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## ***Biodiesel : First and Second Generation***

*Tortona — April 4, 2011*

# OXEM: Overview

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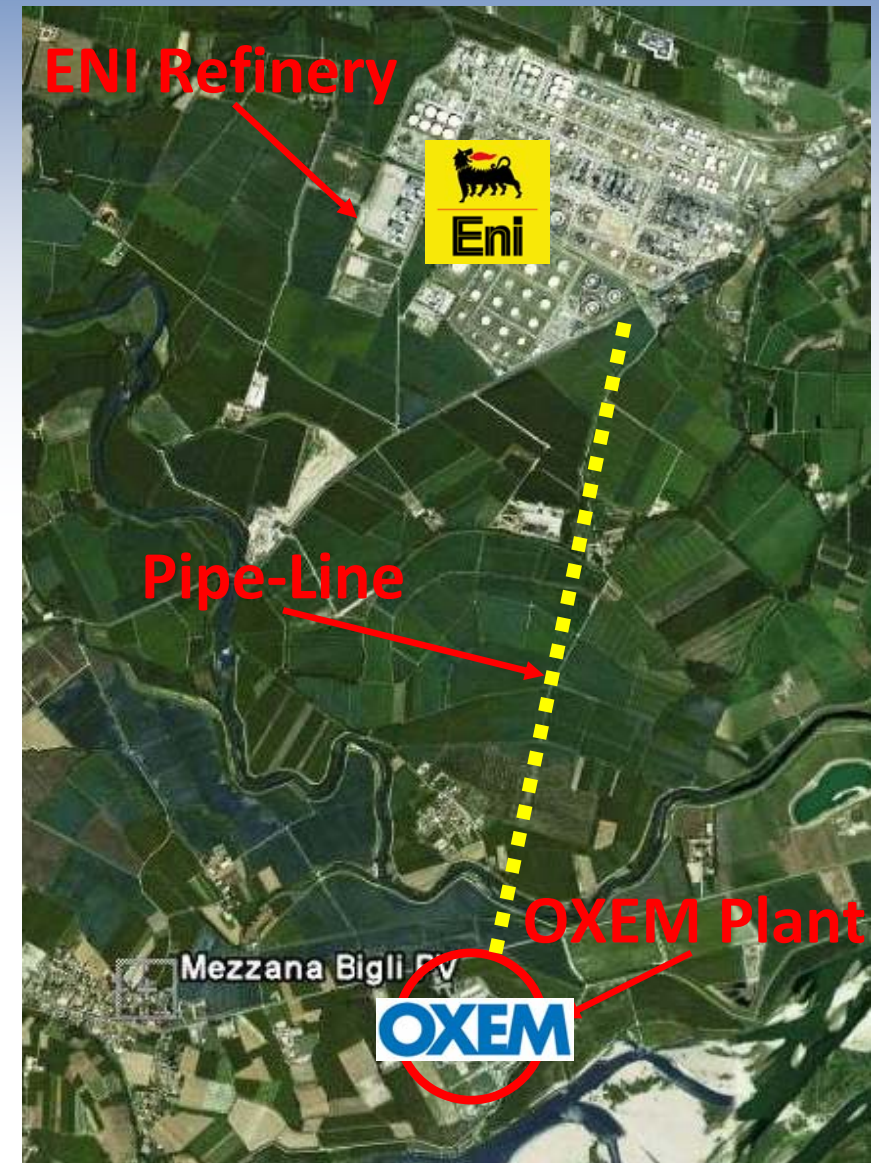
- *Year of establishment:* 2006
- *Investment:* 50 M €
- *Capacity:* 200,000 tons/year
- *Technology provider:* Desmet-Ballestra
- *Start-up:* January 2009





# OXEM: Localization

## OXEM biodiesel plant in Mezzana Bigli (PV)



# OXEM: Strenghts to play on

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- **Shareholders** with industrial links and very supportive (oil industry, logistics, agriculture), keeping up the information flow.
- **Management team expertise** (chemical, agro-business and project finance experience) and all involved as investors.
- **Oxem-Oleo** partnership (Oxem and Wilmar) for logistics and raw material/BD procurement
- Consolidated state of the art **technology provider** and R&D commitment thanks to the cooperation **with** DesmetBallestra
- **Location** advantages:
  - proximity to ENI largest oil refinery directly connected to OXEM biodiesel plant via pipeline
  - integration with OXON chemical know-how and facilities
  - agricultural area to develop rapeseed crop (formerly sugarbeet)



# RENEWABLE ENERGY DIRECTIVE 2009-28

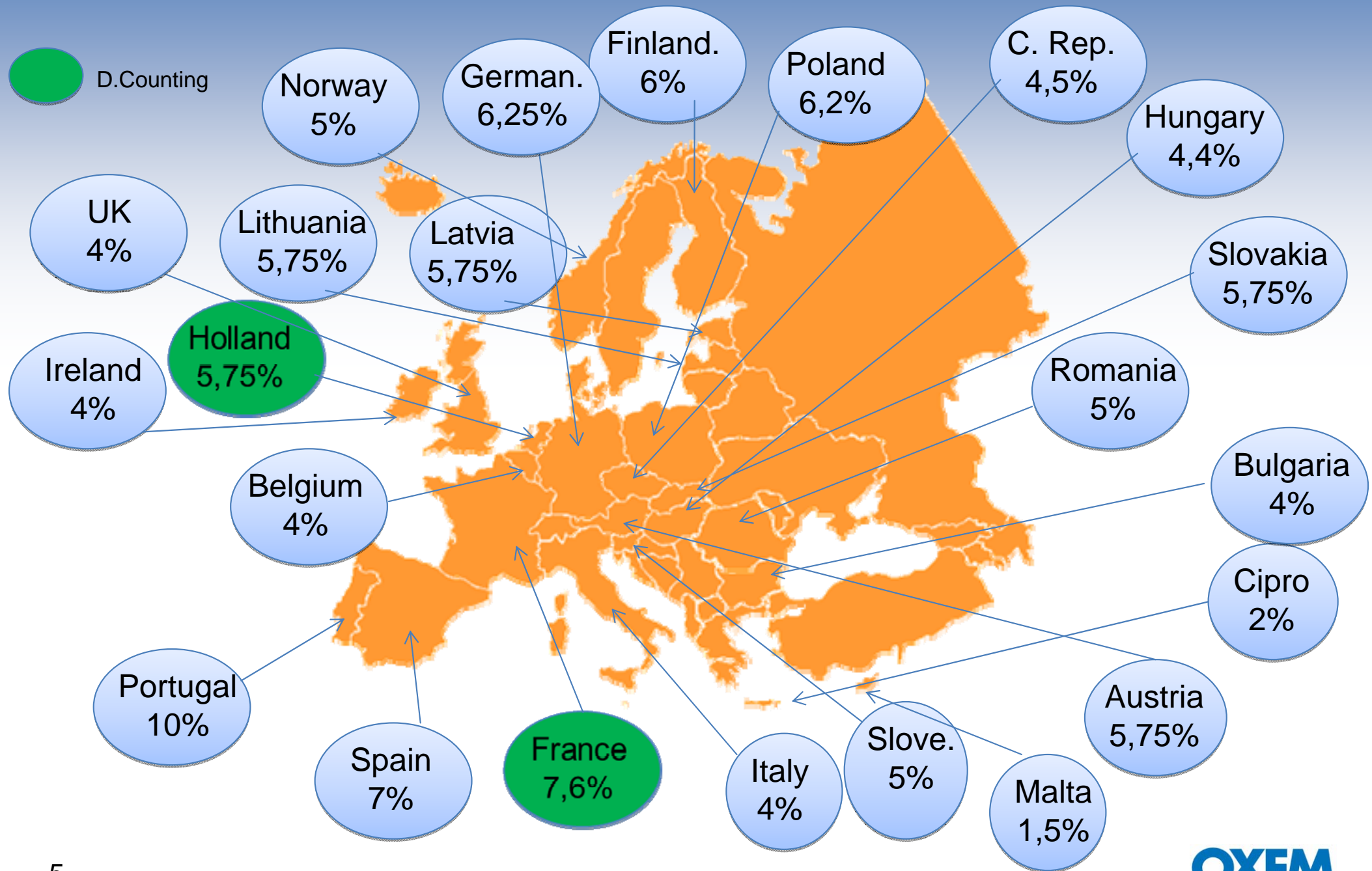
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1. Mandatory blending of sustainable biofuels into fossil fuels
2. Biofuel incorporation target by 2020 → 10%
3. *Sustainability criteria*
  - ✓ *obligatory minimum GreenHouseGas saving (min 35% by 2013, later growing to 60%)*
  - ✓ *restrictions on land use for growing biofuels crops (ie non deforested land)*
4. *Intermediate targets defined at Member State Level*



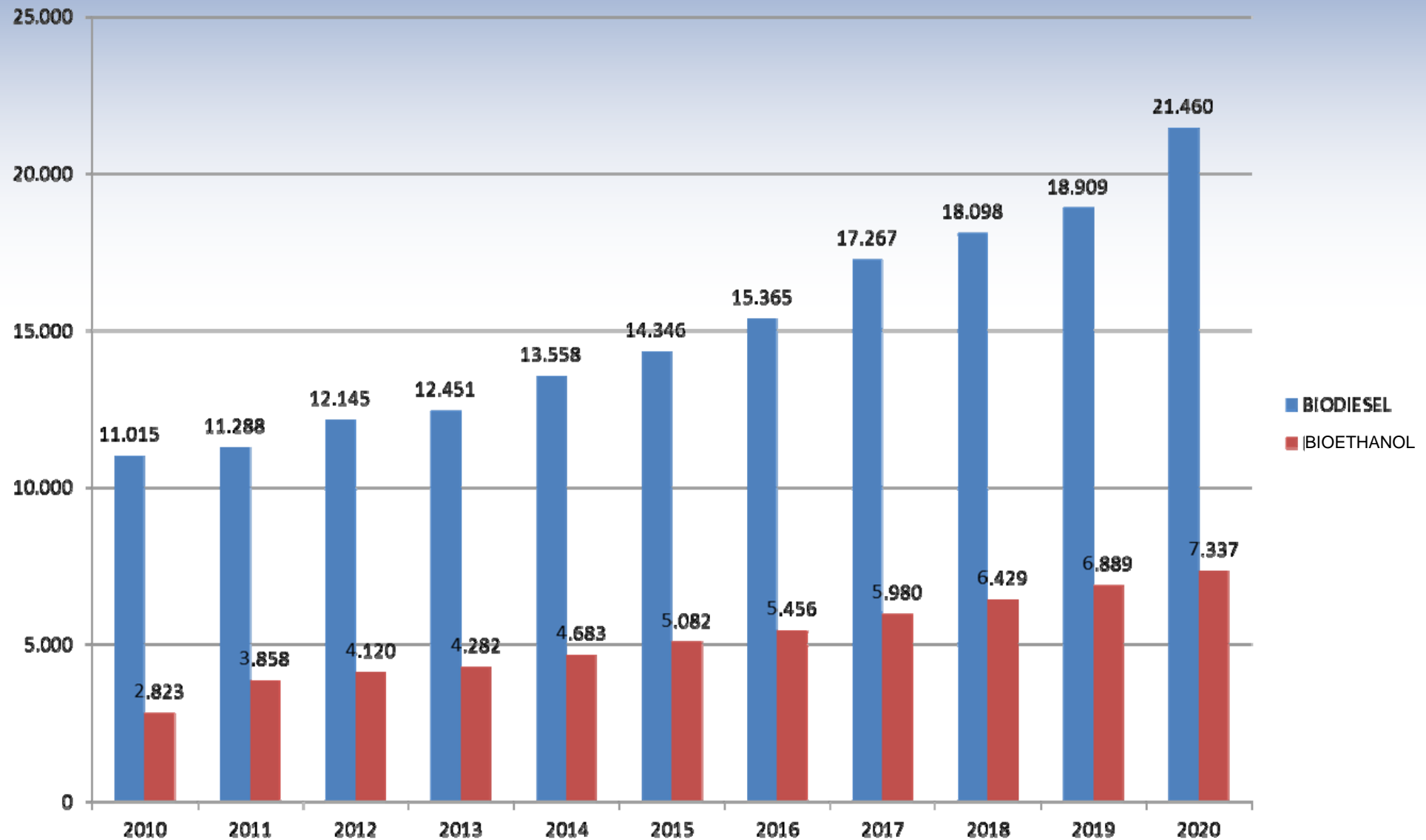
Mandatory blending = increasing demand

# EU-27: BIOFUELS BLENDING MANDATES (JAN 2011)



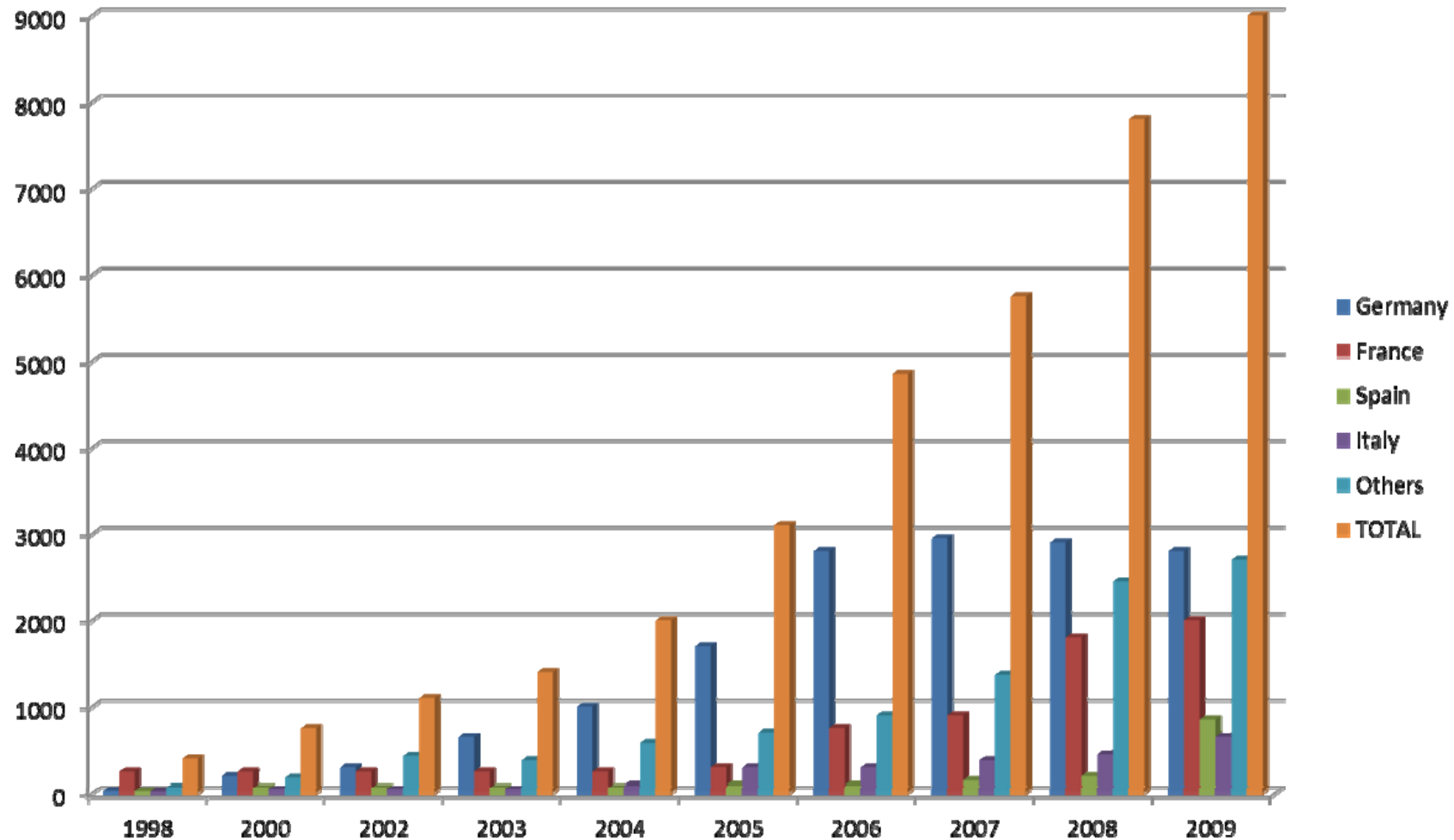
# EU BIOFUEL CONSUMPTION TARGET

## 27 National Action Plans



# EU BIODIESEL PRODUCTION EXPANSION (X1.000TONS)

- Achieved 9Mtons in 2009 → averaging +37% increase each year



\* Source: EBB



# WORLD SUPPLY / DEMAND (2010 - Mtons)

COUNTRY	PRODUCTION	CONSUMPTION
EU	9	11,6
<u>USA</u>	1,3	0,6
BRAZIL	1,8	1,8
<u>ARGENTINA</u>	2	0,6
<u>SE ASIA</u>	1,5	1
ROW	0,5	0,5
TOTAL	16,1	16,1



- EU represents 80% of world consumption
- All exports are towards EU (2,6 Mtons in 2010)
- 90% of the exports of Argentina is for the MED (Italy + Spain)

- 220 plants in total
- Today there are only 80 active “producing” plants
- 9 Mtons production vs 16/18 Mtons nominal capacity → capacity utilization about 50%

# Italian Biodiesel sector:

## LEGISLATION

1993-2007	No excise duty, presence of quota system: max 250ktons
2007	<u>“Legge finanziaria 2007”</u> mandatory blending system in place: 2% biodiesel starting 2008 incremented on a yearly base → integration with EU produced feedstock (filiera nazionale)
2009	<u>EU RED 2009/28</u> target 2020 → 10% biofuels in transportation
2010	<u>“Legge finanziaria 2010”</u> quota system down from 250ktons to 18ktons but mandatory blending increase: <ul style="list-style-type: none"><li>• 3,5% in 2010</li><li>• 4,0% in 2011</li><li>• 4,5% in 2012</li><li>• 5,0% in 2013 (part of DL 3-March-2011)</li></ul>
2011	<u>“Decreto Legislativo 3 March 2011”, n. 28</u> transposing EU RED 2009/28 <ul style="list-style-type: none"><li>• <i>EU produced feedstock counts higher toward mandatory target (10% circa)</i></li><li>• <i>Other than waste and residues, also “non alimentary feedstock” counts double toward mandatory target</i></li></ul>

## MARKET 2010

Consumption 1,3Mtons, production 700ktons, production capacity circa 2Mtons

# MARKET DISTORTIONS

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## USA

- B99 → blending credit 300\$/ton (1 \$/gallon) extended
- EU antidumping and countervailing duties
- Circumvention through document's exchange touching base in non US/EU countries (Canada, India etc)

## ARGENTINA

- DET: differential export tax (32% soybean oil vs 20% soybean biodiesel)
- 150 \$/t → advantage
- But no legal way to stop it

## MALAYSIA/INDONESIA

- Monthly modification to ExportTax (DET: currently 25% palmoil vs 10% palm biodiesel)



**Market distortion + unfair trade**



- Biofuel sector will probably stay in stormy weather for a few years, but will continue to grow (at least 1 Mtons/year in EU) and professionalize (consolidation/improvements)
- **Second generation biofuels (from waste and from nonfood crops)** will be relatively limited but **important competitive advantage**
- **RED: biofuels from waste and residues count double vs mandatory volume**
- “Waste” feedstock need severe pretreatment and/or distillation
- Distillation will be further required with new biodiesel quality EN specs



**Double counting is an opportunity for the biodiesel players**

- Biodiesel producers group:
    - ✓ *A: integrated agribusiness, large multinationals (ADM, Bunge, Cargill, Dreyfus, Diester)*
    - ✓ *B: independent, midsize, innovators*
    - ✓ *C: too weak, will disappear*
  - Double Counting major opportunity for B group: 10/15 companies/plants
  - UCOs availability: 600/800 ktons
  - Animal fats: 1.000/2.000 ktons
  - Double counting biodiesel could generate
    - ✓ Extra 50€/ton margin
- 10/15% max of EU biodiesel will be double counting*



# DOUBLE COUNTING --> JATROPHA & ALGAE (!?)



# HIGHLIGHTS JATROPHA: hectares cultivated???

SOURCE	SURFACE (kha)	YEAR	N. PROJECTS	METHODOLOGY
GEXSI	936-1.011	2008	242	survey
D1OILS	234	2009	1/4 of market	self-declaration
JBOOK	197	2009	130	self-declaration

- GEXSI survey → done on 2008...high estimations
- Jatrophabook → direct verification, strong focus private and NGO's projects, from estimated 197kha in 2009 now expected 224kha, very limited growth
- D1OILS → claimed 60kha 2008/2009, ytd produced/sold only circa 1000tons of CJO!



- High expected figures have been drastically revised; CJO still far from being traded



- Investment in algae-biofuel ventures has doubled every year since 2006
- Not all startups → substantial experience and deep pockets such as ExxonMobil, Shell, Chevron + airlines such as Boeing, Virgin Atlantic, Japan Airlines and Continental
- Million of \$ being offered by governments around the world
- US department of energy offering 85M\$ for algae based biofuels

However still unsolved problems on:

- High capital and operating production costs
- Harvesting methods
- Dewatering
- Oil extraction
- Too fragmented, thousands of different tech solutions out there...

# Conclusions

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- Long-term positive outlook
- Mandatory blending targets increase everywhere → EU Directive 2009/28 in place (10% mandatory target by 2020)
- Biodiesel plays a decisive role for EU's security of energy supply
- Biofuel demand from circa 13 Mtons in 2010 to circa 27 Mtons in 2020
- Sustainability is key → second generation biodiesel is an opportunity

## **BUT short-term:**

- Biodiesel margins are today under preassure
- Dominance of trading
- Still market distortions



**Roberto Garlaschi**  
*Operation Manager*

**OXEM SpA**

*Via Pietro Portaluppi 17  
20138 Milano*

*Tel. (+39) 02 58020015*

*Fax (+39) 02 5060176*

*e-mail : [Roberto.Garlaschi@oxem.it](mailto:Roberto.Garlaschi@oxem.it)  
[oxem@oxem.it](mailto:oxem@oxem.it)*

*Web: [www.oxem.it](http://www.oxem.it)*