DON'T WASTE THAT WASTEWATER, IT IS A VALUABLE RESOURCE

RESEARCH PROGRAM ON Water, Land and Ecosystems

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PRESENTATION OUTLINE

- General introduction
- The Capval project
- Activities carried out (aquaculture component)
- Some results
- Conclusions

Introduction

Photo by Pay Drechsel

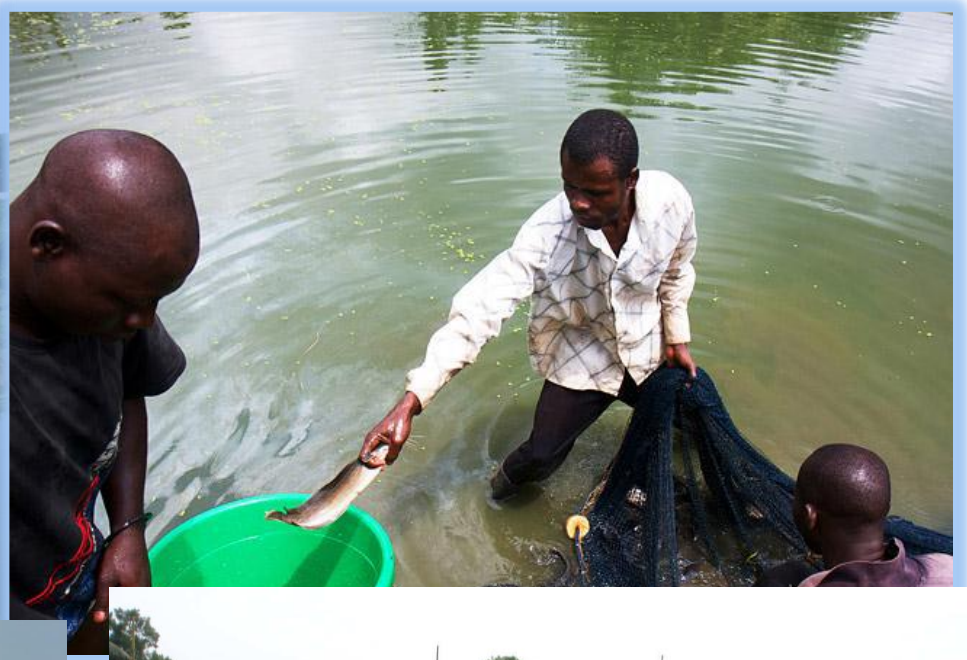
Wastewater is a valuable resources reuse it!!

WHAT ARE THE REUSE OPTIONS

IRRIGATION

FERTILIZER

Treated wastewater aquaculture



CAPVAL PROJECT

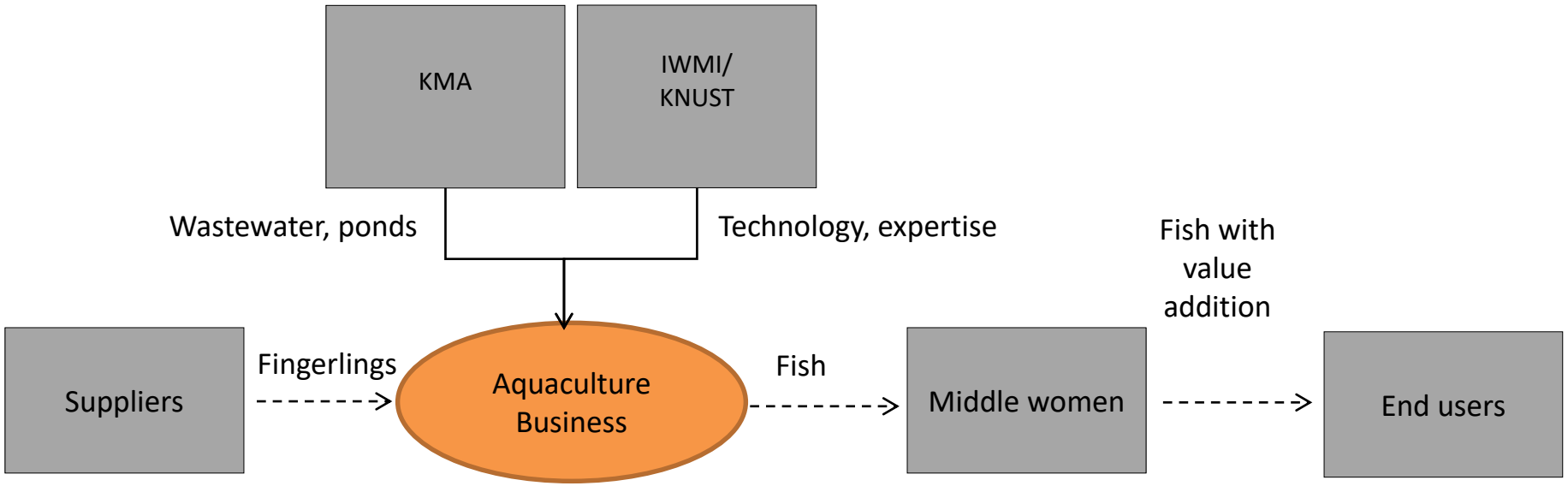
Creating and capturing value: Supporting enterprises for urban liquid and solid wastes recycling for food, energy and clean environment (CapVal)

Key partners

- Training Research and Networking for Development (TREND)
- Volta Ghana Investment Co. Ltd. (VGICL)
- Jekora Ventures Ltd. (JVL)
- RUAF-Foundation (International network of Resource centres on Urban Agriculture and Food security)
- Kumasi Metropolitan Assembly (KMA)

Wastewater Aquaculture

Product Flow Value Chain



A Public Private Partnership (PPP) between the Assembly (KMA) and the private entrepreneur.

THE BUSINESS MODEL

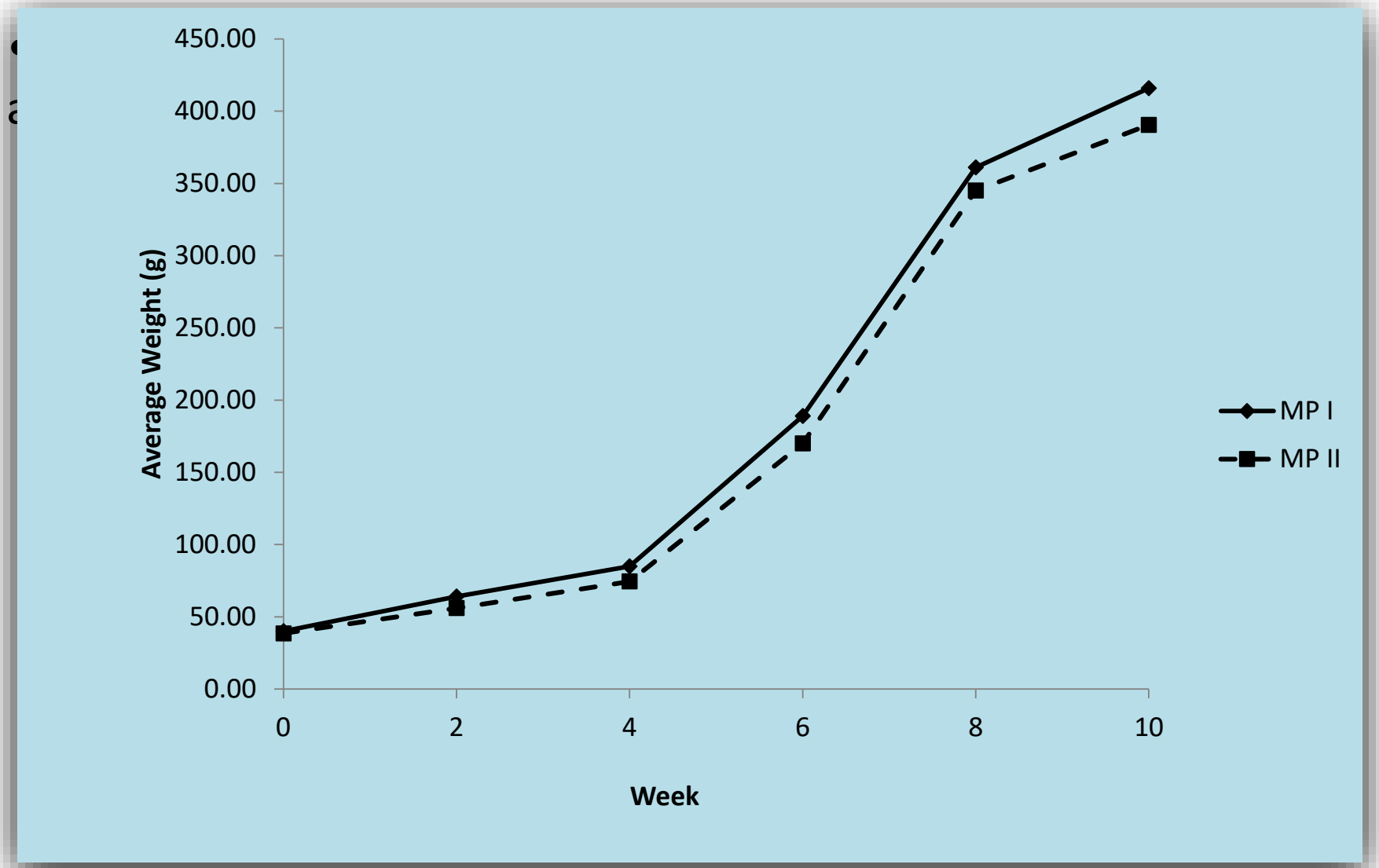
Cost Structure	Revenue Streams
• Capital investment • O & M – labour, utilities, marketing, packaging, distribution and sales	• Sales of fish
Social and environmental costs	**Social and environmental benefits**
• Possible human health hazard from contact with wastewater for workers (only if safety plan gets violated).	• Reduced public costs of treating wastewater • Increased portion of wastewater being formally treated • Reduction in health costs due to reduced discharge of contaminated water into the environment • Reduced pollution in the region • Job creation

Schematic diagram of the stabilization pond system in Chirapatre, Kumasi

Activities carried out included the following

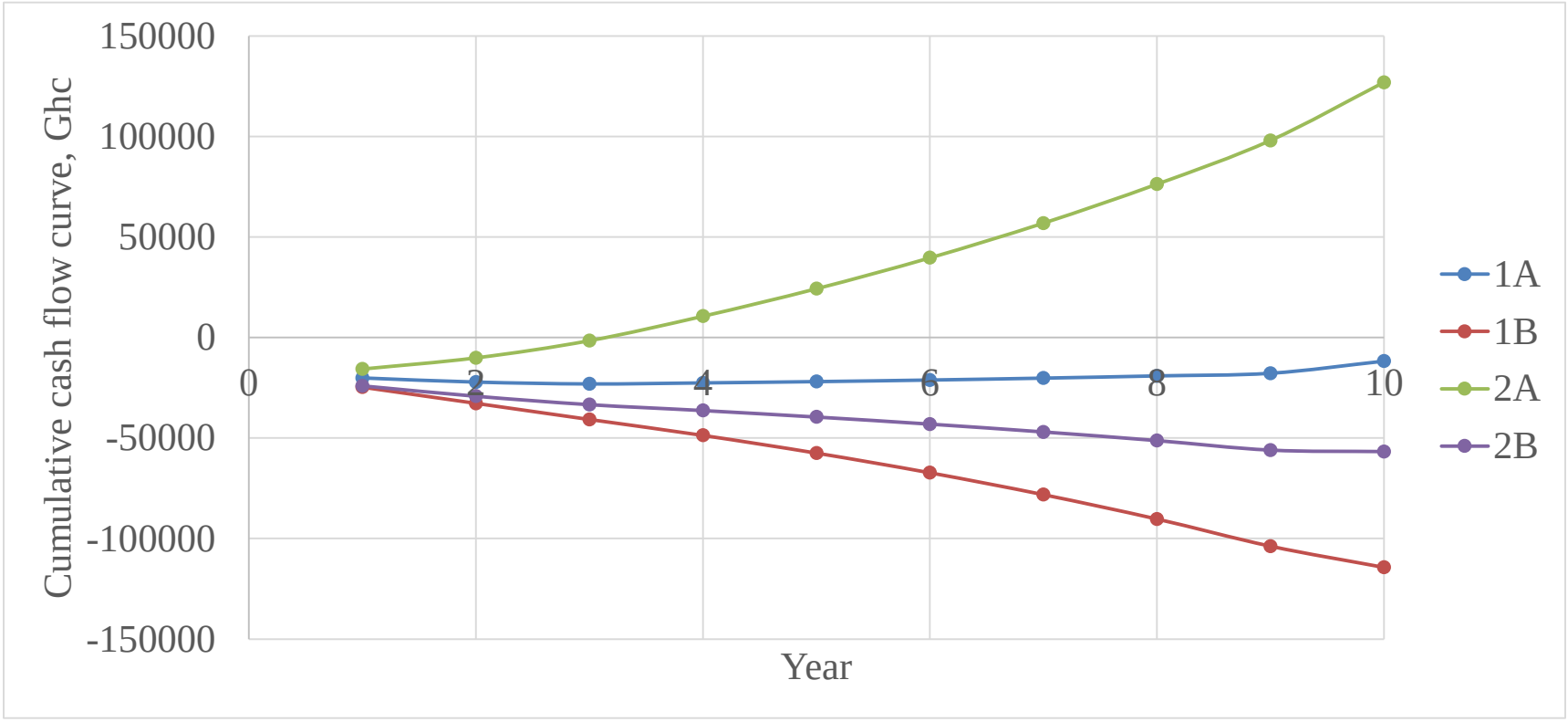
- **Optimization of the fingerling production**
  - Pond preparation/water quality measurements.
  - Identification of the fish species suitable for production, their stocking density.
  - Monitoring survival and growth performance
  - Fish quality assessments of the and its suitability for human consumption
- **Market demand and profitability assessments**
- **Identification of opportunities/risks/constraints/ --- how to address them**.

Some key findings



Cumulative cash flow curve for four scenarios

(Plant construction cost not included in the analysis)



- ✓ 1A production at maximum capacity of 3 fingerlings/m^2 and fish sold fresh
- ✓ 1B production at reduced capacity of 2 fingerlings/m^2 and fish sold fresh
- ✓ 2A production at maximum capacity of 3 fingerlings/m^2 and fish sold smoked
- ✓ 2B production at reduced capacity of 2 fingerlings/m^2 and fish sold smoked

CONCLUSIONS

- **Treated wastewater aquaculture business is viable but there could be operational constraints**:
  - maintaining good quality water,
  - appropriate stocking densities,
  - feeding practices

- **Ghana's Environmental Sanitation Policy supports safe resource recovery and reuse of waste (describes solid/liquid wastes as MINT) --- Opportunity!**

- **Source of fish not one of the major product attributes for purchasing fish in Ghana (form our market study in Kumasi)**
  - Expectations of consumers could change.
  - Product quality assurance (e.g. from Ghana Standards Authority) may be required


THANK YOU