

## Chile Hydrogen Law, Regulations & Strategy In Chile

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### **Current State of Hydrogen Projects in Project**

- Chile to be carbon neutral by 2050
- Still at an early stage of hydrogen production due to technical barriers, an underdeveloped legal framework and a lack of clear financial support mechanisms.
- Public Transport
  - Solution for larger road vehicles in the Chilean public transport system.
  - Smaller vehicles such as taxis, buses and commercial fleets would follow suite.
- Industry
  - Use hydrogen (mainly grey) as a feedstock for several industrial processes.
  - With the development of concentrated solar power plants and wind farm technology over the coming decade. This hydrogen could be obtained through electrolysis.
  - Two pure hydrogen producers:
    - “INDURA Lirquén” is a green-hydrogen plant, located in southern Chile. Since 1996, it has been developing 99 per cent pure green-hydrogen through electrolysis for the purpose of supplying hydrogen to local glass manufacturers
    - “ASU Indura Graneros” is a hydrogen plant, located in central Chile, which produces and supplies pure hydrogen to local industries.
- Mining
  - Promoting hydrogen fuelled mining trucks and support vehicles
  - Studying feasibility of dual power hydrogen-diesel engines and hydrogen fuel cell-power.
- Green Hydrogen the-phased plan:
  - From 2020 to 2025. The government plans to accelerate the deployment of green hydrogen in 6 prioritised applications in order to create local supply chains and acquire experience in the developing of the industry. Incentives for green hydrogen use and production will be aimed at: (1) oil refineries, (2) ammonia production, (3) mining haul trucks, (4) heavy-duty trucking, (5) long range buses, and (6) blending into gas grids (hydrogen injection into existing gas networks).
  - From 2025 to 2030 onwards. The local government aims to leverage its growing local experience on green hydrogen production so that it can start exporting energy to other nations and by doing so becoming a key player in the energy export community.
  - Finally, a third phase will exploit synergies and economies of scale to expand the local industry into a position in which Chile could become a global supplier of clean fuels with a special focus on the future use of ammonia in the shipping industry and synfuels in aviation.
  - The Chilean state has pledged it will become a facilitator, coordinator and promoter of green hydrogen projects in its quest to establish a new industry through a multisectoral effort in which both private and public sector play a key role. The public sector will intend to identify and lower legal, financial, technical and regulatory barriers. Private initiatives shall build upon these fundamentals to play a leading role

in developing the technologies, business investments and projects required to scale up efficient and competitive local and export markets.

- In the same line, the Chilean state has set up a policy to promote its domestic and export market for green hydrogen by: (i) launching funding rounds of up to 50 MUSD to support selected green hydrogen projects; (ii) establishing a public-private roundtable, to discuss the pathway for both carbon prices and taxes that may better reflect the negative externalities that fossil fuels produce; (iii) committing to bridge regulatory and standard gaps throughout the hydrogen production process to ensure safety standards and give assurances to investors; (iv) the establishment of an operational team to help developers in permitting and piloting processes for green hydrogen project developments; (v) integrally reviewing natural gas regulations and local infrastructure to promote the injection of green hydrogen quotas in the existing gas infrastructure therefore increasing the local demand for green hydrogen; and (iv) deploying a green diplomacy strategy to position itself internationally as a source of clean energy.

### **Market Prospects**

- The hydrogen market in Chile is at an early stage and has significant prospect for growth over the coming years. The Ministry of Energy has advised that hydrogen will be a key enabler for Chile to meet its 2050 net zero goals. Because of the nascent status of hydrogen projects, there has been limited M&A activity in the sector and as such, little by way of private financing to date. This is expected to change once the Chilean government clarifies the legal framework, as promised in the aforementioned National Green Hydrogen Strategy.
- 2021 has already seen the emergence of some M&A operations. Among some of the most renowned projects are Green Hydrogen production ventures such as (i) “Haru Oni” in the Magallanes Region; (ii) a consortium between energy company Engie and mining research organisation Mining3 in order to incentivise decarbonisation in the mining industry through the use of green hydrogen; and (iii) “HyEx”, a project that aims at implementing green hydrogen in the production of mining explosives.

### **Challenges Facing Hydrogen Projects in Chile**

- Legislative Framework
  - In common with many other jurisdictions, Chile does not have a specific legislative framework for hydrogen projects across the various sectors. Therefore, it is important that new regulations are established to regulate the use of hydrogen in Chilean industry. There are a number of gaps and uncertainties that will need to be addressed before the hydrogen economy can truly flourish.
- Financial support and incentives
  - The Chilean government supports the generation and use of alternative fuels generally and particularly hydrogen in the move to decarbonise the public transport system and the mining industry. This support is reflected in the decision of CORFO to financially support projects such as Hydra, which seeks to decarbonize the mining industry. 9 By the end of January 2021 the same public entity had received 18 letters of interest to develop green hydrogen projects from private investors. These letters are a response to a request for information solicited by CORFO that aimed at gathering information from private parties interested in developing green hydrogen

projects. CORFO is currently studying the possible alternatives of public support that may be necessary for the projects that show to be most promising.

- However, according to a 2020 study by Deutsche Gesellschaft für Internationale Zusammenarbeit and 4E Chilean Renewable Energy Program and Electric Efficiency, Chile still requires a larger engagement from public and private funds in the development of the hydrogen sector across the board.
- Research and education
  - Generally, there needs to be an increase in the amount of research that is conducted into hydrogen in order to fully understand the availability and applicability of the resource and the technology needed for its production.

## Regulation of Hydrogen

- In broad terms, hydrogen in Chile is classified as a dangerous substance and, according to NCh382.Of98: 2003, it belongs to the Class 2.1: “flammable gases”. Therefore, the regulated activities are only those set out in the regulation. Namely, the following areas of activities are regulated:
  1. transport of hazardous substances in public roads;
  2. storage of hazardous substances; and
  3. possession of hazardous substances in the workplace
- The Ministry of Public Health regulates storage of dangerous substances (including flammable gasses), and basic sanitary and environmental conditions in the workplace pursuant to the following regulations:
  1. Supreme Decree N° 43 approves the regulation of storage of dangerous substances. This regulatory decree is the most complete regulation on hydrogen in Chile. It explicitly refers to the storage of hydrogen and is the most comprehensive in terms of specific measures such as safety distances and maximum storage capacities. However, this supreme decree explicitly indicates that it does not apply to “liquid and gaseous fuels, used as energy resources”, which “must be regulated by the Ministry of Economy, Development and Reconstruction”.
  2. Supreme Decree N° 594 approves regulations on basic sanitary and environmental conditions in the workplace. It regulates hydrogen implicitly when dictating provisions for “flammable substances” and on fire safety measures; and
  3. Exempt Resolution N° 408 approves a list of dangerous substances to health. This exempt resolution introduces hydrogen as a “hazardous substance” in both compressed and liquid forms, however it has not been regulated by the Ministry of Economy, Development and Reconstruction.

## Transport

The Ministry of Transport and Telecommunications regulates the transport of dangerous substances by road and their handling in port facilities, in the following regulations:

1. Supreme Decree N° 298 regulates the transport of dangerous loads on streets and roads. It establishes general provisions for the transport of dangerous substances on public roads. However, it does not provide details or specific requirements for hydrogen or flammable gases transported in bulk. Nor does it contain provisions for the bulk transfer of flammable gases; and

2. Resolution N° 96, which updates and modifies handling and storage regulations of dangerous cargoes in port facilities. It has mainly administrative provisions, product classifications and indications of what can be deposited in certain port areas. It also does not reference the transfer of flammable gases in bulk.

#### Health & Safety

- The Ministry of Labour and Social Welfare has also issued a regulation on the prevention of occupational risks, which indirectly applies to hydrogen projects as it requires employers to have an internal regulation of safety and hygiene in the workplace, by means of Supreme Decree N° 40. This Supreme Decree approves regulation on professional risk prevention and requires employers to prepare and keep current safety and hygiene regulations, in addition to informing workers of the risks they run and training them to adequately face such risks. These provisions mandate to update the safety and hygiene regulations to include “hydrogen” whenever it is incorporated into a work task, in addition to informing and training workers.

#### Mining

- The National Service of Geology and Mining issued a Supreme Decree in 2004 which establishes mining safety regulations that could affect hydrogen indirectly. It does not refer to hydrogen directly, but this regulation allows the use of Liquefied Petroleum Gas (“LPG”) and Compressed Natural Gas (“CNG”) as a fuel for machinery in underground mines (under Article 129°), which suggests that they could also accept the use of hydrogen as a fuel.

#### Environment

- Regarding the environmental aspects of hydrogen, it is estimated that the current regulations issued by the Ministry of Environment, addresses projects related to the hydrogen value chain and guides environmental impact statement proceedings. The Ministry of Economy and the Ministry of Environment are analysing in detail the current regulations in relation to hydrogen in order to propose specialised legislation.

#### Hydrogen-specific Regulation

- Despite the lack of comprehensive regulation, small advances have been made aiming at creating broad regulation, a small change in Decree-Law 2,224 made in December 2020, granted sufficient powers to the Ministry of Energy so that it may directly regulate the hydrogen industry, which will be done on the basis of specific regulations on the subject.
- In May 2020, a regulatory proposal funded by the Chilean Ministry of Energy and developed by the Pontificia Universidad Católica de Chile laid the groundwork for an eventual regulatory framework for the development of green hydrogen.
- Despite recent legal undertakings and proposals, the currently existing regulatory framework of hydrogen is still insufficient for all of its applications, since the eventual spread of the use of hydrogen requires updated, specific and detailed regulations, covering situations not dealt with by existing regulations.

#### Regulatory Bodies

- There is no specific regulatory body which is responsible for the regulation of hydrogen projects. Instead, a number of regulators have responsibilities depending on the activity in question.

Regulatory Body	Role
Municipal Authority	Regulates the use of land
Superintendence of Health	Usually has the inspection role of the hazardous substance authority in relation to storage
Labour Direction	Regulates workplace hazards regarding storage and use
Superintendence of Environment	Inspection of environmental compliance
Environmental Evaluation Service	Undertakes Environmental Impact Assessments and all proceedings related.
Superintendence of Transport	Usually has the inspection role of the hazardous substance authority in relation to transport
Minister of Energy	As mentioned in section 4.6 above, recent changes in law decree number 2.224 have made the Chilean Ministry of Energy the ultimate regulatory body and has granted them sufficient powers to regulate the industry.