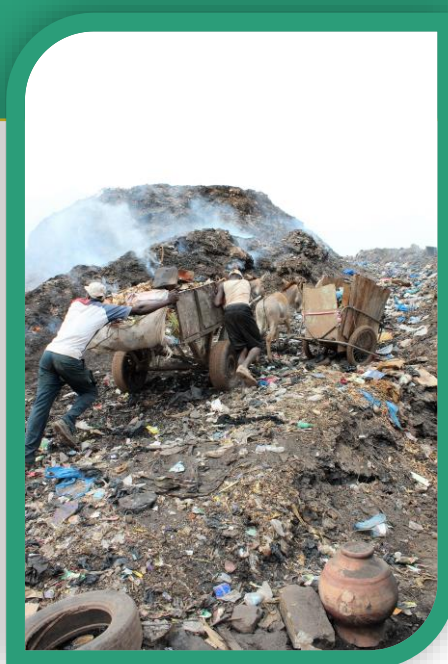


# Business cases in solid waste management

## Primary collection of household waste



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Young people in Mali often lack decent employment opportunities, leading to high levels of unemployment. Funded by the European Union, a consortium of ICCO, WASTE, APEJ, led by SNV, is implementing the Value Chain Development and Youth Employment in Mali (EJOM) project. The project takes place in the four regions of Kayes, Koulikoro, Gao and the district of Bamako, all areas where young Mali people face systemic employment challenges.

WASTE's interventions in the project focusses on setting up small businesses in solid waste management and improving existing ones to help them to grow and create employment. Participants of the EJOM training programs are asked to prepare a business plan. To assist the development of these business plans, WASTE developed a series of 4 illustrative business cases in solid waste management to serve as inspiration:

1. Primary collection of household waste
2. Primary collection of household waste and sales of recyclables
3. Grinding of hard plastics to produce flakes
4. Paving tiles out of low-grade plastics

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## 1. Collection of mixed waste

### 1.1 Key characteristics

<b>Waste input type:</b>	Collection of mixed waste
<b>Product:</b>	Service of waste collection (including awareness raising and fee collection) from households and transportation of the waste to the transfer station.
<b>Value offer:</b>	Providing the service of waste collection what else would be dumped somewhere in the environment. This results in less pollution in the neighbourhood (no dumping and no waste burning) and in an improved health situation of the citizens.
<b>Organisation:</b>	GIE, in partnership with the government/commune (PPP)
<b>Scale of business:</b>	Small
<b>Investment needed:</b>	150,000 CFA for a donkey with a cart up to 20,000,000 CFA for two tractors with trailers
<b>Market/revenue:</b>	Households pay directly for the service of waste collection to the collector however a registration is needed at GUICHET UNIQUE (the chamber of commerce) to have permission to collect waste in the assigned neighbourhoods. Additional revenues can be achieved by selling recyclables or offering other services such as street sweeping or public toilet management.
<b>Examples of implementation:</b>	Bo Klin, Sierra Leone; Salvage, Nakuru, Kenya
<b>Risks/challenges:</b>	Free riders: people that receive waste collection but do not pay for it
<b>Health and safety:</b>	<p>Waste collection is a risky job because:</p> <ul style="list-style-type: none"> <li>• Waste contains germs which could affect those in contact with them.</li> <li>• Waste could have sharp edges which could injure the worker.</li> <li>• Waste encourages the breeding of insects and rodents which could act as agents for the transmission of diseases.</li> <li>• Waste workers could not only contact these diseases but could also serve as agents to spread them to other people.</li> </ul> <p>Protecting oneself is one of the professional values of a waste collection worker. Use as much as possible to following protective working gears:</p> <ul style="list-style-type: none"> <li>• Uniforms</li> <li>• Masks</li> <li>• Gloves</li> <li>• Boots</li> </ul>

<b>Social impact:</b>	<p>Collection business/GIEs have the potential to create considerable amount of jobs as labour is needed to collect the waste</p> <ul style="list-style-type: none"> <li>• For collecting mixed waste approx. 120 kg/load<sup>1</sup> with handcart: 2-3 workers per handcart.</li> <li>• For collecting mixed waste 200 kg with donkey cart: 3-4 workers per donkey cart</li> <li>• For collecting mixed waste approx. 1,500 – 5,000 kg/load<sup>2</sup> with tractor and trailer: 3-4 workers</li> <li>• For collecting mixed waste 5,000 kg with small truck: 3-4 workers</li> </ul>
<b>Environmental impact:</b>	By collecting the mixed waste from households less waste will be dumped in the environment.
<b>Economic impact:</b>	Creation of jobs and income
<b>Key success factors:</b>	<p>Local governments are in favour of primary collection by GIEs and facilitate the establishment and/or subsidize infrastructure (containers, collection vehicles).</p> <p>Professionalism in waste collection: providing a reliable service to satisfied customers using rational routes for collection service with appropriate type and size of vehicles, motivated workers.</p> <p>Willingness to pay: households are willing to pay for the waste collection</p>

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<sup>1</sup> *Solid waste collection and transport, service delivery training module 1 of 4, 2008, The Asian Foundation:*  
<https://asiafoundation.org/resources/pdfs/05SolidWasteCollectionandTransport.pdf>

<sup>2</sup> *MOOC training solid waste management, EAWAG*

## 1.2 Place in the value chain

In waste management systems we identify two important chains that are interlinked: the service chain and the value chain (see figure 1).

The **service chain** is about providing services to remove waste from their point of generation to a (dump) site where they are burned, buried or stored. These services are traditionally a **public sector** activity; and removal and disposal of waste are considered a public responsibility but can be outsourced to private service providers.

The **value chain** of solid waste (organic and inorganic waste) involves activities that add value to waste in such a way that as a result products can be sold to customers. To start a business in waste management it is important to know where your business is situated in the waste management system. Who are your suppliers? Who are your clients?

In the case of collecting mixed waste from households, the business/GIEs are situated in the service chain. The customers are the households and companies paying for the waste collection services.

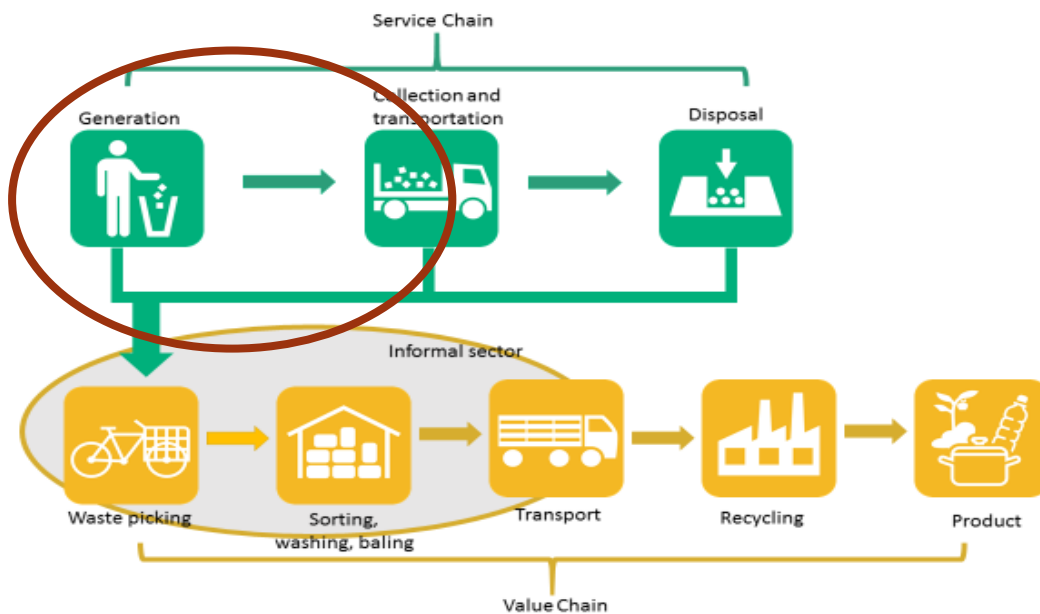



Figure 1: Schematic overview of service chain and value chain in solid waste management

## 2. Analysis of the profitability of the waste collection enterprise (GIE)

Households generate 0.66 kg waste/day : 307 kg/ month (100 families)		<b>Market:</b> Households, companies, recycling sector for sales of recyclables	<b>Products:</b> service of waste collection (2-3 times per week) and transportation to a waste depot, awareness creation, fee collection, Sales of recyclables	<b>Location:</b> Kayes	
<b>Investment (CAPEX)</b>					
	Total investment: 600,000 CFA (2 donkeys plus carts, shelter and tools <sup>3</sup> )				
<b>Business plan</b>					
<b>profit-loss</b>				<b>Per month (CFA)</b>	
	<b>Sales/service :</b> Collect waste from 100 households and 30 companies/public agencies (households pay 1,500 CFA/month, companies pay a medium price of 3,000 CFA/month)			<b>240,000</b>	
	<b>Expenses</b>				
	<ul style="list-style-type: none"> <li>• Salaries (1 promotor, 2 workers) 100,000</li> <li>• Food donkey 25,000</li> <li>• Other (taxes) 30,000</li> <li>• Depreciation (Life time of 10 years) 5000</li> </ul>			<b>160,000</b>	
<b>Total Expenses</b>					
<b>Result per month</b>			<b>80,000</b>		

<sup>3</sup> Plan d'affaires ramassage des ordures ménagères Kayes, Octobre 2018

## 2.1 Profit and Loss statement and break even point

The table below shows the profit and loss statement of the collection of waste from households with a donkey cart. This profit and loss statement is based on the actual data in Kayes, Octobre 2018 (see assumptions below). The payback period is the length of time an investment reaches a breakeven point. In this case the break even point will be reached after **2 years and 1 months** supposed that 100 households and 30 companies will become abonnees and pay the requested fees.

<b>3 Year Summary</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>
<b>Profit and Loss</b>			
<b>Revenues</b>	<b>2,016,000</b>	<b>2,419,200</b>	<b>2,880,000</b>
<b>Operating Costs</b>			
<b>Payroll</b>	1,200,000	1,260,000	1,323,000
% of revenues	60%	52%	46%
<b>Raw materials</b>	300,000	300,000	300,000
% of revenues	15%	12%	10%
<b>General &amp; Depreciation</b>	420,000	420,000	420,000
% of revenues	21%	17%	15%
<b>Water &amp; Electricity</b>	0	0	0
% of revenues	0%	0%	0%
<b>Total Operating Costs</b>	<b>1,920,000</b>	<b>1,980,000</b>	<b>2,043,000</b>
% of revenues	95%	82%	71%
<b>Beneficie</b>	<b>96,000</b>	<b>439,200</b>	<b>837,000</b>
Accumulated cash flow	<b>96,000</b>	535,200	1.372,200

## Assumptions

- 22 working days per month, 8 hours per day
- Capacity year 1: 70%, capacity year 2: 85%