Brazil’s experience in scaling-out low carbon agriculture

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Brazilian GHG Emissions – 2005 ($CO_2e$)

National Plan on Climate Change – PNMC (2008)

- 15 Ministries (Energy, Agriculture, Transportation, Economy, Science & Technology)
• voluntary commitment to reduce between 38% of its emissions projected by 2020.

• Approx. 1 billion t CO₂ eq less from different sectors:

  - Amazon deforestation control (PPCDAm);
  - Cerrado deforestation control (PPCerrado);
  - Agriculture (160 M t CO₂ eq less than if nothing is done);
  - Energy (wind and solar power; biofuels etc);
  - Steel industry (planted forests);
  - Transportation
The ABC Plan – The Selected Practices that reduce or avoid emissions of GHG and contributes to adaptation to climate change. It includes capacity building, research funding, and monitoring.

The ABC Program – The Farm Loan Scheme with US$1.7 billion available in 2012. Repayment within 15 years at 5.5% annual interest rate. Both governmental and private banks offer this loan scheme.
## Targets for 2020

<table>
<thead>
<tr>
<th>Technology Process</th>
<th>Increase in area/use</th>
<th>Mitigation potential (million Mg CO$_2$e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Recovery of degraded pasture land</td>
<td>15 million ha</td>
<td>83.0 – 104.0</td>
</tr>
<tr>
<td>2. Integrated crop-livestock-forestry systems</td>
<td>4 million ha</td>
<td>18.0 - 22.0</td>
</tr>
<tr>
<td>3. No-till farming with cover crops</td>
<td>8 million ha</td>
<td>16.0 - 20.0</td>
</tr>
<tr>
<td>4. Use of biological nitrogen fixation</td>
<td>5.5 million ha</td>
<td>10.0</td>
</tr>
<tr>
<td>5. Planted forests</td>
<td>3 million ha</td>
<td>8.0 – 10.0</td>
</tr>
<tr>
<td>6. Treatment of Animal Waste</td>
<td>4.4 million m$^3$</td>
<td>7.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>133.9 - 162.9</strong></td>
<td></td>
</tr>
</tbody>
</table>
Governance of the ABC Plan

CIM - Deliberate, approve and guide actions within the scope of the National Policy.

GEx - Coordinates the preparation and implementation of the National and Sectoral Plan.

Federal Level

State Level

Executive Commission

State Management Group (GGE)

State Meetings

Awareness Seminar

Workshops

State ABC Plan

Steering Committee of the ABC Platform

ABC Platform

Nacional ABC Plan
Key partners

Farm cooperatives

Rural extension offices

Farmer’s Union
Contribution by Agricultural Universities

Spatial distribution of the possible role of universities in training the ABC Plan, within 100 KM and within 200 KM

Legenda
- Orange: Municipios com faculdade (raio 100 Km)
- Green: Municipios com faculdade (raio 200 Km)

Organizado por: FGV/EMBRAPA
Technology transfer
- On-farm capacity building
- Communication
- Research
Challenging Tropical Environments

Results so far
### Meeting the area and emission targets set in 2009

<table>
<thead>
<tr>
<th>Practice</th>
<th>Target area for 2020 (M ha)</th>
<th>Results in 2018 (M ha)</th>
<th>% appr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pasture recovery</td>
<td>15.0</td>
<td>4.5 - 10.5</td>
<td>30 - 70</td>
</tr>
<tr>
<td>Integrated CLF</td>
<td>4.0</td>
<td>5.8</td>
<td>145</td>
</tr>
<tr>
<td>Zero tillage</td>
<td>8.0</td>
<td>9.9</td>
<td>124</td>
</tr>
<tr>
<td>Planted forests</td>
<td>3.0</td>
<td>1.1</td>
<td>37</td>
</tr>
<tr>
<td>BNF</td>
<td>5.5</td>
<td>9.9</td>
<td>180</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Practice</th>
<th>Emission target for 2020 (Mt CO₂ eq)</th>
<th>Results in 2018 (Mt CO₂ eq)</th>
<th>% appr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>All practices</td>
<td>132.9 - 162.9</td>
<td>100.2</td>
<td>62</td>
</tr>
<tr>
<td>Pasture recovery</td>
<td>83.0 - 104.0</td>
<td>16.9</td>
<td>18</td>
</tr>
<tr>
<td>Integrated CLF</td>
<td>18.0 - 22.0</td>
<td>22.1</td>
<td>111</td>
</tr>
<tr>
<td>Zero tillage</td>
<td>16.0 - 20.0</td>
<td>18.2</td>
<td>91</td>
</tr>
<tr>
<td>Planted forests</td>
<td>8.0 - 10.0</td>
<td>2.0</td>
<td>25</td>
</tr>
<tr>
<td>BNF</td>
<td>10.0</td>
<td>18.2</td>
<td>182</td>
</tr>
</tbody>
</table>
Monitoring low-carbon agriculture

1 – Carbon and nitrogen measurements once every 5 years
2- Monitoring biomass changes with satellite images
3 – Estimating de NPP each 30 days using Modis and Landsat. Radar?
## ABC Program – disbursement/harvest year

<table>
<thead>
<tr>
<th>Period</th>
<th>Nr. of Contracts</th>
<th>Disbursement value (R$1,000)</th>
<th>Available through the Credit Line (R$) Bi</th>
<th>Average value per contract (R$1,000)</th>
<th>∆% of average value of contracts</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010-2011</td>
<td>1.290</td>
<td>418.300,00</td>
<td>2,00</td>
<td>324,26</td>
<td>-</td>
</tr>
<tr>
<td>2011-2012</td>
<td>5.038</td>
<td>1.515.995,40</td>
<td>3,15</td>
<td>300,91</td>
<td>-7,2%</td>
</tr>
<tr>
<td>2012-2013</td>
<td>4.961</td>
<td>2.864.753,83</td>
<td>3,40</td>
<td>577,45</td>
<td>91,9%</td>
</tr>
<tr>
<td>2013-2014</td>
<td>5.882</td>
<td>2.695.119,38</td>
<td>4,50</td>
<td>458,20</td>
<td>-20,7%</td>
</tr>
<tr>
<td>2014-2015</td>
<td>8.018</td>
<td>3.656.402,33</td>
<td>4,50</td>
<td>456,02</td>
<td>-0,5%</td>
</tr>
<tr>
<td>2015-2016</td>
<td>3.344</td>
<td>2.052.466,03</td>
<td>3,00</td>
<td>613,78</td>
<td>34,6%</td>
</tr>
<tr>
<td>2016-2017</td>
<td>1.808</td>
<td>1.220.934,51</td>
<td>2,99</td>
<td>675,30</td>
<td>10,0%</td>
</tr>
<tr>
<td>(from Jul-Jun)</td>
<td>2.460</td>
<td>1.617.716,69</td>
<td>2,13</td>
<td>657,61</td>
<td>-2,6%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>32.801</strong></td>
<td><strong>16.041.688,17</strong></td>
<td><strong>25,67</strong></td>
<td><strong>489,06</strong></td>
<td><strong>--</strong></td>
</tr>
</tbody>
</table>

Source: data SICOR, SPA and SMC/MAPA

<table>
<thead>
<tr>
<th>Total disbursement (USD Billion)</th>
<th>Nr. of loans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 2010 - Jan 2019</td>
<td>4.3</td>
</tr>
<tr>
<td>34271</td>
<td></td>
</tr>
</tbody>
</table>
Area of ABC Plan technologies in rural properties financed by ABC Program from Jan 2013 to Mar 2018

Total 6,485,004 ha

- Pasture recov. (50%) 3,266,190 ha
- Zero till (32%) 2,078,389 ha
- ICLF (6%) 386,254 ha
- Pl. Forest (10%) 631,731 ha
Capacity building achieved between 2011/2017

(Target Audience: 2% Students, 30% Producers, 70% Technical)

57,000 Accumulated

Fonte: MAPA
Synergy with other National Policies

- Law for Protection of Native Vegetation
  - Forest Code 2012

- Set-aside area: 20%, 35%, and 80%

- National Irrigation Policy 2013

- National Programme to Combat Desertification (PAN-Brasil)

- Areas of Permanent Preservation (APP)
  - River buffer strips

- National System of Conservation Units 2000

- Environmental Regularization Programme 2014

- Rural Environmental Registration (www.car.gov.br)

- Agricultural Policy for Planted Forests 2014
Final remarks

- Indicators show a fairly efficacious policy for low-carbon resilient agriculture.
- Tireless efforts to enable public-private partnership to make things happen.
- Surprising motivation by farmers and ranchers in adoption at own costs.
- Improvements are needed:
  - Bank/finance system for loans could help more on traceability;
  - Planted forests need adjustments or more support for adoption;
  - Emission coefficients need to be more specific to activity and soil-climate type.
Thank you!

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Photo: M.Lopes