7th Bioenergy Week and Study Tour for Capacity Building

Philippines, Manila
Philippine International Convention Center (PICC)
Cultural Center of the Philippines Complex, Roxas Boulevard,
Pasay City, Metro Manila

Liquid Biofuels in Argentina
Secretariat of Agroindustry of Argentina

June 2019
PRESENTATION CONTENTS

✓ Energy consumption by source in Argentina

✓ Reasons for the development of biofuels in Argentina

✓ Recent developments in the Argentine biofuels sector

✓ Conclusions
ENERGY MATRIX OF ARGENTINA

- Renewable energy: 9.4%
- Fossil energy: 87.3%
- Nuclear energy: 3.3%

Increase the participation of renewable energy
An abundance of varied ecosystems fuelling the growth of diverse crops.

SOYSTAT - USDA, 2016 – Ministry of Agroindustry

WORLD SOYBEAN PRODUCTION
2019/2020 projected

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>PRODUCTION (million tons)</th>
<th>SHARE (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>113,0</td>
<td>32%</td>
</tr>
<tr>
<td>BRAZIL</td>
<td>123,0</td>
<td>35%</td>
</tr>
<tr>
<td>ARGENTINA</td>
<td>53,0</td>
<td>15%</td>
</tr>
<tr>
<td>CHINA</td>
<td>17,0</td>
<td>5%</td>
</tr>
<tr>
<td>SUBTOTAL</td>
<td>306,0</td>
<td>86%</td>
</tr>
<tr>
<td>REST</td>
<td>49,0</td>
<td>14%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>355,0</td>
<td>100%</td>
</tr>
</tbody>
</table>

USDA, 2019– Ministry of Agroindustry
CROPS DEVELOPMENT IN ARGENTINA - SOYBEAN

Production and implanted area of soybean in Argentina
- in million tons and in million hectares -

Average production (2009-2018)
50 million tons

Soybean yield increased 50% from 1990

Ministry of Agroindstry, 2019
BIOFUELS DEVELOPMENT IN ARGENTINA – BIODIESEL

37 Biodiesel plants

40% Domestic market, 60% Export market in 2018

Argentine Biodiesel Markets
- in thousand tons -

Total production capacity: 4.5 million tons
Total Investments: US$ 1.5 billion

Department of Energy - CARBIO
ARGENTINE BIODIESEL – GREENHOUSE GAS SAVING

1. Total production in 2018 = 2 million 300 thousand tons. Domestic Market (45%) – 1050 thousand tons. International Market (55%) – 1250 thousand tons
3. GHG emissions for soybean biodiesel – 29,20 gCO₂ eq/MJ
4. GHG emissions for diesel (UE RED) – 83,7 gCO₂ eq/MJ
5. GHG emissions savings (national average) – 54,5 gCO₂ eq/MJ - 70%

<table>
<thead>
<tr>
<th>Soybean biodiesel¹</th>
<th>Energy generated by biodiesel annual production (MJ)</th>
<th>Saving GHG emissions by biodiesel annual production (tnCO₂-eq)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic Market</td>
<td>55.482 millions</td>
<td>3 millions</td>
</tr>
<tr>
<td>International Market</td>
<td>66.050 millions</td>
<td>3.6 millions</td>
</tr>
</tbody>
</table>

¹ Balance of GHG emissions by soybean biodiesel respect to conventional diesel (UE-RED). Lower and higher values associated with soybean biodiesel emissions without and with considering land use change, respectively.

Total GHG emission savings was 6.6 million tons of CO₂-eq considering biodiesel production during 2018. Based on the proposal defined in the National Action Plan on Energy and Climate Change, with an increase to 20% in mandatory use, this reduction in the domestic market would be 6 million tons CO₂-eq, accumulating a reduction of 9 million 600 thousand tons CO₂-eq with the current export values.

Argentine Biodiesel production model reduces greenhouse gas emissions by 70% compared to fossil fuels.

Soybean production:
- Sustainable Production, large “good practices of cultivation” adopted.
- 95% No till production.
- 300 kms distance from the main soy production areas to the crushing/biodiesel production facilities.

Soybean oil
Crushing facilities very efficient by scale and technology.
- Full port integrated.

Biodiesel from soybean
- Large scale factories. (exporters)
- Integrated to the crushing plants and ports by pipes.
BIOFUELS DEVELOPMENT IN ARGENTINA - BIOETHANOL

Production of Bioethanol - in thousand of m³ -

Mandatory use in 2018 12%

in 2018
Production: 1.1 million M3 Tons
Corn= 586 thousand M3
Sugar cane= 528 Thousand M3
CONCLUSIONS

Argentina is a large agricultural producer of raw materials and manufactures

From the **economic and social** point of view, the development of bioenergy in Argentina:

- Adds value to the chain production,
- Generates new industries and jobs,
- Promotes energy security,

From the **environmental** point of view, the development of bioenergy in Argentina:

- Reduces greenhouse gas emissions (GHG),
- Diminishes soil and water pollution.
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Thank you