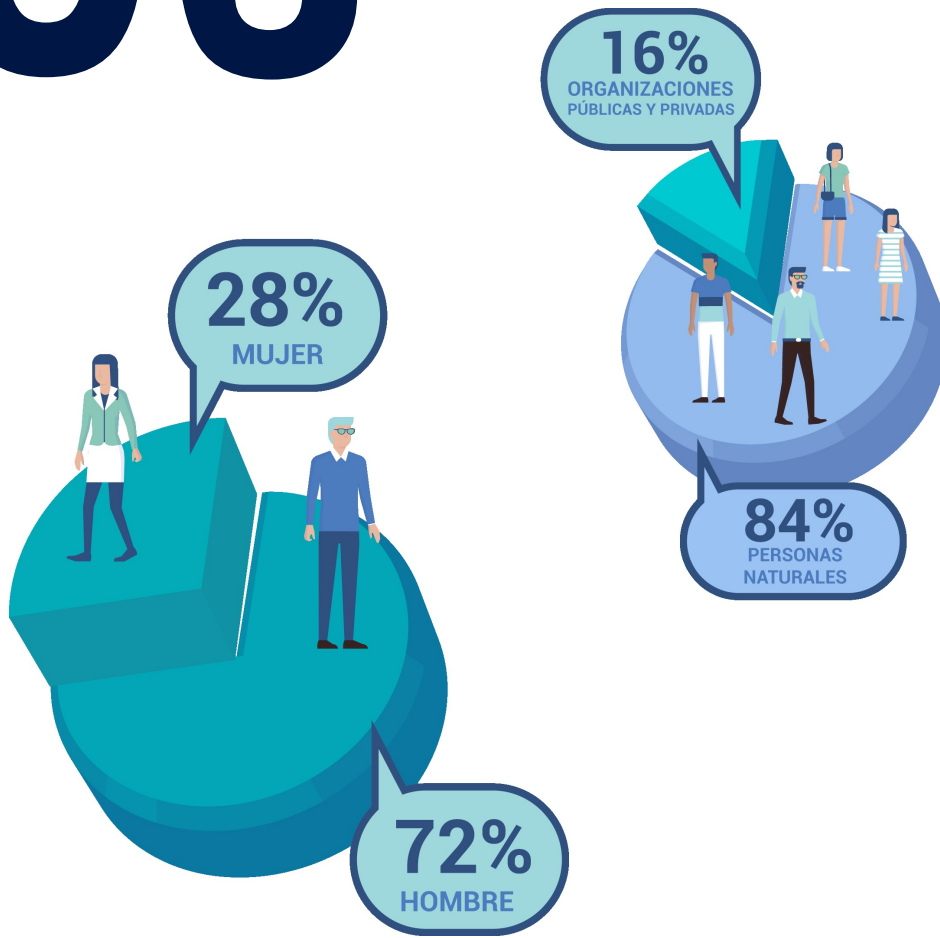
Sectorial Organizations

- Ministries
- Agencies
- Energy public service companies

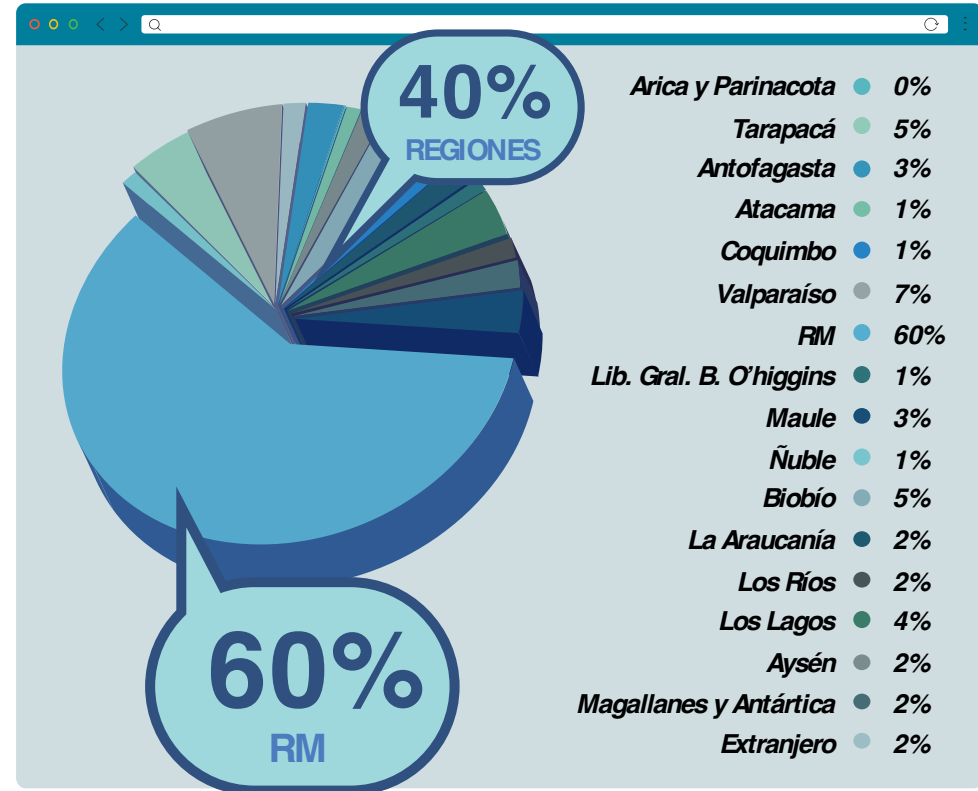
LTEP: Citizen Participation Registration

706

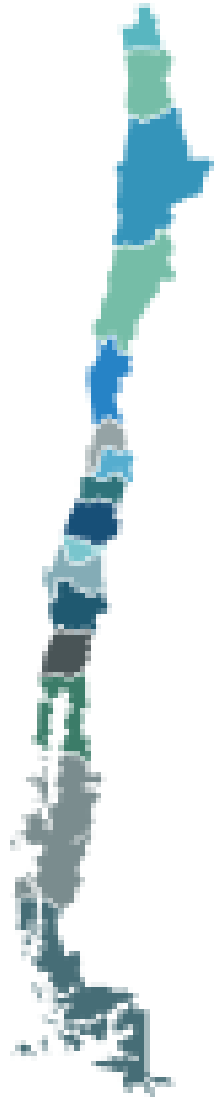
Inscriptions



¿DE QUÉ REGIÓN SON LOS PARTICIPANTES?



Infografía
"Participantes PELP"
PELP 2023-2027



LTEP: Technical Support Group



Camila Álvarez
CR2



Ignacio Alarcón
Consultant - UAI



Paz Araya
UCH - RedPE



Rodrigo Cienfuegos
CIGIDEN



Carolina Chávez
USACH



Marcelo Cortés
U. Antofagasta



Patricia Galilea
PUC



Alex Godoy
UDD



Rosa Herrera
Consultant - UdeC



Luis González
CLAPES UC



Francisca Jalil
UAI



Rodrigo Moreno
UCH - ISCI



Claudia Moraga
U. de Tarapacá



Alejandro Navarro
UCH



María Luisa Ojeda
U. Magallanes



Mauricio Osses
UTFSM



Claudia Rahmann
UCH -SERC



Fernando Peña
UC Temuco



Alejandra Schueftan
UACH - INFOR



Enzo Sauma
PUC Energy Center



Rosa Serrano
Univ. of Manchester



Gender
parity



Diversity
of topics



Focus on
Sustainability



Results
orientation

LTEP: Sectorial coordination



Ministry of Energy



Ministry of Mining



Ministry of Environmental



Ministry of Housing and Urban Planning



Ministry of National Assets



Ministry of Transport and Telecommunications



Ministry of Agriculture



Chilean Copper Commission



Office of Agricultural Studies and Policy



National Emergency Office



German Agency GIZ



National Energy Commission



Superintendence of Electricity and Fuels



National Electrical Coordinator



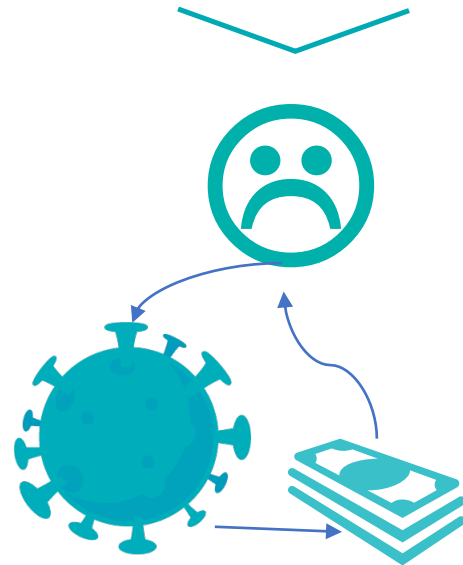
Energy Sustainability Agency

LTEP: Democratizing energy planning



3 SCENARIOS

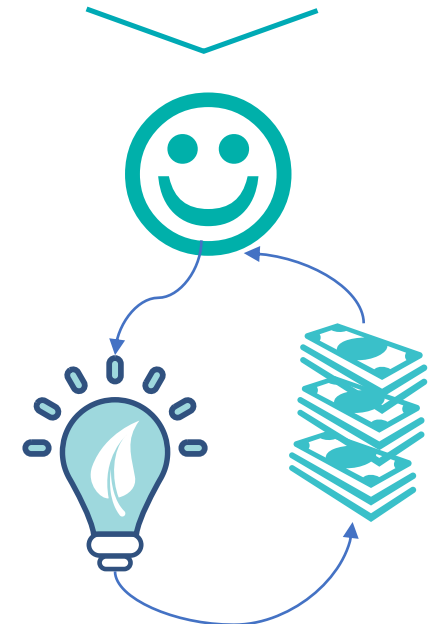
SCENARIO
RECOVERY



SCENARIO
CARBON
NEUTRALITY

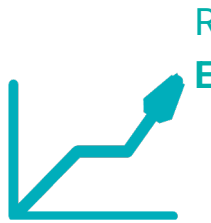


SCENARIO
ACCELERATED
TRANSITION



LTEP: Slow recovery after Covid-19

Improve Air Quality

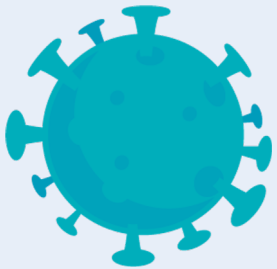


Reactivating the Economy



Regulation Firewood Use

Energy Efficiency Measures



Economic and Social Impact due to Covid-19



2030



Electromobility

Energy Efficiency Law

Direct Impact on People



LTEP: Towards carbon neutrality



Firewood Regulation



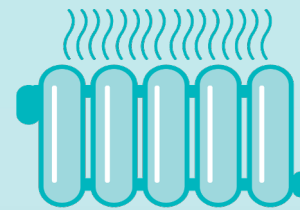
**CARBONO
NEUTRALIDAD
2050**



Energy Efficiency



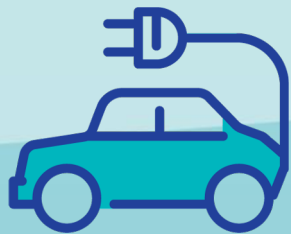
Better **Economic** Conditions



Diversification of the
Heating Matrix



Reduction of Greenhouse Gases



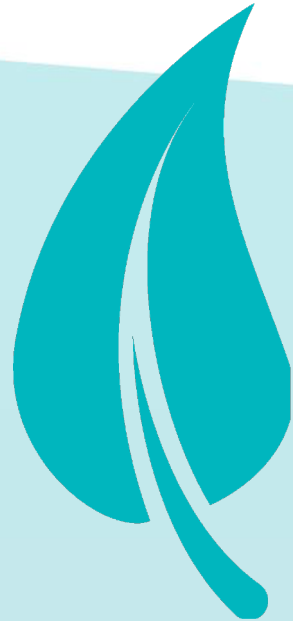
LTEP: Accelerating the energy transition



Economic development



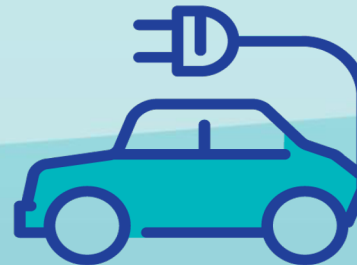
Use of Regulated Firewood



CARBONO NEGATIVIDAD 2050



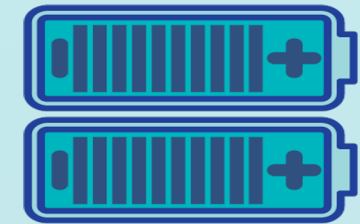
Renewable Energy



Electromobility



Clean
Technological
Alternatives



Storage

LTEP: Democratizing energy planning

Citizen deliberation

Public audiences and workshop

Always we consider at least two different options (time slots) for each workshop

Citizen: the key for a LTEP with legitimacy

Main discussions in the citizen participation process

Priorities and interests for the energy future

Projection of energy requirements

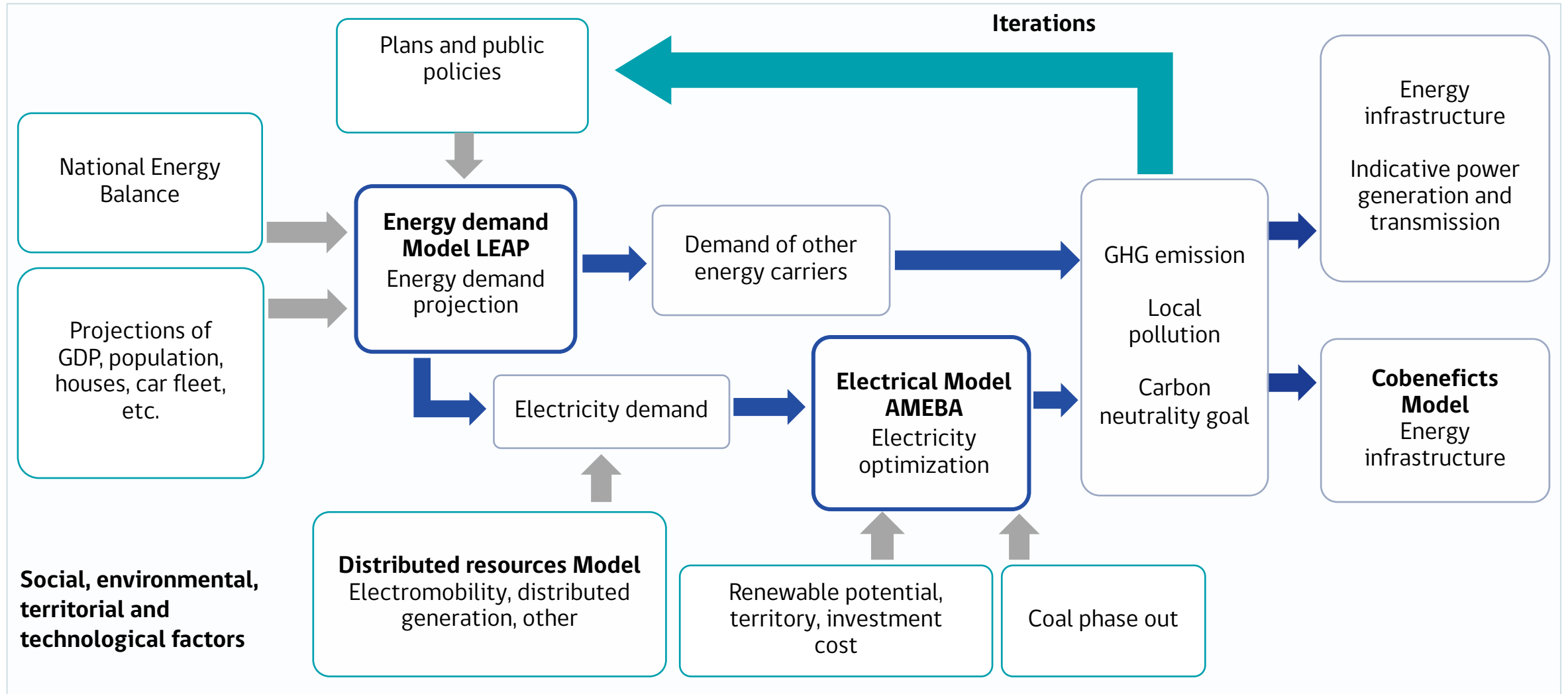
Projection of electricity system requirements, including landing aspects

From a future vision to a clear signal of investment and expansion of the electricity system

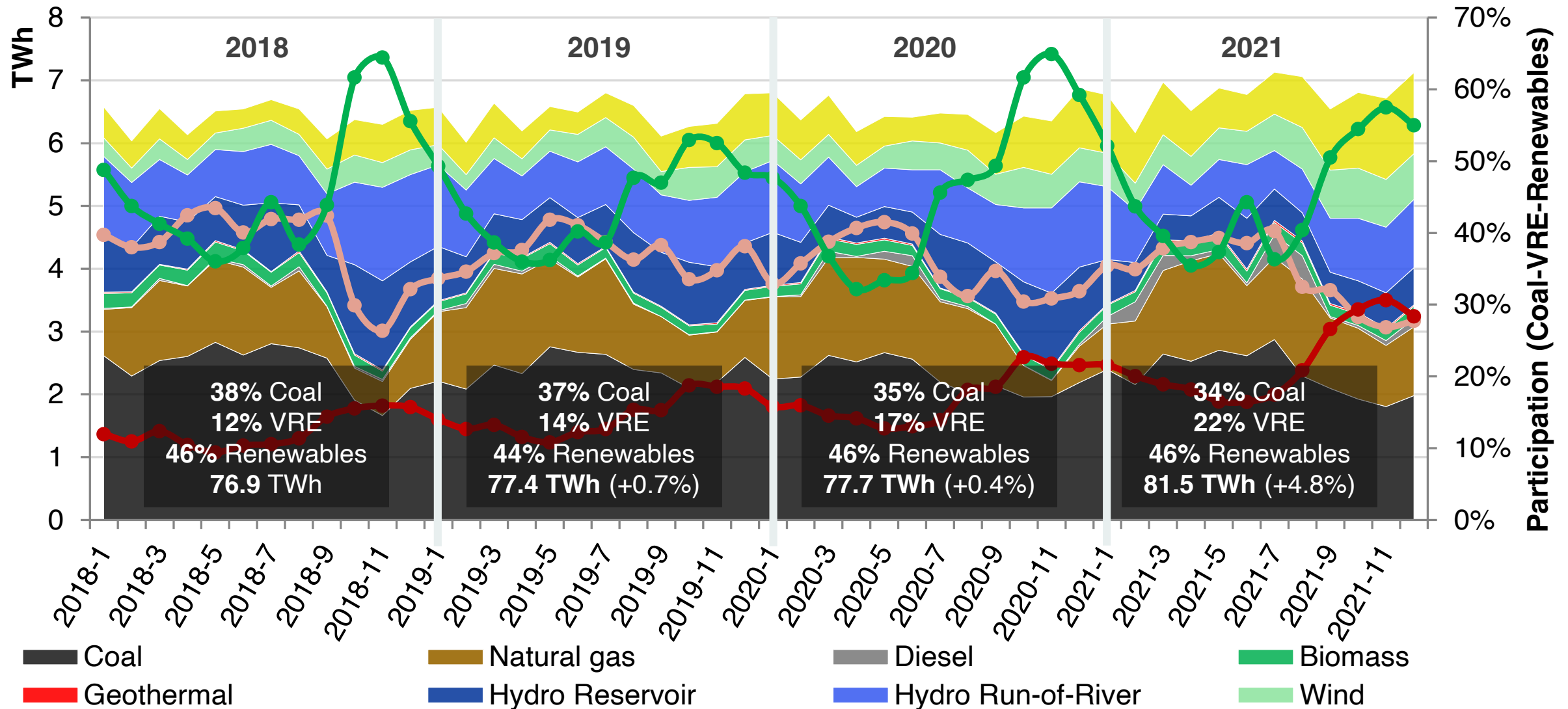
LTEP: Energy scenarios

External	Economic growth
	Fossil fuel prices
	Decreasing cost of NCRE technologies
GHG and local pollutants	GHG mitigation
	Reduction in air pollution in the housing sector
	Carbon pricing
New technologies	Electromobility
	Green hydrogen
	Energy storage
	Decentralized energy system and more active energy user
	Inclusion and adoption of new technologies
Electrical power system	Coal phase out
	Gas and diesel replacement
International interconnections	Energy import
	Energy export
Energy efficiency	Within the commercial, public and residential sectors
	Within transport, industry and mining

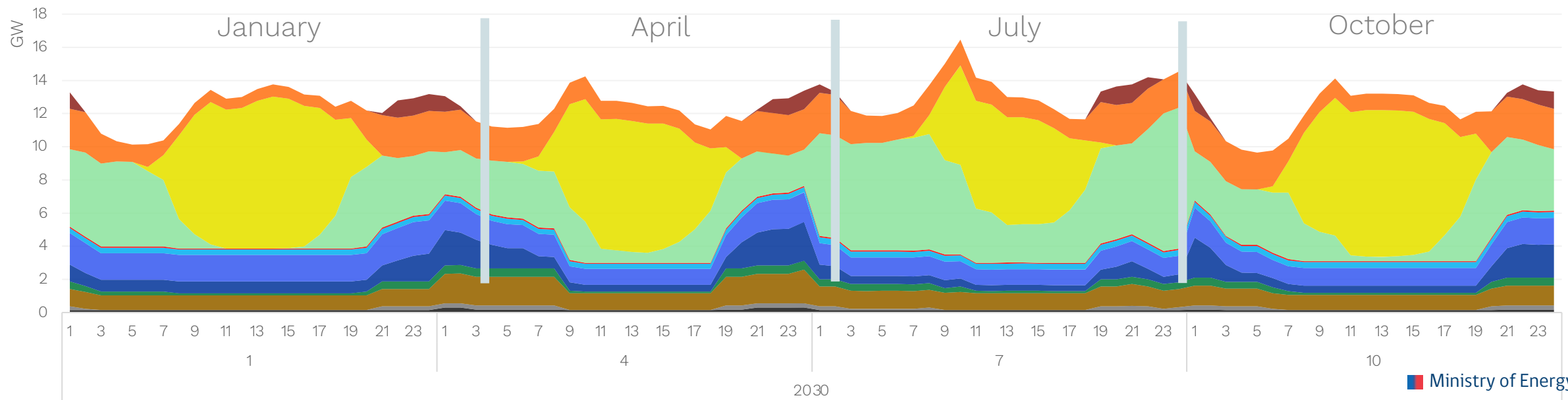
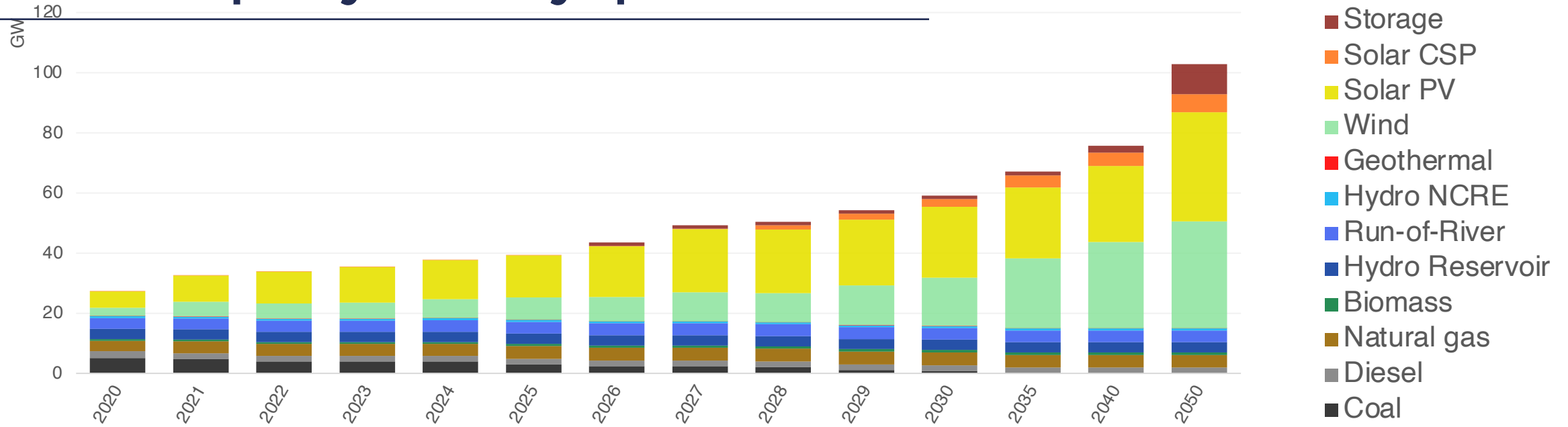
LTEP: Methodological aspects and models



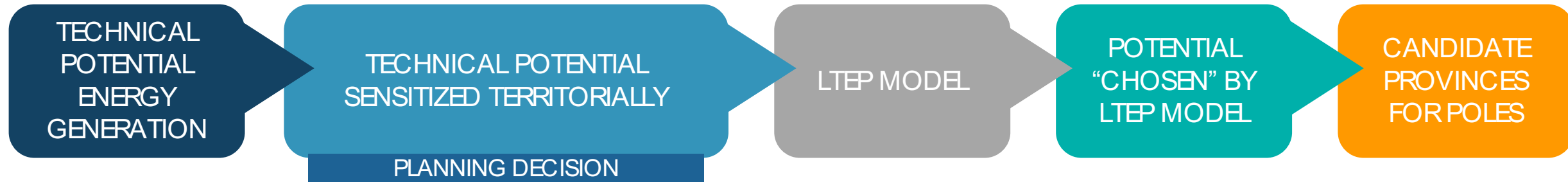
LTEP: The future of electrical system



LTEP: Capacity and daily operation



LTEP: Territorial aspects



To optimize and define the location of new generation projected (including large- and small-scale projects and net-billing), Ministry of Energy determines technical potential energy using a lot of territorial criteria and energy explorers, which is sensitized territorially, excluding or sensitizing areas that contains some Objects of Territorial Assessment (OTA) to promote a more sustainable generation project development.

LTEP: Continuous technical participation process

 *Ciclo de
encuentros técnicos*

PELP

LTEP: Conclusions

LTEP shall:

- a) define different possible paths for the energy sector development,
- b) identify the existence of good territories for the development of strategic energy projects,
- c) forecast the future of energy consumption and supply required by the country,
- d) establish a diagnosis of public policy decision-making in the energy sector,
- e) define scenarios -by legal mandate- for the development of the transmission system,
- f) evaluate the possible opportunities for energy integration with other countries and international interconnections,
- g) identify the opportunities for innovation and technology adoption required for a sustainable energy sector development,
- h) contemplate an instance of citizen participation that allows to legitimize the long-term energy vision of the country,
- i) provide a roadmap with main short-term and medium-term actions for the development of energy sector, coherent with a long-term vision.



4th International Forum on Long-Term Scenarios for the Clean Energy Transition

Chilean experience in implementing participatory and consultation processes for developing LTES

Alex Santander G.

Head of Energy and Environmental Policy and Studies Division

Ministry of Energy, Chile | December 9th, 2022