Scaling Up Financing to Expand the Renewables Portfolio: Advanced Biofuels

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ADVANCED BIOFUELS READY FOR COMMERCIALISATION

- From a technological barrier to financial and political barriers

- Commercialization depends on political leadership and ambitious targets
THE FUTURE IS LIQUID FUELS
– ADVANCED BIOFUELS WILL PLAY KEY ROLE

World facts in 2035

- Global energy demand has increased by 40%
- Oil demand has increased by 18% driven by transport
- Global vehicle fleet has doubled and the vast majority still use liquid fuels
- Oil production is concentrated in fewer and fewer countries

Great promise of advanced biofuels

- Meet >50% of gasoline demand
- Reduce dependency on imported oil
- Help keep oil prices under control
- Stimulate rural economies and create domestic jobs
- Significant reduction of GHG emissions

Sources: International Energy Agency, Bloomberg New Energy Finance
VISION FOR BIOFUELS BY 2050 - IEA BIOFUEL ROADMAP

- Global biofuel supply grows from 2.5 EJ today to 32 EJ in 2050
- Biofuels share in total transport fuel increases from 2% today, to 27% in 2050
- Diesel/kerosene-type biofuels become particularly important to decarbonise heavy transport modes
- Large-scale deployment of advanced biofuels vital to meet roadmap targets

Source: IEA Technology Roadmap, Biofuels for Transport, 2011
ENZYME TECHNOLOGY ON THE RIGHT TRACK
ASSESSING THE POTENTIAL BASED ON THE AGRICULTURAL POWERHOUSES

914 million tonnes residues will be available and can replace half of the gasoline needs in the above regions.

CASE STUDY
- WHAT’S IN IT FOR THE US

The US can replace 16% of its annual gasoline consumption by 2030 with advanced biofuels.

Create more than 1 million jobs between 2010 and 2030 mainly in rural areas.

American players would be the major beneficiaries, including 663 billion USD domestic engineering, construction and feedstock market.

Save CO2 and reducing GHG emission from gasoline related road transport by 11%.

Source: Bloomberg New Energy Finance, “Moving towards a next-generation ethanol economy” 2012
THE ROLE OF POLICY

Guiding principle

- Secure demand early and set ambitious target to provide investor confidence
- Incentivise supply simultaneously to lower the cost in a short period

Incentivise supply
- Support biomass development and collection

Secure demand
- Mandatory targets
- Remove technical barriers e.g. blend walls

Materialise investment
- Loan guarantees
- First of its kind commercial plants
BARRIERS

Need for biomass collection infrastructure
No market for biomass

Conversion economics – economies of scale
Biorefinery financing

No incentives for demand for biobased product
Bankable demand
MECHANISMS TO ADDRESS INVESTMENT NEEDS AND RISKS

Key risk factors influencing investment decisions:

- Product market risk (often a political risk)
- Upstream risk (e.g. feedstock supply)
- Process scale-up risk
- Technical risk

1. De-risk capital investments:
   - Grants
   - Debt (e.g. with success-based repayment schemes)
   - Guarantees
   - Default insurances, etc.
   - Other de-risking/risk-sharing mechanisms (e.g. EIB’s RSFF)

1. De-risk cash-flows from operations:
   - Workable product off-take risk (commercial volumes and profitability)
   - Workable feedstock supply risk (commercial volumes and costs)
   - AND/OR mechanisms that absorb/share remaining non-bankable risk

2. De-risk capital investments
SUMMING UP.....

- No current market for biomass
- Biomass infrastructure required
- Conversion economics
- Technical blending hurdles
- Capital shortage

Main barrier is the perceived investment risk in an uncertain policy environment with no clear incentives
THANK YOU!

Learn more:
www.bioenergy.novozymes.com