



SEVENTH FRAMEWORK PROGRAMME

THEME: FP7-ENERGY.2008.3.2.1

“Enhancing international cooperation between the EU and Latin America in the field of biofuels”

DIBANET

The Production of Sustainable Diesel-Miscible-Biofuels from the Residues and Wastes of Europe and Latin America

Sustainability considerations for biofuel feedstocks

Networking Day December 13th, 2010

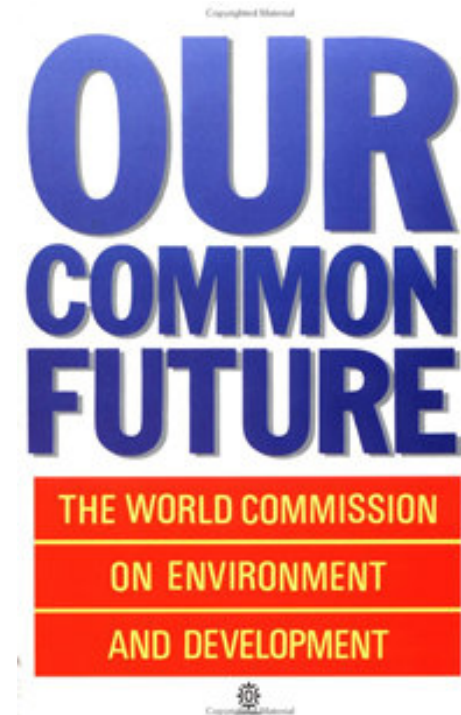
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1. Sustainable development
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3. Diesel Miscible Biofuel
4. Summary



Sustainable development concept was brought into focus by the World Commission on Environment and Development or Brundtland Commission's 1987 report, *Our Common Future*, 1987. The Commission defined the concept as:

“development that meets the needs of the present without compromising the ability of future generations to meet their own needs”



Links between biofuels and sustainable development are varied and complex.

Biofuels production

- Looking for improve energy security
- economic gains
- rural development
- greater energy and water efficiency
- reduced GHG emissions compared to standard fuels.

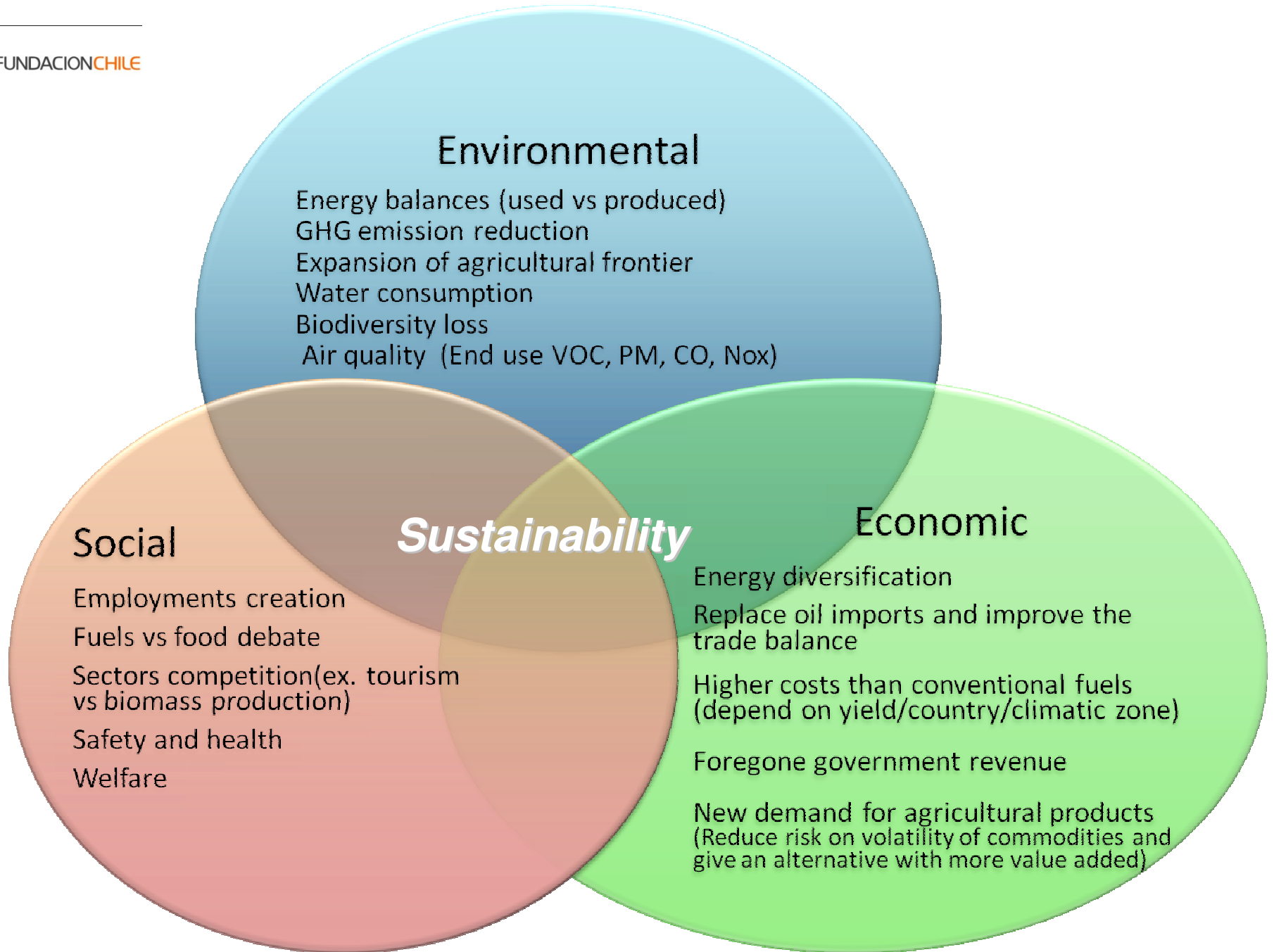
Production of energy crops could result in:

Negative impacts

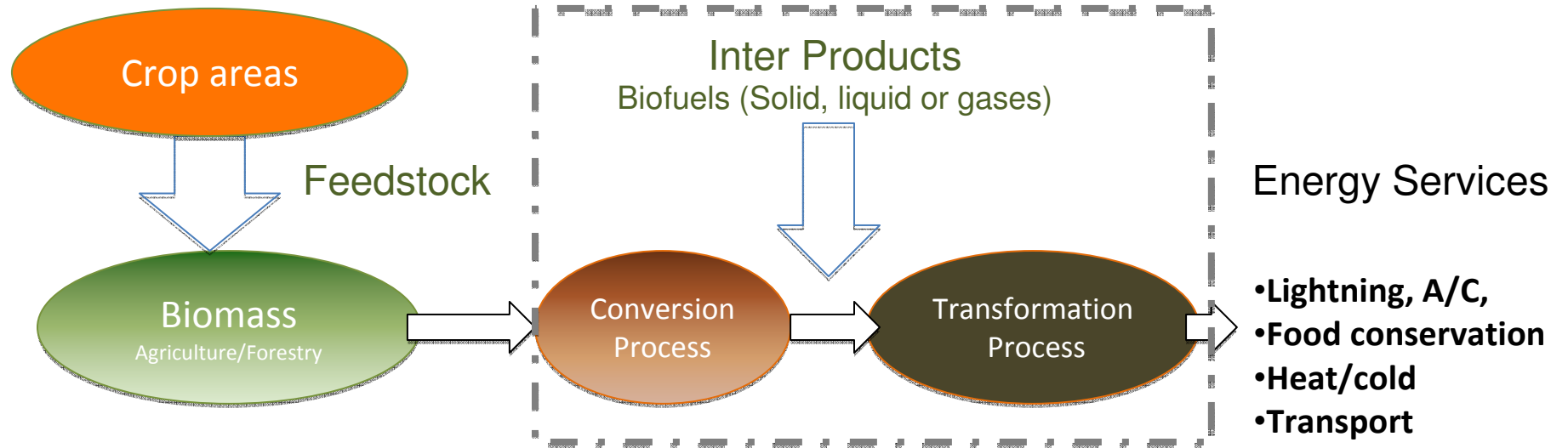
- Expansion of the agricultural frontier
- Deforestation
- Monocropping
- Water pollution
- Food high costs and security problems
- Poor labour conditions
- Unfair distribution of the benefits along the value chain.

Positive impacts and trade-offs

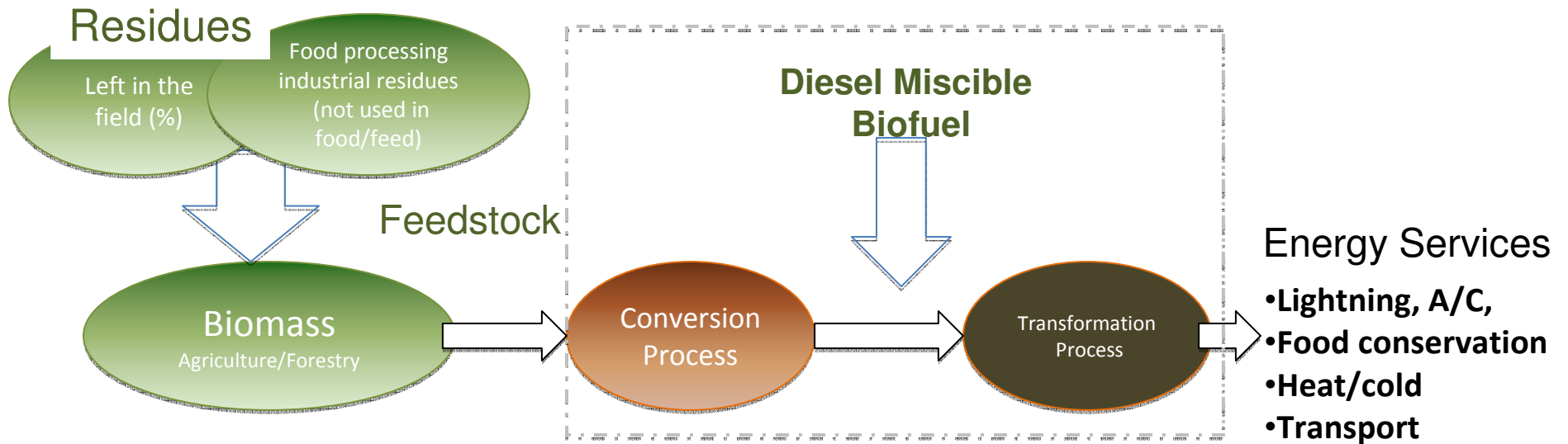
- Vary depending on the type of energy crop
- Cultivation method
- Conversion technology
- Country or region under consideration.



Biofuel Value Chain



DMB and Coproducts Value Chain



- | | |
|----------------------|--|
| Economic | <ul style="list-style-type: none"> •Gives alternative value to residues •Improve economical efficiency of biomass production |
| Environmental | <ul style="list-style-type: none"> •No crops environmental impact •Sustainability standards supply side (Max yields, water and land use) •Improve Energy balance, CO2 emissions |
| Social | <ul style="list-style-type: none"> •Help to advance in getting alternatives to Food vs fuel debate •Improve state of the art on biomass R&D •Creation of jobs and welfare |

- | | |
|----------------------|--|
| Economic | <ul style="list-style-type: none"> •Allows energy diversification •Improve economical efficiency of conversion process •Require long term feedstock supply contracts for enabling investments |
| Environmental | <ul style="list-style-type: none"> •Quality std accomplishment from demand side (EN590) •Biorefinery concept •Coproducts for closing loops of flow materials |
| Social | <ul style="list-style-type: none"> •Improve state of the art of levulinic acid and co product •Potential recuperation of soils and ecosystems (biochar) |

Summarizing

- Sustainable development and biofuels is a complex relation on debate
 - ★ International Trade and Commodity Food Markets transfer the impact of regulation and subsidies from one country/ continent to other
- DIBANET actions (EU and LA) looks for improving sustainability of:
 - ★ Biomass use (residues as feedstock)
 - ★ Biomass yield production (coproducts – biochar will go back to fields)
 - ★ DMB production (state of the art of levulinic and co products)
- DIBANET research collaborate with sustainable development of LA





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- **Primary residues** are produced when harvesting crops or timber. They comprise agricultural residues like straw and stover, as well as forestry residues like treetops, branches, and stumps.
- **Secondary residues** are accumulated during the processing of crops into food products or the production of other biomass based materials. Feedstocks in this category include nutshells, bagasse, presscake, and fruit bunches, as well as sawdust, bark and scrap wood.
- **Tertiary residues** include post consumer residues that are derived after consumption of biomass based products, e.g. municipal solid waste, wood waste from cities

Source: IEA 2010, Perlack et al. 2009



Sustainability standards are specific rules and criteria by which the production, transportation, and processing of feedstocks can be assessed for their environmental, social, and other values.



• Round Table on Better Sugar Initiative

The BSI aims to determine principles and to define globally applicable performance-based standards for sugarcane products (including bioethanol) with respect to its environmental and social impacts. Technical working groups (TWGs) – global teams of technical and scientific experts assess sugarcane management practices

• Round table on Sustainable Soy

Global platform composed of the main soy value chain stakeholders with the common objective of promoting the responsible soy production through collaboration, dialogue and consensus finding among the involved sectors in order to foster an economical, social and environmental sustainability.

RTRS Standard - Version 1.0 was developed.

Principles:

1. Legal Compliance and Good Business Practice
2. Responsible Labour Conditions
3. Responsible Community
4. Environmental Responsibility
5. Good Agricultural Practice

•Others

- Round table on Sustainable Palm Oil
- WWF Roundtable on Responsible Soy Oil RRSO
- The Sao Paulo State Green Ethanol Program
- German Biomass Sustainability Ordinance (BioNachV)
- Overview of Recent Developments in Sustainable Biomass Certification (IEA Task 40)
- Testing Framework for Sustainable Biomass (Cramer Report)
- Sustainability Criteria and Certification Systems for Biomass Production
- CSBO Draft Standards



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3.1 To monitor production and process efficiency; to measure the impacts of production and processing so that improvements are made over time.	
INDICATOR	Standard
Total raw materials used per kg product (kg/kg)	< 11 if no ethanol produced < 20 for full ethanol production
Sugarcane yield (tc/ha harvested/y)	Total yield per year/total ha cut/weighted average age at harvest for each category of water regime. •Irrigated - 85; •Supplementary 65; •Rainfed 45
Working hours lost as percent of total hours worked	<5
Mill overall time efficiency	75
Factory Performance Index	90
Industrial Efficiency	75

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3.2 To monitor global warming emissions with a view to minimizing climate change impacts.	
INDICATOR	Standard
Global warming burden per unit mass product	Total < 0.4 t CO ₂ eq/t Sugar Total < 24g CO ₂ eq/MJ
5.2. To continuously improve the status of soil and water resources.	
INDICATOR	Standard
Net water consumed per unit mass of product (kg/kg)	Mill, 20 kg/kg sugar or 30 kg/kg ethanol. Agric <130 kg/kg cane
% Ground cover of tops or leaves after harvest	>20
Soil surface mechanically tilled per year (% of area under cane)	<20
Percent fields with samples showing analyses within acceptable limits for PH (%)	>80