

# Water Optimization in Paraná: Implementation of a Wastewater Management Treatment Plant



National Technological University  
Paraná Regional School  
Civil Engineering Department  
Inglés I

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## Introduction

**1** Wastewater is defined as water that has been used and contains pollutants and contaminants from human activities.

**2** Paraná discards 350 million liters of wastewater into the Paraná River daily.

**3** The majority of wastewater is neither collected nor treated.



# Purpose of the Presentation

**01**

Raise awareness  
about wastewater

**02**

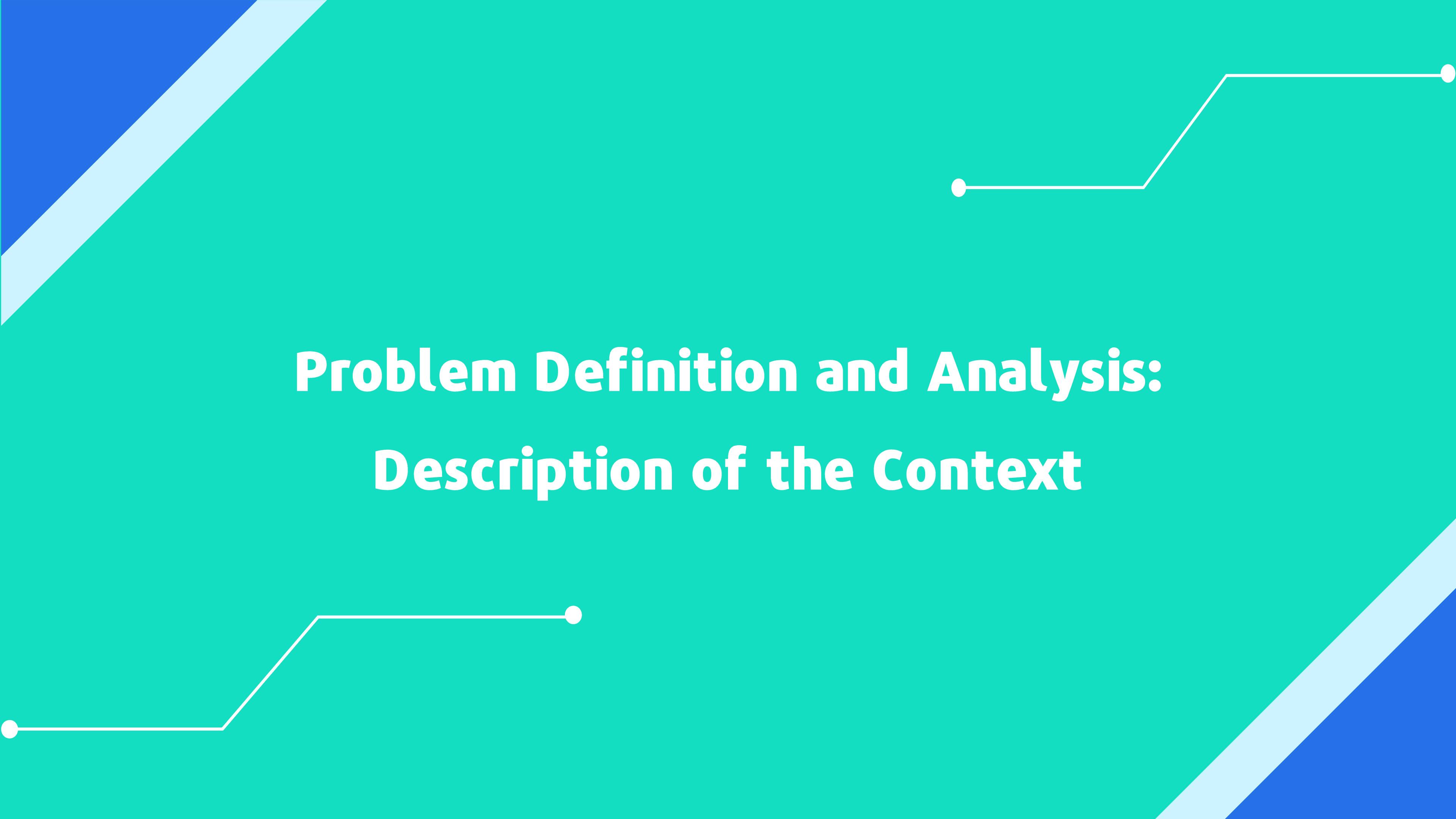
Show causes and  
consequences

**03**

Analyze a  
solution to the  
problem

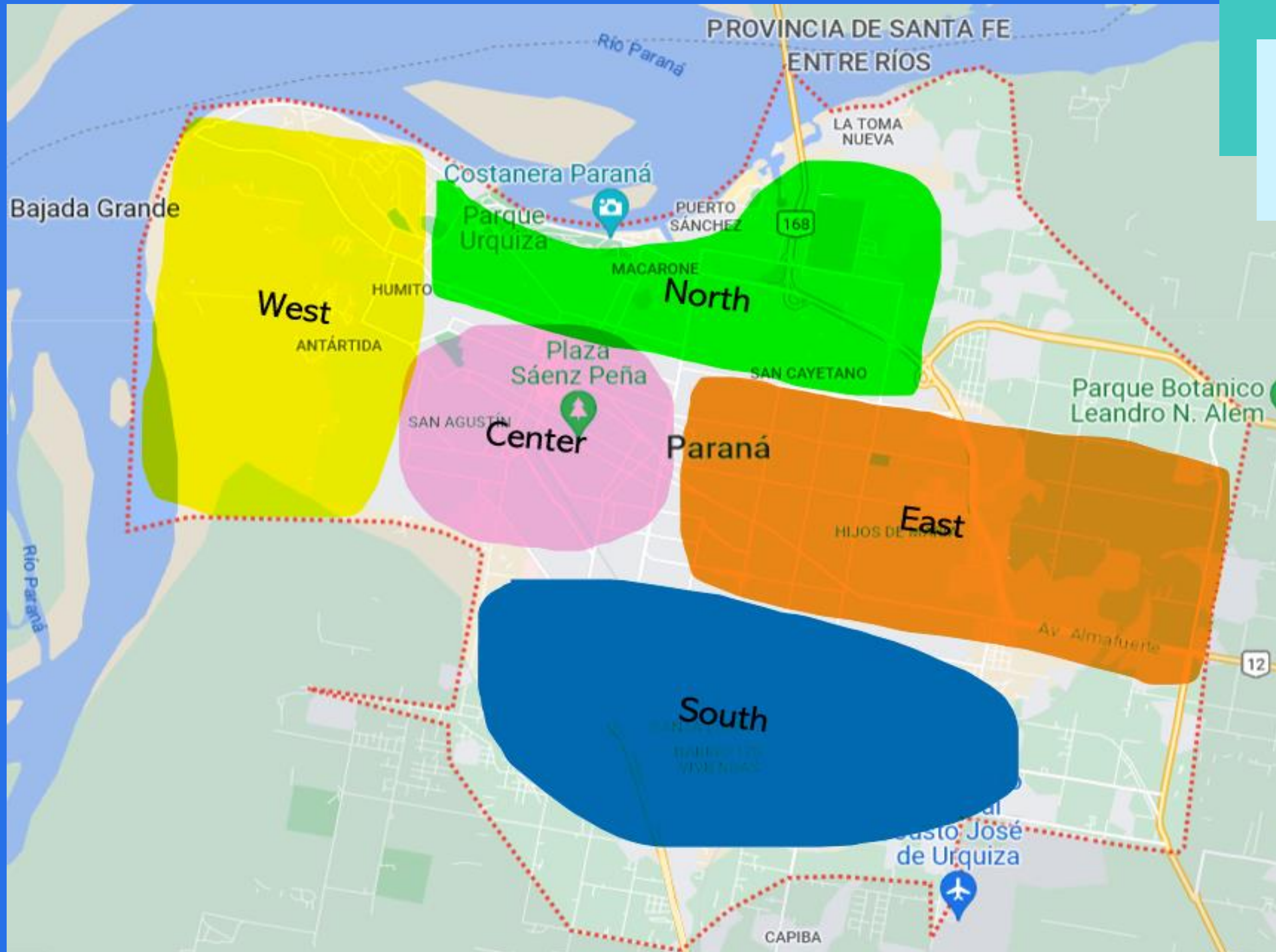
# Map of presentation

- **Description of the Context**
- **Problem Statement**
- **Description of Scenes that Help Picture the problematic Situation**
- **Identification and Analysis of the Causes that Give rise to the Problem**
- **Identification and Description of the Consequences**
- **Problem Approach**
- **Strengths and Weaknesses of the Proposal**

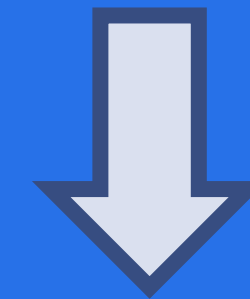


# **Problem Definition and Analysis: Description of the Context**



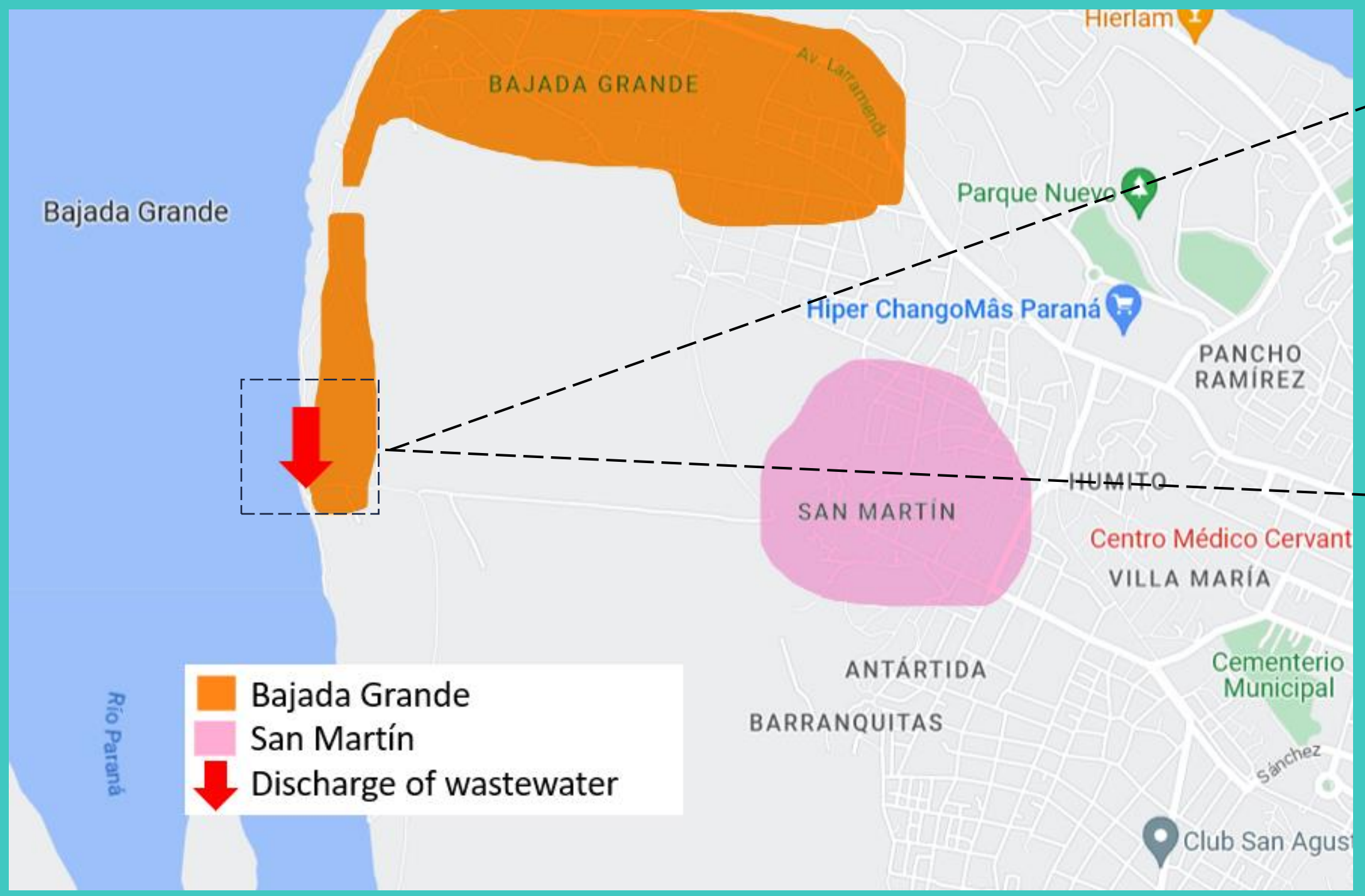


**Paraná, its important areas and the Paraná river.**



**The area analyzed in this work is the west, where the wastewater is discharged.**

# West



Discharge of wastewater



# **Problem Definition and Analysis:**

## **Problem statement**



## Problem Statement

There is no wastewater treatment system at this moment.

Wastewater from different uses contains a significant number of **pollutants**

**SUCH AS**

- Organic matter
- Pathogens
- Organic and inorganic chemicals
- Heat from water used in industries



**Problem Definition and Analysis:  
Description of Scenes that Help Picture  
the Problematic Situation**

**Problem Definition and Analysis: Description of Scenes that Help Picture the Problematic Situation**



**Untreated wastewater  
accessing the Paraná  
River**



**Problem Definition and Analysis: Description of Scenes that Help Picture the Problematic Situation**



**Industrial and untreated wastewater being discharged**



**Problem Definition and Analysis: Description of Scenes that Help Picture the Problematic Situation**



**Pollution because of  
wastewater**



**Problem Definition and Analysis:**  
**Identification and analysis of causes or factors that give rise to the problem**

**Problem Definition and Analysis: Identification and analysis of causes or factors that give rise to the problem**

# Causes

**01**

Lack of awareness

**02**

Lack of political  
commitment

**03**

Lack of  
infrastructure

**04**

Lack of planning



# **Problem Definition and Analysis: Identification and Description of the Consequences**



# Consequences

**01**

Water pollution

**02**

Less biodiversity

**03**

Less water resources

**04**

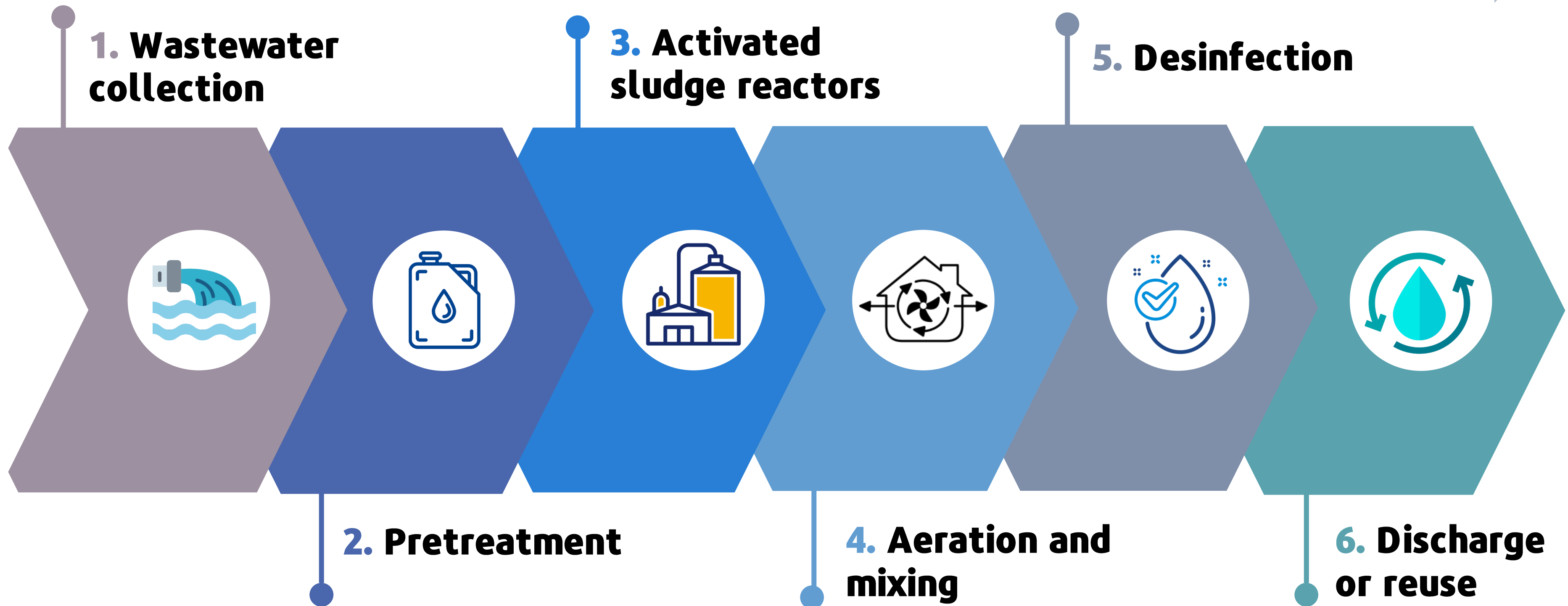
Spread of diseases



# The way forward: Problem Approach

# Implementation of a Wastewater Management Plant

## Activated Sludge System





**The way forward:  
Strengths and Weaknesses of the  
Proposal**



## Strengths 😊



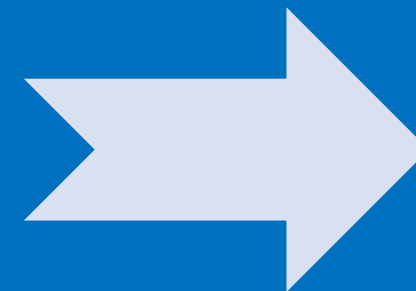
**Low cost**



**Safe operation**



**High quality**



## Weaknesses 😞



**High ongoing  
operation cost**

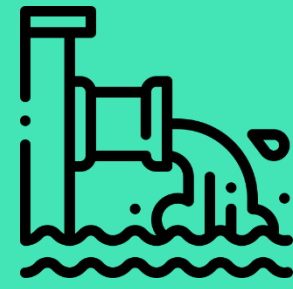


**Waste of sludge**



**A lot of  
supervision**

# Conclusion



**Wastewater is being directly  
dump into the Paraná River**



**This creates a severe  
pollution risk**



**The proposed solution is to  
build a Wastewater Treatment  
Plant**



**Water optimization is crucial for  
a sustainable future**

# References

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