CLIM$^2$ Project

Diversifying agri-food value chains in Southern Malawi
ILRI, ICRISAT and SSLLP

CLIM$^2$ DEC MEETINGS, October/November 2019,
in Balaka, Chiradzulu, Thyolo Districts, Malawi
Our team

1. Infrastructure
   3 District offices
   1 Blantyre office
   2 vehicles

2. Staff: 6 scientists, 5 NGO staff, 1 PhD student
What is CLIM² all about?

*Increased income and livelihoods through diversified and intensified agricultural production and better market access*
Our theory of change: Income, food insecurity and nutrition

Farm investments → Crops → Food security

Current policy priorities: directing farm investments to produce more maize
Our theory of change: Income, food insecurity and nutrition (1/2)

Farm investments
- Land
- Labor
- Capital

Crops

Livestock

Food security

Income

Nutrition

Directions that we need to go if we are to enhance nutrition outcomes

Current policy priorities: directing farm investments to produce more maize

Positive systems feedback loops
Our theory of change: CROP-LIVESTOCK AND MARKETS (2/2)

- Household financial needs: Food, Education, health, construction etc.
- Off farm income
- Food security
- Crop Production: Cereals, Legumes
- Livestock Production: Chickens, Goats, Dairy, Beef
- Markets
- Value chains
- On farm
- $
Our theory of change: CROP-LIVESTOCK AND MARKETS (2/2)

Household financial needs: Food, Education, health, construction etc.

Crop Production
- Cereals
- Legumes

Livestock Production
- Chickens
- Goats
- Dairy
- Beef

On farm
- Value chains
- Food security

Off farm income

Markets
- Markets
- Food security

MK
CLIM$^2$ approach and methodology of implementation

Knowledge of the system
- Household surveys
- Focus group discussions
- Literature surveys
- Value chain Analysis
- Governance & Policy

Perceived Challenges
- Problem identification
- Root cause analysis
- Network analysis

Goals of the system
- Visioning
- Subsistence to Market orientation

Interventions
- Markets SME
- Incr. crop production
- Incr. Livestock Production
- Impr. Integration

Outcomes
- Sustainable Intensification
  - Food & nutritional security
  - Market oriented production
  - Resilience
  - Local level organization

Policy implication
### Baseline situation: Crops (1/2)

**Traditional focus:** Maize for food security

**What next?**

<table>
<thead>
<tr>
<th></th>
<th>Maize</th>
<th>Sorghum</th>
<th>Groundnuts</th>
<th>Pigeon pea</th>
<th>Cowpea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmers producing (%)</td>
<td>100.0</td>
<td>31.1</td>
<td>17.4</td>
<td>75.2</td>
<td>17.2</td>
</tr>
<tr>
<td>Area (acre)</td>
<td>1.1</td>
<td>0.4</td>
<td>0.4</td>
<td>0.7</td>
<td>0.5</td>
</tr>
<tr>
<td>Yield (kg per acre)</td>
<td>501</td>
<td>311</td>
<td>314</td>
<td>174</td>
<td>191</td>
</tr>
<tr>
<td>Price (MK per kg)</td>
<td>110</td>
<td>81</td>
<td>158</td>
<td>95</td>
<td>136</td>
</tr>
<tr>
<td>Revenue (MK/farm)</td>
<td>42,032</td>
<td>6,351</td>
<td>13,546</td>
<td>6,443</td>
<td>8,998</td>
</tr>
<tr>
<td>Costs (MK/farm)</td>
<td>15,232</td>
<td>209</td>
<td>831</td>
<td>1,015</td>
<td>1,617</td>
</tr>
<tr>
<td>Netreturns (MK/farm)</td>
<td>28,172</td>
<td>6,273</td>
<td>12,921</td>
<td>5,796</td>
<td>7,692</td>
</tr>
<tr>
<td>Netreturns (MK/acre)</td>
<td>39,682</td>
<td>25,820</td>
<td>47,115</td>
<td>14,896</td>
<td>19,005</td>
</tr>
<tr>
<td>Cost / Revenue</td>
<td>0.4</td>
<td>0.0</td>
<td>0.1</td>
<td>0.2</td>
<td>0.2</td>
</tr>
</tbody>
</table>
Baseline situation: Crops (2/2)

Average prices for crops sold at rural growth points

Maize prices (per kg, MK, 2016-2018)

Groundnut prices (per kg, MK, 2016-2018)
Baseline situation: Livestock (1/3)

Underinvested: Livestock for income and nutrition

More income from livestock
- more money spent on livestock based foods?
- re-investing into the farming system?
- better nutrition?

<table>
<thead>
<tr>
<th></th>
<th>Poultry</th>
<th>Goats</th>
<th>Dairy cattle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmers producing (%)</td>
<td>46.8</td>
<td>34.0</td>
<td>4.8</td>
</tr>
<tr>
<td>Flock size (n)</td>
<td>10.2</td>
<td>3.5</td>
<td>3.8</td>
</tr>
<tr>
<td>Losses (%)</td>
<td>170.3</td>
<td>41.1</td>
<td>27.8</td>
</tr>
<tr>
<td>Offtake (%)</td>
<td>79.4</td>
<td>32.8</td>
<td>13.1</td>
</tr>
<tr>
<td>Price (MK per n)</td>
<td>2,170.4</td>
<td>14,000.0</td>
<td>133,577.6</td>
</tr>
<tr>
<td>Price (MK per l)</td>
<td></td>
<td></td>
<td>157.9</td>
</tr>
<tr>
<td>Revenue (MK)</td>
<td>12,217</td>
<td>19,345</td>
<td>240,519</td>
</tr>
<tr>
<td>Costs (MK)</td>
<td>1,455</td>
<td>2,896</td>
<td>17,454</td>
</tr>
<tr>
<td>Netreturns (MK)</td>
<td>10,762</td>
<td>15,644</td>
<td>203,577</td>
</tr>
<tr>
<td>Cost / Revenue</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
</tbody>
</table>
Baseline situation: Crop and livestock net returns (2/3)

Farm net returns (MK)

- Maize
- Sorghum
- Groundnuts
- Pigeon pea
- Cowpea
- Poultry
- Goats
Potential to increase gains from livestock

At district level
- Prices (seasonality, distance)
- Reducing losses

<table>
<thead>
<tr>
<th></th>
<th>Poultry</th>
<th>Goats</th>
<th>Milk</th>
</tr>
</thead>
<tbody>
<tr>
<td>n / l sold (per month peak season)</td>
<td>10,000</td>
<td>5,500</td>
<td>55,000</td>
</tr>
<tr>
<td>n / l sold (per month off season)</td>
<td>2,500</td>
<td>2,500</td>
<td>44,000</td>
</tr>
<tr>
<td>Value sold (per month peak season, MK)</td>
<td>21,900,000</td>
<td>102,200,000</td>
<td>7,034,280,000</td>
</tr>
<tr>
<td>Value sold (per month off season, MK)</td>
<td>7,300,000</td>
<td>61,320,000</td>
<td>5,627,424,000</td>
</tr>
<tr>
<td>Value lost (per month peak season, MK)</td>
<td>46,971,914</td>
<td>128,061,585</td>
<td>447,636,000</td>
</tr>
<tr>
<td>Value lost (per month lean, MK)</td>
<td>15,657,305</td>
<td>76,836,951</td>
<td>447,636,000</td>
</tr>
</tbody>
</table>

Reference unit: Project EPA catchments markets
Baseline situation: Nutrition (1/2)

People in a year live 6.2 months from self-produced foods

Consumption of livestock based foods is underrepresented
Baseline situation: Nutrition (1/2)

Higher income consumers pay for diversity and quality

Low income consumers prioritize availability and affordability

Rural consumers spend large share of income on food

Monthly expenditure on different foods, by consumer types

<table>
<thead>
<tr>
<th></th>
<th>Pulses</th>
<th>Eggs</th>
<th>Meat</th>
<th>Milk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural consumer</td>
<td>4,726</td>
<td>2,760</td>
<td>5,153</td>
<td>1,696</td>
</tr>
<tr>
<td>Low income urban consumer LLW</td>
<td>2,843</td>
<td>2,419</td>
<td>6,173</td>
<td>2,010</td>
</tr>
<tr>
<td>Low income urban consumer BTY</td>
<td>4,384</td>
<td>4,706</td>
<td>11,418</td>
<td>2,497</td>
</tr>
<tr>
<td>High income urban consumer LLW</td>
<td>8,993</td>
<td>5,220</td>
<td>15,360</td>
<td>7,576</td>
</tr>
<tr>
<td>High income urban consumer BTY</td>
<td>7,714</td>
<td>5,786</td>
<td>22,857</td>
<td>10,143</td>
</tr>
</tbody>
</table>

Constraints to more frequent consumption of eggs, by consumer types

<table>
<thead>
<tr>
<th></th>
<th>Rural consumer</th>
<th>Low income urban consumer LLW</th>
<th>Low income urban consumer BTY</th>
<th>High income urban consumer LLW</th>
<th>High income urban consumer BTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affordability</td>
<td>68</td>
<td>67</td>
<td>57</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Accessibility</td>
<td>18</td>
<td>0</td>
<td>7</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Food quality</td>
<td>6</td>
<td>33</td>
<td>7</td>
<td>27</td>
<td>60</td>
</tr>
<tr>
<td>Diversity</td>
<td>3</td>
<td>0</td>
<td>14</td>
<td>40</td>
<td>20</td>
</tr>
</tbody>
</table>
1. Systems Diagnostics

Innovation platforms:
Multi-stakeholder planning and feedback

Quantitative data:
Baseline and value chains

IP: Visions and challenges
Gross margins for profitable farming:
informing management choices

IP: Planning and revision
Baseline and value chain assessment:
Informing investment decisions
3rd round of IPs – how to link farmers to markets

24-29.10.2019

About 50 participants per meeting, about one third were women.

IP meetings include representatives from farmer and care groups, government extension and private sector.
2.1 Viable agri-business processing opportunities identified, developed and implemented

*Business plan development*

4 Companies: structuring the business
2.2 Viable agri-business processing opportunities identified, developed and implemented

_Piloting business models, MSMEs, agribusiness companies_
Chicken: Fast track the Kuroiler breed (focus in Chiradzulu)

Large scale commercial firms are at the forefront to supply chicken and egg production to domestic markets, imports at the increase - space for smallholder farmers?

CLIM²: Smallholder farmer based meat & egg production through dual purpose birds

- 1000 chicken tested at Mikolongwe research station
- 4000 under semi-commercial conditions at Lunzu farm
  - 2000 hens handed over to two SME companies (starter kit, support)
  - 1000 hens handed over to 100 individual farmers
- Cocks slaughtered – funds reinvested in SMEs
- 30 chickens for productivity evaluation
Poultry Companies

- Chimtengo, Zaone (Namagazi) Poultry Companies
- Robust business plan development
- Registration of companies
- Construction of own facilities
- Link to inputs – local feed manufacture
- Link to high value local markets
  - Eggs
  - Meat
- Proof of concept
Background: Breeding Structure

- Primary Breeder
- Genetic Improvement
- Pedigree Selection
- Great GrandParent
- Grandparent Stock
- Parent Stock
- Day Old Chicks (BU)
- Meat and Eggs (SHF)

Entry point Malawi: about 1500 parental stock and above

Needs private sector Investments
Vision: Brooded and vaccinated Chicken (21 to 42 days old –depending on need of villagers) to villages
Small holder farmers produce meat birds and eggs – Home consumption, income from sale
IP -lessons and preliminary results

• Farmers and consumers are aware on nutritional benefits from chicken and eggs; there is a supply gap of village chickens and eggs at rural markets
• Introduction of the Kurioler allows farmers to benefit from consumption and sale of eggs and meat – the bird does well under local management, mortality is low
• Entry points production:
  o Control of New Castle disease disease to mitigate losses and make more chicken and eggs available for consumption and sale – entry point for SMEs
  o Locally produced feeds to half variable costs - entry point for SMEs
• Entry points marketing:
  o Market channels: For consumers the taste and size of chicken and eggs seems appealing (lower per kg price for meat as compared to broiler, same price for eggs at half the feed cost)
  o Local consumer markets
  o Large organizations, preferential arrangements
## What next?

<table>
<thead>
<tr>
<th>Nutrition</th>
<th>Value addition / market linkages</th>
<th>Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verify the taste of Kuroiler eggs and meat through blind tasting (village chicken, kuroiler, broiler)</td>
<td>Outreach for Kuroiler at DAEC, DEC, DC councillor – brief about chicken and market links, seek support, for higher level dialogue</td>
<td>Inclusive regulations and quality control to ensure smallholder farmers benefit from increasing demand at domestic markets</td>
</tr>
<tr>
<td>Promote messages on Kuroiler eggs and meat for nutrition through DEC, DAEC, DNCC, care groups</td>
<td>Inventory and GMA on local market channels that show interest to buy chicken and eggs from farmers / SMEs</td>
<td>Supporting farmer self-organization, access to rural infrastructure, e.g. cold chain</td>
</tr>
<tr>
<td></td>
<td>Farmer market exploration, CLIM and other potential farmer groups, synergies to increase the supply</td>
<td>Government role in controlling contagious diseases</td>
</tr>
<tr>
<td></td>
<td>Prototyping models for SMEs (feed, health), working with gvt-traders-farmer/care groups</td>
<td>Feedback on the release of the Kuroiler</td>
</tr>
<tr>
<td></td>
<td>Continue mentoring SMEs and farmers on chicken production and business model</td>
<td></td>
</tr>
</tbody>
</table>

Goats: gaps beyond the farm level

Despite ever growing demand for goat meat, and increasing goat populations, there are very little investment in smallholder farmer-based goat value chains.

CLIM² – 40 butchers and municipality as entry point for value chain improvement – SMEs promote goat quality
• improve slaughter slab, water and waste management
Improve meat handling and selling area

• Cooling facilities
• Meat storage, longer shelf life
• General hygiene
• Concept of cost sharing and share holdings
• Business structure, enterprise management

Outstanding

• Goat sales-pen
• Goat market model
Farmer capacity development: goat meat quality and market organization

- Goat meat quality criteria
- Introduction of the scale for understanding price quality relations
- Testing auction procedures
**IP - lessons and preliminary results**

- Farmers cannot afford to eat goats, even though they are aware of the benefits.
- In comparison to other livestock commodities, goat farmers are less organized. They are not aware of the demand for goats and meat quality at domestic markets.
- A mechanism is required that supports farmers to organize the aggregation of quality goats.
- Creating parallel channels through the auction model can translate quality meat to consumers, with benefits along the entire value chain.
<table>
<thead>
<tr>
<th>Nutrition</th>
<th>Value addition / market linkages</th>
<th>Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promote messages on goat feeding and meat for nutrition through DEC, DAEC, DNCC and care groups</td>
<td>Outreach for goat quality meat markets at DAEC, DEC, DC councillor – brief about quality goat market options, seek support, also for higher level dialogue</td>
<td>Prioritize goat production and marketing in policy setting and implementation</td>
</tr>
<tr>
<td></td>
<td>Capacity development for farmers and buyers on meat quality and prices through practical demonstrations</td>
<td>Facilitating policies that encourage farmers to organize around goats markets</td>
</tr>
</tbody>
</table>
| | Goat auction as new decentralized market model for quality goat meat, at about 2 sites per EPA, all project sites, during peak market periods  
• Launch and facilitate setting up the market points (demonstrations, scale, documentation)  
• Role of the auctioneer | Include goats in nutrition policies |
| | Complete the goat business model for prototyping, mentoring | Propose the goat quality market demonstration as new extension tool |
Dairy: Policy barriers?

While smallholders have the capacity to produce milk, what at hinders them to reduce losses and add value to milk? Making raw and pasteurized milk locally available improves incomes and nutrition.

CLIM²: Bvumbwe Dairy Association as entry point for value chain improvement – SME.

- Renovate the pasteurizing facility
- Packaging
- Capacity building
- Institutional arrangements
Business coaching and mentoring

- Business plan development
- Record keeping
- Costs management
- Markets
- Ownership
Forage Production and Feed Processing

Locally produced, affordable quality feeds:
Feed and fodder production, ration formulation and processing
Artificial insemination support

AI equipment provided to
• Bvumbwe in Thyolo
• Sabuni in Chiradzulu
IP -lessons and preliminary results

Creating parallel channels for milk processing can increase the share of sales to local consumers in bulk, through product differentiation.

This empowers the farmer groups and bulking centers, to manage the processes, as it increases the volumes of milk that they sell.

This increases milk consumption locally.
<table>
<thead>
<tr>
<th>Nutrition</th>
<th>Value addition / market linkages</th>
<th>Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promote messages on buying milk locally for nutrition through DEC, DNCC and care groups</td>
<td>Assess gross margins and value addition to highlight profit margins per market channels</td>
<td>Price incentives including minimum price, subsidies to reduce production costs, reduced tax</td>
</tr>
<tr>
<td>Awareness creation that farm milk is safe to drink, add value to your locality</td>
<td>MBS to license dairy products</td>
<td>Approve and promote sale of raw milk and pasteurization</td>
</tr>
<tr>
<td>Capacitate existing add 1-2 new SMEs, training and equipment for pasteurization and processing</td>
<td></td>
<td>Strategy to open up markets for local processing and sale of dairy products,</td>
</tr>
<tr>
<td>Lobby for dairy with government departments (education, health &amp; nutrition etc) and stakeholders to budget for dairy as priority food purchases</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.1 Smallholder agriculture production increased and diversified

On-farm demonstrations and evaluations

Crop diversification with 908 farmers in 36 f-groups @ 7.5t improved seed (sorghum, groundnut, pigeon pea, cowpea, mucuna)

On-farm Kuroiler chicken evaluation: 8 f-groups @ 100 chicken

Groundnuts Participatory Variety Selection: farmers appreciation of residues for feed

Crop residue biomass assessment: Expected biomass yields and quality
3.2 Smallholder agriculture production increased and diversified

FEAST
Feed Assessment Tool

FEAST to identify feeding challenges
3.3 Smallholder agriculture production increased and diversified

Multiple trainings, following IP requirements

- Labor saving crop processing
  - 12 groundnut shellers to farmer groups
  - 4 hammer mills for feed companies

- Crop management and post harvest trainings: 180 farmers in 6 f-groups

- Chickens and goats husbandry trainings: 180 farmers, in 6 f-groups

- Feed biomass training: 180 farmers, in 6 f-groups
4. Transformational capacity for sustainability and scaling

*Farming systems integration*

*Improved market linkages through MSMEs*

*Increased role of private sector*

CLIM2 Policy Dialogue on Shaping Agri-food Value Chains For Nutrition and Health in Malawi

Balaka IP  Chiradzulu IP  Thyolo IP
## Capacity development, training, year 2 - today

<table>
<thead>
<tr>
<th>Type of trainings</th>
<th>N trainings / farmer groups</th>
<th>N women</th>
<th>N men</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Farmers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crop inputs and management</td>
<td>39</td>
<td>642</td>
<td>327</td>
</tr>
<tr>
<td>Gross margin analyses</td>
<td>6</td>
<td>141</td>
<td>41</td>
</tr>
<tr>
<td>PICS bags trainings</td>
<td>6</td>
<td>130</td>
<td>50</td>
</tr>
<tr>
<td>Business plan development</td>
<td>3</td>
<td>35</td>
<td>15</td>
</tr>
<tr>
<td><strong>Multiple-stakeholders (govt, priv sect, farmers)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poultry training</td>
<td>2</td>
<td>11</td>
<td>25</td>
</tr>
<tr>
<td>Second IP meetings</td>
<td>3</td>
<td>37</td>
<td>86</td>
</tr>
<tr>
<td>Third IP meetings</td>
<td>3</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>Biomass training</td>
<td>6</td>
<td>120</td>
<td>60</td>
</tr>
<tr>
<td><strong>Project team</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communications and blog writing training</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>
Outputs

- Project annual reports
- IP reports (3 per year)
- Technical reports: Baseline, value chain, consumer assessment
- Blogs (8)
- Visibility events
- Website (https://clim.icrisat.org/)
Thank you!

This project is funded by the European Union.