

## VIÑA DEL MAR, Chile

### City Information

**Population:** 330.110

**Area (km<sup>2</sup>)**  
122 km<sup>2</sup>

#### Climate

It has a temperate climate with distinct seasons during the year. The average temperature ranges between 10 ° and 22 ° as the minimum and maximum respectively, with average winter rainfall of 270 mm. It has a front approximately 4 kilometers of beaches, this being one of its biggest tourist attractions.

Among the consequences of this particular climate, we can mention the adaptability for developing multiple floral and plant species, native and exotic. This is why Viña del Mar is also known as Garden City

#### Main Economic Activities

Viña del Mar is known for its beaches, malls, extensive coastal with high buildings, hotels and various entertainment venues, explaining why it has become one of the most tourist cities of Chile, and one of the most internationally recognized.

Its main economic activities of the city are the tourism, universities and Services.

#### City website

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



## Country Information

### Population

16.572.475 (prel census 2012).

### Area (km<sup>2</sup>)

756.102.4 km<sup>2</sup>

### Economy and GNI/Capita

High income

GNI/Capita (at current prices): \$ 15.363

### Main Economic Activities

Mining, fishing, forestry and livestock. Chile is the biggest copper producer in the world, being copper industry the most important activity in the country.

### Website of National Government Agency responsible for guidance on waste legislation

Ministry of Health: [www.minsal.cl](http://www.minsal.cl)

Ministry of Environment: [www.mma.gob.cl](http://www.mma.gob.cl)

Sub secretary of Regional Development: [www.subdere.gob.cl](http://www.subdere.gob.cl)



## MSW Sector Overview: City Level

### Classification of MSW

In some areas of the city there is selective collection in bins located in public areas of the city, so people can voluntarily dispose its separate waste.

Type of SW	Comments
Glass	Bell-shaped bins in public areas
PET	<ul style="list-style-type: none"><li>• Jail-type containers in public areas.</li><li>• RINOPLAST company collects in the landfill El Molle.</li></ul>
Tires	Collected on demand.
Batteries	In plastic bottles located in public buildings and shopping centers.
Tetrapack	At schools

Papers and cardboard	<ul style="list-style-type: none"> <li>• Municipal (schools, neighbors associations)</li> <li>• Informal collection.</li> <li>• Collection centers and SOREPA company.</li> <li>• RINOPLAST collects in El Molle</li> </ul>
Podas de árboles (Toneladas)	Recolección Municipal.

The waste with separate collection are:

Recycled waste	Tons (2012)	Source
Paper and Cardboard	6.780	SOREPA: 5.157 tons. Rinoplast: 1080 tons. Municipality: 543 tons.
Glass	908,69	Cristalerías Chile and Cristalerías Toro.
PET	543,52	Municipality: 3,52 tons. RINOPLAST: 540 tons.
Tires	43,01	Melon Cement Company
Batteries	8,27	Municipality
Prunning waste	1.531,00	Municipality
<b>TOTAL</b>	<b>9.614,49</b>	

### MSW Generation

total in tonnes/year: 129.749,0 tonnes/year

per capita in Kg/year: 417,8 Kg/year .

SW DISPOSED IN LANDFILL (2012)	
MONTH	Total (ton)
JANUARY	12.316
FEBRUARY	11.323
MARCH	11.055
APRIL	9.915
MAY	10.476
JUNE	9.850
JULY	10.259
AUGUST	10.131
SEPTEMBER	10.367
OCTOBER	11.472
NOVEMBER	11.028
DECEMBER	11.555
<b>TOTAL</b>	<b>129.749</b>

### Collection Coverage and Type

URBAN SOLID WASTE MANAGEMENT	tons/ year	ton/year per capita	kgs/year per capita	percentage treated (%)
Final disposal in landfill	129.748	0,393	393,04	93,1

Recycling	9.614,49	0,029	29,13	6,9
total	139.362,49	0,417	417,86	100

### **Waste Composition**

The composition was determined in the study to extend the useful life of Lajarilla dump in 1998, using 1995 data

COMPONENTS	COUNTRIES			VIÑA DEL MAR
	Low Income	Medium Income	High Income	
	%	%	%	
Organic	40-85	20-65	06-30	54-69
Paper	01-10	08-30	20-45	09-18
Cardboard	-	-	05-15	03-05
Plastic	01-05	02-06	02-08	05-08
Textile	01-05	02-10	02-06	01-02
Rubber	-	-	00-02	00-01
Glass	01-10	01-10	04-12	01-04
Metal	01-10	01-10	01-04	01-02

Study of ISWM for Valparaiso Region, done by Universidad Santa María in 2011 (Data corresponding to Viña del Mar).

Components	Income Quintile (%)					
	1	2	3	4	5	
Organics	67,8	72,0	63,0	71,9	64,0	67,74
PET	0,1	0,2	0,4	0	0	0,14
Other plastics	10,5	12,4	6,6	12,7	17,6	11,96
Tetrapack	1,3	0,9	0,5	2,6	0	1,06
Paper	7,1	7,2	9,6	2,2	6,3	6,48

<b>Cardboard</b>	4,1	1,0	3,0	4,3	1,5	2,78
<b>Metals</b>	0,7	1,4	1,17	1,9	0,3	1,094
<b>Glass</b>	2,9	2,8	1,3	3,8	0,9	2,34
<b>Batteries, electronic devices, halogen lights, others.</b>	0	0,6	0,3	0	0	0,18
<b>Textiles</b>	1,1	0,2	4,7	0,3	6,8	2,62
<b>Cellulose</b>	2,1	0,6	1,9	0,3	2,5	1,48
<b>Others</b>	2,2	0,6	0	0,2	0	0,6

#### Projection of the Average Composition

<b>COMPONENTS</b>	<b>COMPOSITION</b>
<b>Pet</b>	0,2
<b>Other plastics</b>	9,6
<b>Tetrapack</b>	1,0
<b>Paper</b>	4,3
<b>Organics</b>	69,9
<b>Cardboard</b>	3,8
<b>Metals</b>	0,9
<b>Glass</b>	1,9
<b>Inerts</b>	0,1
<b>Specials</b>	0,2
<b>Textile</b>	3,7
<b>Cellulose</b>	1,9
<b>Others</b>	2,4

#### **Waste Management Practice**

During 2013, begins operating a landfill, which replaces the current place of final disposal, which is a controlled dump called "El Molle". It is privately owned and is located in the neighboring city of Valparaiso, 26 Kms away from Viña del Mar. The dump receives waste from several municipalities in the region, with its main customers being Viña del Mar and Valparaiso.

Dump operations consider the recovery of paper, cardboard and Rinoplac Company does Pet Recovery on site, once the waste is disposed at the disposal site, before being covered with the covering material. In paper and paperboard, they recovered on average 90 tons per month (1080 Tons/ Year) and Pet recovers on average 45 tons per month (540 tons/ year). No records are kept from the sources of the waste separated on the dump.

The paper and cardboard are baled and sent to the Company Recopac in Santiago. The Pet is chipped, washed and sent to manufacturing companies of PET packaging, in Santiago.

Biogas is also recovered, which is burned at several fireplaces, but only for security purposes.

### ***Formal Waste Sector***

The waste recycling operations in Vina del Mar, are made in private treatment plants outside the city, except for pruning residues, treated by the municipality on a site of its property (Compost).

The recycling treatment centers are factories of glassware (glass containers) Cement kilns (tires), Plastics (Company Girsá) Batteries (Plant for treatment of Hazardous Industrial waste), paper and paperboard (collection centers and Plants treatment).

### ***Informal Waste Sector***

The collection coverage is 100% of Residential Solid Waste. However, there is a small sector of waste pickers recovering waste with commercial value from public containers and commerce, to recover paper, cardboard, cans and other.

### ***Financing of MSW***

(what type of model is used to finance waste services e.g. through household fees, general tax, etc. Is the cost a significant part of the city budget?)

The financing of MSW for all municipalities in the country is set in the Law on Municipal Revenue, No. 3079/79, and Regulation No. 69 of February 14, 2006, which contains the general conditions for waste management fees.

The current legislation allows charging a quarterly fee for the service of ordinary waste management (Producers of up to 60 liters per day of waste) and extraordinary services to those requesting the service (waste over producers).

Regarding ordinary fees, the Act provides the following levels of exemptions:

1. Social Exempt.
2. Exempt by law (Section 7 law 20.280/08, for property tax valuation lower than \$18,000).
3. Partial or total Exempt depending on Municipal Council agreement (for properties fiscal values between \$18,000 and \$28,000)

The level of funding that is obtained by collecting the cleaning service in the City is approximately a 45%. The deficit, around \$9 million annual, should be funded from the Municipal budget.

The budget of the Municipality of Viña del Mar for 2013 was \$115 million, and the cost of cleaning service in 2012 was \$16 million, representing 14.32% of the Municipal Annual Budget.

## MSW Sector Overview: Country Level

### General description and overview of common practice

More than 60% of the waste generated is disposed in facilities with environmental approval, which is equivalent to more than 4 out of the 6.5 million tons of municipal solid waste.

### Waste Generation (per capita/year)

365 kg household waste/año per capita

### Collection Coverage

About 95% of municipal waste is collected, in a few communities there is segregated collection, in all larger cities (except extreme south and north) there are bins for paper & cardboard; glass and metals.

### Number of Landfills/MSW Disposal rate (tonnes/year)

unknown

### Recycling Rate 10%

Type of product	Product	Generation (ton/year)	Current Recycling rate	Year
	Tires	53.560	22%	2012
	Electronic devices	7.674	19%	2008
	Batteries	26.100	52%	2008
	Used Oil	72.150	52%	2008
	Domestic batteries	4.337	No data	2011
<b>Containers</b>	Glass	292.014	54%, of which 11% corresponds to households	2012
	Metal	100.665	43% of which 10% corresponds to households	2012
	Cardboard for soft drinks		3% households	2010
	Plastics	355.394	12% of which 2,9% corresponds	2012

			to households	
	Paper and Cardboard	474.650	82% of which 8% corresponds to households	2013

### **Waste management of Organic fraction (composting, anaerobic digestion)**

Composting on a small scale

The following data corresponds to 2012:

Compost: 268.000 t of waste treated

There is no info about waste treated under anaerobic digestion.

### **Energy Recovery Rate**

Energy recovery in the larger landfills (not more than 5 landfills, which is about 50% of all municipal waste

**The following data corresponds to 2012:**

- Methane recovered and flared from anaerobic digestion of mud generated in the served water treatment: 26.034.325 kg/year
- Methane recovered from final disposal sites: 68,85 Gg/year
- Energy generated from methane recovered in final disposition sites: 88.800 MWh/year

## ***Plans, Strategies, Policies [including financial instruments] and National Objectives***

### **City Level**

#### ***Aimed at improving Waste Management in General***

The city of Vina del Mar, has a strategic vision of a Maritime City Residential Park - Coast in harmony with the urban environment and great environmental quality. In its strategic lines includes using urban development, natural resources, environment and landscapes as support to its touristic role with programs and cooperation agreements between the municipality, universities and private companies, developing applied research projects with community interest financed with public-private funds (FONDEF, Regional Government, Ministry of Planning, IDB, etc.) and treatment plans for solid waste.

#### ***Aimed at addressing Climate change and reducing SLCPs through waste related activities***

To improve the management of urban solid waste, the City is committed to develop a "Community Plan for Integrated Municipal Solid Waste" in order to have a tool for planning and management guidance that will enable the Municipality to lower emissions of CO2 and SLCPs to the atmosphere, tune the

growth of the community with the policies and projects that the City implements in order to achieve continuous improvement in their management and harmonious and balanced development with its surroundings. The Integrated Solid Waste Management Plan (ISWMP) should focus on measures for diversion of organic waste from households, the food industry, supermarkets, restaurants, etc. The separated organic waste should be sent to biological treatment where the energy and nutrients in the waste will be utilized and the methane emissions reduced. Where organic waste is still landfilled – collection and utilization of landfill gas should be installed when possible. If the analysis of the current situation that is made for the ISWM plan shows that open burning of waste is occurring, necessary measures need to be undertaken in order to stop open burning from occurring, hence generating emissions of black carbon. The ISWM plan will also include goals and activities for increased recycling and waste prevention in order to reduce the emissions of both methane and CO<sub>2</sub>, reduce transports and improve resource efficiency. The ISWM plan will contain short-, medium- and long-term goals for improving the waste management in Viña del Mar as well as the related activities and measures that is needed in order to achieve the goals. The ISWM plan will also contain a plan and measures for how the evaluation of the goals will be performed.

### **Country Level**

#### **Aimed at improving Waste Management in General:**

Since January 2005, Chile has a policy of Integrated Solid Waste Management, which is the framework for the development of all actions performed by the Ministry of Environment regarding the treatment of waste.

The Ministry of Environment is updating this policy, which is based on the concept that a residue is a substance or object out of use, the handling of which may involve a risk to health and the environment and is a resource that in many cases can have value.

The policy considers waste management throughout the territory, independent of being hazardous, non-hazardous or inert, except for the following: radioactive waste, emissions to air, liquid effluents, explosives and explosive objects.

As part of the policy, instruments and actions will be developed for:

- Prevent the generation of waste, in order to conserve natural resources.
- Protect the environment from the impacts of inadequate waste management.
- Promote the recovery and use of resources in waste.
- Encourage all actors of society to assume their responsibilities and participate actively to achieve the environmentally sound management of waste.

#### ***Aimed at addressing Climate change and reducing SLCPs through waste related activities***

The government is developing many crosscutting initiatives to improve the waste management, and contribute with climate change and the reduction of SLCPs. In 2010, created the Ministry of Environment, the Environmental Assessment Service and the Superintendency of Environment (SMA). The latter will debut this year with powers of enforcement and sanction, and the SMA will be responsible for ensuring compliance with environmental regulations in Chile.

Also, the Government has a National Solid Waste Program initiated in 2006. The objective is to improve sanitation and environmental quality of urban and rural disposal centers nationwide.

Additionally, the "Policy for an Environmentally Rational Waste Management (2013 - 2020)", is on its way to be sanctioned, and will set the framework for the development of activities and initiatives in the area of waste management in the coming years.

Finally, in March 2013 the Government of Chile started its trial run the National Waste System (SINADER). This will allow policy makers to focus the public policy and / or regulation on the promotion or enhancement of waste diversion. The statistical data will allow the analysis of each of the stages of waste management and to identify critical points.

The previous crosscutting initiatives will complement the specific lines of work Chile has for waste management: The Extended Producer Responsibility (EPR) Bill, soon to be sent to the Congress, to address the non-organic waste, and the Chile Waste NAMA, to address the management of organic waste in the country.

## Legislation

### **City Level**

At city level there are no legislation

### **National Level**

#### **Legislation governing MSW management.**

*The Ministry of Health develops the regulation applied to waste today in Chile, as they have the legal mandate in this area.*

*The main regulation in the area of waste management is the Health Code, Decree-Law No. 725, 1968. Based on the Code, in recent years the Ministry of Health established a number of regulations on waste management, being the principal, Supreme Decree 189 of 2005, Regulation on sanitary conditions and basic safety in landfills.*

*Law 19,300, on general bases of the environment, does not address the issue of waste management specifically and 20,417 law that creates the Ministry, the Environmental Evaluation Service and the Superintendence of the Environment, 2010, amending Law 19,300, delivered specific powers to the Ministry regarding waste management, so the attributions in the area are limited to policy development and the generation of information. Under the Law 19,300, General Bases of the Environment, the government has developed several regulations related to waste management, such as Supreme Decree*

45 of 2007, emissions standards for the incineration and co-incineration, and Supreme Decree 4, of April 2009, Rules for handling plant sludge generated in wastewater treatment.

Regarding municipal solid waste, Law 18.695, Organic Constitutional Municipalities Act, 1988, provides that municipalities have the exclusive function of providing the service of cleaning and decoration of the commune. For its part, the 3063 Act on Municipal Income, 1979, provides an exemption from paying for cleaning service for homes or dwelling units with tax valuation below \$18,000, as mentioned before.

**Guidance for MSW management (after legislation, before inspection activities):**

There are standards that are voluntary, that guide stakeholders on waste management, for example: colors for waste containers, waste characterization, quality of compost, among others.

**Inspection activities/supervision and enforcement of legislation:**

The Ministry of Health supervises the accomplishment of the regulations.

## **Involvement to date in CCAC MSW Initiative**

### **City**

Participating since 2012, has the assessment presented, participated in the Vancouver event in March 2013, has an MOU with the City of Stockholm to collaborate on waste management, and is preparing the TORs to develop a sustainable integrated waste management plan.

### **Country**

The Ministry of the Environment is participating in the initiative, accompanying Vina del Mar during the process, and also signed a MOU with the Sweden EPA to review Chilean regulations and try to improve the sustainability focus of the waste regulations, according to the experiences learned from Sweden. The Ministry will provide guidance to other municipalities on developing ISWM plans based on the experiences from Viña del Mar.

## **Current Projects or activities aimed at reducing SLCP Emissions**

### **City Level**

As mentioned before, some recycling and composting, along with doing methane flaring in the dump where Vina del Mar waste is disposed. Based on the ISWM plan developed under the CCAC initiative, new projects will come up.

### **Country Level (and/or international)**

NAMA: National Program for Catalyzing Industrial and Commercial Organic Waste Management in Chile

## Key Stakeholders

Ministry of Environment: [www.mma.gob.cl](http://www.mma.gob.cl)

Ministry of Health: [www.minsal.cl](http://www.minsal.cl)

Municipality of Vina del Mar: [www.vinadelmarchile.cl](http://www.vinadelmarchile.cl)

## Contacts

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