

WASTE SEGREGATION BINS FOR HEALTHCARE WASTE MANAGEMENT AT HCFS IN RURAL TIMOR LESTE



GWWINNOVATORS

Submitted as a part of the WaterAid Winnovators 2023 challenge

BACKGROUND

Timor-Leste is located in the far corner of Southeast Asia. The Municipalities of concern for this project (Liquica and Manufahi) are highlighted green in the map below.



The municipalities feature 50 healthcare facilities (HCFs) with a large majority reported as being below minimum service level, when it comes to the disposal of hazardous healthcare waste.

The core contributors to the underperformance of the rural HCFs are as follows:

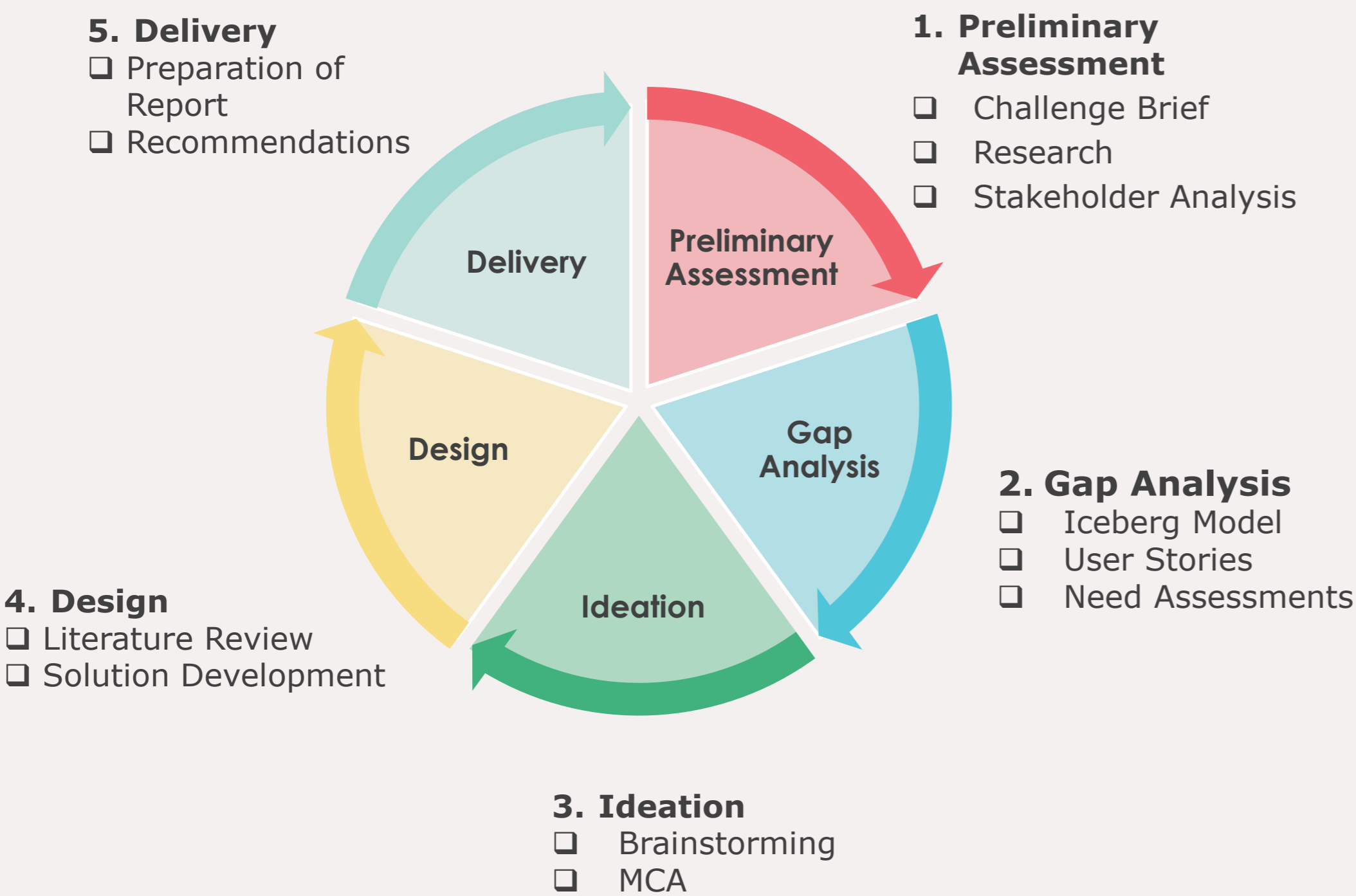
- Less than 10% of health centres had a member of staff trained to manage waste.
- Over half (56%) did not have anyone appointed to manage waste.
- Over half of healthcare centers disposed of sharps by burning and only 11% collected sharps for safe disposal offsite.
- 60% of HCFs disposed of infectious waste by burning either in the open or in a prepared pit.



OBJECTIVE

The primary objective of this project is to develop a solution to healthcare waste management in Timor-Leste.

METHODOLOGY



SOLUTION

Our solution considers the following waste types:

- General Waste (Black Garbage Bag)**
 - Non-Hazardous waste
- Hazardous Waste (Yellow HDPE Bin Liner)**
 - Waste generated as a result of medical procedures e.g. Pharmaceutical waste, Biological waste and, chemical wastes.
- Sharps waste (White Cardboard Syringe Box)**
 - Contaminated Syringes
 - Uncontaminated Syringes



In order to effectively segregate hazardous and non-hazardous wastes we suggest the following strategy:

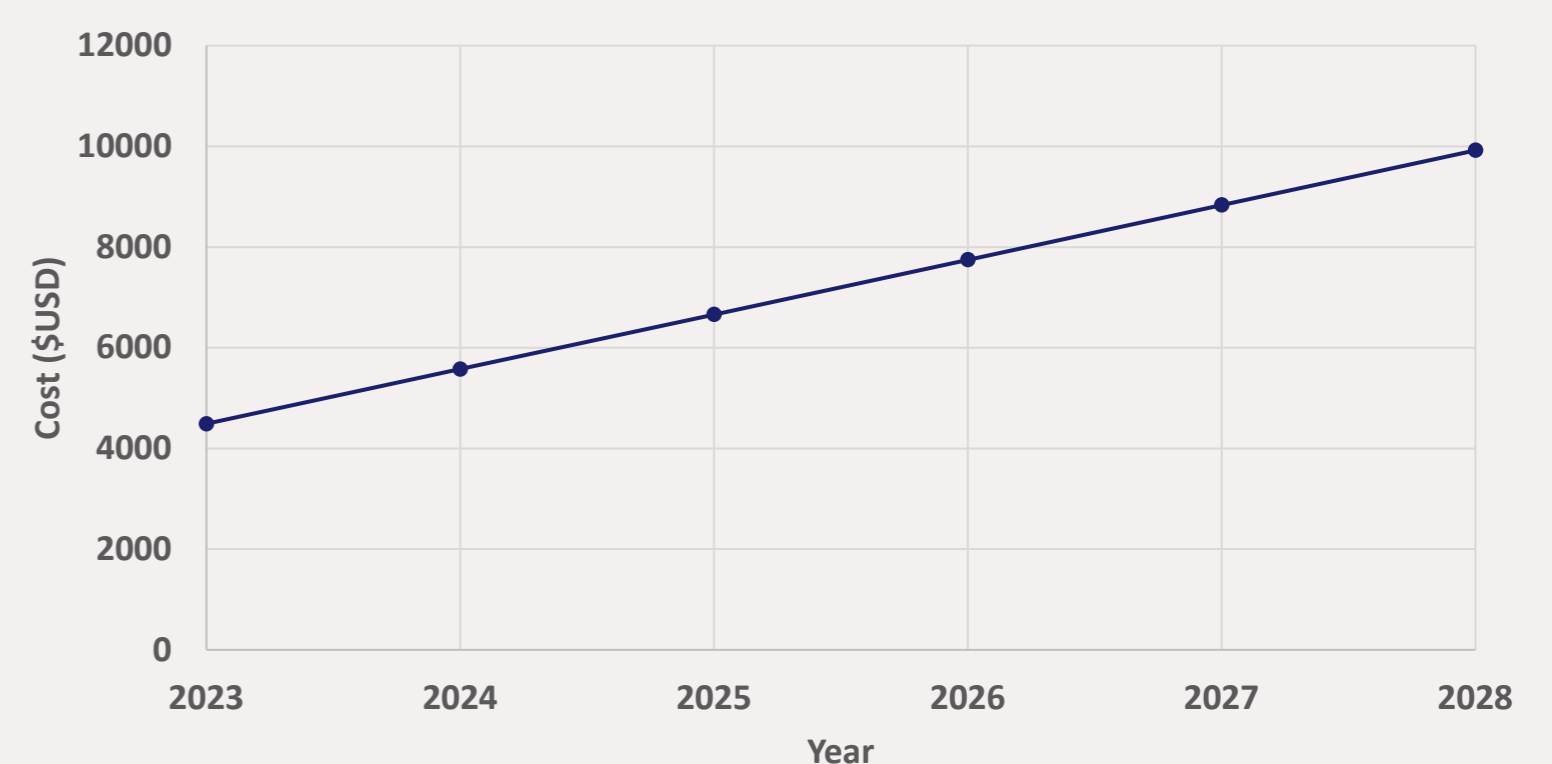
1. Procurement and distribution of the necessary assets for each HCF including; a 30L hazardous healthcare waste bin, 2x90L black garbage bags, 1x 25L HDPE bin liner and, 1x2L cardboard sharps container,
2. Establish routine collection period for each HCF depending on expected patients or average volume of waste generated,
3. Collect generated waste as per determined collection period and provide replacement bin liners, garbage bags and sharps box,
4. Transport segregated waste to appropriate location for final treatment:
 - Landfill for general waste,
 - District hospital or other suitably equipped facility for destruction via incineration for hazardous waste.



For a single HCF, our solution would cost \$89.81 to implement, and an extra \$1.81 every 30-day collection period. Over a five year period the costs can be estimated as shown in the graph below. This assumes the solution is rolled out across all 50 HCFs and that they are serving an average level of patients monthly.



5 - Year Costs Projection for 50 HCFs



Our education piece focuses on two key deliverables, these are:

1. Training Material & Waste Management Plan
2. Visual Aids

Examples of the training material and visual aids we are proposing are shown below. The waste management plan is explored in greater detail in the report.

LIMITATIONS

Throughout the development of the solution 6 key limitations were identified. Further thought should be put toward these areas to confirm the validity of the solution prior to beginning implementation. The 6 key limitations are as follows:

