

ETERI COMBUSTIBILI DA BIOMASSE

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LyondellBasell Industries

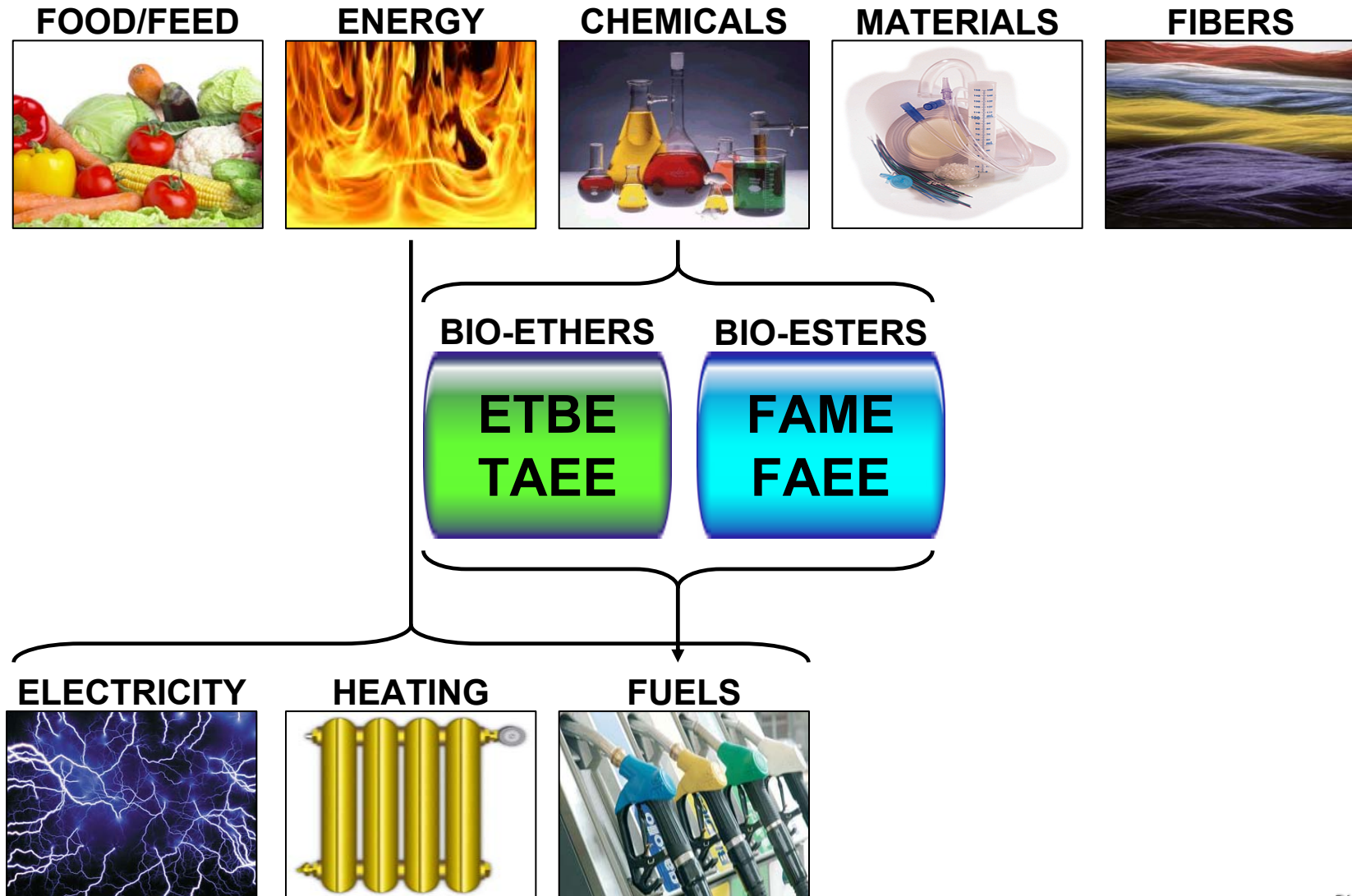
BioBased Economy e Bio-raffinerie
13^a Fiera Internazionale ECOMONDO

Rimini, Italia
29 Ottobre 2009

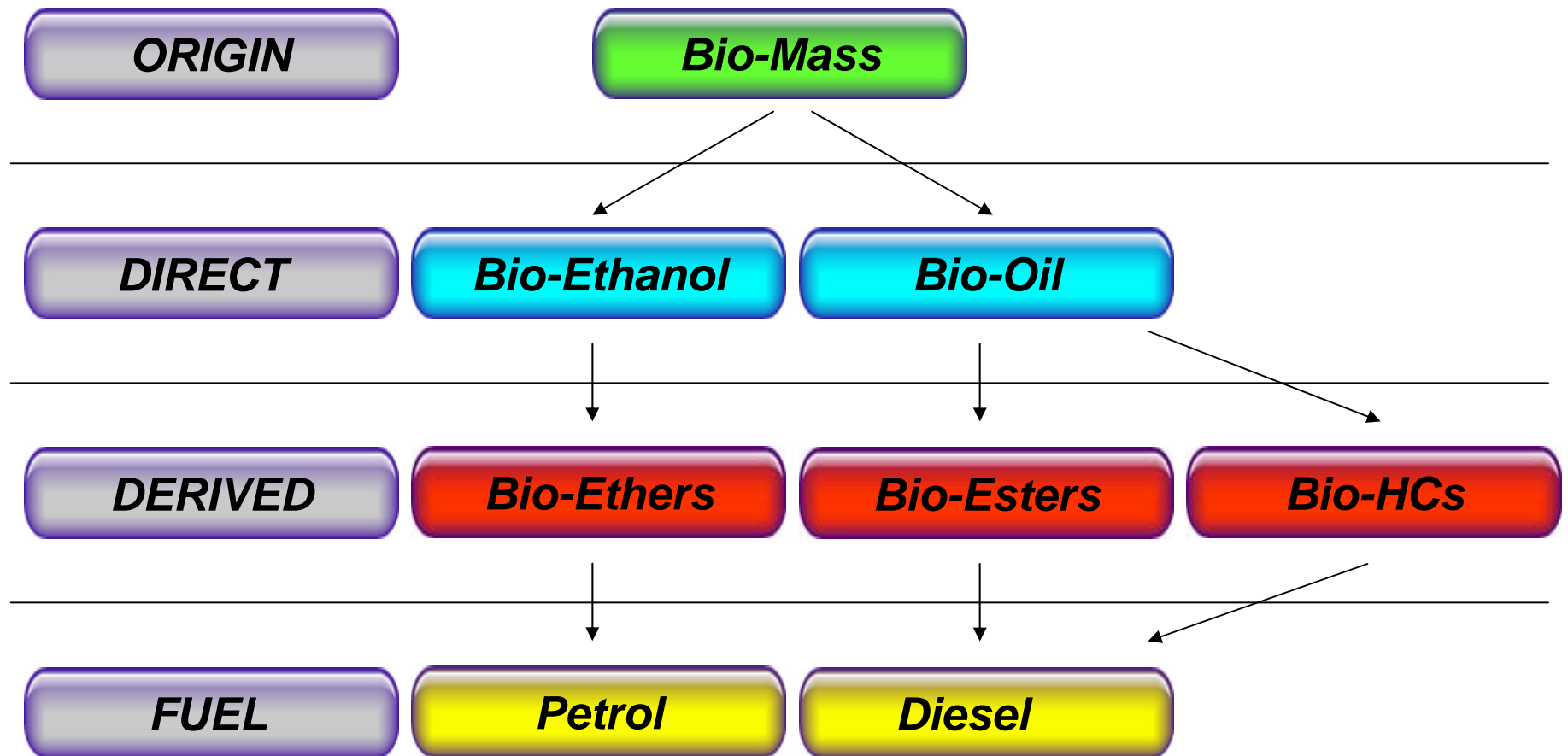
ECOMONDO



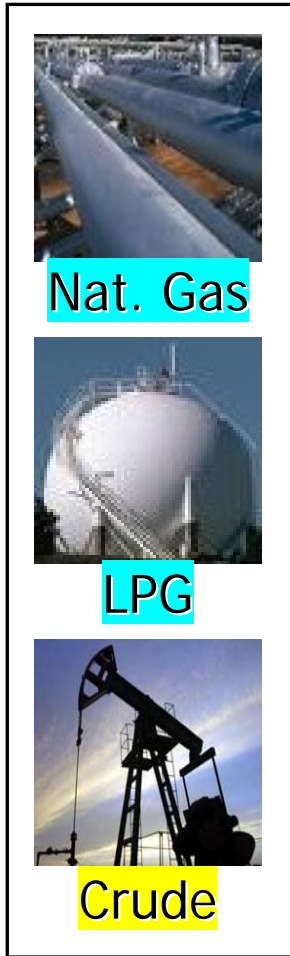
Bio-Based Economy: Sectors & Fuels



Bio-Fuels “Supply Chains”



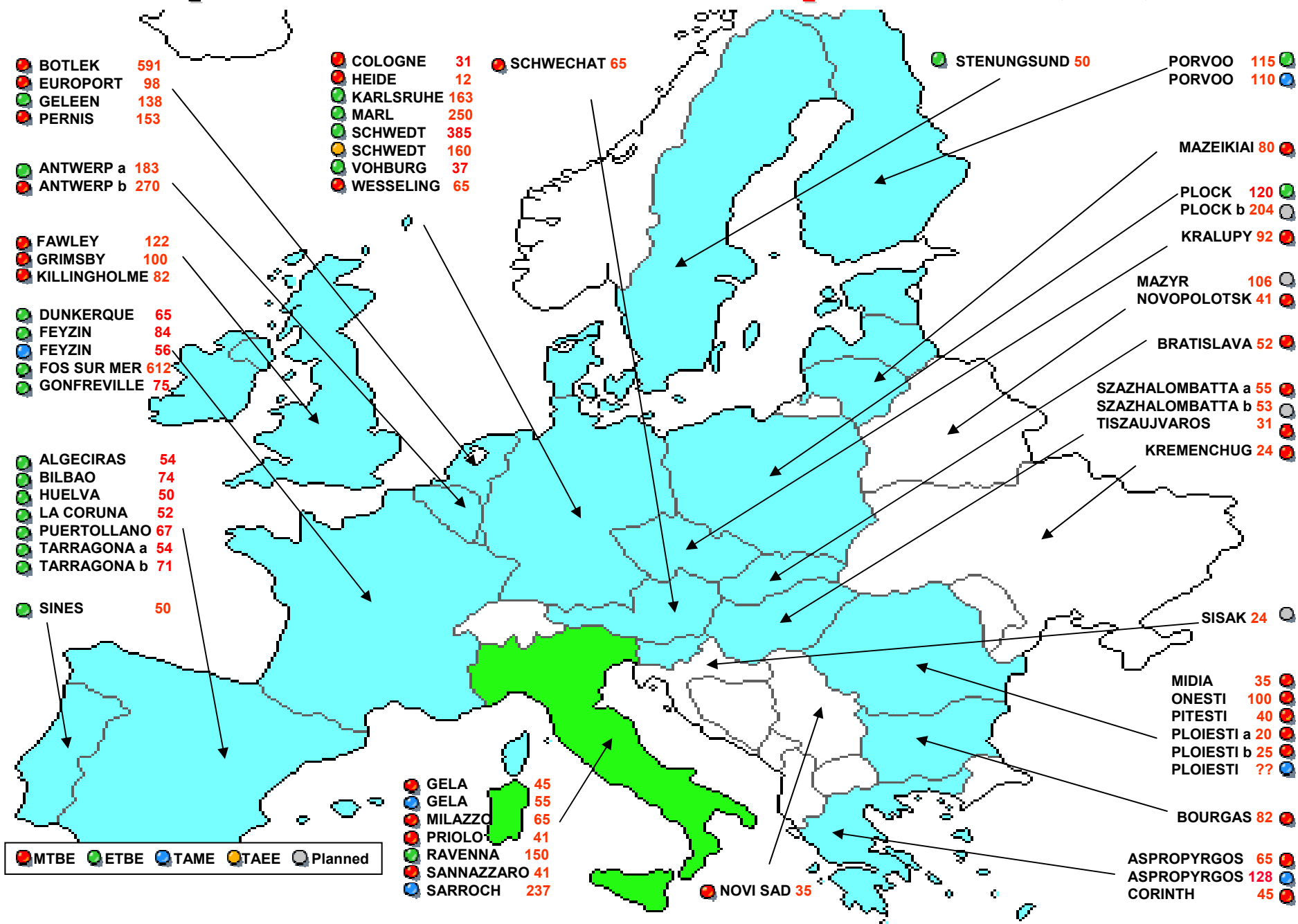
Fuel-Ethers Manufacturing



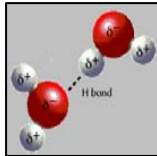
Olefins	MeOH	EtOH	Alcohols
i-C₄	MTBE	ETBE	Ethers
i-C₅	TAME	TAAE	

... "Alternative" or "Bio",
Depending on Raw-Material

European Fuel-Ethers Production Capacities 2008 (KT/Y)



ETBE: Further Enhancing ETOH Performances



← < Blending **Volatility**

< VOCs **Emissions**



← > **Octane** Barrel Delivery

> **CO₂** Emissions Reduction



← > **Crude-oil** Replacement

No **Commingling**



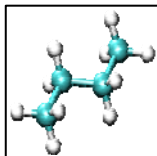
← > **Water** Tolerance

No **Azeotrope**



← < **Logistic** Complexity

> **Blend-stocks** Value

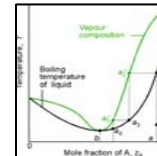


← **Butane** Uptake/Upgrade

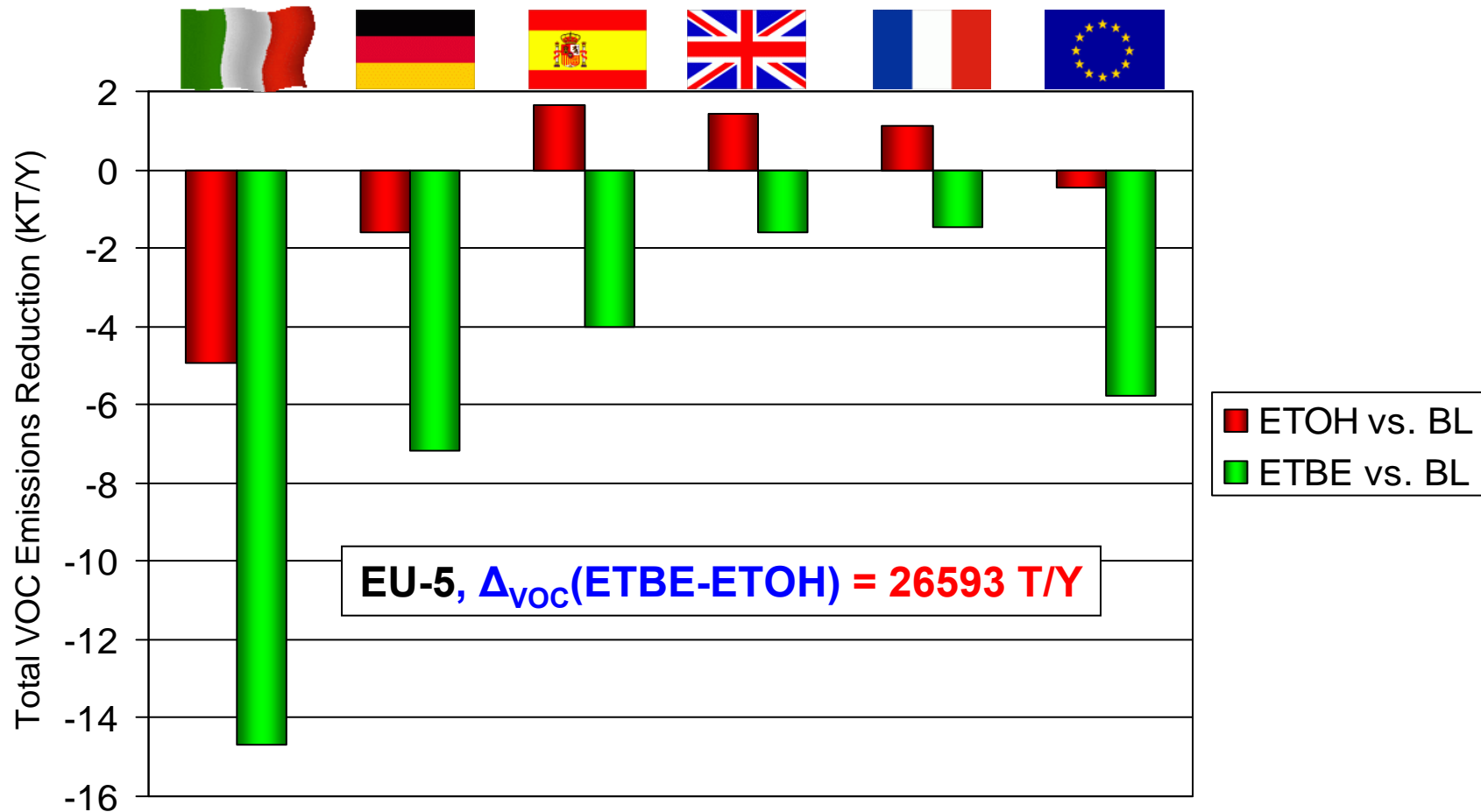
> Refining **Flexibility**



← > Material **Compatibility**



COPERT 2010: VOC Reductions with ETBE



Source: Emissions and Health Unit - Institute of Environment and Sustainability - EC-JRC Ispra
 "An assessment of the impact of ethanol-blended petrol on the total NMVOC emissions from road transport in selected countries"



ETBE Reduces CO₂ Emissions



HART July 2007

**Study on Relative CO₂ Savings
Comparing Ethanol and ETBE
as a Gasoline Component**

Submitted by:
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HART
Relative CO₂ Savings Comparing Ethanol and ETBE as a Gasoline Component - All rights reserved - Hart Energy Consulting www.hartenergy.com

“The use of bio-ETBE reduces refining crude-oil need and processing intensity, requires less fuel and, implying relevant petrol composition changes, allows the reduction of carbon factor and lesser CO₂ emissions”

CE-Delft October 2007

CE Delft
Solutions for
environment,
economy and
technology

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**ETBE and Ethanol:
A Comparison of CO₂ Savings**

Report
Delft, October 2007

Author(s): Harry Croezen
Bettina Kampman
Gerdien van de Vreede
Maartje Sevenster

“This study indicated that, when bio-ETBE is used, the resulting modification of refinery operations determine a significant reduction of greenhouse gases emissions”

IFEU August 2008

ifeu
ifeu -
Institut für Energie-
und Umweltforschung
Heidelberg gGmbH

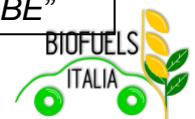
**Bioenergie aus Getreide
und Zuckerrübe: Energie-
und Treibhausgasbilanzen**

Endbericht (Kurzversion)

Im Auftrag des
Verbandes Landwirtschaftliche
Biokraftstoffe e.V. (LAB), Berlin

Heidelberg, 13. August 2008

*“Best results by far are obtained when ethanol is converted to bio-ETBE.
The use of ETBE can allow the saving of 4 times the primary energy required to produce its fossil alternative.
IFEU recommends to exploit the whole potential of bio-ETBE”*



EU & Fuels: Relative Positioning



1° 2° 3° 4° 5° 6° 7° 8° 9° 10° 11° 12° 13°

Primary Refining Capacity



Domestic Petrol Consumption



Domestic Diesel Consumption



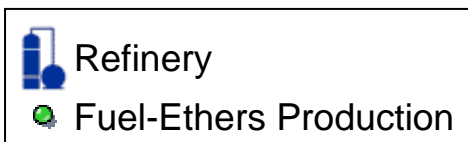
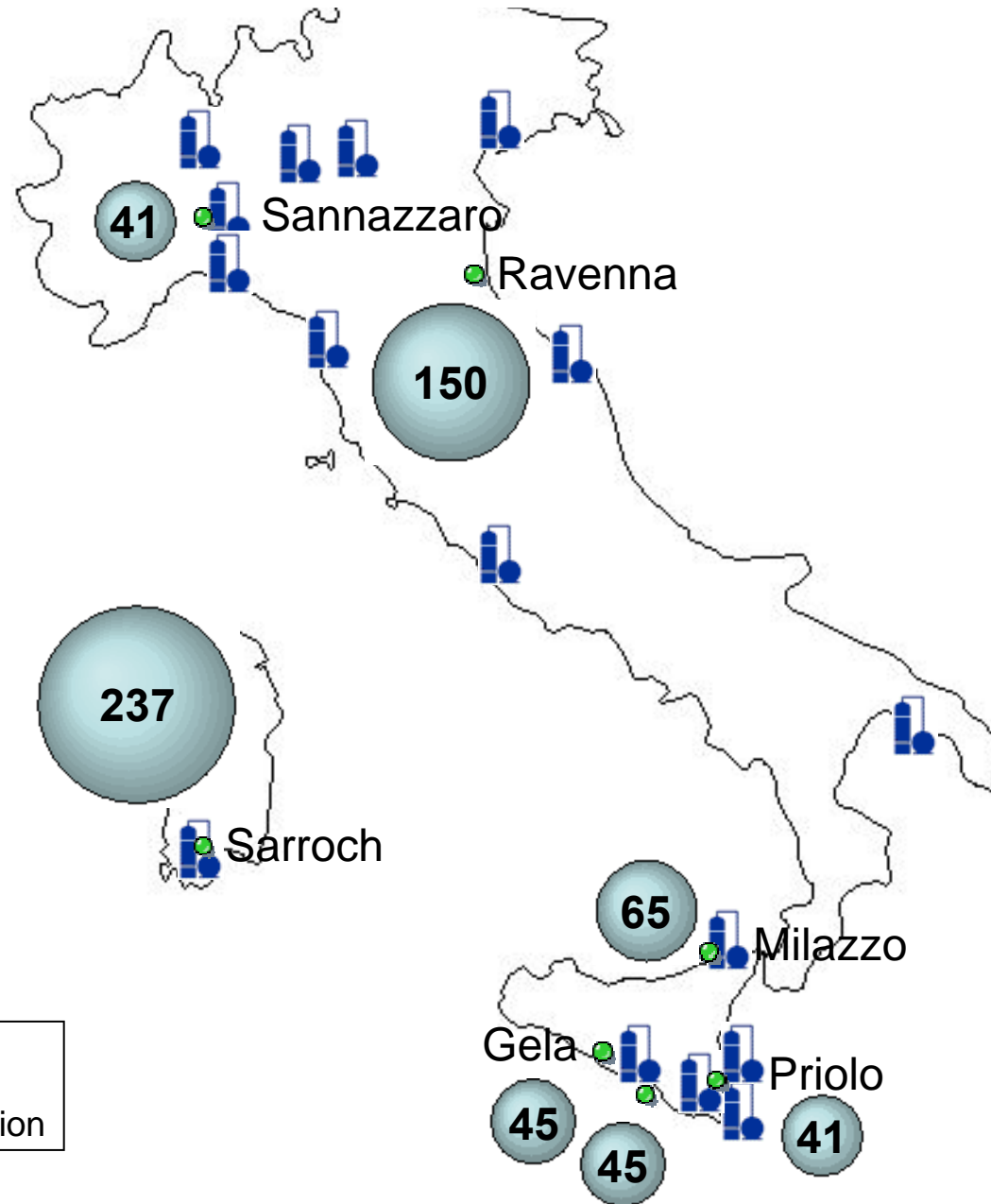
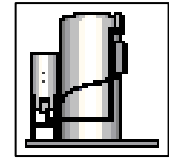
Biodiesel Production Capacity



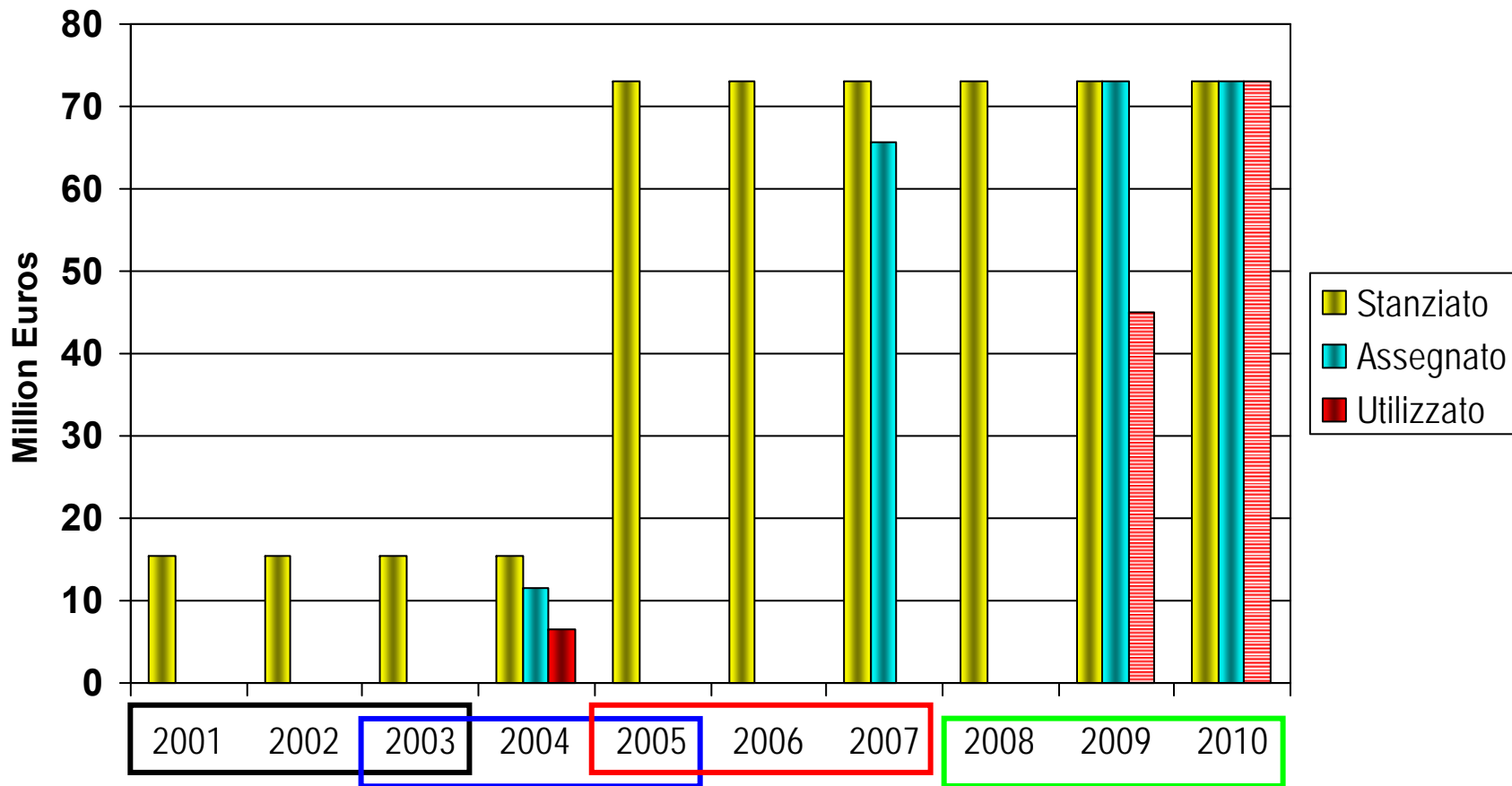
Fuel-Ethers Production Capacity



Italian Fuel Ethers Production (KT/Y)



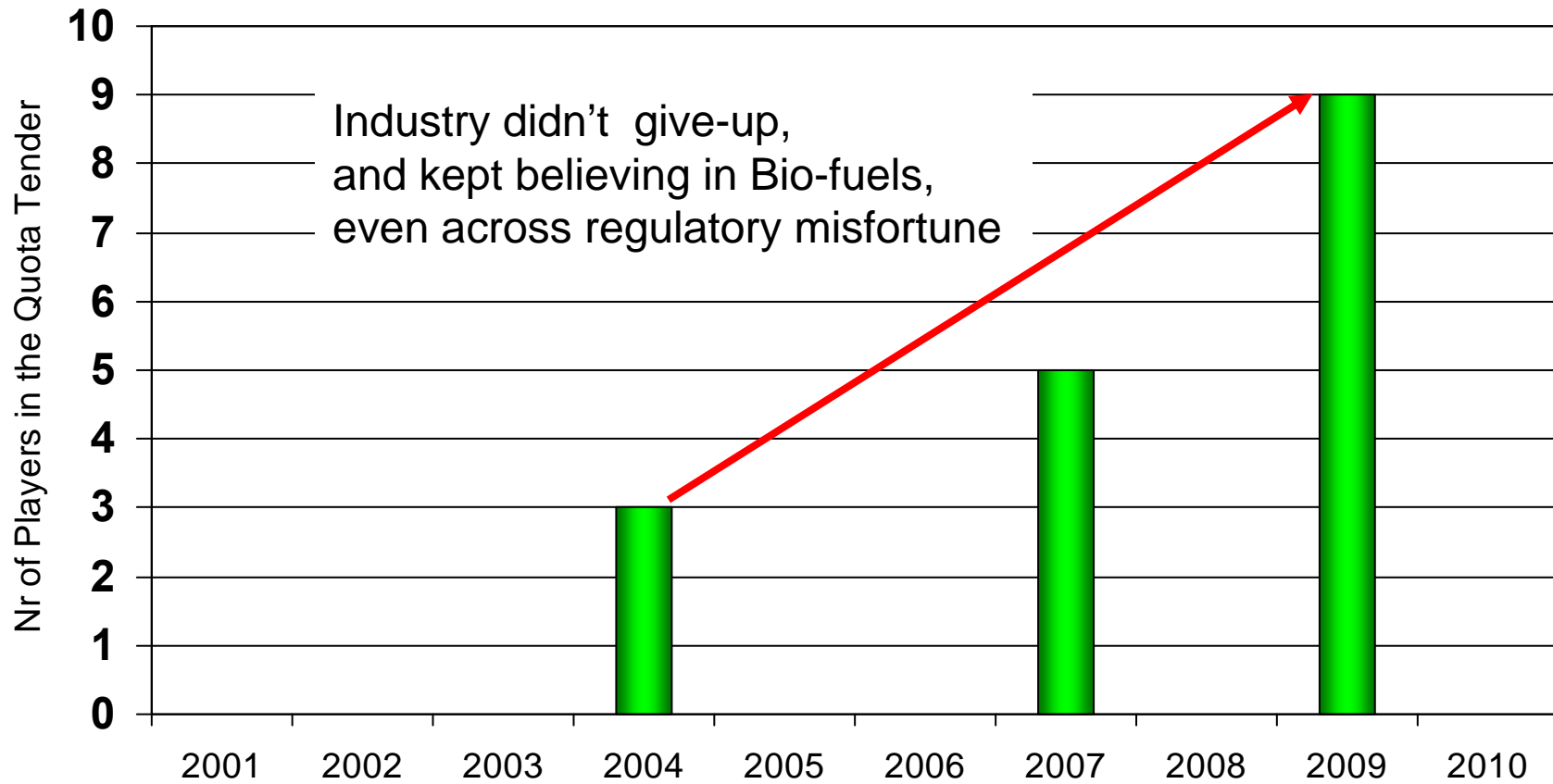
Italian Bio-Ethanol Fiscal Incentive Programmes



- Implementation decree never issued!
- Quotas assigned, for 2004 only, on Nov 9th 2004
- Quotas assigned, for 2007 only, on Dec 31st 2007
- Quotas assigned for 2009 on Oct 22nd 2009, and expected for 2010 on Feb 1st



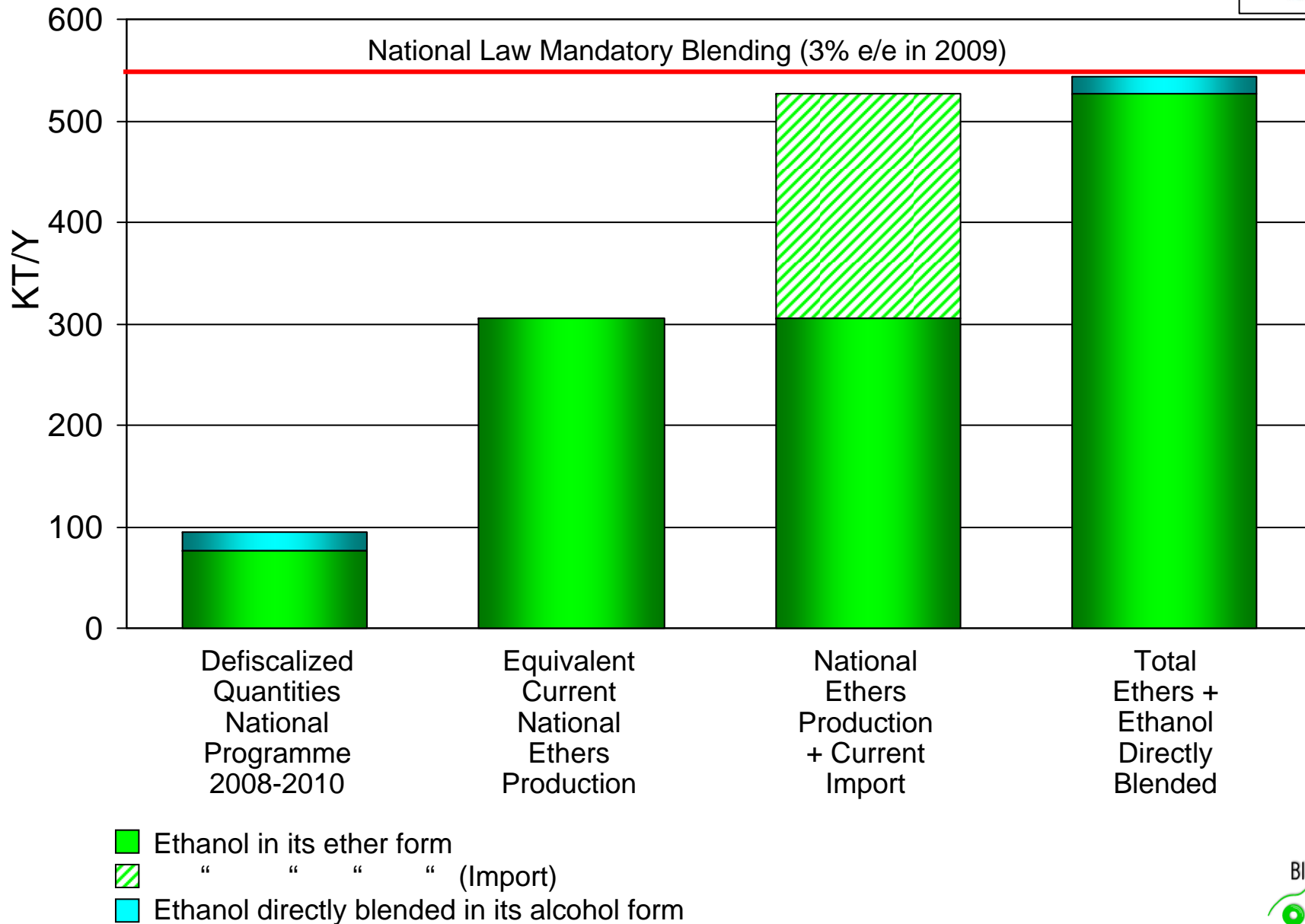
Italian Bio-Ethanol Fiscal Incentive Programmes



■ Years in which Defiscalised Quotas Tender has been Issued (even if very late) by Authorities



Bio-Ethanol (equivalent) for Petrol: Indicators Italy 2009



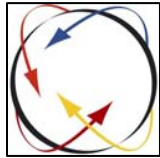
Overcoming Barriers to Bio-Fuels Market Development



Clear and consistent legislation



Policies harmonisation



Open market



Technology neutrality










Preserving flexibility



Product portfolio

RED: Renewable Energy Share Mandatory National **Targets 2020**

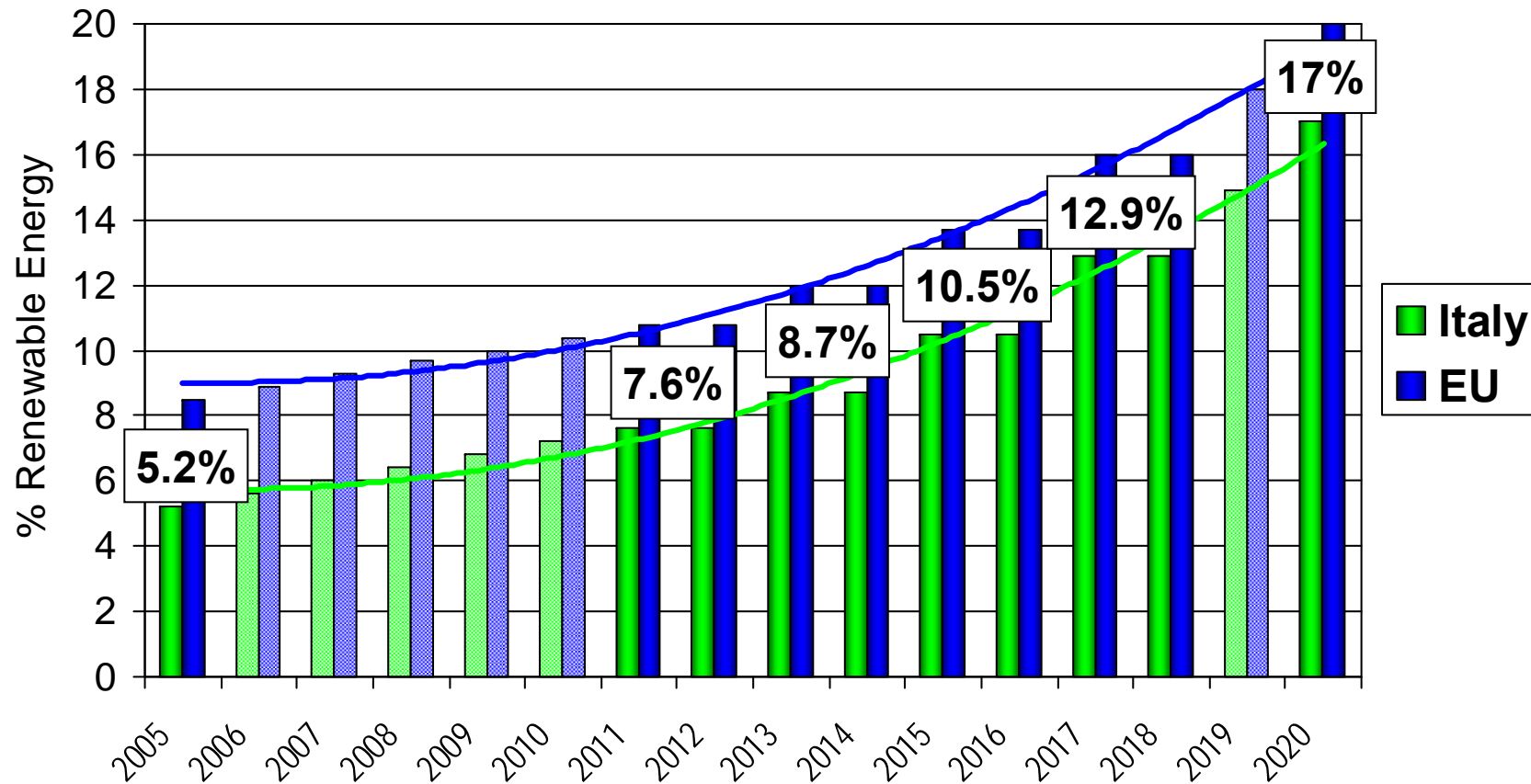


	EU	$\geq 20 \%$
	Spain	$\geq 20 \%$
	France	$\geq 23 \%$
	Germany	$\geq 18 \%$
	Italy	$\geq 17 \%$
	UK	$\geq 15 \%$
	Netherlands	$\geq 14 \%$

Minimum renewable energy share target by 2020 in **transport** = **10%**



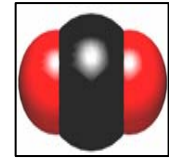
RED: Renewable Energy Share **Indicative Trajectory**



Minimum renewable energy share target by 2020 in **transport** = **10%**



FQD: GHGs Emissions Reduction Targets - Fuels



Some **Future Key Open Issues** on **Bio-Fuels Implementation**



Sustainability:

National Default Values ?



National Obligation:

Bio-energy Blending Percentage



Open market:

Domestic vs. Import



Fuel Quality:

Harmonisation ?

Conclusions

- Bio-Ethers are key to Meet European Policy Targets
- Ethanol-Ethers Enhance ETOH in Multiple Ways, including CO₂ Emissions Reduction Improvement
- Industry is ready and committed