

Waste Management in the LATAM Region

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Waste Management Country Report: Colombia

This paper aims to provide a better understanding of business opportunities for the Netherlands in waste/Circular economy sector in Colombia



Source: Photo by Vivianne Lemay on Unsplash, 2021

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COLOMBIA

Country Information

A few years back, the Colombian tourism office launched the slogan: "*Colombia ... the only risk is that you want to stay*". In one go, the country left behind its turbulent past of civil unrest (especially in the countryside) and self-confidently invited visitors to come and enjoy its wonders. By then, businesspeople had already rediscovered the country with its 3% average economic growth over the past two decades. Located in the northwest of South America, Colombia has easy access to both the Pacific and the Atlantic oceans. Half of its territory is covered with forests. Most economic activity is concentrated in the triangle formed by the capital city Bogotá (2,700 mts above sea level, 8 million inhabitants), Medellín (1,500 mts, 2.5 million, world's most innovative city in 2013) and Cali (1,000 mts, 2 million).

The current President, Mr. Iván Duque will be in office until August 2022. The provincial governors and mayors will have until December 2023. In general, the political mood can be considered liberal, creating fertile ground for a dynamic business climate and positively affecting the waste and circular economy sector.

Key Indicators	
Size	Colombia is 27.5 times the size of The Netherlands
Population (2019)	50.3 million ⁱ
Nominal GDP (2019)	USD 323.5 Billion world rank: 40 ^{thiii}
GDP per capita (2019)	USD 15,634 ⁱⁱⁱ
Import from the NL (2018)	USD 26 million ^{iv}
Economic growth (2018)	2.6% ^v
Ease of doing business rank (2019)	67/190 ^{vi}
Corruption index (2019)	96/180 ^{vii}
Unemployment rate (2019)	10.5% ^{viii}
Currency	Colombian Peso (COP)
Time difference NL	-6/-7 hours

1. The Waste/CE Market Analysis

1.1 Facts & Figures^{ix} Waste Generation and Composition

In 2018, Colombia generated around 14 million tons of Municipal Waste or 0.77 kilograms per person per day. 61.5% was organic waste and 30% recyclable materials (National Planning Department DNP, 2016). 50% of the recyclables came from packaging (Ministry of Environment, 2018). According to DNP and the World Bank, 83% of Municipal Solid Waste ends up in landfills and 17% is recovered, mainly by waste pickers. On top of this, the country generates 25 million tons of construction and demolition (C&D) waste every year (DNP, 2016). The pork and poultry industries together generate 135 million tons of organic waste per year (2015) (Gobierno de la Republica de Colombia, 2019). In 2016, Colombia generated over 300,000 tons of hazardous waste, of which 388 tons were stored, 135.486

tons externally treated, 48,230 tons recovered, and 121,112 tons disposed of in special secure landfills^x.

1.2 Collection and Disposal

1.2.1 Waste Collection

The coverage of collection and transport of non-recyclable waste increased from 97.3% in 2015 to 98.6% in municipalities (2017)^{xi}. Only Bogotá works with five waste companies (one per zone). In the rest of the country, households can decide which waste company will collect their waste. Colombia has 62 official regional landfills, receiving solid waste of 961 (out of the 1,103) municipalities, 96% of the Municipal Waste generated in the country. The rest of the waste is disposed of in (illegal) dumpsites. In 2018, according to the SSPD and DNP, 10.3 million tons of solid waste were disposed of in authorized and unauthorized sites (Superintendency of Residential Public Services SSPD, 2019).

1.2.2 Waste Disposal

The table below shows the landfill situation in Colombia's main cities in 2017 (SSPD and DNP, 2018).

Cities	Landfilled/year [Million Tons]
Bogotá	2.2
Cali, Medellín, Barranquilla	0.7
Cartagena, Bucaramanga, Santa Marta and Pasto	0.2

The average disposal fee in landfills is €8 per ton. At Bogotá's Doña Juana site the fee stands at €13.50 per ton. The major (regional) landfills are operated by the biggest waste companies of Colombia such as Veolia and Interaseo. Landfilling is the cheapest option, so 90% of the waste ends up there. Close to 50% of the landfills will reach capacity within 10 years, so municipalities are eager to look for alternative solutions. Citizens are opposing new landfills in their vicinity. Because of the complicated geo-hydrological conditions in the Netherlands, landfilling and the extraction of gas from landfills continue to be areas of outstanding expertise. Therefore, opportunities for Dutch companies include the extension of the useful life of existing landfills, the introduction of waste diversion techniques such as post collection separation and the development of new sustainable landfills.

1.3 Value Chain

1.3.1 Recycling

Traditionally, recycling activities in Colombia have been dominated by the informal sector (also referred to as the "waste pickers"). The government estimates that there are between 60,000 to 100,000 waste pickers in the country. The Colombian waste industry is aware that recycling rates can only be raised through the introduction of professional collection and processing methods. Therefore, one third of the waste pickers are now participating in a process of professionalization. In 2016, Decree 596 allowed the waste pickers to get paid for their activities (collecting recyclable waste), which is additional income to the selling price of the recyclables themselves.

The Ministry of Housing and the Ministry of Environment have regulated the colors of bags to be used in source separation (black: non-recyclables, white:

recyclables, green: organic waste). This system must be implemented starting 2021. Besides, the national government and the industry are looking for machinery and knowledge to have a more efficient recycling chain. Because of the high transport costs, the companies are mainly looking for regional solutions. For example, in 2019 the biggest PET-bottle recycling company has made a €23.6 million investment in machinery^{xiii}. In Colombia, the recovery rate of C&D waste is a mere 2% (DNP, 2016). Unfortunately, most C&D waste is still dumped as mixed waste at illegal sites (rivers, unused areas) or special dumpsites. Dutch companies have a lot of experience in producing Solid Recovered Fuel (SRF) from mixed wastes. SRF is a promising waste management option that makes optimized use of the calorific value of non-recyclables.

1.3.2 Composting

As mentioned, 61.5% of Municipal Waste in Colombia is organic material. Because of the low tipping fees, it is still cheaper to landfill than to recover this material. As a result, and because of a lack of composting standards, composting is not yet widespread in Colombia. However, in the province of Cundinamarca which surrounds Bogotá, there are 16 composting plants. These plants have found the perfect location for a sustainable business: close to the supply (organic waste) and demand (agriculture). In the Netherlands, in the early nineties, source separation and separate processing of organic waste from households and markets became mandatory. As a result, Dutch companies have a long track record in composting and anaerobic digestion.

1.3.3 Waste to Energy

In Colombia, Waste-to-Energy (W2E) could be a viable option, especially around big cities. However, low tipping fees slow down developments. Interestingly, on the Colombian island of San Andrés (off the coast of Nicaragua, 65,000 inhabitants), a W2E plant was built in 2011. Unfortunately, due to technical and financial difficulties the plant was never put into operation.

Early 2020, the regional government of Medellín, the Ministry of Housing and the company Empresas Públicas de Medellín (EPM) have expressed their interest in building a W2E-plant in Medellín. This may be the best option for a profitable mass burn incineration

plant in Colombia because of the distance to the landfill La Pradera and the involvement of EPM.

The cement industry is using different waste streams (tires, flexible plastics) for their plants and the poultry industry is investigating the recovery of chicken manure. The company Kikes installed the first plant in 2017 (see photo)^{xiii}. Agriculture residues such as bagasse have long been in use as sources of energy for off-grid solutions.



[Photo: plant ofde Caloto, Cauca], (Valle del Cauca.2017), Colombia.

2 Governance on Waste/CE

2.2 Waste Management

The Ministry of Housing is responsible for Municipal Waste policies, sectoral investments (e.g. in landfills) and provides technical support to municipalities. The Ministry of Environment is in charge of special waste streams (non-MSW) and EPR-schemes. They cooperate with the Ministry of Agriculture on organic waste. The Superintendency of Residential Public Services (SSPD) controls the waste entities and the Regulation Commission of Potable Water and Basic Sanitation (CRA) designs and implements the waste tariffs. Both are part of the Ministry of Housing.

The regional and local governments are responsible for the waste management execution. For this, the municipalities must design and implement their 12-year municipality waste management plan (PGIRS). The PGIRS must be updated this year, being the first year in office for the mayors and governors.

The Ministry of Housing recently introduced a landfill tax which initially is set at €1.80 per ton in 2020, to promote recycling. If properly enforced, the 10.3 million tons of waste landfilled annually will fetch €18.5 million

per year. If this works as planned, this situation will create new opportunities for Dutch companies to sell recycling systems.

2.1 Policy Landscape: Circular Economy

The Ministry of Environment and Sustainable Development and the Ministry of Commerce, Industry and Tourism designed the National Circular Economy Strategy^{xiv} (ENEC), published Nov. 2018. The ENEC promotes strengthening of value chains and contributes to meeting the goals of the Paris Agreement. The National Circular Economy Strategy in Colombia will provide additional momentum to the quest for sustainable waste management. The strategy emphasizes six lines of action represented in six cycles: Industrial materials and consumer products, packaging materials, construction and demolition materials, biomass, water, energy sources and flows. The strategy aims to increase the rate of recycling and waste utilization, which today stands at 8.7%, so that it rises in the year 2030 to 17.9%.

The table below provides some highlights for five out of the six priority lines.

1/ Industrial materials / consumer products
Concrete CE targets for EPR norms
2/ Packaging materials
EPR target: 10% recovery in '21, 30% in '30
3/ Construction and demolition materials
10% recovery rate by 2022 + pilot plants
4/ Biomass
+20% recovery; special tariff organic waste
5/ Energy
+10% installed biomass generation by 2022

In waste, the country is betting heavily on Extended Producer Responsibility systems, on pilot projects and, to some extent, on waste taxes. The above list provides guidance to Dutch exporters of goods and services in waste/CE as to where opportunities will emerge.

In biomass, it is estimated that the Colombian economy annually produces about 178 million tons of residual biomass from agricultural crops (41%), livestock activities (59%), and the residential sector (<1%) (UPME, 2018). Dutch companies specialized in converting this biomass into valuable materials or energy will have significant opportunities.

3 Financial Aspects

The waste and circular economy sector in Colombia is underfinanced. But the situation is improving, with waste pickers being compensated for their efforts, a waste tax in the first phase of implementation (with the proceeds destined for recycling projects), a tax exemption for import of environmental technology and mandatory EPR systems which are expected to pump additional funds into the system. There is a lack of financial instruments to stimulate investments. However, the national government provides additional funds and incentives to support sustainable development projects. The Ministry of Commerce has special entities, such as Innpulsa, Bancoldex and Findeter. In October 2020 Innpulsa started the project “activating the circular economy”. Besides, there are private investment options such as Waste2Worth. The “Investment Guide 2020” of PWC provides a good overview.

4 Stakeholders

In many municipalities, the collection and transport of MSW is mostly carried out by the local government (they acquire the machinery). The other waste streams (hazardous waste, industrial waste and EPR-streams) are managed by the private sector.

The biggest waste companies in Colombia are Interaseo and Veolia. Both are international companies that do collection, transport and landfill management. In addition, Veolia has the highest market share in collection and processing of hazardous waste in Colombia. In Medellín, the public service company EPM and its waste company Emvarias are responsible for waste management. As a result of the free competition in the Colombian waste sector, in the past years some 400 EPR Producer Responsibility Organizations have been created. For tires there are 17, small batteries 30, computers 46 and for packaging waste 25, although the implementation of the norm has not started yet. A thorough review of the value chain is therefore particularly relevant. It is important to mention that in Colombia, all private sector companies tend to be member of one or more associations. For example, the members of the Plastic Pact committee (apart from the Ministry of Environment) are Acoplásticos, ANDI, ANR and Andesco. These associations represent the

plastic producers, the Colombian industry, the waste pickers, and the public service companies, respectively.

The main associations in the sector are:

- [Andesco](#)
- [ANDI](#)
- [Fenalco](#)
- [Acodal](#)
- [Camacol](#)
- [Acoplásticos](#)

5 Dutch–Colombian Cooperation

The Netherlands had a Partners in International Business Program in waste/CE in the period 2014 - 2016, in which the companies VDL Translift, Geesinknorba, WAVIN Overseas, Hofstetter/AWT and Wequips/Bollegraaf participated. Some examples of Dutch waste equipment already in operation in Colombia include several RAVO sweeping machines in Bogotá, Cartagena and Medellín, among other cities. ATN Engineering has installed a recycling unit for fridges. ENKI Engineering has delivered a test installation for the digestion of POME in Santa Marta.

On the 6th of August 2020, the Dutch embassy in Bogotá signed an MoU with the local government of Magdalena (Caribbean coast) focused on circular agriculture^{xv}. Besides, the embassy is working on an MoU with the Ministry of Environment and the Ministry of Agriculture on circular economy, with special focus on circular agriculture. In addition, where it comes to C&D-waste, the Netherlands will be special invited country for the Camacol^{xvi} international seminar next year. This will be a huge opportunity for companies working in this sector.

6 Business Opportunities

It is obvious that, in Colombia, business opportunities are abundant in the waste/CE sector. Let us single out some prominent ones.

6.1 Processing of Organic Waste from Municipal, Industrial and Agricultural Sources

Overall, the country lacks knowledge on the production and application of high-quality compost and biogas. Dutch companies can step in and provide technological

and infrastructural solutions for compost and biogas production.

As part of the circular economy strategy, the national government aims to implement two biogas pilot projects before 2022. In Bogotá, city authorities are preparing the construction of a pilot composting plant and the production of biogas at the Doña Juana landfill. The city of Medellín plans to build a biogas plant during this governmental period (2020-2023). This project is in the design phase^{xvii}.

Since in Colombia only very basic technologies for manure treatment are applied, there are opportunities for Dutch companies with equipment to produce biogas or compost out of pork and chicken manure. Holland House presented these opportunities in the study “*More than Manure: Opportunities for the Dutch technology sector and know-how on manure valorization in the Colombian pig and poultry sector*”, executed for the Dutch Embassy in Bogotá.

It is important to mention that mid-size cities like Pereira and Armenia are looking for small scale solutions to produce electricity from organic waste generated at their marketplaces. Several waste companies and chambers of commerce are on the lookout for international options.

6.2 Recycling Technologies, for EPR Packaging, Tires and Waste Electrical and Electronic Equipment (WEEE)

In the coming years, EPR-systems for tire, WEEE and packaging waste must comply with higher targets. Private companies operating these systems are looking for quality equipment to improve their value chain (collection, separation, and recycling). In the Netherlands, the first EPR-systems were implemented 20 years ago, because of this, Dutch companies can help the Colombia-schemes with their knowledge (consultancy) and recycling equipment.

At the moment, private companies together with local authorities are preparing the construction of a plastics recycling plant near Bogotá and a glass-recycling plant on the Caribbean coast. Upcycling of tires and adequate

recycling of refrigerators are also key to professionalizing the value chain of the EPR-schemes.

6.3 Processing of Construction and Demolition (C&D) Waste

To date, in Colombia, only three cities have formal recycling plants for C&D waste. Mid-sized cities are looking for local and regional collection and recycling solutions to solve the problems caused by the illegal dumping of mixed waste in rivers and other ecosystems.

Besides, the construction sector offers opportunities for Dutch companies active in the first phase of the building life cycle. Colombia lacks knowledge on how to close the loop of building materials, starting at the design phase (eco-design). Architects and suppliers of sustainable construction materials can fill this void. More information is presented in the report “*Circular Construction in Colombia: Business Opportunities for Dutch Companies*”, a joint research project between the Netherlands Embassy in Colombia and Holland House.

7 Concluding Remarks

The Colombian waste and circular economy sector is developing quickly, creating multiple business opportunities, especially with private sector entities.

Additional opportunities are in consultancy services, both in waste and circular economy. Bi- and multilateral organizations are increasingly keen on working with Colombia in this area. At this moment, several consultancy projects are being prepared concerning plastics and organic waste with EU funds and the World Bank.

It has to be kept in mind that Dutch equipment and services can be perceived as relatively expensive in Colombia. The value depreciation of the peso relative to the euro in the recent past has not helped this situation. It is therefore important to stress the life cycle costs of products and to look for customers and partners who prefer quality over the lowest investment cost.

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