



Development of new processes and lasting solutions for high energy costs and proper disposal of wastewater at Mpanga Growers Tea Factory Limited, Uganda

Presenter: Jacob Etunganan

AKTP Project Associate
Mpanga Growers Tea Factory

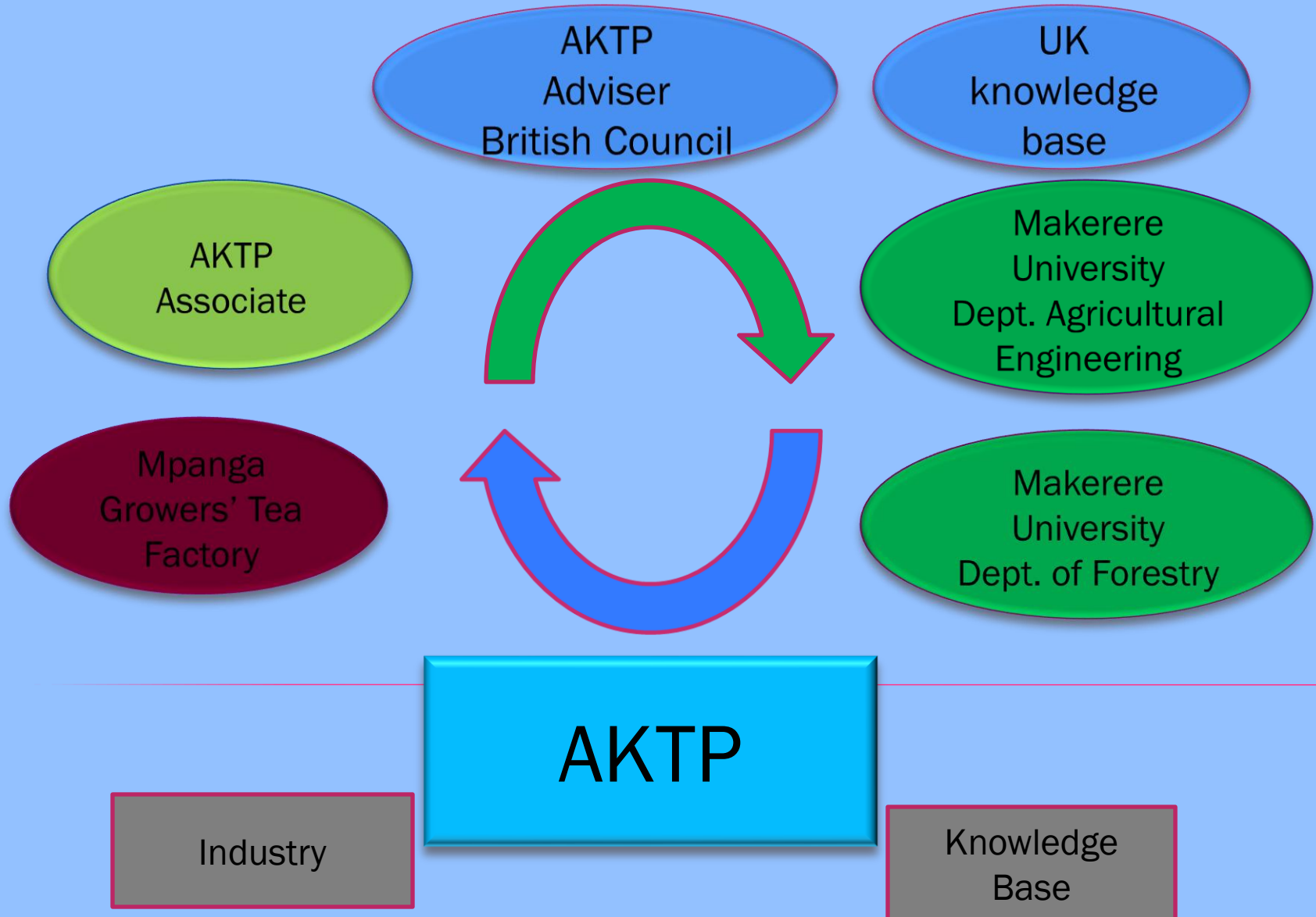




Presentation Outline

- ❑ Company Background information
- ❑ Specific challenges at the company(AKTP entry point)
- ❑ Objectives of the project
- ❑ Project Activities
- ❑ Impacts & tangible benefits
- ❑ Partnership results
- ❑ Knowledge base insights

Project Team





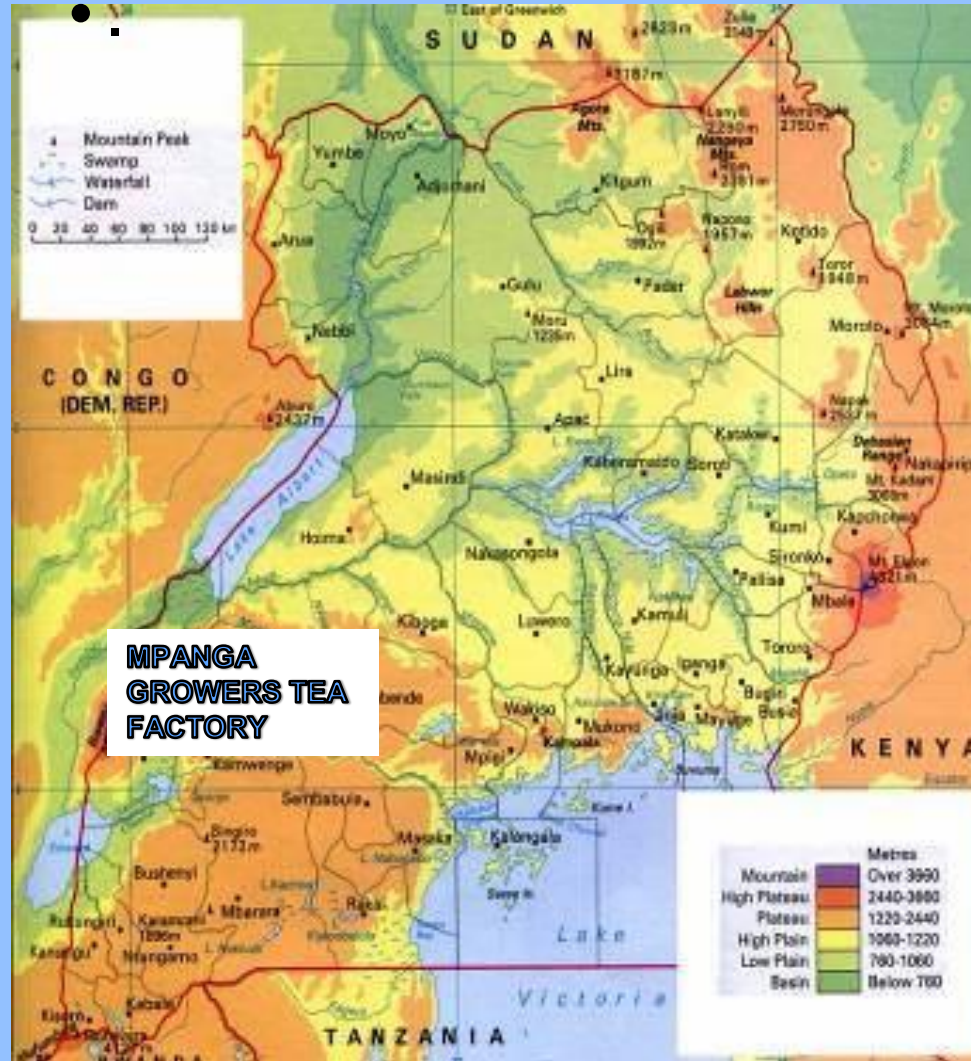
Company Introduction

- ❑ Mpanga Growers Tea Factory is a smallholder tea Factory owned by 585 farmers in Kabarole and Kyenjojo Districts in Western Uganda
- ❑ It is located at Sebitoli 15 kms from Fort portal on Kampala- Fort Portal highway
- ❑ Main Activity is the processing of Black CTC (cut tear and Curl) tea
- ❑ Main inputs are Green leaf (raw material), Fire wood (used to generate thermal energy) and Power from the National Grid





Factory Location





Specific challenges

- High energy costs

Table1:

| Description | Benchmark | Mpanga | % difference |
|--|---------------------------|--------|--------------|
| Specific wood consumption(kg/kg MT) | 0.9 (EPB report 2009) | 1.08 | 16.6 |
| Specific electricity consumption (KWh/kg MT) | 0.35 (EPB report 2009) | 0.78 | 55 |

- Release of untreated effluent to the surrounding environment-non conformity to legal requirements





Objectives of the project

- ❑ To improve on energy utilization at the factory
- ❑ To improve on effectiveness of the wood harvesting and utilization at the factory
- ❑ To design and construct a factory wastewater treatment pond



Project activities

| PHASE | TASK DESCRIPTION | OUTPUT |
|-------|--|--|
| 1 | Assessment of potential for energy conservation at the factory | Report with recommendations for implementation |
| 2 | Development of an energy utilization and conservation model | Energy model developed |
| 3 | Assessment of the woodlot performance and development of harvesting and utilization plan | Report with recommendations for implementation |
| 4 | Design and construction of waste water management plant | Effluent treatment plant constructed |
| 5 | Training of company staff on energy conservation ,effluent management and woodlot planning | Staff knowledge enhanced in these areas |
| 6 | Monitoring and evaluation of project activities over the lifetime of the project | Monitoring and evaluation reports |

Understanding process details



Withering (moisture reduction)



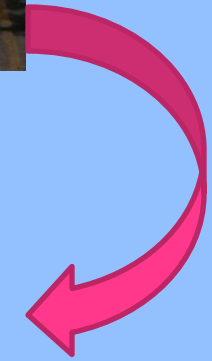
Rolling(size reduction)



Drying&sorting (moisture reduction &storage)



Fermentation (colour & aroma)





Impacts & tangible benefits

| AMOUNT SAVED ANNUAL (USD) | FINDING | SOLUTION IDENTIFIED |
|---------------------------|--|---|
| 9,570.46 | Low power factor as low as 0.7 | Power factor improved to 0.98 |
| N.A | Poor operational practices | Improved house keeping |
| 5,000 | Numerous steam leakages | Arrest and insulation of steam lines |
| 7,000 | Bigger Size logs of wood fed to boiler up to 18" | Log size reduced to 9" and feeding optimized |
| 1,000 | Numerous air leakages in withering troughs | Sealing of air leakages |
| 9,000 | Poor control practices in the withering section(15% energy lost) | Improved practices through measurements and control |
| N.A | Poor wastewater disposal | Improved wastewater disposal |



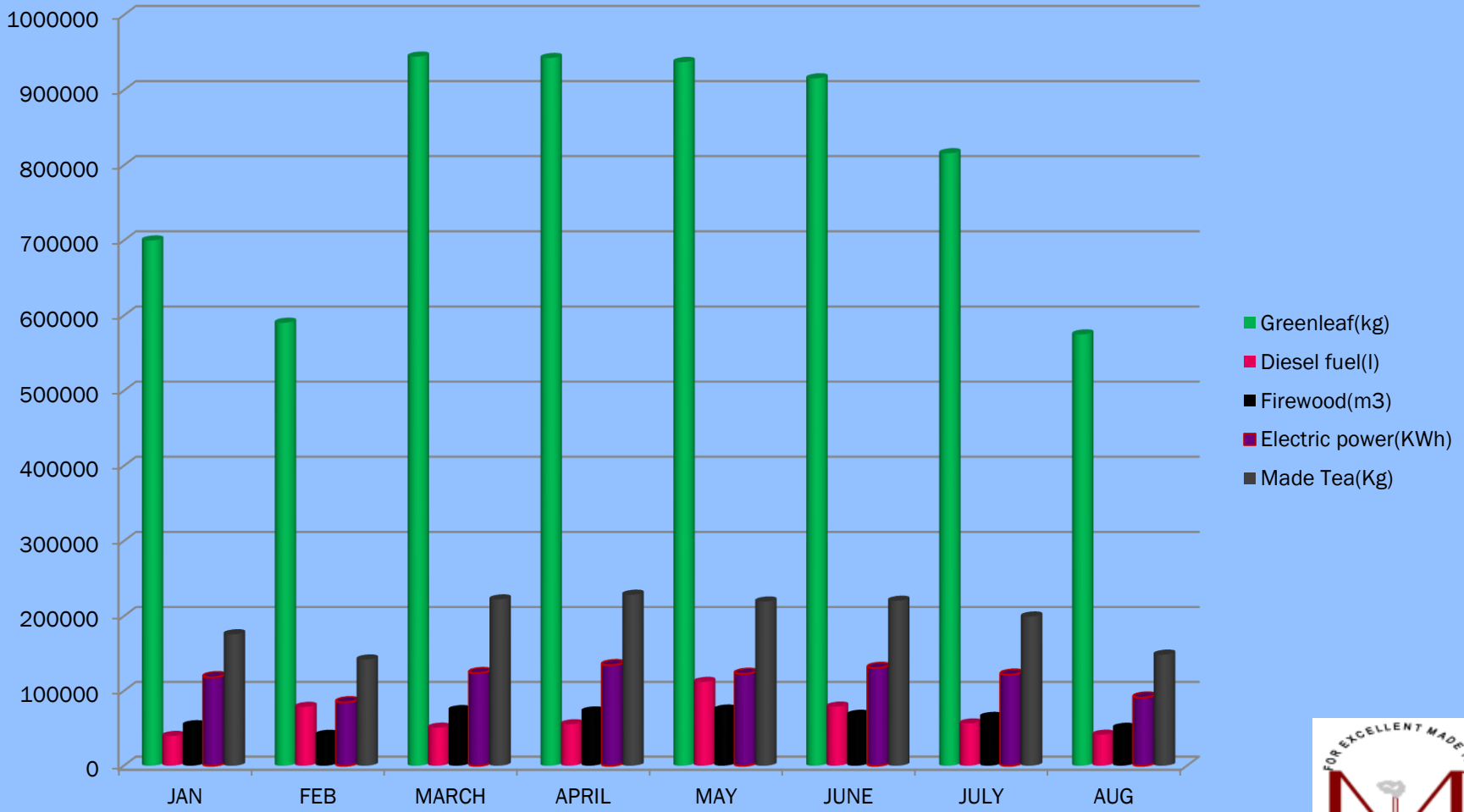
Partnership results

- ❑ SEC(kWh/Kg MT)reduced by 25% , Specific wood consumption reduced by 10%
- ❑ Effluent treatment has been designed to reduce the Total suspended solids and Biological oxygen demand to acceptable limits for disposal
- ❑ Associate has developed Skills in transformation of knowledge into solutions for business problems
- ❑ Close knowledge sharing between the academia and factory has been established
- ❑ Skills enhancement of senior management through trainings organised by the British Council





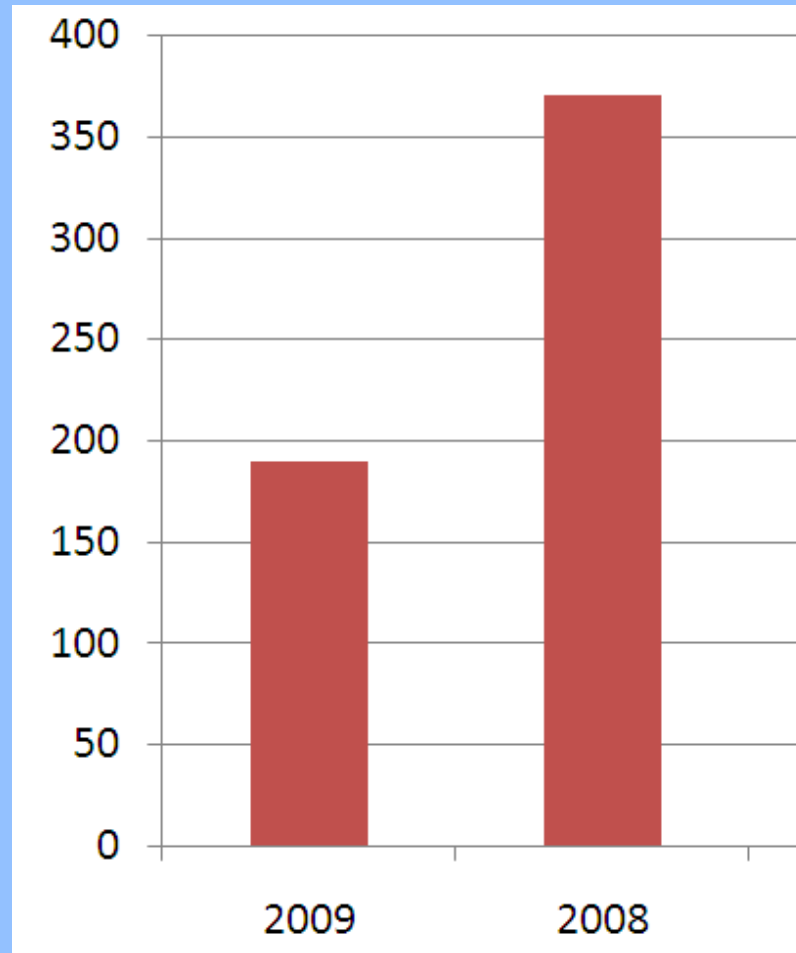
Energy productivity for 2009





Energy expenditure (2008-2009)

Cost (Million UGX)





Profit increase due to AKTP

| Financial summary | 2007(before AKTP) | 2009(after AKTP) |
|-------------------------|-------------------|------------------|
| Sales turnover (UGX) | 4,286,129,000 | 8,925,143,284 |
| Percentage of exports | 98% | 99% |
| Employee numbers | 600 | 612 |
| Profit Before tax (UGX) | (159,871,000) | 1,496,936,941 |



Capacity building





AKTP Benefits to Mak

- ❑ Enhancing the university visibility
 - Locally & internationally
- ❑ Fulfillment of the out-reach mandate
- ❑ Establishment of a working relationship with industry
 - Industrial training
 - Sharing of scientific equipment
- ❑ Establishment of linkages with UK universities



Benefits to academic & associate

- ❑ AKTP not a one way knowledge transfer but a knowledge sharing opportunity
 - ❑ to understand the industry system
 - ❑ the factors key to industrial performance
 - ❑ awareness of the actual problems in the local businesses
 - ❑ Publications
 - ❑ Reliable employment creation for a young graduate



Conclusion

- ❑ AKTP is one of the few programmes that can improve on the marketability of University graduates
- ❑ Universities should therefore look at any of the 4Ps of marketing in order to position their graduates.....brand your products (partnerships)



Thank you for listening

