TRAIL GUARD

Project Proposal

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Problem Statement

- When traveling, individuals often encounter unfamiliar bathing facilities and water sources, potentially leading to allergies and skin irritation due to contaminated water.
- Exposure to dust and pollen in new environments can trigger breathing difficulties, particularly for those sensitive to airborne particles.

Objectives

- To ensure a safe environment for drinking and bathing water, as well as high-quality air for a pleasant travel experience.
- To deliver a device with extended battery life for uninterrupted usage and to provide diverse data and functionalities during travel.

Product Description

- The product is a compact, portable device designed to measure both water and air quality, providing users with immediate feedback.
- Integrated with temperature and humidity sensors, as well as a torch, the device offers a comprehensive solution for evaluating environmental conditions.
- Utilizing a user-friendly display, it presents data collected from the sensors in an easily understandable format.
- The device also features a solar-powered charger to extend its operational duration between charging sessions.

Market Analysis

- While devices for checking air and water quality exist in the market, they are often non-portable and come with a high price tag. Furthermore, there is a gap in the market as no single device currently fulfills all these purposes.

Financial Analysis

- The budget estimate outlines the major expenses associated with the following modules, which comprise significant portions of the financial analysis.

Item	**Cost (LKR)**
Microcontroller	1400
128X32 OLED Display	700
Turbidity sensor	2700
Dust sensor	1900
Temperature and humidity sensor	400
Li ion Battery * 3	750
Solar cells * 2	720
Mini solar batter charging module	450
Total estimated cost	9990