**Problem Definition: Access to Safe Drinking Water in Rural Areas**

**Introduction**

Sustainable Development Goal (SDG) 6 aims to ensure availability and sustainable management of water and sanitation for all. A critical component of this goal is guaranteeing access to safe and affordable drinking water. This document defines the problem of inadequate access to safe drinking water in rural areas, outlining its relevance, impact, and proposed data-driven solution.

**Problem Statement**

In numerous rural regions globally, access to safe drinking water remains a substantial challenge. Factors such as deficient infrastructure, contamination of water sources, and inadequate maintenance contribute significantly to this issue. This study focuses on identifying regions with elevated risks of water contamination and assessing the effectiveness of existing water sources within rural communities.

**Problem Significance**

Unsafe drinking water poses severe health risks, including waterborne diseases like cholera and dysentery. This, in turn, imposes significant economic burdens on rural communities due to healthcare costs and lost productivity. Moreover, access to safe water is fundamental for improving quality of life and fostering socioeconomic development.

**Project Objectives**

This project seeks to:

* Identify geographical areas with a high risk of water contamination.
* Evaluate the effectiveness of current water sources and purification systems.
* Provide actionable insights to inform policy decisions and resource allocation for enhancing water access and safety in rural areas.

**Data Requirements**

To achieve these objectives, the following data will be collected and analyzed:

* Water quality data: contamination levels, types of contaminants, and water source types.
* Geographic data: locations of water sources, population density, and infrastructure details.
* Health data: incidence of waterborne diseases in different regions.
* Infrastructure data: information about existing water treatment and purification facilities.

**Project Scope**

This project will concentrate on rural areas within a specific region or country. Data will be gathered from governmental agencies, non-governmental organizations, and local reports. A relational database will be created to manage and analyze the data. SQL will be employed for data retrieval and analysis, while Excel will be utilized for data visualization and reporting.

**Expected Outcomes**

The anticipated outcomes of this project include:

* Identification of regions with critical water quality issues.
* Evaluation and ranking of the effectiveness of different water sources and purification methods.
* Development of recommendations to improve water access and safety in rural areas.