This paper aims to provide a better understanding of business opportunities for the Netherlands in waste/circular economy sector in Peru.
PERU

Country Information

Peru is famous for its culture, the ancient Inca city of Machu Picchu and its delicious raw fish dish called ceviche. The country, bordered by Colombia, Ecuador, Brazil, Bolivia and Chile, is rich in natural resources such as copper, silver, lead, zinc, oil and gold. Peru’s economic development has in large part been driven by this abundance and by the high commodity prices on the global market (MVO Nederland, 2017).

The capital (and main) city Lima is home to 10 million out of the 31.8 million Peruvians. The city is divided into 43 districts, which all have full autonomy regarding waste management.

1. The Waste/CE Market Analysis

1.1 Facts & Figures Waste Generation and Composition

In 2018, Peru produced 7.3 million tons of Municipal Waste, or 0.63 kilograms per person per day. 57.7% was organic waste; 18.3% recyclables such as plastic, aluminum and paper; and 24.1% was residual waste. Of the 20,000 tons of garbage produced daily, a third is generated in Lima. According to official data, only 1% of the municipal waste is being valorized; 4% of the dry recyclable waste and 1% of organics. Information is scarce and mostly limited to the formal sector, even though the informal sector recycles more than the formal sector.

Additionally, 28.9 million tons of non-Municipal Waste per year is generated, 59.5% of which comes from industry, 16.1% from agriculture and 9.5% from mining (National Environmental Action Plan 2011-2021 PLANAA).

1.2 Collection and Disposal

1.2.1 Waste Collection

Peru has a Municipal Solid Waste collection coverage of 93.7%. However, in 80% of the municipalities the waste ends up at dumpsites (PLANAA). Only 6.4% of the districts (119 out of the 1874) dispose of their solid waste at controlled landfills. However, these 119 districts are important in terms of volume. 49.2% of the total amount of Municipal Solid Waste (MSW) is generated there. Officially, almost 15% of the municipalities practice open air burning of the waste, but in practice most of the municipalities have an illegal dumpsite, since it is cheaper.

In some medium-sized cities other private companies collect and transport the waste to the landfill, such as the French companies Seche and Veolia and the Colombian company Interaseo. Companies interested in offering waste management services must be officially registered at the Ministry of Environment (MINAM). The list of companies can be found here.

1.2.2 Waste Disposal

All in all, the country has 52 landfills (four of which in Lima) and 1,585 dumpsites. 98% of the dumpsites should be closed while 2% could be converted into official landfills. Because of their extensive knowledge, Dutch consultancy and equipment producer companies can play an important role in this process.
In Lima, the collection of 9000 ton of municipality domestic waste is carried out daily by six private companies. Innova and Petramas operate both two of the four landfills. The municipalities are the owners of the landfills and determine which company gets to operate them. The tipping fee for waste companies is approximately € 3.95/ton.

Hospital waste is disposed in the landfill, at a separate location, but without further measures. Lima has two small incinerators for hospital waste.

1.3 Value Chain
1.3.1 Recycling

In Peru, there are more than 98,000 informal waste pickers, and only 1,800 formal ones	extsuperscript{iii}. As a result of the “Waste Pickers Law” (Law No. 29419), local governments primarily focus on informal waste pickers in their recycling plans. As a result, most of the organizations are (in)formal small companies, which makes it rather difficult for Dutch companies to find business opportunities in the collection of municipal recyclable waste.

The separation of organic and inorganic waste is underdeveloped and, in most cases, does not take place at all (MVO Nederland, 2017). As a result, the national government implemented a strategy on source separation with the local governments (PLANAA). If the municipalities comply with their goals, they receive money from the Ministry of Economics and Finance (MEF), as established in the Decree Nº 362-2019-EF	extsuperscript{iv}. The implementation of selective collection systems can offer opportunities for Dutch equipment producers, but as well for organisations that specialize in data management.

When it comes to special waste streams, the country has taken first important steps. For example, Extended Producer Responsibility (EPR)-legislation for E-waste was implemented in 2012, then updated in 2019	extsuperscript{v}. This legislation establishes that 50% of used electronics has to be treated and recycled adequately in 2017, rising to 100% in 2021. In addition, in May 2013 the National Superintendency of State Assets has approved a national directive for the adequate discharge and treatment of E-waste of public entities. This is around 30% of the total E-waste	extsuperscript{vi}. Although the national government has regulated E-waste, in most cities the E-waste is still dumped along with domestic solid waste, or delivered to one of the three national recycling plants, located in Lima (PLANAA). Control and enforcement are weak, among others because of lack of human resources.

In October 2020, MINAM presented a draft version of EPR-legislation on tires	extsuperscript{vii}. A final version is expected soon. This legislation will open new markets for Dutch companies in tire recycling. In the third year after approval of the law there will be a 15% recycling target.

The Peruvian government is also working on EPR-legislation for batteries. This legislation is expected to be presented by the end of 2020 or beginning 2021. As for packaging waste, the country decided to first gather information on how much packaging waste is being produced and by whom before implementing this EPR-legislation. The Netherlands, being one of the first country that implemented this legislation, could take a proactive role in defining the framework, data gathering and supporting packaging producers.

An inspiring example of Peruvian-Dutch cooperation in plastics recycling is already in full swing. Banana plantations in Peru use plastic bags to protect the bananas from bugs and enhance fruit growth. These bags tend to end up in the environment after use. The Dutch banana supplier Agrofair, the consultancy company WASTE and the technology provider Plastic Fantastic have teamed up to develop corner boards out of recycled plastics to protect the banana pellets during shipment. The first recycling line has now been placed at one of AgroFair’s banana suppliers. The corner boards are being produced, saving a lot of virgin plastic.

In Peru, the management of construction and demolition waste (C&D waste) is regulated since 2013	extsuperscript{viii}. The Ministry of Housing obliges producers to present a waste management plan annually, which includes among others amount of waste produced, a strategy on classification, separate collection and final disposal and education campaigns. However, to date the country does not have any Construction & Demolition waste recycling facility. As a result, Construction & Demolition waste ends up in landfills or is dumped illegally, for example at designated beaches. In October 2020, the Ministry of Housing presented a new law	extsuperscript{ix} to incentivize the valorization of Construction & Demolition waste and the use of recycled building materials. The design of this law
and the demand for (recycling) infrastructure offer promising business opportunities for Dutch companies.

1.3.2 Composting

Agri-food is one of the biggest economic activities in Peru and also one of the largest exporting sectors, especially to the Netherlands. According to MVO Nederland (2017), for many Dutch (start-up) companies it is of great interest to invest in the valorization of agri-food residue streams in Peru, both from an economic and an environmental perspective. As an example, experts from Wageningen UR and TNO are already looking for opportunities to apply their expertise in Peru. Last year, the Dutch Agricultural Counsellor participated with several Dutch companies in the biggest Latin American Poultry Congress. Among other options they presented solutions for the valorization of organic waste.

On the other hand, the national government obliges municipalities to properly treat and use their organic waste. The compost must be used to improve the soil of municipal parks and gardens. Sectoral experts indicate that Peruvian companies are looking for solutions to process fruit, vegetables, fish and seafood for composting and animal feed.

1.3.3 Waste to Energy

Waste to Energy has been applied in Peru in a sense that the company Petramas installed a power plant at the Huaycoloro landfill site near Lima (Worldbank, 2012). The grid connected system converted methane of the landfill into 4 Mega Watts of clean electricity, enough to power 9,000 homes. This project was carried out under the Netherlands Clean Development Mechanism Facility. The carbon credits helped to sustain the project. A similar project was carried out at the former waste dump known as La Cucaracha in the Municipality of Callao.

The Ohio based company Eco Waste Solutions installed a Waste to Energy batch system facility for a mining community of 1,600 in the Alto Chicama region of Peru. 2 tons of solid waste and 250 l of liquids per day are being processed in parallel through a pyrolysis process.

To date there is no large-scale waste incineration facility in Peru, although Lima appears to have the appropriate size for it. The Peruvian Government has not yet developed a strategy to implement this.

2. Governance on Waste/CE

2.1 Waste Management

The Ministry of Environment (MINAM), created in 2008, is responsible for the National Solid Waste policy. It has designed and implemented the national solid waste management plan (PLANRES) and supports the provincial (PIGARS) and district (PMRS) solid waste management plans. The PIGARS 2015-2025 of the Municipality of Lima is the most important local plan.

The National Environmental Plan 2011-2021 (PLANAA) of MINAM includes specific guidelines on waste management and a special chapter on promoting public and private investment in the sector. The PLANAA specifies the following goals for 2021:

- 100% of the non-recyclable waste is treated and disposed of adequately
- 100% of reusable solid waste is recycled
- Compared to 2012, the generation of hazardous waste is reduced by 20%
- 100% of hazardous waste is treated properly and disposed of in appropriate facilities

It is clear that these goals will not be met by 2021, but no doubt it is important and useful to aim high.

The PLANRES 2016-2024 was developed by the government, in partnership with the United Nations and 800 stakeholders from the public, private and civil society sectors representing a total of 271 institutions in Peru.

The Ministry of Production (PRODUCE) formulates, executes and supervises the national and sectoral Industrial policies. In the field of waste management, the Ministry works together with MINAM in the supervision and control of the EPR framework and the management of several funds.

Decree nº 1278, published in December 2016, regulates the Law on the Integrated Management of Solid Waste and lays the foundation for the transition towards a circular economy. In May 2020, this law was updated. The new version nº 1501 facilitates the reactivation of the economy after the pandemic. It contains several important changes which make it easier for companies to recycle their solid waste. The obligation...
that the waste must be collected and transported by official service providers was skipped. Companies now can deliver their waste to formal recyclers’ associations. Besides, the new law includes less strict requirements for waste collection centers and allows companies to valorize their organic waste (<2tons per day) without a license. The latter change can make it easier for Dutch companies to offer their small scale and mobile equipment. In addition, the Decree 1278 makes it possible to exchange C&D waste between construction projects without a license.

In December 2018, Law nº 30884 was approved. This law regulates the use of single use plastics as well as plastic packaging. It introduces the obligation for producers to use at least 15% postconsumer recycled material in PET bottles starting 2022. It also defines incentives for replacing single use plastic bags by reusable ones.

In Peru, the different ministries are responsible for the waste that is generated in their sector. The Ministry of Economy and Finance (MEF) plays an important role in financing the different waste programs designed by MINAM., in 2018 220 million USD in incentives were given.

2.2 Policy Landscape: Circular Economy

The National Competitiveness and Productivity Plan 2019 – 2030 includes the objective to “generate the conditions for the transition towards a circular and eco-efficient economy”. As a follow-up to this, MEF is preparing two so called roadmaps: one for the industrial sectors and another one with guidelines for fishing and agriculture.

At the end of 2018, the National Society of Industries (SNI) launched a Circular Economy Commission. The main objective was to find out how the Peruvian industries are going to make the shift towards circular economy models. The Commission consists of Coca Cola Peru, Pamolsa, Owen Illinois Peru, Nestlé Peru, OPP Film, the Cooperation of Plastic industries and Tetra Pak Peru.

The SNI worked together with MINAM and PRODUCE to prepare the Circular Economy Roadmap for the Industry. This Roadmap was approved and presented by the national government in February 2020. Currently, the government is developing the Roadmap for the fishing and agriculture sectors (due by the end of this year).

In January 2019 Peru signed the New Plastics Economy Global Commitment, promoted by the Ellen MacArthur Foundation.

3. Financial Aspects

In Peru, citizens pay their fee for collection and final disposal directly to the municipality as part of the municipal tax. This appears to be a good arrangement but in practice, only 18% of residents pay for waste management (MVO, 2017). The new waste management law allows municipalities to charge the waste tax through the electricity or water bill.

Various funds can be used to implement waste management projects:

- National Environment Fund – FONAM
- National Fund for Science and Technology – FINCYT
- Fund for the Promotion of Regional and Local Public Investment - FIDT
- The National Program of Innovation for Competitiveness and Productivity: Innóvate Perú.

Additionally, companies can use their income taxes to invest in infrastructure projects.

4. Stakeholders

As presented in the report, the private sector in Peru plays an important role in the transition towards a circular economy. Many companies have been involved in the design of the national waste management policy and the roadmaps. In many cases the Government expects the private sector to play an active and risk-taking role in the development of infrastructure for waste management projects through Public Private Partnerships (PPP’s). For Dutch companies this means that by default they will have to work with and through Peruvian partner companies, as they are not likely to enter as investment partners themselves.

Peru has the following important private associations:

- National Society of Industries
- Foreign trade society: ComexPerú
• **National Quality Institute**

Like many Latin American countries, Peru has an NGO created by multinational companies to finance the implementation of recycling projects. In Peru, this organization is called Reciclame. Overall, companies in the beverage sector such as Coca Cola and Arca Continental Lindley are taking a frontrunners role by implementing waste management and circular economy projects. These companies also tend to be member of one or multiple committees of the national society of industries or one of the chambers of commerce.

5. **Dutch–Peruvian Cooperation**

Verstappen Environmental Consultancy and five subcontractors from the Netherlands and Peru (private sector and NGO's) are executing the study “Solid Waste Management Peru, Lima and Piura”. The main activities include waste characterizations, optimization of existing landfills and methane extraction, design of new landfills, rehabilitation of illegal dumpsites and organizing the involvement of the informal recycling sector. The project takes place between 2019 and 2021 and is carried out in close cooperation with the Netherlands Embassy and RVO.

Bart van Hoof of the University los Andes in Bogotá is helping the Peruvian government with the design of the national circular economy strategy.

6. **Business Opportunities**

After their study in Cusco in 2017, MVO Nederland concluded that in Peru there is the will to work on the waste issue, but the challenges are as yet numerous. These include a lack of technical know-how and hardware, an absence of efficient logistics and limited resources of local governments to tackle the challenges at hand (in terms of budget as well as human resources).

As a result, the following business opportunities were singled out.

6.1 **Sustainable landfilling**

Most of the waste in the country is still deposited in dumpsites and only a small fraction of municipality waste is valorized. The process of closing illegal dumpsites and designing and implementing of landfills that meet official requirements is part of the Dutch waste management history. Hopefully, the ongoing study of Verstappen Environmental Consultancy will shed additional light on specific opportunities for Dutch companies concerning the sustainable management of landfilling.

6.2 **Processing of Organic Waste**

The scope and importance of the agriculture sector makes the valorization of agri-food residue streams in Peru an interesting market for Dutch companies. Dutch companies no doubt can contribute useful know-how and infrastructure for efficient organic waste management, for municipal as well as the industrial sector. Promising areas include small-scale and mobile equipment for the processing of organic waste, for example of municipal marketplaces.

6.3 **Tire recycling and C&D waste**

In Peru, the management of special waste streams is not fully developed yet. Dutch consultancy companies and providers of equipment can help the country with the development of these frameworks, business models and equipment. For example, the design of necessary EPR systems and offering solutions for tire recycling and recycling infrastructure for C&D waste to enhance a circular economy.

7. **Concluding remarks**

Since 2017, the government has made big steps forward by introducing the first circular economy roadmap, the updated waste management law 1501 and the C&D waste valorization legislation. Additional steps should be taken by the different ministries and their sectors to have a sustainable waste management system, in not only the principal cities but as well in the rural areas. Afterwards, the country will be ready to implement a circular economy strategy.
References


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