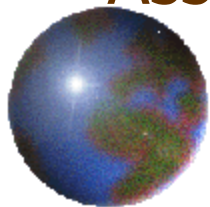




Market Access and Commercialization: Assessment of Scenarios with Policy Analysis Matrix



Alex Winter-Nelson, University of Illinois

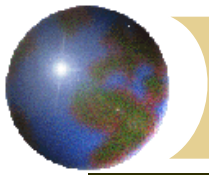
Solomon Lemma, IFPRI

Shahidur Rashid, IFPRI (Presenting)

Prepared for IFAD-IFPRI Strategic Partnership Program
Innovative Policies for Improved Market Access Climate Change Mitigation

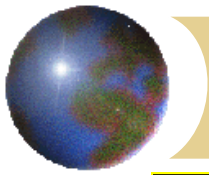
Washington DC

July 25, 2012



Plan of presentation

- ⊗ The rationale for the activity and the method
 - ⊗ Why this *activity* and *method*
- ⊗ Illustration of Policy Analysis Matrix (PAM)
 - ⊗ What can it do and how is it done?
- ⊗ The preliminary results
 - ⊗ Geographic focus and data sources
 - ⊗ The commodity focus (maize and cotton)
- ⊗ Identifying opportunities (*very tentative*)
- ⊗ Summary and way forward



The rationales

✚ Rationale for the activity

- ✚ assess comparative advantage of agricultural sector in Northern Mozambique, where IFAD and the GoM are implementing PROMER
- ✚ Identify the interventions and policy changes that could influence the region's comparative advantage
- ✚ Build national capacity for monitoring policy parameter / project progress (the objective was to implement the PAM with national partners)

✚ Rationale for proposing PAM

- ✚ Simple yet powerful to analyze comparative advantage under alternative policy scenarios and draw implications for poverty alleviation economic growth potentials
- ✚ Easy to train country partner to carry out the analysis

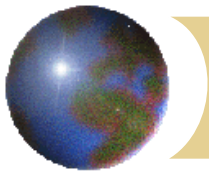


Illustration of PAM (1)

- ✚ Method to identify agricultural activities that
 - ▣ Contribute to economic growth for nation
 - Find comparative advantages
 - ▣ Contribute to farm income growth
 - alleviate poverty
- ✚ Method to identify interventions that could increase both of these contributions in specific agricultural activities.

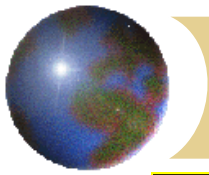


Illustration of PAM (2)

✚ Key elements of analysis:

- ✚ Comparison of costs and benefits of farmers for a given commodity (private costs) with that of the costs and benefits to the whole country (social costs).
- ✚ Private costs-benefits and social costs-benefits can differ due to taxes and subsidies or market failures.
- ✚ Finding beneficial and sustainable farm activities that are profitable to farmers and the economy as whole.

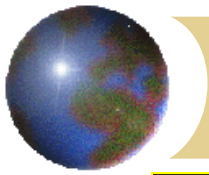


Illustration of PAM (3)

Example 1: import restriction / subsidies

- ⊕ US farmer sees revenue of 20 cents per pound of sugar.
- ⊕ US could import sugar for 10 cents per pound but restricts imports, raising price to 20.
- ⊕ Sugar is worth 10 to the national economy.
 - ⊞ Sugar could be gotten for that much!
- ⊕ Sugar earns 20 for the US farmer.

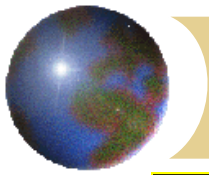
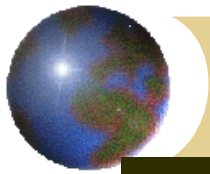


Illustration of PAM (4)

Example 2: Input subsidies

- ❖ Farm costs may also differ from national costs due to input subsidy policies.
- ❖ If fertilizer is subsidized, its cost to the farmer is less than its cost to the country. The state covers part of cost.
- ❖ With a 20% subsidy, a farmer would pay 10 for some input, but the total cost to the country would be the 10 she pays, plus 2 paid by the state. The national cost is 12.

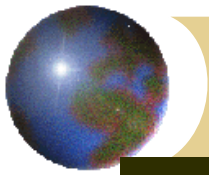


PAM Illustration: Farm and National Income (1)

Per hectare of land	Farm	Nation
Revenue (\$)	20,000	10,000
Input Costs (\$)	10,000	12,000
Labor and Capital (\$)	5,000	5,000
Profits (\$)	5,000	-7,000

Policy inconsistency

1. Here the farmer finds production **profitable**,
2. But that production costs the country more than it needs to pay.
3. The country loses \$7,000 per HA of land for producing this crop compared to importing.



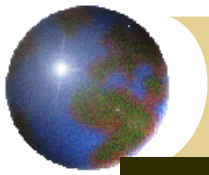
PAM Illustration: Farm and National Income (2)

Per hectare of land	Farm	Nation
Revenue (\$)	10,000	20,000
Input Costs (\$)	10,000	12,000
Labor and Capital (\$)	5,000	5,000
Profits (\$)	-5,000	3,000

Policy inconsistency

1. Here, policy is depressing the local prices /taxing the producers
2. It is worth 20, but farmer receives only 10.
3. Producing a HA of this crop would profit the country \$3,000 over importing, but farmers lose \$5,000 if they grow it.

Bottom line: Little grown, lost opportunity



PAM Illustration: Farm and National Income (3)

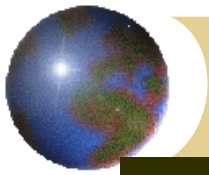
Per HA of land	Farm	Nation
Revenue (\$)	18,000	20,000
Input Costs (\$)	10,000	12,000
Labor and Capital (\$)	5,000	5,000
Profits (\$)	3,000	3,000

CONSISTENCY!

Here production would be:

1. **Profitable** to farmers (reduces poverty)
2. **Profitable** for nation (raises economic growth)

The bottom line: **Policy Analysis** looks to find these conditions and to identify ways to create these conditions.



Some useful measures from PAM

Per Hectare	Farm	Nation	Diff.
Revenue (\$)	18,000 (A)	20,000 (E)	-2,000 (I)
Input Costs (\$)	10,000 (B)	12,000 (F)	-2,000 (J)
Labor and Capital (\$)	5,000 (C)	5,000 (G)	0 (K)
Profits (\$)	3,000 (D)	3,000 (H)	0 (L)

Some useful summary measures from the PAM:

Private Cost benefit ratio (farm):

Social Cost benefit ratio (country):

Domestic Resource Cost ratio:

Producer Subsidy Equivalent:

Nominal Rate of Protection:

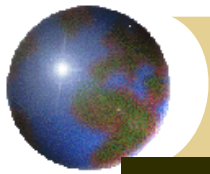
$(B+C)/A \rightarrow$ Ratios handy for comparing

$(F+G)/E \rightarrow$ Different commodities.

$C/(E-F) \rightarrow$

$L/A \rightarrow$ Measure of trade protection

$(A/E)-1 \rightarrow$ Measure of tax /subsidy



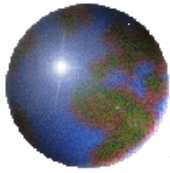
What we look for alternative policy environment

Per Hectare	Farm	Nation	Diff.
Revenue (\$)	18,000 (A)	20,000 (E)	-2,000 (I)
Input Costs (\$)	10,000 (B)	12,000 (F)	-2,000 (J)
Labor and Capital (\$)	5,000 (C)	5,000 (G)	0 (K)
Profits (\$)	3,000 (D)	3,000 (H)	0 (L)

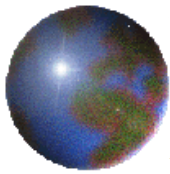
Example:

Production is privately and socially profitable => comparative advantage exists.
Slight overvaluation of currency implies depressed private revenue, tradable input costs and private profits.

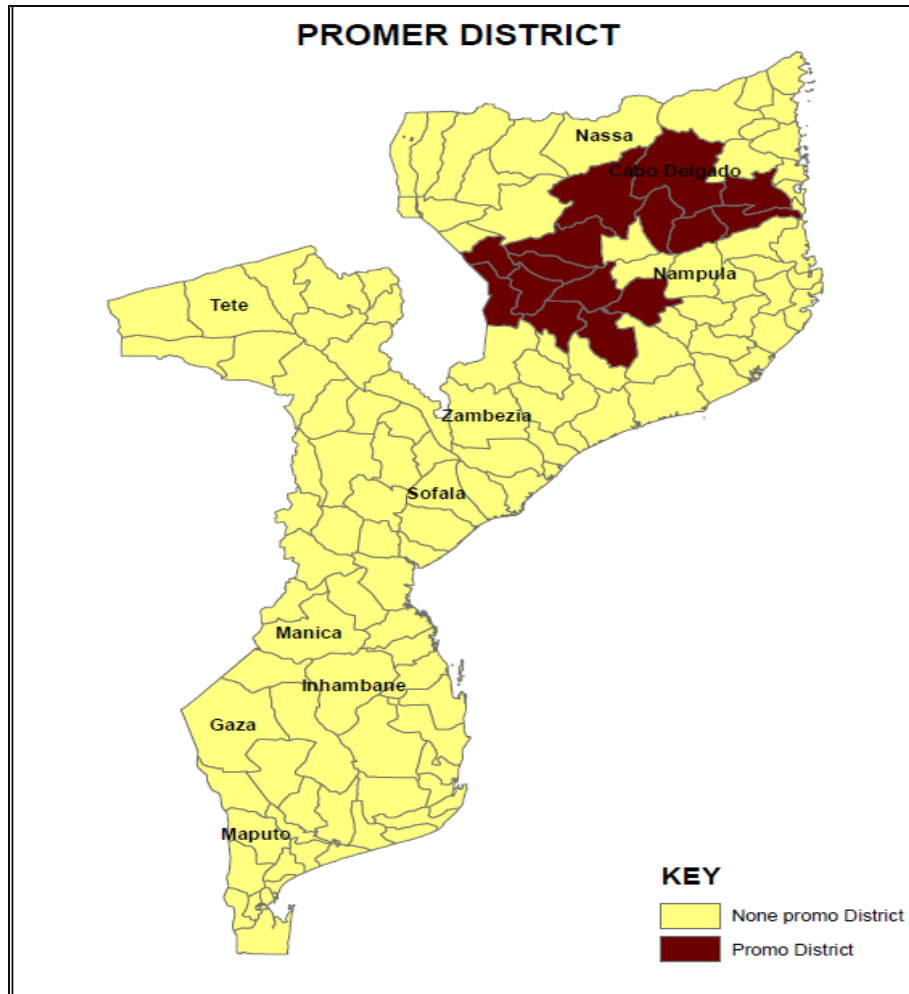
Simulation of infrastructure or technology improvement would alter private and social values.



POLICY ANALYSIS MATRIX FOR NORTHERN MOZAMBIQUE

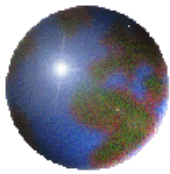


Mozambique PAM: Geographic Focus (1)

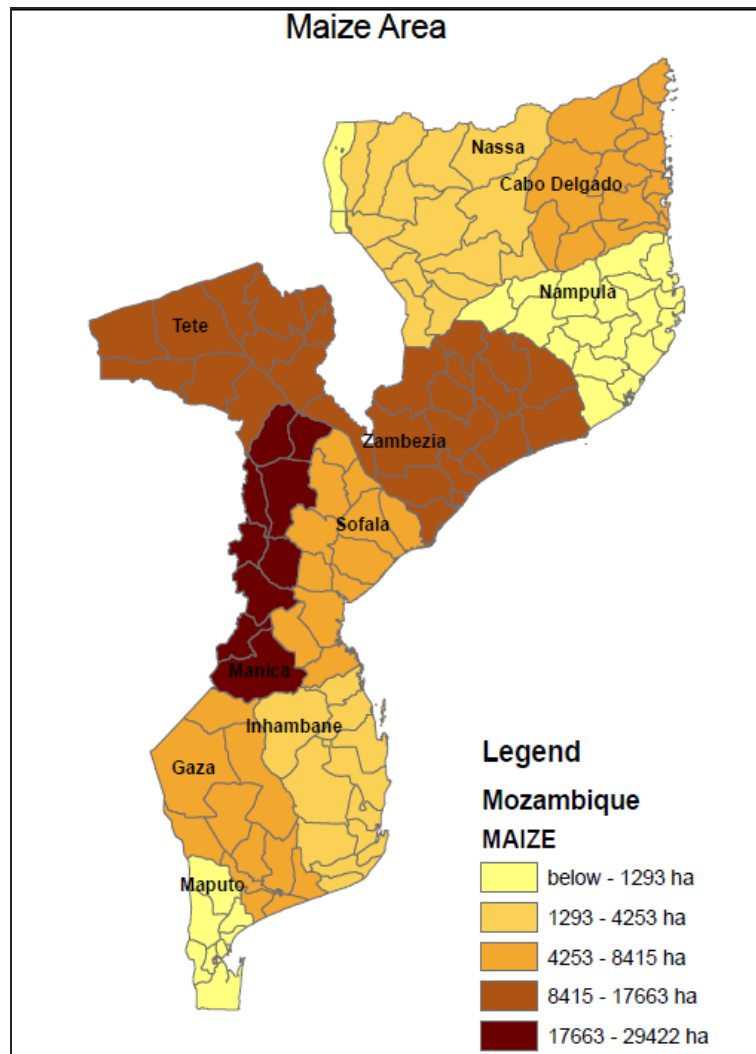


15 PROMER District in 4 Region

- Niassa (6 District)
- C delgado (5 District)
- Nampulla (2 District)
- Zambez (2 Destrict)



Mozambique PAM: Geographic Focus (2)

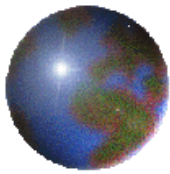


Maize

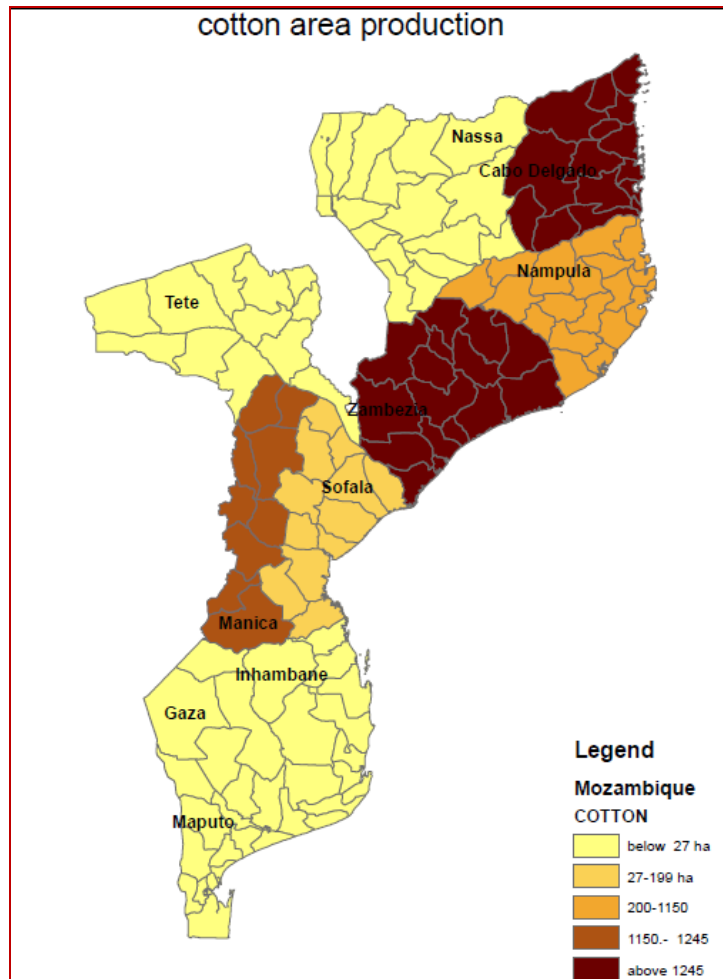
- Important staple crop
- In 2010/11 2.1 million ha
- There is huge gap between actual and potential yield
 - **Actual 0.9 t/ha**
 - **Potential 5-6 t/ha**
- Small holder dominate

Two farming sectors

- Individual family farmers (FAM)
 - Uses family labor
- Medium and large scale farmers (ECF) ≥ 10 ha (only 5% of the land)

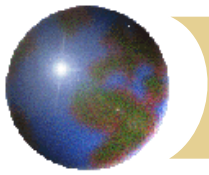


Mozambique PAM: Geographic Focus (3)



Cotton

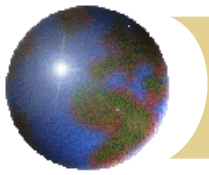
- Income for 250,000 families)
- 20% of agricultural sales
- In 2010, 130 thousand hectare of land allocated to Cotton
- An important cash crop and part of smallholders livelihoods
- Overlaps with PROMER focus regions



Mozambique PAM: Data sources

- ✚ ITA 2008 Household survey (MoA and MSU)
- ✚ FEWSNET Mozambique country office
- ✚ SAFEX (South Africa Future Exchange) and
- ✚ Mozambique Ministry of Agriculture Database

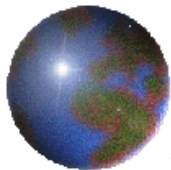
A serious missing element is triangulation with field data and training for local partners



Mozambique PAM for Maize: Baseline (1)

Baseline PAM

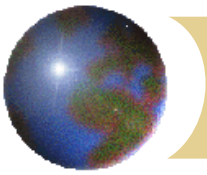
- Typical smallholder production system (no purchased inputs)
- Maize price based on export to Malawi (Blantyre cif) and policy conditions in 2008.
- Existing infrastructure and transport costs imply Nampula price (Blantyre cif-costs=Nampula fob)
- Blantyre Price set to US\$325/MT



Mozambique PAM: Baseline for maize (2)

Maize MZN/HA	Revenue	Input Costs	Labor and Capital	Profits
Private	4,682	0.00	2,486	2,196
Social	5,604	0.00	2,483	3,121
Divergence	-922	0.00	3	-925

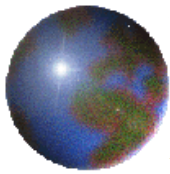
Divergence emerges from estimated 15% overvaluation of currency. Appreciation of since 2008 has likely removed divergence raising private to social level. Still very low private and social returns (MZM 3100 < US\$100).



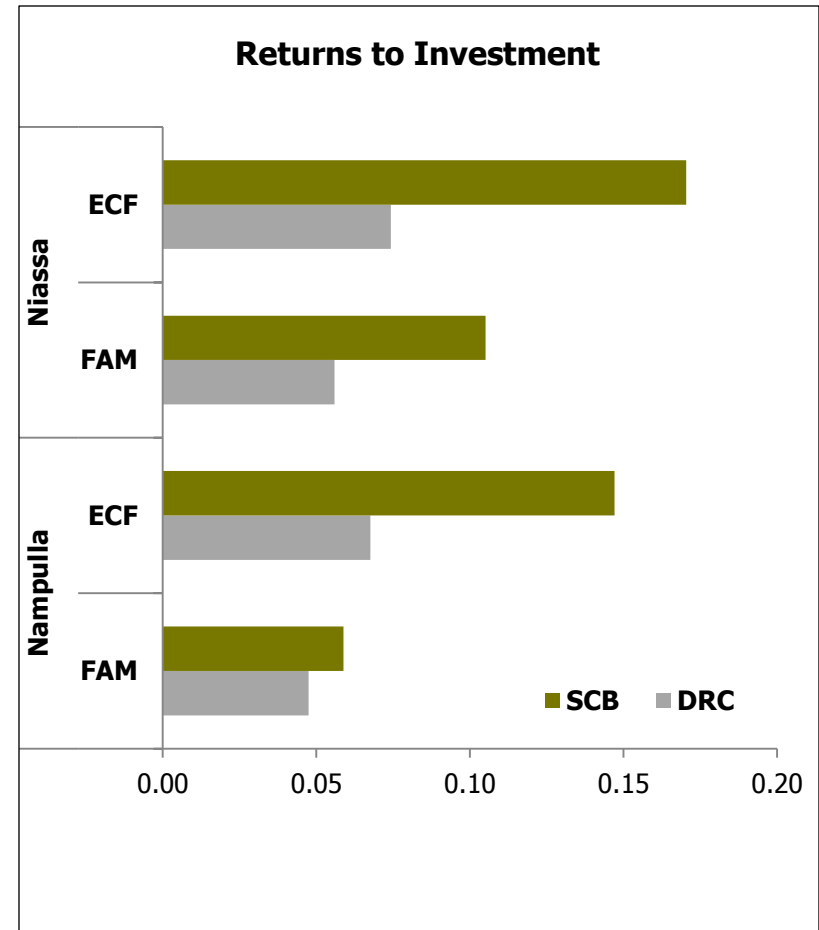
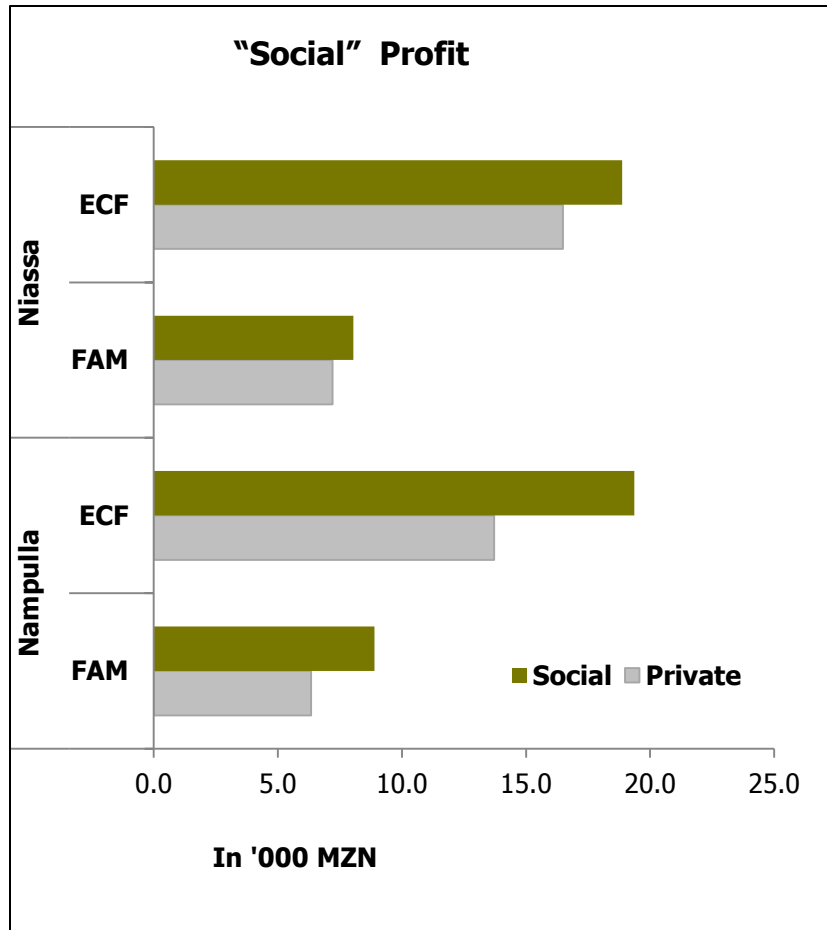
Mozambique PAM: Maize alternative scenario (1)

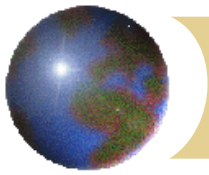
✚ Introduction of Emergent Commercial Farmers:

- ▣ Cultivate at 10 ha of land
- ▣ Use modern inputs



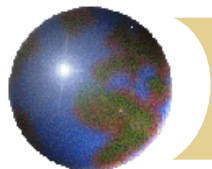
Mozambique PAM: Maize alternative scenario (2)





Mozambique PAM: Maize alternative scenarios (3)

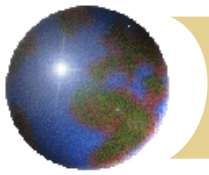
- ⊕ Emerging commercial farmers' technology
- ⊕ Reduced transactions costs (50%)
- ⊕ Trade with Blantyre



Mozambique PAM: Maize alternative scenarios (4)

MZM/HA	Revenue	Costs of Tradable Inputs	Costs of Domestic Factors	Profits
PRIVATE PRICES Traditional Technology Baseline	4,682	0.00	2,486	2,196
PRIVATE PRICES Traditional Technology, with no overvaluation + 50% Lower Trans Costs	6,044	0.00	2,485	3,559
PRIVATE PRICES ECF Technology ; no currency overvaluation + 50% Lower Trans Costs	20,779	1,901	2,854	16,024
SOCIAL PRICES ECF Technology with no overvaluation + 50% Lower Trans Costs	21,705	1,777	2,832	17,096

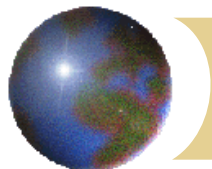
Author's calculations. Market outlet is Blantyre. Data are provisional and results are not to be cited.



Mozambique PAM for maize: alternative scenarios (5)

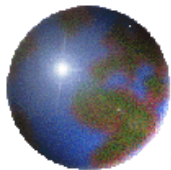
✚ Should Blantyre market be relied upon?
What if there's trade restrictions?

- ▣ An alternative would be integrating North with Maputo.
- ▣ The next simulations looks at that possibility



Mozambique PAM for maize: alternative scenarios (6)

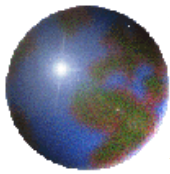
MZN/HA	Revenue	Costs of Tradable Inputs	Costs of Domestic Factors	Profits
PRIVATE PRICES Traditional Technology Baseline	3,771	0.00	2,486	1,285
PRIVATE PRICES Traditional Technology 50% Lower Trans Costs	4,371	0.00	2,485	1,885
PRIVATE PRICES ECF Technology + 50% Lower Trans Costs	12,181	1,901	2,854	7,426
SOCIAL PRICES ECF Technology + 50% Lower Trans Costs	12,035	1,777	2,832	7,426



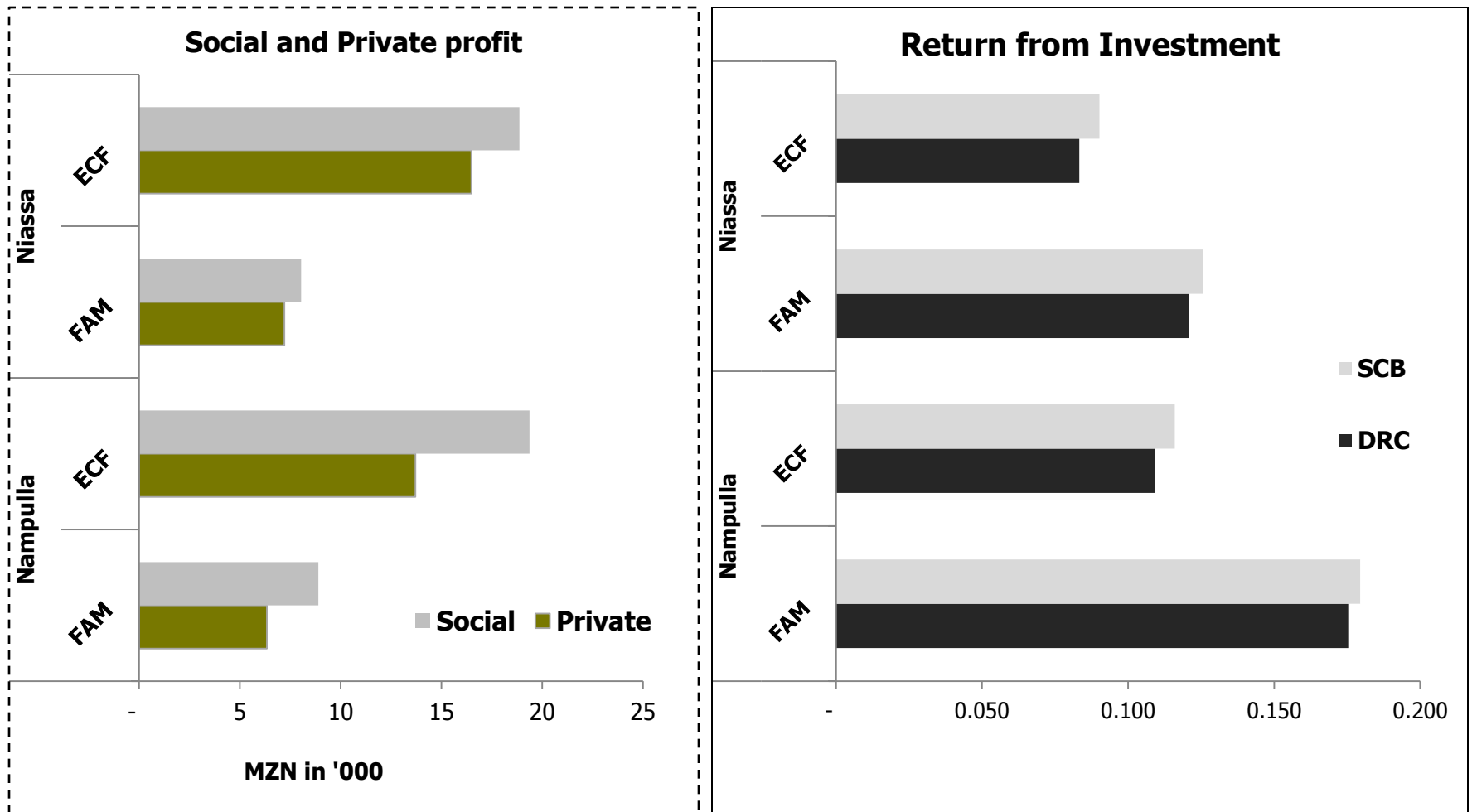
Mozambique PAM: Baseline for cotton

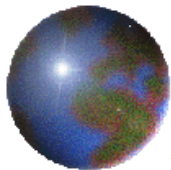
Maize MZN/HA	Revenue	Input Costs	Labor and Capital	Profits
Private	3339.6	340.5	1117.7	1881.4
Social	4352.3	32.7	1157.3	3162.3
Divergence	-1012.7	307.8	-39.5	-1280.9

Divergence emerges from estimated 15% overvaluation of currency. Appreciation of since 2008 has likely removed divergence raising private to social level. Still very low private and social returns (MZN 3160 which is close to US\$100).

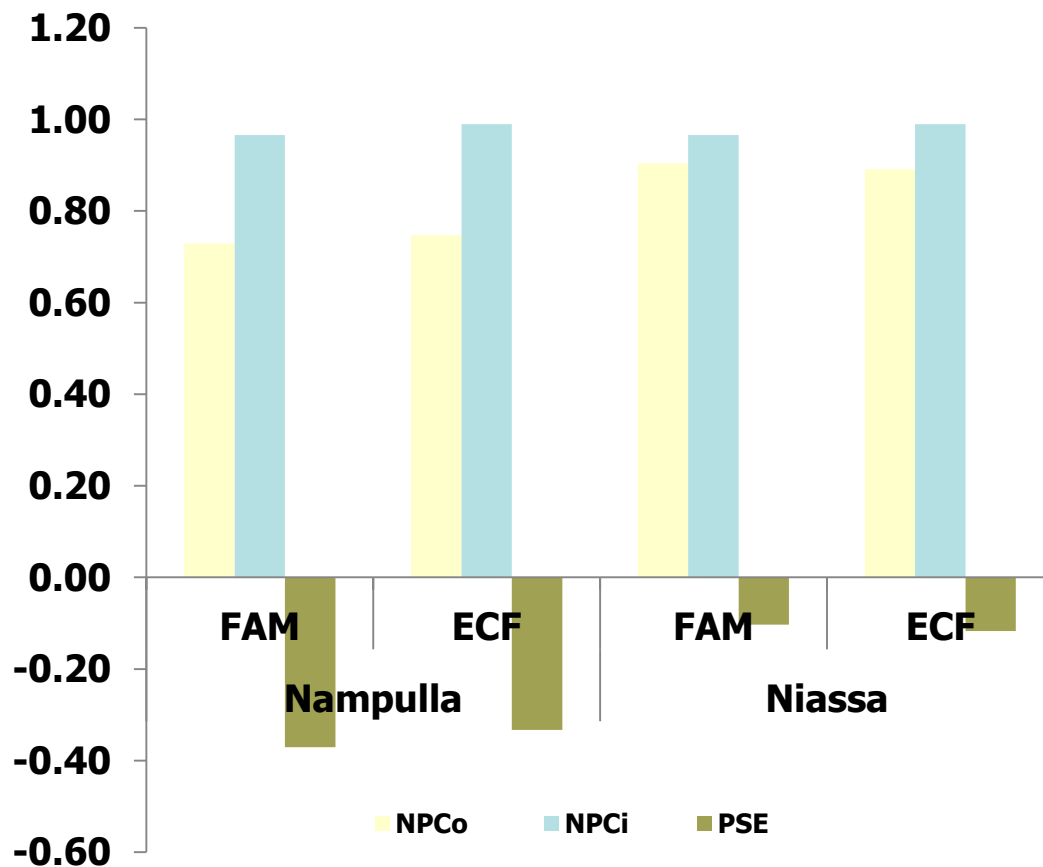


Mozambique PAM: Cotton comparative advantage



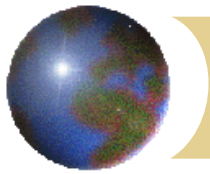


Protection / Taxation for maize

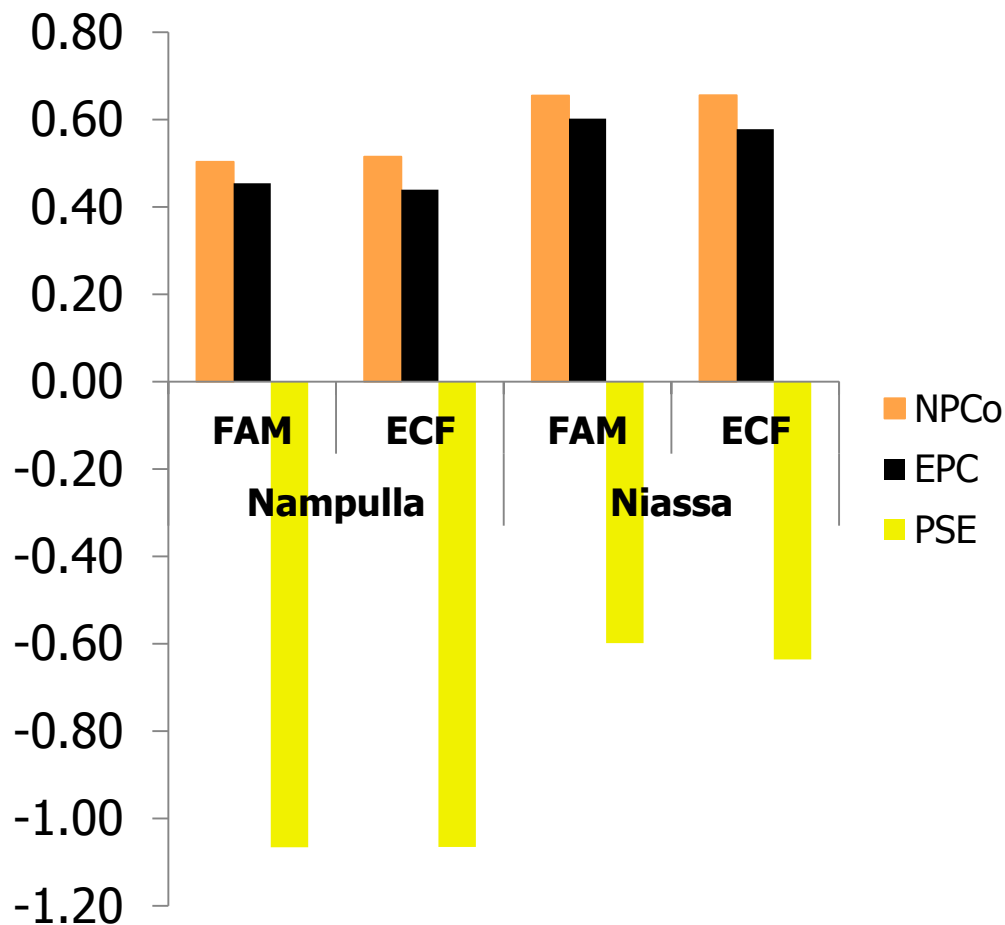


Indicators of Protection

- **NPCo** :-Nominal Protection Coefficient on Output > 1 implies protection.
- **NPCi** :-Nominal Protection Coefficient on Tradable Inputs < 1 implies protection to output.
- **PSE**:-Producer subsidy equivalent >0 implies subsidy.
- **SRP**:-Subsidy Ration to Producers >0 implies subsidy.
- **Net Transfer:-Domestic** currency transfers per Ha > 0 implies subsidy

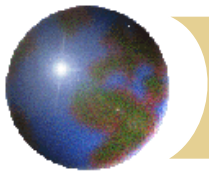


Protection / Taxation for cotton



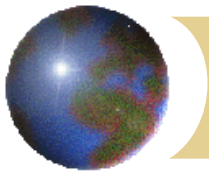
Indicators of Protection

- **NPCo**:-Nominal Protection Coefficient on Output > 1 implies protection.
- **NPCi** :-Nominal Protection Coefficient on Tradable Inputs > 1 implies protection to output.
- **EPC**: Effective protection coefficient $> 1 \rightarrow$ protection
- **PSE**:-Producer subsidy equivalent > 0 implies subsidy.
- **Net Transfer**:-Domestic currency transfers per Ha > 0 implies subsidy



Summary and way forward

- ✿ PAM can be a useful tool for updating policy environment and tracking progress of selected intervention crops.
- ✿ The exercise based on secondary data indicates that there are comparative advantages in both maize and cotton.
- ✿ However, these crops (and most likely the other crops) are not likely to have significant impact on poverty under the current traditional technology and high transactions costs.
- ✿ There are clear indications that misalignment in macro parameters (interest rates and currency) causes divergence in private and social costs.



The way forward

- ⊗ The data used in developing the Mozambique PAM were not validated / triangulated with farm budget survey
- ⊗ Therefore, these results are indicative and preliminary.
- ⊗ The exercise suggests the potential for the analytical approach
 - ⊗ Such as developing spatially disaggregated PAM analysis within a value chain approach, which can triangulate the logic of the integrated market development approach of the PROMER programs
 - ⊗ Incorporate gender dimension to PAM in order to carry out gender disaggregated simulations of commodity comparative advantages.
- ⊗ For this exercise to be useful, the partnership should focus on transferring the methods and techniques to monitor and track the outcomes of policies / interventions. This couldn't be done during the first phase, but can be picked up in the second phase if the partners are serious.