# A market driven mechanism to improve sanitation and sustain agriculture in Ghana

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# OUTLINE

* Introduction to IWMI

- Background
- Approach
- Outputs
- Outcomes
- Conclusion
  - *A brief video*

## Vision

A water-secure world

## Mission

To provide **evidence-based solutions**
to sustainably manage **water** and **land** resources for **food** security, people's **livelihoods** and the **environment**

# We do research for development!

We are:

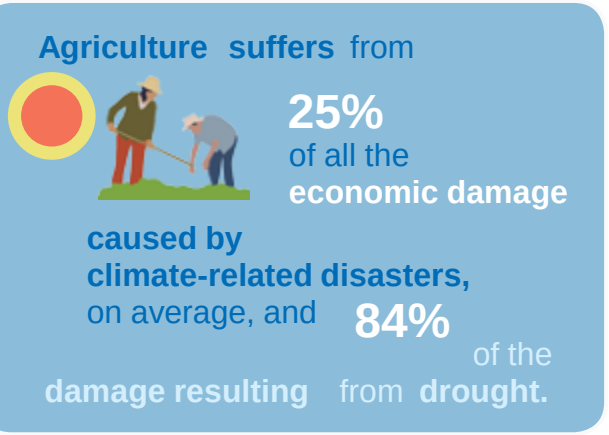
- A **think tank** driving innovative research, generating ideas for solutions.
- A **provider** of science based products and tools.
- A **facilitator** of learning, strengthening capacity and uptake of research findings.

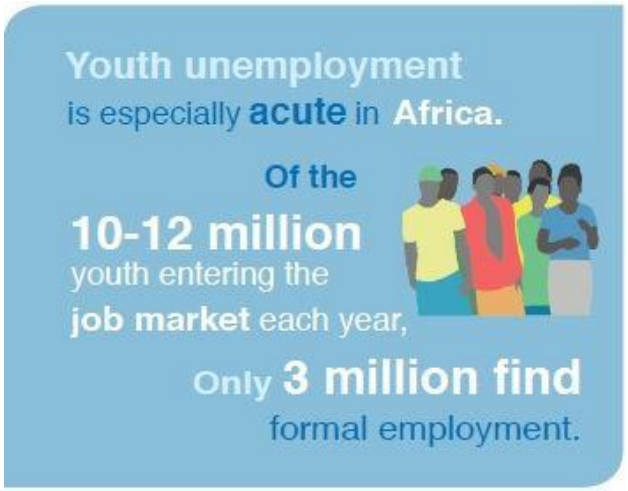
# IWMI's 3 Strategic Programs

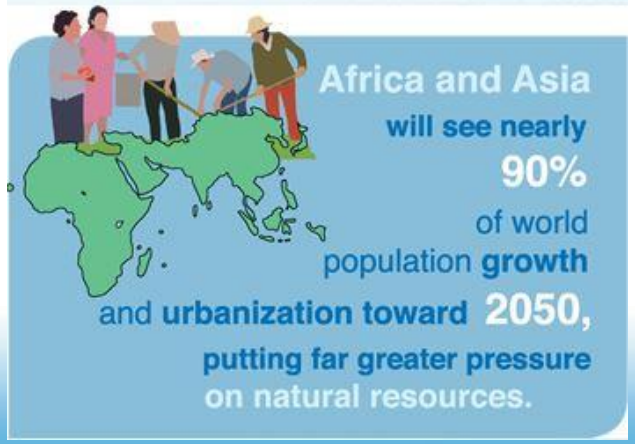
## SP1 Building Resilience

## SP2 Enabling Sustainable Growth

## SP3 Managing Rural – Urban linkages

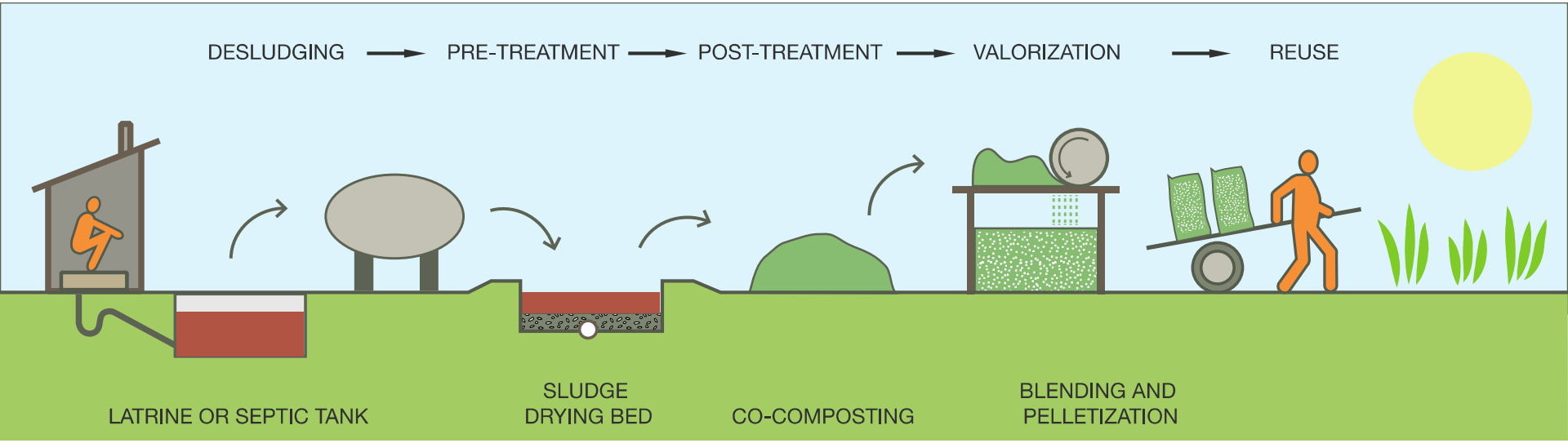


# We work on these aspects

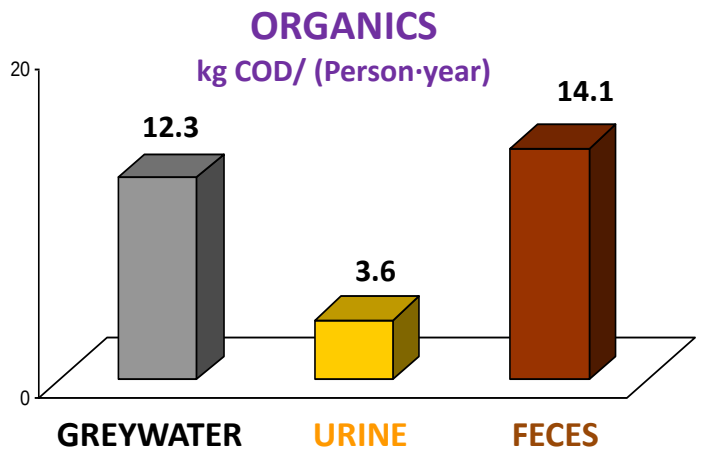
Technology // Business models // Institutions // Policy

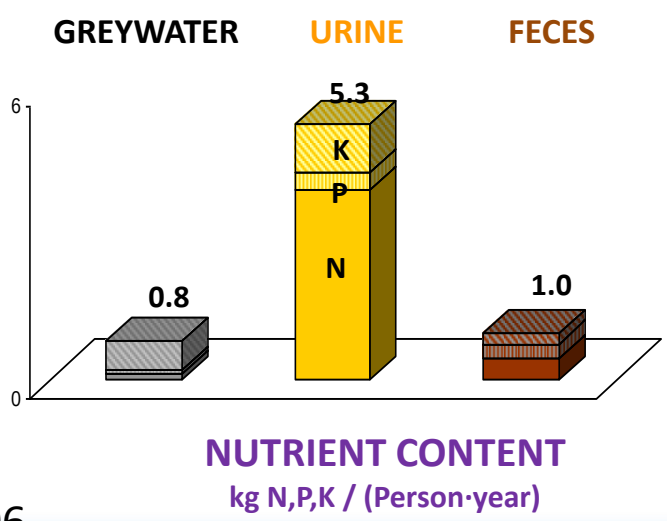


# CHALLENGES WE ADDRESS

## 1. SUSTAINING WASTE MANAGEMENT

- Up to 50% of municipal budget is allocated to waste management
- By 2025, developing nations would spend about USD150 billion per year by 2025 on managing municipal solid waste




Source: Sobsey, 2006

# 2. LOW RATE OF FERTILIZER USE

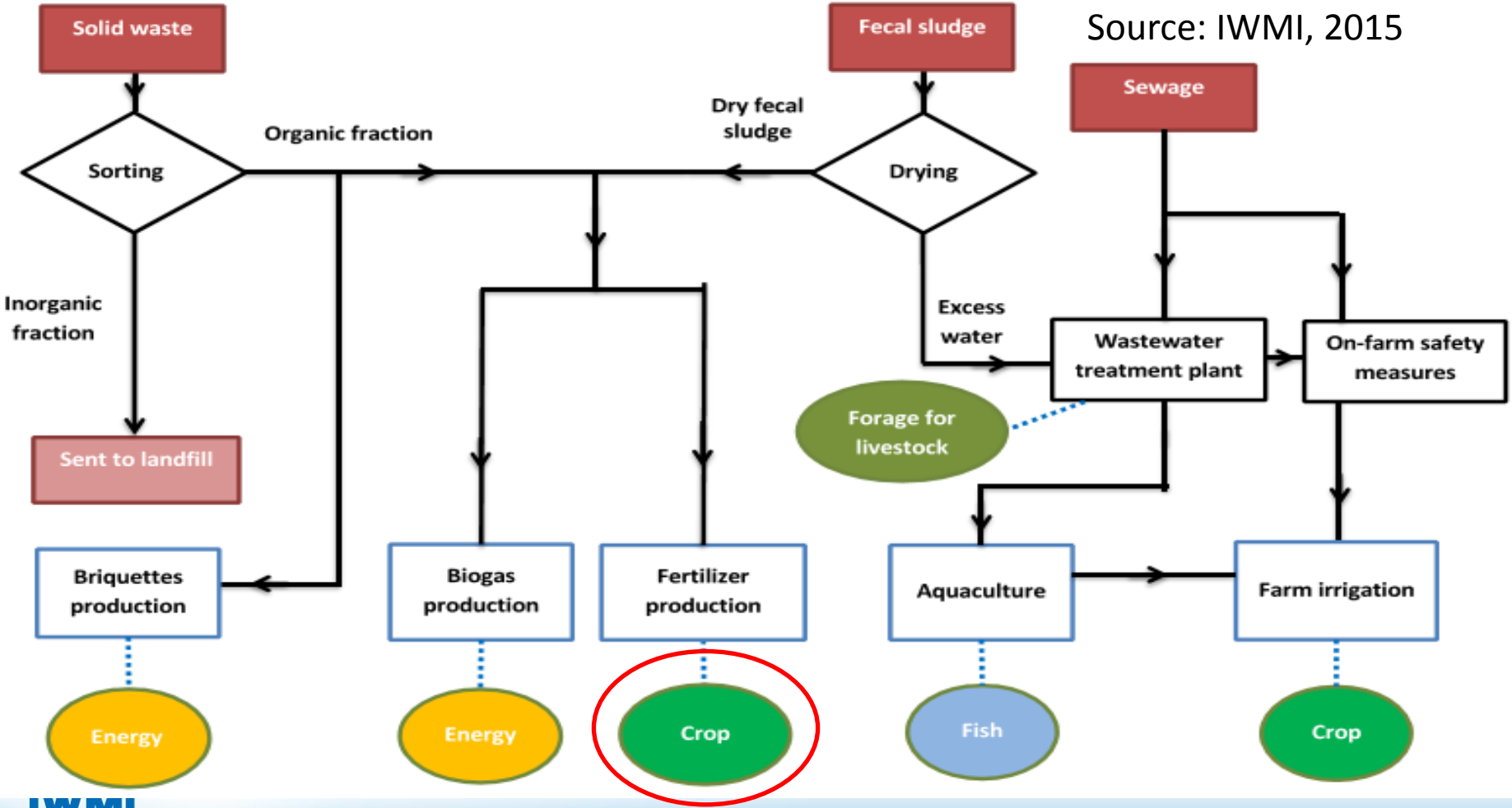
- Ghana average: 12kg/ha / Worldwide average: 90 kg/ha

**PLUS**: Intensive agriculture in urban and peri-urban areas needs more than chemical fertilizer

# OUR SOLUTIONS

## RECOVERING AND REUSING RESOURCES IN CITIES

Reduce the negative urban footprint on ecosystems and human health through market driven incentives




Source: IWMI, 2015

# THE *FORTIFER*™ CASE @ACCRA

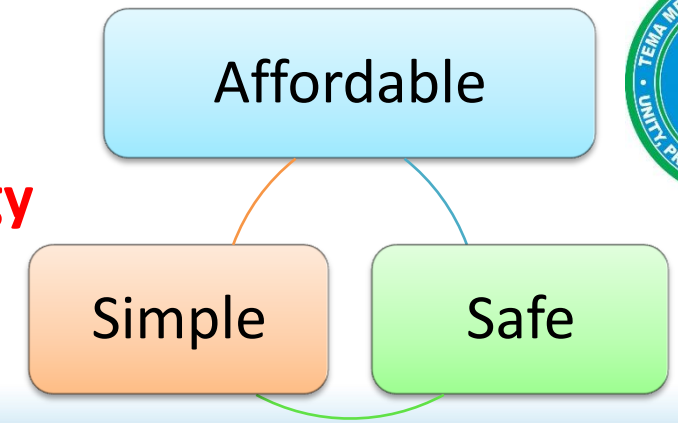
Commissioned in May 2017

**Location:** Greater Accra

## Objectives

- Recycle fecal sludge
  - Optimization of the nutrient and organic matter recovery process
- Produce a good quality product
  - Increase of the product marketability


**Keywords for the technology**

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JEKORA VENTURES
WASTE MANAGEMENT PROFESSIONALS

TREND

IWMI is a member of the CGIAR System Organization and leads the: CGIAR RESEARCH PROGRAM ON Water, Land and Ecosystems

# THE *FORTIFER*™ CASE @ SOMANYA

- **Location**: Eastern Region

Land acquired in January 2018

- CapVal Project (co-funding from the Dutch Government through the Ghana Wash Window)


The CapVal Project

- YKMA

JEKORA VENTURES
WASTE MANAGEMENT PROFESSIONALS

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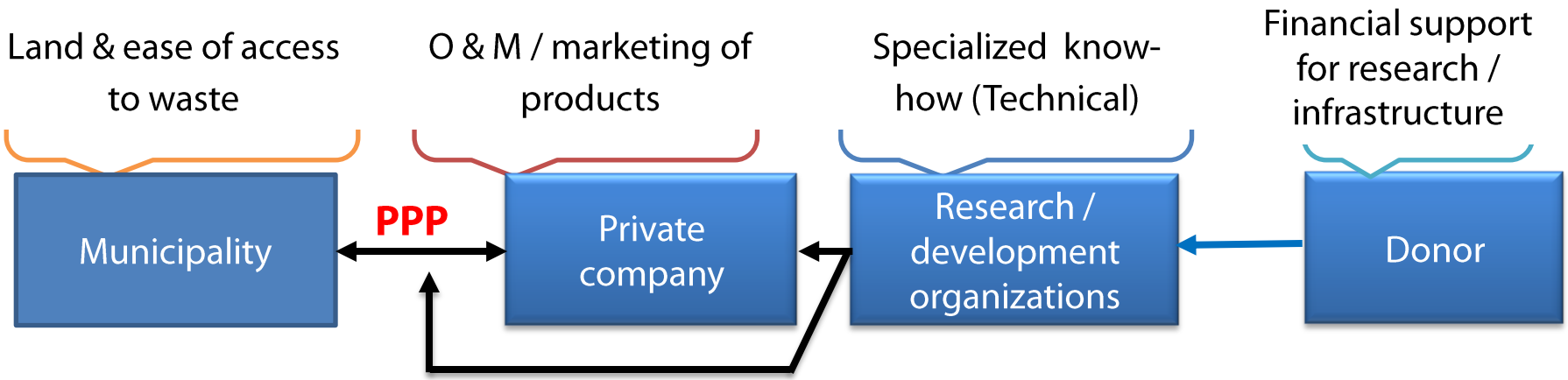
# INSTITUTIONS AND ROLES




Institutional / technical support

Financial support

PPP: Public Private Partnership

# A SIMPLE TECHNOLOGY ADOPTED

Food waste

Sorting / air drying

Inorganic waste to landfill

700 MT of sorted food waste

Fecal sludge from tankers; 4,200 $m^3$ from Public toilet; 8,400 $m^3$ from households

240 MT of dewatered sludge

Dewatering

Composting
Enrichment
Pelletization

Fortifer©

Liquid

Post-treatment

Regular addition of water

Up to 10,000 $m^3$ of treated liquid discharged

# (CO-)COMPOSTING, E.G. WITH ORGANIC MARKET WASTE OR SAWDUST

First stages

Final stage

Monitoring, through control of temperature and addition of water

# WE IMPROVED THE PRODUCT QUALITY TO INCREASE MARKETABILITY

- Enrichment
  - Compost and inorganic N fertilizer to give better yields …
  - Lower amounts of each is required
  - Reduces accumulation of toxics and heavy metals
  - Kills pathogen

- Pelletization
  - Increase bulk density
  - Steady release of nutrient
  - Reduce dust during handling

# OUTPUTS

- Is a pathogen-free compost
- Is enriched with mineral fertilizer, available in regular and pellet forms
- Has been registered as a trademark in Ghana
- Has been approved for farm use by the Ministry of Food and Agriculture


## Average willingness to pay for Fortifer™ as of 2015

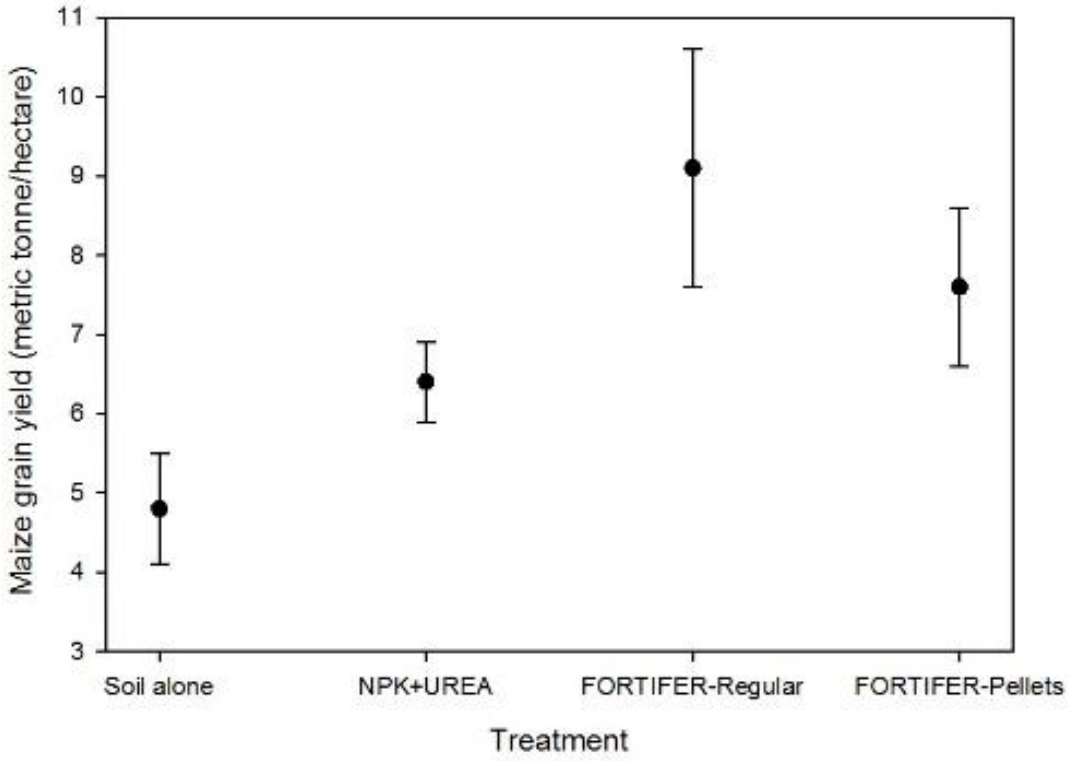
| Fortifer™ | Willingness to Pay (%) | Willingness to Pay (GHS/50 kg bag) |
|---|---|---|
| Non-pelletized | 74% | 19.0 GHS |
| Pellet | 71% | 23.5 GHS |

1 USD = 4.5 GHS (Jan 2018)

# AWARENESS RAISING CAMPAIGNS ON THE *FORTIFER*™

- Increases yields by up to 50%, compared to use of inorganic fertilizers only

Source: IWMI, 2016

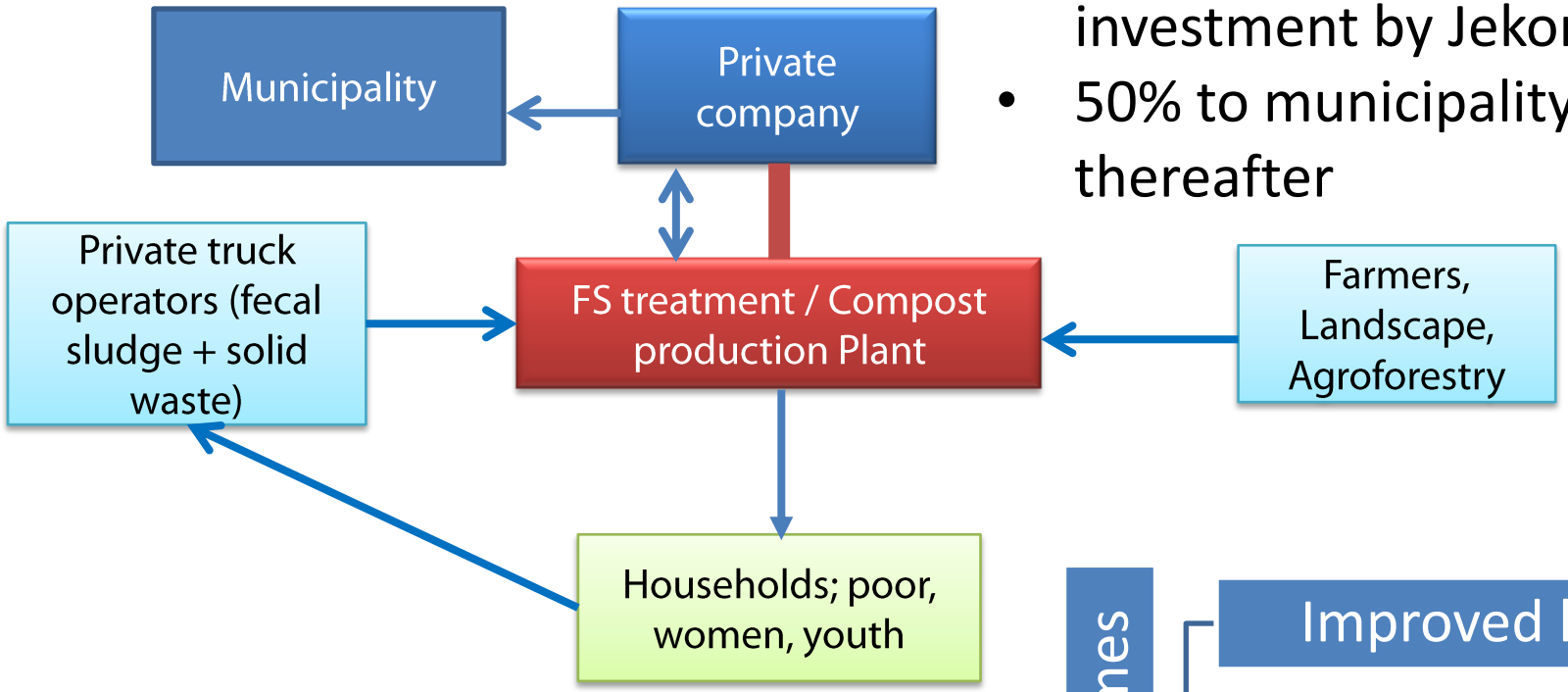



Example of a field work at Klagon
*Greater Accra, 2016*

# MONEY FLOWS IN THE FORTIFER PLANT

Profit sharing after breakeven:

- 0 -20% to municipality before the recovery of the investment by Jekora VL
- 50% to municipality thereafter




**15 - 30 JOBS CREATED**

Outcomes

- Improved health
- Improved livelihoods
- Improved nutrition

# SOME OUTCOMES ACHIEVED

The project contributed to:

- Emergence of the Fortifer™ products, some sales achieved
- Develop an effective business model that involves public, private partners collaborating to achieve FS treatment
- Influence of policy
  - Integration of compost to the fertilizer subsidy program of Ghana
  - Create a linkage with regulatory body for the certification process
- Enhancing the capacity of institutions towards wastes recycling
  - Raise awareness on possible FS recycling technologies
  - Increased visibility for partners
- Create an opportunity to replicate the model

# CONCLUSION

**This solution is full of opportunities for many African countries**

- We are doing feasibility studies for Burkina Faso and Benin
- Preliminary findings show that the composting model could be profitable

# A SHORT VIDEO

Fortifer video; From waste to food: going commercial

https://www.youtube.com/watch?v=FKMl9dr0sh0

# MANY THANKS FOR YOUR KIND ATTENTION !

Source: IWMI, 2010

**We thank our partners and our donors:**

- **WaFo Project:** Bill & Melinda Gates Foundation, Grand Challenges Canada, UK Department for International Development; Ministry of Local Government and Rural Development, Ghana)
- **CapVal Project:** co-funding from Dutch Government through the Ghana WASH Window)

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