

## Abengoa Bioenergy : Investor Day



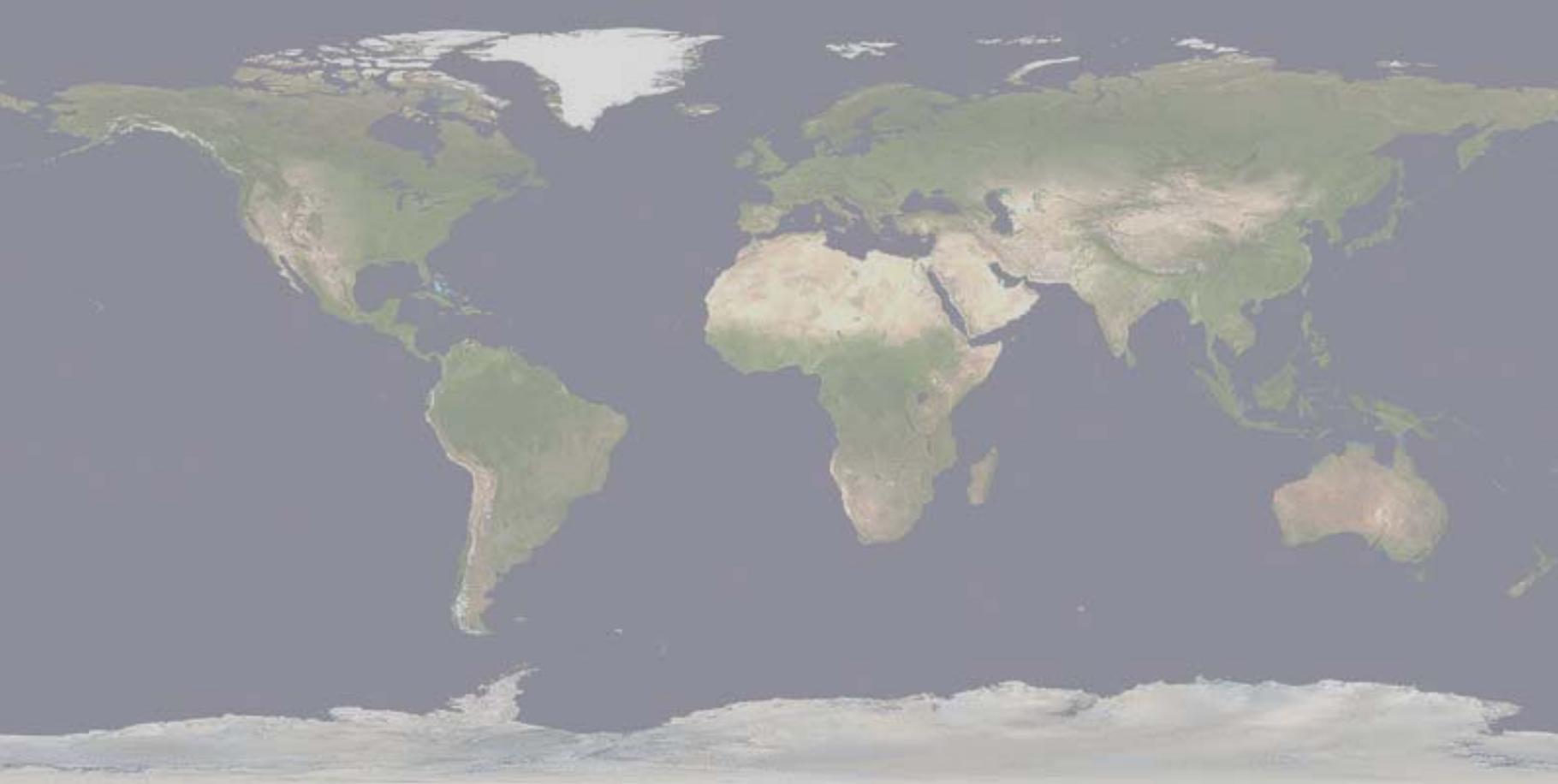
**Javier Salgado**  
President & CEO  
October 2006

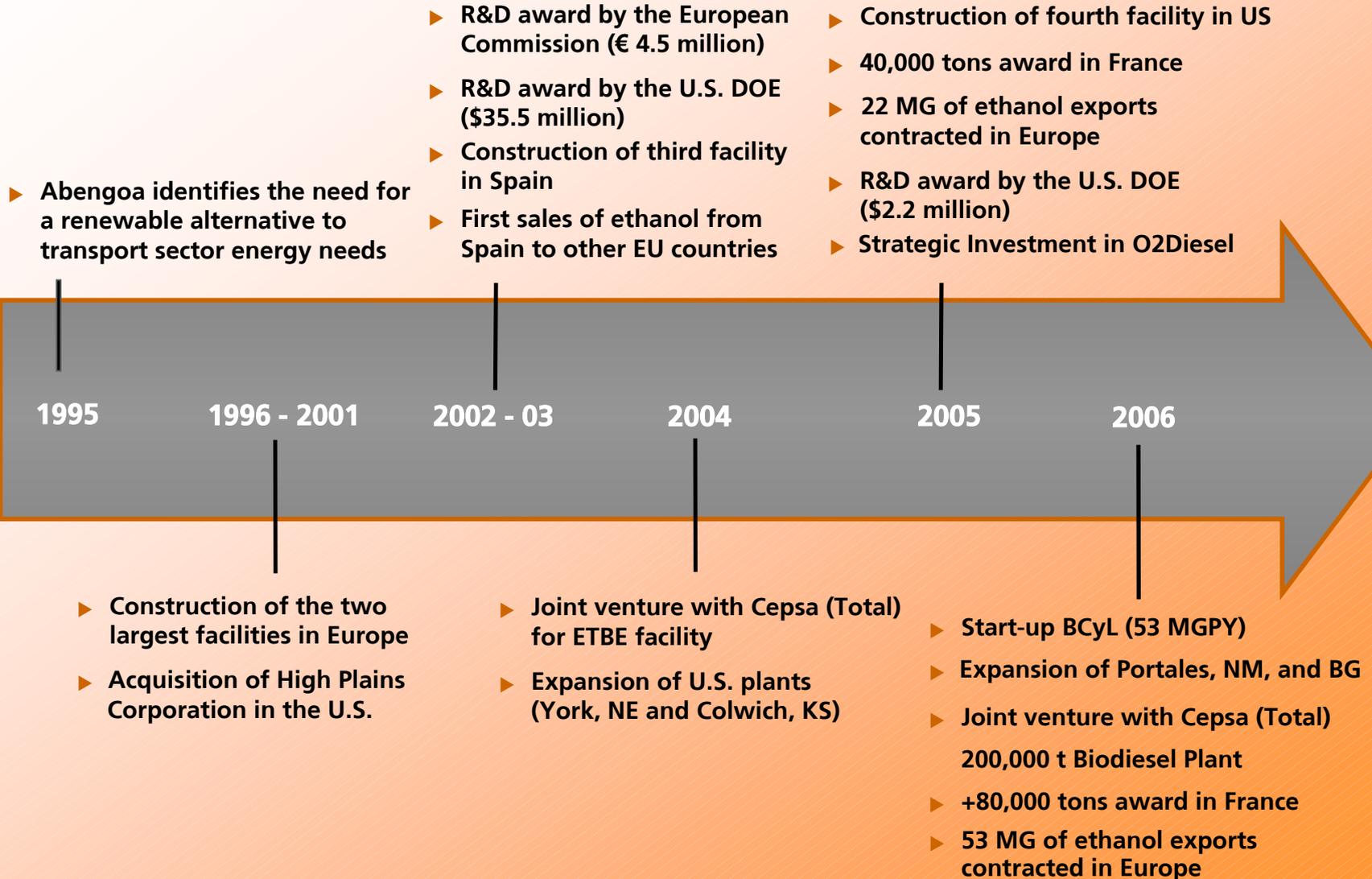


- 1. Abengoa Bioenergy Overview**
- 2. US Market**
- 3. EU Market**
- 4. World Market**
- 5. R&D**



## 1. Abengoa Bioenergy Overview





## Production Facilities in EU

EU (MGPY)	2006	2007	2008
Production	143	143	209
Construction *	66	66	

- Cartagena (40 MGPY) • La Coruña (50 MGPY)



- Salamanca (53 MGPY) • AB France \* (66 MGPY)



## Production Facilities in U.S.

US (MGPY)	2006	2007	2008
Production	110	198	198
Construction*	88		

- York, NE (55 MGPY) • Portales, NM (30 MGPY)



- Colwich, KS (25 MGPY) • Ravenna, NE \* (88 MGPY)



Abengoa Bioenergy is the only international producer of ethanol



## 2. US Market





## Frequently asked questions ...

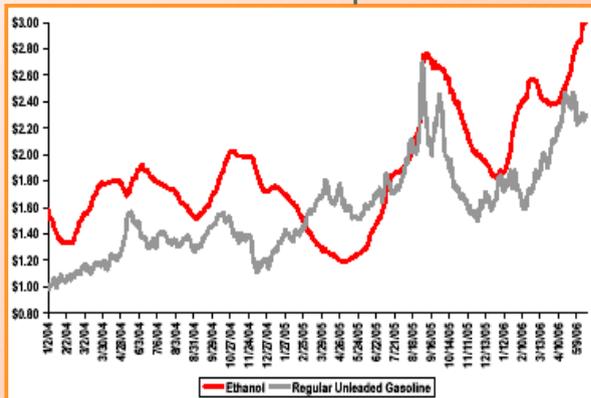
- ▶ **U.S. would seek a cheap barrel or an “American” barrel?**
- ▶ **Will incentives still be necessary?**
- ▶ **What does it take to reach the E10 by 2015?**
- ▶ **Is Corn the answer to U.S. energy independence ?**
- ▶ **Ethanol Imports?**
- ▶ **Is Cellulosic ethanol an option?**
- ▶ **DDGS, a potential risk?**



### High crude oil and rapid MTBE replacement

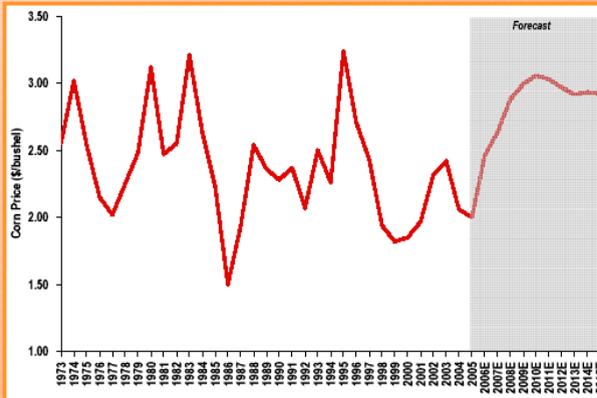
- ▶ 3.1% blended with gasoline
  - ▶ Ytd ethanol production capacity = 5BGPY  $\Rightarrow$  32% increase over 2005
  - ▶ 3 BGPY under construction  $\Rightarrow$  44 new plants and 7 expansions
  - ▶ 8 BGPY, 5,7% gasoline consumption, by the end of 2007  $\Rightarrow$  80% increase over 2005
  - ▶ The lost of the MTBE liability protection means additional needs of 2 BGPY for the refiners
- 
- ▶ As a result strong demand, ethanol trading above \$2 gall, \$0.51 gall. premium over gasoline
  - ▶ At 3.1% blended ethanol represents 14% corn production.
  - ▶ 8 BGPY capacity will represent 26,6% corn production, 71,6% increase over 2005

Ethanol - Reg. Unleaded Gasoline wholesale prices



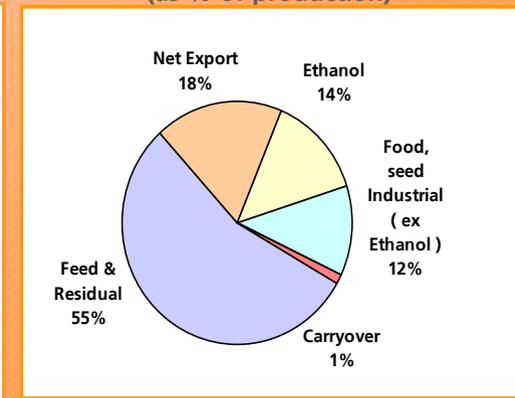
Source: Bloomberg

US Farm Annual Avg. Corn Price (E7 @ 2015 Case)



Source: USDA

2005 US Corn uses (as % of production)

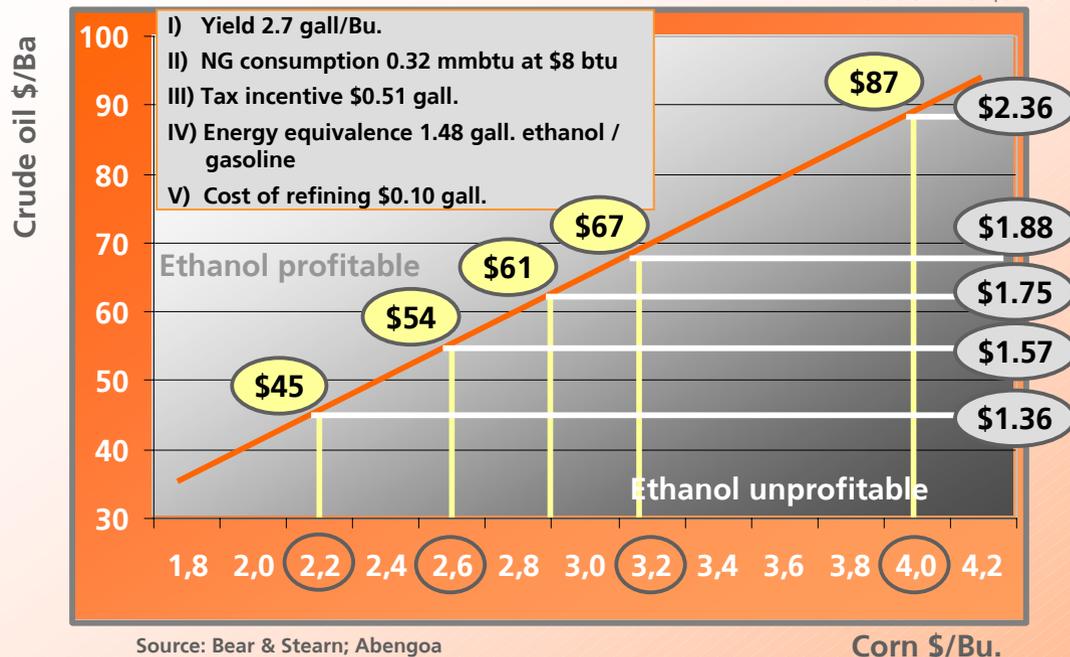


Source: USDA

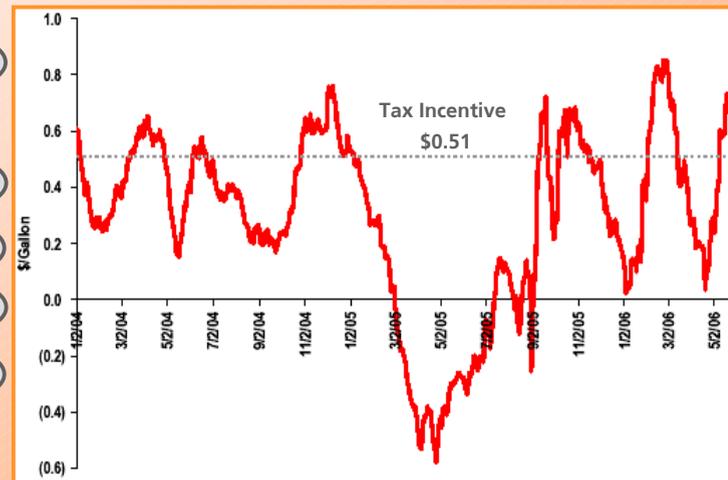
# ABENGOA BIOENERGY

## Cheap oil or energy independence? Legislation

Gasoline \$/Ba.



Ethanol's premium over regular unleaded gasoline



- ✓ Oil prices will be a main driver for ethanol pricing.
- ✓ Government support will be required with low crude oil or high corn prices

Short term

- ▶ 2.5% Import tariffs and \$0.51 ad valorem duty, due to expire October 2007  
Extension expected
- ▶ Farm Bill, Energy Crops, Federal support, State support

Long term

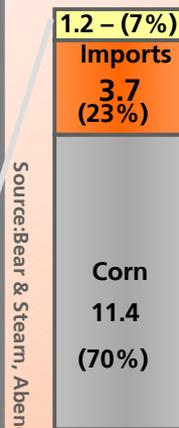
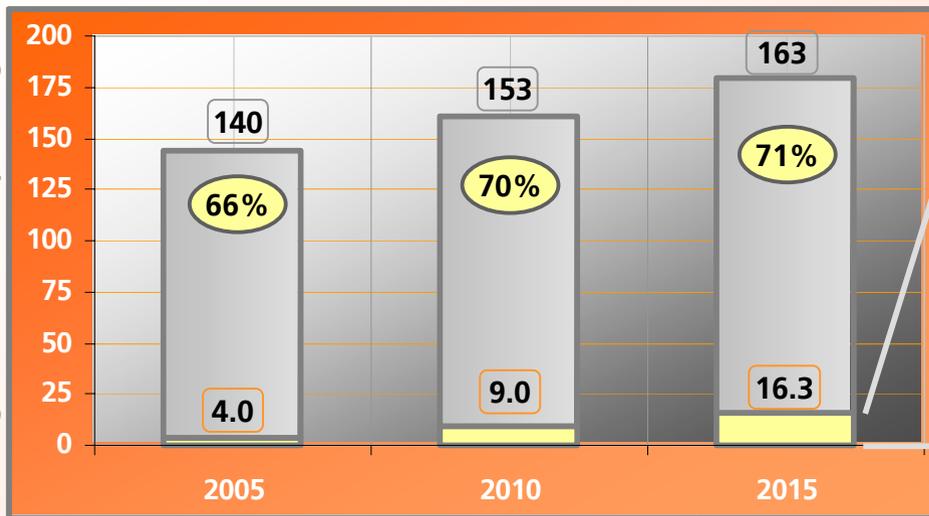
- ▶ \$0.51 per gall. Tax credit for blenders through 2010. Slight reduction 2010 – fwd.
- ▶ Increase the 7.5 BGPY by 2012 to 10 BGPY
- ▶ E85 infrastructure at retail gas stations

# ABENGOA BIOENERGY

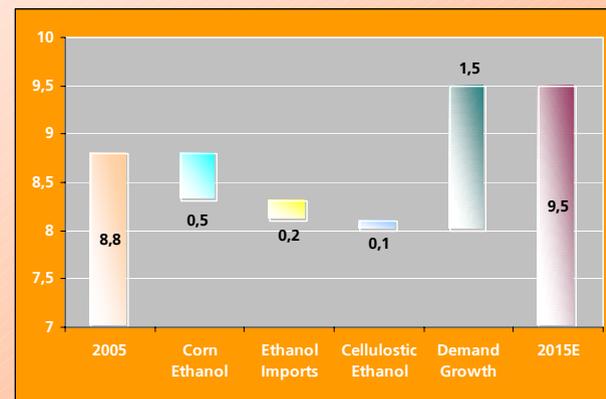


Can ethanol really make a difference?

U.S gasoline consumption Bgall.



Source: Bear & Stearns, Abengoa



Sources: USDA, EIA



Gasoline Imports (%)

- Gasoline. CAGR 1,53%
- Ethanol. CAGR 15,08%

66% U.S. crude oil supply is imported; Risk ⇒ National Security



2015 - E10 through:

11.4 BGPY	<ul style="list-style-type: none"> <li>▶ Expand current U.S. corn ethanol production capacity and under construction, 4.7 BGPY needs to be built – 47 plants of 100 MGPY</li> <li>▶ Assuming a capital investment of \$2 gall. the ethanol industry requires \$9.4 billion</li> </ul>
1.2 BGPY	<ul style="list-style-type: none"> <li>▶ Cellulosic ethanol can displace 1.2 BGPY with a capital investment in excess of \$7 billion</li> </ul>
3.7 BGPY	<ul style="list-style-type: none"> <li>▶ Imports will replace up 2% of gasoline consumption (Brazil, ...)</li> </ul>

Even implementing E10, gasoline consumption will increase, aprox. 11 BG.

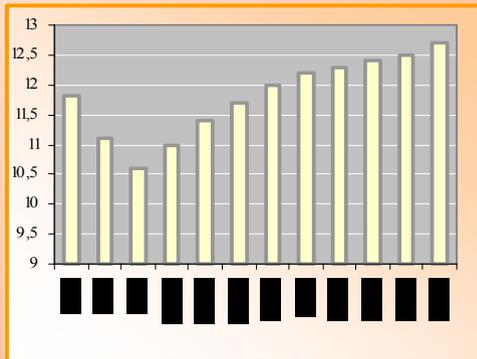


- ▶ **Land availability:** Corn planted acreage increase 3% by 2015
- ▶ **Yield:** Corn yields have been improving on average 1.9 Bu. per acre per year from 1973 to 2005. 11% increase by 2015.
- ▶ **Domestic demand:** Food and livestock will not decline
- ▶ **Exports at the same level:** Foreign buyers have shown their willingness to pay more if necessary

## Our View:

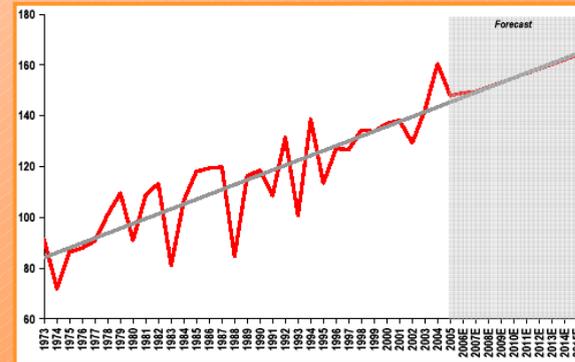
Up to 7%, 11.4 BGPY, without disrupting feed and residual usage  $\Rightarrow$  \$2.50Bu-\$2.90 Bu.  
At this levels, corn ethanol, still attractive with oil prices > \$50 Ba.

U.S. Annual Corn Production



Source: USDA

Corn Yield

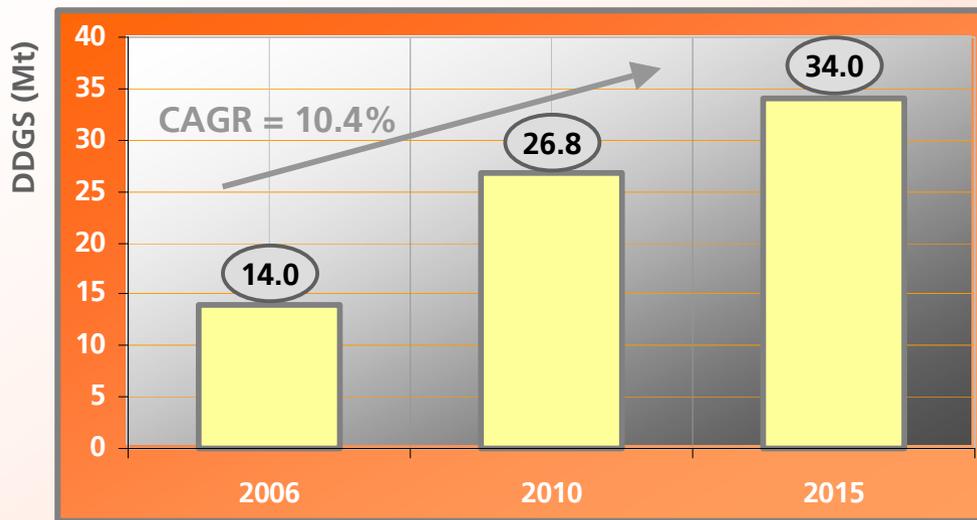


Source: USDA

# ABENGOA BIOENERGY

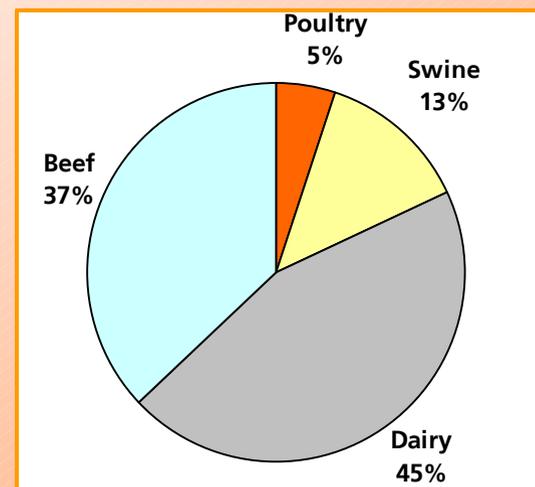


## DDGS: A Potential Risk?



Sources: JP Morgan, Abengoa

### US 2005 DDGS consumption



Sources: JP Morgan,

- ▶ U.S. livestock and poultry, pig, swine, do have potential to consume all the DDGS. However education and technical support is needed to help wide the market.
- ▶ Exports promotion. Switch from corn to DDGS

- ✓ **2006:** 90% recovery over Corn
- ✓ **2007:** 85% recovery over Corn
- ✓ **2015:** 90% recovery over Corn (new uses, new markets, new technologies ...)



### Ethanol supply / demand outlook

#### 2006 – 08 Expansion

- MTBE phase out
- New Ethanol Markets
- High oil prices
- Strong ethanol prices

#### 2008 – 10 Consolidation

- Higher blends (E85)
- New RFS minimum target
- Supply catches up to demand
- Ethanol price set by the lowest cost producer

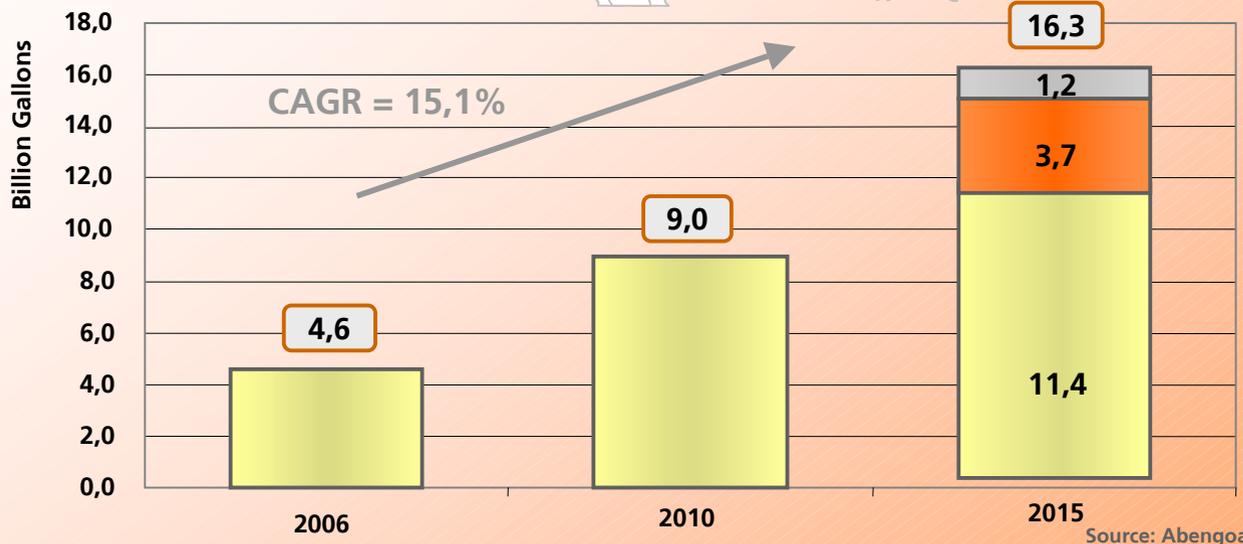
#### 2010 – Fwd. Maturing market

- Tax credit extended
- E85 provides a retail channel to offset blender market power
- Voluntary blending
- New market for CO<sub>2</sub> emissions
- Biomass based market

# ABENGOA BIOENERGY



U.S. - Our Vision



## Legislation

- Energy Policy Act. Mandatory floors
- VEECT Incentives
- State Incentives

- 163 billion gallons of gasoline
- Increased percentage utilization (E10)
- Higher min. targets , 10 BGPY 2012

## Raw Material

- Grain (corn, milo)

- Hybrid, grain / biomass

## Incentive

- State and Federal Level

- Lower tax credit rate / Final consumer
- Tax credits on biomass

## R&D

- DOE Biomass program

- Hybrid comercial scale demonstration programs

# ABENGOA BIOENERGY



Legislation

	Oil > \$50	Oil < \$50
Favorable	<ul style="list-style-type: none"> <li>▪ <b>Demand:</b> Beyond mandate target</li> <li>▪ <b>Capacity:</b> &gt; 10 BGPY by 2012</li> <li>▪ <b>Biomass:</b> critical</li> <li>▪ <b>Strong market:</b> &gt; \$2.0 gall. (E10 – E85)</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>Demand:</b> RFS level 10 BGPY by 2012</li> <li>▪ <b>Capacity:</b> overcapacity (20%)</li> <li>▪ <b>Biomass:</b> no critical</li> <li>▪ <b>Subsidized market:</b> \$1.5 (American barrel E7)</li> </ul>
Unfavorable	<ul style="list-style-type: none"> <li>▪ <b>Demand:</b> Beyond mandate target</li> <li>▪ <b>Capacity:</b> &gt; 10 BGPY by 2012</li> <li>▪ <b>Biomass:</b> no critical</li> <li>▪ <b>Strong market:</b> &gt; \$1.8 gall. (E7)</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>Demand:</b> RFS level 7.5 BGPY by 2012</li> <li>▪ <b>Capacity:</b> &gt; overcapacity 50%</li> <li>▪ <b>Biomass:</b> Slow development</li> <li>▪ <b>Weak market:</b> &lt; \$1.5 gall. (E5)</li> </ul>





## 3. EU Market





- ▶ **What is driving EU's interest in biofuels overall?**
- ▶ **Do we need to fill the ETBE capacity to shift to direct blending?**
- ▶ **Will ethanol replace methanol in biodiesel production?**
- ▶ **Are we facing a constraint in terms of availability of raw material?**
- ▶ **Does EU need to consider imports as a threat?**
- ▶ **In which countries do we want to take the leadership?**



### Mandatory targets: driving the growth

▶ Ethanol installed capacity

Installed Capacity (Bioethanol - MI)	
	2006
Spain	540
Germany	490
France	120
Poland	60
Sweden	50
<b>Total</b>	<b>1.260</b>

Source: Abengoa

- ▶ The EU target was missed in 2005, but we firmly believe the 2010 target will be achieved.
- ▶ Euro-feed stocks (E25) → 0.4 percent of the total cereal grains and 0.8 percent of the sugar beets produced per year where used in the production of ethanol.
- ▶ EU interest in biofuels drivers:
  - Environmental (Kioto)
  - Dependence on foreign oil
  - Agricultural boost



## Biofuels Industry is in its Infancy

Science. Solutions. Service.

**Netherlands:**  
Mandatory target by 2007 approved by Government is 2%.

**United Kingdom:**  
Mandatory Targets, from 2.5% in 2008 to 5% by 2010  
Partial tax exemption = 0,3 Eur/l

**France:**  
Mandatory Targets, Ecotax. 5.75% by 2008, 7% by 2010 and 10% by 2012  
Partial tax exemption (Jan, 07 – Dec. 2013)

**Italy:**  
Mandatory target of 1% by 2006, plus an additional 1% each year up to 2010 (5%)

**Spain:**  
Total tax exemption (yearly revised) 0,37 Eur/l  
Jan. 2003 – Dec. 2012

**Approved legislation**

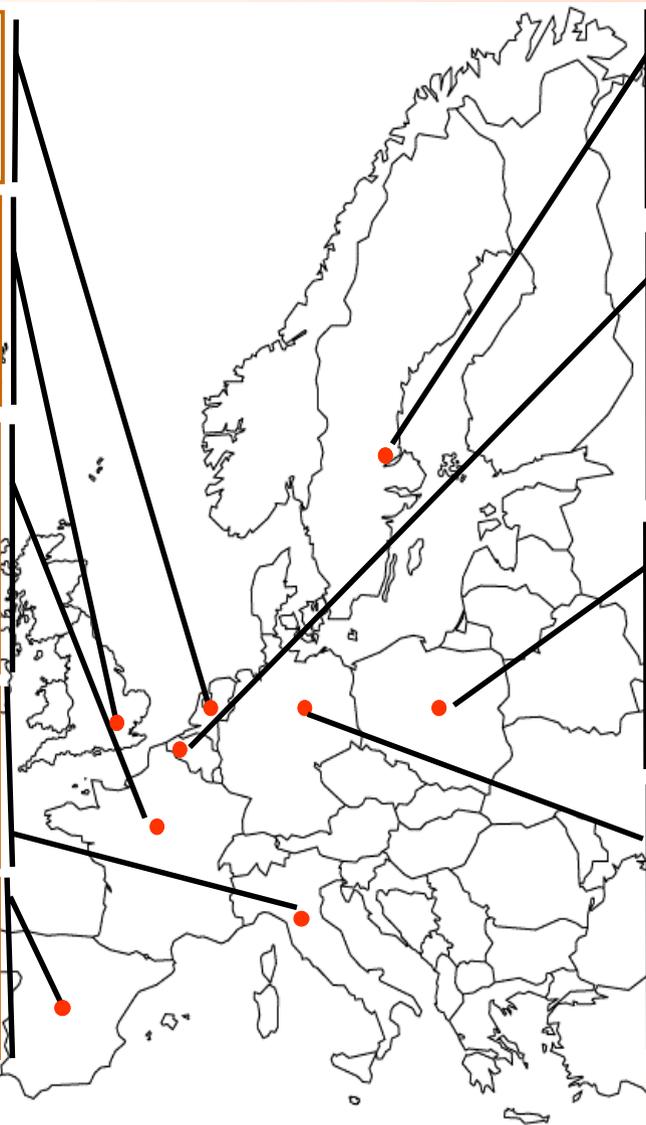
**Sweden:**  
Total tax exemption 0,5 eur/l  
Jan. 04 – Dec. 2010

**Belgium:**  
Mandatory target for 2010 is 5,75%. Current bids:  
- 48 MI for 2007  
- 250 MI up to 2012  
- 187,5 MI up to 2013

**Poland:**  
Total tax exemption (yearly revised) 0,35 eur/l  
2005 – 2010  
Draft law pending for a minimum 4% by 2007

**Germany:**  
Expected mandatory by 2006 (2,0% by 2007).  
Total tax exemption (yearly revised) 0,65 eur/l  
Jan. 2004 – Dec. 2009

**Pending to be approved**



## Legislation under development

- ▶ Different legislations: Germany 100% exemption on all biofuel consumed while France has a quota system.
- ▶ Inconsistency between the RVP, blending limits and directives on fuel quality.
- ▶ EU Imports tariff on undenatured alcohol (EUR 192,3 m3) and denatured (92,0 m3).



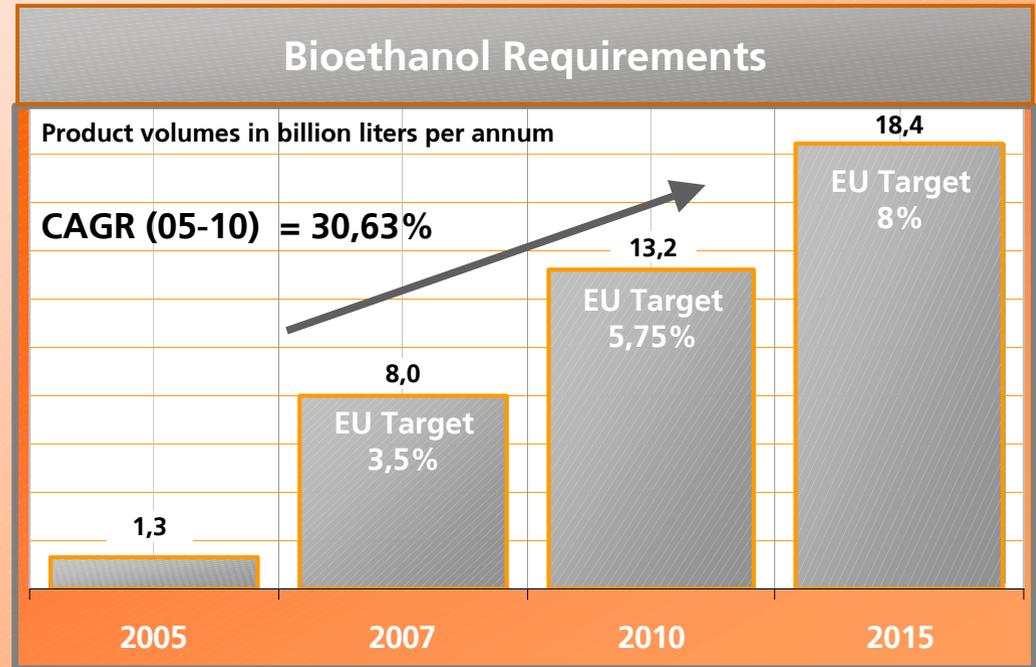
## Our view

- ▶ We expect a mandatory target will be approved
- ▶ Over the longer term ⇒ Harmonization.
- ▶ EU will need imports to achieve the targets, quota: 20% - 25%

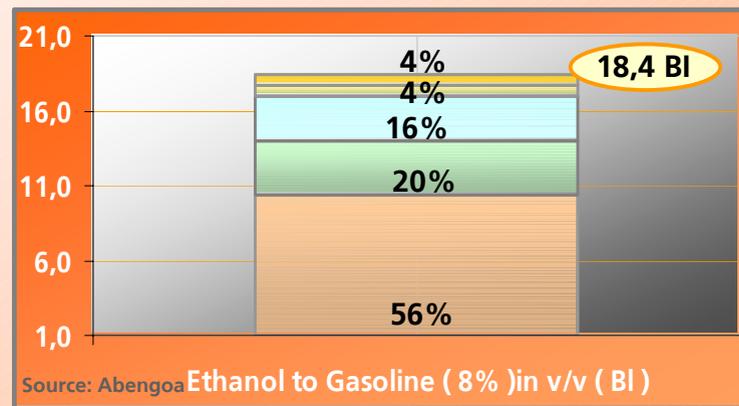
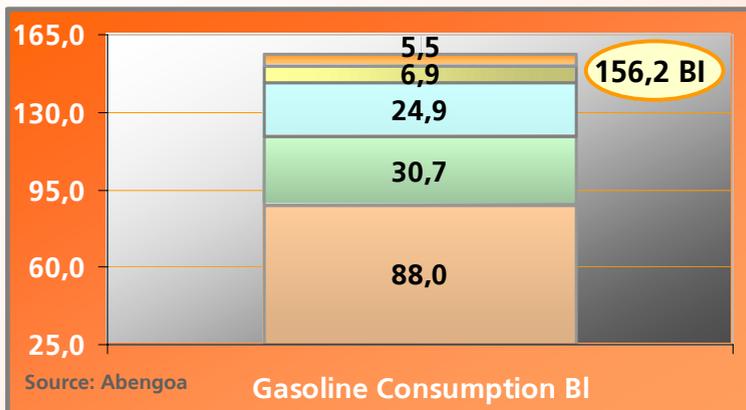
- ▶ Achieving the EU targets would require boosting bioethanol capacity an annual 60% (05 – 10) and 31% (05-15), but as the US market has proved this is clearly possible .
- ▶ We estimate almost an additional 12 BI and 17 BI are needed to achieve the 5,75% and 8,0% EU targets. Assuming 25% will be imported, the EU needs will be around 9 BI and 12,4 BI respectively.
  - 62 new plants will be needed (0,2 BI each)
  - 2,5 new plants per country.

We envisage that the targets will be achieved through:

- Transforming the MTBE capacity to ETBE: Market can reach 3% target
- New ETBE capacity
- Higher blends E5, E85.



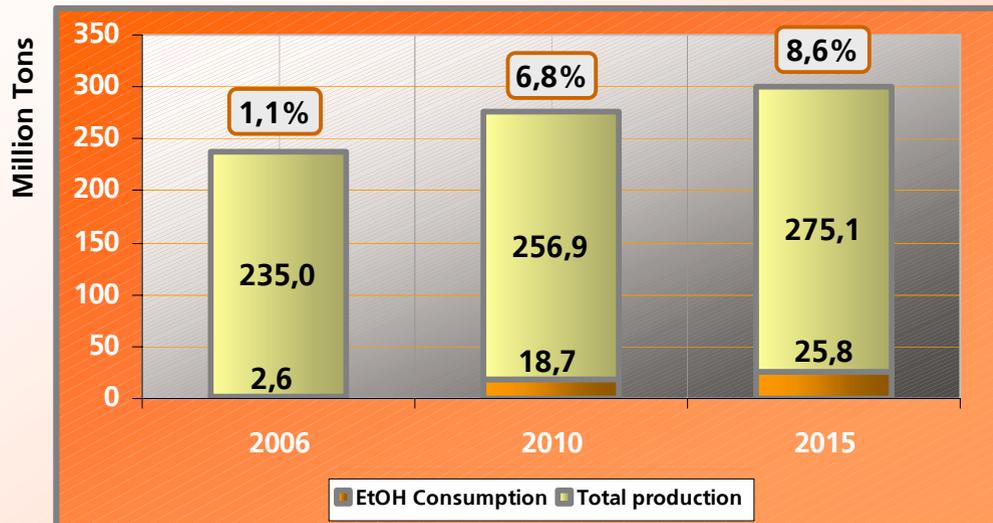
Source: Abengoa



The mandatory target for EU of 8% in 2015 would imply a total EU25 ethanol production of 18.4 BI, of which 44% would be consumed in Sweden, Netherlands, United Kingdom and Germany.



% EtOH consumption on Cereal Production



- **Cereal:** Corn, wheat, barley
- **EtOH:**
  - 2006 = 1,3 BI
  - 2010 = 9,0 BI
  - 2015 = 12,4 BI

Sources: Stratégie Grain,  
OECD-FAO  
Deloitte

- **Acreeage is not an issue:** in terms of availability of raw materials, ethanol in EU is not faced with the kinds of constraints that biodiesel has.
- **Excess on total production over total consumption** in current and future market. Food crops secured, not affected by ethanol surplus consumption.

	2005	2010
Total	38,03 MHa	40,7 MHa
Energy Crops	1,5 Mha - 45 eur/Ha	3,0 Mha - 70 eur/Ha
Yield	Wheat - 6,0 Barley - 4,3 Corn - 8,0	+5% Increase
Crops	Wheat, barley & Rye	Corn, wheat, barley & Sugar Beet

With a market of 9,0 BI by 2010 the needs of cereal would represent 18,7 Mt (6,8 % over the forecasted 2010 production for wheat, barley and corn)



- ▶ DDGS is still relatively unknown in Europe but is likely to find its way to the compound feed industry. Our experience of introduction has been very successful.
- ▶ DDGs is going to displace imported protein at the SBM price (aprox. 70% of SBM price).
- ▶ There is potential to consume all DDGs production. However, education and technical support is needed to help wide the market.



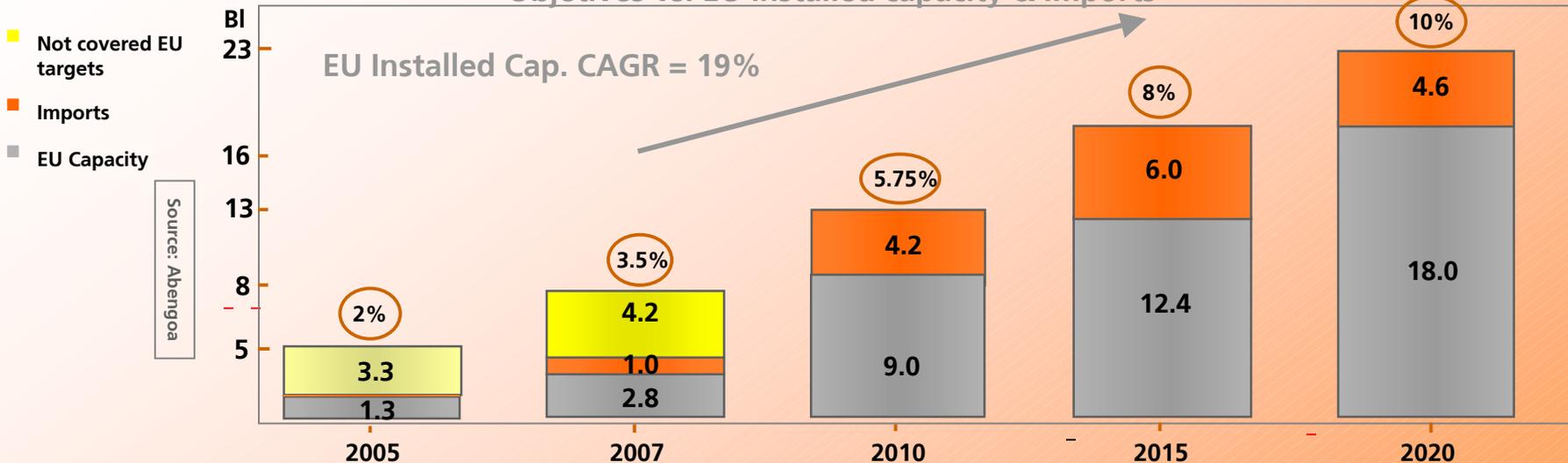
Million Tons	EU Production		EU Consumption		Self-sufficiency
	Products	Proteins	Products	Proteins	
<b>Total</b>	18.876	5.075	60.470	21.658	23%

Source: FEDNA

# ABENGOA BIOENERGY



Objetives vs. EU installed capacity & imports



## Legislation

- Voluntary
- Mandatory EU
- 5.75 % → 10 % Kioto II
- CO2 Market
- RVP, higher blends
- Diesel = Gasoline taxes balanced

## Raw Material

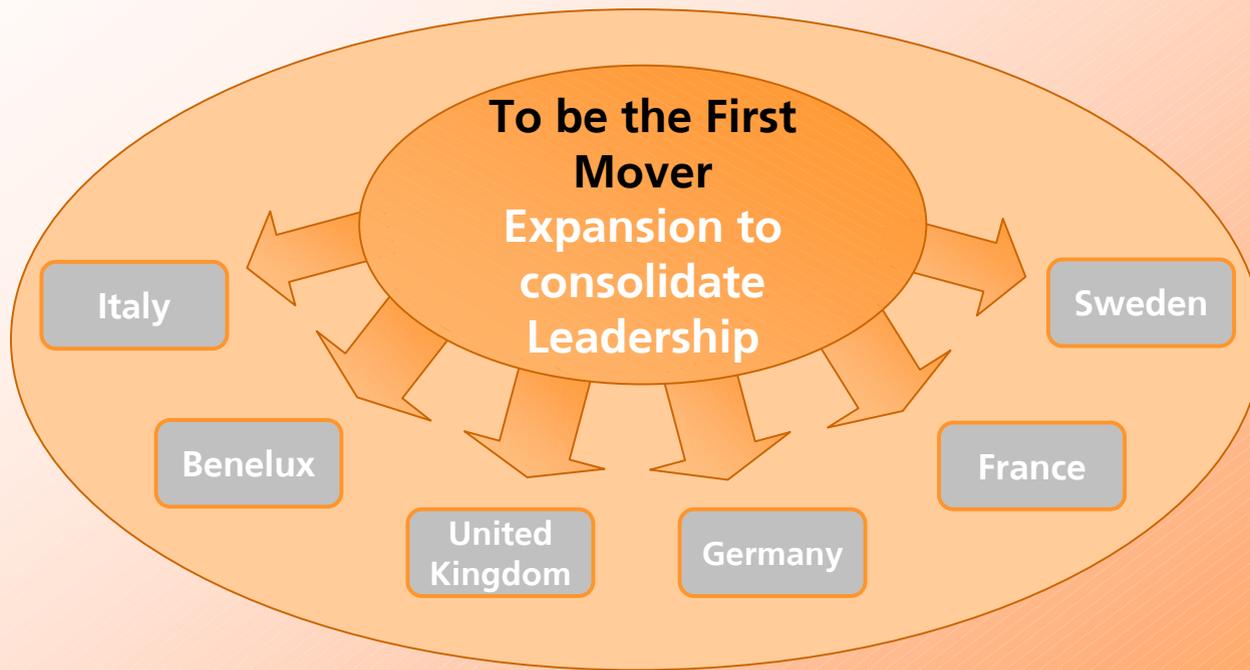
- Cereals (wheat, barley, corn, beet, rye ...)
- Hybrid, cereals/ biomass

## Incentive

- Steady stable
- Reduction on detaxation
- Final consumer
- Tax credits on biomass

## R&D

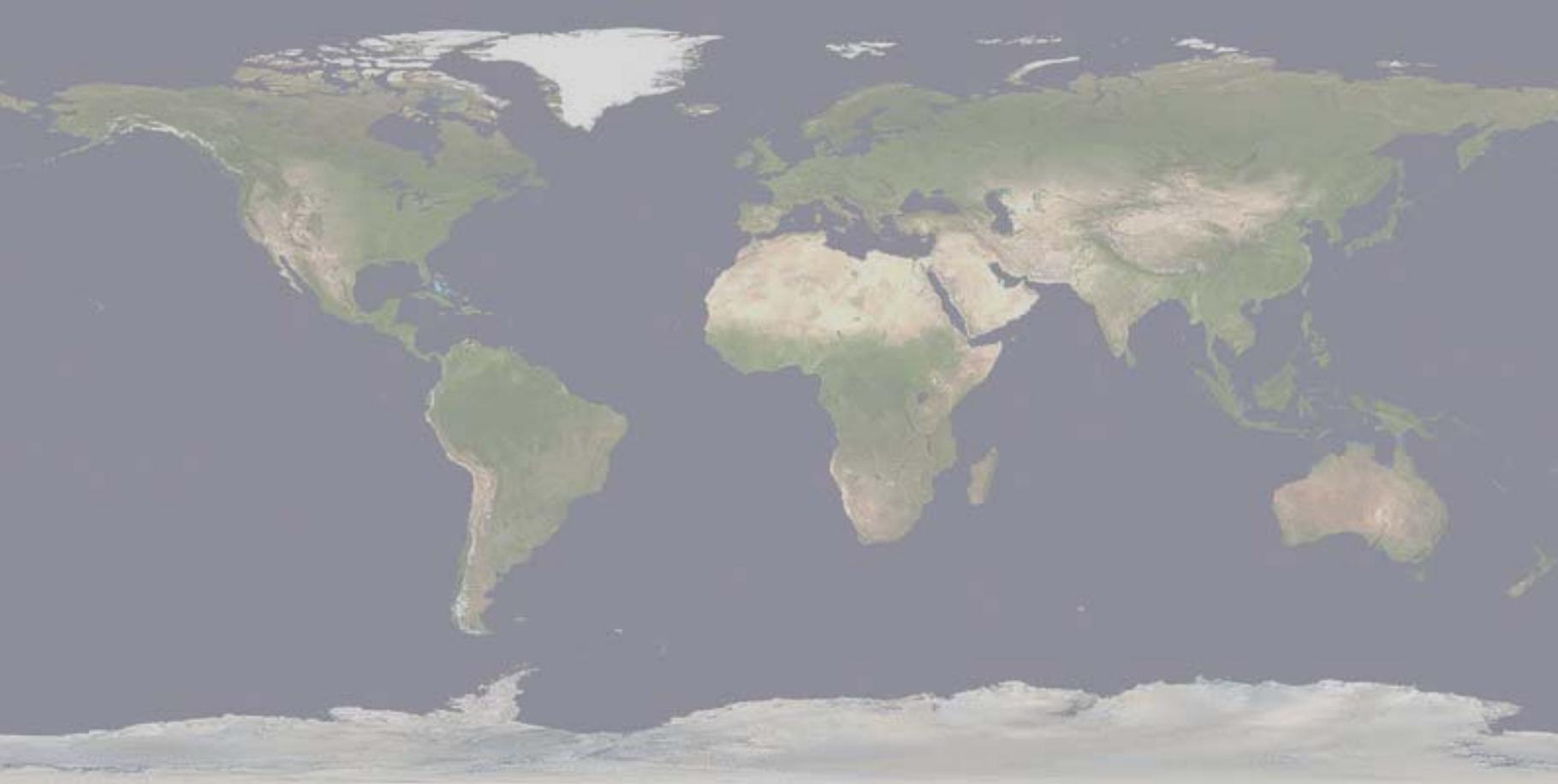
- VI & VII research programme, development of Biomass technology
- Hybrid comercial scale demonstration programs

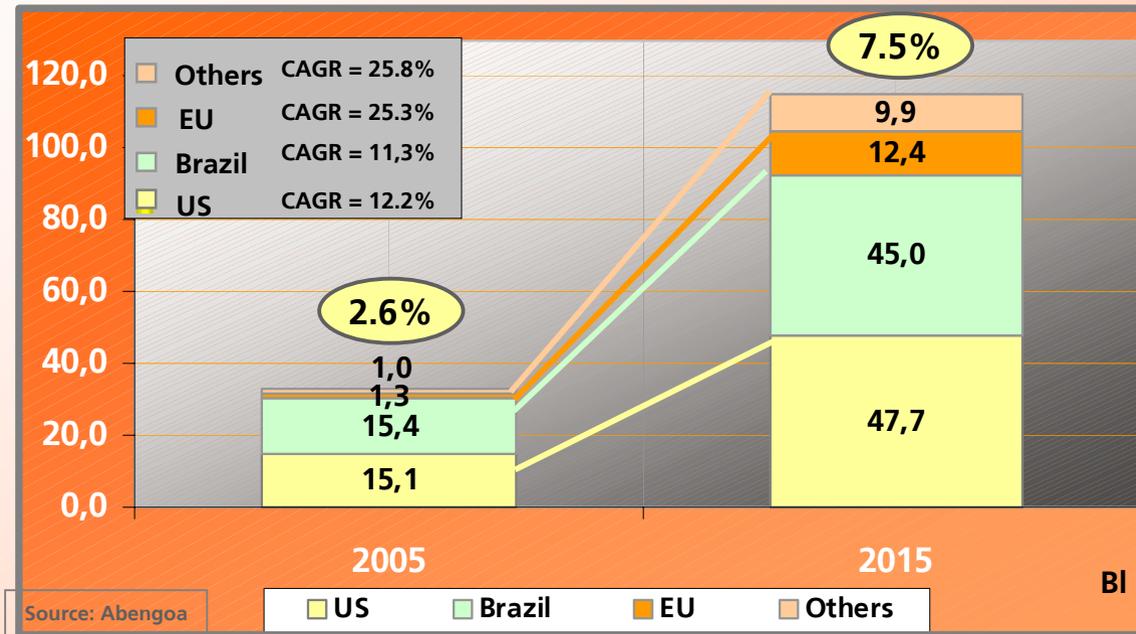


**ABT & Ecoagricola**

**Commodities Risks Mitigation**

## 4. World





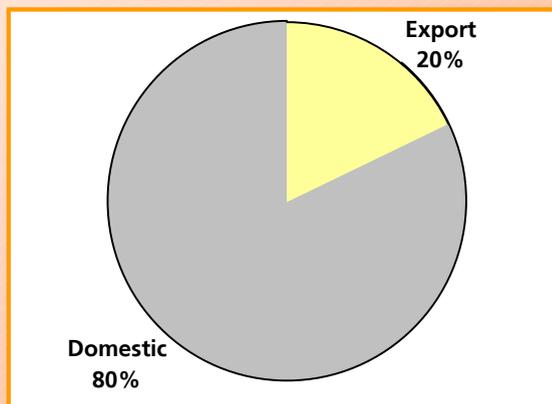
Ethanol /Gasoline (%)

- ▶ Brazil driven by technological advance and demand in the export market.
- ▶ US driven by the National Security Policy.
- ▶ EU driven by energy dependence and Kyoto Protocol.
- ▶ Asia-Pacific driven by clean energy and gasoline dependence.

### High oil prices and strong Government support

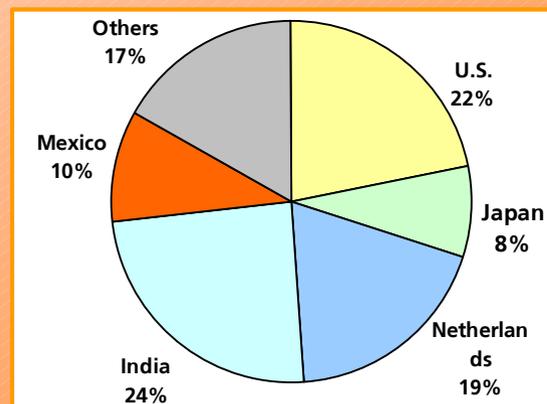
- ▶ Actual production 15.4 BI (2005)
- ▶ 20% Mandate target ⇒ 6.0 BI
- ▶ Internal consumption 80% (no exports dependency, preference to distribute locally)
- ▶ High subsidies; tax reductions, federal, state.
- ▶ 5.5 MHa to reach the 15.4 BI, considering 50/50 sugar / ethanol
- ▶ Recent strong rise in sugar cane prices, up to 53% in the last 12 months
- ▶ Today's sugarcane ethanol at the gas station is cheaper than gasoline, R\$0.30 – R\$0.80
- ▶ More than 80% September new inmatriculations are 100% Flexible vehicles (E100)

Brazil 2005 Ethanol Distribution  
(15.4 billion liters produced)



Sources: Foreign Agriculture Service

Brazil Ethanol Exports  
(Aprox. 3.1 billion liters exported)

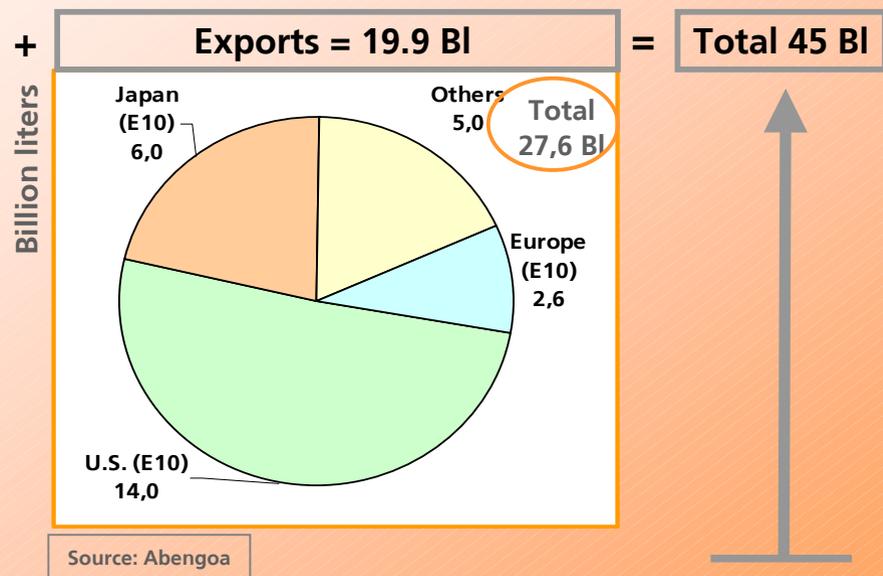
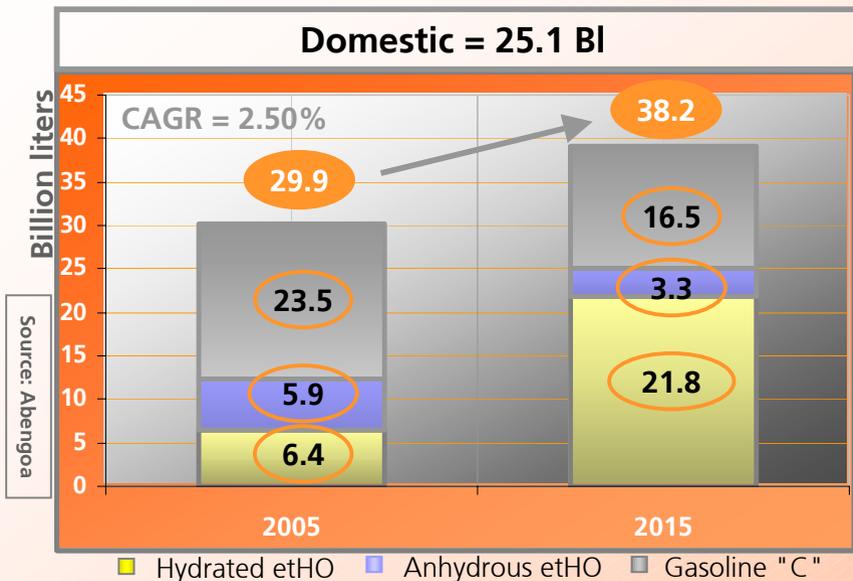


Sources: Foreign Agriculture Service, USDA

# ABENGOA BIOENERGY



## Brazil's roll on the World ethanol market



- ✓ 20 and 25 new plants will start operations in 2006 and 07 respectively.
- ✓ 2015 ⇒ 45 BI ⇒ Total Inv. required \$12.5 B (+ 100 new plants) + infrastructure for distribution exports and imports

Domestic

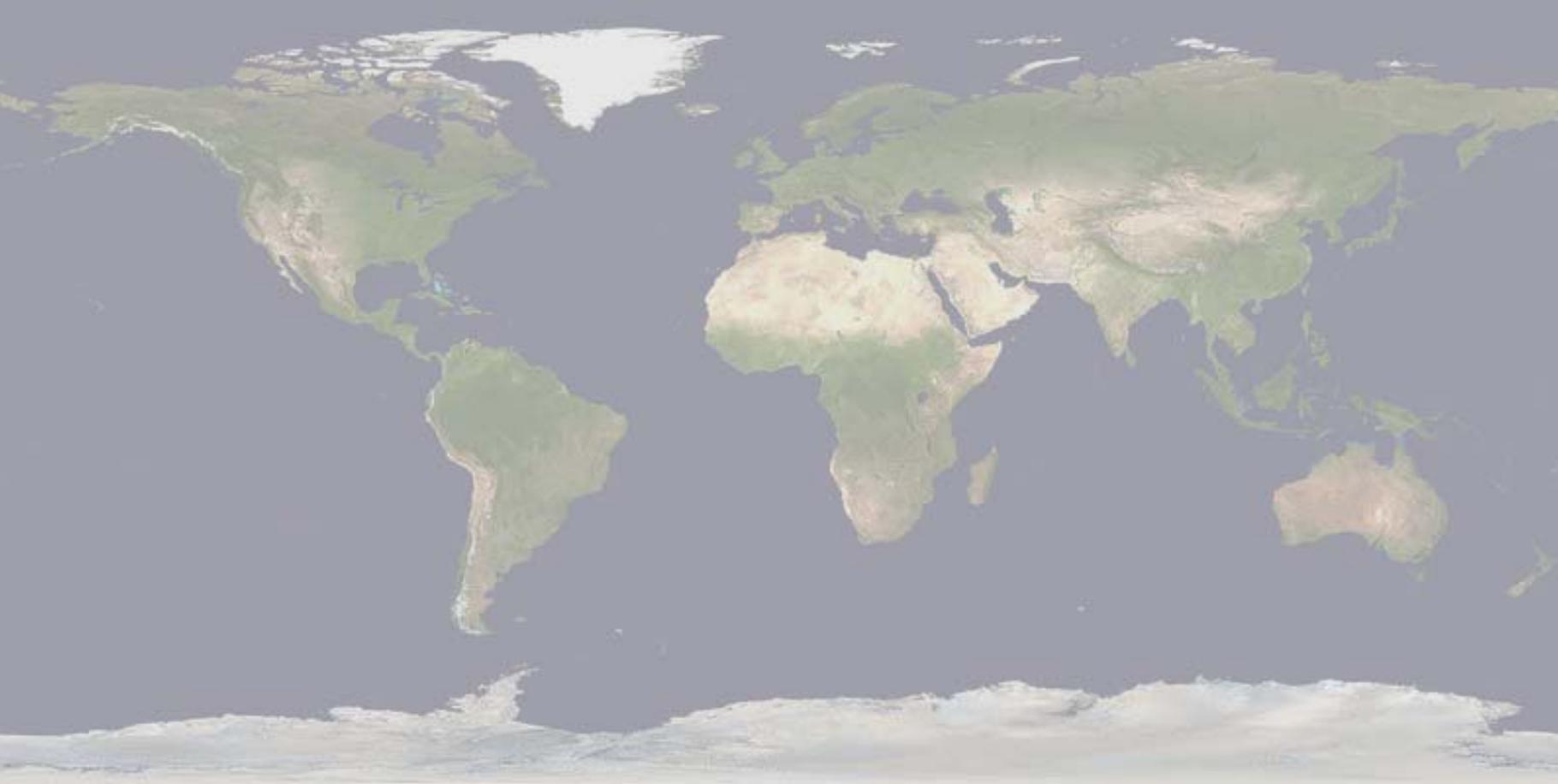
- ▶ High energy prices and FFV will drive internal ethanol demand. Vehicles 20,8 M (70% FFV by 2015)
- ▶ Ethanol consumption over gasoline consumption will be 65% in 2015 (40% in 2005)

Exports

- ▶ Strong international needs will demand higher exports (Europe, Japan, U.S.) 27.6 BI potential
- ▶ Infrastructure needed for further ethanol exports in Brazil and import countries

Sugarcane ethanol remains competitive with a crude oil barrel above \$22

## 5. R&D





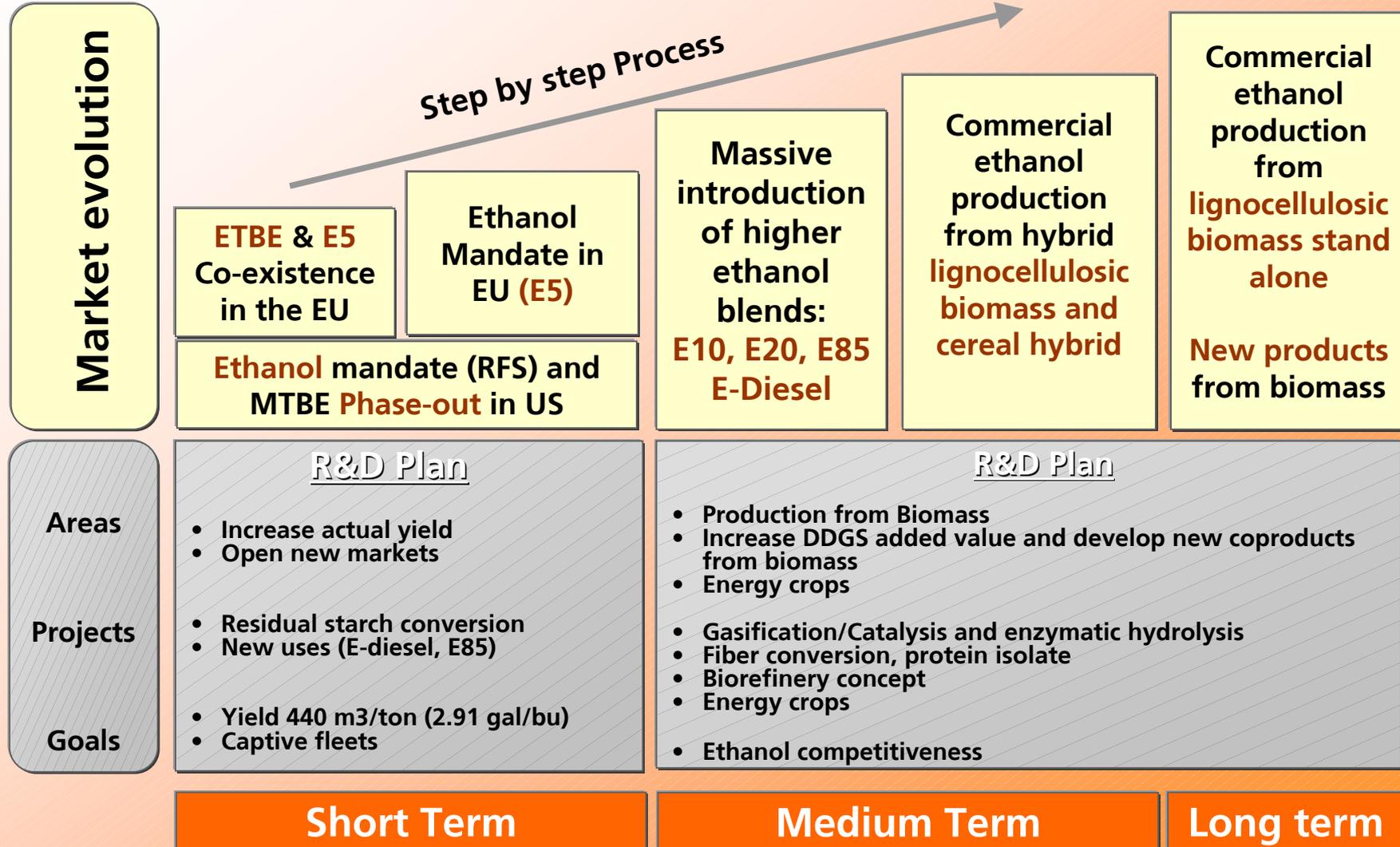
- 1. Objectives, Strategy and R&D Activities**
- 2. Projects**



## 1. Objectives, Strategy and R&D Activities



Our strategic vision is part of a sustainable energy system:



### Bioenergy R&D Plan. Objectives

Objectives	Production of ethanol at gasoline competitive prices					Widen the market	
Work Area	Improve current technology		Ethanol Production from Biomass = new technology		Energy crops		
Projects	Co - Products	Residual starch conversion	Enzyme Hydrolysis	Gasification & catalysis	Development of new high sugar varieties		
Partners	KSU	Novozymes	Cargill Dow, NREL, Taylor Dyadic	AICIA CSIC CIEMAT	Syngenta Oryzon Genomics		
R&D Programs	DOE	DOE	DOE	VI & VII E.U. F.P. / Cenit	VI & VII E.U. F.P. / Cenit		
Goals	Increase protein content in animal feeding products	Increase ethanol yield, yields over 95%	2007 – 2012: Demonstrate technology at pilot scale 2012 – 2020: Develop hybrid concept at commercial scale		Develop sugar content energy crops		
Pilot Plant	York		York BCyL	Seville	-		
Commercial scale	-		Kansas	Germany	-		
			Demonstration programs for ethanol end-uses and development of new applications		FFV E-85 E-95	E-Diesel	
			GM-Ford BP		Ford / BP Iveco / Delhpi		
			R&D NP		R&D NP		
			Captive fleets in the US & network in state		Captive fleets across; UK, BE, NE, SP, FR Heating		
			-		-		
			-		-		



Abengoa Bionenergy conducts its R&D through a subsidiary, ABRD, Inc.

- ▶ More than 30 researchers in Europe and US working on R&D
- ▶ Use collaborative partnerships, JVs and equity stakes to identify and develop cost efficient manufacturing technologies and new applications

Develop and commercialize cost competitive biomass technology

Increase coproducts add value and develop new ones

## Strategic Plan

Improve current dry-mill technology

Develop end uses programs

Promote energy crops development



### Main Current Projects

- 4 year \$35.5 million contract with DOE in 2003 to develop technology for Advanced Biorefining of Distiller Grain and Corn Stover Blends
- BCyL Project: construction of a plant combining cereal and lignocellulosic processes (V FP)
- Key participation in Renew project (VI FP) to develop and compare a range of biofuel production technologies
- Project (under Spanish Government Strategic Program) to develop energy crops
- Industrial leader within Biosynergy Project (VI FP) to develop biorefinery concept, both biochemical and thermochemical pathways

### New Projects

- First World Hybrid Plant at US combining enzymatic and cereal technologies, sharing process streams and improving the economics
- Project under Cenit program leading a consortium to develop
  - New technologies for raw material production
  - Gasification and catalytic synthesis of ethanol production technology
  - Improving end uses



## 2. Projects



### Energy crops

#### Sugar content crops

- Evaluate Jerusalem Artichoke and Sweet Sorghum as raw material
- Develop farming techniques for these crops
- Sugar beet evaluation for ethanol. New varieties under revision

#### Cereal crops

- Promote seeds with improved characteristics development
- Evaluate economics of farms and logistics
- Develop business models for energy crops
- Establish strategic alliances with seeds producers
- Evaluate externalities tied to cereals as energy crops (social, sanitarian, environmental, security of supply)

#### Lignocellulosic crops

- Develop lignocellulosic crops for energy applications
- Evaluate the economics of these crops
- Promote other companies to develop new crops varieties useful for enzymatic hydrolysis and gasification and synthesis technologies
- Develop technology to produce enzymes using plants as expression platform



## Residual starch

### Objectives

- Increase ethanol yield over 95%
- Improve plant operation
- Demonstrate third parties technology
- Improve DDGS protein content

### Current status

- Pilot plant constructed
- Corn research experimental program finished
- Barley and wheat experimental programs ongoing
- Roll out at US facilities ongoing
- Programs with third parties to evaluate new crops
- DDGS protein content raised over initial goal

### Economy

- Returns over 15% for developed technology
- AFF process to be patented by Abengoa Bioenergy

### Partners

- Novozymes
- Syngenta
- Genencor



York Pilot Plant  
Starch Conversion



## Enzymatic Hydrolysis

### Objectives

- Develop Enzymatic Hydrolysis technology
- Develop C5 fermentation
- Construct a flexible pilot plant
- Construct the first world demonstration plant

### Current status

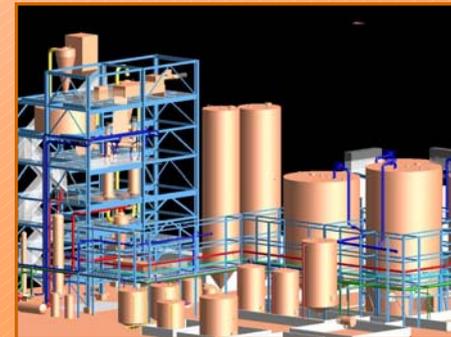
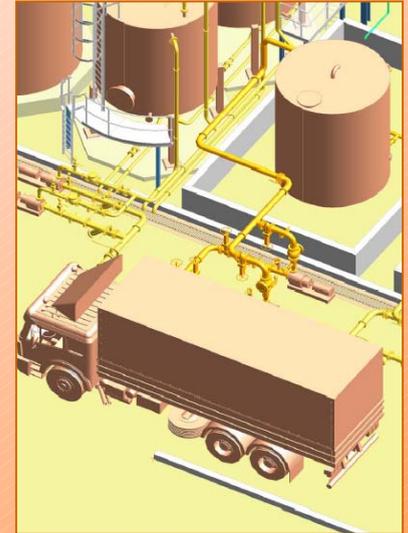
- York pilot plant under construction
- Salamanca Demonstration Plant (70 t/day) under construction
- York pilot plant will ferment both C5 and C6

### Process

- Abengoa Bioenergy has develop a proprietary pretreatment technology for biomass processing
- The novel fractionation process to enhance enzyme hydrolysis will be ongoing at Salamanca.

### Partners

- Lund University
- Novozymes
- Ciemat
- Nrel





## Gasification and synthesis

### Objectives

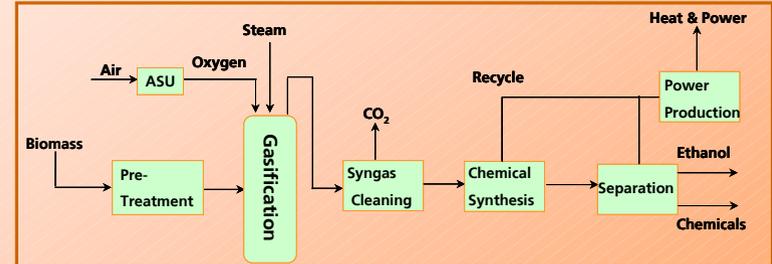
- Develop Gasification and Ethanol Catalytic Synthesis
- Develop a catalyst for ethanol synthesis
- Evaluate the optimum process configuration

### Current status

- A first set of catalyst designed and tested under different operating condition
- Constructed two reactor devices for catalyst synthesis; fixed bed reactor and liquid media reactor
- Catalyst development second program defined; two complementary projects ongoing
- Best process configuration evaluated
- Process configuration being improved
- Contacts with gasification technologists to license the gasification section

### Process

- Biomass gasification to get a rich syngas
- Syngas depuration
- Catalytic synthesis using an Abengoa Bioenergy patented catalyst
- Separation process to get ethanol plus other chemicals





## Hybrid Plant

### Objectives

- Promote, design, build and operate the first commercial hybrid plant combining starch and enzymatic hydrolysis technologies
- Make it profitable
- Make it easily replicated
- Increase learning curve evolution for enzymatic hydrolysis technology

### Current status

- Basic engineering developed
- Business and financial models developed
- Location identified

### Financing

- Applied for US Department of Energy grant
- Total Budget: 300 M\$

### Capacity

- 57 ML/year from lignocellulosic raw material
- 320 ML/year from starch



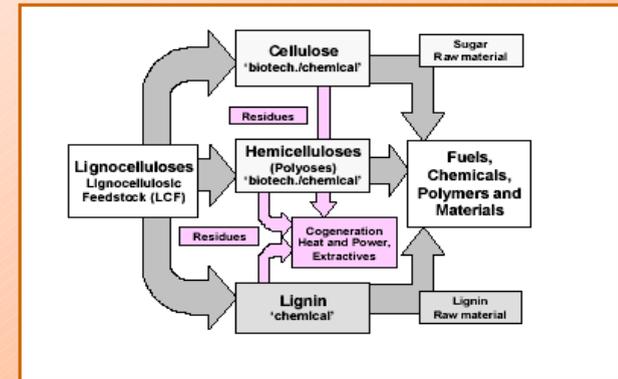
### Coproducts and new materials

#### Objectives

- Increase DDGs quality
  - Improve amino acid balance
  - Increase protein content
  - Improve palatability and digestibility
  - Avoid heat damage
- Develop new materials derived from ethanol production process (biorefinery concept)

#### Current status

- DDGs quality
  - Pilot plant under modification to begin testing
  - Lab scale tests ongoing
  - Drying pilot plant under construction
  - DDGs quality greatly improved at lab scale
  - Economy being evaluated
- Biosynergy project beginning
  - Advanced physical and chemical processes for fractionation
  - Both pathways being developed
    - Biochemical: enzymatic hydrolysis complementary
    - Thermochemical: G&C complementary
  - All technologies will be demonstrated at pilot scale





## Ethanol end use

### Objectives

- Demonstrate ethanol- diesel blends (e-diesel)
- Demonstrate ethanol-biodiesel-diesel blends
- Develop additives for e-95
- Promote ethanol high blends
  - Logistics
  - New applications



### Current status

- Strategic agreement with O2Diesel to develop e-diesel
- Agreements closed and under negotiation with fleets to demonstrate e-diesel
  - Buses operators
  - Construction companies
- Collaboration with Innospec (Ocel) to develop an additive for e-95
- Agreements with car manufacturers to promote e-85
- Agreement with motor cycle manufacturer to design and construct two stroke engines for e-85
- Agreement with engine manufacturer to design and construct four stroke engines for pure ethanol
- Agreement with engine manufacturer to design and construct stationary applications engines for e-diesel
- Agreement with homologation and certification center to develop procedures useful for ethanol and ethanol blends testing as first step to develop standards





### Ethanol end use

#### Objectives

- Develop ethanol reforming systems

#### Current status

- A catalyst for ethanol reforming developed and patented
- A 1 kW pilot plant designed, constructed and tested
- A 10 kW pilot plant designed, constructed and tested
- A 300 kW demonstration plant designed, constructed and being started up

