

# **Analysis of the EIA of Landfills for Sustainability in Perú**

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## **Abstract**

Solid waste represents a serious problem that needs to be solved. In countries such as Perú, landfills are still viable alternatives for waste management (Minam, 2023). However, its implementation has many aspects, both economic, social and environmental. This article will analyze in a comparative manner the Environmental Impact Assessments (EIA) carried out in Perú on solid waste (Senace, 2023), in order to know their alignment with the Sustainable Development Goals, placing special emphasis on Goals 3: Good Health and Well-being, 6: Clean Water and Sanitation, 11: Sustainable Cities and Communities, 12: Responsible Consumption and Production and 14: Life Below Water (INEI, 2023). This article will seek to know if the landfills evaluated with the respective environmental management instrument contribute to the fulfillment of the Sustainable Development Goals and therefore to a Just Transformation. To assess alignment with the Sustainable Development Goals, the monitoring and follow-up system of its indicators will be used, and for the identification of the incidences of socio-environmental conflicts, the monthly reports of social conflicts of the Peruvian Defensoría del Pueblo will be used.

## **Introduction**

Solid waste is a global problem. In countries such as Perú there is a lot to be done regarding this issue, however, it is a problem that causes conflicts, especially in areas where waste management is not the most adequate and the population suffers the effects of pollution.

This article relates the parameters studied in the EIAs to the SDGs and how they can help measure whether environmental management instruments can help achieve the 2030 targets. In addition, environmental conflicts related to solid waste in 2023 are analyzed.

## **Background**

### *Solid Waste in Perú*

In Perú, 21 million tons of solid waste are generated every day. (Servindi, 2024), of which only 1% is recovered. (Servindi, 2024).

According to Gómez, R., & Flores, F. (2014). In Perú, the view on waste management is changing, from being simply a cleaning issue to one that involves recycling and integrated management. The authors note that there are economic incentives to reduce waste going to landfill and an increase in recycling.

According to the National Environmental Information System, the composition of municipal waste is as follows: 9.2% hazardous, 13.7% non-usable, 22.5% inorganic, 54.6% organic (SINIA, 2019).

### *Landfills in Perú*

According to Duran (2020), 55% of the solid waste generated in Perú is taken to a landfill, the rest is taken to illegal waste dumps.

Landfills are infrastructures for the safe final disposal of solid waste based on engineering methods. (OEFA, 2022).

Mixed landfills are those that also handle hazardous waste. (OEFA, 2022).

Perú has 47 landfills and 6 security landfills. (SINIA; 2019).

### *In Latin America*

According to Gonzales & Stamm, (2022) in Chile, landfills have not been the complete solution to the solid waste problem in Santiago de Chile, in fact, they have been the

creators of other environmental problems, as well as social conflicts. The authors point out that landfills have caused several environmental injustices.

The author Mahecha Bustos (2019) describes the case of the Doña Juana landfill located in Colombia, which ended up becoming an environmental problem for this country, one of the causes being its location. The article indicates that landfills can cause major problems of inequality in the population, due to the conflicts they can generate in the surrounding population.

The author Lara (2022) carries out an analysis of the sanitary landfills "La Perseverancia" and "Loma de Mejía" located in Mexico, which present conflicts due to their location and protests of the population. The researcher concludes that public authorities have a fundamental role to play in avoiding or reducing this type of conflict.

According to Guevara, et al (2020) in Bariloche, Argentina there are conflicts related to solid waste due to informal businesses around them. One of the main liabilities of this area is solid waste. The landfill is more than 40 years old and presents the problem that leachate contaminates the water resource.

## **Methodology**

The Environmental Impact Studies related to the landfill published on the SENACE website, which is the Peruvian authority in charge of approving such studies, have been used. The EIAs that are in accordance with SENACE and already approved, have been used.

The content of these EIAs has been compared with the SDGs and their targets to determine whether they are properly aligned.

In addition, the report published by the Peruvian Defensoría del Pueblo for December 2023 has been used to learn about socio-environmental conflicts related to solid waste management.

## **Environmental Impact Assessments (EIA) of landfills and their alignment with the Sustainable Development Goals.**

### EIA 1

Environmental Impact Study 1 corresponds to a safety landfill for the treatment and final disposal of hazardous solid waste located in Trujillo, Peru. The project aims to reverse the impacts of poor waste management as waste is currently taken to a landfill.

The approximate generation of industrial waste in the area is approximately 10 to 13 tons per day.

According to the EIA, the potential impacts of the project are:

Atmosphere: air quality, emissions, odors and noise.

Soil: Morphology and relief, land use change and soil quality.

Flora, Fauna, Cultural status, Socio-economic environment.

### EIA 2

The project deals with a safety landfill in the south of the country, located in Moquegua, where the infrastructure to handle hazardous waste is scarce. This is a project that will also contribute to the recovery of waste before final disposal.

The potential impacts of the project are:

Physiography: alternation of the earth's surface.

Soils: Alteration of soil quality, change of land use, soil compaction.

Air: vibrations, particulate matter, gases, odors, noise

Wildlife: Habitat Loss

Flora

Social: economy, employment, fear of pollution.

### EIA 3

The third IEA is also a security landfill located in the south of the country, in the Arequipa region.

Impacts have been considered in the following aspects:

Air: particulate matter, noise, odors, emissions, vibrations

Soil: land use: relief, quality

Water: surface water quality, groundwater quality

Landscape

Flora

Fauna

Aquatic ecosystems

Customs

Employment

Economy.

These factors taken into account are related to SDG 3 as it is linked to the goal of reducing air, water and soil pollution by 2030.

It is related to SDG 6 as it is linked to the target of minimizing water pollution with chemicals by 2030. Landfills, if properly managed, are a technology that minimizes environmental pollution.

It is linked to SDG 11 as there is a specific target on waste management in cities. In Perú's growing cities, they are a necessary tool for solid waste management.

There is a relationship with SDG 12 as it talks about rational management of products throughout the life cycle. Therefore, it is important to think beyond landfills but in the life

cycle of their products, in responsible consumption, in design for recyclability, among other strategies linked to the circular economy.

And finally, there is a relationship with SDG 14, as landfills in Perú prevent waste from reaching marine ecosystems.

### **Social conflicts related to solid waste in Peru during 2023**

The issue of waste and sanitation accounted for 4.5% of conflicts in Perú. (Defensoría del Pueblo , 2023).

There are problems due to the mismanagement of solid waste, the lack of collection, as well as conflicts over the location of projects destined to be sanitary landfills.

Some examples:

- Landfill: Huánuco. No dialogue
- Landfill location: Puno: there is dialogue
- Farmers protest prevented the final disposal of waste in different areas of Pasco.
- Problems with waste treatment and final disposal. Junín
- Closure of landfill due to poor final disposal of waste and contamination. Cusco.

### **Conclusions**

- Landfills have different advantages in countries such as Perú, where other techniques for treating solid waste have not yet been developed.
- Landfills help improve waste collection, as well as decrease the amount of greenhouse gases produced. Solid waste is a complex issue to solve, especially when there are different social problems that afflict the population.
- Landfills are still a valid and necessary strategy in countries such as Perú for the proper treatment of solid waste.
- EIAs can be aligned with the SDGs to be instruments that help achieve targets at the national level.
- Solid waste is an issue of socio-environmental conflicts that there are many aspects related to the issue that must be addressed.

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