



# HEALTH CARE WASTE MANAGEMENT TOWARDS THE CIRCULAR ECONOMY

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# Background: increasing risk of infection and air pollution

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Smoke containing pollutants such as dioxin and furans from the incinerator

All mixed waste stored at open area

# Beneficiary and partners

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- Tribhuvan University Teaching Hospital (TUTH) / direct beneficiary: with 700 patient beds and treats 2,000 outpatients per day. It had a plan to develop a national level training centre.
- WHO Nepal: provide technical advice to the project implementation and evaluate the progress of the waste management system
- The Health Environment and Climate Action Foundation (HECAF 360) / local NGO : provide close technical support and training on waste management system in all wards of TUTH for two years, while seeking a solution to safe treatment and disposal of medical waste
- Health Care Without Harm (HCWH) / International NGO: focus on transforming the global healthcare sector via promotion of environmental health and justice since its foundation in 1996.



# Initial assessment in 2014

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# Results of the initial assessment

Findings	Suggested solutions
pollution from the incinerator	Installation of pre-vacuum autoclave
poor segregation of waste increased infectious waste	Trolleys equipped with bins, color coded Segregated waste to be kept separate during transport in the hospital Establishment of a waste treatment centre for separate risk waste from general waste
lack of safe disposal of sharps	Use of needle cutter Appropriate method of collecting syringes in large metal drums for disinfection
Large quantity of biodegradable waste (20% or 189kg/day) related to food waste and pathological waste (10kg/day) comprised placentas created a nuisance and unhygienic condition.	Installation of bio-digesters which are common in agricultural sector in Nepal The chambers were designed to be large enough to hold the waste for the required time to kill pathogens





# Structural change

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1. Waste management committee: handling higher level issues including plan approval and troubleshooting
  - Hospital director as chair
  - Heads of all departments as member
  - Waste management coordinator as member-secretary
2. Working committee: implementing the system and report back to the waste management committee
  - waste management coordinator as chair
  - Head of general administration, senior nursing supervisor, head of technical support, HECAF 360 as member
  - Head of housekeeping as member-secretary
3. Staff who is responsible for HCWM (7 full time staff: 1 coordinator, 1 supervisor of waste treatment center, 2 autoclave operators, 2 transporters, 1 assistant)



# Capacity building

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1. Procedures (Standard operating procedures in accordance with the national guidelines)
  - Waste handling and disposal for general wards
  - Waste handling and disposal for specialist wards (e.g., haemodialysis, psychiatric ward)
  - Waste handling and disposal for operating theatres
  - Using needle cutters
  - Waste transportation
  - Sorting waste for recycling
  - Waste autoclave operation
  - Waste sales
  - Using the biodigester
2. Monitoring mechanism
  - Waste generation and segregation
  - placement of buckets
  - Hygiene condition
  - Amount treated by autoclave
  - Maintenance of autoclave
  - Waste sales (recycling)
3. Development of training center (suspended)
  - To offer practical learning for internal and external healthcare workers



# Impact (1) -reduction of risk waste and improvement of hygiene condition-

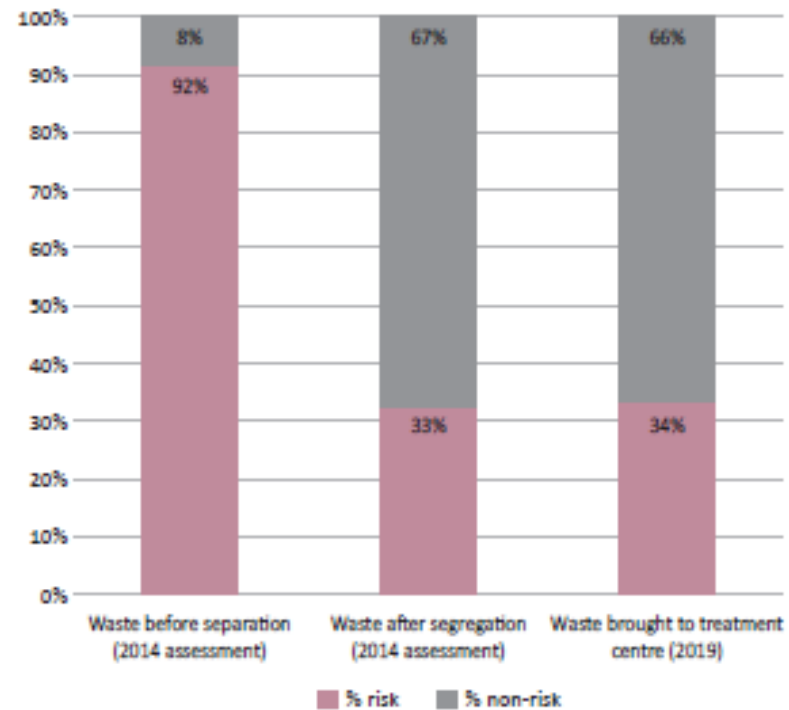


Figure 18: Percentage of risk and non-risk waste in 2014 and 2019

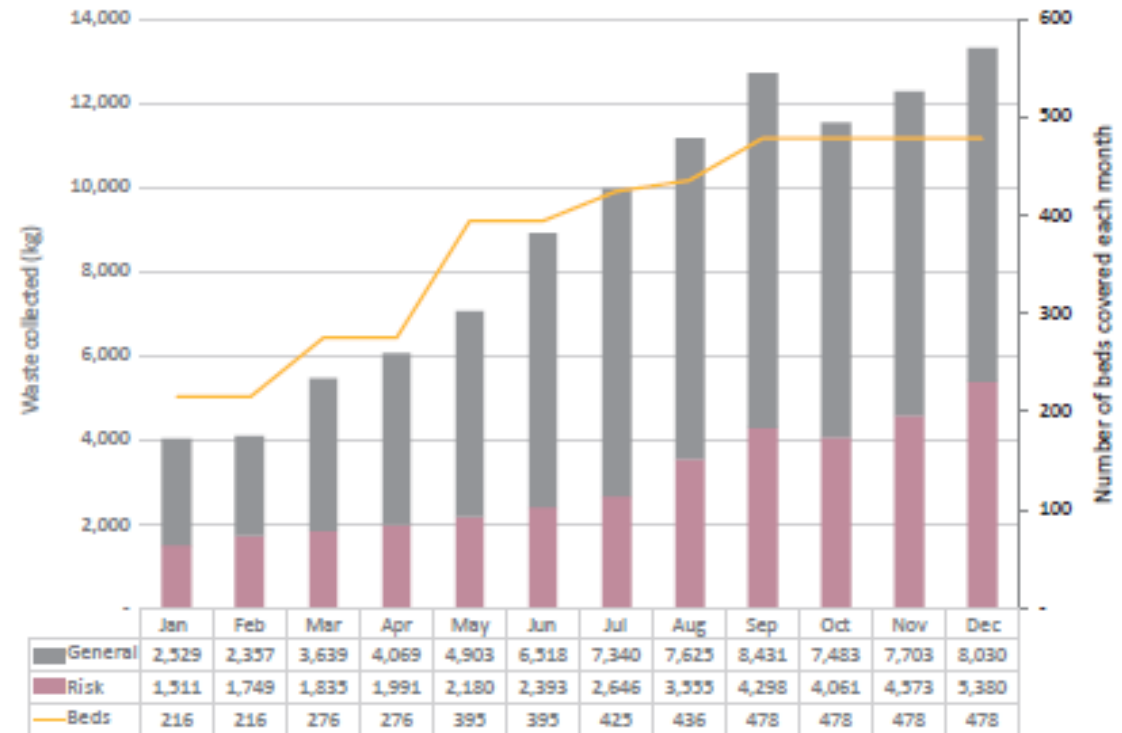


Figure 19: Weight of waste collected in 2019

# Impact (2) –reduction of pollution and increase in recycling -

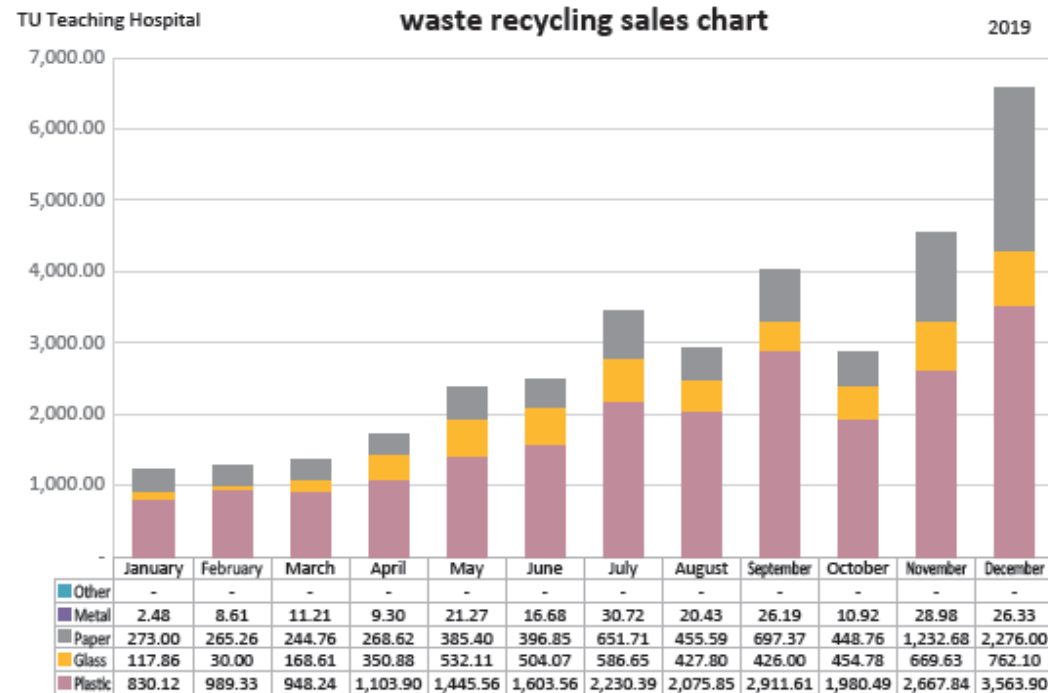


Figure 21: Weight of waste recycled per month in 2019 (kg)

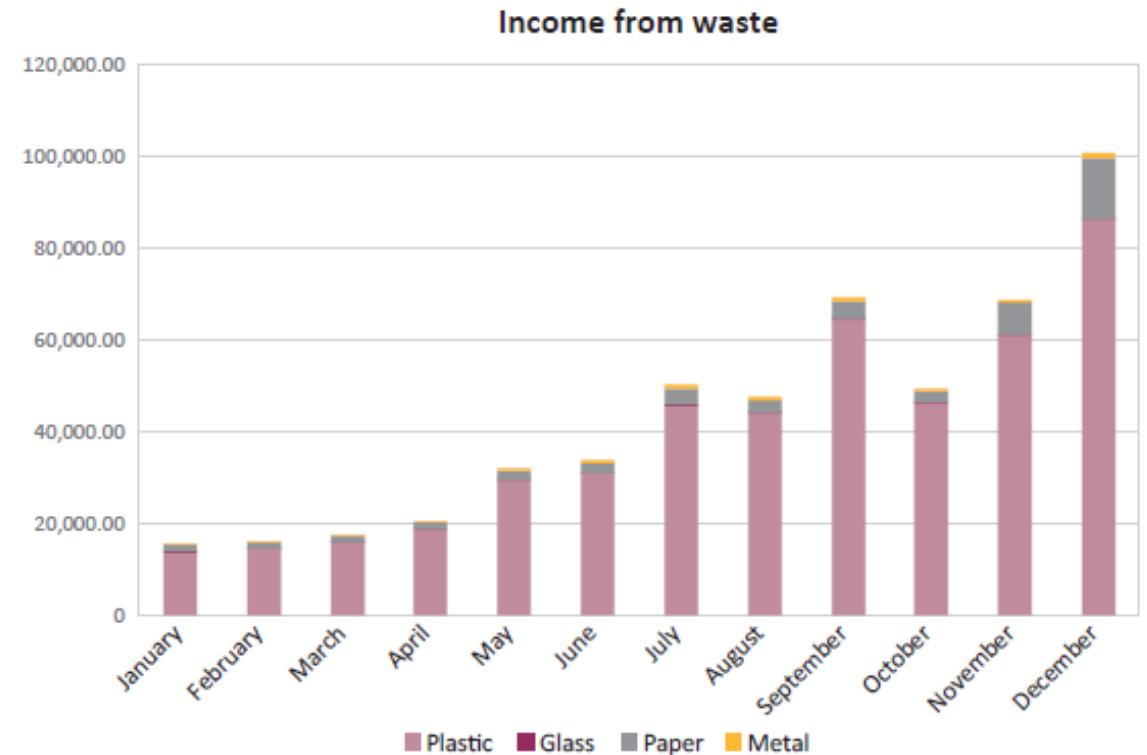


Figure 24: Income from recyclables sold

# Recommendations at healthcare facility

Issue	Recommendation
Weak leadership will hinder institutional development	- Determined leadership with broad network from top management is a vital element for improvement of HCWM and further opportunities and support
Absence of HCWM plan	- Initiation or enhancement of data collection, in support of the HCWM plan, to analyse the current situation and progress, as well as to identify issues to be solved and targets to be achieved
Lack of budget, dependency on external funds	- Acquisition of knowledge on investment and operational costs, to assist proper budget allocation to implement HCWM plan - Recording of budgets and expenditures associated
Bureaucracy slows down implementation	- Procurement should be accelerated by distributing authority while maintaining transparency and accountability in the process - Creation of standards for green procurement of HCWM equipment and supplies need to be promoted under the circular economy
disagreement by the canteen contractor	- Consensus from concerned stakeholders should be obtained in elaborating contracts for outsourcing service; ensuring all services provided inside a hospital are in line with the HCWM plan
Lack of incentive will Demotivate staff and lead to poor HCWM	- Combination of desk learning and practical training should be given to all new staff and continue to be given - Reduction of health risk and cleaner and more pleasant working environment will help raise the level of dedication of working staff - The role of waste workers should be highly acknowledged and respected as they protect the community from risks



# Recommendation at national and regional government

issue	recommendation
Existing waste management guidance is not rigorously enforced	<ul style="list-style-type: none"><li>- Facilitate and control the implementation of HCWM with sufficient budget and detail plan to achieve or maintain the standards set under the policy and strategy</li><li>- Good practices should be disseminated widely, especially among HCFs</li></ul>
Lack of data hinders identification of issues and their causes, which in turn hinders making adequate plans and monitoring	<ul style="list-style-type: none"><li>- Data collection and digital monitoring would assist regulatory authorities to track waste management, to ensure compliance with rules and regulations, and to set future plans</li><li>- As well as quantifying waste data, the benefits to health and environment, including climate change, should also be estimated in a quantitative manner</li></ul>
Absence of green procurement criteria will prevent taking part in circular economy	<ul style="list-style-type: none"><li>- green procurement criteria should be applied across the HCF in order to reduce amounts of waste generation and its toxicity and to increase reuse and recycling</li></ul>

# Thank you

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QUESTIONS AND INQUIRIES:

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