This initiative is supported by **PacWastePlus**-a 85 month project funded by the European Union (**EU**) and implemented by the Secretariat of the Pacific Regional Environment Programme (**SPREP**) **to sustainably and cost effectively improve regional management of waste and pollution.**

TIMOR-LESTE

Baucau Hospital Healthcare Waste Management Case Study

June 2025

Issue to be Addressed

Baucau Referral Hospital, (Referral Eduardo Ximenes Hospital) in the Baucau District of Timor-Leste, is the district health service centre for all district residents. Baucau Referral Hospital serves patients 24 hours, and medical waste generated from this activity accumulates and then is either stockpiled for disposal to local dumps or burned on hospital grounds. The incinerator located at the hospital was not working when the project was developed.

With no operating incinerator, and expensive transportation costs to move materials to a local dump, where material was burned in the open, the Hospital was utilising land adjacent to the wards to dump and burn all facility waste. Attempts had been made to form controlled areas, but a significant land area was contaminated with partially burned healthcare waste and was unsafe to access. The air quality issues for staff and patients was also a substantial concern due to the open burning.

This case study will focus on the construction of the three healthcare waste facilities specifically designed for healthcare waste disposal.

Project Design & Planning

This project involved:

- The installation and commissioning of a previously procured high-temperature healthcare waste incinerator.
- The installation of a facility that would manage three waste material streams (Sharps pit, Anatomical pit, and a Disposal pit for legacy medical waste)
- Removal of partially burned medical waste on hospital grounds and placement into disposal pit
- Healthcare waste management training for staff

Key Information		
Status of healthcare waste process (2014)	1. No national healthcare waste strategy or guidelines 2. Current incinerator was not working since 2004 3. Occasionally, healthcare waste (infectious) would be dumped on ground and partially burned 4. No healthcare waste segregation was occurring, i.e., all wastes would be bagged. 5. No known training courses within Timor Leste which specifically relate to infection control or healthcare waste management 6. Bagged healthcare waste would occasionally be shipped off hospital by local private contractors to the local dump 7. No facilities for disposal of anatomical waste or sharps	
Baucau Referral Hospital (2014)	Population served	111,486
	Number of beds	114
	Number of Staff	190
	Healthcare Waste Segregation Processes	N0
	Treatment process	Open burning
	Volume of Healthcare Waste each week	~250kg/week
Cost of project*	USD$159,535	
Project	• The installation of a facility that would manage three waste material streams (Sharps pit, Anatomical pit, and a Disposal pit for legacy medical waste) • Removal of partially burned medical waste on hospital grounds and placement into disposal pit • Healthcare waste management training for staff	
Key Considerations for the removal & disposal	No national framework/strategy for healthcare waste management in Timor-Leste. No approvals needed for constructing facilities on land designated for Healthcare Facilities.	

* additional project activities were undertaken by PacWastePlus in Timor-Leste, this cost is only accounting for the creation of the various pits, and the clean up of contaminated lands.

Research and Options Assessment

Due to the extensive area of contaminated land, any management solution for future waste generation, must include the ability to remediate the existing contaminated lands.

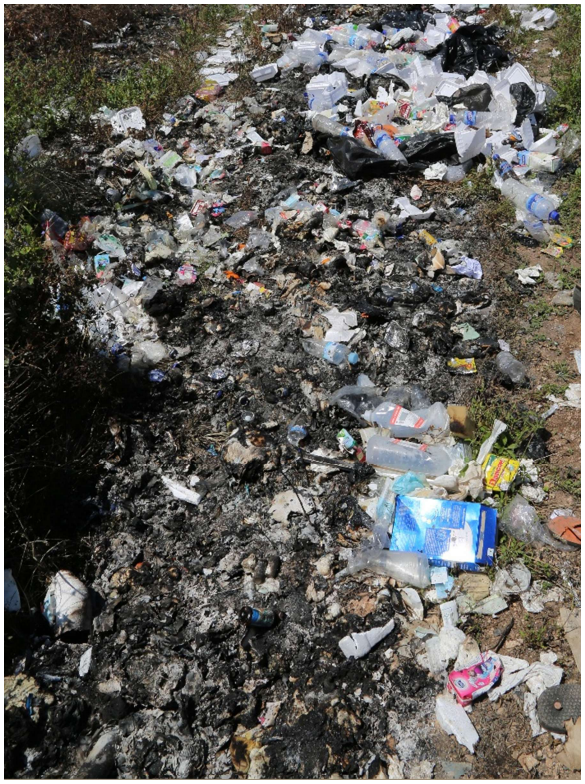
Research on the disposal of healthcare wastes in developing countries uncovered practical recommendations for management of medical waste (International Committee of the Red Cross (ICRC) on Medical Waste Management, 2011). Based on these recommendations, siting several small-scale facilities on the hospital grounds could provide an environmentally friendly disposal options for healthcare wastes.

Three designs were proposed:

1) Creation of a burial pit for contaminated materials and lands (scraped from contaminated areas), essentially providing for on-site encapsulation.
2) Creation of a burial pit specifically for management of sharps
3) Creation of a burial pit specifically for the management of anatomical waste

Detailed designs were developed and approvals sought from the Timor-Leste Ministry of Health, confirmation if any other planning or environmental license provisions were needed (none were required due to it being implemented on land designated for healthcare purposes), and approval from the PacWastePlus Donor (European Union).

Given the current experience on site, the need for appropriate management of healthcare waste, protection of human health, and that additional work was being undertaken by PacWastePlus with the Timor-Leste Ministry of Health that would affect sustainable chance (Development of a National Healthcare Waste Management Strategy, Hospital waste management plans, develop and deliver Healthcare waste management training to healthcare facility workers), the project was approved.



A local contractor was engaged to survey the site and design the three waste pits, including fencing, drainage, and other site access considerations based on the World Health Organization standard design (https://www.icrc.org/sites/default/files/external/doc/en/assets/files/publications/icrc-002-4032.pdf). Detailed engineering drawings were produced and approved.

A small temporary warehouse was constructed to store construction materials; meanwhile two water tanks were ordered to support the construction activities. An all-weather concrete path 3 meters wide was constructed from the hospital to the facility.

Upon completion of the path, the three burial pits were located inside hospital fencing on the north side of the hospital. The three pits located near each other in one location and surrounded by security fencing to limit access.

Anatomical pit

Anatomical pit volume was 12m^3 (3 x 2 x 2 meters) with an estimated lifespan of five years based on an estimated annual disposal of 1,200kg. The pit was provided with a small removable lid for access to the pit for disposal as well as a vent pipe for off-gassing as waste decomposes.

Sharps pit

The Sharps pit is 1.4 m^3 (1 x 1 x 1.4 meters) with an estimated lifespan of five years based on receiving an estimated 480kg of sharps per year. This pit was provided with a vent pipe for off-gassing.

Burial Pit

The burial pit volume was 12m^3 (3 x 2 x 2 meters). Unlike the other two pits, this was constructed of concrete blocks to provide stability and to protect the walls from failure due to loading of the waste materials. The burial pit was designed to be filled with the contaminated land materials scrapped and picked from burn areas around the hospital. This pit was filled and capped with concrete so additional onsite disposal could not occur.

Drainage and Fence Construction

A drainage system was constructed surrounding the three burial pits to eliminate the potential for water flowing into the pits. A wire security fence was installed around the facility. The key to the fence gate was delivered to hospital waste management staff during the hand-over ceremony on December 21, 2023.

Project Challenges and Lessons Learned

Challenge	Response	Lesson Learnt
Language Barriers	Documents were published in both English and Tetum.	Most Timor Leste personnel had a limited understanding of English. Translation of all documents into the local language, i.e., Tetum translation of all documents, was critical for project success.
Staff Resources	Engaged a local national officer onboard the project	The National officer was critical to the success of the project. They engaged closely with the national Ministry of Health. Duties included: 1) language translations 2) ensuring contractors and venders implement actions efficiently 3) provided an understanding of cultural issues and how the Timor Leste bureaucracy works.
General National Elections and Staff Changes	Increased engagement with the project officer and undertook a mission visit soon after the election to meet the new staff.	General elections were held in 2024, which precipitated government staff changes that made it difficult to move forward as the continuity of work was interrupted. Active focussed engagement is needed to keep the project on track after such changes.