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# Series of Booklets - Carbon Pricing Instruments

STARTING POINT FOR THE DEPLOYMENT OF  
CARBON PRICING MECHANISMS IN CHILE

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# Abstract

In 2017 Chile implemented an entirely new form of green tax, levied on fixed sources emitting local pollutants (PM, NOX, SO2) and the principal global pollutant (CO2). This was a pioneering mechanism for the region, expanding the range of environmental management instruments available in the country. The core environmental purpose is to support and complement efforts to reduce local atmospheric pollution – Chile's main environmental problem – and to mitigate greenhouse gas emissions at a reduced cost. In February 2020, as part of the Tax Modernization Reform, two key elements of green taxes were modified: i) the applicability threshold, moving from establishments' thermal power rating to their annual emissions; and ii) the incorporation of an offset system as a complementary instrument, adding flexibility in the implementation of these taxes and constituting a new environmental management tool. These modifications comprise an advance in the system implemented, moving towards more sophisticated instruments that include market elements in the form of offsets, opening the way for further definitions stipulated in the Climate Change Framework Bill, which puts forward a system of emissions standards that could be attained using trading mechanisms.



# Introduction

Chile is facing many environmental challenges. Two of the principal issues center on local atmospheric pollution, associated with increased mortality and morbidity to cardiorespiratory disease, and global pollution caused by greenhouse gases (GHGs), causing the climate change to which the country is highly vulnerable<sup>2</sup>. Here, and in line with the efforts to be made by all countries to meet the cap on temperature rise established in the Paris Agreement, Chile has joined over a hundred countries to adopt a commitment to become carbon neutral by 2050. The country has thus made a firm pledge to achieve carbon neutrality within the next 30 years<sup>3</sup>. One emblematic measure that will trigger a series of carbon reduction actions in energy-intensive sectors, together with more carbon sequestration in the forestry sector, is the specific commitment to shut down all thermoelectric power plants by 2040, in an initiative that is already underway, operating through close public-private collaboration. From a regulatory and standards perspective, the goal of achieving carbon neutrality by 2050 has led to the establishment of the new Nationally Determined Contribution – NDC (Government of Chile, 2020a), specified in the Climate Change Framework Bill currently under debate in the nation's Congress (Government of Chile, 2020b)<sup>4</sup>. This is particularly relevant in that the commitment has been incorporated into key mechanisms for climate change oversight. The country is also working to develop its Long Term Climate Strategy (ECLP, Spanish acronym), which will provide the framework and principal guidelines for achieving the country's goals under the Paris Agreement, and which will be coherently linked to other regulatory instruments addressing climate change.

To address this twofold environmental threat, Chile has opted to develop carbon pricing instruments to expand its armory of management mechanisms. This began in 2014 with the approval of green taxes in the country (coming into force in 2017), and is now continuing with the incorporation of offsets as a complementary mechanism (Law 21,210). When the Climate Change Framework Bill is passed into law, the array of carbon pricing instruments will be further extended.

The implementation of green taxes constituted a first step for the incorporation of pricing mechanisms as an environmental policy tool, and allowed a full institutional infrastructure to be built to underpin correct implementation: that is, causing polluters to internalize the externalities generated through emissions of local pollutants like nitrogen oxides (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), and particulates (PM), as well as emissions of carbon dioxide (CO<sub>2</sub>), under the “polluter pays” principle, thus achieving environmental objectives at a lower social cost.

Environmental taxes complement existing regulatory mechanisms through the introduction of economic incentives for decision making in covered establishments. Their usage allows the consolidation of information exchange and traceability mechanisms between different state bodies, building a new institutional architecture that lays the groundwork for

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2 Chile possesses six of the nine criteria established under the UNFCCC (IPCC, 2001). These are: i) low-lying coastal areas; ii) desert and semi-desert zones; iii) woodland areas; iv) areas susceptible to natural disasters; v) areas prone to desertification and drought; vi) urban areas with atmospheric pollution problems; and vii) mountain ecosystems.

3 Commitment announced by Chile at the New York Climate Summit (2019).

4 It should be noted that Chile is a member of the Coalition of Finance Ministers for Climate Action and the Carbon Pricing Leadership Coalition, represented by its Treasury Minister (Ignacio Briones) and Energy Minister (Juan Carlos Jobet), respectively.

<http://pubdocs.worldbank.org/en/646831555088732759/FM-Coalition-Brochure-final-v3.pdf>

<https://www.carbonpricingleadership.org/governance>

meeting the country's local challenges and international commitments in a transparent and cost-efficient way.

## **The Global Agenda. Chile: a country committed to Climate Action**

Chile's high vulnerability to climate change brings potential impacts affecting not only environmental issues but also economic and social ones. It is therefore vital for public policy to move proactively to strengthen multilateral forums and international cooperation as core mechanisms for addressing the challenges brought by this phenomenon, without losing sight of the need for efforts and contributions to be made under principles of equity and shared responsibilities, differentiated in line with respective capacities (Office of the President, 2016).

Chile therefore ratified the Paris Agreement, accepting a commitment to actively support national actions to contain the threat of climate change, strengthen sustainable development, and increase efforts to eradicate poverty. Additionally, together with the other three countries that make up the Pacific Alliance, they stated their conviction in the Cali Declaration (2017) "to continue promoting a green growth strategy as a way to face the challenges of climate change, which affect the region especially; [...] as well as our endorsement of the Paris Agreement of December 2015"<sup>5</sup>. In February 2019 is also signed the Helsinki Principles<sup>6</sup>, which serve as orientations for the Coalition of Finance Ministers for Climate Action and include efforts to 'work towards measures that result in effective carbon pricing' (Principle 3).

In this context, Chile was put forward to chair the Conference of the Parties (COP) of the Framework

## **Chile's New Nationally Determined Contribution (NDC 2020)**

a) Chile commits to a GHG emission budget not exceeding 1,100 MtCO<sub>2</sub>eq between 2020 and 2030, with a GHG peak in 2025, achieving a GHG emission level of 95 MtCO<sub>2</sub>eq by 2030.

b) A reduction of at least 25% of total black carbon emissions by 2030, compared to 2016. This commitment is to be implemented mainly through national air quality policies. It will also be monitored through permanent and periodic efforts to improve information on the black carbon inventory.

## **Integration Component (Forestry Sector)**

c) Chile commits to the recovery and sustainable management of 200,000 hectares of native woodland, representing GHG capture of 0.9 to 1.2 MtCO<sub>2</sub>eq per year, by 2030.

d) Chile commits to foresting 200,000 hectares, of which at least 100,000 hectares will comprise permanent forest cover, with at least 70,000 hectares of native species. The forestation and recovery will take place in preferable areas for forestry land use and/or priority conservation areas, representing carbon capture of 3.0 to 3.4 MtCO<sub>2</sub>eq per year by 2030.

Source: Government of Chile, 2020a.

<sup>5</sup> Available at: <https://alianzapacifico.net/download/declaracion-de-cali-junio-30-de-2017/>

<sup>6</sup> More information available at <https://www.financeministersforclimate.org/>

Convention on Climate Change (UNFCCC), starting this role at the 25th Conference (COP25), held in Madrid in December 2019. There, Chile made a commitment to ensure that 70% of energy consumed in the country by 2030 will come from fully renewable sources<sup>7</sup>, together with the creation of a Climate Change Framework Bill. The former goal is linked to the plan to remove carbon from the country's energy matrix by 2040, announced by the government and carbon-based power companies in June 2019 (and subsequently updated in May 2020)<sup>8</sup>, while the latter is now under discussion in the nation's Congress, including two innovations linked to pricing mechanisms: i) GHG emission regulations (Art. 13); and ii) Certificates of emission reductions and/or surpluses (Art. 14) for compliance with the standard.

Meanwhile, the update to the NDC submitted to the UNFCCC on April 9, 2020, specifies recognition of Article 6 of the Paris Agreement as a mechanism that can allow countries to implement mitigation actions in a cost-effective manner, while advancing the implementation of new technologies through voluntary collaboration with other parties, for example through internationally transferred mitigation outcomes (ITMOs), stressing that this is the only article of the Agreement that promotes participation by the private sector. The new NDC also establishes a low-emissions road map to achieve carbon neutrality by 2050, a goal that is also included in the Climate Change Framework Bill.

Climate oversight in Chile has been placed within the remit of an inter-ministerial public policy drawing together actions from a wide range of areas<sup>9</sup>, thus allowing international commitments to be connected to current situations within the country, aligning Chile's commitment to a low-carbon economy and a green growth agenda with the commitments adopted with the UNFCCC and the Organisation for Economic Cooperation and Development (OECD) relating to sustainable development and the climate.

## The challenges of local pollution

Atmospheric pollution is the principal environmental challenge in Chile. Geographic and climatic conditions, together with patterns of production, consumption, and economic activities entailing intensive usage of fossil fuels, are factors that contribute to the current situation in which emission of pollutants into the atmosphere affect more than 10 million people in the country and lead to some 3,700 premature deaths each year (Ministry of the Environment, 2014).

The country possesses air quality regulations that address the maximum concentrations of particulates (PM<sub>10</sub> and PM<sub>2.5</sub>), sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), tropospheric ozone (O<sub>3</sub>), carbon monoxide (CO), and lead (Pb). However, despite these regulations, many cities far exceed the established limits and are declared saturated or latent zones, triggering the implementation of Environmental Decontamination Plans (PDAs) to meet air quality standards. There are currently 20 active PDAs. These decontamination plans require a long duration and fail to incentivize further reductions amongst industrial polluters, as a well-designed pricing mechanism can. Thus, economic mechanisms can operate alongside these action plans, incorporating criteria based on efficiency, flexibility, and compliance with goals set for emitters, with recognition of the social harm associated with pollutants, incentivizing decontamination in the areas where environmental burdens are most severe and preventing other areas from becoming saturated.

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7 <https://www.elmostrador.cl/agenda-pais/2019/12/10/chile-se-compromete-a-que-el-70-de-la-matriz-energetica-sea-de-energias-renovables-para-el-2030/>

8 The first stage was established for 2024, gradually shutting down the first 11 coal-burning plants, with a total installed capacity of 1,731 MWt), while the remaining 17 plants will be shut down prior to 2040, in a process of reviews every five years.

9 For example, 2015 saw the creation of the Inter-Ministerial Technical Team on Climate Change (ETCC), comprising 16 ministries coordinated by the Climate Change Office (OCC) at the Ministry of the Environment (MMA, 2018).

# Green Taxes in Chile

There is international consensus that pollutant pricing mechanisms meet emissions reduction targets at a reduced social cost. In other words, they are economically efficient. The implementation of these taxes made Chile the first country in South America, and one of the first middle-income countries, to adopt carbon pricing.

Green taxes comprise a taxation system that complements and expands the range of environmental management tools, providing flexibility in regulatory compliance while incentivizing greater efficiency, innovation, and promotion of technological development and usage of supplies.

Within the framework of the tax reform<sup>10</sup> of 2014 (Law 20,780, and subsequent simplification in January 2016 with Law 20,899), the decision was made to incorporate green taxes with the goal of reducing local and global pollution, with incentives to cause behavioral changes amongst the stakeholders responsible for emissions, placing a cost on polluting. The tax came into force in 2017. Subsequently, in February 2020 the Tax Modernization Law (Law 21,210) incorporated two innovations to the original green taxes, which are due to come into force in 2023.

Specifically, the tax passed in 2014 established a charge on atmospheric emissions of local pollutants PM, NO<sub>x</sub>, SO<sub>2</sub>, and the principal global pollutant (CO<sub>2</sub>), produced by establishments with stationary sources comprising boilers or turbines that, individually or together, output a thermal power level equal to or greater than 50 MWt (megawatts thermal) of nominal thermal power<sup>11</sup>, calculated based on the upper limit of the fuel's energy content. The Tax Modernization Law passed in 2020 replaced the technical threshold (50 MWt) with an emissions threshold (25,000 tons of CO<sub>2</sub> and/or 100 tons of PM)<sup>12</sup>. The new limit will exclude some facilities that are subject to the existing cap, but will extend enforcement to other establishments, including new economic sectors. The transition to an emissions threshold, as well as the values at which the thresholds are set, are coherent with the values used in other jurisdictions, and with progress towards more complex pricing mechanisms.

For CO<sub>2</sub>, a tax of USD 5 was imposed for each ton emitted. Excluding stationary sources based on non-conventional renewable power sources that operate with biomass as their primary energy source<sup>13</sup>. The value was determined based on the social cost of CO<sub>2</sub> estimated by the Ministry of Social Development (MDS, Spanish acronym) in 2014<sup>14</sup>. This value is lower than those used in other countries and jurisdictions (World Bank, 2020). Nonetheless, as a groundbreaking mechanism and starting point for moving towards more comprehensive instruments, a low tax was deemed to facilitate implementation, by: i) Helping applicable sectors to adapt to the new regulation; ii) Increase social acceptability; and iii) Allow the installation of the institutional infrastructure that underpins the tax. This also sparked broader discussion regarding pollution pricing mechanisms in general and carbon pricing in particular.

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<sup>10</sup> The reform also incorporated a tax associated with emissions from mobile sources, through a tax on first sale of new light and medium motor vehicles, based on their urban performance and emissions of NO<sub>x</sub>. For more information, see: <http://www.sii.cl/portales/reforma-tributaria/impuestoverde2015.pdf>

<sup>11</sup> Nominal thermal power: The thermal power calculated based on information on nominal fuel consumption, determined in light of the design technical specifications or engineering completed by the manufacturer and/or builder, and the upper limit of the energy content of the fuel used, determined in line with values published by the National Energy Commission (Source: MMA DS 18/2016).

<sup>12</sup> Emissions sources are defined as sources that generate emissions through combustion, in whole or in part.

<sup>13</sup> The tax per ton of local pollutants is calculated based on a formula designed to recognize the specific damage caused by emissions released from industrial processes, in line with the situation in each area where emissions occur (Pizarro, 2016).

<sup>14</sup> When the law was prepared, the Ministry of Social Development rated a cost of CLP 2,213 (Ministry of Social Development, 2014) approximately equivalent to USD 5 /ton. For details on the social pricing methodology and the social price of CO<sub>2</sub>, see: <http://sni.ministeriodesarrollosocial.gob.cl/evaluacion-iniciativas-de-inversion/evaluacion-ex-ante/metodologias-precios-sociales/>

The Chilean carbon tax was held at the flat rate of USD 5 per ton following the 2020 tax reform. However, it should be mentioned that the methodology used by the MDS for ascribing a social cost to carbon has been updated, moving from the market price of carbon as an approximation of the social cost to a shadow pricing mechanism based on analysis of marginal costs of carbon dioxide abatement, allowing Chile to meet its mitigation goals under the Paris Agreement, in line with the 2015 NDC. The new methodology established the cost of CO<sub>2</sub> emissions at CLP 23,298 (MDS, 2020). This value, equivalent to USD 32.5015, is close to the pollutant's marginal damage cost established in the Report of the High-Level Commission on Carbon Prices (CPLC, 2017), which indicates that the cost of CO<sub>2</sub>, in line with achieving compliance with the Paris Agreement, varies between USD 40 – 80 for 2020 and USD 50 – 100 for 2030. Although this new social cost of carbon is not applicable to the carbon tax, it is used for analysis of costs and benefits arising from public investment by the MDS Integrated Project Bank.

## Characteristics of the Green Tax System in Chile

In specific terms, the system features the following characteristics:

### **Principle of Responsibility:**

Based on the principle that the polluter pays.

### **Corrective tax:**

The objective is to modify behavior, rather than to accrue revenue. Taxes on local pollutants are designed to charge the social cost of the damage caused and to institute incentives for emission sources to introduce lower-emission technologies, allowing them to pay lower taxes. The tax on CO<sub>2</sub> seeks to establish a compensation mechanism for the damage caused, while also incentivizing energy efficiency and the transition to cleaner technologies that allow for emissions to be reduced<sup>15</sup>.

### **Downstream Tax:**

Taxes can be levied 'upstream' – which, in the case of carbon, is determined based on the carbon content of the fuels used in the production process – or downstream, based on emissions that have been generated. Chile adopted the latter method due to the twofold nature of the tax, addressing both global and local impacts. This mechanism also allowed the construction of a measurement, reporting, and verification (MRV) system suitable for potential transition to other carbon pricing instruments, like offsets, an emissions trading system (ETS), or a hybrid mechanism, as these systems are designed around emissions as the taxable item.

<sup>15</sup> Value equivalent to 0.823 UF/ton CO<sub>2</sub> for the calibration year (as of December 30, 2016) with the UF unit valued on that date at CLP 28,309.03, giving a value of CLP 23,298.03 per ton of CO<sub>2</sub>.

<sup>16</sup> No commercially developed technologies are currently available for abatement of CO<sub>2</sub>. However, it is considered that spaces exist for process improvement and efficiency that companies could undertake to reduce their emissions.

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## Threshold:

The original decision to use a technical threshold rather than an emissions threshold was made in view of applicability considerations. Thus, in practical terms it was found to be more suitable to identify taxable establishments based on their technical characteristics rather than their emissions, particularly as the latter mechanism would require accurate information on emission levels for each pollutant; this information was available, but not at the required level of precision. Indeed, good information was available for emissions from power plants (subject to MMA DS 13/2011), but information on other emission sources was less precise. Now that more precise information is available (after three years of implementing green taxes), the 2020 Tax Modernization Law (Law 21,210) was drafted to better fit the ‘polluter pays’ principle, setting a threshold based on annual emissions.

## Damage approximation:

Local emissions taxes were designed to allow an approximation of the specific damage caused by industrial processes in each geographic zone. In this way the tax both establishes a charge related to environmental damage and incentivizes the incorporation of abatement technologies at localized emissions sources where processes take place, decompressing the areas where the concentration of emissions is highest. The tax thus encourages industries to reduce pollution in areas that are already polluted and supports Atmospheric Decontamination Plans by providing signals of differentiated costs, indirectly decentralizing investment decisions linked to processes that cause pollution.

## Tax on a wrong:

From a conceptual perspective, green taxes are based on the economic value of the environmental damage caused by pollutant emissions generated in an economic activity. This means that what is taxed is a negative impact or societal wrong. The implementation of taxes based on this principle allows a platform of cost-effective taxation instruments to be developed, reducing the system’s inefficiencies by internalizing the environmental impacts within production or consumption costs.

## Scalable instrumental system:

The construction of institutional structures to support green taxes, particularly centering on the consolidation of an MRV system, can lay the foundations for expansion and scaling of the system: to other technologies and emissions sources, other greenhouse gases (such as methane - CH<sub>4</sub>), or other carbon pricing systems such as offsets, an ETS, or hybrid systems.

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<sup>17</sup> Countries such as Mexico, Colombia, and South Africa use upstream tax mechanisms. .



## Construction of a subject:

The instatement of environmental taxes created a framework for debate that led to the construction of a new social subject, comprising the shared principle of responsibility for the tariff on polluting by making rules that consolidate the ethical imperative behind the new mechanism.

## Equipoise:

The Chilean Constitution establishes the principle of ‘prohibiting earmarking’, whereby no tax may be raised for a specific purpose. It is therefore not possible to earmark the revenue garnered through green taxes for direct spending on climate change mitigation or adaptation measures. Rather, all revenue goes to the state treasury, with no set spending destination.

# Offsets as a Complement to Carbon Taxation

The Tax Modernization Law (Law 21,210) not only modified the threshold for defining which establishments are subject to the green tax; it also incorporated offsets as a new environmental oversight mechanism, due to enter into force in 2023.

Offsets are an emissions exchange tool that allows a reduction or sequestration of pollutant emissions in one sector or jurisdiction to compensate emissions that are released in another sector or jurisdiction. This makes tax payments more flexible, through a mechanism that helps make emissions mitigation more efficient and incentivizes mitigation in sectors that are not covered by the tax itself. In other words, a taxable establishment can offset some or all of its emissions through duly validated reduction certificates as defined by the competent authority in a body of regulations.

It must be noted that offsets must correspond to permanent, verifiable, measurable, and additional reductions. They are also subject to certain restrictions:

- They must be in addition to the obligations established under: Decontamination or Prevention Plans, Emissions Standards, Environmental Classification Resolutions (RCAs, Spanish acronym), and any other legal obligations.
- Offsets must apply to reductions in the same pollutant.
- Offsets for local pollutants (PM, NOX, SO2) must be based on reductions in the same district as the emission source, so long as the district has been declared a saturated zone or latent zone. If no such declaration is in operation, the reductions may be in the same district or in an adjacent district. If the district is adjacent to more than one other district, so specific criterion is stipulated.

This following diagram shows the coming milestones in innovations included under the Tax Modernization Law<sup>18</sup> and its implementation process through to its entry into force in 2023.

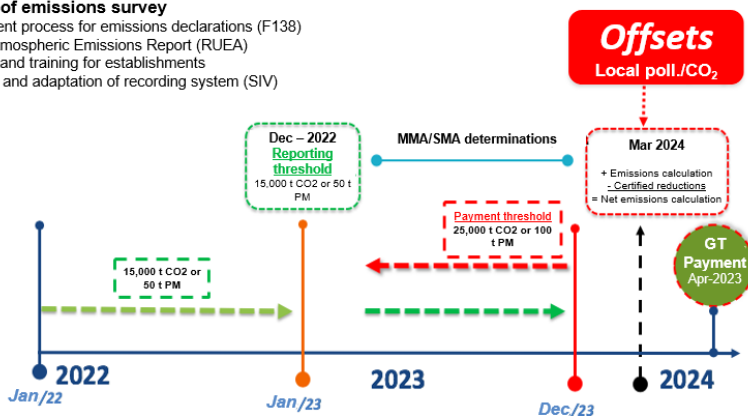
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18. F138 is the form used to adhere to Health Ministry Supreme Decree 138/2005, which mandates the provision of necessary information to estimate emissions of atmospheric pollutants. Reporting is made using the Ministry of the Environment's Registry of Emissions and Transfers of Pollutants (RETC). The RUEA (Uniform Registry of Atmospheric Emissions) draws together information on emissions from a number of mechanisms, including form F138, Green Taxes, and the System of Thermolectric Power Plants.

## Diagram 1. Implementation process for carbon pricing mechanisms (Law 21,210)

### Preparation of emissions survey

- Improvement process for emissions declarations (F138)
- Uniform Atmospheric Emissions Report (RUEA)
- Mentoring and training for establishments
- Expansion and adaptation of recording system (SIV)



Source: Ministry of the Environment (2020)

## Institutional Infrastructure

The core element of implementing the green tax was the creation and consolidation of a complex and comprehensive institutional infrastructure, allowing the coordination of a number of government bodies based on a series of laws, regulations, protocols, and instructions specifying the responsibilities, procedures, and processes of inter-institutional relations, thus adjusting environmental oversight to best achieve effective implementation of the tax.

The Ministry of the Environment (MMA), as the lead regulatory body, is responsible for coordinating the implementation of the mechanism and drawing up a registry of taxable establishments. Meanwhile, the Superintendency of the Environment (SMA, Spanish acronym) is the lead oversight body, and tasked with implementing the MRV system that comprises the information basis for calculating the tax.

As shown in Diagram 2, the process begins with a Ministry of the Environment Decree that specifies which establishments are subject to the taxes, which must be registered with the Pollutant Release and Transfer Register (RETC, for its initials in Spanish)<sup>19</sup>, and subsequently must declare their emissions – using the quantification methodology stipulated by the SMA. Using this information, together with all other parameters necessary for calculating the tax – establishments, districts, population, zone types – the Internal Taxation Service (SII, Spanish acronym) determines the sum payable and sends the information to the companies, for payment to the General Treasury of the Republic (TGR, Spanish acronym).

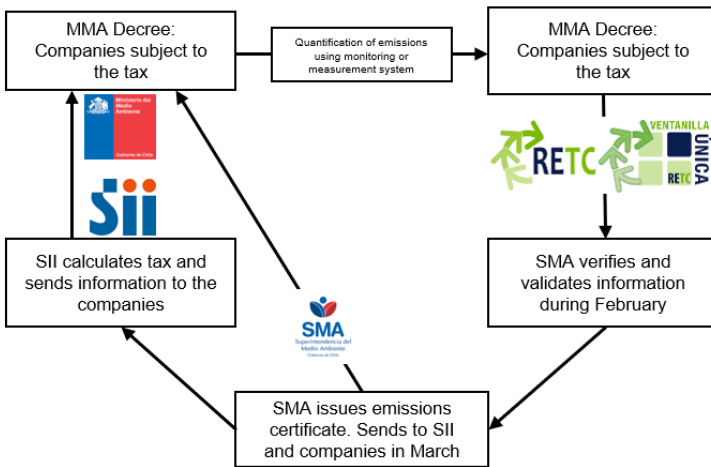
When offsets are used, first it is necessary to verify the source of the reduction projects to offset some or all of the tax. Project owners must file a request with the MMA, which will verify

<sup>19</sup> <http://www.retc.cl/>

compliance with the requirements specified in the regulations<sup>20</sup>. Meanwhile, accreditation of emissions reductions will be certified by an external auditor authorized by the SMA, which will establish the applicable certification methodologies. The Ministry of the Environment issues the offset regulations, determining the certification procedures, attributions, and minimum requirements for an external auditor, which is to undertake certification, to form part of an ad hoc registry of auditors.

Once it has received verification that the emissions reduction project has been implemented, the SMA will calculate the emissions of each taxable entity, including the emissions reductions used as an offsetting mechanism, and will remit this information to the SII for calculating and collecting the tax. The SMA will keep a public record of authorized external auditors.

**Diagram 2. Flow chart for the application of Green Taxes\***



Source: Ministry of the Environment\*: Existing institutional structure. Operational since 2017.

20 At present, these regulations are in the process of being drafted. The Regulations will establish the form and information required to verify the necessary characteristics for these projects to qualify, the procedure for filing a request, and the information that must be included and attached.

## **Key Laws and Regulations for Implementation of the Green Taxes**

### **Law 20,780 (2014)**

Tax reform modifying the revenue taxation system and introducing a range of adjustments in the taxation system, including green taxes.

### **Law 20,899 (2016)**

Simplification of the Revenue Taxation System and Adjustment of other Tax Law Provisions.

### **Law 20.210 (2020)**

Tax modernization, modifying the threshold for stipulating which establishments are subject to green taxes, and incorporating offsets as a complementary mechanism.

### **Green Tax Bylaw 41,646 (Ministry of the Environment, 2016b)**

Regulations specifying obligations and procedures regarding the identification of applicable taxpaying entities, and establishing the necessary administrative procedures for application of the tax.

### **Offset Bylaw**

In preparation.

### **Instructions for quantifying emissions from stationary sources subject to taxation under Law 20,780, Article 8 (Superintendency of the Environment, 2016)**

Establishes methodologies for quantifying NO<sub>x</sub>, SO<sub>2</sub>, PM, and CO<sub>2</sub> emissions, for facilities (boilers and turbines) subject to the tax, and specifies the administrative requirements necessary for correct implementation.

### **Exempt Resolution 1,333 (Ministry of the Environment, 2016b)**

Establishes the list of establishments subject to the tax.

### **Registration Manual for Boilers and Turbines, for Payment of Green Taxes (Ministry of the Environment, 2016)**

Determines the administrative process for registering and determining the establishments required to make emissions declarations subject to green taxes.

### **Circular 54 (Internal Taxation Service, 2015)**

Specifies instructions on declaration and payment of taxes on pollutant compounds released by stationary sources, as stipulated in Law 20,780, Article 8.

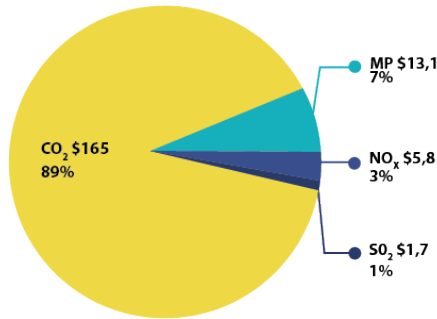
### **Exempt Resolution 52 (National Energy Commission, 2018)**

Complements and amends National Energy Commission Exempt Resolution 659, of November 17, 2017, which establishes technical provisions for the implementation of Law 20,780, Article 8.

# Results

The twofold purpose of simultaneously combating local and global atmospheric pollution through green taxes in Chile has been successful and recognized (Crampton et al., 2017). According to figures reported by the Ministry of the Environment, green tax revenue in 2020, associated with emissions in 2019, amounted to USD 185.6 million, 1.4% less than the previous year. 89% of the total tax revenue came as payment for emissions of CO<sub>2</sub> (USD 165 million), while the remaining 11% was linked to local pollutants (USD 20.6 million)<sup>21</sup>.

**Graph 1. Revenue by pollutant - 2019**



Source: MMA (2020)

The tax was levied from a total of 90 establishments located in 49 districts. Tax revenue is highly concentrated: 15 establishments paid 82% of the total, while just six establishments paid half of the total (50%). 94% of the total was paid by power companies, mainly operators of thermoelectric plants.

Furthermore, the MMA reports a reduction in total emissions subject to the green tax: CO<sub>2</sub> emissions fell by 0.13%, while PM fell by 22%, NO<sub>x</sub> by 6%, and SO<sub>2</sub> by 5%. After three years of green taxes, CO<sub>2</sub> emissions have fallen by 1.4%, and PM emissions have fallen by 28%. Although the tax's real impact on emissions reduction can only be estimated by means of a counterfactual<sup>22</sup>, the trend is coherent with expected behavior.

In terms of competitive impact, and considering the characteristics of the electricity market that establishes marginal costs as the basis for generator power orders, simulations made prior to the implementation of the tax indicated that the application method and tax rate on CO<sub>2</sub> would not alter the electricity matrix: they would not induce changes in orders (KAS Ingeniería, 2016). In practice, it is observed that once the tax came into force, taxable companies in the power generation sector (responsible for 94% of emissions) pro-rated the sums for payment by generation units supplying power into the grid or withdrawing power from it, including non-conventional renewable energy plants, and the spot market is a necessary tool for meeting power supply contracts. This has led to extensive public debate on incentives for

21 In 2019 a total of USD 191.3 million was raised, while in 2018 the figure amounted to USD 188.3 million

22 In order to account for any other effects linked to a reduction in the emissions subject to the green tax.

generating clean energy and a potential rise in the carbon tax rate, which currently falls well below the value suggested by experts (CPLC, 2017) in order to achieve the objectives of the Paris Agreement. Indeed, pressure from the public to retire thermoelectric plants earlier is growing, particularly in areas with greater social conflict, thus transitioning more quickly towards a cleaner energy generation matrix.

## Conclusion

The development and implementation of green taxes in Chile has proved a successful and internationally recognized policy. The institutional infrastructure underpinning implementation of the system has operated correctly in the three years since the taxes came into force. The results in terms of reductions in emissions of applicable pollutants have been coherent with the incentive put into place, although an impact evaluation (counterfactual) is necessary in order to determine whether a causal link can be attributed to the new taxes. A reduction was observed in local pollutants, particularly PM, while the CO<sub>2</sub> reductions observed were marginal, and although this was the expected outcome in view of the low value of the tax, the green tax has taken on a role as a new signal and as a complementary mechanism, constituting a first step towards more comprehensive and sophisticated instruments that accelerate the transition towards low-carbon development. A potential increase in the tax rate, approaching values in line with achieving compliance with the Paris Agreement, is currently under debate, as is a mechanism to incentivize clean energy generation through an adjustment to the electricity tariff system.

Furthermore, the tax modernization law added two innovations to the green tax: a) it changed the threshold for rendering establishments subject to the tax, moving from a technical to an emissions one, at a level in line with values observed in other jurisdictions, thus permitting potential future scale up to other instruments; and b) it added offsets as a new environmental oversight instrument, complementary to the tax, to enhance efficiency in reduction of locally and globally pollutant emissions.

Chile's advances in the implementation and adjustment of its pollutant pricing mechanisms are in line with requirements for local atmospheric decontamination and bolstering mitigation of GHG emissions. Today, the challenge is to insert the taxation innovations into the existing institutional infrastructure, for correct implementation and potential future enhancements in sophistication.

# Bibliography

- Pacific Alliance (2016). Declaración de Cartagena de Indias. Available online at: <https://alianzapacifico.net/wp-content/uploads/Declaracion-Ministros-de-Ambiente-de-la-APdf>
- Pacific Alliance (2017). Declaración de Cali. Available online at: <https://alianzapacifico.net/download/declaracion-de-cali-junio-30-de-2017/>
- Carbon Pricing Leadership Coalition (CPLC) (2017). Report of the High-Level Commission on Carbon Prices. Available online at: <https://www.carbonpricingleadership.org/report-of-the-highlevel-commission-on-carbon-prices/>
- National Energy Commission (Comisión Nacional de Energía) (2018). Exempt Resolution 52. Complements and amends National Energy Commission Exempt Resolution 659, of November 17, 2017, which establishes technical provisions for the implementation of Law 20,780, Article 8. Available online at: <https://www.cne.cl/nuestros-servicios/resolucion-exenta-impuesto-emisiones/>
- Chilean Constitution (1980). Available online at: <https://www.bcn.cl/leychile/navegar?idNorma=242302>
- Cramton, P., MacKay, D. J., Ockenfels, A., & Stoft, S. (2017). Global Carbon Pricing: The Path to Climate Cooperation. MIT Press. Available online at: <https://carbon-price.com/wp-content/uploads/Global-Carbon-Pricing-June-2017.pdf>
- Government of Chile, 2020a. Contribución Determinada a Nivel Nacional (NDC) de Chile. Available online at: <https://www.cne.cl/nuestros-servicios/resolucion-exenta-impuesto-emisiones/>
- Government of Chile, 2020b. Proyecto de Ley que fija una Ley Marco sobre Cambio Climático. Boletín N° 13191-12. Available online at: <https://www.camara.cl/legislacion/ProyectosDeLey/tramitacion.aspx?prmiD=13728&prmlBoletin=13191-12>
- Kas Ingeniería (2016). Análisis de impactos potenciales derivados de la implementación del impuesto al carbono en plantas de generación térmica en Chile. Available online at: <http://www.precioalcarbonochile.cl/estudios/analisis-impactos-potenciales-derivados-la-implementacion-del-impuesto-al-carbono-plantas-generacion-termica-chile>
- Law 20,780 (2014). Reforma Tributaria que Modifica el Sistema de Tributación de la Renta e Introduce Diversos Ajustes en el Sistema tributario. Available online at: <https://www.leychile.cl/Navegar?idNorma=1067194&idVersion=2016-10-26>
- Law 20,899 (2016). Simplifica el Sistema de Tributación a la Renta y Perfecciona otras Disposiciones Legales Tributarias. Available online at: <https://www.bcn.cl/leychile/navegar?idNorma=1087342>
- Ministry of Social Development (2014). Precios Sociales Vigentes 2014. Available online at: <https://www.leychile.cl/Navegar?idNorma=1142667>
- Ministry of Social Development (2020). Estimación del Precio Social del CO2. Available online at: [http://www.dellibertador.cl/diplan/2014/precios\\_sociales\\_vigentes\\_2014.pdf](http://www.dellibertador.cl/diplan/2014/precios_sociales_vigentes_2014.pdf)
- Ministry of the Environment (2011). Decreto Supremo N°13: Establece norma de emisión para centrales termoeléctricas. Available online: <http://snj.ministeriodesarrollosocial.gob.cl/download/precio-social-co2-2017/?wpdmcl=2406>
- Ministry of the Environment (2014). Planes de Descontaminación Atmosférica. Estrategia 2014 – 2018. Available online at: [http://portal.mma.gob.cl/wp-content/uploads/2014/08/articles-56174\\_Plan\\_Descont\\_Atmosferica\\_2014\\_2018.pdf](http://portal.mma.gob.cl/wp-content/uploads/2014/08/articles-56174_Plan_Descont_Atmosferica_2014_2018.pdf)
- Ministry of the Environment (2016). Reglamento que fija las obligaciones y procedimientos relativos a la identificación de los contribuyentes afectos, y que establece los procedimientos administrativos necesarios para la aplicación del impuesto que grava las emisiones al aire de Material Particulado, Óxidos de Nitrógeno, Dióxido de Azufre y Dióxido de Carbono conforme lo dispuesto en el artículo 8° de la ley n° 20.780. D.S N°18/2016. Available online at: [http://www.retc.cl/wp-content/uploads/2016/12/DS\\_N18\\_2016\\_MMA.pdf](http://www.retc.cl/wp-content/uploads/2016/12/DS_N18_2016_MMA.pdf)
- Pizarro, R. (2016). Ley 20.780 Artículo 8°: Impuestos verdes a las fuentes fijas. Nota técnica, División de información y economía ambiental, Ministerio del Medio Ambiente. Santiago, Chile. Available online at: [http://www.precioalcarbonochile.cl/wp-content/uploads/2016/10/KAS\\_Castalia\\_Impactos\\_ImpuestoCO2\\_2016-02-28\\_GMS.pdf](http://www.precioalcarbonochile.cl/wp-content/uploads/2016/10/KAS_Castalia_Impactos_ImpuestoCO2_2016-02-28_GMS.pdf)
- Office of the President (2016). MENSAJE N° 196-364. Mensaje de S.E. la Presidenta de la República con el que inicia un Proyecto de Acuerdo que Aprueba el Acuerdo de París, Adoptado en la Vigésimo Primera Reunión de la Conferencia de las Partes de la Convención Marco de las Naciones Unidas sobre el Cambio Climático, en París, el 12 de diciembre de 2015. Santiago, October 21, 2016. Available online at: <https://www.bcn.cl/historiadelaley/historia-de-la-ley/vista-expandida/6274/>
- World Bank (2020). State and Trends of Carbon Pricing 2020. Washington, DC. Doi: 10.1596/978-1-4648-1586-7. License: Creative Commons Attribution CC BY 3.0 IGO. Available online at: <https://openknowledge.worldbank.org/handle/10986/33809?locale=attribute=en>



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