

# Cost Analyses on Mechanized Land Preparation in Tanzania and Rwanda

Kathiresan, Arumugam  
Regional Consultant

Coalition for African Rice Development

## Mechanization – Cost Components

### 1. Capital Investment (Purchase) Cost

### 2. Fixed Costs:

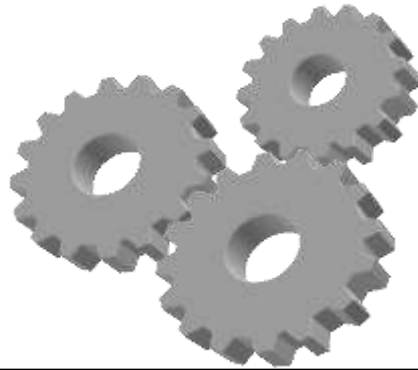
- **ownership cost or overhead costs that do not vary with machine use**
- **expenses that are necessary to the continued functioning of the business but cannot be immediately associated with outputs/services**
  - **Depreciation**
  - **Housing (Parking/Storage Shed)**
  - **Opportunity Cost (Loan + invested capital)**
  - **Insurance**



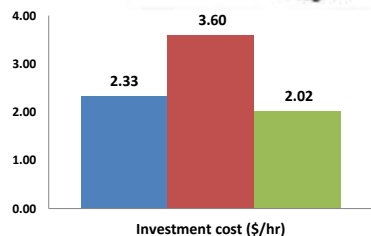
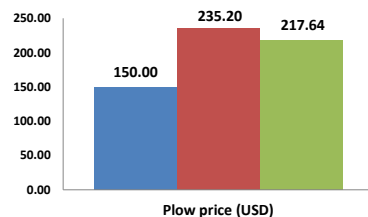
## Mechanization – Cost Components (Contd.)

### 3. Operating Costs

- those expenses that vary as machine use varies
- expenses that are immediately associated with outputs/products/services
  - Repair and Maintenance
  - Fuel and Lubrication
  - Labor
  - Dependability

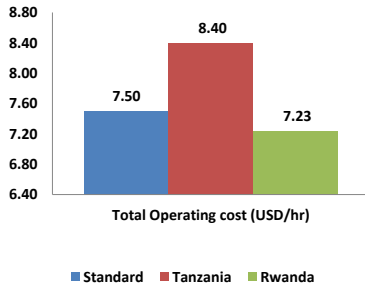
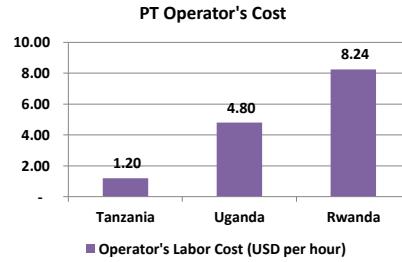
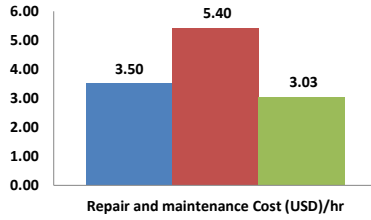


### Purchase Costs

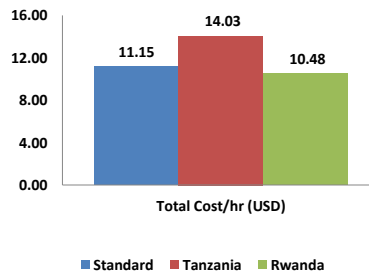
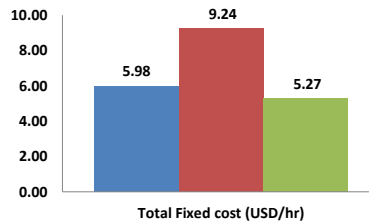


■ Standard ■ Tanzania ■ Rwanda

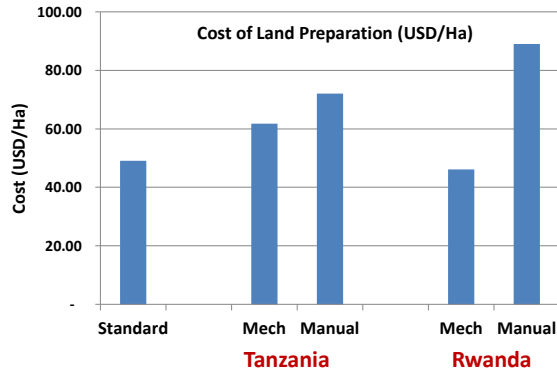
# Operating Costs



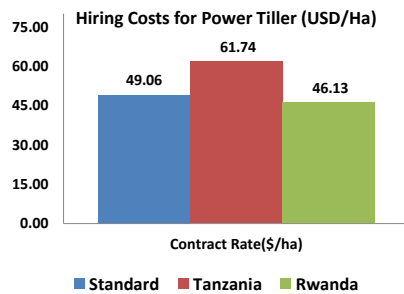
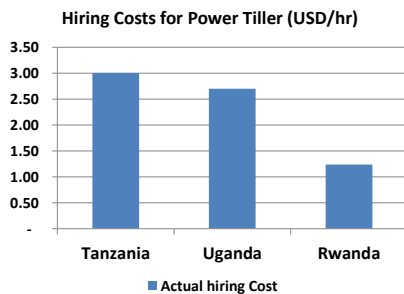
# Fixed and Total Costs



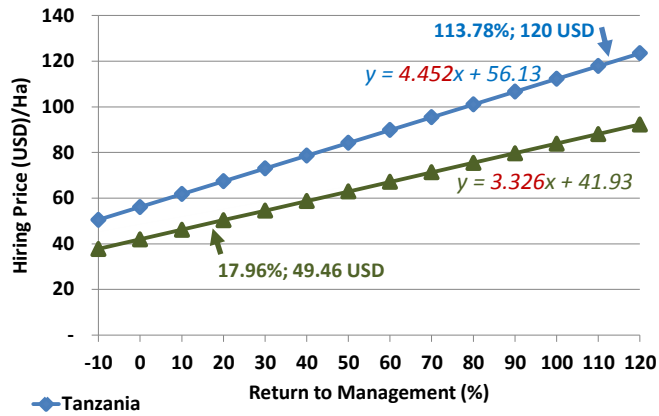
## Comparison between Manual- and Mechanized Costs of Land Preparation at 10% return to service provider



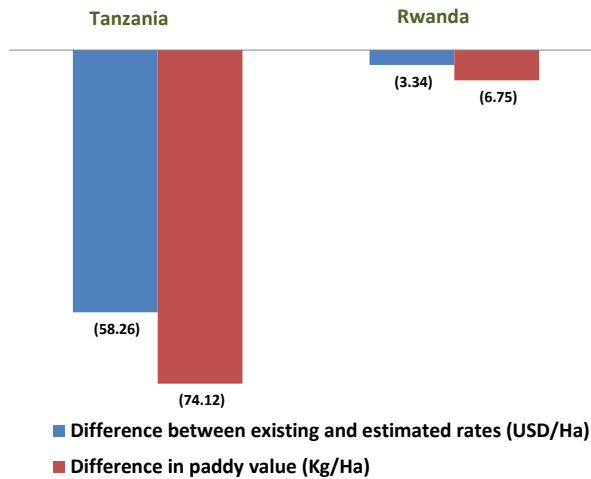
## Existing Contract Rates



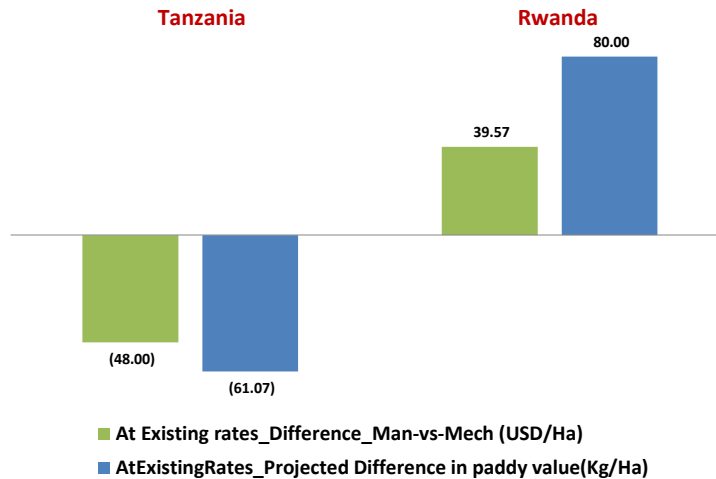
## Rates of Return to Service Providers



## Difference to the rice farmer between existing contract rate and estimated rate (@ 10% return to service provider)



## Cost Difference (more/less) for farmers by opting for mechanization against manual land preparation at 'existing' rates



## Observations → Issues → Technical- and Policy Options

| Observations   | Possible Issues  | Policy Tools |
|--|--|--------------|
| Contract rate (USD/hr) is high for Tanzania                                  | <ul style="list-style-type: none"> <li>High inflation</li> <li>Higher interest rates on loans/investments</li> <li>Taxation (service tax, income tax, etc.)</li> <li>Poor matching of equipments</li> <li>No/Weak competition amongst private entrepreneurs</li> </ul> |              |
| Contract rate is low in Rwanda   | <ul style="list-style-type: none"> <li>The power tillers are subsidized (sustainability)</li> <li>Contract is sponsored by public sector</li> <li>Lack of private players in service provision</li> </ul>  |              |
| The operating cost for power tiller in Tanzania is also higher at 8.4 USD/hr | <ul style="list-style-type: none"> <li>High repair and maintenance cost (5.4 USD/hr) against an estimated 3.5 USD/hr (Tanz)</li> <li>High operator cost (Rwa)</li> <li>High fuel cost (Rwa)</li> </ul>   |              |
| Investment cost for power tillers is higher (USD 5400)                       | <ul style="list-style-type: none"> <li>Higher sales margin</li> <li>Higher interest rates on loans towards machineries</li> <li>Matching of Equipments (machineries and implements)</li> </ul>   |              |

The Road to Rice Farm Mechanization is under construction

