

# Unlocking the cellulosic bio-ethanol opportunity

DSM and POET make advanced biofuels a reality

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The English language version of this document is leading.

A more comprehensive discussion of the risk factors affecting DSM's business can be found in the company's latest Annual Report, which can be found on the company's corporate website, [www.dsm.com](http://www.dsm.com)

# DSM and POET to make advanced biofuels a reality

- POET - DSM Advanced Biofuels JV to commercially demonstrate and license *cellulosic* bio-ethanol:
  - DSM and POET each hold 50% share
  - Initial capital expenditure of ~ US\$ 250m
  - Headquartered in South Dakota
  - Initial capacity expected to be 20 million gallons, growing to ~ 25 million, scheduled to start in H2 2013
  - Raw material corn crop residue
  - Favorable GHG effect
- JV intends to license proven *Integrated Technology Package*
  - Replicate technology throughout POET's existing network of 27 corn ethanol plants
  - Worldwide to third parties

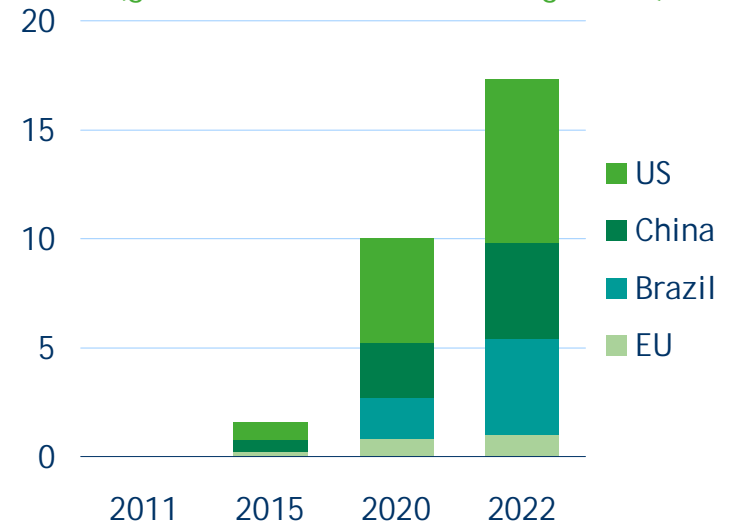


# Highly attractive market opportunity

- Global cellulosic ethanol market expected to grow to 18bn gallons in 2022, ~ US\$ 50bn
- Resulting in market value for enzymes & yeasts of ~ US\$ 3-5 bn in 2022
- US is leading, forecast ~ 7.5bn gallons of cellulosic bio-ethanol by 2022
- It can be calculated that by 2022 ~ 150-200 plants to produce cellulosic bio-ethanol from corn crop residue could be required in the US.



Market expectations(\*)  
cellulosic ethanol  
(global demand in billion gallons)

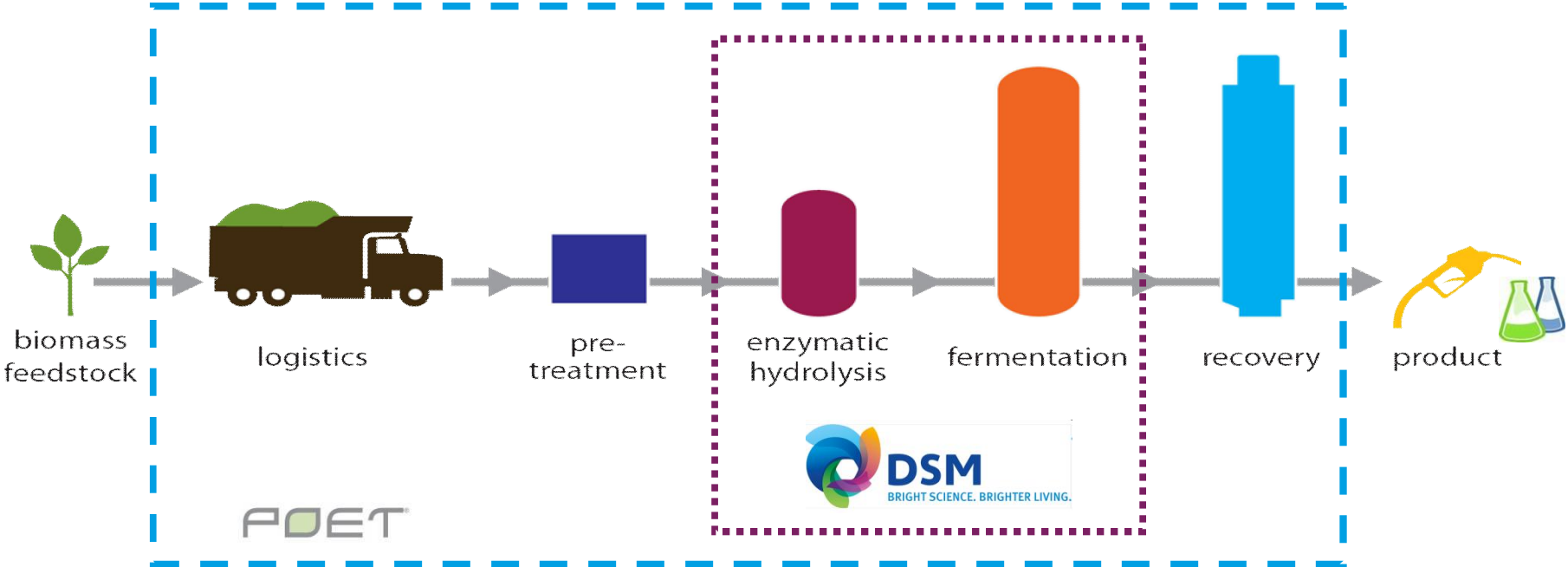


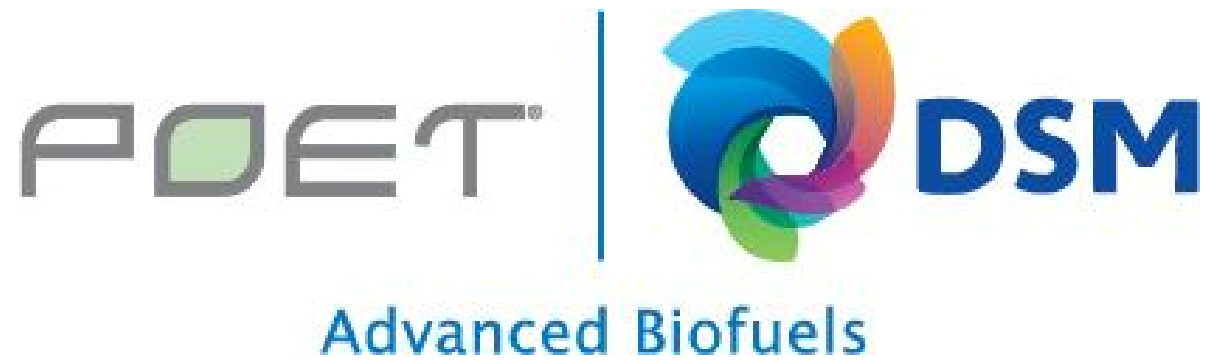
\*: derived from Hart's Global Energy Study

# From biomass to cellulosic bio-ethanol



Project LIBERTY





# Two innovative leaders, one shared vision

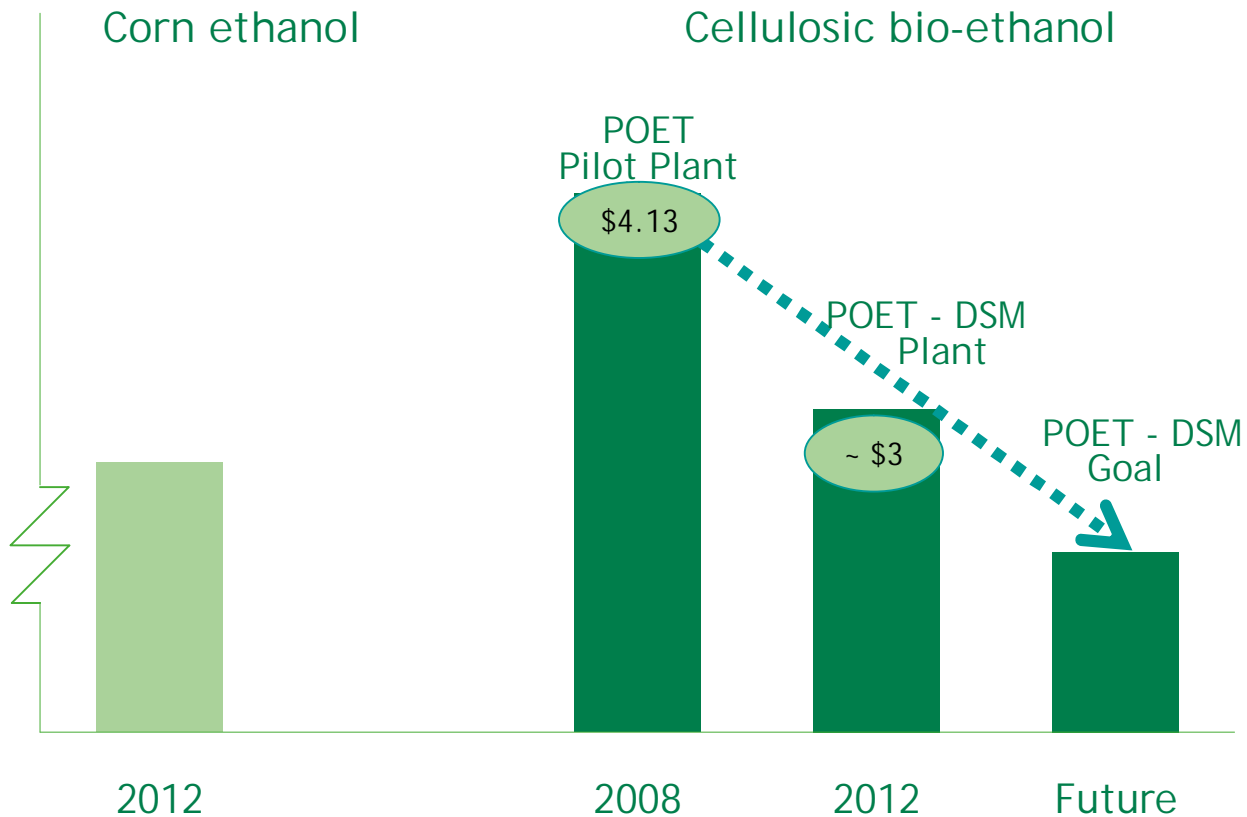


- Has more than 140 years of experience in biotechnology
- Has a proven track record in scaling up industrial operations
- Leadership position in conversion technologies (yeast and enzymes) for cellulosic biomass to ethanol
- DSM is the only company that can simultaneously co-ferment all C6 and C5 sugars (xylose & arabinose) in cellulosic biomass



- US market leader in bio-ethanol with a network of 27 corn ethanol plants and revenues ~ US\$ 6 bln in 2011.
- Has significant experience in scaling up technology within its network of corn ethanol plants
- Has a leadership position in cellulosic ethanol process technology and has been operating a pilot scale cellulosic ethanol plant since 2008
- Has spent five years developing a system to harvest, transport and store cellulosic biomass and has built an infrastructure for corn crop residue around the Emmetsburg, Iowa facility

# Production costs comparison & development



Source: POET and DSM



# Value creation now & tomorrow

- Goal is to establish a solid leadership position in the global cellulosic bio-ethanol market
- First revenues expected in 2013. JV is expected to be profitable in first full year of production (2014)
- Projected sales (cellulosic bio-ethanol, biogas and later on licensing) from JV to grow to > US\$ 200m\* with above average EBITDA contribution in the medium/longer term. Future license income could add up to several tens of millions of US\$.
- JV expected to contribute significantly towards DSM strategic aspirations for the EBAs by 2020

\* Due to IFRS rules as of 2013 DSM will consolidate the JV using the equity method



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