Bio-Ethanol Conference

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LEGAMBIENTE

The role of biofuels
In a sustainable energy scenario

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2006, focus back on biofuels

Biofuels as an aswer to:

- the increase of CO2 emissions

and to the growth of emissions in the transport sector

- the increase of oil prices and to the consumption of gasoline, due to the diffusion of cars

A new phase

- Brazil's success in ethanol
- New policies in the United States (federal subsidies for $7 billion per year, tax on the import of ethanol) and in the European Union (Subsidies and the goal of 5,75% by 2010, 10% by 2020 of biofuels over the total fuels, tax on import)

2007, fears and risks about biofuels

Is this perspective sustainable for the planet?

A large-scale diffusion will bring to

- the decrease of food crops
- the increase of prices of products, and
- consequences for the poorest
- the diffusion of industrialised monocultures
- depletion of forests and important ecosystems

In order to increase cultivable areas (such as the tropical forest in Brazil and Malaysia)

- a limited benefit in terms of

CO_2 emission savings

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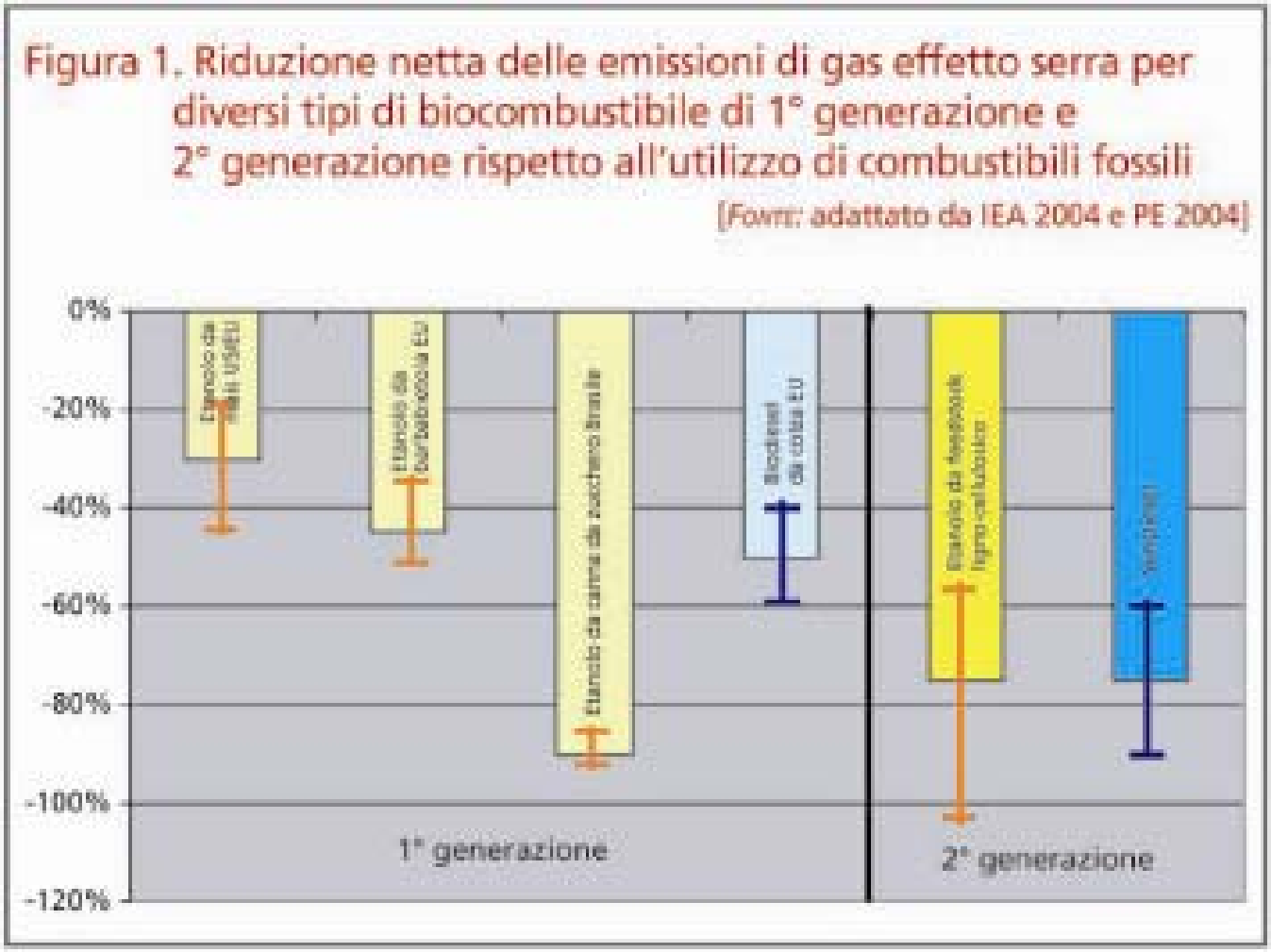
Some answers

Biofuels are not all equivalent in terms of CO2 emissions savings

Figura 1. Riduzione netta delle emissioni di gas effetto serra per diversi tipi di biocombustibile di 1° generazione e 2° generazione rispetto all'utilizzo di combustibili fossili

[Fonte: adattato da IEA 2004 e PE 2004]



Some answers

Biofuels are not all equivalents in terms of energy balance

Tabella 1: Bilancio energetico dei biocombustibili di prima generazione – Rapporto tra energia fornita in fase di combustione (Output) ed energia necessaria per la fase di produzione del biocombustibile (Input)

Fonte: Adattato da [Russi 2007, IEA 2006, CONCAWE 2002]

BIOCOMBUSTIBILE	FEEDSTOCK	OUTPUT/ INPUT ENERGIA senza allocazione ai coprodotti	OUTPUT/ INPUT ENERGIA con allocazione i coprodotti	FONTE
Bioetanolo	Canna da zucchero (Brasile)	8		IEA/GB 2006
	Mais	<2		
	Barbabietole / grano (media)	1,2	1,45	CONCAWE 2002
Biodiesel	non specificato	<3		IEA/GB 2006
	Colza (Svezia)	2,5	3,2 - 3,5	Bernesson et al 2004
	Colza	1,9	2,3	CONCAWE 2002
	Colza	0,7–1,0	1,0-1,5	Venturi&Venturi 2003
	Girasole	0,3-0,9	0,4-1,2	
	Soia	0,2-0,6	0,7-1,6	
	non specificato	0,98-1,16	1,21-1,51	Giampietro&Ulgiati 2005

Imported biofuels an estimated increase of 6-10% of energy consumptions

(Source IEA)

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Biofuels as an answer:

To the increase of CO2 emissions in the transport sector?

Italy, Scenario at 2010 (5,75%) with present fuels:

-All biodiesel hypothesis: needed area 3,1 – 4,6 million hectares (23-34% of Italy's cultivated land), CO2 emission reduction 4,7 million tons (3,5% of total emissions due to transport)

-All bioethanol hypothesis: needed area 1,25 Mha

(9,3% of cultivated land), CO2 reduction 1,7 – 3,8 Mt

(1,2% - 2,8% of total emissions due to transport)

Paolo Frankl, Iea (Qualenergia, n. 3, 2007)

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The real issues

For biofuels to become an answer to the climate and energy emergency

1) **First-generation biofuels have great technological limits** and therefore limited sustainable diffusion on a large scale.

- How can we control the environmental and energetic impact of imported biofuels? By fixing international standards for environmental impacts (water, biodiversity, etc)
- Do national binding standards and subsidies

  make sense in this phase? No

The real issues

For biofuels to become an answer to the climate and energy emergency

2) **Promote applied research on second-generation biofuels**

- The processes “biomass to liquid” for the production from lingo-cellulosic materials, able to achieve better results on energy efficiency and CO2 emission reduction, through a higher yield and a reduction (zero setting) of water consumption.

The real issues

For biofuels to become an answer to the climate and energy emergency

3) Encourage a territorial approach aimed at the valorisation of more suitable and sustainable biomasses.

- Through the development of local energy supply chains, with a careful integration and promotion of the alternation of food and non-food culture, and a use of biomasses both for energy and heat purposes, and also for biofuel production.
- National goals for gradual diffusion and subsidies are compatible with this scenario.

The real issues

Biofuels, as well as renewable energy sources, are the answer in a scenario of reduction of fuels consumption.

In Italy (and in the rest of the world) the reduction of CO2 emission by transport can occur within a policy that takes into account at the same time:

- The reduction of consumption and emissions of the circulating vehicles
  (UE Directive Proposal: 130 grams per kilometres maximum of CO2 emission; USA: new energy bill, maximum consumption 1 litre every 15,1 km)
- Carbon tax for the promotion of fuels with lower CO2 emissions
  (biofuels, methane, electric and hybrid cars)
- Strong policies of re-balance and modal integration
  Priority to investments for sustainable mobility in cities and for rail freight transport, stop to new motorways and airports (Sarkozy conclusions of the "Grenelle de l'environment)"