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## SMART GRIDS IN BRIEF

# SMART GRIDS IN GERMANY AND CHILE

Smart grids are a key actor to modernize the energy sector in both Germany and Chile. In Germany, smart grids are a cornerstone of the country's ambitious transition to renewable energy sources, enabling efficient integration of intermittent renewables and optimizing energy distribution. Smart grids help reducing greenhouse gas emissions and enhance reliability. In Chile, smart grids are crucial for managing their diverse energy sources, from solar and wind to hydropower. Smart grids improve energy efficiency, reduce power losses, and enhance the resilience of the grid, particularly in remote areas. The significance of smart grids lies in their ability to make energy production and consumption more sustainable, cost-effective, and responsive to the growing demand for cleaner and more reliable energy sources.

**Energy Partnership Chile-Alemania Mesa Redonda B2G**

**12 octubre**

**08:30 – 11:00**  
InterContinental Santiago  
Av. Vitacura 2885, Las Condes  
Sala ANTÁRTICA

**Explorando Opciones para un Smart Grid:**

**Tecnologías de Almacenamiento como Grid Booster**

**AHK** Deutsch-Chilische Industrie- und Handelskammer  
Cámara Chileno-Alemana de Comercio e Industria

**giz** Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

## Current State in Germany

Germany and its neighbors are making progress in the adoption of smart grid technology like smart meters and grid management technologies. Germany seeks to generate growing amounts of variable renewable capacity (44% of gross electricity generation in 2022 and a projected 80% by 2030 under the Renewable Energy Act), which is why digitalized grids will be the standard to increase the efficiency and reliability of the country's electricity system.

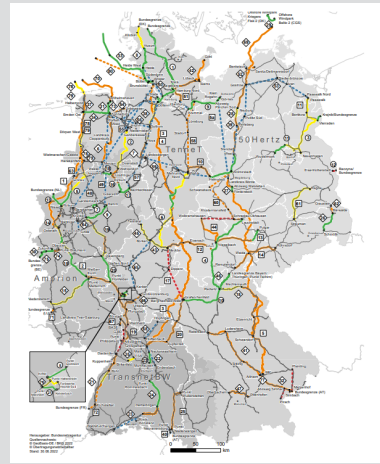
As of February 2023, a total of 119 grid expansion projects (14,044 km of high-voltage lines) have been implemented to enable the integration of renewables at a low cost. The expansion of the grid aims to meet the need for electricity supply of the industrial centers – located mainly in the South and West of Germany – by improving the connection to the production sites of renewable energy, particularly wind-energy, in the North. By the end of 2023, a total of 900km of lines are expected to be completed, aiming for 4,400km by the end of 2025 (Graph 1). The increase in the number of large-scale battery storage systems (LSS) installed in the German power sector can serve as a point of reference to portray the country's dedication to its energy transition. In 2022 alone, 47 new LSS installations with 434 MW, were added to the country's capacity. That marks a growth of 910% in terms of energy additions (Graph 2).

## Policies in Germany

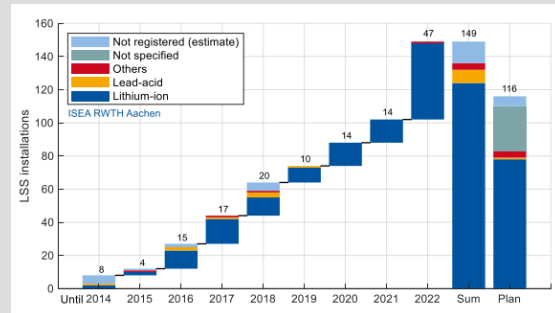
The Act on the Digitization of the Energy Transition (GDEW, 2016) set the foundation for the digital transformation in the energy industry. With the law, the Metering Point Operation Act (Messstellenbetriebsgesetzes MsbG) was introduced, which prescribes the comprehensive installation of smart metering systems.

The implementation of smart meters is a process of many stages where each stage is targeting different consumer groups. From 2025, the installation of smart metering systems will be required for households with an annual electricity consumption of more than 6,000 kilowatt hours or a photovoltaic system with more than seven kilowatts of installed capacity.

By 2030, all these consumers are to be equipped with smart meters accordingly. Households that consume less electricity also have the right to have a smart meter installed.



Graph 1 Smart Grid Projects in Germany as of February 2023



Graph 2 New installations of Large-scale battery storage systems in Germany from 2014 until 2022

## Current Situation in Chile

The evolution of the Chilean power grid has been remarkably swift. Over the past decade, the installed capacity of renewable energy sources has surged, accounting for about 33% of the total power generation in August 2023. While the most optimistic experts in earlier predictions suggested that renewables might make up 90% of the total power generation by 2050, the latest assessments indicate that Chile is on track to achieve this ambitious target as early as the 2030s.

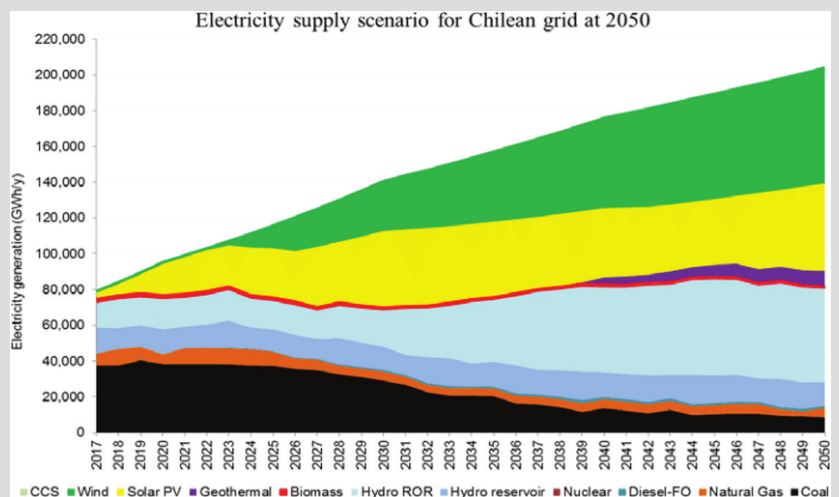
Smart grid technology is increasingly vital in achieving these objectives as Chile is facing rising electricity demand. The existing distribution network, that was designed when hydroelectricity and coal prevailed as energy sources, is insufficiently to absorb substantial renewable energy inputs.

To address this challenge, in 2022 Chile initiated a 2 billion USD project for the first substantial direct current transmission line of about 1400km. The line will transport up to 3,000 megawatts (MW) of energy from the Antofagasta region in the north to the Metropolitan Region of Santiago in the centre. The line is to be inaugurated in 2029.

## Policies in Chile

Chile stands out for being the first emerging country in the world to define carbon neutrality by law. This goal is central to the country's transition towards a clean economy as outlined in its energy transition agenda.

The primary objectives include ensuring a secure energy supply, promoting the use of sustainable resources, and significantly reducing the carbon footprint in the energy sector. By 2030, Chile aims for around 80% of its energy consumption to come from green sources.



Graph 3 Projected electricity generation in Chile until 2050 by power source