



# Chile's Electricity Market: Main Aspects and Investment Opportunities

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# Agenda

1. Chile's Electricity se market: Main Aspects.
2. Opportunities in Chile's Electricity Marky.
3. Electricity Market Challenges



# Chile's Electricity Market : 3 Segments

## Generation



## Transmission



## Distribution



# Chile's Electricity Market: Generation Segment

## Open Marketplace

- Investors make decisions based on signals: demand , supply, prices, and business environment

## Market Size

- Installed Capacity 23.3 GW (December 2018), increasing 3% with respect to 2017.
- 2018 Gross Generation SEN 75,541 GWh, increasing 2% year to year.



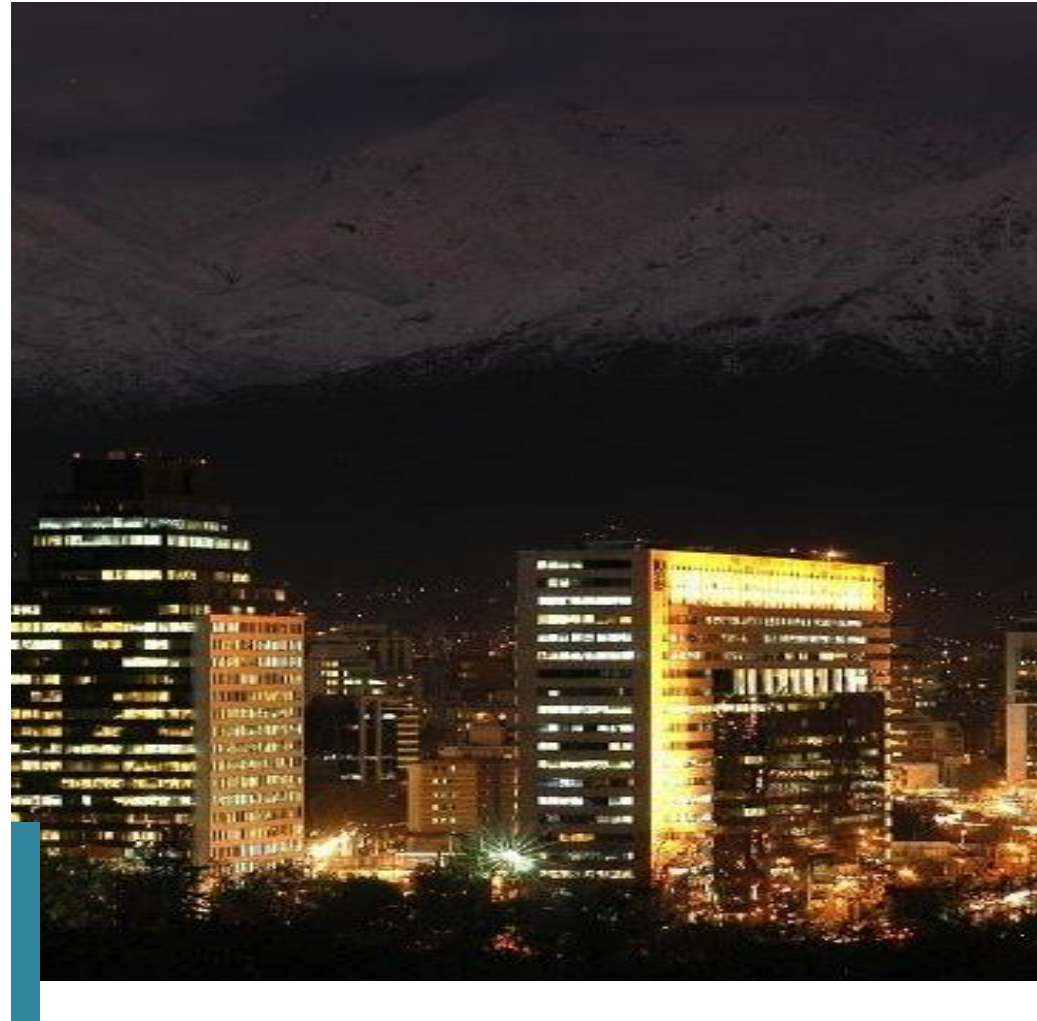
# Chile's Electricity Market: Transmission Segment

- **Regulated Natural Oligopoly.**
- **Open Access.**
- **Transmission**
  - Nacional
  - Zonal.
  - Dedicated Systems.
  - Development Poles.
- **Rate of Return:** it is determined by the awarded offer for first 20years, and afterwards it is determined by CNE.
- **Five-year planning timeframe with a 30 year horizon.**
- **Main Transmission company.**



# Chile's Electricity Market Distribution Segment

- **Regulated Natural Oligopoly**
  - Cost that can be transferred to final customers is determined every 4 year (distribution value added)
- **Compulsory Service.**
- **Main distribution companies:**
  - Enel Distribución.
  - CGE (Naturgy).
  - Saesa (Ontario Teachers).
  - Chilquinta(Sempra international).



# Chile's Electricity Market: Non-Conventional Renewable Project Pipeline

February 2019

Chilean Environmental Agency

<b>Tecnología</b>	<b>In Operation MW</b>	<b>Under Testing MW</b>	<b>Under Construction MW</b>	<b>Approved RCA MW</b>	<b>Under Analysis MW</b>
Biomass	501	6	1	498	59
Wind	1,524	212	742	10,007	2,903
Geothermal	0	40	0	120	100
Small Hydro	494	25	60	824	165
Solar PV	2,306	94	260	16,571	7,580
Solar CSP	3.5	0	110	2,348	300
<b>Total</b>	<b>4,825</b>	<b>377</b>	<b>1,173</b>	<b>30,368</b>	<b>11,107</b>

**Source:** CNE Montly Report

# Chile's Electricity Market: Renewable Energy Current Status

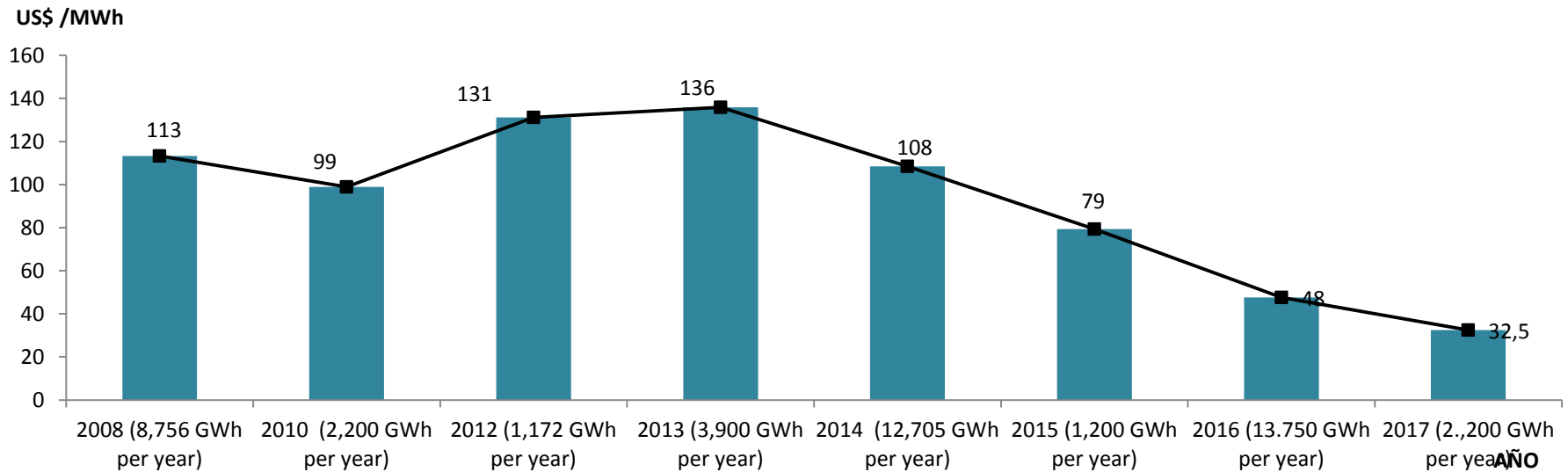
## Renewable Energy

- According to Climate scope 2019, Chile is the second most attractive country for clean energy investment.
- Chile is a country with almost zero fossil fuels. Most of the fossil fuels are imported.
- Currently 46% of electricity is generated by renewable sources.
- The Government's goal is to generate 70% of electricity from renewable sources by 2030.
- The energy sector is third sector in terms of investment size in Chile.
- Non-Conventional Renewable energy, which includes small hydro plants (below 20 MW), has increased 5 fold in the past 5 years, reaching 4.8 GW in February 2019.
- Today, most projects under construction are renewable energy projects.





# Chile's Electricity Market: Average tender prices for regulated customers (residential and small & medium sized companies)



Source : Ministry of Energy

# Opportunities in Chile's Electricity Market



## Generation

- Renewable Energy Emphasis.
- The North of Chile has the highest irradiance on Earth.
- Chile has good wind in several regions across the whole country: Antofagasta, Coquimbo, Biobío, Los Lagos y Magallanes.
- A 5,880 GWh per year tender for residential and small & medium sized customers will be awarded in May 2020 (15 year contract with generation as of 2026).
- The 1,047 MW decarbonization calendar from 2019 through 2024 represents an opportunity for renewable energy. This is only the first phase.

## Transmission

- A US\$409 million tender will be awarded in December 2019 and February 2020.
- US\$3.1 billion is the total project pipeline from 2019 through 2024.

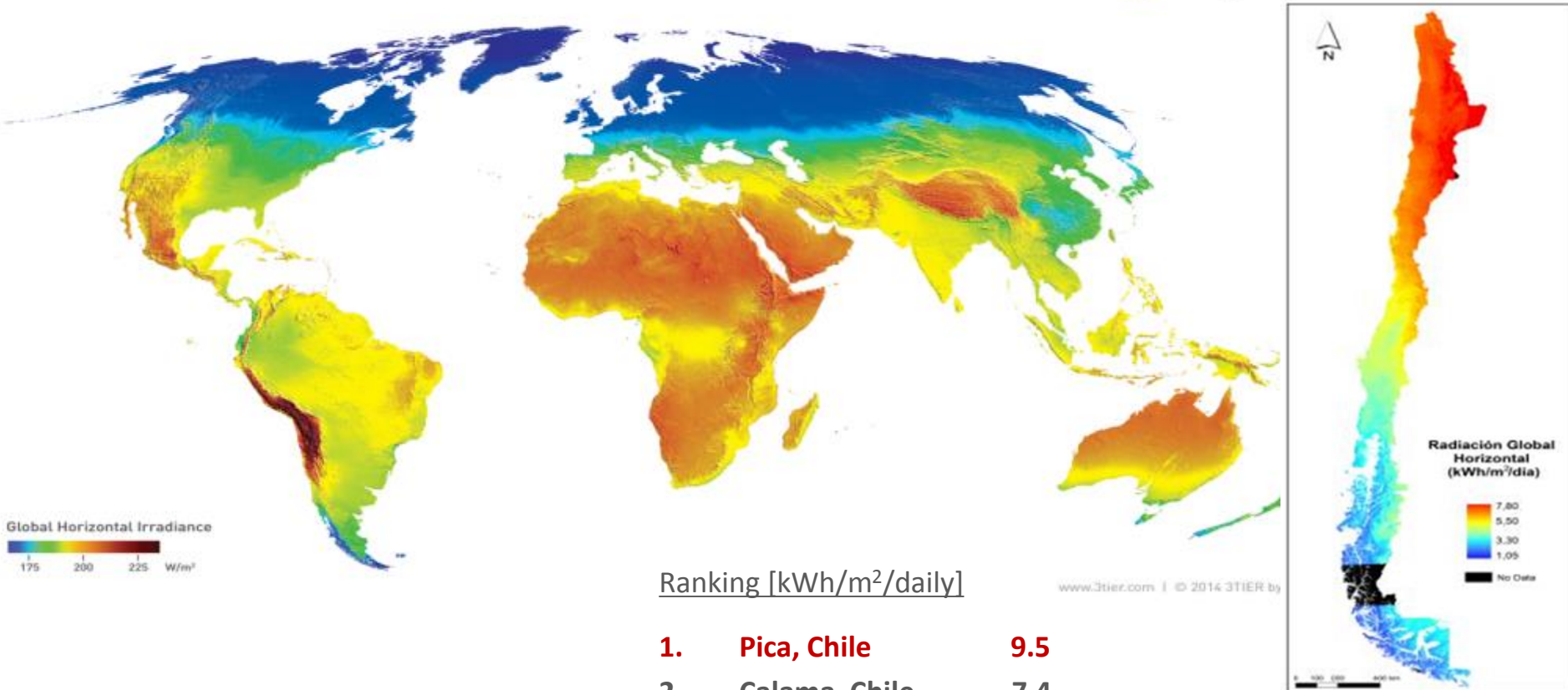
## Opportunities in other segments

- Storage (batteries).

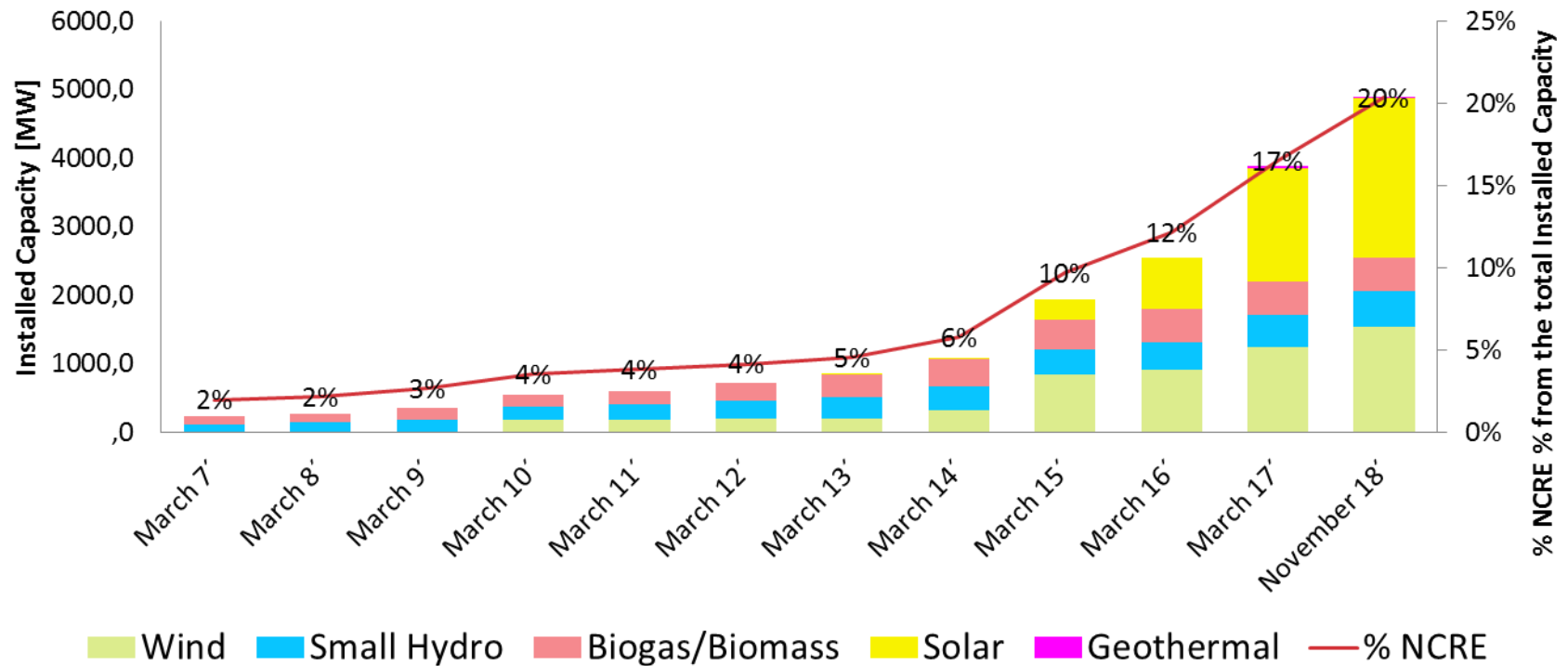
# Opportunities in Chile's Electricity Market

## Global Mean Solar Irradiance

 **3TIER**  
by Vaisala

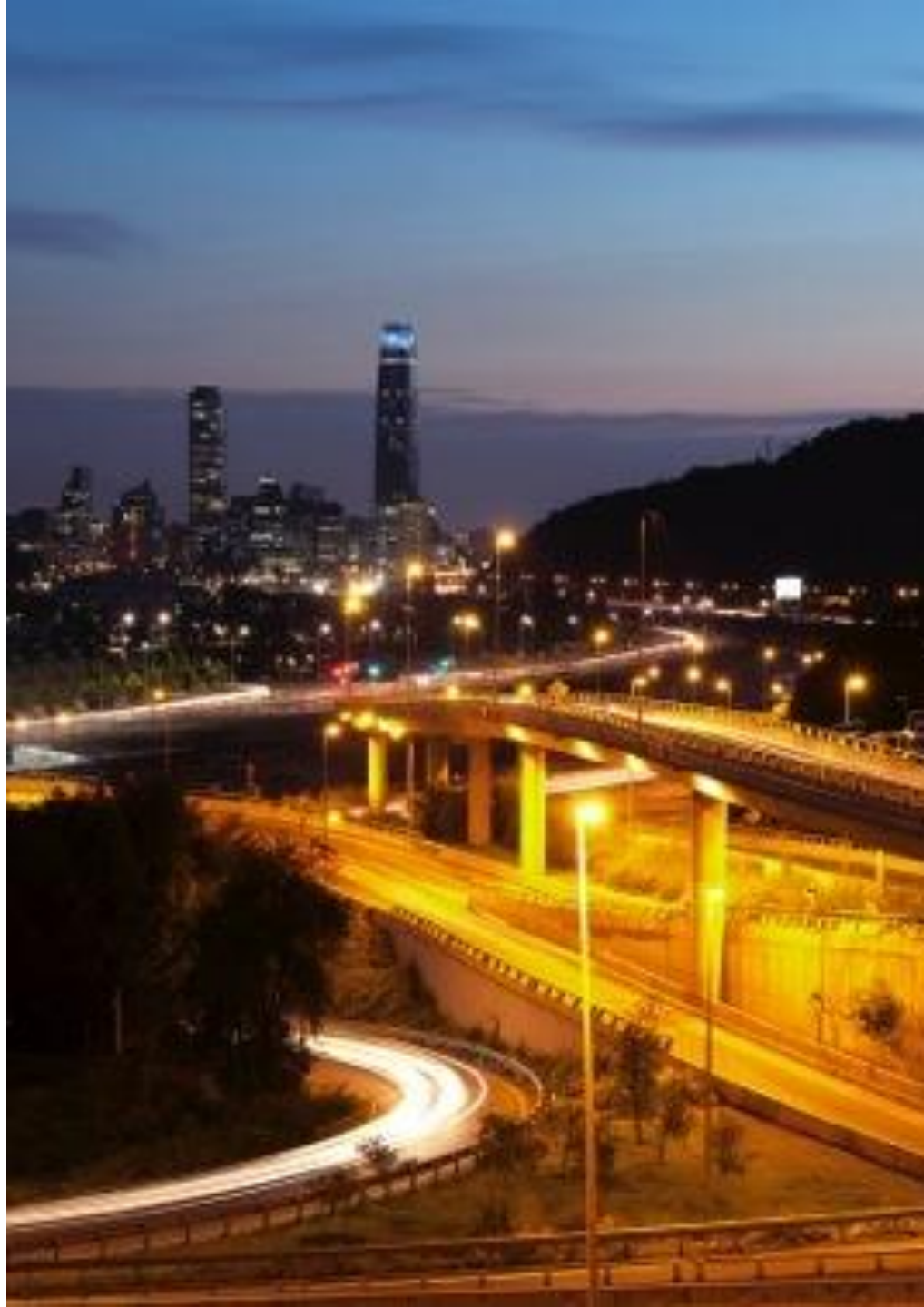


# Opportunities in Chile's Electricity Market : Growth will come mainly from wind and solar capacity



# Challenges

- Intermittence management (most non-conventional renewable energy is intermittent).
- Energy Efficiency.





A panoramic nighttime photograph of San Francisco, California. The city is densely packed with lights, with the Golden Gate Bridge visible in the distance. In the foreground, a multi-lane highway shows light trails from moving vehicles. Several prominent skyscrapers are illuminated, including the Transamerica Pyramid in the center and the Salesforce Tower on the right. The word "Thanks" is written in a large, white, sans-serif font across the middle of the image.

Thanks