Welcome &
9M, 2013 performance
Benny D. Loft, CFO
Peder Holk Nielsen, President & CEO
Novozymes Capital Markets Day, October 31, 2013
Safe Harbor Statement

This presentation and its related comments contain forward-looking statements, including financial expectations.

Forward-looking statements are by their very nature associated with risks and uncertainties that may cause actual results to differ materially from expectations.

The uncertainties may include unexpected developments in the international currency exchange and securities markets, market-driven price decreases for Novozymes’ products and the introduction of competing products in Novozymes’ core areas.
## Agenda

**Thursday, October 31**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Presenters</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 08:30</td>
<td>Breakfast at hotel restaurant</td>
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<tr>
<td>08:30-9.00</td>
<td>9M, 2013 performance</td>
<td>Benny D. Loft, CFO · Peder Holk Nielsen, CEO</td>
</tr>
<tr>
<td>09:00-9:30</td>
<td>Strategic update</td>
<td>Peder Holk Nielsen, CEO</td>
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<tr>
<td>09:30-10:00</td>
<td>Break</td>
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<tr>
<td>10:00-10:30</td>
<td>Business Development – Creating tomorrow’s business for Novozymes</td>
<td>Thomas Videbæk, EVP Business Development</td>
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<tr>
<td>10:30-11:15</td>
<td>BioAgriculture – Developing a platform for growth</td>
<td>Trevor Thiessen, Vice President, BioAg</td>
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<td>11:15-11:30</td>
<td>Break</td>
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<tr>
<td>11:30-12:30</td>
<td>Biomass conversion – Driving commercialization</td>
<td>Sebastian Soderberg, Vice President, Biomass conversion &amp; Claus Crone Fuglsang, Vice President, Bioenergy R&amp;D</td>
</tr>
<tr>
<td>12:30-13:45</td>
<td>Lunch &amp; Ride – Lunch box and bus ride to Crescentino</td>
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<tr>
<td>13:45-14:00</td>
<td>Introduction to plant visit</td>
<td>Dario Giordano, CTO Beta Renewables</td>
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<tr>
<td>14:00-15:30</td>
<td>Plant tour</td>
<td>Beta Renewable representatives</td>
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<tr>
<td>15:30-15:45</td>
<td>Break</td>
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<tr>
<td>15:45-16:45</td>
<td>Beta Renewables – Strategy &amp; Status</td>
<td>Guido Ghisolfi, CEO Beta Renewables</td>
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<tr>
<td>16:45-17:00</td>
<td>Wrap-up</td>
<td>Benny D. Loft, CFO</td>
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<tr>
<td>17:00</td>
<td>End of program; transportation for Turin airport, Malpensa airport or Principi di Piemonte</td>
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<tr>
<td>19:45</td>
<td>Dinner for those staying in Turin; meet in lobby of Principi di Piemonte for 10 min. walk to restaurant</td>
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9M 2013 Summary

9M performance in line with expectations
- 6% organic sales growth after 9M (7% in Q3) driven by all industries, spearheaded by Household Care
- Significant headwind from currencies
- EBIT margin up by 0.4 percentage point

FY sales outlook adjusted for currency developments, EBIT margin increased
- Underlying sales performance in line with expectations and full year outlook narrowed
- Negative impact on sales in DKK from broad basket of currencies
- Expectation to EBIT margin increased due to productivity improvements, product mix and favorable cost development

New collaboration agreement with Raízen within biomass conversion in Brazil

Accumulated organic sales growth and guidance, 2012 & 2013

<table>
<thead>
<tr>
<th>Key financials</th>
<th>Realized 9M 2013</th>
<th>Outlook October 25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales growth, DKK</td>
<td>+5%</td>
<td>3-5%</td>
</tr>
<tr>
<td>Sales growth, LCY</td>
<td>+7%</td>
<td>6-8%</td>
</tr>
<tr>
<td>Sales growth, org.</td>
<td>+6%</td>
<td>5-7%</td>
</tr>
<tr>
<td>EBIT growth</td>
<td>+6%</td>
<td>4-5%</td>
</tr>
<tr>
<td>EBIT margin</td>
<td>25.0%</td>
<td>24-25%</td>
</tr>
<tr>
<td>Net profit growth</td>
<td>8%</td>
<td>7-8%</td>
</tr>
<tr>
<td>Net investments excl. acq., DKKm</td>
<td>558</td>
<td>~900</td>
</tr>
<tr>
<td>Free cash flow bef. acq., DKKm</td>
<td>1,235</td>
<td>1,600-1,700</td>
</tr>
<tr>
<td>ROIC incl. goodwill</td>
<td>19.8%</td>
<td>19-20%</td>
</tr>
</tbody>
</table>
Sales & Markets

First 9M sales in line with expectations

- 9M 2013 sales: DKK +5%, LCY +7%, org: +6%
- Q3 2013 sales: DKK +3%, LCY +8%, org: +7%

- Household Care continued on growth track, as strong performance in emerging markets and Europe/MEA made up for slower US market

- Food & Beverages delivered moderate growth driven by strong performance of healthy concepts, offsetting lower Baking sales. Starch also slightly positive

- Bioenergy sales showed strong momentum due to good progress with Avantec® sales and early adoption of Spirizyme® Achieve®

- Agriculture & Feed up due to strong BioAg performance across markets. Animal feed slightly up driven by protein segment

- Technical & Pharma up on higher sales to the textile and pharma industries

Sales by industry, DKKm

<table>
<thead>
<tr>
<th>Industry</th>
<th>9M 2013</th>
<th>9M 2012</th>
<th>DKK growth/LCY growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household Care</td>
<td>3.156</td>
<td>2.997</td>
<td>+5%/+8% Q3: +8%</td>
</tr>
<tr>
<td>Food &amp; Beverages</td>
<td>2.394</td>
<td>2.380</td>
<td>+1%/+3% Q3: +2%</td>
</tr>
<tr>
<td>Bioenergy</td>
<td>1.369</td>
<td>1.308</td>
<td>+5%/+8% Q3: +24%</td>
</tr>
<tr>
<td>Agriculture &amp; Feed</td>
<td>1.286</td>
<td>1.187</td>
<td>+8%/+12% Q3: +4%</td>
</tr>
<tr>
<td>Technical &amp; Pharma</td>
<td>601</td>
<td>551</td>
<td>+9%/+12% Q3: +12%</td>
</tr>
</tbody>
</table>

DKK growth/LCY growth
In Detail: Corn Ethanol Customers Adopt New Enzyme Technology

New technology has been well received by customers and we are outperforming the market:

- Avantec® has now been one year in the market place and is 20% into the market

- Spirizyme® Achieve has been more rapidly adopted by customers than expected and is already 10% into the market.

- Olexa® doing fine, but market is smaller than for the other two enzymes systems

Current penetration and converted customers represent the “low-hanging fruits”

**Quarterly growth rates, 2012-2013**

- US ethanol production
- Bioenergy organic sales growth

**Benefits from technology package**

- Up to 5% more ethanol yield
- Up to 8% energy savings
- Up to 13% more corn oil extraction
Innovation - New Evity® Platform for Household Care

The Evity® Platform:

• New stability technology for Household Care aiming at taking stability to next level

• Relevant for both granulate and liquid formulations and many products will be added Evity technology

• Improves storage times & increases the possibility of including more enzymes in the harshest formulations

Improved Granulate Illustration

- Protective layer
- Film coating for color preservation and dust reduction
- High-strength enzyme-containing core with stabilizing technology
9M 2013 Financial Performance & FY 2013 Outlook

Satisfactory earnings development in dynamic currency environment

- Increase of both gross and EBIT margin despite currency headwinds and higher cost base
- Free cash flow improved throughout the period as expected

2013 outlook

- Organic sales growth outlook narrowed

- Significant headwinds from currencies take its toll on sales growth in DKK (USD, JPY, BRL, INR, ARS)

- Better than expected earnings development and favorable cost development lead to higher EBIT margin expectation

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<th>Outlook August 9</th>
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novozymes®
Rethink Tomorrow
Strategic update

Peder Holk Nielsen, President & CEO
Novozymes Capital Markets Day, October 31, 2013
Setting the scene
Management wishes to provide an update on strategy and targets to emphasize Novozymes' strategic priorities for the years ahead

Outline
• Long-term targets
• Strategic priorities
• Innovation
• Earnings capacity
• Priorities for cash use
• Q&A
Long-Term Targets, Updated January 2013

**Long-term financial targets for the next 5 years:**
- Average organic sales growth of more than 10% (from 2015)
- EBIT margin of more than 24%
- Return on invested capital of more than 22%

**Targets are based on the assumptions that:**
- The global economy stabilizes
- The biofuel market in the U.S. moves toward E15
- Novozymes will sell enzymes to at least 15 biomass conversion plants by 2017

The targets are contingent upon no major acquisitions being made.
Novozymes’ vision:
We envision a future where our biological solutions create the necessary balance between better business, cleaner environment and better lives.

- Use industrial biotechnology to address society’s biggest challenges:
  - Energy efficiency
  - Waste reduction
  - Scarce raw materials
  - Replacing chemicals
  - Climate change
  - Population growth
  - Etc.

- Diversified growth from core technology platform is pivotal

- Biological solutions for B2B, not just enzymes

- Innovation is the epicenter
3 Focus Areas to Drive Performance and Reach Long-Term Targets

1. Deliver significantly more innovation to the market faster
   - The value of our innovation must increase in order to sustain 10% organic growth
   - Technology and innovation processes must decrease time to market

2. Ensure success in growth platforms
   - 4 key platforms defined today within business development. Nurse, develop and execute
   - Keep room (and resources) for exploring the next big thing to ensure long-term growth

3. Cultivate great leadership and develop people
   - Without the right leaders we will get nowhere
Driving Innovation Is All About Striking the Right Balance with Your Expertise

Take full advantage of technology

Technology is developing incredibly quickly. We have the right know-how to take advantage of the unprecedented opportunities this development is providing. Mastering complexity and data to develop new solutions is critical, as well as utilizing our production strength to an even larger degree.

Customer-driven innovation is not a one size fits all

With the foundation of our core technologies, we can customize solutions that fit the customer and application. Partners are critical for success, but in some areas, more value is generated by delivering the unexpected. We need both push and pull.

Pipeline management is no simple task

Our innovation depends on the insight and involvement of the more than 1,500 Zymers engaged in product development. Reducing complexity and bringing innovation straight to market are key.
Novozymes Has a Proven Ability to Outgrow the Global Economy through Economic Cycles

Novozymes' organic sales growth vs. global GDP growth, 2003-2012

Source: The World Bank/Internal Analysis
How Do We Get To +10% from 2015?

- History shows potential to grow 10% from a diversified set of industries, but not consistently
- Consistent performance in existing business will lay foundation for +10%
- Growth platforms will add layers of growth to enable +10%
- All 5 sales areas have the potential to deliver +10% growth within the 5-year period

Historic performance & size of areas, 2012 DKKm

<table>
<thead>
<tr>
<th>Area</th>
<th>Sales 2012</th>
<th>2008-2012 org. sales CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household Care</td>
<td>3.973</td>
<td>9%</td>
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<tr>
<td>Food &amp; Beverages</td>
<td>3.186</td>
<td>4%</td>
</tr>
<tr>
<td>Bioenergy</td>
<td>1.748</td>
<td>11%</td>
</tr>
<tr>
<td>Agriculture &amp; Feed</td>
<td>1.617</td>
<td>7%</td>
</tr>
<tr>
<td>Technical &amp; Pharma</td>
<td>720</td>
<td>(2)%</td>
</tr>
</tbody>
</table>

Future growth to come from

Established businesses
- Household Care
- 1G bioenergy
- Food & Beverages + Technical

Growth platforms
- Transformational opportunities
- Growth contributors
- Biomass Conversion
- BioAg
- Animal Health & Nutrition
- Biopharma
Historical Performance
Demonstrates Track Record of Delivery

Since IPO:
→ +5.2 %-points gross margin
→ +7.7 %-points EBIT margin
→ +9.9 %-points ROIC improvement

• Historical margin expansion through productivity improvements and operational leverage
• Earnings capacity is believed to be intact, as productivity improvements are expected to continue
• From 2015, success is +10% growth with high EBIT margin of +24% and ROIC >22%. Higher margins not a priority in themselves
• Leadership decision to allocate resources to drive innovation instead of margins, emphasizing absolute returns
Cash Generation, Use, Capex and Future Priorities – DKK billion

Cash generation has tracked EBIT

Cash for growth and shareholders

CAPEX 2002-2012; DK & new facilities

2013-2017; DKK +15bn* in operational cash flow to be invested in:

1. Innovation
2. Business development
3. Acquisitions
4. CAPEX as needed
5. Return to shareholders

* Estimated as a simple progression of current operational cash flow with 10% growth p.a.
Business Development – Creating tomorrow’s business

Thomas Videbæk, Executive Vice President, BD
Novozymes Capital Markets Day, October 31, 2013
Setting the scene

Business Development as an organizational unit was created in connection with the reorganization that Novozymes carried out in Q1 2013.

This presentation aims at providing an overview of the business development, the rationale and the role of the current functional setup.

Outline

- Ambition
- Historical perspectives
- Overview & role
- Individual introduction to growth platforms
- Recap
- Q&A
BUSINESS DEVELOPMENT CREATES TOMORROW’S BUSINESS FOR NOVOZYMES

MATURING PLATFORMS, DEVELOPING BETS AND TESTING IDEAS BY MATCHING MARKET NEEDS WITH NOVOZYMES' TECHNOLOGY
The Road to Business Development

Early exploration 2000-2006

Aim:
Technology acquisitions to explore adjacent business opportunities
- Biopharma
- Biologicals

BioBusiness 2007-2012

Aim:
- Streamline & consolidate acquired businesses
- Build BioAg
- Identify growth platforms

Business Development 2013→

Aim:
- Ensure success in growth platforms
- Integrated support from regional public affairs and sustainability
- Acquisitions to support platforms and bets
- Prioritize Group pipeline

Roots Acquisition

Gamlen France Acquisition

GroPep Ltd Acquisition

Philom Bios Acquisition

Delta Biotechnology Acquisition

Lund + peptides Divestment

EMD Acquisition

Natural Industries Acquisition

T.J. Technologies Acquisition

Business Development Nurtures Tomorrow’s Business for Novozymes

- Responsible for new business areas and Novozymes’ entire pipeline prioritization
- Close coordination on pipeline, resource allocation and customers
- Business development organization to cater for alternative business models and new business areas
- Innovation & business development crucial in all industries Novozymes serves

**Business Development**

- Innovation clusters
  - Customers
  - Academia
  - Radical ideas
  - Internal ideas

- Emerging platforms
  - Undisclosed projects

- Growth platforms
  - Biomass conversion
  - BioAg
  - Animal Health & Nutrition
  - Biopharma

**Business Operations**

- Established businesses:
  - HHC
  - F&B
  - 1G fuel
  - Technical

M&A + partnerships
Case: Animal Health & Nutrition – A Growth Platform with a Strong Core

Business today
- Feed enzymes are important for Novozymes
- CAGR of +10% from 2000 to 2012
- High single-digit percentage of Group sales
- Novozymes–DSM alliance offers innovative solutions that improve the nutritive value of the raw materials

Rationale for the future
- Fundamental macrodrivers + Novozymes’ capabilities and presence in adjacent industries (Agriculture, Bioenergy and Food processing) offer a strong platform for driving growth opportunities across the broader animal production value chain
Novozymes’ Growth Strategy for Animal Health & Nutrition

Strengthen core in feed enzymes

- Invest in strengthening the feed enzymes core in the DSM NP Alliance.
- Reinforce leadership through continued investment in innovation
- Drive customized & regional approach to offerings in order to create more value for customers

Beyond feed enzymes

- Leverage microbial and enzymatic technologies to expand beyond feed enzymes (with partners)

Health/non-nutritional feed additives:
- Non-nutritional feed additives targeting a growing need for performance improvement of animals

Feed ingredient processing:
- Rethink our customers' processes and increase the feed value of their co-products or residual materials
Biopharma Overview & Status

- Dedicated cGMP ICH Q7 plant in Tianjin, China
- Samples for in vitro and preclinical trials available
- First sales are ticking in; +100 customers have trialed
- Potential intact, but delayed according to early ambitions – triple-digit sales in 2-3 years still the aim

Hyaluronic acid
- Superior safety, consistency and performance
- Cost savings and minimized risk
- Ingredient in medical devices and pharmaceuticals

Recombinant albumin USP-NF*
- High-quality animal-free recombinant albumins
- A safe and consistent regulatory-compliant product
- Stabilizes drug and vaccine products + use in medical devices

Half-life extension technology
- Albumin-based technology
- Albumin fusion or chemical conjugation with APIs
- Improved dosing regimes for increased patient compliance
- Next-gen, patented technology: Albufuse® Flex

Pharma enzymes
- Proteases and lipases for biocatalysis and diagnostic use
- rTrypsin cell culture applications
- Novel proprietary enzymes being explored

- Running business to grow with new supply deals

Some partners for first Albufuse®:

- Existing business, leveraging one of the most comprehensive biocatalyst enzyme portfolios
- New focus aiming at exploring potential to become an important player for cost-effective & sustainable manufacturing of fine chemicals & APIs
Biomass Conversion; Food, Feed, Fuel, Chemicals and Materials Made from Biomass and Waste

- A transformational opportunity for Novozymes
- Turning renewable low-value carbon into high-value product is revolutionary
- Enzymes poised to be a leading conversion technology
- Entire field to be the focus of significant innovation once commercialization has caught on

Potential offered by biorefining by 2030:

- ~8.2 million man-years employment
- 475 million tons CO2 reductions/year
- $3,000 billion in accrued revenue for a $500 billion investment

BioAg is at the Convergence of Structural Drivers

- Increasing consumer focus on sustainability in agriculture
- Increasing weed & pest resistance
- 9bn people by 2050
- Microbial technology development
- Increased regulatory scrutiny of chemicals
- High & volatile input prices
- Big established Ag players moving in

BioAg
Recap

• Business Development is tasked with creating tomorrow’s business for Novozymes

• Business Development drives pipeline prioritization and management for the entire company

• Business Development is tasked with ensuring success in the 4 well-defined growth platforms, while developing earlier-stage ideas and bets
BioAgriculture – Market & Priorities

Trevor Thiessen, Vice President, BioAg
Novozymes Capital Markets Day, October 31, 2013
Agenda

Setting the scene

Over the last 7 years Novozymes has built a leading position within Agricultural Biologicals (BioAg)

This presentation aims at explaining Novozymes' view of the market and its priorities with a view to driving the business forward

Outline

• Executive summary

• Novozymes’ BioAg business – history and present

• The BioAg market – technologies and opportunities

• Strategic priorities

• Recap

• Q&A
Executive Summary

What are Ag Biologicals?

*Ag Biologicals are microbial-based solutions that work to naturally produce healthier crops and improve yields*

- Provide farmers with effective and more sustainable, “low-chem” alternatives for their agricultural practice
- A cost-efficient tool for the farmer to safeguard the high investment of seeds and other Ag chemicals

Novozymes’ strategic priorities

- Increase penetration in existing markets
- Grow global markets
- Develop science and R&D pipeline
Why Are Ag Biologicals Interesting to Novozymes?

- Higher demand for agricultural produce from growing population
- Regulatory and consumer focus on sustainable agriculture
- Increasing chemical and fertilizer input scarcity and price volatility
- Technology advancements that provide path for developing science and new products
Our BioAg Platform Was Built through Acquisitions and Application of Novozymes' Core Competencies

Why acquisitions & what have they given us?

- Window of opportunity to consolidate the BioAg space and become a major player
- Size and footprint to make a difference
- Product leverage across crops and geography

Leverage Novozymes' core competencies

- Scale advantage by applying competencies within R&D, fermentation and relationships across business areas

Relative size

- TJ Technologies
- Natural Industries
- EMD Crop BioScience
- Turfal
- Philom Bios
- Earth BioScience

Novozymes BioAg

= Transformational  ★ = Bolt-on  ★ = Tech

Biotech R&D

Molecular biology, bioinformatics & systems biology, and screening systems

Industrial-scale fermentation

Large-scale production of microorganisms; continuous optimization

Experience from partnering & joint developments

- Henkel
- Syngenta
- Cargill
- DSM
- P&G
- MG
- DSM
- Cargill
- P&G
Novozymes BioAg Is Early Part of Value Chain

Distributor: Most distributors have only a small amount of influence on farmers' decision process

Retailer: Plays the most important role in determining if a farmer will use seed treatment inoculants and what brand

Tech provider/BioAg manufacturer: Will in most cases be the same company within the BioAg space

- Majority of sales go through distributor channels – some through seed companies
- Distributors (e.g. Cargill, Winfield, Agrium/Loveland)
- Seed companies (e.g. Bayer)

- Products sold through regional seed and crop input retailers

Buying criteria for farmer: *
1. Past experience
2. Retailer advice
3. Agronomist input
4. Peer recommendation
5. Brand

* Novozymes & markets 2010
Historical Results Build Confidence in Our Future

- Annual revenue around USD 120 million (2012)
- North America accounts for roughly 2/3 of sales
- Inoculants for nitrogen fixation for soy and other pulse crops the single biggest application

Novozymes BioAg's combined sales development, 2003 = 100

Source: Internal analysis. Combined sales development from the combined business of EMD/Merck Crop Bioscience, Philom Bios, EBS and Turfal. Natural Industries and TJ Technology not included as they were acquired just recently.
Novozymes’ Competitive Advantages Are Three-Pronged

“First to market” position in phosphate solubilization & signal molecules and market-leading brands and partnerships within soybean and canola

Global leader in innovation/microbial R&D with a strong IP base and commitment to sound scientific principles

Largest producer and marketer of inoculants with vast experience in large-scale production of microorganisms
Fertilizer and Seeds Are the Biggest Crop Inputs, Biologicals Are the Fastest Growing

**Crop input and market size**

- **Fertilizers**
  - Nitrogen, phosphorus & potassium
  - USDn: $110
  - 3Y CAGR: 2%

- **Seeds**
  - Corn, soy, canola, etc.
  - USDn: $28
  - 3Y CAGR: 6%

- **Herbicides**
  - Weed control
  - USDn: $18
  - 3Y CAGR: 6%

- **Fungicides**
  - Control fungus diseases
  - USDn: $11
  - 3Y CAGR: 7%

- **Insecticides**
  - Control insect diseases
  - USDn: $9
  - 3Y CAGR: 4%

- **Seed treatment**
  - Coating, coloring, vaccines, etc.
  - USDn: $2
  - 3Y CAGR: 11%

- **Ag Biologicals**
  - USDn: $1.8-$2
  - 3Y CAGR: 15%

**Ag Biologicals market**

- **Biofertility**
  - Increases the supply of nutrients to crops
  - USDm: ~$225m

- **Bioyield enhancers**
  - Stimulate crop stress resistance
  - USDm: ~$100m

- **Biocontrol**
  - Controls insects, disease, and weed crop pests
  - USDm: ~$1.500m

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Note: Not shown are nematicides, a type of chemical pesticide used to kill plant-parasitic nematodes
Source: External market research (e.g. marketresearch.com, fertilizers.org)
Top 10 Ag Companies – Combined Revenue of USD +65bn

2012 revenue, excl. fertilizers, USDbn

<table>
<thead>
<tr>
<th>Company</th>
<th>AgChem</th>
<th>Seed</th>
<th>Other, incl. Ag Biologicals</th>
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<tr>
<td>Syngenta</td>
<td>$14,2</td>
<td></td>
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<tr>
<td>Monsanto</td>
<td>$13,5</td>
<td></td>
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<tr>
<td>Bayer CropScience</td>
<td>$10,4</td>
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<tr>
<td>BASF</td>
<td>$8,9</td>
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<td>Makhteshim Agan</td>
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<tr>
<td>Nufarm</td>
<td>$4,7</td>
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<tr>
<td>FMC</td>
<td>$2,8</td>
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<tr>
<td>Agrium</td>
<td>$2,2</td>
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<tr>
<td>ICPL</td>
<td>$1,8</td>
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<tr>
<td>Arysta LifeScience</td>
<td>$1,6</td>
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</tbody>
</table>

Fertilizer majors:

Source: Partner estimates
BioAg has Gained Attention – Tough Competitors Provide Proof of Value

2012

- AgraQuest USD 500m
- Becker Underwood USD 1bn

2013

- Pasteuria USD 110m
- Agradis USD Xm
- IPO
- Prophyta USD Xm
- Alliance
Our Current Biologicals Offer Ample Opportunities for Growth

<table>
<thead>
<tr>
<th>Novozymes' relative market penetration</th>
<th>Soy</th>
<th>Pulses</th>
<th>Canola</th>
<th>Corn</th>
<th>Wheat</th>
<th>Fruit &amp; veg.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biofertility</strong></td>
<td></td>
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<tr>
<td><em>Phosphate solubilization</em></td>
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<tr>
<td>JumpStart®</td>
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<tr>
<td><em>Nitrogen fixation</em></td>
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<tr>
<td>TagTeam®, Cell-Tech®, &amp; Optimize®</td>
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<td><strong>Bioyield enhancers</strong></td>
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<td><em>Plant growth promoters</em></td>
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<tr>
<td>Torque®, Proventus®, Ratchet® &amp; QuickRoots®</td>
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<tr>
<td><strong>Biocontrol</strong></td>
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<tr>
<td><em>Biofungicide</em></td>
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<tr>
<td>Taegro® &amp; Actinovate®</td>
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<td><em>Bioinsecticides</em></td>
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<tr>
<td>MET52®</td>
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</tbody>
</table>

- **Market close to full penetration**
- **Market less penetrated**
- **Still significant potential**
- **Unpursued market opportunity with existing products and technologies**

Just launched = Market close to full penetration
Just launched = Market less penetrated
Just launched = Still significant potential
Just launched = Unpursued market opportunity with existing products and technologies
Key Markets and Future Opportunities: Americas Are Key – the World Is Open
The Scientific Challenge in BioAg – a Lot of Moving Parts ...

Agriculture is very complex

Plants

Wind, solar, soil, water ...

Insects, nematodes ...

Leaves, roots ...

Predictive assays → field performance

Microbial diversity

Beneficials

Competition in microbiome

Inhibitors

Products

Field trials

Robust performance

Approvals & regulations

Formulations (spray, seed …)

Key to understanding the entire scientific environment

- **Plant microbiome, incl. mode of action of microbes**
  - Bacteria: ~4,000 genes/genome
  - Fungi: ~20,000/genome

- **Genomic potential of bacteria and fungi**
  - Bacteria: ~4,000 genes/genome
  - Fungi: ~20,000/genome

- **Performance in field based on interplay between many factors**
  - Microbes interact with plants, insects, on leaves, in a variety of different field/soil and climate conditions

- **Regulatory aspects**
  - Regulatory requirements different from region to region, incl. registrations and time for approval, toxicology testing, efficacy studies and product label claims
Novozymes Is Well Positioned to Find Answers to the Complex Challenges in BioAg

Novozymes' capabilities are the foundation... ...Partners/Academia are critical for understanding

**Microbiology**
- Bacteria, fungi, culture collection, biochemistry, taxonomy

**Microbial physiology**
- Linking growth to production
- Fast & predictive scale-up

**Molecular biology**
- Strain development using protein engineering, genetic modification, DNA sequencing, etc.

**Bioinformatics & systems biology**
- Application of computer algorithms in discovery of enzymes in DNA databases

**Screening systems**
- Assay development, application of high-throughput robotics

**Industrial-scale fermentation**
- Continuously optimizing and improving yields for 60 years
Novozymes' Priorities: Drive Long-Term Growth

Increase penetration in existing markets
1. Add regional distributor collaborations
2. Make bolt-on acquisitions
3. Build further field trial data on key crops

Grow global markets
1. Add distribution partnerships
2. Make bolt-on acquisitions
3. Build required minimum presence (regulatory)

Develop science and R&D pipeline
1. Add capabilities in R&D
2. Collaborate with academia and corporations
3. Scout for technology acquisitions
Recap

• BioAg fits Novozymes’ vision of producing more with less

• Novozymes has built a leading position over 7 years

• Interest in industry is growing, providing proof of value

• Novozymes believes in its competitive advantages and its ability to leverage these through partnerships in a changing competitive environment

• Science is key to unlock potential

• BioAg is poised to grow in importance in global agriculture
Novozymes BioAg Has Applications within All 3 Subsegments of the BioAg Market

Novozymes BioAg

1. Biofertility products
   - Phosphate solubilization
     - JumpStart®
   - Nitrogen fixation
     - TagTeam®, Cell-Tech®, Optimize®
   - A phosphate inoculant that grows along the roots, making more soil and fertilizer phosphate available to the plant
   - Nitrogen-fixating inoculants

2. Bioyield enhancers
   - Plant growth & health
     - Torque®, Proventus®, Ratchet®, QuickRoots®
     - Unique LCO molecule enhances nutritional capabilities, driving natural growth processes, which enhances plant health and crop performance
     - Microbial seed inoculant for increased yield

3. Biocontrol products
   - Biofungicides
     - Taegro®, Actinovate®
     - Slows down the resistance of current spray chemicals, thereby extending the life of those chemicals, within high-value fruits and vegetables
   - Bioinsecticides
     - MET52®
     - Wide mode of action to help break resistance in current chemical products within high-value fruits and vegetables as well as turf and ornamentals
Novozymes BioAg Has Global Presence

- **Saskatoon, Canada**
  - Sales, Manufacturing, R&D
- **Watertown, South Dakota**
  - Sales, Manufacturing
- **Houston, Texas**
  - Sales, Manufacturing
- **Salem, Virginia**
  - R&D
- **Buenos Aires & Pilar, Argentina**
  - Sales, Manufacturing
- **Nottingham, UK**
  - Agronomy
- **Milwaukee, Wisconsin**
  - Sales, Manufacturing
- **Paris, France**
  - Sales, Customer Communications
- **Bangalore, India**
  - Sales, Agronomy, Toll Manufacturing, Satellite R&D
- **Curitiba/Araucária, Brazil**
  - Sales, Manufacturing, R&D
- **Bagsvaerd, Denmark**
  - Sales, Marketing
- **Ho Chi Min City, Vietnam**
  - Sales
- **Kuala Lumpur, Malaysia**
  - Sales
- **Melbourne, Australia**
  - Sales (joint venture)
- **Nottingham, UK**
  - Agronomy
- **Bangalore, India**
  - Sales, Agronomy, Toll Manufacturing, Satellite R&D
- **Curitiba/Araucária, Brazil**
  - Sales, Manufacturing, R&D
- **Bagsvaerd, Denmark**
  - Sales, Marketing
- **Ho Chi Min City, Vietnam**
  - Sales
- **Kuala Lumpur, Malaysia**
  - Sales
- **Melbourne, Australia**
  - Sales (joint venture)
The World of Crops – Two Markets of Similar Value

Global acreage can be divided into two main categories:

- Broad-acre crops such as corn and soy: high volume, low value
- High-value crops such as strawberries, salads, nuts: low volume, high value
- Farmer dollar spend on high-value crops is significantly higher

Source: UN FAOSTAT 2011
Core Crops for Novozymes BioAg Today

**Soybeans**
- ~100m HA globally in 2012
  - ~31m HA in NA, of which 50% treated
  - ~47m HA in LATAM, of which 70% treated
  - ~22m HA in RoW, of which ~10-50% treated
- Novozymes' market share
  - ~25% in North America
  - ~20% in LATAM
  - 5-20% in RoW (Eur 20%; Africa 5%; Asia 5%)

**Pulses (peas, lentils, beans, etc.)**
- ~62m HA globally in 2012
  - 3m HA in NA, of which 90-95% treated
  - 6m HA in LATAM, of which 10% treated
  - 53m HA in RoW, of which <10% treated
- Novozymes' market share
  - ~50% in North America
  - ~20% in LATAM
  - <3% in RoW (0% in Europe; 3% in Asia)

**Canola (oil seed, etc.)**
- ~35m HA globally in 2012
  - 8.5m HA in NA 2012, of which 15% treated with a phosphate solubilizer
  - 1m HA in LATAM, of which <5% treated
  - 26m HA in RoW, of which <5% treated
- Novozymes' market share
  - ~100% in North America
  - ~0% in LATAM
  - <5% in RoW (0% in Europe; <5% in Asia)

**Forage crops (clover, etc.)**
- ~24m HA globally in 2012
  - 11m HA in NA, of which 85% treated
  - 4m HA in LATAM, of which 40% treated
  - 9m HA in RoW hereof
- Novozymes' market share
  - ~70% in North America
  - ~20% in LATAM
  - <5% in RoW (5% in Europe; 1% in Asia)

*Source: Internal estimates*
Biomass Conversion – Driving commercialization

Sebastian Soderberg, Vice President, Biomass Conversion
Claus Crone Fuglsang, Vice President, Bioenergy R&D
Novozymes Capital Markets Day, October 31, 2013
Setting the scene

Biomass conversion is a transformational opportunity for Novozymes

10+ years in the making, the first commercial-scale plant is now online

This presentation aims to provide an overview of the market and how Novozymes is adjusting its enzyme development strategy to serve the market

Outline

• Executive summary
• Advanced biofuel markets
• Novozymes’ approach to the market
• Recap
• Q&A
Biomass Conversion Is a Transformational Opportunity for NZ

Biomass Conversion has the aim to be a significant contributor to Novozymes’ long-term revenue growth target: 10% p.a. from 2015

External messages:

- Beta Renewables to contract 15-25 biomass conversion facilities with Novozymes as enzyme supplier by 2015-2017
- These facilities to generate turnover up to DKK 1 billion once operational
- Sales to at least 15 commercial-scale biomass conversion plants by 2017

Key objectives:

- Ensure that industry is commercialized and explore means to accelerate this
- Capture large share of first biomass plants to ensure first-mover learnings and market leader image
- Position Novozymes as clear market leader with key global and regional partners

Business should not negatively impact other NZ financial targets:
EBIT of >24%, ROIC >22%
The Business Case for our Customers Rests on Two Desirable Elements (given Economic Viability)

Waste to value:
Utilize cheap renewable feedstock to create low-cost, lower-volatility and sustainable biofuels/biochemicals

More with less:
Get more out of arable land, existing infrastructure and market presence. For example, Brazilian plant to increase output by 30-50% from same land, 20-40% in the U.S.

Illustrative example – Cost distribution by type of ethanol

1G ethanol (corn)
Assumptions:
• Corn @ USD 5.25/bushel
• Depreciations (Plant cost USD 2.00/gal)
• Other = energy, water, yeast, chemicals & labor
• Enzymes: USD 0.04/gal

Sugarcane ethanol
Assumptions:
• Sugar cost equiv. to USD 0.18/lb
• Depreciations (Plant cost USD 6.50/gal)
• Other = energy, water, yeast, chemicals

2G ethanol (biomass)
Assumptions:
• Biomass @ USD 50/ton
• Depreciations (Plant cost USD 7.50/gal)
• Other = energy, water, yeast, chemicals & labor
• Enzymes: USD 0.50/gal
Many More Potential Customers Are Interested in Biomass Conversion Today than 5 Years Ago

- The number of projects choosing enzymatic hydrolysis conversion has increased from 7 in 2008 to 26 in 2013
- In addition to projects publicly announced, there is a significantly larger pipeline of projects in the making
- The market has shifted from a U.S. play to a global opportunity
- Important to note that not all facilities on the drawing board will make it commercially viable

Commercial projects by region, 2013

- **7**
  - POET-DSM
  - DuPont
  - Project Alpha
  - Fiberight
  - Abengoa
  - Canergy
  - Greenfield

- **2**
  - Crescentino
  - Maabjerg

- **6**
  - GranBio
  - Raizen
  - OAI
  - Rhodia
  - TMO
  - Colbiocel

- **9**
  - Cofco/Sinopec
  - SQ
  - Datang
  - Dacheng
  - HNTG
  - Longlive
  - ZTE
  - Stategrid
  - Jilin Fuel

Commercial projects: Projects either completed, under construction or publicly announced using enzymatic hydrolysis
Increasing Interest Has Led to Activity in All Segments of the Value Chain

- Farmer co-ops
- Palm oil producers
- Wood owners
- Municipalities

Existing chain

* Enzymatic hydrolysis only  ** Captive enzyme producer
Demand for Renewable Low-Emission Liquid Fuels Remains a Structural Growth Story

Transportation energy demand by sector and region (millions of oil-equivalent barrels per day)

Global passenger vehicle sales by technology

Global oil use by sector

Projected world energy-related CO2 emissions (Mt)

Source: ExxonMobil: The outlook for energy: A view to 2040, 2013
OECD/IEA world energy outlook, 2009
IEA: Key World Energy statistics, 2013
International transport forum, key data and trends, 2010
Biotechnology Can Be Used to Produce More than Ethanol – The Sugar Platform Is Key

- Biotechnology is unique in its ability to be part of many different processes
- The sugar platform is key for biofuels and biochemicals
- Many technologies converting sugar to chemicals exist today, others are under development
- Ethanol can be fuel and a platform chemical
Mandates and Political Support Have Been a Strong Driver of Current Market Status

- Today 50+ countries have adopted blending mandates or targets
- From region to region, business cases factor in political incentives to a varying degree, depending on certainty, level of longevity and enforcement of support mechanisms

Major global support mechanisms for biofuels

- **EU**: 10% of renewable fuel in transport by 2020 via Renewable Energy Directive
  - Favoring of cellulosic biofuel with double and quadruple counting towards the target pending on feedstock is currently under review

- **USA**: 36 bn gallons of biofuels per year by 2022 of which 16 bn gallons are expected to be cellulosic
  - Mandated via the Renewable Fuel Standard

- **CHINA**: 5 million tons (1.7 bn gallons) of biofuel per year by 2015 mandated via the Bioenergy Five Year Plan
  - Target to be doubled by 2020
  - Main growth to come from cellulosic biofuel as food based biofuel has been capped

- **INDIA**: Target of 26% biofuel of transportation fuel pool by 2017
  - Cellulosic biofuel favored as early non-food feedstock allowed according to the National Policy on Biofuels

- **BRAZIL**
  - Mandates E20.25 in gasoline
  - Large hydrocarbon market
  - Target of doubling E20 output by 2020 requires significant amounts of cellulosic ethanol

- **SOUTHEAST ASIA**
  - Indonesia: E5 to increase gradually to E15 by 2025
  - Thailand: ethanol production target of 9ML/day in 2022 from 3 ML/day in 2008
  - Philippines: E10 to increase to E20 by 2025
There Is Plenty of Biomass Available Globally

- Significant potential for sustainable biomass from agricultural residues
- Good global distribution of resources
- Potential to replace half of global gasoline demand by 2030

### Estimated agricultural residues available for biorefining by 2030, million dry tons

<table>
<thead>
<tr>
<th>Country</th>
<th>Residues (Milotons)</th>
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<tbody>
<tr>
<td>China</td>
<td>221</td>
</tr>
<tr>
<td>United States</td>
<td>180</td>
</tr>
<tr>
<td>Brazil</td>
<td>177</td>
</tr>
<tr>
<td>EU-27</td>
<td>151</td>
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<tr>
<td>India</td>
<td>110</td>
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<tr>
<td>Argentina</td>
<td>39</td>
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<tr>
<td>Mexico</td>
<td>20</td>
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<tr>
<td>Australia</td>
<td>16</td>
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</tbody>
</table>

Source: Bloomberg New Energy Finance, "Moving towards a next-generation ethanol economy", 2012
A Snapshot of Global Demand Scenarios for Cellulosic Biofuels Shows Potential and Uncertainty

- Numbers vary with degree of belief in mandates and targets
- Scenarios reflect poor visibility, as cellulosic biofuels is just now proving technical and commercial viability

The potential is there!
Average scenario volume (excl. RFS):

2015: 0.5bn gal in 2015
2030: 7bn gal in 2030, CAGR of +20%!

- Goldman Sachs
- Boston Consulting Group
- Bloomberg New Energy Finance
- Renewable Fuel Standard
Novozymes Has Clear Strategic Priorities in Biomass Conversion

Be the preferred supplier of enzyme technology for biomass sugar, fuel and chemical producers worldwide

Priorities:

1. Ensure first-mover advantage
2. De-risk technology
3. Adapt and utilize strengths to enable customers

Target:

Serve 15 commercial-scale plants by 2017
1. Ensure First-Mover Advantage

• A changing customer landscape has created a need for multiple market access points

• A global business development team and regional R&D competencies support potential customers outside Beta Renewables

• The global BD team drives co-marketing agreement with Beta to attract new customers globally
Partnership with Beta: To De-Risk Technology and Projects and Access Customers Worldwide

- Beta Renewables is a leader in biomass conversion with the PROESA technology and owner of the world’s first commercial-scale plant. As preferred enzyme supplier, Novozymes will gain access to significant new business opportunities.
- Beta Renewables to have contracted 15-25 new cellulosic biofuel facilities by 2015-2017.

Cellulosic customer

- PROESA license
- Basic engineering & key equipment
- Enzyme supply

BR/NZ joint hydrolysis cost guarantee AND accelerate large-scale commercialization of the industry
2. De-risk Technology: Novozymes Has Been a Key Enabler of the Commercialization

Novozymes' enzyme cost-efficiency development, 2000-2012

- 10X improvement over 12 years
- From main inhibitor to valuable tool
- Now other cost items hit the steep part of customers' development curves
3. Adapt and Utilize Strengths to Enable Customers

The game is changing, and Novozymes must stay ahead of the curve

- From demo to commercial
- From breakthrough innovation to process and product optimizations
- From enzyme performance at lab bench to enzyme cost/performance at plant

Leverage premier position

- Use global presence and experience to guarantee enzyme delivery at scale
- Develop individualized delivery models with customers
- Default is hub-and-spoke. Looking to add capacity in Brazil

Customize

- Total production cost will be further reduced through customization
- Enzymes will be developed to fit the needs of specific cellulosic technology, customers, processes and feedstock
A Strong and Optimized Technology Backbone Will Guide Customization

- Enzyme efficacy – a measure of the amount of enzyme needed to achieve a given level of conversion of biomass to sugars – has been dramatically improved.
- Average relative “fold improvement” in enzyme performance over time on a range of industrially relevant pretreated substrates is shown below.
Drivers of Enzyme Cost Reductions: Enzyme Discovery, Engineering and Production Economy

Discovery case:
GH61 is boosting hydrolysis

Protein engineering case:
Design of an inhibitor-tolerant BG

Production economy case:
*T. reesei* expression

Recombinant CBH I
Expressed in *T. reesei* where native CBH I has been deleted

“If it doesn’t express, it doesn’t exist”
First-wave Commercialization ... and Innovation Continues (a Game We Know)

First-wave commercial-scale ethanol plants will initiate the realization of further cost-saving potential in most cost elements through:

- Combined enzyme, yeast and process optimization
- Design experience
- Operating experience

**Enzyme cost-efficiency development**

2012 = index 100

**Total production cost estimate**

2012 = index 100

Illustrative projections of future costs
As Industrialized Processes Are Locked into Place, Highly Customized Technologies Are Needed

- Different pretreatment technologies produce different hydrolysates and inhibitors
- Hemicellulose mix (C5 sugar types) also vary. Enzyme components must be tailored to match

![Biomass Pretreatment Hydrolysate Diagram](Image)
Now the Time Has Come to Benefit from Customization for the Individual Process

- Diverging processes are being established at industrial scale
- For every process, there will be an optimal enzyme blend
- Every blend will require further optimization work
- Current CTecX blends contain over 8 separate, unique enzymes

Feedstock pretreatment
- Physical treatment
- Chemical intensity

Cellulosic hydrolysis
- Solids level
- Sugar composition
- Separation and side streams

Further processing
- Yeast
- Fermentation
- Catalysis

Optimization opportunities, many are enzyme related
Recap

• Biomass conversion projects are firming up globally and interest is on the rise due to early-stage commercialization

• Novozymes has first-mover position today and will do its utmost to strengthen and leverage this position

• Enzymes are important for further total cost reductions

• Going forward, enzymes will be tailored to process and plant to give customers the best possible technology package – every time!

• Production know-how and scale are key competitive parameters
Beta Renewables
Strategy & Status
Beta Renewables is a joint venture, created in October 2011, between Chemtex and the investment firm TPG (Texas Pacific Group).

Novozymes, Denmark-based world-class biotech company acquired 10% share of Beta Renewables in October 2012.

Beta Renewables owns and licenses the Proesa® technology.

1st commercial-scale 2GE biofuels plant in Crescentino (Italy).
Our Business Model

- Owns the PROESA® technology
- Invests in the R&D for continuous process improvement
- Licenses the technology worldwide
- Provides performance guarantees
- Supports licensees on biomass supply chain, off-take, financing
- Will own/operate the commercial site in Crescentino, Italy

- Exclusive engineering partner
- Supplies, at a minimum, a basic engineering and key equipment package
- Provides mechanical guarantees
- Qualifies EPC contractors
- Conducts R&D activities on behalf of Beta
- Support in commissioning, start-up and training
Beta Renewables and Novozymes have both a co-marketing and a joint development agreement in place. Long-standing collaboration has led to substantial reduction in cost of enzymes per unit of cellulosic ethanol. Partnership of two industry leaders boosts confidence in the technology. Guarantees on enzyme performance and cost incidence de-risks the technology. Parties are committed to ongoing improvements in enzymes and process. Ensuring secure and most competitive enzyme supply to our customers.
To de-risk the technology, enabling profitable deployment and bankable projects

Our Joint Value Proposition: a Solid Foundation

PROESA® Licensee

- PROESA® Know-how
- Engineering
- Enzyme Supply

Process Guarantees

Mechanical Guarantees

Enzyme Guarantees
Support throughout a PROESA® Project’s Lifecycle

Enable
- Project feasibility study and investment estimates
- Qualify feedstock in pilot plant
- Optimize process parameters and enzymes for feedstock
- Support in the development of a biomass supply chain (Chemtex Agro)
- Support in financing

Deploy
- Basic engineering package
- Qualify EPC contractors
- Permitting support and procurement of critical equipment
- Support in the construction and start-up of the plant
- Start-up and training

Empower
- Support in establishing product off-takes
- Ensure joint performance guarantees hold
- Provide ongoing customer support
- Supply of enzymes and yeast (through our biotech partners)
Beta Renewables is continuing to establish partnerships across the entire technology and deployment value chain to capitalize on its’ 1st mover advantage.
PROESA®: A Platform Technology

Non-Food Cellulosic Biomass

PROESA®

Cellulosic Sugars

C5-DERIVED CHEMICALS
C6-DERIVED CHEMICALS
(C5+C6)-DERIVED CHEMICALS

NOW

Ethanol

N-Butanol
Iso-Butanol
Butanediol
Fatty Alcohols
Ethylene Glycol

NEXT

Lignin

ENERGY

Later

LACTID ACID
GREEN DIESEL
SUCCINIC ACID
ACRYLIC ACID
ADIPIC ACID
GREEN GASOLINE

LIGNIN-DERIVED CHEMICALS

POWER

CRESCENTINO

HEAT / STEAM

AROMATICs
TEREPHALIC ACID
PHENOLS
The PROESA® Process in a Nutshell

**The Key Benefits of the PROESA® Technology:**

- **Feedstock flexibility**
- **No chemical addition, optimal trade-off between high sugar extraction and low enzyme dosage**
- **Fully integrated process design using commercially established equipment**
- **Industry leading capex and opex backed by performance guarantees**
## Economics of 2G Ethanol Production

### REVENUE
- **• Ethanol value**
  - Base case line: $700
  - USD/Mt ethanol: $1100

### INVESTMENT
- **• CAPEX***
  - Base case line: $1500
  - USD/Mt ethanol: $2500

### CASH COSTS
- **• Biomass**
  - Base case line: $100
  - USD/Mt ethanol: $300
- **• Enzymes**
  - Base case line: $150
  - USD/Mt ethanol: $200
- **• Energy**
  - Base case line: $0
  - USD/Mt ethanol: $125
- **• Labor**
  - Base case line: $40
  - USD/Mt ethanol: $60
- **• Other**
  - Base case line: $40
  - USD/Mt ethanol: $60

### LEVERAGE
- **• Debt**
  - Base case line: 80%
  - USD/Mt ethanol: 20%

### IRR before tax
- **15-20%**

### Cash costs
- **$500-570/ton**
  - (1.5-1.7/gal)

---

* USD/Mt of yearly capacity. 20 years of operating life
** 2G ethanol production is energy self-sufficient
It is no longer technology that needs to be solved

Funding
- Bankability will come as first projects have proven successful
- Until then; equity and government support

Biomass supply
- Biomass cost
- Preferably < $50/dry ton
- Fixed biomass supply 10-15 years

Off-take
- Market price of ethanol
- Uncertainty on subsidy levels and blending mandates (policy risk)
- Export market opportunities

Technology
- Proof of concept at scale
- Conversion guarantees
Crescentino plant is ramping up according to plan; Confirmation of “base case line” expected in 2014.

Status of continuous optimization at Crescentino plant (@ biomass cost: USD 50/tdw)

- Phase I: Ramp-up biomass throughput (2013)
- Phase II: Technical refinement (2014)
- Phase III: Steady State optimization (Constant)

Confirmation of base case operation as seen in Beta pilot plant.