

Sector Reports

Clean Growth

Doing Business in Chile Guide 2022





Chile's clean growth agenda has broadened and become more ambitious under successive governments since the beginning of President Michele Bachelet's second term in office in 2014, and has now further intensified due to the recovery needed after the Covid-19 pandemic.

Driven by both economic and climate imperatives, it now has a cohesive strategy to reduce reliance on imported fossil fuels, harness its almost limitless amounts of solar and wind energy, and incorporate global know-how to reduce consumption and pollution to create a cleaner and low carbon environment.





This report will cover the following components of the green growth agenda:

- Power Generation – the electricity business
- Consumption – transportation, construction, and mining
- Materials and waste management.

Sector	Main Targets
Energy	<p>70% of electricity from renewable sources by 2030 and 95% by 2050</p> <p>Retirement of all coal-fired power stations by 2040</p> <p>10% reduction in nationwide energy intensity by 2030</p> <p>Mandatory energy management systems for large energy consumers, within the framework of the Energy Efficiency Law</p> <p>5 GW of green hydrogen electrolysis capacity by 2025 and 25 GW by 2030</p> <p>The cheapest green hydrogen in the world by 2030</p> <p>Chile among the 3 biggest exporters of green H₂ by 2040</p>
Transport	<p>100% electric public transport by 2040</p> <p>40% electric private vehicles by 2050</p> <p>Promotion and strengthening of non-motorised modes of transport</p> <p>15% of freight transport via electric railway</p> <p>Energy efficiency standards for new vehicles</p>
Mining	<p>Use of hydrogen-fuelled trucks in the mining industry by 2028</p>
Construction	<p>Energy certification of new housing</p>
Materials and Waste Management	<p>30% of household organic waste recovered by 2030</p> <p>Maximum 10% of household waste sent to landfills by 2040</p> <p>30% co-processing of waste by 2030 (base level of 12% in 2014)</p> <p>Targets for recovery and reclamation of materials (tyres, containers and packaging) starting in 2024 and by 2030.</p>



Energy

Energy

Chile has achieved remarkable progress in recent years as it transitions towards a cleaner and more decentralised power supply system.

Installed renewable energy generation capacity has grown rapidly from just 2% in 2012 to 28% in March 2022. Chile has almost unlimited solar and wind resources, rapidly growing experience and know-how, and is consistently ranked globally as one of the best investment destinations for renewable energy projects. According to Bloomberg New Energy Finance's Climatescope 2020 ranking, Chile ranks first among the most attractive economies to invest in renewable energy, among 108 emerging and 29 developed countries. In 2018 electricity generation accounted for 30% of the total national greenhouse gas emissions.





Overview

Since the privatisation of the Chilean electricity sector in 1980, all generation, transmission and distribution activities have been in private hands.

Generation

Until recently Chile's generation matrix was dominated by large scale hydro electric dams, coal fired power plants, combined cycle gas plants and smaller diesel peak lopping plants. All of the fossil fuel burnt had to be imported, making Chile vulnerable to price fluctuations and supply risks.

More recently Chile has started to capitalise on its own significant renewable energy sources. Chile is estimated to have the potential energy sources from 1,800 GW solar, 37 GW wind, 14,6 GW hydro, 2 GW geothermal, and 2 GW biomass. To put this in perspective, the total installed generation capacity in July 2021 was approximately 28.4 GW.(Comisión Nacional de Energía – CNE)

Transmission

Chile's high voltage transmission network is composed of a single interconnected grid known as the Sistema Eléctrico Nacional (SEN), and two small separate grids in Aysen and Magallanes in the far south.

Distribution

Electricity is sold to the end customers by regional distribution companies, who bid for future supply contracts via auctions. Some of the larger commercial end users buy directly from the generating companies via future supply contracts. With the incorporation of renewable energy into the matrix, the winning bids for the 2021 auction were some of the lowest ever seen globally at under US\$24 per MWH.

Supervision

The Superintendent of Electricity and Fuels (SEC) acts on behalf of the Energy Ministry to promote the industry and ensure safe quality services to the public. It supervises compliance with the laws and regulations relating to electricity and fuels.

The operation of the transmission system is controlled by the National Energy Commission (CNE), which is a decentralised public institution created in 1978. Its role is to ensure a safe and sufficient energy supply compatible with the most economic operation. It sets prices and tariffs, schedules grid inputs and defines the technical norms under which the generating and distribution companies within the system must comply.

Green Hydrogen

Worthy of specific mention is the current focus on the emerging opportunity to convert Chile's rich renewable energy resources into green hydrogen, for many the fuel of the future for all mobile applications. It will also give Chile autonomy from imported fossil fuels, and with potential to export.

The government launched its National Green Hydrogen Strategy in November 2020, setting out its roadmap to become one of the world's top three exporters of green hydrogen by 2040. In 2021, it launched the first green hydrogen accelerator in the country, supported and co-financed (US \$300 million) by the Energy Sustainability Agency. The accelerator will work within the National Green Hydrogen Strategy framework to promote hydrogen production and exports.



Anticipated Investments

The demand for energy is expected to increase 3.3% per year until 2027, driven primarily from manufacturing and mining requirements.

To address this increase in the demand, the Cámara Chilena de la Construcción (CChC) developed an investment plan for critical electric infrastructure. It has settled investment requirements up to US \$8,900 million from 2018 to 2027, of which US \$6,619 million are targeted for spending in between 2018 and 2022 split between Generation 58.7 %; Distribution 21.7 %; and Transmission 20.1%.

Generation	Transmission	Distribution
AES Gener (US)	AES Corp. (US)	EEPA (Chile)
Colbún (Chile)	Colbún (Netherlands)	Chilquinta (China)
EDF (France)	ISA (Colombia)	CGE (China)
Enel (Italy)	Enel (Italy)	Enel-D (Italy)
Engie (France)	Engie (France)	Abengoa (Spain)
Latin America Power (Netherlands)	Transelec (Canada)	Saesa (Canada-CL)
GPG (Spain)	Abeinsa (Spain)	
Stratkraft (Norway)	Transnet (China)	
Pacifichydro (China)	Pacifichydro (China)	
Siemens Gamesa (Spain)	Transemel (China)	
AELA Energía (UK-Ireland)	Transchile (Brazil)	
Coihue Eólica		
Tamakaya Energy S.A (UK)		
Enfragen LLC (US)		
Cerro Dominador, EIG (US)		
The EDG Group (France)		
Inkia Energy (Perú)		
Grupo Ibereólica (Spain)		
WDP (Germany)		



Transport

Transport

Chile's various forms of private and public transport contribute approximately 26% of the greenhouse gas emissions in the country.

Along with emissions from local industries (roughly 6%), they are the cause of intense localised pollution, air quality contamination and the associated health issues such as asthma. Transport has many opportunities to target for Chile's clean growth recovery plan coming out of COVID at the start of 2022.





Overview

Chile's biggest city by far is Santiago, which is located in the centre of the country. It is home to about 7 million people, and during the winter months of July and August has severe air quality problems due to some unusual atmospheric conditions. The city is bounded by the Andes mountains to the East and a coastal range of mountains to the west, which almost merge to the north and south of Santiago forming a basin where emissions are trapped and linger.

During these winter months a system of traffic control is imposed to restrict the number of vehicles entering the centre of the city in an attempt to avoid dangerous levels of toxic gases and particulates from diesel engines. The system has two levels called pre-emergency and emergency, and the severity of the restrictions depends on the levels of contamination on the day in question.

Chile's other bigger cities also have traffic and pollution problems, but not on the same scale as in Santiago. In the south, in Temuco for instance the air quality issues are more related to burning damp wood in crude heaters.

Public Transport

Santiago's public transport system was modernised in 2007, which at the time was considered to be one of the most ambitious transport reforms undertaken by a developing country. It was named Transantiago and was influenced by Colombia's TransMilenio project in Bogotá. Its plan was to standardise bus routes and connect them with cities' metro system, and enable an integrated fare system which allowed passengers to make bus to bus, or bus to metro transfers for the price of one ticket using a contactless smart card.

The system was not well received by the fare paying customers due to lack of capacity and increased fares, and the name Transantiago was dropped in 2019. It is now known as the "[Red Metropolitana de Movilidad](#)".

Chile has continued to improve and modernise the public transport system in and around Santiago. Significant investment has been made in the Metro system, with two complete new lines incorporated since 2015. There are now 7 lines operating which carry some 260 million passengers in 2021 and reach most of greater Santiago. More lines and extensions are planned.

The bus fleet is being sequentially replaced with newer and more efficient, agile and comfortable buses, and now in March 2022 there are a significant number of electric buses entering the fleet. The bus network is split into seven different operating concessions, each of which operates in specific geographical territories. A tender process was initiated in 2017 in an attempt to attract new operators and improve the experience for the rider and the environment. This process was stalled and never completed. See [here](#).

The historically prominent overland train services in Chile fell into decline many years ago. More recently a number of new overland train lines have been either constructed or refurbished as feeder routes for commuters who travel into and out of the city every day, predominantly from San Fernando and Rancagua to the south. These services are operated by EFE – Trains of Chile.



Commercial Transport

The majority of Chile's goods that arrive via the ports and airports are distributed around the country by road. The same applies to locally produced goods. The nature of Chile's geography means that it is 4,700 km long, and has one main highway which runs from the very north of the country to the central southern city of Puerto Montt. Attempts to convert some of the longer haul routes into either cargo train or sea transport have been largely frustrated by resistance from the truckers union.

Private Transport

The number of cars on Chile's roads has been increasing at a staggering rate since the beginning of the century. At the end of 2021 sales of new cars reached an all time high, fueled by the liquidity in family incomes created by the government's pandemic related financial support mechanisms. Electric cars are still few and far between, as yet there is an insufficient charging point infrastructure and to date no feed in subsidies to encourage ownership.

However bicycles are more and more visible not only for sorting purposes, but also as a means to get to work. A new phenomenon on Chile's urban roads is the plethora of small motorbikes delivering e-commerce and fast foods.

Supervision

Policy and compliance for transport comes under the authority of the Transport and Communications Ministry. The ministry has two sub secretariats, one for transport and one for communications. Within the transport authority there are a number of subdivisions responsible for the different components for defining policy, and making and enforcing the regulations.



Construction

Construction

In Chile, 90% of the population lives in urban areas, higher than the regional average in Latin America and the Caribbean of 80%. Santiago, the capital city, accounts for more than half this figure. This intense concentration, coupled with other factors (such as a growing middle class, an ageing population and the digital revolution), feeds a demand for the development of sustainable and connected cities to accommodate the lives of its citizens. Manufacturing and the building industry combined accounted for approximately 14% of the national ghg emissions in 2018.





The Ministry of Public Works (MOP) is responsible for planning, directing, controlling and building the public infrastructure.

CORFO – is Chile's economic development agency, and reports into the Economy Ministry. It promotes and funds initiatives such as Building Information Modelling (BIM) via Planbim and Smart Cities via Sé Santiago.

In May 2016 a Memorandum of Understanding was signed between the Department for Business, Innovation, and Skills (BIS) and UK BIM Task Group (BIMTG) with the Chilean Development Agency (CORFO), agreeing to the exchange of information on national strategies for the dissemination of BIM UK protocols in Chile. Already 6 new hospitals and Santiago's international airport (USD 800 million) have been all tendered under BIM protocols.

The Green Building Council (GBC) was incorporated in Chile in 2010 and along with the Technological Development Corporation (CDT) promotes sustainable building, buildings, and construction. The CDT is part of the Chilean Construction Chamber of Commerce (CChC). In 2017 Chile stood in ninth place in world rankings with 58 buildings with LEED certification, and another 182 projects under construction.

In March 2021, the government announced its plan to expand and improve on the country's infrastructure to contribute to Chile's future economic growth. The 2021-2025 five-year concessions programme, worth more than US\$15 billion, targets transport and healthcare projects as well as highways, orbital roads, airports, cable cars and more, presenting various opportunities for businesses. Please see the sector report dedicated to Infrastructure for more details.





Mining

Mining

From Chile's sodium nitrate boom of the 19th Century to its position today as the world's largest producer of copper (28% share) and second largest producer of lithium (22% share), Chile's mining sector has, quite literally, always been the bedrock of its economy.





The sector's contribution to GDP is 11% and today represents over 50% of the total exports, which in 2020 amounted to more than 37.5 billion U.S. dollars. Mining also accounts for 25% of investment received in Chile. Today the industry is focused on sustaining operations in a complicated environment, characterised by political and economic uncertainty.

On one hand mining is seen as a dirty industry that needs to clean up its act. In 2018 it contributed over 7% of the national ghg emissions. On the other it is known to be critical to the development of technology and equipment necessary for the rapidly growing clean growth economy. The use of copper, gold and lithium in the production of batteries and other components for electric vehicles is paramount.

Historically Copper mining in Chile had been done by open cast methods. As the huge open pits get deeper and deeper, the immense trucks that are used to bring the ore to the surface for processing are using more and more fossil fuels. The incorporation of Green Hydrogen to replace the conventional fuels provides an important opportunity to reduce the carbon emissions from this part of the process.

Another trend that is helping to reduce the particulate matter released from the open pit mines is to move the operations underground, where the different technology used produces less environmental issues.

For more details please see the sector specific report on Mining.





Materials and Waste Management

Materials and Waste Management

Chile's rapid and sustained economic growth since the beginning of the 21st century has been accompanied by an equally rapid increase in the amount of waste produced. The population has grown from 15 million in 2000 to nearly 20 million in 2022. At the same time the steep rise in disposable family incomes and greater availability of packaged goods has created a significant problem of how to dispose of the waste produced.

Historically, the country has focused on the appropriate final disposal of waste through sanitary landfill. Although landfill regulation has improved and the number of dumping sites reduced, the environmental problems generated by the hoarding of solid waste in landfills persist. Effects such as GHG emissions, water pollution, land erosion, and the rapid filling of the landfills, have shown that concentrating efforts on sanitary final disposal is not enough.

In 2020 it was estimated that 4.4 million tons of waste was generated, and that only 20% of the total waste produced was recycled. These waste dumps are the second biggest generator of methane in the country, and overall waste management produces nearly 5% of the national ghg emissions.

Supervision

The environment ministry (MMA) is responsible for promoting reform in the circular economy, and for defining and policing the laws and regulations relating to waste management. It currently has many initiatives to encourage recycling and good practice. One of the most significant additions to the environmental laws recently was the introduction of the law of extended responsibility of the producer, known in Spanish as the Ley REP. In very simple terms it is an economic instrument that obliges producers of certain products to finance the disposal of their wastes in a sustainable way.



Opportunities

Summary of Business Opportunities

Sector	Opportunity	Estimated Market Size
Electric Power Generation	Power Storage	900 MW at US\$2,000/kw: US\$1.8 billion
Energy use in homes	Electric Heating	175,000 houses US\$547
	Replace wood burning	2 million wood stoves
	District wide heating	unknown
Mining indirect	Tailings material recovery	Just Copper US\$3.6 billion
Mining Circular economy	Tailings as construction material.	unknown
Mining energy efficiency	More efficient processes	US\$2.0 billion
Mining Fuel Substitution	Use of Green Hydrogen in ore moving trucks	US\$19.0 billion
Electric Transport	Buses for public transport	US\$850 million by 2030
	Electric taxis and shuttles	unknown
	Electric light vehicles	US\$200 million by 2030
Construction	Energy efficiency in homes	unknown



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