EDITING SLIDES IN THE NOVOZYMES TEMPLATE

Choose Layout:
Click Layout in the top menu Home. And choose between +30 different layouts.

Edit Header and footer:
In the top left corner you find Slide no., Date and Header. Change settings in the menu:

Novozymes and CleanStar Mozambique

3/20/2013
Nine different industries

- Food and Beverages
- Household care
- Agriculture
- BioPharma
- Leather
- Textiles
- Pulp and Paper
- Wastewater Solutions
- Bioenergy
Customers use our more than 700 products in 130 countries within more than 30 different industries. We are global leader in industrial enzymes & microorganisms and have more than 6,000 employees worldwide.
Sales and markets

Geographical distribution of 2012 sales

- North America: 33%
- Asia: 20%
- Latin America: 10%
- Europe, Middle East, and Africa: 37%

Sales development in DKK million

- 2011: 10,510
- 2012: 11,234

More than 700 products used in 130 countries.
The charcoal industry in Africa

- >$10B annual consumer spend
- $25-$35 / month per household in large cities
- 10-30% of average incomes
- 5M acres annual forest destruction
- Indoor smoke kills women & kids
Charcoal-based deforestation

- Causes land degradation and flooding
- Soil erosion leads to food insecurity
- 10kg of wood = 1kg charcoal
- Major source of GHG emissions
Cooking shouldn’t kill

Indoor charcoal smoke = 2 packs of cigarettes per day

2 million early deaths per year from indoor air pollution

World Health Organization

HELP KIDS QUIT!
CleanStar’s commercial strategy

CULTIVATION
Smallholder farmers

PROCESSING & PACKAGING
Integrated Food and Cooking Fuel Plant

DISTRIBUTION
Urban shops sell stoves and fuel

Ethanol-based cooking fuel & Ethanol clean cookstove

- Clean, safe and fast
- Cheaper than charcoal
- ~20L / month / family
- ~1 ton CO2 saved / month / family
A low-input agroforestry cultivation system is at the core of our partnership with smallholders

- The system has a **1 ha agroforestry zone** with rows of fast-growing leguminous trees/shrubs and alleys planted with annual crop rotations

- This is surrounded by a **1 ha forestry shelterbelt zone** that contains indigenous trees and Pongamia oilseed trees

- The system involves a mix of multi-purpose crops & trees, incl. cassava, cowpea, soyabean, sorghum, ground nut, lucaena, pigeonpea, pongamia and native tree species
Company-owned retail network

Sales team undertakes in-home demonstrations and take orders

Customers visit shops to fulfil orders and collect stoves & fuel

NDZILO shop network being rolled out in low-income neighbourhoods

Customers return every day / week to buy more fuel
Worlds First Sustainable Cooking Fuel Plant

Opened 17 May 2012
Partnering with small farmers: Integrated food and energy agroforestry systems

Baseline farming is subsistence-only
Lack of inputs/storage/markets

High-yielding disease-free cassava, soya, beans, sorghum, pigeon peas

Rural Impact: ↑ incomes ↑ nutrition ↑ tree cover ↑ soil health

Reforestation belts around fields
VENTURE WILL ACHIEVE PROFITABILITY IN 2014 AND THEN EXPAND IN MOZAMBIQUE AND BEYOND

<table>
<thead>
<tr>
<th>by end of 2012</th>
<th>by end of 2014</th>
<th>2015+ (not modeled)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 1000+ farmers</td>
<td>• 3,000 farmers</td>
<td>• 15,000 farmers in central Mozambique</td>
</tr>
<tr>
<td>• 3 community-level pre-processing centres</td>
<td>• 7 community-level pre-processing centres</td>
<td>• Agroforestry system replicated in Inhambane &amp; Nampula provinces</td>
</tr>
<tr>
<td>• 2m litre ethanol cooking fuel plant commissioned</td>
<td>• 20m litres of clean cooking fuel sold per annum</td>
<td>• Stove market share expanded to 40% (160,000 households)</td>
</tr>
<tr>
<td>• Stove manufacturing &amp; assembly started in Maputo</td>
<td>• Farmer household income increased at least 3x</td>
<td>• Ethanol cooking fuel production capacity matched to demand</td>
</tr>
<tr>
<td>• 5000+ cookstove &amp; fuel customers in Maputo</td>
<td>• 80,000 urban households using clean cookstoves</td>
<td>• Cooking solution launched in other sub-Saharan African cities</td>
</tr>
<tr>
<td>• ~$10m invested</td>
<td>• 320,000 t CERs per annum</td>
<td>• Potential to leverage several hundred million dollars of investment</td>
</tr>
</tbody>
</table>

• 2.4 million trees planted in forest belts (3,000 ha)
• ~$15m invested
IN 2 YEARS: FROM IDEA TO MANDATE

Selected milestones (1/2)

2008-2009: Concept development
- We identified “sustainable biofuels” as a great opportunity to have impact
- We had an existing enzyme product to convert cassava to ethanol
- We saw an attractive opportunity in the cooking fuel market
- We believed that we could build a solid, scalable and replicable business model
- But, we needed a “venture developer” partner...

2009-2010: Search for partners and effective mandate
- Several potential partners found, tested and (some) discarded
- Found CleanStar Ventures, who were looking at forestry and biodiesel opportunities in Mozambique
- Novozymes funded pre-feasibility study of merged business concept

March 2010: Mandate secured for Novozymes seed investment
- Pilot-scale project pitched internally at Novozymes (CEO backing)
- 900,000 USD investment mandate was given
IN ANOTHER 2 YEARS: FROM MANDATE TO FULLY FUNDED CONSORTIUM DEEPLY ENGAGED IN IMPLEMENTATION

Selected milestones (2/2)

Aug 2010:  
**Company is formed and we go “above the radar”**
- JV created to develop detailed business model and raise capital
- Engineering partner ICM joined (dialogue since 2009)

Oct 2011:

Sep 2011:
- Bank of America Merrill Lynch bought options on future carbon credits
- Project announced at Clinton Global Initiative

May 2012:
- Ribbon cutting on first ethanol plant

Jun 2012:
- Environmental Finance: “Bioenergy Finance Deal of the Year “

Aug 2012: 
**3rd round investors join:**
- Soros Economic Development Fund and IFU joined – together investing $8,9 MUSD → Demo-scale project was now fully funded
- Options sold in DevCo for concept replication – to be incubated by CleanStar Ventures and Novozymes

End 2014:  
**CleanStarMozambique is a profitable business**
Strategic Partners

CleanStar Ventures
- Impact venture developer, head office in New York
- Ventures under development in Africa, Latin America and Australia

Novozymes
- Global leader in enzymes for bioenergy and agriculture
- $2 billion revenue & 6,000 people

ICM
- US ethanol process technology contractor
- Built 6.7 billion gallons of ethanol capacity globally over last 30 yrs

Bank of America Merrill Lynch
- Leading global bank, $50 billion environmental commitment
- Innovative financier in carbon and climate solution markets

Soros Economic Development Fund
- Commercial investor in post-conflict societies, part of Soros group
- Invests in sustainable businesses that alleviate poverty

IFU
- Danish government-owned Development Finance Institution
- Invests in sustainable businesses in least developed countries
The Pipeline Problem...

<table>
<thead>
<tr>
<th>Exploration</th>
<th>Concept note</th>
<th>Business planning</th>
<th>Business building</th>
<th>Scale-up</th>
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<tbody>
<tr>
<td>Ideation</td>
<td>Pre-feaso studies</td>
<td>Detailed studies</td>
<td>Ongoing operations</td>
<td>Replication</td>
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<td></td>
<td>Partner scouting</td>
<td>Formal partnerships</td>
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<td>Venture formation</td>
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</tbody>
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Discretionary internal funds
- CEO “cigar boxes”
- BoP Biz Dev units

Development Aid grants + seed/angel investments
- Foundations
- MDB inno funds
- ODA biz dev funds

Venture capital
- Impact Investors
- DFIs

Debt finance
- MDBs
- Local banks

Project finance
- MDBs
- PE pursuing FMs
- Pension funds
- Carbon finance*

Negligible; prohibitive risk profiles and opportunity costs

Fragmented and often dysfunctional, but moving in the right direction

Huge growth, but they have a pipeline problem!
ENERGIZING AFRICAN AGRICULTURE

A BLEAK REALITY
THE CHANGE WE BRING
A BRIGHTER FUTURE

FOOD & ENERGY
PRODUCTION PLANT

COMMUNITY
PROCESSING
CENTER

RESTORE
SUSTAIN
PLANT

PREPROCESSED
CROPS

SURPLUS
CROPS

MONEY & SUPPORT

ETHANOL COOKING FUEL

CLEAN COOKSTOVES

MONEY

FOOD

ETHANOL COOKING FUEL

CITY RETAIL NETWORK

SLASH
BURN
DEGRADE
MOVE