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NATIONAL ORGANIC WASTE STRATEGY CHILE 2040

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NATIONAL ORGANIC WASTE STRATEGY CHILE 2040

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FOREWORD



Climate change is the most important challenge we face as a generation. Fighting it decisively is an ethical imperative and has been one of the focuses of our government. It is necessary, now more than ever, to join forces to confront it. We can no longer just keep looking at how its consequences affect us. The time has come to become an active part of the solution, through the participation and commitment of all sectors.

This National Organic Waste Strategy seeks, precisely, to integrate efforts in pursuit of a more sustainable management of municipal organic waste – which allows us both to mitigate greenhouse gas emissions, and to better adapt to the climate stress that strikes us each time with more force.

This category of waste represents more than half of that generated in households, and that, with notable exceptions, is not managed separately in Chile, but is mixed with the garbage that goes to landfills and dumpsites, thus wasting its enormous potential and generating a significant environmental impact.

The Strategy proposes a vision that is established through ambitious goals by 2040. We propose that in two decades we can take advantage of two out of every three kilograms of organic waste, putting ourselves at the level of the most developed countries in the matter and moving decisively towards a circular economy. In addition, the strategy suggests the main changes that must be prompt to achieve the vision and goals.

The circular economy allows solving a set of environmental problems at a local and global level. Few examples like the one of organic waste demonstrate this so clearly. Of the different scales in which the territory is organized, this strategy is focused on the country scale: its goals are goals for all of Chile, and the changes it proposes are changes that affect all its regions. However, sustainable organic waste management is necessarily the result of a local management. Therefore, the success of the Strategy will depend, crucially, on the leadership of the municipalities and regional governments of the country in this matter. It will be essential to empower these actors to implement the solutions that make the most sense for their various realities.

I am confident that in 20 more years we will look back and see in this strategy a turning point from which we begin to follow a different path, towards sustainable and low emissions development, generating a simultaneous improvement in the environmental, economic and social aspects.

Carolina Schmidt Ministry of Environment

EXECUTIVE SUMMARY

NATIONAL ORGANIC WASTE STRATEGY: THE CHILE WE WANT BY 2040

THE COMMITMENT OF ELABORATING THE NATIONAL ORGANIC WASTE STRATEGY (THE "STRATEGY") WAS INCLUDED IN CHILE'S NATIONAL DETERMINED CONTRIBUTION (NDC), UPDATED TO 2020, THIS STRATEGY NOT ONLY FULFILLS THIS COMMITMENT, BUT MOREOVER, IT IS ESSENTIAL TO MOVE TOWARDS A CIRCULAR ECONOMY AS A COUNTRY, ESPECIALLY GIVEN THAT ORGANIC WASTE CORRESPONDS TO THE VAST MAJORITY OF THE WASTE GENERATED IN OUR CITIES.



Approximately 58% of municipal solid waste by weight is organic waste. This is more than double that of other waste such as containers and packaging (plastic, cardboard, glass, cans, etc.). However, the recovery rate of organic waste is less than 1% of the total tons generated each year.

In this current model of linear production and consumption, based on extract-use-discard, organic matter, water, energetic potential and nutrients contained in organic waste are lost, while generating multiple economic, social and environmental impacts, which can be avoided.

This Strategy seeks to overturn the way we organize ourselves as a society in order to take over the waste we generate.

THE STRATEGY AIMS TO INCREASE THE RECOVERY OF ORGANIC WASTE GENERATED AT MUNICIPAL LEVEL

FROM 1% TO 66% BY 2040. Specifically, it seeks to ensure that citizens generate substantially less organic waste and separate those that they are unable to avoid at source, in their homes, shops, offices, educational centers, parks, outdoor markets and fairs. It also seeks to have infrastructure, equipment and logistics systems in place in order to use organic waste as a resource in the production of soil improvers, electrical and/or thermal energy.

TO ACHIEVE THIS, A SERIES OF INTERMEDIATE TARGETS ARE PROPOSED FOR 2030:

- 30% of the organic waste generated at municipal level is recovered.
- 5,000 educational centers with compost bins and/or worm composting bins.

- 50% of public institutions separating at source and recovering the organic waste they generate.
- In order to reach what is planned for Chile to reflect this plan within 20 years, a transformation in multiple areas is required. In other words, a strategy is needed in order to untie a set of knots that currently exist and which have prevented or restricted progress in this area. It is also essential to generate the right rules and incentives for citizens, public bodies, municipalities and companies to change the way they deal with organic waste.

To achieve the above, the active participation of citizens is of vital importance. People will play a major role in the appropriate management of organic waste. To achieve their involvement and greater environmental awareness, it is proposed to establish obligations and incentives for people, promote environmental education and reach citizens through municipalities and other public programs.

- 500,000 families using compost bins and/or worm composting bins in their homes.
- 500 neighborhoods of "I Love my Neighborhood" program ("Quiero mi Barrio", in Spanish) implementing composting and/or

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 All urban parks administered by the Ministry of Housing and Urbanism (MINVU in Spanish) recover the organic waste generated, preferably at their facilities.

Municipalities will be another key player in the implementation of this Strategy, which will require capabilities and resources to design and implement this transformation. Accordingly, the Ministry of Environment (hereinafter MMA for its acronym in Spanish) will create an Organic Waste Program, which will support the municipalities, maximizing the use of all kinds of resources already available in the public sector and looking for new lines of financing in the public and private sector.

The financial aspect that will make this Strategy feasible is a critical issue. In addition to making use of existing public investment and tender instruments, the historic municipal deficit in waste management is needed to be addressed. It is essential to progress gradually towards charging people and companies for the waste they generate. Moreover, is essential that private sector can guide its investments on providing solutions in this area. To this end, there must also be clear incentives to make private projects viable. Furthermore, it is essential that different projects can benefit from carbon markets that will be introduced in the future.

As a result of the implementation of the Strategy, the supply of products obtained from the recovery of organic waste (compost, humus, digestate and biogas) will gradually increase. In that sense, this Strategy proposes to use a set of instruments in the public sphere to increase the demand for such products, including the development of a certification scheme.

On the other hand, the adaptation of the regulatory framework from linear-based regulation to a circular

logic is vital. To move in this direction, the Strategy proposes to modify and create a set of instruments to promote the recovery of organic waste, such as adjustments in health, environmental assessment and territorial planning regulations.

Along with increasing recovery, actions must be taken to avoid the generation of organic waste, which implies preventing and reducing food loss and waste. This is why efforts already made by the National Committee for the Prevention and Reduction of Food Loss and Waste need to be supported.

Lastly, the measurement of the Strategy's progress is essential to know whether the objectives and goals proposed are being achieved. To this end, this instrument includes the definition of a baseline and a permanent monitoring system.



OBJECTIVE OF THIS STRATEGY:

To significantly increase the recovery rate of organic waste managed at the municipal level.



SCOPE:

Organic waste managed by the Municipalities, generated at the household level, in street markets, parks and gardens, the hotel sector, restaurants, cafeterias, and small businesses.

It was decided to focus efforts in this area given that the level of progress is very limited, unlike what currently exists in productive sectors, such as agroindustry or agriculture.



WHY ARE WE DEVELOPING THE STRATEGY?



In Chile, the need to speed up the transition to a circular economy that includes sustainable waste management models is becoming increasingly apparent.

Similar to other Latin America countries, the regulation associated to waste management has historically been approached with an emphasis on health aspects. In the last two decades, the main progress in the area of municipal solid waste (MSW) has been the closure of inadequate disposal sites and the opening of sanitary landfills, since the enactment of the respective regulations by the Ministry of Health¹.

In recent years, there has been a greater shortage of sites for the construction of new sanitary landfills, due to the socio-environmental conflicts they generate in the territory. The existing ones, in turn, only have a few more years of useful life. The national average is 12 years, and the construction of a new landfill takes approximately 10 years to materialize.

So, why are growing numbers of sanitary landfills needed?

Firstly, because there has been a sustained increase in waste generation² given the current consumption model and linear production, the population growth,³ purchasing power, changing consumption patterns and lifestyles, associated to the decisions taken daily related to the way we eat, live, use transportation, buy and have leisure . Today, Chile generates more waste per capita than highly developed countries such as South Korea and Japan.

Secondly, because a lot of unnecessary waste is generated. According to the Food and Agriculture Organization of the United Nations (FAO), one third of all food produced for human consump⁵tion in the world is lost or wasted each year, and Chile is no exception. In particular,⁶ this is due to behavior of food sellers (supermarkets and HORECA), to the lack of coordination between the differen⁷t players in the food chain, to the preference to high aesthetic standards to food with the same nutritional value, to the lack of planning when shopping and to a careless attitude of some consumers who allow themselves to waste food.

Thirdly, because very little waste is recovered, especially organic waste, which corresponds to the majority of MSW. According to the Fifth State of the Environment Report (MMA, 2019), 23 million tons of waste was generated in Chile during 2017, of which approximately 34.3%, or 7.9 million tons, corresponded to MSW. Of this, 96% goes to final disposal, which ranks us penultimate in terms of waste utilization among member countries of the Organization for Economic Cooperation and Development (OECD)⁸.

¹⁻Decree 189 of 2008, enacted by the Ministry of Health, approving the Regulation on basic health and safety conditions in sanitary landfills. It is important to bear in mind that, to date, multiple sites not eligible for MSW remain in operation. Of the total of 124 active disposal sites, only 30.6% correspond to sanitary landfills, including manual landfills, according to the "Update of the situation by commune and region regarding MSW and similar" (Under-secretariat for Regional Development (SUBDERE in Spanish), 2019).

²⁻According to the First Report on Solid Waste Management for 2009 (National Commission of the Environment, 2010), the estimated generation of municipal waste was 6.5 million tons, with per capita generation of 1.05 kg per person per day. While in 2018 approximately 7.5 million tons were reported, with generation of 1.22 kilos of waste per day per inhabitant, according to the Update of the situation by commune and by region regarding MSW and similar (SUBDERE, 2019).

³⁻It is estimated that Chile's population in the year 2020 is of 19,458,310 inhabitants. From "Estimations and projections of Chile's population 1992-2050, total in the country" (National Institute of Statistics, 2018).

⁴⁻How can people better understand their environmental impacts? An introduction to lifestyle calculators (UNEP, IGES, 2020)

⁵⁻FAO, 2016. Food losses and waste in Latin America and the Caribbean.

⁶⁻According to the FAO (Food losses and waste in Latin America and the Caribbean, 2015), food loss and waste is related to the decrease in the amount of food for human consumption, at any point in the production chain, from initial production to end consumption, "Food loss" can occur at the production, post-harvest, storage and transport stage, i.e. when food is lost before it reaches the end product or retail stage. On the other hand, "food waste" refers to what happens during distribution and consumption, in direct relation to the behavior of wholesalers and retailers, food services and consumers who decide to throw away food that still has value. Given that and the fact that the scope of this Strategy is solid waste management in the municipal level, the concept of food waste will be taken into account.

⁷⁻HORECA is an acronym of Hotels, Restaurants and Cafeterias, which is used to address the sector of food services.

Approximately 58% of MSW corresponds to organic waste⁹, or 4.6 million tons, more than double that of other waste such as containers and packaging (plastic, cardboard, glass, cans, etc.), on which work has been carried out for several decades in different municipalities. Although around 13% of the country's municipalities have started to introduce actions to recover their organic waste, this effort is equivalent to a recovery of less than 1% of the total tons generated each year¹⁰. This is partly a consequence of the lack of technical capabilities of the municipalities for the development and management of financing for organic waste recovery projects, which was identified as one of the main barriers raised in the process of preparing this Strategy¹¹

However, even if it were possible to continue building more sanitary landfills, it is worth asking whether it makes sense to continue depositing all the waste that comes from the cities, as there are more environmentally, social and economically desirable alternatives.

The current linear production and consumption model, based on extract-use-discard and which sends practically all the waste to final disposal, is highly inefficient; as it not only wastes resources, but also nutrients and energy. In the linear scheme, inorganic resources such as metals, which have been so costly to extract from nature, are used only once and then buried in a landfill.

The same applies to the organic matter, water, energetic potential and nutrients contained in organic waste. Not only are lost, but by disposing of such waste in this way multiple avoidable economic, social and environmental impacts are generated.

Advancing in the prevention and management of organic waste as a public policy priority, is of the utmost importance in order to improve the country's environmental performance, in line with Chile's commitments to the OECD, the Sustainable Development Goals (SDG)¹² (in particular SDG 12 associated with Responsible Production and Consumption¹³) and the Paris Agreement **(see box 1)**.

⁸⁻OECD, 2016. Evaluations of the environmental performance: Chile 2016.

⁹⁻According to the Diagnosis of the situation by commune and by region in terms of MSW and similar (SUBDERE, 2018).

¹⁰⁻As declared in 2017 by the municipalities in the National Waste Declaration System (SINADER in Spanish).

¹¹⁻Further information on the Annex: Strategy's Elaboration Process

¹²⁻In 2015, the United Nations Member States adopted the 2030 Agenda on Sustainable Development, where they adopted a set of global objectives to eradicate poverty, protect the planet and ensure prosperity for all.

¹³⁻Chile has a National Program for Sustainable Consumption and Production, which allows the monitoring of country's progress on SDG 12. It aims to be an instrument that, through its action lines, promotes economic growth that contributes to environmental protection and social equality, modifying the current patterns of consumption and production, thus decoupling the country's growth and development from environmental degradation.

Box 1

NATIONAL ORGANIC WASTE STRATEGY: A COMMITMENT BY CHILE UNDER THE PARIS AGREEMENT



In 2020, Chile updated its Nationally Determined Contribution (NDC), with the purpose of committing a set of national goals and actions that contribute to achieving the objectives of the Paris Agreement. Chile's commitment is to increase its resilience and become a carbon neutral country by 2050, being the first developing country to propose.

In this regard, and in line with the ambition to increase the goals of the NDC, it is highlighted that together with the components of Mitigation, Adaptation and Means of Implementation, Chile has innovated with the incorporation of the "Integration" component. With this, the role of oceans, forests, peatlands, ecosystems, and circular economy

are contemplated for the first time as elements that contribute comprehensively to address the causes, effects and impacts of climate change. That is why the development of this Strategy is part of these commitments, since it strategically contributes to the neutrality of emissions and climate resilience.¹⁴

Regarding climate mitigation and adaptation measures of the Strategy, mitigation component is present in the management of organic waste through the use of recovery technologies (e.g. vermiculture, composting, biodigestion, etc.), because it avoids the emissions of greenhouse gases (GHG) that would be generated by putting this waste in landfills. On the other hand, the use of the products derived from this recovery in order to improve the quality of the soil or recover degraded soils, corresponds to an adaptation measure, as the soils that receive these products will be able to better cope with climate stress. This becomes especially relevant considering the challenges the country faces regarding erosion of agricultural soils and desertification.¹⁵

Recent studies¹⁶ have presented key findings regarding the benefits of compost for the soil, such as the potential for carbon sequestration and increased water retention capacity, in addition to its significant monetary value given its nutrient content and its potential for carbon sequestration. The global implications of this are enormous, to the extent that all organic waste generated in cities can be separated at source and turned into quality compost.

14-The new structure, additionally, incorporates the approach of planning with a long-term vision, considering the integral needs of the country, with special attention to vulnerable populations. The latter is reflected within the NDC, through the incorporation of a social pillar of Just Transition and Sustainable Development. In line with the implementation criteria suggested by this pillar, mainly with the principle of "equity and gender equality", an effort has been taken in conjunction with the Bureau of Gender and Climate Change of the MMA in order to incorporate a gender approach in relevant and achievable aspects of the Strategy.

15-Approximately 75% of agricultural land suffers from erosion, with 34% suffering from severe erosion. Desertification affects 62% of the national territory. More information in: Summary of the state of soils in five countries (International Solid Waste Association, 2020).

16-Quantifying the benefits of applying quality compost to soil (International Solid Waste Association, 2020).

Since publication in 2016 of Law No. 20,920 Framework for Waste Management, Extended Producer Responsibility and Promotion of Recycling (hereinafter Law number 20,920), circular economy approach has taken hold in Chile. However, the focus has been mainly on the waste management of the priority products addressed by the law, such as packaging.

Nevertheless, as part of the Law No. 20,920 implementation, there will be an obligation to carry out door-to-door collection of packaging waste in coming years. This change in Chilean household practices, which comes in hand with the challenge of a major cultural transformation, also represents a great opportunity for people to separate not only packaging waste, but also the organic fraction. There is evidence that people are already demanding these kinds of changes. According to the results of the online questionnaire addressed to citizens, carried out as part of the development process of this Strategy, 97% declared that they were willing to separate waste in their homes for subsequent recovery.¹⁸ There are also successful experiments and pilot programs for organic waste recovery in educational centers, neighborhoods, urban parks and public institutions. While these correspond to sporadic efforts, they are an example and present opportunities for scaling up.

It is expected that existing regulatory, financial, educational and training barriers that have prevented the application of the hierarchy principle in the management of organic waste will be addressed through the gradual introduction of this Strategy, positively impacting the development of projects aimed at preventing waste generation and favoring waste recovery. In addition, the Strategy could have a positive impact on progress towards more responsible production and consumption, in synergy with other instruments, such as those that seek to prevent and reduce food waste.

Likewise, a set of potential environmental, social and economic benefits are identified, related to a significant increase in the recovery of organic waste:

Environmental:



•Reduction of GHG emissions emissions generated during the transportation and final disposal of organic waste in landfills and dumps, which represents the largest source of GHG emissions in the waste sector, especially methane as it is far more powerful than CO₂. As a short-lived climate gas, the benefits and impacts of its mitigation on health, ecosystems and climate are more immediate.

¹⁷⁻More information in Annex: Strategy development process.

¹⁸⁻It should be noted that of the total number of people surveyed, 79% correspond to women.

¹⁹⁻One ton of methane (CH4) is equivalent to 28 equivalent tons of CO2.



Reduction of demand for synthetic fertilizers

through the use of organic products to improve the soil and the agricultural production.



Improvements in the management of waste generated by pruning and seasonal loss of foliage,

reincorporating the substrate produced into the soil of the same pruned plants and trees, thus closing the circle



Improvement of degraded soils and lacking organic matter in arid areas allowing the implementation of green recreational areas, crop areas, among other uses.



Potential to produce renewable energy (like biogas), which would generate a reduction in fossil fuel consumption, contributing to the country's commitment to become carbon neutral by 2050.





New and better work conditions of waste pickers and recyclers considering that the materials of interest to them will be cleaner as a consequence of an optimal source separation of organic waste. In addition, this will have a positive impact on the fulfillment of the recovery goals associated with the extended producer responsibility for household packaging.



In turn, reducing food losses and waste brings a number of benefits to society as a whole, since it helps to guarante an efficient use of resources and ensure their supply, helping to reduce hunger and food insecurity.



Developing a generation with better environmental awareness.



Reduction of the amount of waste deposited in landfills **(see box 2)**, extending their useful life while minimizing other impacts associated with waste decomposition such as the proliferation of sanitary vectors (e.g. flies, birds, rats), the generation of leachates and bad odors.

Económicos:



Creación de nuevas fuentes de trabajo y fortalecimiento de emprendimientos existentes asociados a la gestión de residuos orgánicos.



Reducción de costos asociados al manejo de residuos orgánicos en rellenos sanitarios.



Aumento de la producción regional de productos obtenidos de la valorización de residuos orgánicos, aportando a la agricultura y economía local.



Generación de oportunidades para hacer sinergia

y articularse con el sector privado, en torno a aprovechar el conocimiento y la capacidad existente para valorizar este tipo de residuos.

SANTA JUANA: SUCCESSFUL CASE SHOWS THAT THIS STRATEGY IS APPLICABLE TO OUR CITIES

Box 2



The municipality of Santa Juana in the Biobío Region, with 13,749 inhabitants, is one of the few in the country with a separation at source and separated collection of its waste throughout its urban area. As of mid-2019, the waste collection and transportation service is being carried out in three fractions: recyclable, organic and disposable.



Santa Juana municipality has an Integrated Solid Waste Management Plant, installed on the land of the old landfill approximately 10 km from the town, which includes a plant for the collection and pre-treatment of containers and packaging, and for the composting of organic waste. In one year of operation, waste destined for Cemarc landfill, located a long distance from the municipality (about 70 km), decreased by 19%. The municipality has been able to significantly reduce the costs of transporting waste, with which a part of the additional costs of selective collection has been covered.

The waste destined for the landfill decreased by 19% after one year of separation at source.



WHAT DO WE WANT TO ACHIEVE WITH THE STRATEGY?

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2.1 Vision: a shift in the way we relate to waste

This Strategy will be considered successful if, by 2040, Chile has conscious citizens who avoid food waste and organic waste generation, and separate unavoidable waste at source, in their homes, offices, educational centers, shops, hotels, restaurants and cafeterias. For their part, municipalities, along with selectively collecting organic waste separated by its citizens, also have differentiated management systems for organic waste generated in parks, outdoor markets and fairs; and the infrastructure, equipment and logistic systems that allow organic waste to be used as a resource in the production of soil improvers and electrical or thermal energy, taking advantage of organic matter, water, energy potential and nutrients contained in organic waste.

Different cities along the country by 2040, manage organic waste at household level through the following three coexisting scales, in order of priority²⁰:



HOUSEHOLD

Waste is recovered at home, the same place where it is generated, through composting or single-family worm composting bins. Counting with this type of equipment at home has become as common as having a microwave, which has catalyzed the implementation of the Strategy. Not only those who can treat waste at home, but citizens widely recognize organic waste as a valuable resource and demand action from its authorities to take advantage of it. In this way, environmental impact and cost associated with collection and transportation of this waste has been reduced. Since not all families can or want to have such equipment at home, the following two scales are also proposed.

²⁰⁻ According to the results of the study "Advice on the management of organic waste at the municipal level in Chile" (MMA, 2019), technologies with the greatest possibility of application in our country are composting, vermicomposting, anaerobic digestion and thermal drying, the latter being an incipient technology that has not yet been widely used worldwide.



COMMUNITY

Neighbors organize themselves and, together, implement solutions to recover organic waste using intermediate scale composters located in public and private spaces such as: the common area of a condominium, the garden of a building, the neighborhood square, etc. Through this action, in addition to benefits described in the household scale, the social fabric and the interaction among neighbors have been strengthened; and, in many cases, these projects are complemented with community vegetable gardens. Compost bins are common in educational institutions and are managed by students, which is an essential tool for learning about sustainability and circular economy.



COMMUNAL OR INTERCOMMUNAL

Selective collection systems for organic waste (i.e. a truck that removes only organic waste from households once or twice a week) have been implemented in all cities to transport it to larger-scale treatment facilities. These consist of composting, worm composting or anaerobic digestion plants with advanced technology, which have all the necessary licenses to operate in urban sectors, close to where people live. This minimizes the impacts of waste transporting, considering that both the health regulations and the General Bylaw on Urban Planning and Construction (OGUC in Spanish) were adapted to promote and facilitate the location of this type of facilities near the generation sites. At this scale, during the first years of implementation it is expected that composting is developed over other technologies, given the simplicity of its operation, the level of existing technical knowledge and the availability of different equipment supplier companies for its operation. In addition, large urban parks compost organic waste from pruning as far as possible in their own premises and, in some cases, also receive organic waste from other nearby generation sources, such as outdoor fairs, markets and households.

Similarly, in outdoor fairs and markets along the country, as well as in offices and shops, segregate separation and collection systems have been implemented for this type of waste, which is sent to recovery plants such as those described above. In schools, kindergartens and other educational institutions, as well as parks, organic waste is also separated and processed preferably on their premises, enriching the learning experience along with providing own compost.

The foregoing has occurred in a context of publicprivate cooperation, where the establishment of business models that promote innovation and technology transfer is encouraged and further synergies are established between municipalities and companies managing waste through the development of mixed management models, in order to take advantage of the existing infrastructure and knowledge to recover organic waste selectively collected by the municipalities.

Moreover, these scenarios occur in a broader context. A shift has taken place in the way society is organized in order to take over the waste generated frequently as a result of daily activities, giving priority to prevention actions and, if this is not possible, separating at source actions to recover waste instead of sending it to landfills. Thus, in each household in the country, waste is classified into three flows **(see figure 1):**

CONTAINERS AND PACKAGING (plastic, glass, cardboard, tetra brick and metal) which are collected door to door and transported to recycling plants as a result of the implementation of Law No. 20,920;



ORGANIC, which is handled as outlined above; and



DISPOSABLE, which is still collected door to door, but with much less frequency than at present (only once a week) and are transported to landfills, all of which operate in compliance with regulations.

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Figure 1: Strategy Overview.



2.2. Goal: to recover two thirds of organic waste within two decades



THIS STRATEGY PROPOSES ACTIONS TO ACHIEVE A 66% RECOVERY OF ORGANIC WASTE GENERATED AT MUNICIPAL LEVEL BY 2040.

In order to materialize this challenging goal, the foundations must be established through a series of intermediate goals by 2030:



Recover 30% of the organic waste generated at municipal level.



500,000 families using using compost bins and/or worm composting bins in their homes.



Reach 5,000 educational centers with compost bins and/or worm composting bins.



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50% of public institutions separating at source and **recovering the organic** waste they generate.



Achieve 500 neighborhoods of the "I Love my Neighborhood" program practicing.

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Ensure that all urban parks managed by the **Ministry** of Housing and Urbanism (MINVU in Spanish) value the organic waste generated, preferably at their facilities.

Likewise, this Strategy will promote compliance with the target of SDG 12.3 of the 2030 Agenda, which corresponds to reducing food loss and waste by 50%, with a focus on wastage.



THE STRATEGY TO ACHIEVE THIS AMBITIOUS GOAL

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IN ORDER TO REACH WHAT IS PLANNED WITHIN 20 YEARS, A TRANSFORMATION IN MULTIPLE AREAS IS REQUIRED. IN OTHER WORDS, A STRATEGY IS NEEDED IN ORDER TO UNTIE A SET OF KNOTS THAT CURRENTLY EXIST AND WHICH HAVE PREVENTED OR RESTRICTED PROGRESS IN THIS AREA. IT IS ALSO ESSENTIAL TO GENERATE THE RIGHT RULES AND INCENTIVES FOR CITIZENS, PUBLIC BODIES, MUNICIPALITIES, THE CIVIL SOCIETY ORGANIZATIONS AND COMPANIES TO CHANGE THE WAY THEY DEAL WITH ORGANIC WASTE. TO DO THIS, IT IS ESSENTIAL TO ADEQUATELY ANSWER A SERIES OF QUESTIONS ABOUT PREVENTION, GOVERNANCE, FINANCING, REGULATION AND CITIZEN INVOLVEMENT.

3.1. First things first: preventing waste generation

The principle of hierarchy in waste management²¹ considers prevention as the first alternative, i.e. all possible measures must be taken to avoid the generation of waste, or at least reduce it. Then, if prevention is not possible, value the waste and, ultimately, eliminate it. In the case of organic waste, preventing and reducing Food Loss and Waste (PDA in Spanish) is essential.

This Strategy raises the need to support the National Commission for Prevention and Reduction of Food Losses and Waste **(see box 3)** to achieve the target that has been set in SDG 12.3, in particular, in relation to food waste as an important source of organic waste in our cities. It is essential to reinforce the line of action of dissemination, awareness and communication to citizens²² and key organizations, on fundamental concepts and actions to prevent and reduce PDA.

The foregoing will be materialized through the "National Program of Environmental Education

in Circular Economy and Organic Waste²³, which includes addressing, among other issues, prevention and reduction of food waste through formal and non-formal education, as well as communication and dissemination campaigns to raise awareness among target groups.

These campaigns will seek to improve the citizens disposition regarding aesthetically different products and promote prior planning of purchases and their storage. The campaigns may also be focused on public institutions (for example, the National Board of School Aid and Scholarships) and

²¹⁻ Included in our legislation in article 2 letter d) of Law No. 20,920: "Order of preference for management, which considers as the first alternative the prevention of waste generation, then the reuse, the recycling of the same or of one or more of its components and the energy recovery of the waste, total or partial, leaving its elimination as the last alternative, in accordance with the development of relevant legal, regulatory and economic instruments."

²²⁻ As mentioned previously, focus will be on food waste concept since the scope of this strategy is the management of organic waste at the municipal level.

²³⁻ More information in section 3.4.2. Promoting environmental education through a national program.

private institutions (for example, food distribution and marketing companies). It is important to note that there are incentives for companies that want to support these institutions, with tax benefits for both food delivery²⁴ and financial support²⁵. In addition, a specific bill on the matter is currently being discussed, which will further enhance the foregoing **(see box 4)**.

Similarly, these campaigns would promote other actions that prevent and reduce food waste and promote the redistribution of food suitable for human consumption, such as:

- Food recovery and preparation activities at fairs.
- Promote household-level platforms to share surplus food.
- Promote platforms that incorporate food outlets

(supermarkets, restaurants, cafes, small businesses, etc.) to sell surplus food at discounted prices.

^{24.}In accordance with what is established for this by the Internal Revenue Service (Circular 60/2018 and Resolution 151/2018), by allowing losses caused by products that have lost their commercial value, making their commercialization difficult or impossible, to be deducted as a necessary expense to produce income, as long as these products are available to people with limited resources or in vulnerable situations, through non-profit institutions and complying with the requirements established in the corresponding instruments. This has allowed the formation and operation of the Food Banks. Similarly, the Tax Reform (Law No. 21,210 of 2020) included at the legal level an equivalent incentive not to destroy food.

^{25.} Under the Law on donations for social purposes (Law No. 19,885 of 2003) or the Municipal Revenue Law (Decree No. 2385 of 1996, which consolidates and systematizes Law Decree No. 3,063), both with significant tax benefits.

Box 3

NATIONAL COMMISSION FOR THE PREVENTION AND REDUCTION OF FOOD LOSSES AND WASTE (CNPDA IN SPANISH)



Given the importance of working on the prevention and reduction of PDA, in 2015 target 12.3 associated with Responsible Consumption and Production was included in the SDG: *"Reduce global per capita food waste at retail and consumer level by 2030 by 50% and reduce food losses in production and distribution chains, including post-harvest losses".*

This Commission was created in 2017, promoted by FAO, with the aim of promoting dialogue and exchange of experiences between public and private institutions to help prevent and reduce the PDA. To date, it is led by the Office of Agrarian Studies and Policies of the Ministry of Agriculture, with the participation of about 40 members including public and private organizations, academia and representatives of civil society. Their lines of work are the following:

Governance: Establish public-private partnerships, dialogues and work networks with relevant stakeholders of the food system, to strengthen the policy and regulatory framework required in order to reduce PDA.

Research, technology and knowledge: Exchange and manage knowledge for the generation of evidence, technological development and innovation that leads to the reduction of PDA in Chile.

Dissemination, awareness and communication: Raise awareness, educate and disseminate messages destined to all food stakeholders to prevent and reduce PDA.



This draft law²⁶aims to reduce and prevent loss of food suitable for human consumption at any point in the production chain, recover it, distribute it, promote its consumption and promote sustainable food systems.

Therefore, it will be possible to advance strongly in the CNPDA's lines of work and the prevention dimension of this Strategy. The project proposes that the respective regulation of the Ministry of Health establishes the requirements and conditions that Food Banks and final recipients must meet so that they can deliver and receive the food in safety conditions. If it is not possible to donate or give free food suitable for human consumption, it should be used for animal feed or recovery, following the hierarchy in the management of waste from the agri-food industry²⁷. Additionally, it is prohibited to destroy or discard food suitable for human consumption, perishable or non-perishable, which has lost commercial value.

Similar laws have been created in other countries²⁸, which have shown that it is convenient to establish a regulatory framework that encourages this type of donations and regulates the process, rather than relying only on voluntary practices.

²⁶⁻ As of February 2021, it is in the Second Constitutional Procedure in the Chamber of Deputies. More information at: https://www.camara.cl/legislacion/ProyectosDeLey/tramitacion.aspx?prmID=10618&prmBOLETIN=10198-11.

 ²⁷⁻ In order of management preference, reduction at source should be considered as the first alternative, followed by actions to redistribute food for human consumption, animal feed, industrial uses, anaerobic digestion, composting, and finally, energy recovery and disposal (FAO, 2014).
 28- In February 2016, France published the Law 2016-138, becoming the first country in the world to ban supermarkets from destroying or throwing away unsold food, with the goal of halving PDA by 2025. Several countries have followed this path. In March 2020, the Autonomous Community of Catalonia published Law 3/2020, on the

prevention of food losses and waste, whose objective is to establish prevention actions to reduce food losses and waste and promotion actions for increase the use and recovery of food throughout the food chain.

3.2 How do we organize ourselves to make this transformation happen?

In Chile, management of household waste is responsibility of municipalities. Under the extended producer responsibility mechanism established by the Law No. 20,920²⁹, a part of that responsibility (the management of packaging waste), in the near future, will be organized by the management systems and financed by the companies subject to liability. As far as organic waste is concerned, no other formula is envisaged other than that it continue to be managed by municipalities, as is the case in most OECD countries. The challenge therefore is to use the current structure, building on existing governance, to ensure the implementation of this Strategy.

Achieving such ambitious goals with the same structure requires an engine that can drive change and take advantage of the opportunities that undoubtedly exist. To lead and coordinate the implementation of the Strategy, the MMA will create an **Organic Waste Program**, which will articulate public actions at national, regional and municipal level **(see box 5).**

In addition, the National Executive Secretariat for Waste will be reactivated and renamed the National Secretariat for the Circular Economy and Waste, which will be made up of various public services³⁰ and will be led by the MMA. Its purpose will be to articulate and coordinate public bodies with competencies in this field. A National Advisory Committee³¹ will also be established, made up of representatives from the private sector, academia and civil society, who will steadily monitor the implementation of the Strategy providing experience and knowledge. In this way, the role of the Advisory Committee³² that participated in the design of this Strategy will continue. At regional level, Regional Ministerial Secretariats (SEREMI in Spanish) of Environment will be the main parties responsible for the introduction of this Strategy in the regional and communal structure. The inclusion of guidelines arising from this instrument in the Regional Development Strategy³, the main instrument of public planning that guides the actions and instruments of government financing in the region, should be materialized through the incorporation of a line of action -or a strategic axis- in that document. Likewise, in order to specifically introduce this public policy, SEREMI should draw up or update a regional action plan in the first two years of the implementation of this Strategy, which will set the path in the short, medium and long term.

At local level, the SEREMI of Environment will encourage and support municipalities to draw up their own local policies on circular economy and waste management and include them in their community development plans, since these plans guide the development of their public policy.

32-For more information on the Advisory Committee, see Annex: Strategy development process.

²⁹⁻This mechanism corresponds to a special waste management regime, according to which the producers of certain products (called "priority products", including containers and packaging), are responsible for the organization and financing of the waste management of the priority products that they commercialize in the country (Law No. 20,920, Article 9).

³⁰⁻Besides the MMA, representatives of the following public services should also participate in this Secretariat: Undersecretary of Regional and Administrative Development, Ministry of Health, Ministry of Housing and Urbanism, Ministry of Social Development and Family, Ministry of Agriculture and Ministry of Energy. 31-Gender equity will be promoted in its formation, in line with the commitments acquired by our country in the preparation of the NDC framework.

³³⁻It is the main instrument of regional planning, which guides the actions and instruments of government funding, especially in relation to the National Regional Development Fund. It is not a normative strategy, but an indicative one. For this reason, it does not restrict, but rather promotes and summons public institutions and the regional community, in pursuit of shared objectives.

Box 5

ORGANIC WASTE PROGRAM: AN ENGINE THAT MOBILIZES PUBLIC BODIES



Among the main functions of the Organic Waste Program will be to promote public investment to increase the installed capacity of waste recovery facilities at the municipal level and strengthen the technical capacities of public services at all levels. To do this, focus will be on:

- Advice municipalities and regional governments in the design of investment projects aimed at valuing organic waste, to be presented to different public and private financing lines available..
- Strengthen technical knowledge at national, regional and municipal level associated with the design and execution of projects on sustainable waste management.
- In coordination with SEREMI of

Environment, provide technical support to Regional Governments (GORE in Spanish) and municipalities to incorporate into their strategies and plans circular economy and recovery of waste.

- Establish formal articulations and coordination with other public services, such as the Ministry of National Assets, Ministry of Economy, Development and Tourism, Ministry of Energy, among others, in order to promote the development of infrastructure projects for organic waste recovery and its equipment.
- Promote the incorporation of a specific line on circular economy and waste management in all training instruments (public and private) aimed at municipalities, GORE and public services.
- Establish the necessary coordination and lines of action with public services in charge of meeting the intermediate goals, such as MINVU and Ministry of Education (MINEDUC in Spanish), within the framework of the implementation of the Strategy.
- Design and implement the education and awareness programs described below in coordination with the MMA's Education and Citizen Participation Division.
- Articulate the National Secretariat for Circular Economy and Waste along with the regional secretariats.
- Establish links with private sector to promote mixed business models (public-private) and support innovation and technology transfer in organic waste management.

This program will be developed inside the MMA, giving continuity to the work carried out by the Organic Recycling Program³⁴. It is expected that the program will be consolidated over time until it becomes an agency, similar to the Energy Sustainability Agency, constituting a technical reference at national and international level with greater flexibility for the implementation of the Strategy.

34-The program is part of the Chile-Canada Bilateral Agreement on Environmental Cooperation that entered into force in July 1997, focusing on reducing greenhouse gas emissions generated by municipal waste in Chile. The objective of the Organic Recycling Program is to provide technical and economic assistance to the municipalities that are part of the program, in order to catalyze public investment for the development of sustainable management projects for organic waste at the municipal level, reducing the generation of greenhouse gases and obtaining benefits for the health of people and the environment. SEREMI should also encourage the adaptation to this public policy of territorial planning instruments such as the Regional Plan for Land Planning (PROT in Spanish³⁵) and the Communal Regulatory Plans³⁶, determining land uses and clearly defining the necessary requirements for the development of waste recovery facilities.

In order to materialize the foregoing, each SEREMI of Environment besides including this line of action among the functions of the Regional Executive Secretariat of Waste (which will be called the Regional Executive Secretariat of the Circular Economy and Waste³⁷ and will continue being coordinated by SEREMI of Environment), will must

as its first task design the regional action plan and propose it to the authority. The Secretariat will maintain its articulating role of public services at regional level collaborating with the regional authority who will preside over this secretariat³⁸. In this instance, GORE will play a key role in bringing this Strategy down to the regional and municipal scale since one of their general functions consist of advising municipalities in the formulation of their development plans³⁹; and since their competencies will be increased in coming years with the implementation of the regionalization law (**see box 6**). In addition, a Regional Advisory Committee will be established replicating the governance at national level.

Box 6

REGIONALIZATION OF THE COUNTRY: AN OPPORTUNITY FOR THE IMPLEMENTATION OF THIS STRATEGY



Law No. 21,074 on Strengthening the regionalization if the country, introduces a set of modifications to different legal bodies with the aim of strengthening regionalization in Chile. With this law, GOREs have greater autonomy in their management and their functions and competences are increased.

Among the new legal competences are the establishment of location conditions for the disposal of the different types of waste and their treatment systems and the identification of preferred locations, both with binding nature in the PROT.

The implementation of this law represents an opportunity to facilitate the location of facilities for the recovery of organic waste on land owned by the government⁴¹.

35- DFL No 19,175, 1975, Constitutional Organization on Government and Regional Administration. The PROT is an instrument that guides the use of the region's territory through strategic guidelines and a macro zoning in order to achieve its sustainable development.

36- DFL No. 458 of 1975, New General Law on Urban Development and Constructions. The Regulatory Plan is an instrument comprising a set of regulations on adequate hygiene and safety conditions in buildings and urban spaces, and on comfort in the functional relationship among living, working, equipment and recreational areas 37- This Regional Secretariat will include at least representatives of the following public services: Undersecretary of Regional and Administrative Development, Health SEREMI,

37 - This Regional Sected at with include at teast representatives of the following public services. Order sected at y or Regional and Administrative Development, Realth SEREMI, Housing and Urban Development SEREMI, Social Development and Family SEREMI 38- The structure of the Regional Executive Secretariat for Waste must be adapted to the modifications of Law No. 19,175, Constitutional Organic Law on Regional Governance and Generative Secretariation of the Regional Executive Secretariation of the Advision of Law No. 19,175, Constitutional Organic Law on Regional Governance and Generative Secretariation of the Regional Executive Secretariation of the Advision of Law No. 19,175, Constitutional Organic Law on Regional Governance and Generative Secretariation of the Regional Executive Secretariation of the Advision of the Advision of Law No. 19,175, Constitutional Organic Law on Regional Governance and Generative Secretariation of the Regional Executive Secretariation of the Advision of Law No. 19,175, Constitutional Organic Law on Regional Governance and Generative Secretariation of the Regional Executive Secretariation of the Advision of Law No. 19,175, Constitutional Organic Law on Regional Governance and Generative Secretariation of the Regional Executive Secretariation of the Advision of the Regional Executive Secretariation of the Regional Executive Secretariati

Administration, established in Law 21,074, on Strengthening the Regionalization of the Country, when these modifications materialize. 39- One of the general functions of the GORE, established in article 16 of the Constitutional Organic Law on Regional Government and Administration is to "advise the municipalities,

when they request it, especially in the formulation of their development plans and programs."

40- Like National Advisory Committee, gender equity will be promoted in its composition, in line with the commitments acquired by our country in the NDC.

41- The PROT may only be approved when the National Policy for Land Planning (PNOT in Spanish) and the regulations established in Law No. 21,074 come into force. It is expected that, when the PNOT is concluded and made official, it will contribute to promoting the use of fiscal property for the development of the infrastructure considered in this and other public policies.

In this way, national and regional financial resources could be allocated to municipalities, as well as technical and operational support in order to develop organic waste recovery projects on the three scales: households, communities and communal scale, indicated in the Overview section.

At the same time, the recovery of organic waste in public institutions will be promoted through the "Green State"⁴² program. This initiative, led by the MMA, aims to ensure that State bodies develop good environmental practices in their daily work. This instrument will encourage institutions to develop actions to recover their organic waste in order to reach the "outstanding excellence" stage. Currently, 51 institutions have joined the program and it is expected that the number will rise to 140 by 2022. It is expected that by 2030 at least 50% of public institutions will be adhering to the program and implementing actions in order to separate organic waste at source and recovering part or all of it. Likewise, it is expected that the program version addressed to private sector, called "Green Office" will also consider requirements associated with the recovery of this type of waste in its most advanced stages.

In addition, within the framework of the "National Policy on Urban Parks" currently being drawn up by the MINVU, the organic waste recovery will be promoted in all urban parks along the country. This policy seeks to generate a national agreement and propose an intersectoral work plan that promotes the design, construction and maintenance of more urban green areas. The policy will consider geographic variability and the different needs that parks must respond to, not only in terms of design and choice of species, but also in terms of equipment associated with the processes of participation and use of citizens.

It is envisaged that in 100% of urban parks will recover their organic waste by 2030, preferably in the same facilities, so that they can use the products obtained from their recovery as soil improvers in parks and eventually become a source of income from sales to third parties. This would be achieved through the incorporation of this requirement in the tendering conditions for the contracting of urban park conservation services financed by the MINVU, as well as through competitive funds for new projects and urban park improvement. This goal would include the 25 existing parks that are part of "Parquemet" and 14 parks in other regions of the country.



Figure 2: Governance Scheme.

42-https://educacion.mma.gob.cl/estado-verde/

3.3 How do we finance this transformation?

To implement the Strategy, it is essential to promote public and private investments that prioritize the financing of organic waste recovery projects at all levels (household, community and communal scale). Likewise, it is essential to establish stable financing mechanisms to ensure a correct operation of the different schemes of separation at source, selective collection and recovery of organic waste.

To date, significant amounts of public funds are still being allocated to the development of projects that are not in line with separation at source (e.g. the delivery of waste containers), following the traditional logic of disposing all waste together in a single container. In addition, infrastructure and equipment projects for the management of inorganic waste are being funded, which will be unnecessary once the mechanism of extended responsibility producer Law No. 20,920 is implemented, since companies producing packaging will have to pay for the management of such waste.

Considering that organic waste constitutes most of the household waste that municipalities must continue to manage, it is logical that public investment is focused on what is necessary for its segregated management and recovery. To this end, there is a set of public instruments available that should be used. However, in order to make this transformation feasible on a massive scale, new forms of funding must be incorporated, as well as economic incentives for municipalities and citizens.

In parallel, it is key that the private sector can direct its investments to provide the solutions that society need in this area. For this, there must be clear incentives to make viable private projects for the construction of recovery facilities, the operation in public- private schemes (e.g., the concession to operate a plant built with public funds) or other business models. Likewise, it is essential that the different projects developed can benefit from future carbon markets.

3.3.1Building on existing public investment instruments

With the technical assistance of the MMA⁻s Organic Waste Program, the development of organic waste recovery projects in municipalities will be promoted and supported. This in order to generate a robust project portfolio to be finance with resources from the municipal budget **(see box 7)** or by applying to some external financing line, such as the National Fund for Regional Development (FNDR in Spanish)⁴³ -managed by the GORE, the National Solid Waste Program (PNRS in Spanish)⁴⁴ and the Neighborhood Improvement Program (PMB in Spanish)⁴⁵ of the Undersecretary of Regional and Administrative Development (SUBDERE in Spanish).

There are already successful cases of organic waste recovery using public investment. On a small scale,

⁴³⁻The FNDR is a public investment program through which the central government transfers resources to the regions for the development of actions in different areas of social, economic and cultural development, with the aim of obtaining harmonious and equitable territorial development. Under the FNDR, Regional Governments can allocate up to 6% of the total resources assigned in the Budget Law to subsidize, among other activities, "the protection of the environment and environmental education carried out by municipalities, other public entities and/or private non-profit institutions".

⁴⁴⁻The PNRS, managed by the SUBDERE, is a public investment program whose purpose is to improve the health and environmental quality conditions of the country's urban and rural centers, through the implementation of comprehensive and sustainable systems for the efficient management of domestic solid waste.

⁴⁵⁻The PMB, managed by the SUBDERE, aims to improve the quality of life of the poor population living in marginal sanitary conditions, and to provide preferential attention to the progress of irregular neighborhoods and camps with a shortage of basic utilities (drinking water, sanitary sewage, electricity and paving).

municipalities of Rapa Nui, Concepción, El Quisco, Puerto Montt, Temuco, Providencia and Maipú, among others, have implemented successful initiatives of delivering compost or wormcompost bins for households. On a large scale, composting plants have been built with public investment, such as those considered in the Integrated Solid Waste Management Plant of the Municipality of Santa Juana, financed through the FNDR under the PNRS of SUBDERE, and the Center for Integrated Household Waste Treatment of the Municipality of Futaleufú, financed through the Special Development Plan for Extreme Areas managed by GORE. In order to facilitate and accelerate the development of this type of projects through the National Investment System, it is essential that the Ministry of Social Development and Family update the respective methodology for the formulation and evaluation of projects. It should be noted that this Ministry is incorporating the social price of carbon in its social assessment instrument (i.e. the quantification of externalities associated with the generation of GHG from waste management facilities), which will improve the prospects for organic waste recovery initiatives.

Box 7

LA PINTANA: PIONEER MUNICIPALITY IN IMPLEMENTING A PROGRAM OF SOURCE SEPARATION, SELECTIVE COLLECTION AND RECYCLING OF ORGANIC HOUSEHOLD WASTE, WITH 100% MUNICIPAL FINANCING⁴⁶



The Environmental Management Directorate of the Municipality of La Pintana, a commune of the Metropolitan region with 177,335 inhabitants, started the operation of its large-scale composting and vermiculture plant in 2005, on a 3-hectare land owned by the municipality.

In the plant, the vegetable waste separated at home is treated, which is selectively collected from approximately 46,000 households of the municipality by a special truck that passes three times a week, on different days than the traditional collection truck.

On average, 20 tons of household vegetables enter the plant daily, along with 20 m³ of pruning remains from the maintenance of urban trees. Two thirds of what is collected is treated through vermiculture and the remaining third is processed through composting.

The compost and humus produced is used in the green areas of the municipality, in the production of plants in the municipal nursery (more than 500,000 plants a year) or is donated to neighbors to encourage them to continue participating actively in the program.

This segregated collection and organic waste recovery scheme is financed by the Municipality of La Pintana entirely with municipal budget, which is highly remarkable considering the low level of per capita income of this municipality compared to other municipalities in the Metropolitan Region. This case demonstrates that the transformation posed by this Strategy is possible in different types of municipalities, beyond the particularities of each.



46- Information extracted from the study "Advice on the management of organic waste generated at the municipal level in Chile" (MMA, 2019). Available at https://sinia. mma.gob.cl/.





3.3.2. Taking advantage of existing public tendering funds

As mentioned in the vision, it is expected to advance in a parallel and complementary manner at all scales seeking public-private cooperation. Lines of financing will be promoted to support the development of projects for the prevention, management and recovery of organic waste. To this end, the incorporation of these lines into existing instruments of competitive funds will be coordinated, such as those of the Production Development Corporation (CORFO⁴⁷ in Spanish) -for example, the Green Credit⁴⁸ and the Technical Cooperation Service (SERCOTEC⁴⁹, in Spanish), which will be essential in the implementation stage of the Strategy.

In addition, efforts will be made to strengthen those competitive funds that currently fund projects for recovery of organic waste at household and community level, such as the Environmental Protection Fund (FPA in Spanish)⁵⁰ and the Recycling Fund (FPR in Spanish)⁵¹, both of the Ministry of Environment. The first fund is aimed at natural person or legal entities, public or private, who fulfill the specific requirements indicated for each tender, while the second is exclusively intended to municipalities and associations of municipalities.

3.3.3. Creating the right economic incentives

International experience shows that economic incentives are an option for municipalities in order to modify the way they manage their organic waste, or for the private sector in order to carry out investments in recovery infrastructure.

On average, a municipality allocates CLP 38,000 to process one ton of waste, of which 75% is exclusively destined for collection and transportation, and only 25% for final disposal⁵². The foregoing indicates two things.

On the one hand, if transport distances can be reduced, significant savings can be generated. This is an incentive that already exists and has become increasingly evident in the case of municipalities that have to transport their waste to remote disposal facilities. The case of the city of Temuco is paradigmatic, since they must transport its waste about 350 km round trip to the city of Los Angeles. In this regard, it is essential that municipalities be aware of the opportunity that the recovery of organic waste at homes or at plants much closer to urban centers represents.

49-SERCOTEC is a private corporate entity, dependent on the Ministry of Economy, Development and Tourism, dedicated to supporting micro and small businesses and entrepreneurs in the country, so that they develop and be a source of growth for Chile and Chileans. It serves small business people and entrepreneurs who face the challenge of operating successfully in the markets, as well as entrepreneurs seeking to realize their business projects.

52- According to the Diagnosis of the situation by commune and by region in terms of MSW and similar (SUBDERE, 2018).

⁴⁷⁻ CORFO is the agency of the Government of Chile, under the Ministry of Economy, Development and Tourism, in charge of supporting entrepreneurship, innovation and competitiveness in the country, along with strengthening human capital and technological capabilities. Its main objective is to promote a society with more and better opportunities for everyone and to contribute to the economic development of the country.

⁴⁸⁻ In June 2020, CORFO announced the creation of the Green Credit, a new refinancing program that seeks to promote the development of projects that mitigate the effects of climate change and/or improve the environmental sustainability of companies. This, through projects for the generation or storage of Non-Conventional Renewable Energies, energy efficiency, and environmental improvements in production processes, such as waste reuse and recycling, among others.

⁵⁰⁻The FPA is the first and only national competitive fund support environmental initiatives submitted by citizens. It was created by Law No. 19,300 on General Bases of the Environment, to fully or partially finance citizen initiatives -projects or activities- aimed at the protection or repair of the environment, sustainable development, the preservation of nature, or the conservation of environmental heritage.

⁵¹⁻ The FPR is an instrument that was created as a support mechanism for extended producer responsibility, implemented by Law No. 20,920. Its objective is to fully or partially finance projects, programs and actions to prevent the generation of waste, promote its separation at source, selective collection, reuse, recycling and other types of recovery, executed by municipalities or their associations (Decree No. 7 of 2017, of the MMA, Article 1).

On the other hand, the cost of final disposal in a landfill is still very low in our country, since it does not incorporate all present and future environmental and social externalities. This prevents municipalities from deciding to pay the gate fee of a composting plant which averages CLP 43,000 per ton, i.e. more than four times the cost of disposing in a landfill. International experience indicates that many countries went through this situation and it was addressed mainly through the gradual implementation of a landfill tax, with successful results in United Kingdom⁵⁴, Catalonia, Canada, Colombia, Italy and Sweden, among many others. Other countries such as Germany and some Canadian provinces have banned the final disposal of organic waste in landfills.

It is recommended in the Strategy to evaluate the feasibility of applying a tax or other economic incentive to discourage waste disposal in landfills. Any alternative must have ample deadlines for its initial implementation (5 to 10 years minimum). Likewise, it would be possible to distinguish between different types of waste (industrial vs. municipal waste).

Undoubtedly, the implementation of new economic incentives will be complex, but it is essential to significantly increase the recovery rate. Accordingly, long-term horizons are needed, so that municipalities and industry gradually adapt. This measure may be complemented with the gradual prohibition of sending to landfill some specific streams of organic waste that are already collected selectively, such as waste from gardens and pruning remains resulting from the maintenance of urban trees.



3.3.4. Introducing a redistributive waste fee scheme.

In Chile today, the principle of "the polluter pays" is not fulfilled in terms of municipal solid waste. By law, 27% of housing units in Chile are exempt from paying a waste service charge⁵⁶ or waste fee (which include waste collection, transport and disposal cost), and municipalities are allowed to establish additional exemptions based on socioeconomic criteria⁵⁷.

Given that 77% of the housing units are exempt from the payment of property tax⁵⁸ and that waste service charge is charged through the payment of this tax it is given that 50% of the housing units must pay the waste service charge but not the property tax⁵⁹. This represents a challenge for municipalities since the waste fee must be done directly and required a collection scheme.

In addition, it is politically complex for municipalities, since it implies making an additional charge to neighbors who, being above the exemption level

54- In UK, the tax had a significant impact on the amount of waste sent to landfill. In 2001–2002, 50 million tons were sent, while in 2015–2016 it was only 12 million tons. It should be noted that it was considered a popular tax from the beginning, since it included a participatory consultation process with the broad support of local authorities, civil society and industry actors. Extracted from "Landfill Tax in the United Kingdom" (Eunomia, 2016).

⁵³⁻ Regarding the other recovery alternatives, it should be noted that there are currently no anaerobic digestion projects designed to treat municipal organic waste in the country; therefore, there is no entry fee reference in this regard. According to the study "Advice on the management of organic waste at the municipal level in Chile" (MMA, 2019), considering the high investment costs that would be required to develop this technology at the municipal level, it is recommended that this type of projects be carried out in the framework of public-private alliances between municipalities and the agribusiness sector. Despite its higher investment cost, it is important to consider that this type of plant can sell biomethane in the gas, electricity and/or heat network more regularly than the production and sale of digestate.

⁵⁵⁻ Due to this principle, the generator of a waste is responsible for this and, therefore, to internalize the costs and negative externalities associated with their management.

⁵⁶⁻ Own estimate, based on the study "Analysis of the tariff scheme established in municipal waste collection" (MMA, 2020). Available at https://sinia.mma.gob.cl/. 57- The Decree Law on Municipal Income. Decree No. 2.385. which establishes a consolidated and systematized text of Decree Law No. 3.063 of 1979 on Municipal Income.

⁵⁷⁻ The Decree Law on Municipal income, Decree No. 2,385, which establishes a consolidated and systematized text of Decree Law No. 3,063 of 1979 on Municipal income, introduces an exemption from the payment of a waste service charge for all users whose household or housing unit has a tax assessment equal to or less than 225 monthly tax units. In addition, municipalities through their local bylaws may establish total or partial exemptions using socioeconomic criteria for households or housing units with an assessment greater than 225 monthly tax units.

⁵⁸⁻ The Decree with Force of Law No. 1 that establishes a Consolidated, Coordinated, Systematized and Updated Text of Law No. 17,235 of 1969 on Land Taxes, indicates that properties whose financial value is equal to or less than the amount of the general housing exemption, currently CLP 33,199,976, are exempt from the payment of taxes.

⁵⁹⁻ Own estimate based on the information collected in the study "Analysis of the tariff scheme established in municipal waste collection" (MMA, 2020). Available at https://sinia.mma.gob.cl/.

established by law, still have low capability to pay. Therefore, many municipalities choose to exempt households from the payment. With this, in 140 of the 345 municipalities of the country, more than 90% of the housing units are totally exempt from paying waste service charge, and in 61 municipalities this percentage reaches 100% of the housing units⁶⁰.

This low collection of waste service charge results in a high deficit of municipal resources at national level, where only 29 out of 345 municipalities generate more income from waste fee than the costs they incur to manage their solid waste⁶¹.

A fundamental part of this Strategy is to solve the enormous financial deficit at municipal level to manage waste. Otherwise, it will hardly be possible to maintain the precarious system that exists to date.

To address this under-financing, one of the alternatives is to increase the collection of the waste service charge by modifications to the current collection mechanism. Options must be evaluated, such as that the collection was made by the General Treasury of the Republic or that the waste fee was charged along with the basic services, as occurs in Colombia.

Likewise, the effects of gradually reducing the application of exemptions by municipalities or

implementing other measures aimed at increasing their revenues can be evaluated. In this context, measures should be considered to mitigate the effects for cases in which there is a low payment capacity of households, including redistribution formulas between municipalities with high and low income levels.

These changes should certainly be implemented gradually, especially considering the complex short-term economic situation generated as a result of the Covid-19 pandemic. It is proposed to establish a 10-year horizon in order to reach a waste fee collection system that allows lower-income municipalities to finance most of the cost of waste management by 2030, which at the same time will encourage households to correctly manage their solid waste.

Additionally, it is recommended to evaluate the implementations of discount or incentives schemes for households that show good environmental performance. That is, charge less to those who most recycle their organic or inorganic waste and, therefore, generate less disposable waste (see section 3.5.1 for more details). This is in line with the principle "the polluter pays" principle and with international best practices such as Pay-As-You-Throw systems.

It is also clear that charging people for a precarious

⁶⁰⁻ According to study "Analysis on the tariff scheme established in municipal waste collection" (MMA, 2020). Available at https://sinia.mma.gob.cl/.

⁶¹⁻ According to the Diagnosis of the situation by commune and by region in terms of DSW and similar (SUBDERE, 2018)

⁶²⁻ In Colombia, for example, subsidies are included between the lower strata of housing, which are subsidized up to 70% of the rate (DSW collection is included), and the upper strata and commercial and industrial sectors, which are charged up to an additional 60% for "contributions" destined to subsidy payments. The Municipality of Punta Arenas establishes a waste service charge based on the capacity to pay of taxpayers and the characteristics of the service. Regarding the first component, the municipality assigns a portion of the total cost of the service based on the frequency of collection. For more information, consult the study "Analysis of the tariff scheme established in municipal waste collection" (MMA, 2020), available at https://sinia.mma.gob.cl/. Likewise, a successful scheme was carried out by the region of Sardinia, Italy. This scheme included a mandatory system of selective collection, an increase in the tax on landfills and the application of a bonus system (reduction of composting costs) and penalty (increase in the cost of disposal) to reward or sanction municipalities based on performance of the collection of MSW was less than 4% in 2004. In 2012, with the current scheme, the selective collection increased to 51%. The total of composted tons went from 47,000 to 366,000 in 8 years, an increase of 680%. Source: Ricci M. Selective Collection and Treatment of Organic Waste on the Island of Sardinia, 5th SWEEP-Net Regional Forum -Tunisia 14-16 April 2015.

service will be very difficult. These new charges must be accompanied by an improvement in waste management systems, with selective collection of organic waste, delivery of compost bins, support for the implementation of composting at neighborhood level and certainly the implementation of the extended producer responsibility regime for packaging.



3.3.5. Leveraging instruments to promote climate action.

The Climate Change Framework Bill was submitted to Congress in January 2020. It establishes the carbon neutrality goal for the country by 2050, as required by science, and the institutional framework and instruments for management, command and control, among others. To date, the Government of Chile maintains the utmost urgency for the processing of the project.

Regarding the command and control instruments, the MMA has been given the authority to establish GHG and short-lived climate pollutants emission standards, and a national offsetting system based on the issue of emission reduction certificates that can be traded. This offsetting system will mobilize climate action at national level, reducing GHG emissions, providing flexibility among emission sources to ensure more efficient and effective fulfillment of targets and encouraging more costeffective mitigation/capture projects. Additionally, the Paris Agreement⁶³ reached at the twenty-first Conference of the Parties on Climate Change (COP21), which entered into force in 2016, establishes the goal of keeping global warming below 2°C. To this end, article 6 establishes the use of cooperative approaches, including emission trading (or transference) systems between countries in order to fulfill the commitments of their NDCs.

This international trading or transference systems, GHG are based on mitigation programs and projects, are voluntary and must promote sustainable development and guarantee environmental integrity, as well as transparency⁶⁴. There is still uncertainty about how the operating rules of these mechanisms will be generated, the mitigation results that could be transferred, and how double accounting will be avoided and environmental integrity will be proven.

On the other hand, in order to be eligible for financing mechanisms, it is fundamental to have transparent, clear, traceable and accounting information. Therefore, the MMA is already working on the development of criteria and indicators for eventual Monitoring, Reporting and Verification (MRV) of GHG protocols for composting plants and biodigesters, which may be complementary with MRV protocols for renewable energy, thermal and electrical projects from biogas⁵⁵ already developed by the Ministry of Energy. Through these protocols, internal accounting can be established, which must subsequently be standardized based on national or international requirements established in the context of possible emission trading systems or carbon markets.

63-https://unfccc.int/files/meetings/paris_nov_2015/application/pdf/paris_agreement_spanish_.pdf

64-Article 13 of the PA establishes an "Enhanced Transparency Framework", where paragraph 13 states that "the Conference of the Parties, ... will adopt common modalities, procedures and guidelines, as appropriate, for transparency of actions and support".

Finally, it is worth mentioning that Chile in its NDC, establishes that "a public-private round table will be formed to determine a specific policy for the use of markets"⁶⁶. With this, it is expected to lay the foundations for projects that incorporate GHG mitigation measures -such as organic waste recovery projects- to be able to trade emission reductions in the national offsetting system and/ or in the new international trading system (bilateral and/or centralized), becoming a possible source of income for the project.

3.4. What regulatory barriers do we need to remove?

It is essential to establish a regulatory framework to move from a regulation based on a linear logic to a circular one. Waste management has had a mainly sanitary approach, with the aim of protecting people's health. For its part, circular economy seeks the prevention and use of these resources (i.e. waste), so that materials that enter the production process remain in it for as long as possible –or even indefinitely–, reducing waste generation and the use of raw materials. To advance in this direction, this Strategy proposes to amend and create a set of instruments that promote the recovery of organic waste and improve coordination between different actors.



3.4.1. Adjust territorial planning instruments to allow the location of new infrastructure

The specific site where a composting plant or other type of organic waste recovery facility is to be located must be compatible with the land use regulated by the respective Territorial Planning Instruments (IPT in Spanish). Accordingly, one of the main barriers that have prevented the installation of organic waste recovery plants near inhabited areas is that the land use restricts or does not permit this type of facility, since currently these plants do not differ from landfills for final waste disposal.

At national level, most municipalities have an IPT⁶⁷. For those that do not, it is particularly important to define a clear procedure that facilitates the installation of organic waste recovery plants or a protocol for changing the land use for agricultural areas.

Therefore, in conjunction with the Ministry of Housing and Urbanism, clear criteria and requirements standardized at national level will be defined for the location of organic waste recovery facilities in areas that have an IPT, establishing the requirements according to their level of impact. Such facilities must be classified as harmless, unpleasant, unhealthy, polluting, or hazardous, in accordance with Article 4.14.2 of the OGUC, on a case- by-case basis by the corresponding Health SEREMI, regarding the risks that their operation may cause to its workers, neighborhood, and community.

In this context, it is envisaged that neighborhood or community-scale composting plants which meet the requirements and established operating conditions, could be classified as harmless and, therefore, could be assimilated to the land use of "Equipment", being allowed to be located near inhabited areas. It is proposed that health regulations described below establish the requirements for this type of facility. It is also expected to address the need to incorporate design requirements in different types of housing, in order to facilitate the separation at source and selective collection of organic and inorganic waste.

67- According to a presentation to the Senate of the State of Territorial Planning in Chile (MINVU, 2017), there are 15 municipalities without any type of IPT, which is equivalent to 4% of the municipalities of the country.





3.4.2. Create specific sanitary regulations for this type of facility

Currently there is no specific instrument that regulates the design and operation of organic waste management facilities (i.e. a national standard). This implies that different criteria are being applied throughout the country during the authorization or regularization process of this type of plants. Therefore, a regulation will be developed for the design and operation of organic waste recovery facilities, jointly with the Ministry of Health. Initially, a specific regulation to establish a national standard for the design and operation of composting plants on different scales will be elaborated, followed by a particular one for anaerobic digestion plants⁶⁸. Both may consider the standards related to organic waste recovery developed by the National Institute of Standardization.69

3.4.3. Ensure that the environmental assessment is consistent with the complexity of the projects.

Currently, the regulation of the Environmental Assessment System (RSEIA in Spanish)⁷⁰ does not incorporate specific criteria for organic waste recovery projects⁷¹, therefore, the same criteria are applied to them as a landfill, despite their differences in terms of their impacts.

Regarding anaerobic digestion projects, the RSEIA establishes in its 3rd article, letter c), that "power generating plants greater than 3 MW" are subject to environmental evaluation. However, it does not specify whether it refers to electricity and/or thermal generation projects.

In this context, it is proposed to modify the criteria contained in the RSEIA, related to the obligation to include projects of recovery of organic waste, such as composting or anaerobic digestion plants, in order to promote the development of this type of plants at municipal level. The proposal aims to modify the entry threshold and exempt smallscale projects of this type from submitting an environmental assessment, as well as clarify its application in the case of biodigestion projects⁷².

⁶⁸⁻ Said regulation must consider Supreme Decree No. 119, of 2016, of the Ministry of Energy: Safety Regulation of Biogas Plants and Introduces Modifications to the Regulation of Gas Installers, which establishes the minimum safety requirements that the biogas plants must comply, in the stages of design, construction, operation, maintenance, inspection and definitive end of operations, where different activities will be carried out such as reception, preparation and storage of substrate, production, storage, transfer, treatment, supply, use or consumption of biogas, and other related activities, as well as the obligations of natural and legal persons involved in said activities in order to carry them out safely. Available at https://www.sec.cl/generacion-ciudadana-te4/biogas/#1562540642150-69a3767c-4527

⁶⁹⁻ Referential Standards related to organic waste recovery plants:

^{1.} Chilean Standard NCh 2880: 2015 "Compost - Quality and classification requirements"

^{2.} Chilean Standard NCh 3375: 2015 "Digestate - Quality requirements"

^{3.} Chilean Standard NCh 3381: 2016 "Waste Management - Anaerobic Digestion Plants - Design and Operational Considerations". 4. Chilean Standard NCh 3382: 2016 "Waste Management - Composting Plants - Design and Operational Considerations

⁷⁰⁻Supreme Decree No. 40, of 2013, of the MMA

⁷¹⁻ In its article 3, the projects or activities likely to cause environmental impact are defined, in any of their phases, which must undergo environmental evaluation. Some projects with this requirement are "Environmental sanitation projects, such as sewage and drinking water systems, water treatment plants or domestic solid waste, landfills, submarine outfalls, treatment and disposal systems for liquid or solid industrial waste...". Organic waste recovery projects fall under the category "...Treatment and/or disposal plants for domestic solid waste, landfills, transfer stations and collection and sorting centers that serve a population equal to or greater than five thousand (5.000) inhabitants". 72- As a reference, in the Province of Ontario, Canada, the Environmental Assessment Act defines which types of treatment plants must undergo environmental assessment, depending on the type of waste and odors generated, and not on the amount of waste treated

3.5. How do we involve citizens?

Citizen involvement is essential for the implementation of this Strategy. People will be the protagonists in the correct separation of organic waste and for the operation of household and neighborhood recovery solutions. This implies a tremendous challenge, because it requires a change in the current behavior of citizens, who are used to throwing everything in the same bag and are unaware of their responsibility in the generation of their waste. In order to achieve their involvement and raise public awareness, three ways to approach them have been visualized.

3.5.1. Establishing obligations and incentives for people

People who recycle their organic (or inorganic) waste today do so in response to their high degree of awareness of the importance of this behavior for caring for the planet. This is a positive approach and

should continue to be strengthened, as is pointed out in the following section. However, the best international practices indicate that incentives and disincentives to massively increase separation at source are necessary and should be mutually reinforced. Therefore, the following measures are proposed:



Generate an obligation.

Evaluate legal instruments that impose on municipalities the obligation to issue a municipal regulation that requires neighbors to separate their organic waste, once there is the necessary installed capacity to recover it.



Change the collection schedule.

Adapt traditional collection systems, incorporating selective collection of organic waste and reducing the collection frequency of disposable waste. This has been done in other countries, such as Canada, which reduced the collection frequency of disposable waste from three to once a week; or Germany, where disposable waste is collected once a week or once every two weeks, achieving an increase in the separation of organic waste.



Pay-As-You-Throw.

As mentioned above, a large percentage of the population is exempt from payment of waste service charge. For the fraction that pays, the charge is a fixed annual amount, the same for all, despite the difference that may exist between financial value of properties and the amounts of waste generated by each housing unit. It is essential to implement economic incentives that incorporate the "Pay-As-You-Throw" criteria **(see box 8)**. This can be implemented in a very simple way, such as a discount on the waste service charge for participating in an organic waste separation program, as the one already implemented in the commune of San Antonio. At international level, there are more sophisticated formulas⁷³ for reducing the generation of disposable material, which could be progressively adopted by municipalities.

73- For more information, review the study " Analysis of the tariff scheme established in municipal waste collection (MMA, 2020)

Box 8

SUCCESSFUL "PAY-AS-YOU-THROW" INCENTIVE MECHANISMS: FROM SAN ANTONIO TO SWEDEN



The Municipality of San Antonio has a system of separation at source and collection differentiated from organic waste and a discount mechanism for households participating in it, which can reach up to 50% of the waste service charge. Participation is quantified in relation to the days on which people enroll in weekly selective collection, where the greater the number of days of enrollment, the greater the discount that will be obtained. Neighbors can register from one to three days obtaining a 50% discount when registering for three days.

Households participating in the program are verified by field inspectors who visit the 5,000 households subscribed.

At the international level, there are systems that charge per kilo of disposable waste generated. For this, collection trucks have sensors that weigh the container and associate it with a particular household. Such sophisticated systems have been successfully implemented in some communes in Sweden⁷⁴ and Belgium, for example.

Between this sophisticated but high-cost system, and the simple mechanism of San Antonio, there is a wide range of alternatives, with different levels of complexity. A simpler one is the one implemented in Toronto⁷⁵ where people pay for a container of a certain size, and must dispose of all their waste in it. The smallest container has a significant discount on the annual payment, while the largest has an extra cost. Another example is the bag system implemented in Belgium. There, garbage can only be collected in specific bags where the value of the disposable waste bags is much higher than that of the recyclable waste bags.

⁷⁴⁻ Page 172, Report 1, Diagnosis "Consulting on the management of organic waste generated at the municipal level in Chile" (MMA, 2019). Available at https://sinia. mma.gob.cl/.

⁷⁵⁻ Page 135, Analysis of the tariff scheme established in municipal waste collection (MMA, 2020). Available at https://sinia.mma.gob.cl/.

⁷⁶⁻ Page 31, Analysis of the tariff scheme established in municipal waste collection (MMA, 2020). Available at https://sinia.mma.gob.cl/.



3.5.2. Enhancing environmental education through a national program.

People who currently compost their organic waste at home have none of the obligations or incentives mentioned above but they do so motivated by an awareness generated by environmental education. Environmental education is the key process to transmit knowledge and teachings to citizens and private sector regarding environmental protection, in order to generate habits and behaviors that allow them to become aware of the country's environmental problems.

That is why the MMA has developed different types of environmental education instruments, such as the National System of Environmental Certification of Educational Establishments (SNCAE in Spanish⁷⁷) and the Adriana Hoffmann Environmental Training Academy⁷⁸. The SNCAE aims at formal education, i.e. it works in educational establishments; while the Academy focuses mainly on non-formal education aimed at citizens, but addressing formal education as well.

These instruments currently serve more than 13% of educational instruments of the country which have received one of the three levels of certification delivered in the process. The Academy, for its part, has trained some eight thousand people, including teachers, educators and citizens.

This Strategy includes developing a "National Organic Waste Education Program" which enhances the existing instruments, and which will be developed jointly with the Office of Circular Economy and the Division of Environmental Education and Citizen Participation of the MMA, with the collaboration of the MINEDUC.

The program will address two lines of action. The first will be aimed at formal education supporting educational institutions, with a focus on the projectbased learning methodology and supporting the generation of projects by educational communities . The second will be aimed at non-formal education, addressing the requirements of citizens and private sector, which are the main generators of household-assimilable waste managed by municipalities.

⁷⁷⁻ SNCAE seeks to recognize -through an environmental certification- those establishments that successfully introduce environmental education strategies in their educational communities. https://sncae.mma.gob.cl/portal

⁷⁸⁻ The Academy seeks to be a reference for environmental training in Chile, so that citizens, teachers and public officials become aware of the importance of protecting the environment. https://mma.gob.cl/wp- content/academia/

⁷⁹⁻ The project-based learning is a pedagogical method that actively involves students in their learning by asking them to research the answer to some real-world question or problem and then create a specific solution. Throughout this process, the school community reflects on what, how and why of what they are learning.



A. Formal education: The school as the place where recovering organic waste is learned as a basic element of training

The work aimed at educational institutions considers the following actions that seek to promote practical learning ("learning by doing"):

- Install equipment for the recovery of organic waste in educational institutions, in order to treat fresh organic waste produced in dining halls and those that come from student snacks, thus achieving the direct participation of the educational community in the separation of its organic waste and its recovery. To carry out this action, educational institutions must apply for different financing instruments of the MINEDUC, such as the Preferential School Subsidy Law. To this end, the Organic Waste Program of the MMA will provide support and guidance.
- The MMA will prepare an orientation guide for educational institutions, in order to provide guidelines for the development of their own

awareness, training and financing plan. The document will be disseminated through the digital platform of the MINEDUC (i.e. CRA[®]) and the MMA EcoLibrary.

- Strengthen the organic waste line of work in the "Sustainable Solid Waste Management Plan^{\$1} of the educational establishments that are part of the SNCAE.
- Through the Adriana Hoffman Environmental Training Academy, modules aimed at teachers will be developed to prevent and reduce the generation of waste, promote its reuse and recycling.

80- A digital platform of the Ministry of Education that hosts information and supporting documents for educational institutions. http://www.bibliotecas-cra.cl/ 81- The SNCAE requires that educational institutions have a "Sustainable Solid Waste Management Plan". For further information see https://sncae.mma.gob.cl/portal.



B. Non-formal education:

As noted above, non-formal education will focus on two target groups, i.e. citizens and companies in key sectors, such as the HORECA⁸² sector. For this, online, self-study or guided courses will be developed through the Adriana Hoffman Environmental Training Academy.

In the case of citizens, this work will be reinforced with the following lines of action:

- Massive communication campaignss.
- Face-to-face training to the community and door-to-door work, delivering relevant concepts and methodologies to the management of organic waste at local level, promoting, for instance, the work of the elderly as monitors and guides of change.
- Publicize the initiatives for the prevention and recovery of municipal organic waste, so that citizens can easily access them. Online courses and web platforms to reach more people.

 Promotion of regional educational programs, such as "Santiago Recicla" an "Biobío Recicla", among others.

In the case of the private sector, in addition to the Academy courses, face-to-face instances will be developed at the company premises or elsewhere, along with eventual field visits to organic waste treatment plants and final disposal sites.

82-HORECA is an acronym of Hotels, Restaurants and Cafeterias, which is used to address the sector of food services.



3.5.3. Reaching citizens through municipalities

Municipalities are extremely relevant in the daily work of citizens, since they interact directly with their requirements and needs. The MMA has two instruments that bring environmental aspects closer to municipalities: the Municipal Environmental Certification System (SCAM in Spanish)⁸³ and the Sustainable Communities Program⁸⁴. Municipalities will be supported through the establishment of directives that promote the recovery of organic waste in both tools and the National Organic Waste Education Program, presented previously.



3.5.4. Reaching the community through the Neighborhood Recovery Program "I Love My Neighborhood" ("Quiero mi Barrio")

This MINVU program was launched in 2006 with the objective of improving the quality of life of people through a participatory process that involves the municipality and the beneficiary community itself, thus allowing the recovery of the public spaces, the equipment and the strengthening of the social fabric. The main lines of work are identity, safety and the environment. From 2006 to date, 570 neighborhoods have been selected throughout the country, of which

348 were completed by 2017.

This program will incorporate the goal of developing an Organic Waste Recovery Plan in the neighborhood recovery process of all neighborhoods that enter the program 2020. During 2020, 100 neighborhoods started this process and it is estimated that 50 neighborhoods will enter annually⁸⁵, which would mean a total of approximately 500 neighborhoods by 2030.

83-The SCAM is a voluntary comprehensive system that allows municipalities to set up in the territory as a model of environmental management.

84- "Sustainable Communities" is an environmental training tool, the municipalities that are participating in the SCAM and that are in the outstanding or higher Level of Excellence. This must commit to a community-type project, which will allow for the long-term planning of work in the territory. https://educacion.mma.gob.cl/gestion-local/programa-comunidades-sustentables/

85-The annual income of new neighborhoods is subject to the budgetary identification of each year.

3.6. How do we generate demand for new secondary products?

With the implementation of the Strategy, the offer of products obtained from the recovery of organic waste, such as compost, humus and digestate, will gradually increase. It is a currently underdeveloped market in the country compared to synthetic substitutes such as chemical fertilizers. In the case of anaerobic digestion, biogas is generated as a byproduct which could have various applications such as thermal generation (to be used, for example, for cooking, motor fuel, cooling and heating) and electric generation⁸⁶.

The income from the sale of products can be an additional source of revenue for larger-scale recovery projects, contributing to the recovery of the investments made by municipalities or the private sector⁸⁷. In the case of the domiciliary and community scale, it can be assumed that products will be destined for the self-consumption of the citizens, in their orchards and gardens. In this same logic, at communal level, municipalities may use the product of the recovery of organic waste in their own green areas, for the production of plant species in municipal nurseries and/or to be delivered to the neighbors who are part of separation at source and selective collection programs in order to encourage their participation.

This Strategy proposes using a set of instruments in the public sphere to increase the demand for such products, including the development of a certification scheme.



3.6.1. National Landscape Restoration Plan 2020-2030.

This plan is currently being jointly developed by the MMA and the Ministry of Agriculture. It aims to promote the restoration of landscapes in order to recover biodiversity, the functionality of ecosystems and the provision of ecosystem goods and services, increasing the resilience of territories and communities to climate change and other degradation factors.

During the implementation of this plan, large amounts of substrate and organic fertilizer will be needed for restoration actions, for example, as input for nurseries and plant propagation, plantation activities or others related to prevention and reduction of degradation factors. For this, in accordance with the strategic guideline of "Promotion and development of economies linked to the restoration of landscapes" (part of the financing component of the plan), it is proposed to include technical requirements or economic incentives in order to drive demand for products derived from the recovery of organic waste, as an alternative to chemical fertilizer.

⁸⁶⁻Information extracted from the study "Advice on the management of organic waste at the municipal level in Chile" (MMA, 2019). Available at https://sinia.mma.gob.cl/. 87- According to Verdict No. 15,606 of 2005, issued by the Office of the Comptroller General of the Republic: "The price that the municipality receives from those interested in acquiring these materials for recycling, constitutes, in accordance with Article 3, No. 2, of the DL. N ° 3,063, of 1979, municipal income and, therefore, an income that the entity can legitimately receive as a result of the activities it implements to recover waste materials".



3.6.2. Incentive System for Agro-environmental Sustainability of Agriculture Soils.

Law No. 20,412, of 2010, established, for a period of 12 years, an incentive system for the agrienvironmental sustainability of agricultural soils. The system is coordinated by the Undersecretariat of Agriculture and executed by the Agricultural and Livestock Service (SAG in Spanish) and the Institute for Agricultural Development. Its main objective is to recover the productive potential of agricultural soils and, jointly, to maintain the levels of improvement achieved. It is aimed at all agricultural production companies in the country, which meet the requirements of Law No. 20,412, its regulations and the bases of their respective public tenders.

The operation of the system is based on the demand of the agricultural sector, depending on the physical,

chemical or soil conservation deficiency. Regarding tenders that include compost application practices, the bases must establish the minimum technical parameters of this input. These parameters are defined in the regional technical committees, where different actors such as administrative services, representatives of farmers and the Agricultural Research Institute are met. Therefore, new organic waste recovery plants that are installed as a result of the implementation of this Strategy will be able to sell the compost produced, given the incentive that farmers receive as part of this program. To this end, technical requirements established in the bases of regional tenders⁸⁸ must be fulfilled.



3.6.3. Competitive Program of Public Spaces.

This MINVU program is aimed at improving and building public spaces to promote development, equality and quality of life in the city, protecting urban heritage and strengthening local identity. Projects that are financed include the creation and improvement of green areas, which must be executed by municipalities. Requirements to promote the use of organic fertilizer are expected to be included in the bidding rules for such projects, for which it will be necessary to modify the Supreme Decree No. 312 of 2014, which regulates the Competitive Program for Public Spaces.

88- This has been carried out in other countries. For instance, in several regions of Italy, in order to encourage the use of compost, an economic incentive (from 150 to 600 euros per hectare) was generated through rural development programs for farmers who use it to fertilize their fields.



3.6.4. Instruments of the Ministry of Public Works.

Considering the role played by the Ministry of Public Works, in particular, regarding the management of works and infrastructure services, it is essential that the Strategy is articulated with the services and projects managed by this Ministry. The objective is to stimulate the demand for products derived from the recovery of organic waste and promote the market for this type of products.

The Strategy proposes including requirements to encourage the use of compost, digestate or others, in the construction of infrastructure works with the purpose of preparing and improving the soil, specifically when considering the development of parks, green areas, berms or slopes with vegetation, among others. These requirements may be included in the terms of reference and bidding rules for the different projects of the Ministry. Likewise, in those projects mandated by Ministry of Public Works in which atmospheric emissions compensation are made through reforestation and are evaluated in the Environmental Impact Assessment System (SEIA), the use of organic waste recovery products will be required.

Finally, given the importance and scope of the highways manual, i.e. an instrument prepared by the Roads Directorate and intended to standardize procedures and instructions for planning, designing, building, maintaining and operating roads and highways that make up the country's road network, its Sustainability Chapter will be modified proposing the inclusion of a new criterion that considers the use of substrates derived from the recovery of organic waste for the management of soils and construction of green areas of road projects.



3.6.5. Quality certification of products derived from the recovery of organic waste.

In order to give confidence to the market for products derived from the recovery of organic waste (compost, digestate and humus), it is necessary to develop a quality accreditation system for such products, comprised of certification and inspection bodies and accredited laboratories for the development of the respective trials. The development of a certification system is in line with the regulations that will be elaborated within the framework of the bill that will establish a minimum quality standard and rules for composition, labeling and marketing of fertilizers **(see box 9).**

Currently, there are only reference standards that establish the quality requirements and verification methods for digestate (NCh 3375) and compost (NCh 2880). However, it is still necessary to have conformity assessment and certification bodies for specific products in this area, as well as accredited laboratories that can perform all the tests indicated in both standards. In this regard, and with the purpose of safeguarding the quality of the products derived from the recovery of organic waste at all scale (household, neighborhood and community) and avoiding the introduction of unwanted substances in the process, it will be necessary to establish a mechanism to certify compostability of packaging, bags and other items (glasses, cups, plates, cutlery, light bulbs, etc.). This mechanism would facilitate the identification of the level of compostability of these products, its use and proper management through the different available techniques.

In this sense, the Law No. 21.368 that limits the generation of disposable products and regulates plastics⁸⁹, will set a precedent since, among other restrictions, it aims to limit the delivery of single-use plastics in food outlets for consumption outside of this unless these are requested, in which case only certified compostable products can be delivered. For this, the MMA will have to elaborate a regulation to develop a system of certification of the compostability of these products.

⁸⁹⁻ The Law No. 21.368 was published in the Official Journal on August 16, 2021. Its main objective is "to reduce the generation of waste, by limiting the delivery of single-use products in food outlets, promoting the reuse and certification of single-use plastics, and the regulation of disposable plastic bottle" (emphasis added). More information at: https://www.bcn.cl/leychile/navegar?idNorma=1163603&idParte=&idVersion=2222-02-02&utm_source=feedburner&utm_medium=feed&utm_campaign=Feed:%2Bbcn%2EN%2B%3E%2B%C3%9Altimas%2Bleyes%2Bpublicadas)

Box 9

BILL THAT ESTABLISHES RULES ON COMPOSITION, LABELING AND MARKETING OF FERTILIZERS AND BIO-STIMULANTS: KEY DIMENSION FOR A TRANSPARENT MARKET



This bill⁹⁰ aims to establish indications on parameters of quality, composition, classification, packaging, declaration, labeling and traceability, which will be applicable to the manufacture, formulation, production, marketing, possession, import and export of fertilizers and bio-stimulants. In its definition, the concept of fertilizer includes products that contain materials or components derived from the recovery of organic waste, such as compost, humus and digestate. Additionally, it is proposed to create a Single National Registry, in which manufacturers, formulators, producers, marketers, packers, importers and exporters of fertilizers must be enrolled and declare.

The SAG will be in charge of supervising and ensuring compliance with this law, its regulations and other complementary indications, as well as adopting the necessary measures for its application.

This initiative presents a great opportunity to modernize the existing regulations on this matter, establishing a normative standard regarding the quality and composition of the fertilizers marketed in the national territory, including those that contain or correspond to materials derived from the recovery of organic waste. Moreover, it will regulate the way in which those who buy and use these inputs must be informed about their main characteristics such as quality, composition and suitable way of use, through their proper labeling on packaged fertilizers, or on the ticket, invoice or dispatch guide for bulk fertilizers, or in the supplemental brochure. This initiative will contribute to developing the market for this type of products in line with the implementation of this Strategy.

90- As of December 2020, it is in the Second Constitutional Procedure in the Senate, with the utmost urgency for discussion and is promoted by the Ministry of Agriculture and the Ministry of Finance. More information at: http://www.senado.cl/appsenado/templates/tramitacion/index.php?boletin_ini=12233-01.

3.7. How do we monitor progress towards meeting goals?

Progress measurement is critical in order to know whether the proposed objectives and goals are being achieved or whether the work plan should be changed. To this end, it is relevant to establish a monitoring system.

The starting point will correspond to the setting of a baseline, which will allow characterizing the waste at municipal level, information that currently only exists in aggregate form. The composition of household organic waste (housing) and household assimilable (street fairs, pruning and gardens, HORECA) will be identified in the different municipalities of the country, considering territorial and seasonal factors, among others.

The current source of information is the Pollutant Release and Transfer Register⁹¹, c whose data is obtained from annual declarations of waste generators and receivers, which is made at a one-stop window⁹². This data resource will enable the calculation of the indicators defined.

The indicators are developed according to the proposed goals, as shown in the following table:

⁹¹⁻ https://retc.mma.gob.cl/

⁹²⁻ https://vu.mma.gob.cl/

| N٥ | INDICADOR | FORMA DE MEDICIÓN | |
|----|---|--|--|
| 1 | % decrease of organic waste going to landfill | Recovered Tons (SINADER) + estimated recovered Tons (households, EI, neighborhoods (Total recovered Tons + Estimation OW going to landfill) x100% | |
| | | Recovered Tons: To obtain the recovered tons, the information will be taken from the municipalities declarations in SINADER; | |
| | | Estimated recovered tons (households, educational institutions, neighborhoods): The fraction of organic waste that is treated in households, educational institutions (EI) and neighborhoods will be estimated through a calculation formula defined by the MMA, which will be delivered to municipalities for its use and report to the MMA. | |
| | | Total recovered tons: Corresponds to the sum of the two terms indicated above (Recovered Ton + Estimated Recovered Tons (houses, educational institutions, neighborhoods). | |
| | | Estimation of OW going to landfill: Estimation of organic waste that was not recovered and are destined to landfill. For year N, the information will be obtained from a characterization that will be carried out every 5 years. For years N+1 to N+4 a projection will be made based on a formula developed by the MMA. | |
| 2 | No. of households with organic waste recovery equipment. | The municipality must centralize this information and report it to the MMA. | |
| 3 | No. of educational institutions with organic waste recovery equipment | The municipality must centralize this information and report it to the MN | |
| 4 | No. of neighborhoods in the "Quiero mi Barrio" program with composting systems | MINVU will be requested to provide this information to the MMA. | |
| 5 | No. of urban parks with composting system | MINVU will be requested to provide this information to the MMA. | |
| 6 | N ^o of organic waste recovery projects entered the Integrated Project Bank | The information will be taken from the Integrated Project Bank website (https://bip.ministeriodesarrollosocial.gob.cl/bip2-trabajo/app/login) | |
| 7 | N ° of organic waste recovery projects entered the SEIA | The information will be taken from the Environmental Assessment Service website (https://www.sea.gob.cl/) | |

Annex: Strategy Development Process

Given the broad scope of the Strategy, the objective was to develop an instrument in a participatory manner from its genesis. For this, formal and informal instances of participation were defined, in order to listen to the key actors from the public and private sector, academia and civil society, at central and regional levels. In parallel, a technical consultancy was hired to gather information as a basis for decision-making.

The main actors and inputs that contributed to the development of the National Organic Waste Strategy were the following:

Advisory Committee of the National Organic Waste Strategy

An Advisory Committee was formed to prepare the National Organic Waste Strategy in order to receive inputs and validate the progress of the participatory process. The Advisory Committee was made up of 32 key actors from the public, private, academic and civil society sectors, with experience and knowledge on the subject. The list of members is:

| 1. Sustainability and Climate Change Agency | 17. Ministry of Energy |
|---|---|
| 2. Sustainable Armony | 18. Ministry of Finances |
| 3. Chilean Association of Municipalities | 19. Ministry of Health |
| 4. Association of Rural Municipalities RM | 20. Ministry of Housing and Urbanism |
| 5. Sustainable Chicureo | 21. Ministry of Environment |
| 6. Santa Marta Consortium | 22. Municipality of La Pintana |
| 7. Production Development Corporation (CORFO) | 23. Municipality of Providencia |
| 8. Basura Foundation | 24. Municipality of San Antonio |
| 9. Chile Verde Foundation | 25. Pontifical Catholic University of Chile |
| 10. Genera4 | 26. Pontifical Catholic University of Valparaíso |
| 11. Geociclos | 27. Biodigesters Network for Latin America and the Caribbean |
| 12. KDM Companies | 28. Environmental Assessment Service |
| 13. The Possible City Chile | 29. Undersecretary of Regional and Administrative Development |
| 14. Ministry of Agriculture | 30. Suez Chile |
| 15. Ministry of Social Development and Family | 31. University of Chile |
| 16. Ministry of Education | 32. Veolia Chile |

The Advisory Committee met five times⁹³ (see Table 1). In them, each of the elements contained in this Strategy were discussed, and valuable inputs and feedback were obtained. Their participation is appreciated.

| NO. | PLACE | DATE |
|-----|--|-------------------|
| 1 | Room 200 South Wing, La Moneda Palace | August 26, 2019 |
| 2 | Parra Room, San Francisco Hotel | October 18, 2019 |
| 3 | Hall of Presidents, Senate Santiago Headquarters | October 29, 2019 |
| 4 | Hall of Presidents, Senate Santiago Headquarters | November 13, 2019 |
| 5 | Hall of Presidents, Senate Santiago Headquarters | January 15, 2020 |

Table 1: Advisory Committee Sessions.

Participatory process for its co-construction⁹⁴

Ten workshops were held in eight regions of the country (see Table 2), bringing together a total of 277 key actors linked to this issue at the regional level, from the public and private sector, academic and civil society. The objective of the workshops was to promote a conversation around the subject and generate consensus to guarantee the continuity of the Strategy, based on a common vision, shared and accepted by all participants.

The workshops were divided into two parts. A first informative part, where the diagnosis of the current situation of organic waste management at the municipal level in Chile was presented. Then, a second participatory part, whose objective was to collect the existing barriers regarding the recovery of municipal organic waste, identify solution measures for these barriers and determine goals for the recovery of municipal organic waste by 2040. Of the total participants, 61% were men and 39% women. Most of the attendees were representatives of the public sector (59%), followed by the private sector (24%), civil society (11%) and academia (6%). Most participants were from the Metropolitan Region with 80 people, followed by the regions of Biobío with 38 and Valparaiso with 36.

Through the workshops, it was possible to identify the particularities of the different areas of the country and validate the initially identified barriers that prevent the recovery of organic waste. Additionally, the causes of the regional gaps in the organic waste recovery were analyzed in depth, along with defining proposals for solutions in their territories.

⁹³⁻ More information in annex 6.3 of report No. 2 of the study "Advice on the management of organic waste at the municipal level in Chile, Final Report of the participatory process for the preparation of the National Organic Waste Strategy". A description and synthesis of each session of the Advisory Committee is attached to said report. Regarding the fifth session, this aimed to present a draft with the main thematic axes and proposals of the Strategy in order to obtain final feedback from the Advisory Committee.

⁹⁴⁻ More information in annex 6.3 of report 2 of the study "Advice on the management of organic waste at the municipal level in Chile", Final Report of the participatory process for the preparation of the National Organic Waste Strategy.

Table 2: Planning workshops participatory process of co-creation.

| N٥ | REGION | СІТҮ | DATE |
|----|---|--------------|--------------------|
| 1 | Arica and Parinacota Region | Arica | September 06, 2019 |
| 2 | Valparaíso Region | Valparaíso | September 10, 2019 |
| 3 | Metropolitan Region - Public Sector | Santiago | September 27, 2019 |
| 4 | Araucanía region | Тетисо | September 30, 2019 |
| 5 | BioBío region | Concepción | October 01, 2019 |
| 6 | Atacama region | Copiapó | October 09, 2019 |
| 7 | Metropolitan Region - Private sector and academia | Santiago | October 11, 2019 |
| 8 | Metropolitan Region - Civil Society | Santiago | October 14, 2019 |
| 9 | Maule region | Talca | October 15, 2019 |
| 10 | Los Lagos Region | Puerto Montt | November 08, 2019 |

Results of the Study "Advice on the management of organic waste at the municipal level in Chile⁹⁵

The main objective of the consultancy was to collect and analyze information on municipal organic waste management at the national and international level. One of the most relevant results of the study was the identification -through primary and secondary sources- of existing barriers in the country that discourage the recovery of organic waste generated at the municipal level. These barriers define most of the lines of work addressed by this Strategy, which are presented and grouped by area below:

⁹⁵⁻ The reports are available at the MMA's National Environmental Information System (SINIA), https://sinia.mma.gob.cl/.

Enabling Conditions

o Lack of public awareness regarding their responsibility in the management of solid waste.o Lack of technical capacities of municipalities for the development and management of the financing of organic waste recovery projects.

Regulatory, political and institutional framework

o Lack of a public policy that encourages the prevention and recovery of organic waste and that establishes long-term goals that give greater certainty for investments from the municipalities and the private sector.

o The methodology for preparing and evaluating public investment projects for waste management is not aligned with the principle of the hierarchy for solid waste management.

o The RSEIA does not incorporate criteria that differentiate projects for the recovery of organic waste from final disposal in landfills.

•Financial environment

o The resources allocated by municipalities are insufficient to implement the hierarchy in solid waste management.

o Non-existence of a tax on waste disposal in landfills, in order to promote organic waste recovery and the hierarchy in waste management.

o Lack of economic incentives for the recovery of organic waste.

It is important to mention that most of the barriers gathered in this study coincided with the barriers identified in the Advisory Committee, in the participatory process in regions, and in the online questionnaire addressed to key stakeholders and citizens. The results of the latter are summarized below.

Online questionnaire to key stakeholders⁹⁶

The objective of this questionnaire called "Analysis of existing barriers in Chile that discourage the development of projects for the recovery of organic waste at the municipal level", was to gather and complement information regarding the main barriers and possible recommendations for the development of organic waste recovery projects, from the actors related to municipal solid waste management.

The questionnaire was structured based on barriers related to the regulatory and public policy field, the financial field and the enabling conditions. It was emailed to key stakeholders and 60 institutions responded. Most of the participants were representatives of the public sector (64%), followed by the civil society (18%), private sector (15%) and academia (3%).

96- More information in annexes 6.4 and 6.5 of report 2 of the study "Advice on the management of organic waste at the municipal level in Chile", Institutions participating in the online questionnaire aimed at key actors in the management of municipal organic waste and Questionnaire on barriers for key actors.

Online citizenship questionnaire⁹⁷

The objective of this questionnaire was to know the public perception about the prioritization of the barriers that affect the recovery of organic waste in the country and their possible solutions.

The questionnaire was structured in two parts. The first showed a list of five barriers and the second a list with nine possible solutions. The participant had to select, in order of priority, the three main barriers that affect the recovery of organic waste and three possible solutions.

The questionnaire was disseminated through the official page and social networks of the MMA and the social networks of the "Reciclo Orgánicos" Program, collecting the opinion of 1,183 citizens from all regions of Chile. Most participants were from the Metropolitan Region, followed by the Valparaíso and Biobío regions. 59% of the participants declared being working, followed by 25% that declared being studying. The main age range was 25 to 34 years, followed by 35 to 54 years. It should be noted that of the total number of people surveyed, 79% correspond to women.

The main barrier identified was the "lack of a policy that encourages the prevention and recovery of organic waste", which reflects the need for a Strategy that promotes this type of initiatives. The second barrier was the "lack of public awareness regarding their responsibility about the management of solid waste". Moreover, a significant number of participants who selected the "another barrier" option referred to the lack of environmental education, culture, information and training in these matters. The third barrier was the "lack of infrastructure for the recovery of organic waste".

Regarding the measures solution, the main measure was "to educate and train citizens about the responsible management of their waste", while the second was "to develop a public policy that promotes the recovery of organic waste. In the third place, two measures were mentioned: "prohibiting the sending of organic waste to landfills in order to encourage recycling" and "establishing municipal ordinances that encourage separation at source and differentiated collection of waste".

97- More information in annex 6.3 of report 2 of the study "Advice on the management of organic waste at the municipal level in Chile", Final Report of the participatory process for the preparation of the National Organic Waste Strategy.

DEFINITIONS

For the purposes of this document, it will be understood by:

Anaerobic digestion:

Controlled degradation process of biodegradable material in the absence of oxygen at a suitable temperature, where facultative and anaerobic bacteria species convert biomass into biogas and digestate.

Compost:

Organic product obtained from the thermophilic and aerobic biological treatment of biodegradable waste collected separately.

Composting

Aerobic decomposition process of a mixture of organic waste generated by the action of microorganisms. This process occurs in the presence of moisture and generates high temperatures that sanitize the mixture, producing carbon dioxide, water, and stabilized organic matter.

Digestate:

Product obtained from the anaerobic biological treatment of biodegradable waste collected separately.

Food waste:

Food losses that occur at the end of the food chain (retail and final consumption), related to the behavior of retailers and consumers.

Household solid waste:

Waste generated in households as a result of domestic activities. Waste generated in services and industries, which are not produced as a consequence of the main activity of the service or industry is also considered as domestic waste.

Humus:

Product resulting from the digestive and metabolic transformation of organic matter through the systematic breeding of earthworms, called worm farming.

Municipal Solid Waste:

Includes household solid waste, waste generated from the maintenance of parks and green areas, street sweeping, cleaning free fairs and markets, and waste collected in small shops, hotels, restaurants and cafeterias.

Organic waste:

Biodegradable waste from gardens and parks, food waste from homes, offices, shops, hotels, restaurants, cafeterias, lunchrooms and retail establishments.

ACRONYMS

- CNPDA: National Commission for the Prevention and Reduction of Food Losses and Waste
- **CORFO:** Production Development Corporation
- FAO: Food and Agriculture Organization of the United Nations
- FNDR: National Fund for Regional Development
- FPA: Environmental Protection Fund
- FPR: Fund for Recycling
- **GHG:** Greenhouse Gases
- **GORE:** Regional Government
- HORECA: Hotels, Restaurants and Cafeterias
- **IPT:** Territorial Planning Instruments
- MINEDUC: Ministry of Education
- MINVU: Ministry of Housing and Urbanism
- MMA: Ministry of Environment
- MRV: Monitoring, Reporting and Verification of greenhouse gases
- MSW: Municipal Solid Waste
- NCh: Chilean Standard
- NDC: Nationally Determined Contributions
- **OECD:** Organization for Economic Cooperation and Development
- **OGUC:** General Ordinance of Urbanism and Constructions
- PDA: Food Loss and Waste
- **PNOT:** National Policy for Land Planning
- PNRS: National Solid Waste Program
- PMB: Neighborhood Improvement Program
- PROT: Regional Plan for Land Planning
- RSEIA: Regulation of the Environmental Impact Assessment System
- SAG: Agricultural and Livestock Service
- SCAM: Municipal Environmental Certification System
- SDG: Sustainable Development Goals
- SEIA: Assessment System for Environmental Impact

SERCOTEC: Technical Cooperation Service
SEREMI: Regional Ministerial Secretariat
SINADER: National Waste Declaration System
SNCAE: National System of Environmental Certification of Educational Establishments
SUBDERE: Undersecretary of Regional and Administrative Development
UNEP: United Nations Environment Program

NATIONAL ORGANIC WASTE STRATEGY 2020-2040



