IMPLEMTATION OF GBEP INDICATORS IN ARGENTINA
PRESENTATION CONTENTS

✓ Recent developments of the biofuel sector

✓ Project “Indicators of Sustainable Production and Use of Bioenergy in Argentina”

✓ General characteristics – Main activities

✓ Examples of assessed indicators (Environmental Pillar – Social Pillar – Economic Pillar)

✓ Next steps
**BIOFUELS DEVELOPMENT IN ARGENTINA - BIODIESEL**

**Argentine Biodiesel Markets**
- in thousand tons -

- **Domestic**
- **Export**

Total production capacity: 4.0 million tons
Total Investments: US$ 1.5 billion

30% Domestic market, 70% Export market in 2012

Department of Energy and CARBIO
BIOFUELS DEVELOPMENT IN ARGENTINA - BIOETHANOL

Production of Bioethanol (real and projected) - in thousand of m³

- 2012: 3,0%
- 2013: 7,0%
- 2014: 9%
- 2015: 10,0%
- 2016: 12,2%

Sugar cane
Cereals

Department of Energy
Argentina has been participating in GBEP meetings since 2009

Elaboration of a Technical Cooperation Project (TC)

Financial Support: Non Refundable Contribution
Inter-American Development Bank (IDB)

- Biodiesel (soybean) and Bioethanol (sugar cane)
- Regions of the country with biofuels development (NW and Pampa’s region)

Implementation on

Project period: 24 months
INDICATORS OF SUSTAINABLE PRODUCTION AND USE OF BIOENERGY IN ARGENTINA

Participant Organizations

Ministry of Agriculture, Livestock and Fisheries

Secretariar of Agriculture, Livestock and Fisheries

Bioenergy Department

Component 1 - 4

Executing Agency - Technical Manager -

Inter-American Development Bank

Agency of Financial Support
The main objective of the project is to assess the 24 indicators of sustainability (environmental, economic, and social) agreed in GBEP, evaluating the proposed methodologies, as tools to promote and evaluate the design of national policies and programs for bioenergy.

**PROJECT ACTIVITIES:**

1. Workshop to present the project.
2. Assessment of the 24 GBEP indicators.
3. Workshop – Partial Results of consultancy studies.
4. Final Presentation of the indicators quantification.
Contribution to Buenos Aires
May, 30 of 2014

SEMINARIO SOBRE INDICADORES DE SUSTENTABILIDAD DE LA BIOENERGÍA ARGENTINA

1. Workshop of Indicators of Sustainability Project presentation

- Presentation of the Argentine project
- Exchange of experiences
- Learn lessons from the implementation of GBEP indicators in other countries
- Sustainability actions

Countries:
- Paraguay
- Colombia
- Brazil
- Uruguay
- Argentina
- Germany
### 2. Assessment of the 24 GBEP indicators

<table>
<thead>
<tr>
<th>Pillar</th>
<th>Indicator</th>
<th>Priority (estimation)</th>
<th>Non priority (qualitative asses)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environmental</strong></td>
<td>Lifecycle GHG emissions (P)</td>
<td>X (model)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Soil quality (P)</td>
<td>X (official information)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Water use and efficiency (P)</td>
<td>X (official information)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Land use and land-use change related to bioenergy feedstock production (NP)</td>
<td>X (estimation)</td>
<td></td>
</tr>
<tr>
<td><strong>Social</strong></td>
<td>Price and supply of a national food basket (P)</td>
<td>X (estimation)</td>
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</tr>
<tr>
<td></td>
<td>Jobs in the bioenergy sector (P)</td>
<td>X (official information)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Change in income (P)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Allocation and tenure of land for new bioenergy production (NP)</td>
<td>x (reports)</td>
<td></td>
</tr>
<tr>
<td><strong>Economic</strong></td>
<td>Net energy balance (P)</td>
<td>X (estimation)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Energy diversity (P)</td>
<td>X (official information)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Productivity (P)</td>
<td>X (estimation)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gross value added (NP)</td>
<td>X (estimation)</td>
<td></td>
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INDICATORS OF SUSTAINABLE PRODUCTION AND USE OF BIOENERGY IN ARGENTINA

2. Assessment of the 24 GBEP indicators

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</tr>
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</table>

**Water use and efficiency**

**Soybean Biodiesel**

**Water use by the industrial process**

<table>
<thead>
<tr>
<th>Year</th>
<th>Max. m³/ton</th>
<th>Max. m³</th>
<th>Min. m³/ton</th>
<th>Min. m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>1.80</td>
<td>1,281,718</td>
<td>1.03</td>
<td>732,004</td>
</tr>
<tr>
<td>2009</td>
<td>1.80</td>
<td>2,122,470</td>
<td>1.03</td>
<td>1,212,166</td>
</tr>
<tr>
<td>2010</td>
<td>1.80</td>
<td>3,266,823</td>
<td>1.03</td>
<td>1,865,719</td>
</tr>
<tr>
<td>2011</td>
<td>1.80</td>
<td>4,368,025</td>
<td>1.03</td>
<td>2,494,628</td>
</tr>
<tr>
<td>2012</td>
<td>1.80</td>
<td>4,419,248</td>
<td>1.03</td>
<td>2,523,882</td>
</tr>
<tr>
<td>2013</td>
<td>1.80</td>
<td>3,594,727</td>
<td>1.03</td>
<td>2,052,990</td>
</tr>
</tbody>
</table>

**Industrial production peak (2012)**

Water consumption = 2.5 – 4.4 million of m³

**Raw material**

Requires 380-800 mm on the complete cycle

Only 2% of seed production use irrigation

**Industrial use**

Requires 1.03 - 1.80 m³ of water per ton of biodiesel
• There has been a constant growth on the participation of vegetal oil in the Primary Energy Supply.

• Vegetable oil accounted for 3.1% of the Primary Energy Supply in 2012.
## Energy Diversity

### Primary Energy Supply (Period 2006 – 2012)

<table>
<thead>
<tr>
<th>Primary Energy Supply (Thousand TOE)</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydro</td>
<td>4,049</td>
<td>3,316</td>
<td>3,308</td>
<td>3,673</td>
<td>3,576</td>
<td>3,344</td>
<td>3,083</td>
<td>3,619</td>
</tr>
<tr>
<td>Nuclear</td>
<td>2,219</td>
<td>2,114</td>
<td>2,140</td>
<td>2,151</td>
<td>2,289</td>
<td>2,781</td>
<td>1,836</td>
<td>1,850</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>44,401</td>
<td>43,013</td>
<td>42,876</td>
<td>42,241</td>
<td>41,462</td>
<td>43,456</td>
<td>44,160</td>
<td>44,080</td>
</tr>
<tr>
<td>Oil</td>
<td>33,933</td>
<td>33,159</td>
<td>32,246</td>
<td>32,035</td>
<td>31,072</td>
<td>29,518</td>
<td>28,874</td>
<td>28,975</td>
</tr>
<tr>
<td>Coal</td>
<td>453</td>
<td>1,152</td>
<td>1,181</td>
<td>1,188</td>
<td>984</td>
<td>953</td>
<td>757</td>
<td>1,254</td>
</tr>
<tr>
<td>Wood</td>
<td>647</td>
<td>638</td>
<td>644</td>
<td>626</td>
<td>626</td>
<td>645</td>
<td>674</td>
<td>797</td>
</tr>
<tr>
<td>Bagasse</td>
<td>921</td>
<td>1,071</td>
<td>1,004</td>
<td>1,004</td>
<td>918</td>
<td>963</td>
<td>961</td>
<td>859</td>
</tr>
<tr>
<td>Vegetable Oil</td>
<td></td>
<td>749</td>
<td>1,232</td>
<td>1,909</td>
<td>2,552</td>
<td>2,582</td>
<td>2,260</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>608</td>
<td>595</td>
<td>595</td>
<td>595</td>
<td>669</td>
<td>410</td>
<td>748</td>
<td>1,044</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>87,231</strong></td>
<td><strong>85,058</strong></td>
<td><strong>84,744</strong></td>
<td><strong>84,745</strong></td>
<td><strong>83,506</strong></td>
<td><strong>84,621</strong></td>
<td><strong>83,676</strong></td>
<td><strong>84,730</strong></td>
</tr>
</tbody>
</table>

National Energy Balance 2006-2012, Secretary of Energy, Argentina

- 92% Biodiesel in 2012
- 17% Bioethanol
## Indicators of Sustainable Production and Use of Bioenergy in Argentina

### Social
- Price and supply of a national food basket
- **Change in income**
  - Jobs in the bioenergy sector
  - Allocation and tenure of land for new bioenergy production

### Change in income

<table>
<thead>
<tr>
<th>Biodiesel Industry vs</th>
<th>Change in income (2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food production</td>
<td>+ 43%</td>
</tr>
<tr>
<td>Oil products</td>
<td>- 22%</td>
</tr>
<tr>
<td>Electricity, water and gas</td>
<td>Similar income</td>
</tr>
<tr>
<td>Transportation Sector</td>
<td>+ 40%</td>
</tr>
</tbody>
</table>

2. Assessment of the 24 GBEP indicators
INDICATORS OF SUSTAINABLE PRODUCTION AND USE OF BIOENERGY IN ARGENTINA

Environment

Social

National External experts

Economics

3. Workshop – Partial Results of consultancy studies

September 2014
INDICATORS OF SUSTAINABLE PRODUCTION AND USE OF BIOENERGY IN ARGENTINA

4. Final Presentation of indicators quantification

Final Report publication

Beginning of 2015

Next step

Other Activity
Translate to Spanish of “THE GLOBAL BIOENERGY PARTNERSHIP SUSTAINABILITY INDICATORS FOR BIOENERGY” – First Edition
Thank you for your attention

Department of Bioenergy
- Ministry of Agriculture, Livestock and Fisheries -
  Argentina