

# **Nationally Appropriate Mitigation Action**

Catalyzing Industrial Organic Waste  
Management in Chile

# Chile Context

In 2010, the Government officially committed to voluntarily reduce emissions by 20% from the BAU emissions trajectory by 2020, from a 2007 base year.



Several unilateral actions have been taken in waste, energy, agriculture and transport sectors.

Chile is working on several NAMAs in these sectors, and have presented 3 of them to the UNFCCC NAMA Registry.



# Waste Context

Some of the actions taken on these years are:

- New institutional setting (2010 - 2013) to improve policies and enforcement.
- National Solid Waste Program (since 2006), to improve sanitation and environmental quality of urban and rural disposal centers nationwide.



- Waste Act under revision, to create the Extended Producer Responsibility
- "Policy for an Environmentally Rational Waste Management (2013 - 2020)", is on its way to be sanctioned.



# Waste Challenge

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- Most of the greenhouse gas (GHG) emissions in the waste sector are generated by industrial organic waste.
- An important share of the organic waste goes directly to final disposition.





# Work on Organics Diversion

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In this context, the Chilean Ministry of Environment and CCAP, with funds from EC worked during 2012 in analyzing the potential and alternatives to develop organics diversion programs in Chile.



The first study, was focused basically on municipal waste in 59 municipalities, and the second in 2 municipal associations, focused mainly on industrial waste.

# Waste Studies Findings

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The most important findings of these studies are:

1. Municipal waste has not the scale to develop diversion initiatives alone, basically because household collection requires years of preparation. Today, the useful organic waste comes from pruning, open markets and restaurants & hotels.
2. Diversion projects cannot compete against the tariffs charged by dumps in some areas of the country.
3. Many industries are willing to do a proper disposition of their waste, but there are no alternatives available.

**There is a great potential to do a coordinated work between municipalities and industries to develop organic diversion programs.**

# Waste Potential in 2 Municipal Associations

Wine Region



Salmon Region



	Municipal Organic Waste	Industrial Organic Waste	Total
VI Region Association	3,122	12,204	<b>15,326</b>
X Region Association	8,889	79,164	<b>88,053</b>

# NAMA Proposal

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# Barriers Identified

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1. Diversion needs tipping fees similar to landfills, higher than dumps
2. Law prohibits dumps, but is not enforced, as there are no alternatives
3. Waste sector paralyzed by uncertainty; without enforcement of the law, the investment in new landfills is too risky
4. Growing community opposition against waste projects
5. Regulatory standards do not effectively encourage diversion
6. Municipalities use a cost minimization model
7. No private financing for these new technologies without special guarantees

# NAMA Description

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- This NAMA aims to address the barriers by facilitating the installation of a series of diversion projects that use dry fermentation plants.
- Dry fermentation uses indoor treatment, power generation and compost as products obtained from the diversion process.
- It aims to create a new market and show the technology, which will, in future, allow privates to develop the projects independently.



# Projects Parameters and Results

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- Key assumptions:
  - Industrial sources are willing to pay current landfill tipping fee of \$40/ton
  - Revenue from: sale of electricity (\$90/MW + \$20/MWh from RE RPS Law), compost (\$12/ton)
  - Avg investment for 40,000 tpy facility = \$10mm
  - Avg life of project: 20 yrs
- Results:
  - NPV: \$5.5 million
  - IRR: 16%
  - Payback: 9 years

# Lines of Support

Component	Funds	Description
Improvement of Regulatory Framework	\$200,000 Local	Aims to facilitate the development of diversion and the sale of the products produced
MRV System	\$230,000 Local	Using the SINADER MRV tool developed by the Ministry of the Environment, and doing the required adaptations, a series of MRV indicators that can be followed
Feasibility Studies	\$900,000 Local	Through the Chilean development agency will co-finance up to 50% for feasibility studies of projects
Financial Support	\$10,000,000 International	To cover part of the initial investment or to allow gradually increasing tipping fees. Co-financing will diminish over time (economies of scale, technological and expected increase in the cost of alternative disposing).
Partial Performance Guarantee Fund	\$9,000,000 20% Local & 80% International	As new technologies, projects will require special guarantees. The PPGF will cover a portion of new technology performance risk of all the projects, and will be provided for the whole life of a local bank loan.

# NAMA Operation

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- The NAMA will operate through tenders in which winners will be those requesting less support per ton of waste treated.
- In parallel to the tenders, a Partial Guarantee Fund will be in place to support all the projects that require the guarantee to get bank financing.
- **Economic Sustainability:** Developers must demonstrate the project's economic sustainability (cash flows, contracts for waste supply and product sales, etc.)
- **Municipal support:** projects must have the support of the municipality where it is installed, in return for which the project will create a fund to support community projects and give preferential tipping fees for municipal waste.
- This will promote municipal waste diversion and eventual household selective collection.



# NAMA Operation: Virtuous Circle

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# NAMA Expected Results

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- **Waste Diversion:** more than 11 million tons of organic waste throughout the useful life of projects supported.
- **Private Investment:** The NAMA is expected to leverage private investment for \$130 million.
- **GHGs Mitigation:** avoid more than 12 million tCO<sub>2</sub>e, over the life of the projects.
- **Benefits for sustainable development:** environmental, social and health benefits of reducing the use or closing dumps, jobs creation and increased economic activity, among other benefits.

# Conclusions

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- The improvement of the management of organic waste is one of the greatest challenges of the sector.
- Several barriers prevent the installation of diversion plants for industrial and municipal organic waste.
- The NAMA creates the incentives to spur purely private development of diversion projects, breaking the inertia of the sector.

**Gracias!**