This material is shared as a learning resource to promote awareness and good practice in the provision, use and management of water resources for sustainable social and economic development and maintenance of African ecosystems.

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TISA – TRANSFORMING IRRIGATION INTO IN SOUTHERN AFRICA
TISA – TRANSFORMING SMALLHOLDER IRRIGATION INTO PROFITABLE AND SELF-SUSTAINING SYSTEMS IN SOUTHERN AFRICA

Presented By: Wilson de Sousa
STRUCTURE OF PRESENTATION

I. Introduction
II. Implementation Approach
III. Tisa in Mozambique: Project Activities
IV. Key Achievements
V. Conclusion
VI. Next Step and Challenges
I. INTRODUCTION

**Funding:** Australian Government: AIFSRC – ACIAR Funding: A$ 3.3M + 3.6M

**Timeline:** 2013-2017 and 2017-2021

**Achievements for resources management**

- Between 50 and 93% of households have changed practices

- Between 50 and 88% have changed their irrigation frequency, saving between 3 and 19 hours labor per irrigation cycle.
I. INTRODUCTION

Outstanding achievements for crop production

• Between 50 and 68% of households believe it is now easier to purchase inputs

• Of the households who changed practice, between 77 and 93% increased crop yields.

Cabbages sold beside the scheme, 25 de Setembro, Mozambique © P Ramshaw 2014
I. INTRODUCTION

Outstanding achievements for farmers’ livelihoods

• Of households who changed practice, between 43 and 94% increased income

• Now spend more money on: irrigation and farm inputs (61-73%), education (42-68%) and food (36-72%).
II. IMPLEMENTATION APPROACH

Agricultural Innovation Platforms

- Increases adoption of tools
- Stimulates demand for information

Soil monitoring tools

- Learning about nutrients and moisture management improves decision making

Increased yield

Access to improved varieties and high quality inputs

Increases confidence in AIP stimulates engagement and innovation

High-value crops and improved market links, processing and transport

Increased profitability

Access to improved varieties and high quality inputs

Agricultural Innovation Platforms
III. TISA - MOZAMBIQUE

Objective

• Share the progress activities of the Project in Mozambique with focus on participatory mapping, water management and AIP implementation

Farmers installing the tools at Mafuiane irrigation scheme, 2017
III. PROJECT ACTIVITIES

The main activities:

1. Irrigation identification and selection
2. Participatory mapping and Survey
3. AIP Implementation
4. Business plan training (*field book*)
5. Irrigation water management (training using the Tools)
## III. PROJECT ACTIVITIES

### Identified Irrigation schemes

<table>
<thead>
<tr>
<th>Province</th>
<th>District</th>
<th>Características do Regadio</th>
<th># Benficiaries</th>
<th>Area (ha)</th>
<th>#Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Name</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maputo</td>
<td>Moamba</td>
<td>Bloco I</td>
<td>500</td>
<td>390</td>
<td></td>
</tr>
<tr>
<td>Maputo</td>
<td>Moamba</td>
<td>Bloco II</td>
<td>530</td>
<td>240</td>
<td>1º</td>
</tr>
<tr>
<td>Maputo</td>
<td>Boane</td>
<td>Manguiza 1</td>
<td>41</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Maputo</td>
<td>Boane</td>
<td>Manguiza 2</td>
<td>45</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Maputo</td>
<td>Namaacha</td>
<td>Mafuiane</td>
<td>256</td>
<td>196</td>
<td></td>
</tr>
<tr>
<td>Gaza</td>
<td>Chókwè</td>
<td>25 de Setembro</td>
<td>91</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Gaza</td>
<td>Chókwè</td>
<td>Gandlaze</td>
<td>180</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Gaza</td>
<td>Guijá</td>
<td>Nhatine</td>
<td>212</td>
<td>100</td>
<td>Next</td>
</tr>
<tr>
<td>Gaza</td>
<td>Guijá</td>
<td>7 de Abril</td>
<td>112</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Gaza</td>
<td>Chibuto</td>
<td>Maniquenique</td>
<td>71</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Gaza</td>
<td>Chibuto</td>
<td>Tchaimite</td>
<td>207</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td>Gaza</td>
<td>Chibuto</td>
<td>7 de Setembro</td>
<td>80</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>2325</strong></td>
<td><strong>1376</strong></td>
<td></td>
</tr>
</tbody>
</table>
III. PROJECT ACTIVITIES

Participatory Mapping and Survey

Fig. 1: Activity plan for Mafuiane irrigation scheme

Fig. 2: Farmers and TISA staff checking the base map at Mafuiane irrigation scheme
III. PROJECT ACTIVITIES

AIP Implementation

Figure 5: Developing functional networks (van Rooyen & Moyo, 2017)
III. PROJECT ACTIVITIES

AIP Implementation

A *visioning process* meeting was held at the irrigation schemes with farmers to get a picture of how farmers see themselves in next five (5) years and identify main issues they face.

*Fig 6: Vision process meeting at Mafuiane Irrigation scheme.*
III. PROJECT ACTIVITIES

Irrigation water management

Fig 7: Helping a farmer filling the field book at Mafuine irrigation schemes

Fig 8: Selected farmers at Mafuiane irrigation scheme receiving the training
IV. KEY ACHIEVEMENTS

**Grain**

- Yield: 2 - 4,000 kg ha\(^{-1}\)
- Price: US$0.08 - 0.25 kg\(^{-1}\)

**Green**

- Yield: 11 - 22,000 kg ha\(^{-1}\)
- Price: US$0.20 – 0.41 unit\(^{-1}\)

- Production under smallholder irrigation has to be analysed economically, to make maximum utilization of the available farmer resources.

- Given the scarcity of water, profitable crops has to be grown if farmers are to maximise their profits.
IV. KEY ACHIEVEMENTS

Average number of irrigation events

Average irrigation interval
IV. KEY ACHIEVEMENTS

Average duration of irrigation interval

- 2014: 5 hours
- 2015: 5 hours
- 2016: 4 hours
- 2017: 4 hours

- With tools:
  - 18% decrease from 2014 to 2015
  - 39% decrease from 2014 to 2017
IV. KEY ACHIEVEMENTS

Green maize yield over four seasons

![Graph showing green maize yield over four seasons.

Green maize water productivity (Irrigation + rainfall)

![Graph showing green maize water productivity over four seasons.

% yield with tools 37-48% higher than those without

2 fold increase

>3 fold increase

3 fold

9 fold

Season
IV. KEY ACHIEVEMENTS

Gross income per hectare

- Income with tools 38-48% higher than those without

<table>
<thead>
<tr>
<th>Year</th>
<th>With tools</th>
<th>Income with tools 38-48% higher than those without</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
IV. KEY ACHIEVEMENTS

Changes in farming practices

<table>
<thead>
<tr>
<th>Changes to farming practices the last four years</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you changed how often or for how long you irrigate? (% yes)</td>
<td>86</td>
</tr>
<tr>
<td>Why did you do that (% of those who changed)</td>
<td></td>
</tr>
<tr>
<td>Monitoring tools</td>
<td>80</td>
</tr>
<tr>
<td>To avoid water logging</td>
<td>7</td>
</tr>
<tr>
<td>To save water</td>
<td>18</td>
</tr>
<tr>
<td>Availability of water</td>
<td>3</td>
</tr>
<tr>
<td>Plot levelling</td>
<td>43</td>
</tr>
</tbody>
</table>
## IV. KEY ACHIEVEMENTS

Changes in response to tools

<table>
<thead>
<tr>
<th>Changes in response to tools</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(61.9) Have you made changes to your farming practices as a result of what you learned from the chameleon? (% of yes in 61)</td>
<td>93</td>
</tr>
<tr>
<td>Q61.11 What did you change?</td>
<td></td>
</tr>
<tr>
<td>Frequency of irrigation</td>
<td>85</td>
</tr>
<tr>
<td>Length of time taken</td>
<td>56</td>
</tr>
<tr>
<td>Reduced amount of water</td>
<td>62</td>
</tr>
<tr>
<td>(Q61.12) Have you made any changes to your farming practices as a result of what you learned from the Full Stop? (% of yes in 61)</td>
<td>68</td>
</tr>
<tr>
<td>Q61.14 What did you change? (% of yes in 61.12)</td>
<td></td>
</tr>
<tr>
<td>quantity of fertiliser applied changed</td>
<td>11</td>
</tr>
<tr>
<td>changed mode of fertiliser application</td>
<td>63</td>
</tr>
<tr>
<td>Changed time of fertilizer application (when to apply)</td>
<td>37</td>
</tr>
</tbody>
</table>
## IV. KEY ACHIEVEMENTS

### Location of monitoring tools

<table>
<thead>
<tr>
<th>Location of nearest tool</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Where is the nearest tool located (% of those yes in 61)</td>
<td></td>
</tr>
<tr>
<td>I have tool</td>
<td>68</td>
</tr>
<tr>
<td>My neighbour has tool</td>
<td>14</td>
</tr>
<tr>
<td>The farmer two plots away has the tool</td>
<td>0</td>
</tr>
<tr>
<td>The farmer three plots away has the tool</td>
<td>7</td>
</tr>
<tr>
<td>A farmer on the same canal as me has the tool</td>
<td>-</td>
</tr>
<tr>
<td>A farmer on a different canal has the tool</td>
<td>11</td>
</tr>
</tbody>
</table>
V. CONCLUSION

- Tools+AIP combined contributed to the reduction of irrigation events, water level application and irrigation frequency.

- The introduction of tools+AIP at 25 de Setembro scheme triggered an increased of green maize yield and consequently the water productivity by more than 250%.

- In 2016/2017, farmers with tools increased their gross income by 38-48% in comparison to those without tools.
VI. NEXT STEP AND CHALLENGES

1. Illiterate farmers make the data collection a challenge

2. Involve the Private sector in the process of acquiring the tools

3. Develop a research protocol

4. Finalize the Tools user guide for extension officers and farmers

5. Promote business plan workshops for farmers and extension officers

6. Exit Strategies
OBRIGADO

THANK YOU

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