Implementing climate resilience in family farming milk value chains

São Paulo, December 6th, 2017

Daniele Cesano
Executive Summary

➢ Family farmers in Brazil supply the majority (70%) of food to strategic value chains such as milk, cocoa, coffee and acai. However, family farmers are also the most vulnerable farming group to climate change. This poses a serious risk to present and future food security and supplies.

➢ In 2014, the Interamerican Development Bank funded the “Adapta Sertão” coalition to systematize its decade long experience on climate resilience. One of the first climate smart agricultural pilot programs in Brazil was then launched, with focus on bovine milk and lamb meat production.

➢ Today the MAIS Program has become a platform that leapfrogs climate disruptive technologies across value chains and in a way that makes business sense for all actors involved.

➢ Transforming realities for the better is the program mission.

Main partners and supporters
Contents

1. Proadapta Sertão program (past and present)

2. ADAPTA GROUP (the future)
Section 1

1. Proadapta Sertão program (past and present)

2. ADAPTA GROUP (the future)
Proadapta Sertão

Executive Summary

1. Proadapta Sertão

2. ADAPTA GROUP

CAR-SDR, Bahia (matching fund) → IDB/MIF (main project funder) → REDEH (Executing Agency)

Valdirene Santos (Local coordinator) → Daniele Cesano (Project Manager) → Meire Mendes (Administration)

Igor Cezar (Milk specialist) → Joselito Barbosa (Lamb specialist) → Marcelo Bastos (Agronomist)

COOPERATIVES
Coopsertao - Frigbahia → Field Technicians → FARMERS

Product
The challenges: productivity, production fluctuation and carbon footprint

A fast-forwarding climate change can shrink Brazilian GDP by 2.5%...

- Rainfall is expected to decrease on most of Brazilian territory, reducing yields
- Underestimation of the role of deforestation in regulating the national climate

Family farmers are essential to guarantee constant supplies of raw material but have limited means to build resilience...

- Production oscillation will increase and productivity and quality will decrease
- A requalification of current production means is urgently needed
- The vast majority of current technical assistance effort is provided by government programs that have limited outreach, do not monitor their programs impacts and do not provide training on climate resilience
- Credit insolvency will increase because public credit programs (PRONAF; ABC) is not closely linked to technical assistance
- There are structural challenges with credit programs
- Some value chains (diary and meat) are among the largest GHG emitters with unclear means on how to reduce their carbon footprint

Value chains will be seriously affected unless we adapt...

- All farmers’ problems will be transferred to the industry and consumers with substantial socioeconomic impacts
- The 50% increase in food supply by 2050 is seriously undermined

<table>
<thead>
<tr>
<th>Region</th>
<th>Temp.</th>
<th>Rainfall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amazonia</td>
<td>1-6°C</td>
<td>10% - 45%</td>
</tr>
<tr>
<td>Semiárido</td>
<td>1-4,5°C</td>
<td>10% - 50%</td>
</tr>
<tr>
<td>Mata Atl. (NE/SE)</td>
<td>1-4°C</td>
<td>10% - 35%</td>
</tr>
<tr>
<td>Mata Atl. (S)</td>
<td>1-3°C</td>
<td>10% - 30%</td>
</tr>
<tr>
<td>Pantanal</td>
<td>1-4,5°C</td>
<td>3% - 35%</td>
</tr>
<tr>
<td>Pampa</td>
<td>1-3°C</td>
<td>10% - 40%</td>
</tr>
</tbody>
</table>
The solution: a centralized program to disseminate disruptive technologies based on 4 key principles...

Executive Summary

1. Proadapta Sertão

Climate Smart Prod. System
- Decrease the production oscillations caused by climate impact
- Increase the suppliers’ production efficiency
- Improve product quality
- Optimize costs related to product supply

Technical assistance
- Technical assistance program and specific training (Biome/Production specific)
- Disseminating the production system among suppliers

Monitoring and evaluation
- Monitoring of key indicators in real time
- Communication technology (digital platform - Tablet)
- Certification of results

Capitalization strategy
- Specific financing for the production system
- Less paperwork and investment monitoring
- Adequate investment management
- Credit correspondent
... that are integrated in a business model which is beneficial to all stakeholders

1. MAIS System

2. Technical assistance + farm management

3. Monitoring and evaluation - MAISOFT

4. Farmer’s capitalization

**IMPACT:**
- MORE production
- LESS production oscillation
- MORE profits
- LESS production costs
- BETTER product quality
- MORE ecosystem services

**AGREEMENT:**
- Loan concession / payback
Our main innovation: helping farmers make the right decisions

➢ Ensure water and food security for dry season and 2 years droughts
   • Example: Palma forrageira; closed water storage system; identify local feeds and solutions
➢ Implement silvipastorial system using forage varieties
➢ Use available best practices, technologies and equipment
➢ Transform field technicians into qualified professionals and supervise their work
➢ Help farmers gain confidence by respecting their time and dynamics
   • Planning of productive areas to achieve their objectives
   • Cash flow analysis
➢ Train farmers on business management through practice
➢ Look at credit as the last option
➢ Make sure farmers understand why they (we) need environmental restoration
➢ Integrate the 4 MAIS Program pillars in a structured way

José Antônio
• 2,8 + milk and 3,5 times + profits
• Investment: R$ 21500

![Graph showing financial data]
### Executive Summary

#### 1. Proadapta Sertão

#### 2. ADAPTA GROUP

### DATA

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
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</thead>
<tbody>
<tr>
<td>Initial production (l/day)</td>
<td>88</td>
</tr>
<tr>
<td>Initial gross income (R$/month)</td>
<td>771</td>
</tr>
<tr>
<td>Current production (l/day)</td>
<td>137</td>
</tr>
<tr>
<td>Current gross income (R$/month)</td>
<td>2,342</td>
</tr>
<tr>
<td>Average investment (R$)</td>
<td>9,778</td>
</tr>
<tr>
<td>Nr of months</td>
<td>16</td>
</tr>
</tbody>
</table>

### KEY INDICATORS

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Increase in production (l/day)</td>
<td>49</td>
</tr>
<tr>
<td>Increase in production (%)</td>
<td>64%</td>
</tr>
<tr>
<td>Increase in gross income (R$/month)</td>
<td>1,571</td>
</tr>
<tr>
<td>Increase in gross income (%)</td>
<td>204%</td>
</tr>
<tr>
<td>Increase of cactus areas (palma forrageira)</td>
<td>43%</td>
</tr>
<tr>
<td>Decrease of climate risk score</td>
<td>22%</td>
</tr>
<tr>
<td>Average climate risk score after 16 months</td>
<td>45%</td>
</tr>
<tr>
<td>Improvement in pastureland quality</td>
<td>33%</td>
</tr>
<tr>
<td>Production oscillation (estimation)</td>
<td>≈20%</td>
</tr>
<tr>
<td>Reduction in production oscillation (estimation)</td>
<td>≈30%</td>
</tr>
</tbody>
</table>

*Results in less than 2 years...*
Adapta work has been widely recognised for its innovation and rural impact over its 12 years development

Awards

1. 2005: Wisions (Wupperhalt Institute)
2. 2005: UN Habitat
3. 2008: SEED Award UNEP and UNDP
4. 2013: Celso Furtado, Ministry of National Integration
5. 2014: Mandacaru, IABS
6. 2014: Millenium Development Goal Prize, Category “Poverty Reduction”, Brazilian Presidency
7. 2016: FONTAGRO Prize
8. 2016: Best technical assistance program in Bahia, Bahia Government
9. 2016: Best rural development practice, Governo da Bahia
10. **2017: Best Rural Impact Business, INCLUIR, UNDP and SEBRAE**
11. **2017: VEJA-SE, VEJA Magazine, among the 3 finalists in the “Innovation” category**
Section 2

1. Proadapta Sertão project (the past and present)

2. ADAPTA GROUP (the future)
Our clients and potential partners

**Targets**

**PRIVATE SECTOR**
- Medium / large corporate

**PUBLIC SECTOR**
- Local Governmentss / public entities
- State / Federal institutions

**3RD SECTOR**
- Large NGO focusing on specific industry or projects

**Entities**

**Industry/type /partners**

- Dairy industry
- Coffee
- Cocoa
- Coconuts

- Municipalities / Industry associations (UPB, S.Domingos)
- State of BA, Associations of NE States, MAPA etc.

- TNC → Cacau Floresta - PA
- Neumann Foundation → coffee - MG
- TNS → dairy in MG
- WBCSD → Climate Smart Agri. Init.
Our business model

➢ ADAPTA will gradually move from an advisory based model to a hybrid investment business model, by assuming risks and sharing benefits jointly with clients.

➢ Exit strategy of Adapta Group enables the client to carry on with the program independently, with fully skilled in-house staff.

Phase I – 2018/2019

<table>
<thead>
<tr>
<th>ADAPTA</th>
<th>CLIENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Services</td>
<td>Suppliers benefits</td>
</tr>
<tr>
<td>R&amp;D Data</td>
<td>Supppliers / Family farmers</td>
</tr>
<tr>
<td>MAISOFT</td>
<td>#</td>
</tr>
</tbody>
</table>

Phase II – 2019 onwards

<table>
<thead>
<tr>
<th>ADAPTA</th>
<th>CLIENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared results</td>
<td>Suppliers benefits</td>
</tr>
<tr>
<td>INVESTORS / (DONORS)</td>
<td>Services / Direct investments</td>
</tr>
<tr>
<td>Equity / Debts / Grants</td>
<td>R&amp;D Data</td>
</tr>
<tr>
<td>MAISOFT</td>
<td>Supppliers / Family farmers</td>
</tr>
</tbody>
</table>
Value added to large corporations – Financial model

Virtuous circle of benefits

Direct
➢ Cost savings / higher profitability
➢ More efficient management of the supply chain
➢ Stable procurement / better quality

Indirect
➢ Positive image w/ customers
➢ Fidelization
➢ Reduced risk perception

✓ Est. total benefits of a 250 producer program are almost 8 x the investment
✓ Dairy producers can achieve around 45% annual return in a 3 years program for 250 farmers

AVERAGE ADAPTA COST

<table>
<thead>
<tr>
<th></th>
<th>Nr</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of producers</td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>Cost per producer/farmer</td>
<td>281</td>
<td></td>
</tr>
<tr>
<td>Term of the Program (months)</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>Total cost of a 3 years Program</td>
<td>R$</td>
<td>2,524,977</td>
</tr>
<tr>
<td>Av. annual cost</td>
<td>R$/year</td>
<td>841,659</td>
</tr>
</tbody>
</table>

BENEFITS TO PRIVATE SECTOR - DAIRY

<table>
<thead>
<tr>
<th></th>
<th>R$/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logistic costs reduction</td>
<td>89,461</td>
</tr>
<tr>
<td>Avoided loss due to reduction of supply volatility</td>
<td>3,881,250</td>
</tr>
<tr>
<td>SUB-TOTAL</td>
<td>3,970,711</td>
</tr>
</tbody>
</table>

Executive Summary

1. Proadapta Sertão

2. ADAPTA GROUP

BENEFITS TO PRODUCERS

BENEFITS TO PRIVATE SECTOR - DAIRY

BENEFITS TO PUBLIC SECTOR

SHARED BENEFITS
Why ADAPTA Group

➢ ADAPTA built a unique platform (MAIS) which developed a result-oriented approach generating win-win solutions for the entire stakeholders’ universe of medium/large food corporations and their supply chain.

➢ ADAPTA developed not only a technical methodology but it is able to implement it and escalate it through capacity building and monitoring of technical staff and producers, which are then able to carry on independently once the project term ends.

➢ ADAPTA understands deeply resilience mostly as a product supply issue rather than a sustainability issue and provides solutions thanks to its proven track-record and its qualified and dedicated professionals.
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