



**ImplementaSur**  
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# Solid waste and biogas projects in Chile

## Linking circular economy and climate goals

**Gerardo Canales**  
Director at ImplementaSur

July 13, 2021

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Energy  
generation from  
biogas in Chile

3

National Strategy to  
tackle GHG emissions  
from the waste sector



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*Turning climate change into a  
value creation opportunity*



## OUR MISSION

Accelerate actions to mitigate and adapt to climate change in Latin-America, through policy guidance, innovative business models, and financial mechanisms.



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# Energy generation from biogas in Chile

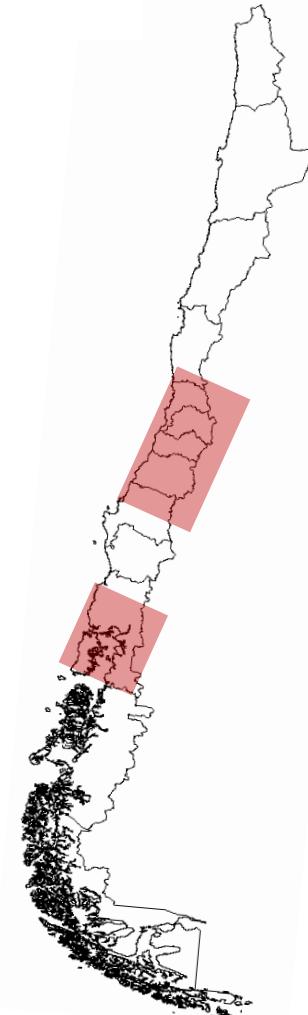


# Biogas plants in Chile according to the Ministry of Energy

- 104 biogas plants have been built in the country
- 78 active plants and 62 operating (60%)
- 19 abandoned projects (18%)



# Distribution around the country



	Total	Operating
Arica y Parinacota	1	
Antofagasta	2	2
Atacama	1	1
Coquimbo	2	2
<b>Valparaíso</b>	<b>11</b>	<b>5</b>
<b>Metropolitana</b>	<b>19</b>	<b>16</b>
<b>O'Higgins</b>	<b>15</b>	<b>8</b>
<b>Maule</b>	<b>12</b>	<b>5</b>
<b>Bío Bío</b>	<b>12</b>	<b>7</b>
La Araucanía	7	2
Los Ríos	4	1
<b>Los Lagos</b>	<b>17</b>	<b>12</b>
Magallanes	1	1

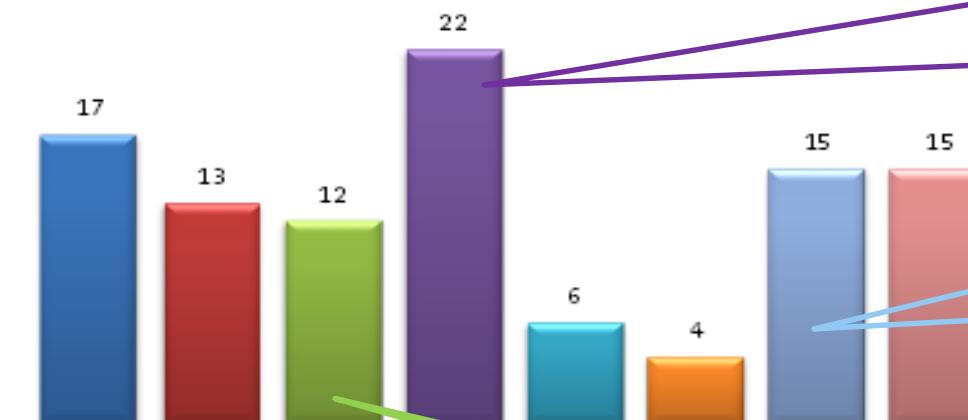
Large and medium-sized facilities



# Biogas plants by industry

Biogas plants by industry

■ Producción Animal ■ Lechería  
■ PTAS ■ Otros Orgánicos ■ Industria Alimentos ■ RRSS  
■ Educación ■ Rural



Strong development in the municipal solid waste (RRSS) sector, due to the CDM until 2012.

Some of these projects are now abandoned

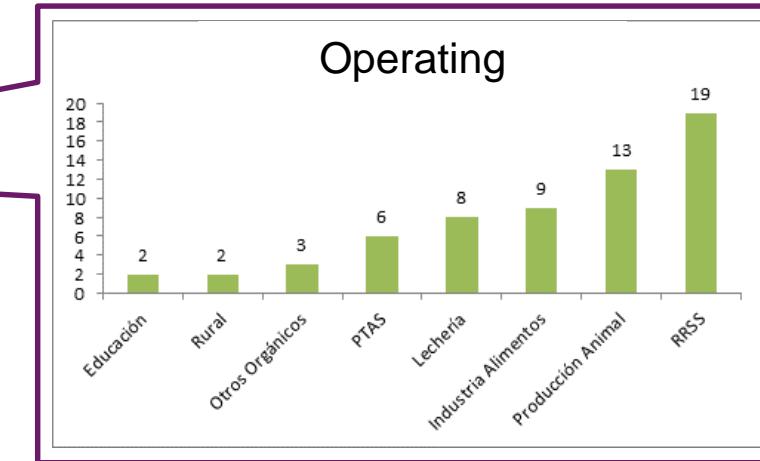
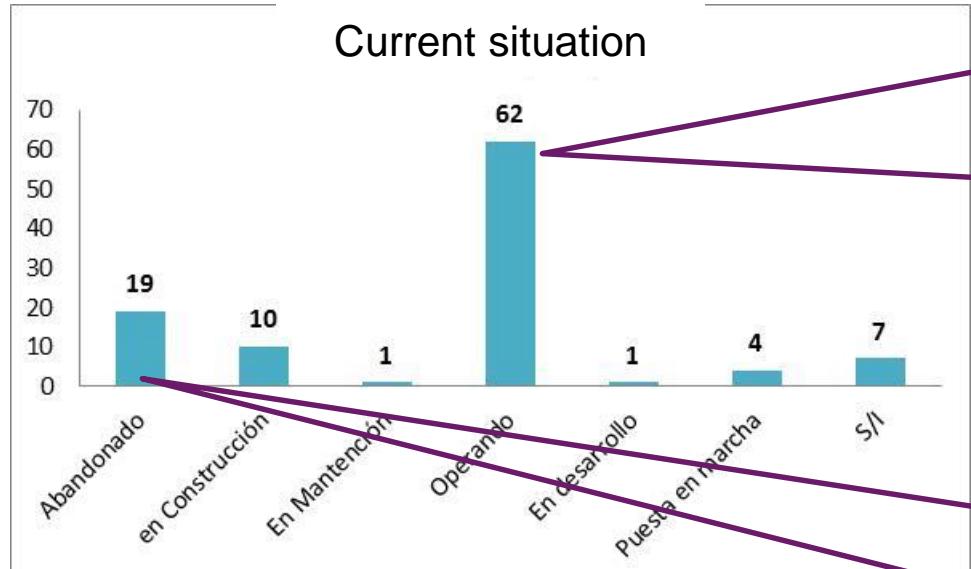
Wastewater treatment plants: There are 6 systems based on activated sludge technology that have anaerobic sludge digestion units.

Animal production plants, associated with reducing environmental impacts of waste. Additionally to reduce the carbon footprint, water footprint, sustainability standards and others.

Food industry: Wastewater treatment

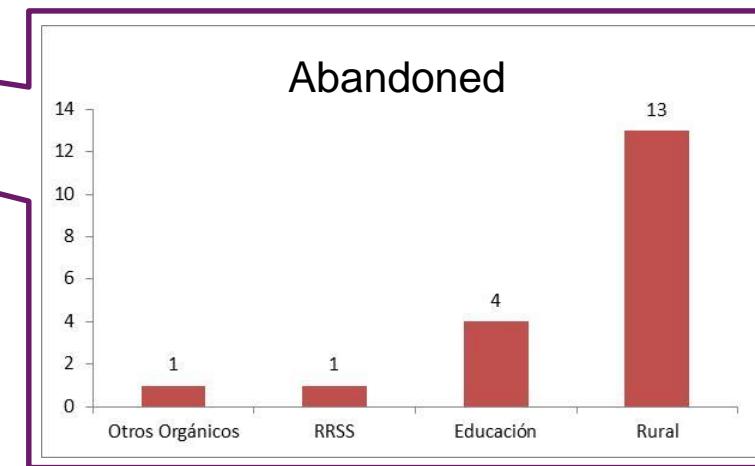
Dairy sector

# Current situation of biogas plants constructed in Chile

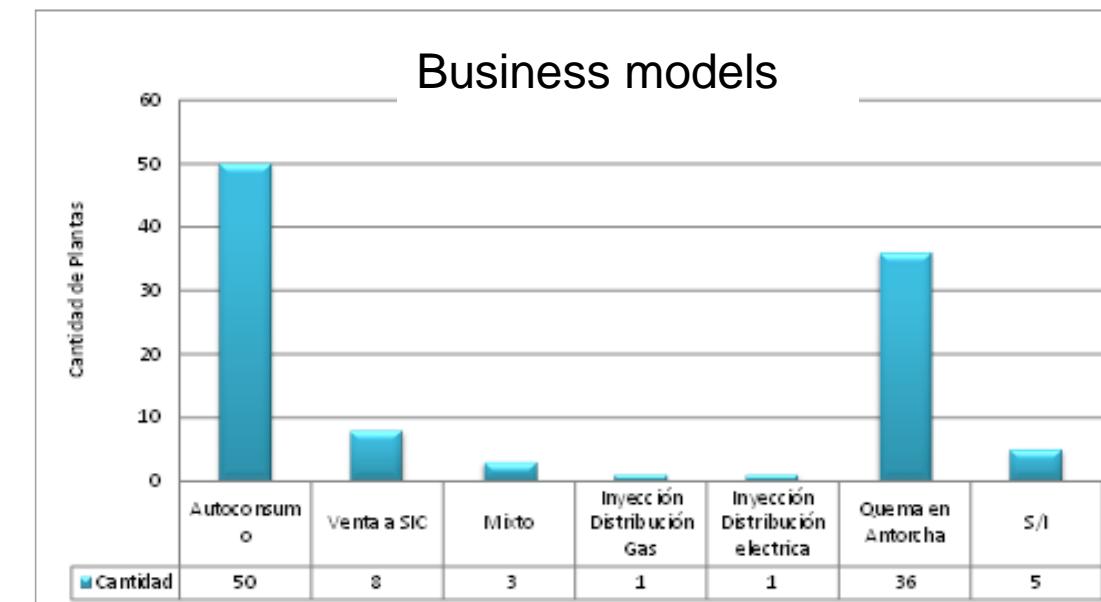


## Active projects:

- 59% take advantage of energy and 41% just burn biogas.
- 51% small, 40% large and 9% medium.



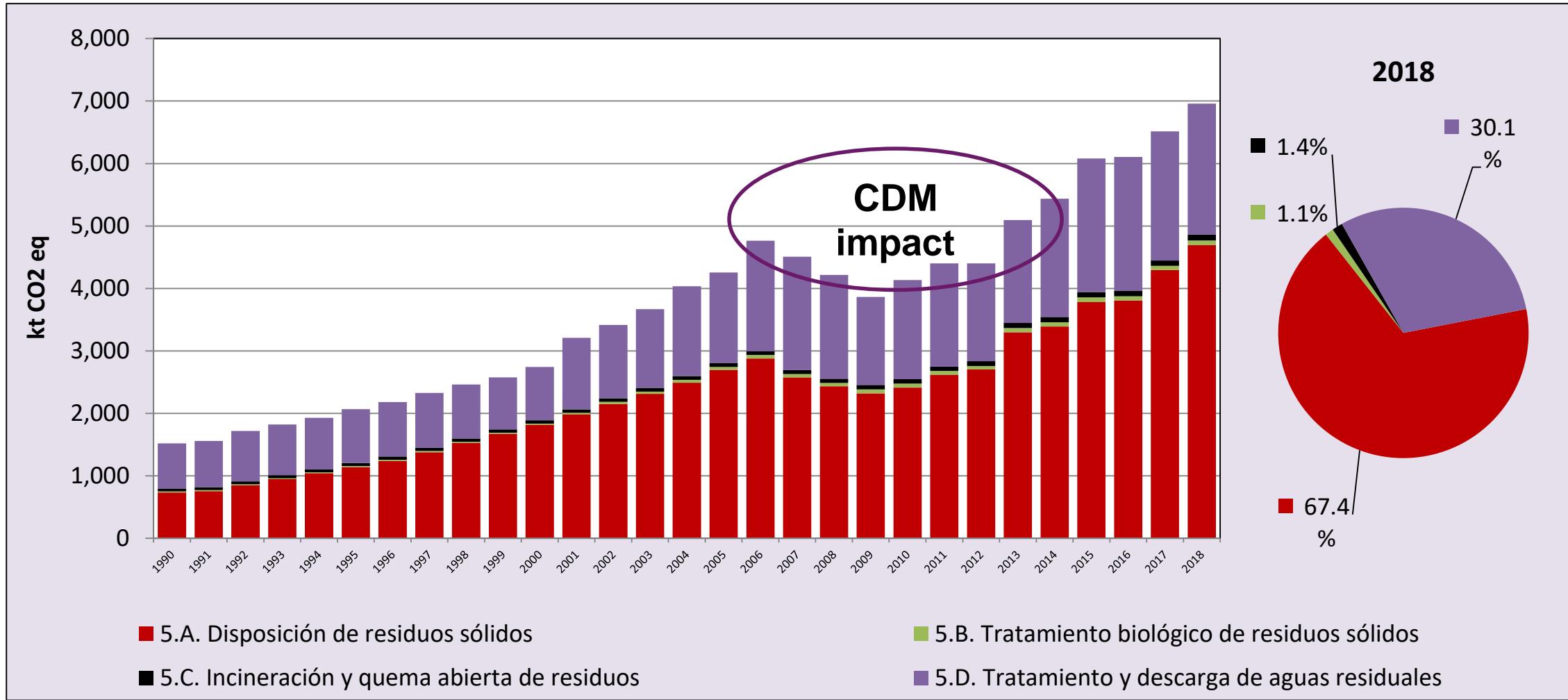
# Current situation of biogas plants constructed in Chile



## Economic feasibility is improved by:

- Use of electricity and heat
- Access to stabilized price of electricity (projects up to 9MW)
- Savings of disposal costs
- Market demand for circular economy solutions

# GHG emissions from the waste sector 1990-2018





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National Strategy to  
tackle GHG  
emissions from the  
waste sector



Accord de coopération environnementale  
Acuerdo de Cooperación Ambiental  
Agreement on Environmental Cooperation



Environment and Climate Change Canada



## Canada's support for the implementation of Chile's national contributions in the waste sector



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# The “Reciclo Orgánicos” Program



When did it start?

in 2017

Who participates?



Environment and  
Climate Change Canada



Ministry of the  
Environment, Chile

How did these organizations come together?



Accord de coopération environnementale  
Acuerdo de Cooperación Ambiental  
Agreement on Environmental Cooperation



CLIMATE &  
CLEAN AIR  
COALITION  
TO REDUCE SHORT-LIVED  
CLIMATE POLLUTANTS



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# The “Reciclo Orgánicos” Program

What is the program about?

**Support from Canada in the implementation of Chile's Nationally Determined Contributions in the waste sector**

What are its areas of action?

- 1. Reduction of methane emissions from the waste sector.**
- 2. Monitoring, reporting and verification of emissions reductions.**
- 3. Facilitating public and private finance for the implementation of projects.**
- 4. Community engagement and education about the relationship between climate change and organic waste.**





# Progress: Municipal composting projects pipeline

Región	Municipio	Asesoría técnica	Definición de sitio	Permiso Ambiental	Ingeniería de detalle			Permiso sanitario Seremi Salud			Permisos territoriales (IFC si corresponde)	Gestiones para obtener financiamiento	Construcción	Implementación operación	Entrega de equipamiento
				Permiso pertinencia	Presupuesto y contratación	Estudios de suelo y topografía	Entrega proyecto	Calificación técnica	Aprobación proyecto	Aprobación planta					
Valparaíso	Rapa Nui														
Metropolitana	Maipú			*											
	La Pintana			*											
	San Bernardo			*											
	Melipilla			*											
	Independencia														
	María Pinto														
	O'Higgins	Marchigüe													
Maule	Talca														
	Molina														
Ñuble	Chillán														
Biobío	Talcahuano														
La Araucanía	Pucón														
	Villarrica														
	Purén														
	Traiguén														
Los Ríos	Puerto Varas														
	Ancud														
	Castro														
	Quellón														
	Puerto Octay														





## Progress: Anaerobic digestion projects



Project	Description	Reduction Potential
<b>Independencia Aguas Andinas</b>	Pilot project where the municipality will be able to treat organic waste in el Mapocho –Trebal treatment plant	11 tCO2e Por un año
<b>Molina BioG</b>	Implementation of an organic waste collection plan for recovery in the Bio G biodigestion plant	1,848 tCO2e (2021-2040)
	Transformation of the current plant to optimize biodigestion process	785.000 tCO2e (2020-2040)
<b>Osorno Ecoprial</b>	Organic sludge processing plant through continuous flow anaerobic digester system	1,2 millones tCO2e (2020-2040)





## Progress: Methane capture projects



Proyecto	Descripción	Potencial de reducción (tCO2e) (2020-2040)
<b>Florida Copiulemu</b>		1,2 million tCO2e
<b>San Felipe La Hormiga</b>		1,3 million tCO2e
<b>Penco Bioenergía Los Pinos</b>	Increased gas recovery for electricity generation	1,3 million tCO2e
<b>Santiago Poniente Veolia</b>		3,5 million tCO2e
<b>Melipilla Popeta</b>	Technical advice on the implementation of landfill gas capture	1 million tCO2e





# Monitoring, Reporting and Verification (MRV)



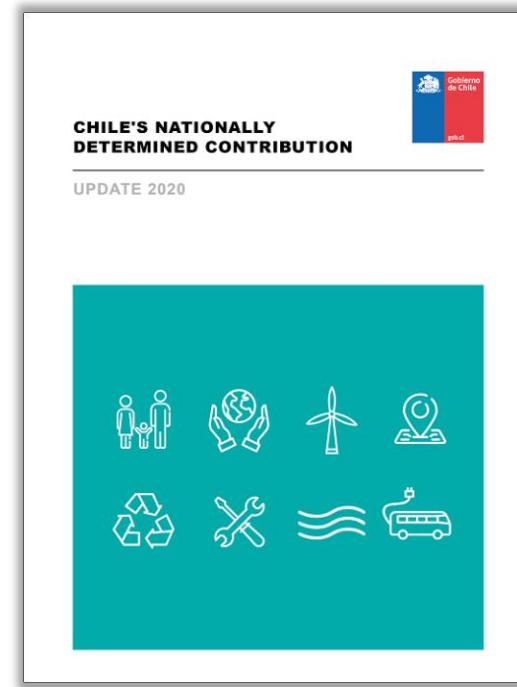
- **Protocols for monitoring, reporting and verification (MRV)**
  - Capture and destruction of GHGs in landfills (in final review)
  - Composting projects (in final review and definition of methane capture factors by default)
  - Anaerobic digestion (first draft under review)
- **Blockchain Pilot (LFGE and Anaerobic digestion)**
- **Supporting MMA to move further forward in an MRV framework**





How do we make this  
bigger? How do we make it  
long-term?





We started the development of a **National Organic Waste Strategy** and made its development is part of Chile's 2020 NDC update.

Contribution to Integration - Circular Economy  
Nº2 (I2)

CONTRIBUTION

I2) In 2020, develop a National Organic Waste Strategy, aimed at increasing the recovery of organic waste generated at municipal level by recovering nutrients, organic materials or substrates into the productive process and, thereby, contributing to climate change adaptation and mitigation.

SDG





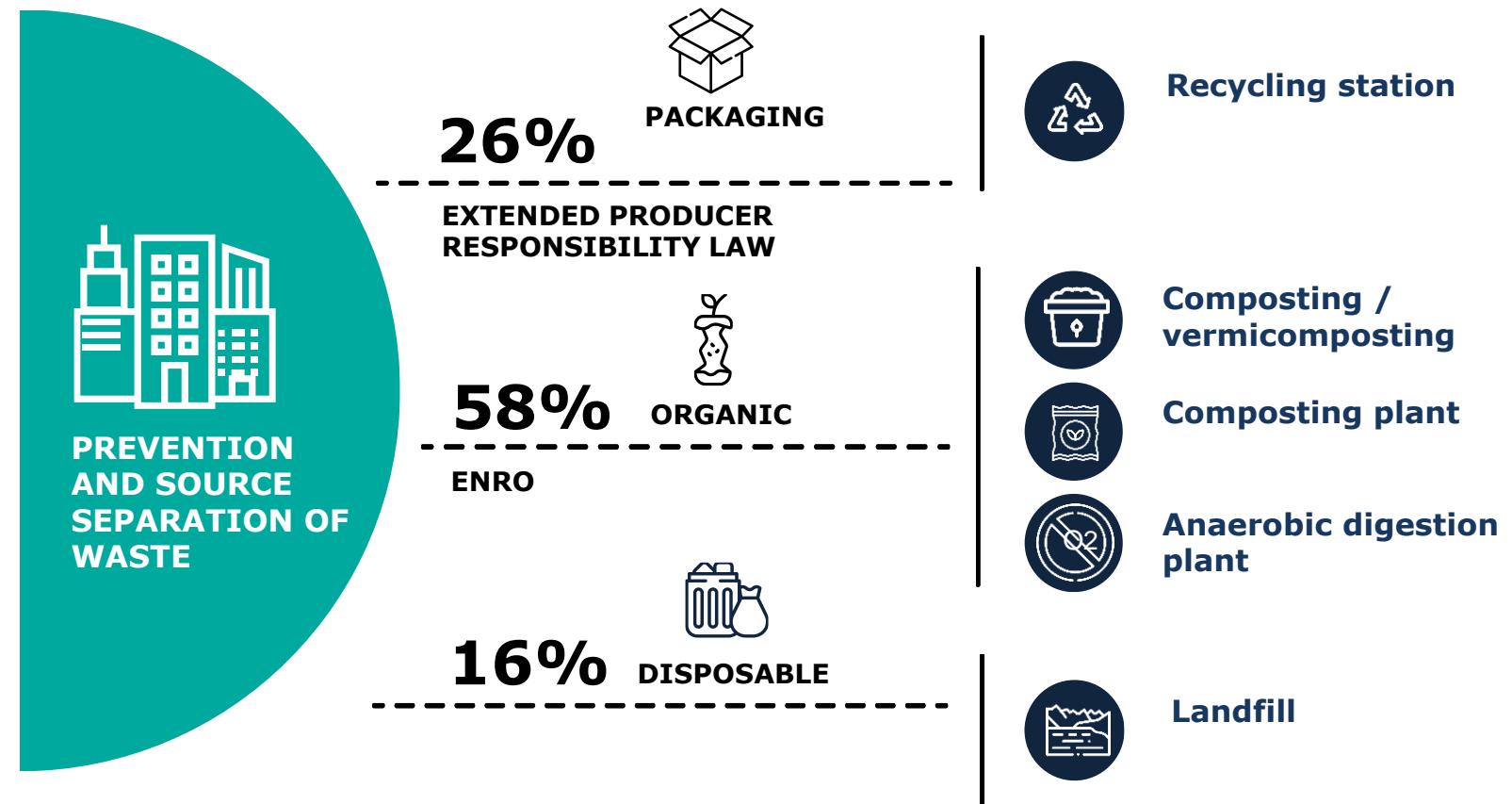
**In february 2021, the National  
Organic Waste Strategy was  
published**



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# The National Organic Waste Strategy: Vision 2040





# The National Organic Waste Strategy: Goals

**2030**

**30%** Organic waste valorization

**500.000** homes doing composting and/or vermicomposting

**5.000** educational establishments composting and/or vermicomposting

**500** neighborhoods of the program "Quiero mi Barrio" composting and/or vermicomposting

**50%** public institutions separating at source and valorizing organic waste

**All urban parks composting their waste** (including Parquemet)

Goal SDG 12.3 Agenda 2030: **Reduce food loss and waste by 50%**



**2040**

**66% valorization of organic waste generated at municipal level**





# The National Organic Waste Strategy: Governance

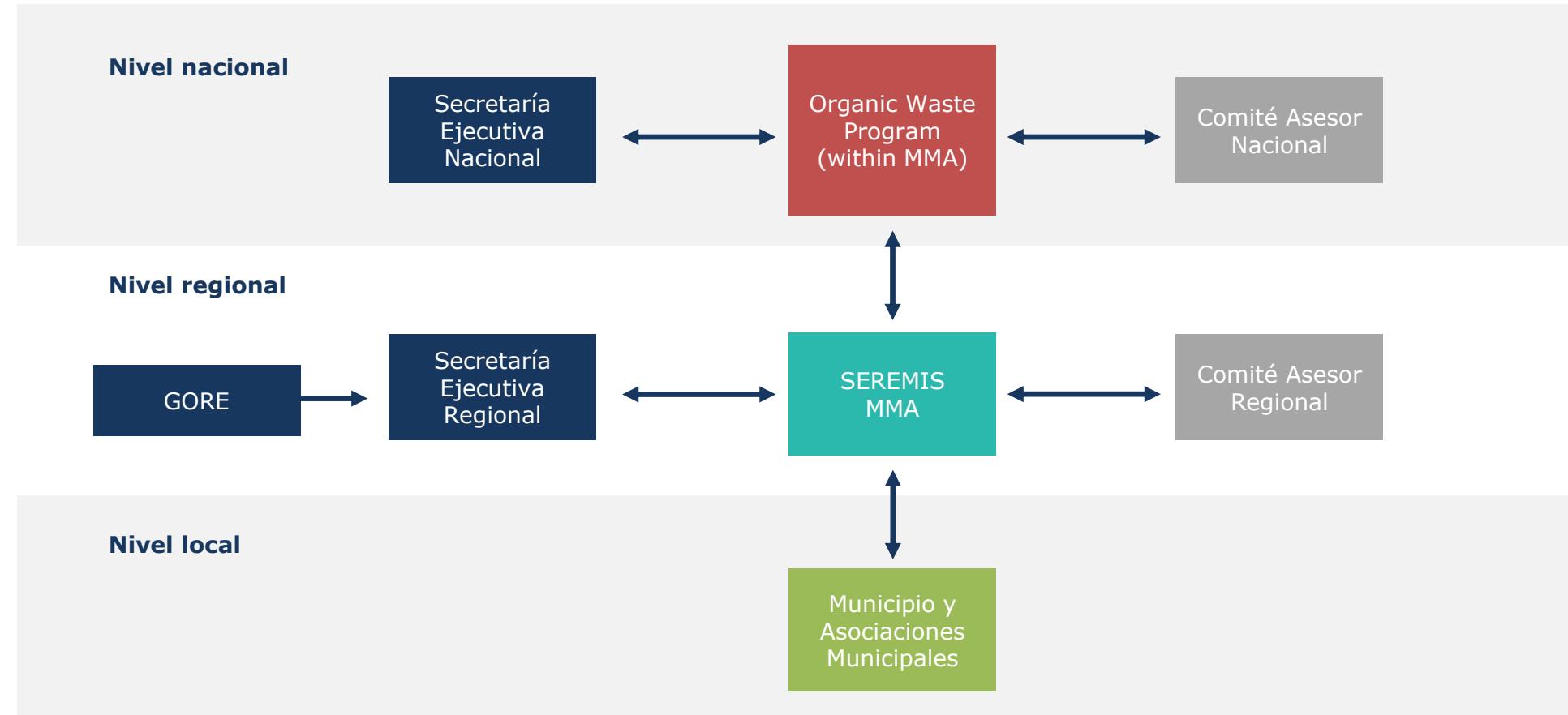


- **Multi level strategy.**
- **The strategy works within the existing governance.**





# The National Organic Waste Strategy: Governance

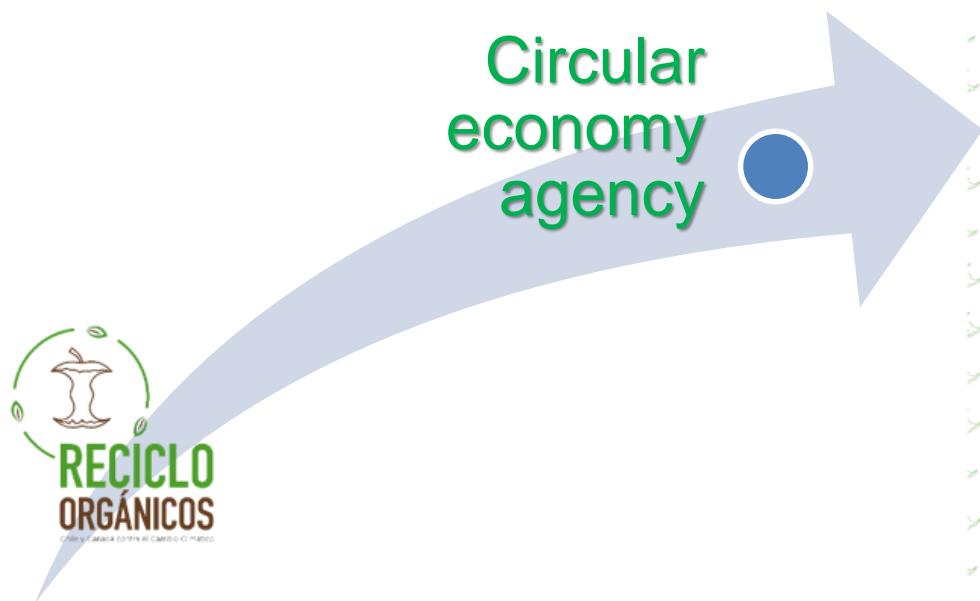


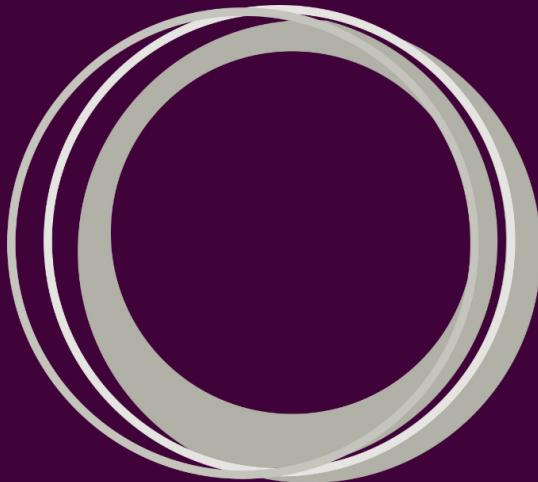


# The National Organic Waste Strategy: Implementation

Main functions of the Program:

- ✓ **Provide technical support to advance investment projects related to the valorization of organic waste.**
- ✓ **To strengthen technical knowledge at national, regional and municipal level.**
- ✓ **Improve policy frameworks to reduce risk for new business models, e.g.:**
  - ✓ Enforce waste tariff collection
  - ✓ Reduce illegal dumping
  - ✓ Increase the requirement of landfill gas collection from 5% to at least 30%
  - ✓ Introduce Social Price of Carbon into the evaluation methodologies for public investment





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[www.implementasur.cl](http://www.implementasur.cl)



[info@implementasur.cl](mailto:info@implementasur.cl)



+56 9 58250830



Casa Sustentable  
Del Inca 4622, Las Condes  
Santiago de Chile