GLOBAL BIOENERGIES

Becoming a pillar of the energy and environmental transition

May 2017

Disclaimer

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These factors include, among other things, commercial, technical and other risks e.g. associated with estimation of the price of carbohydrate resources, the meeting of development objectives and other investment considerations, as well as other matters not yet known to the Company or not currently considered material by the Company.

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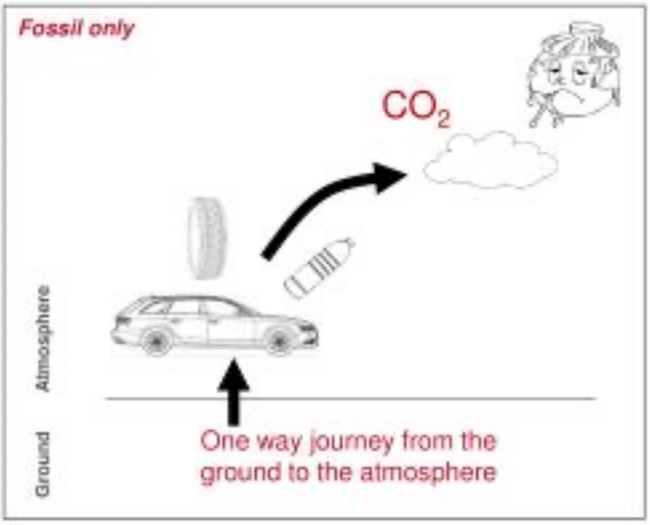
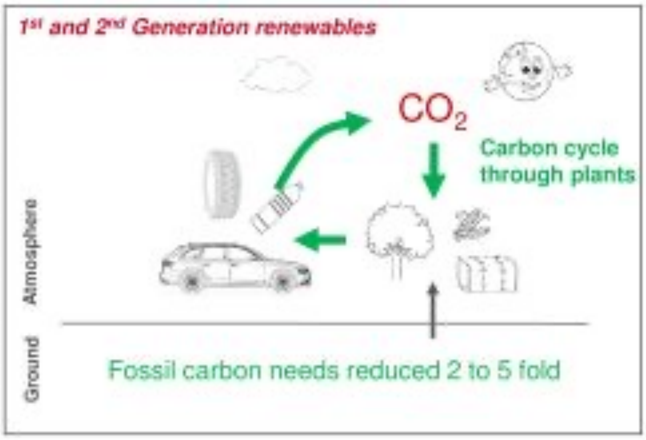
Global Bioenergies

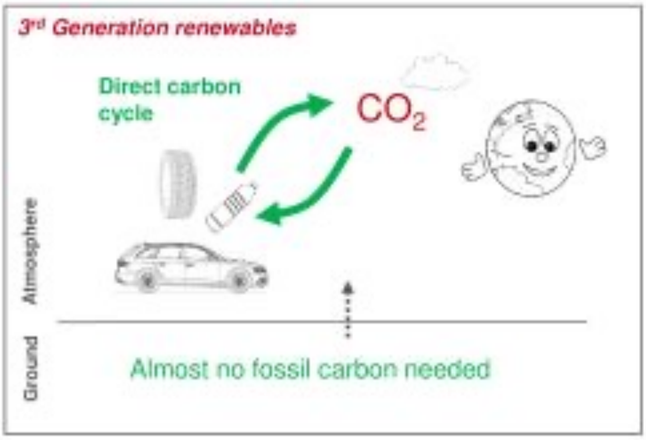
Using fossil resources releases CO_2 in the atmosphere



- Our planet is warming because of CO_2, the main green-house-gas
- Need for the deployment of sustainable and environment-friendly solutions

Introducing carbon cycles





- 1st and 2nd Generation biofuels and biomaterials will help on the short term to reduce human carbon footprint.
- Using carbon emissions from various industries, and eventually atmospheric CO_2, shorter and more efficient carbon cycle will provide long term solutions.

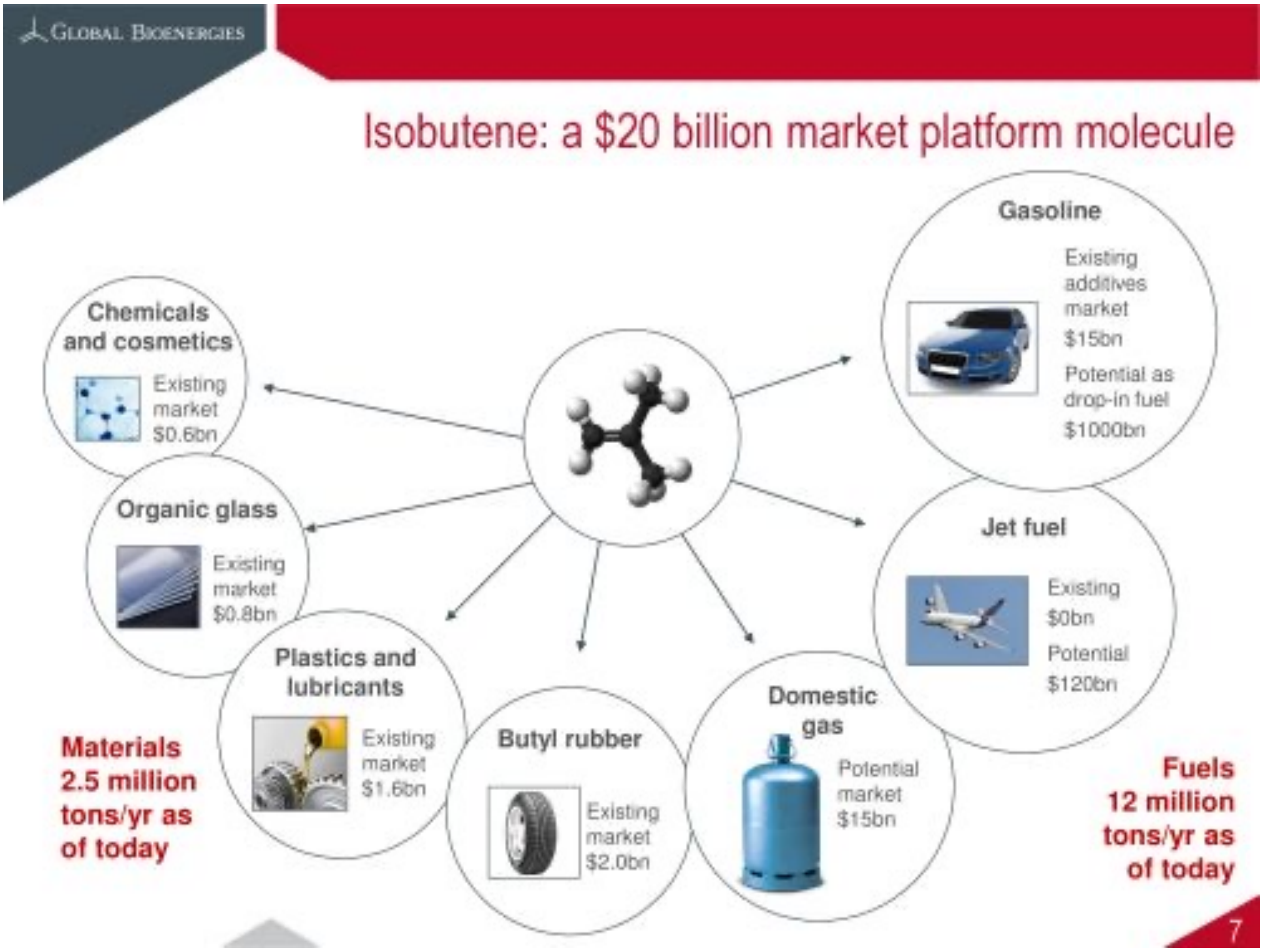
Global Bioenergies

Mission

Develop solutions to produce 1^{st}, 2^{nd}, and 3^{rd} generation biofuels and biomaterials, to reorganize the carbon cycles in fuels, plastics, and fine chemicals.

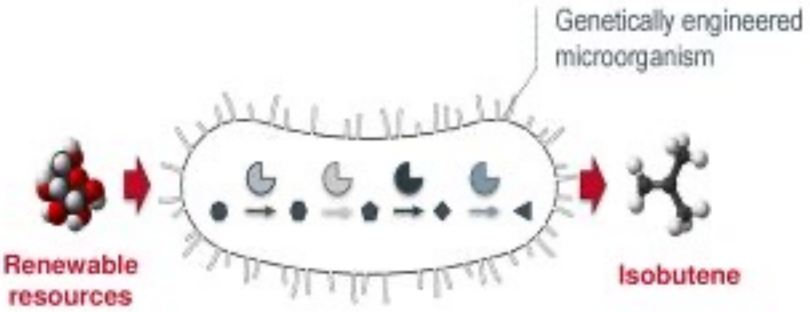
As first product, Global Bioenergies targets isobutene, a key platform molecule today massively derived from oil.

1. **What we do**
2. Bio-gasoline
3. Other markets for bio-Isobutene
4. Road to profitability
5. Team
6. Financials


GLOBAL BIOENERGIES
Isobutene: a $20 billion market platform molecule
Chemicals and cosmetics
Existing market $0.6bn
Organic glass
Existing market $0.8bn
Plastics and lubricants
Existing market $1.6bn
Butyl rubber
Existing market $2.0bn
Domestic gas
Potential market $15bn
Gasoline
Existing additives market $15bn
Potential as drop-in fuel $1000bn
Jet fuel
Existing $0bn
Potential $120bn
Materials 2.5 million tons/yr as of today
Fuels 12 million tons/yr as of today
7

How can it be produced renewably?

- Isobutene is currently exclusively produced from oil.
- **Synthetic biology** has enabled Global Bioenergies to create "**Microbial factories**" to produce Isobutene from **renewable resources.**



- This **breakthrough innovation:**
  - has opened up an entirely new domain within the field of industrial biology: the **direct production of gaseous hydrocarbons**, and
  - is protected by **32 patent families.**

Using a simple and robust industrial process

- The bio-industrial process harvesting the potential of the "microbial factories":
  - has been implemented in fermenters of ever-increasing sizes from laboratory to demonstration plant.
  - Will result in up to 100,000 tonnes per year plants anchored in rural areas thereby participating to the economic revitalization of many regions

Renewable resources

1 Fermentation

Breakthrough technology: direct fermentation to a gas

2 Purification

Combination of proven petrochemical modules

Isobutene

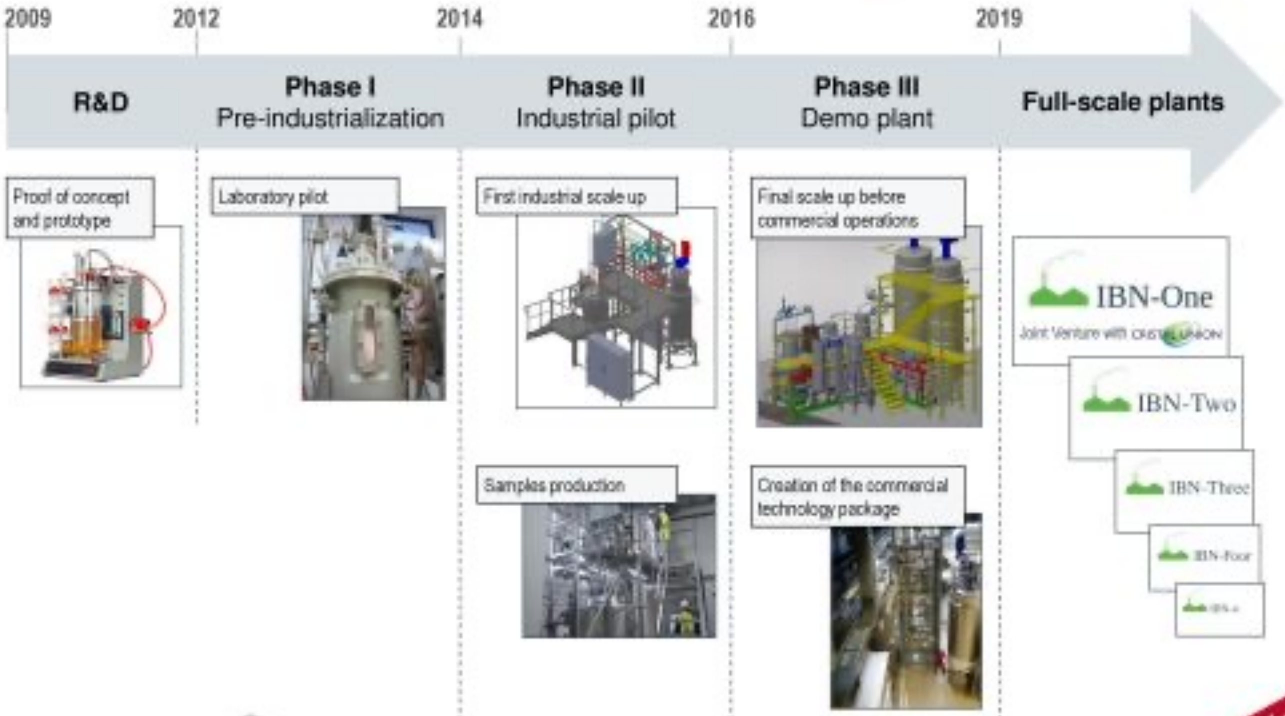
Illustrations are not representative of current Global Bioenergies' installations

A diverse array of renewable resources

	1G Cereals, sugar beet and sugar cane	2G Wood chips, straw, bagasse	3G CO_2, CO and syngas
			
	Traditional feedstock In some cases, competition with other uses	Advanced feedstock Waste or on-purpose production	Emerging feedstocks Currently treated as wastes
Increasing potential	Cost of resource		Environmental impact
Diverse prospects	major agricultural players	major agricultural players Forest operators	Present: Steel mills (syngas). Future: all CO_2-emitting industries
Process maturity	Demo plant	Pilot plant	Lab scale
Main partners	CRISTAL UNION	CLARIANT SEKAB	LanzaTech

- 1st generation (1G) feedstock are the only truly commercially available resources today.
- Their availability and price are expected to improve with the deregulation of the European sugar market and the contraction of the North American sugar market.

Our technology approaches commercial maturity using 1st generation resources



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Demonstration plant - Leuna, Germany

- **The demo plant a glance**
  - Capacity: 100 tons/yr
  - CAPEX: €10m
  - €5.7m public financing
  - €4.4m bank loan
  - Operated by Fraunhofer
  - Operations started in December 2016
- **Remaining 2017 Objectives**
  - Deliver ton scale batches for market development
  - Reach near commercial performances by end of year
  - Provide data for engineering of 1st commercial plant
  - Start testing waste-derived 2G sugars

2nd Generation: Forestry and agro-residues

- **Feedstock: two value chains pursued in parallel**
  - Agricultural residues
    - Wheat straw, corn stover, sugar cane bagasse…
    - Geographies concerned cover all major agricultural producing regions
  - Forestry
    - Wood from sustainably managed forests as well as wood milling residues
    - Primary geographies concerned: Scandinavia, Canada, Southern USA
- **Drivers**
  - Resources are not in competition with food production, prices are not correlated to world sugar market
  - Integrated biorefineries value all components of plants aiming for 50% lower sugars costs
  - Improved environmental impact
- **Challenges**
  - Technologies for producing 2G sugars currently at demo scale - remain to be commercially proven
  - Challenging fermentation due to heterogeneous feedstock composition

2nd Generation: OPTISOCHEM project

- **Major EU Financing granted to GBE and partners in 2nd Generation agro-residues**
  - **Objective**: demonstrate a new value chain from wheat straw to bio-isobutene oligomers
  - **Budget**: 16.4 million euros over 4 years
  - **Support**: 9.8 million euros subsidies from the BioBased Industries Joint Undertaking as part of European Commission's H2020 program. 4.4 million euros of which are for Global Bioenergies.
  - **Targeted markets**: Isobutene oligomers (numerous end markets: lubricants, cosmetics, plastics, solvents, rubber…)
  - **Consortium**:
    - **Clariant** provides Sunliquid™ technology to convert straw into fermentable hydrolysates
    - **Global Bioenergies** will convert wheat straw hydrolysates into bio-isobutene
    - **Ineos** will validate oligomer applications of bio-isobutene
    - **TechnipFMC** and **IPSB** will perform preliminary engineering of integrated wheat straw to bio-isobutene plants.
    - **Johannes Kepler University** of Linz will assess the sustainability and environmental benefit of the value chain

Horizon 2020
European Union funding
for Research & Innovation

BIO-BASED INDUSTRIES

Bio based Industries Consortium

CLARIANT

Global Bioenergies

INEOS

JKU

TechnipFMC

IPSB

3rd Generation: Gaseous carbon and industrial emissions

- **Feedstock:** replacing sugars by gaseous carbon (Syngas, CO, CO_2)
- **Drivers**
  - Syngas, CO and CO_2 are major green house gases.
  - Present as wastes at high concentrations in effluents of numerous industries (steel mills, concrete plants, power stations...). Low or negative value feedstocks.
  - Their use in fermentation will enable value creation and carbon capture.
  - New scope of prospects: heavy industries/non agricultural regions
  - As a first step, focus on syngas emitted by steel mills
- **Challenge**: isobutene-producing microbe and process must be developed
- **Positioning:** Global Bioenergies aims at establishing itself as technology integrator and developer
  - Collaboration with LanzaTech, global leader in 3G ethanol, to combine our technologies and achieve 3G isobutene production.
  - Acquisition of Syngip
    - 8 employees fully dedicated to a 3G Isobutene project
    - A dedicated microbe + genetic tools + know-how in gaseous carbon bioprocessing

GLOBAL BIOENERGIES

1. What we do
2. **Bio-gasoline**
3. Other markets for bio-Isobutene
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Global Bioenergies

Commercial potential of drop-in bio-gasoline

Market sizes with 10% blending mandate

In order to go beyond the 10% ethanol blend wall, Europe and the USA will need to massively adopt drop-in bio-gasoline

Market penetration

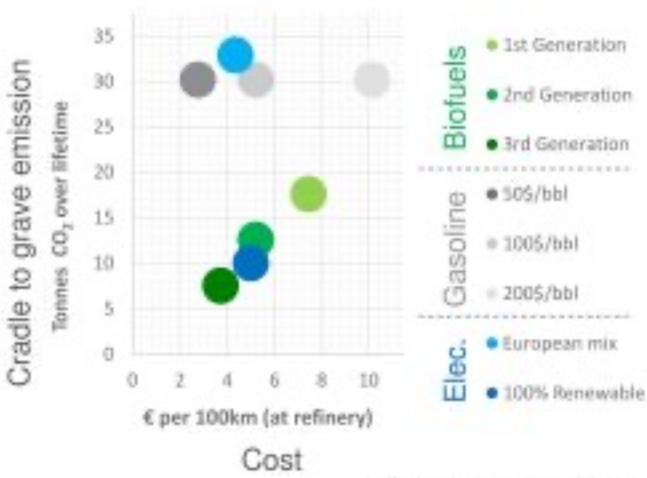
From 50-60$/bbl with tax incentives

From 120-130$/bbl without tax incentives

- **Unmet mandates around the world are numerous opportunities for deployment**
  - China: 15% by 2020
  - Norway: 20% by 2020
  - India: 20% by 2017
  - Indonesia: 15% since 2015
  - Finland: 40% by 2030

Bio-gasoline has higher potential than electric mobility

- **Biofuels have a higher potential than electric cars for cost and environment profile**
- **Biofuels are not promoted as much because**
  - Food vs Fuel debate
  - Biofuels power traditional cars, while electric cars are specific and hype
- **Solutions**
  - Diversify away from edible crops
  - Co-market the technology together with a car manufacturer through a specific brand



200 000 kms over life span

Fuel costs at refinery
Biofuels tax incentives further improve competitiveness for consumers

Source: Global Bioenergies

Global Bioenergies' Bio-gasoline project

- Two products for gasoline cars can be derived from 1st, 2nd and ultimately 3rd generation Isobutene
  - **Renewable Isooctane**
    Drop-in, oxyfree, low volatility, 100 octane, clean burning: low particles, NOx and SOx
    Blends up to 40% possible within regulation and technical potential up to 100% pure.
  - **Renewable ETBE**
    Drop-in, high octane
    Blends up to 28% possible within regulation
- Partnership with Audi
  - Global Bioenergies is part of AUDI's e-fuels strategy for renewable, low impact fuels
  - e-fuels to be a key tool in decreasing AUDI's fleet environmental impact
  - Audi to be the first car manufacturer to offer 100% renewable fuel driving to customers via system of offsets (specific models ex. g-tron)
  - Offset model requires 'drop-in', ready-to-blend fuel
  - Partnership to develop isobutene-derived isooctane for e-gasoline segment

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LPG: the new frontier for renewables in domestic and automotive sectors

- **Global LPG (domestic and automotive): 150 million tons** (equivalent to 1,500 plants of 100,000 tons each)
  - Low fossil production costs make competition difficult for renewables
  - Market penetration would be possible with extension of tax incentives
- Isobutene use for blending in domestic gas bottles validated by French LPG industry
- Global Bioenergies Isobutene is the only technology available for butane/propane
- Partnership with Butagaz
  - Leading French brand distributing gas in bottles and tanks
  - Aim to incorporate batches of bio-isobutene produced at Global Bioenergies' demo plant as early as 2017
  - Option to purchase bio-isobutene from IBN-One, the first commercial plant to be built in France

Global Bioenergies

Jetfuel : large potential subject to higher oil prices or extended renewable mandates

- **Jetfuel market: 120 million tons**
  (equivalent to 1,200 plants of 100,000 tons each)
  - Bio-jetfuel not existing commercially at present
  - High technical and regulatory constraints

- **Limited competition**
  - Isobutene → Jetfuel (Global Bioenergies)
  - Palm oil hydrogenation (Neste)
  - Farnesane (Amyris)
  - Alcohol to Jet (Gevo)
  - Fischer-Tropsch (Fulcrum)
- **Perspectives**
  Strong will from the aviation industry expected to turn into mandates and tax incentives in the mid-term

Chemistry and Materials

Applications

Butyl rubber
1.0 Mt

Lubricants and additives
0.8 Mt

Organic glass
(Plexiglass®)
0.4 Mt

Specialty chemicals
(paints, cosmetics…)
0.3 Mt

Mt: million tons

- **Global high purity Isobutene market 2.5 million tons** (25 plants of 100,000 tons each)
- Market accessible without premium from ~$80 per barrel
- A vast, diversified panel of applications from rubbers to cosmetics.
- Numerous consumer end-uses would enable large commercial premium for renewability, resulting in large operating margins
- Market growth: +4% CAGR expected between 2016 and 2024 for traditional market. Further growth potential as bio-based chemicals.
- A number of samples tests underway by prospects and already several applications validated.

Sources: Argus DeWitt, IHS, SRI, Grand View Research, Global Bioenergies

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Commercial strategy

- **Model:** technology licensing
- **Target revenues:** $1million upfront and $1million annual royalties per 10,000 tons capacity sold (royalties are function of market conditions)
- **Sales potential:** several hundred plants globally
- **Sales needs:** handful of plants to become profitable
- **Current status:**
  - IBN-One: a first concrete plant project in France
  - Two additional plant projects in discussion in North America and Scandinavia

IBN-One

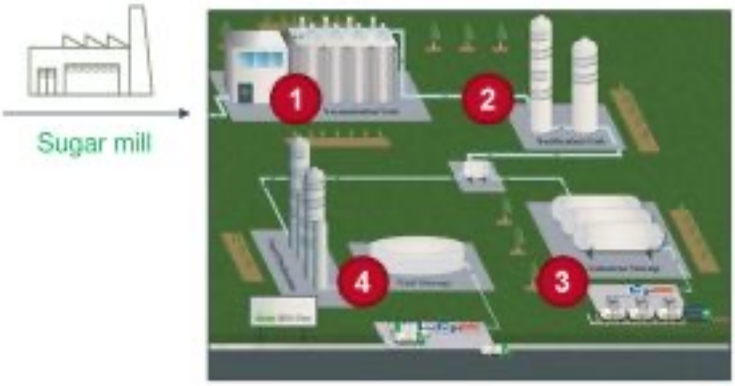
A Joint Venture with CRISTAL UNION

First commercial plant project – France

- 50/50 JV between Global Bioenergies and Cristal Union
- Estimated CAPEX 115 million euros
- €3.3 million from ADEME and *Investissements d'Avenir* program to support engineering, environmental studies and commercial development activities

1. **Production** - 200Kt industrial sucrose are converted into 50Kt gaseous, low purity isobutene
2. **Purification** - isobutene is isolated from surrounding fermentation gases
3. **Shipping** - Liquid high purity isobutene (99.7%) is stored and shipped for chemical applications
4. **Conversion** - Part of the production is converted on site into bio-fuels

- Target schedule
  - Engineering and construction to be completed in 2019
  - Commissioning and start of commercial operations in 2020



IBN-One
A Joint Venture with CRISTAL UNION

Commercial perspectives

- Commercial development
  - First commercial agreements with
    - ASPEN to supply specialty fuels market
    - Butagaz to supply domestic gas sector
  - Collaboration with L'ORÉAL to evaluate opportunities in cosmetic sector

- Financial perspectives
  - Biofuel for gasoline market
    - Volume: up to 100% Isobutene capacity
    - Nature: bio-isooctane or full-bio-ETBE
    - Prospective price calculated as gasoline price + X% TGAP (French tax incentive)
    - Targeted IRR > 15% when oil price is > 80 $/bbl and about 10% when oil price is under that threshold.
  - High purity isobutene
    - Volume: up to 40% of Isobutene capacity
    - Sold only if purchased at higher price that biofuel

Collaborations with industrialists

Since 2011
CRISTAL UNION
France's #2 sugar and ethanol producer
Shareholder and Partner in IBN-One JV

Since 2012
Audi
Leading German car manufacturer
Collaboration on 'e-gasoline' development

Since 2013
ARKEMA
France's #1 chemicals company
Collaboration on methacrylic acid

Since 2016
L'ORÉAL
World's #1 cosmetics company
Collaboration on cosmetic applications of Isobutene

Since 2016
SVEASKOG — Swedish #1 forestry company
preem — Swedish #1 oil company
SEKAB — Swedish Biorefinery
Collaboration on wood-derived biofuels

Since 2017
CLARIANT — Developer of Sunliquid® technology
INEOS — Leading IBN oligomers and petrochemicals producer
Collaboration on wheat straw to isobutene oligomers

Since 2016
ASPEN
Leader in specialty fuels
Commercial agreement on isooctane for small engines

Since 2017
Butagaz
Leading French gas provider
Commercial agreement on domestic gas applications

Applications tests underway at numerous industrialists including
ARLANXEO — World's #1 Butyl rubber manufacturer
CLARIANT — European leader in specialty chemicals

Global Bioenergies

Management team

Coordination Committee

Marc Delcourt
Chief Executive Officer

François-Henri Reynaud
Chief Financial Officer

Macha Anissimova
Chief Scientific Officer

Frédéric Pâques
Chief Operations Officer

Bernard Chaud
Head of Industrial Strategy

Jean-Baptiste Barbaroux
Head of Corporate Development

Vice presidents

Dr. Richard E. Bockrath
VP Chemical engineering

Former Technical Director at DuPont

Dr. Charles E. Nakamura
VP Metabolic engineering

25 years at DuPont
Received ACS award in 2007

Claudia Erning
VP Investor Relations

Former Head of ECM-Origination at Berenberg Bank

James Iademarco
VP Business Development

Former VP Bio-based chemicals at Royal DSM

Board of Directors

Board of Directors

John Pierce – Chairman of the Board

Leading American figure of the industrial biology sector, former Chief Bioscientist of BP

Marc Delcourt – Co-fonder and CEO

Entrepreneur with a scientific background. Has founded and managed industrial biotechs since 1997

Philippe Marlière – Co-founder and President of the SAB

Visionary scientist. Has pioneered the translation of biology into industrial applications

Sébastien Groyer – Partner at Seventure Partners

Has participated in the investment, administration, market launch or takeover of about 20 innovative companies

Karine Lignel – Director at CM-CIC Investissement

A trained engineer active in Venture Capital since 2000

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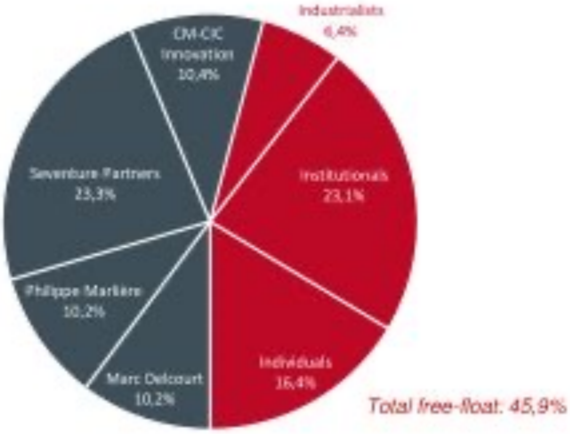
Shareholders and equity financing



Existing shares as at 02/05/17:	3 593 011
Dilutive instruments (stock-options, Bracknor…):	551 625
Fully diluted:	**4 144 636**

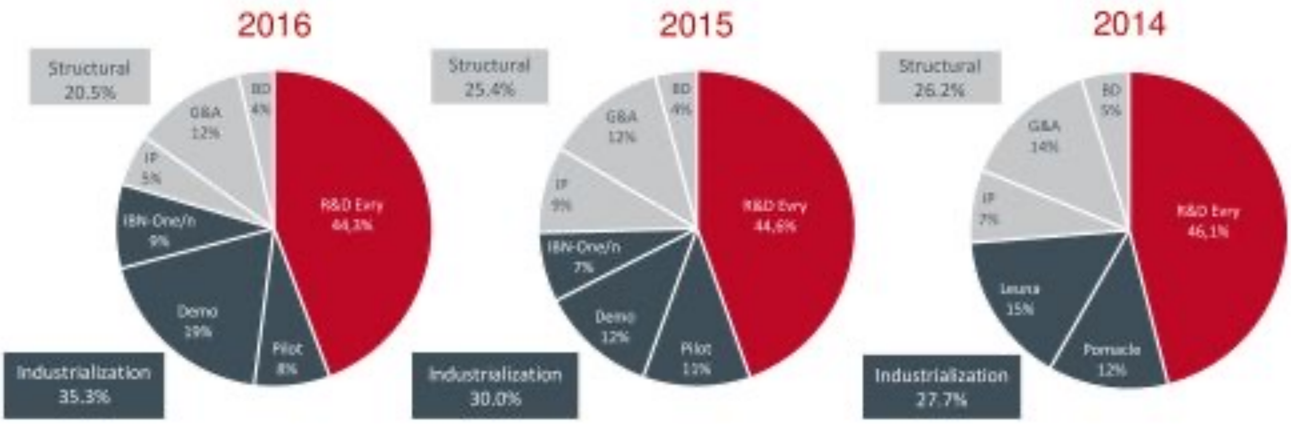
- **53 million euros raised to date**
- **2017: structured €11.2m equity deal with Dubai-based Bracknor**
- **Market cap ~€70m**

Group P&L

In € thousand - audited	01/01/16 to 31/12/16 12 months	01/01/15 to 31/12/15 12 months	01/01/14 to 31/12/14 12 months	01/01/13 to 31/12/13 12 months
Operating income	3,292	2,228	3,171	1,179
Operating expenses	15,216	14,240	12,672	7,885
Operating profit (loss)	-11,924	-12,013	-9,501	-6,706
Financial income	-530	-258	130	105
Exceptional profit (loss)	-50	-109	-83	-23
Income tax	-1,896	-1,985	-1,876	-1,413
Net profit (loss)	**-10,607**	**-10,395**	**-7,578**	**-5,211**

- Net loss stabilized in 2016

Group P&L



- Shift of focus of expenses towards industrialization

Group Balance Sheet

Assets (€ thousand)	31/12/16	31/12/15	31/12/14	31/12/13
Intangible assets	69	106	137	85
Assets	12,182	7,230	3,721	1,581
Financial assets	146	142	110	91
NON-CURRENT ASSETS	12,397	7,478	3,968	1,757
Inventories, receivables	5,074	4,313	4,922	2,021
Cash and equivalents	8,066	10,418	15,657	23,696
CURRENT ASSETS	13,140	14,731	20,579	25,716
TOTAL ASSETS	25,537	22,209	24,547	27,473

Liabilities (€ thousands)	31/12/16	31/12/15	31/12/14	31/12/13
Capital	168	142	139	138
Share Premium	49,409	37,817	36,009	34,945
Retained earnings	(30,066)	(19,665)	(12,087)	(6,877)
Profit (loss)	(10,607)	(10,395)	(7,578)	(5,211)
Equipment subsidies	391	0	0	0
EQUITY	9,295	7,899	16,483	22,996
PROVISIONS	42	30	29	19
Conditional advances and loans	11,483	10,440	4,162	2,456
Trade payables and related accounts	4,120	3,181	2,395	718
Other debts	597	660	1,479	1,284
PAYABLES	16,200	14,281	8,036	4,458
TOTAL LIABILITIES	25,537	22,209	24,547	27,473

- Cash in hand as at 31/12/16: €7.4m (audited)
- Investment in industrial assets (pilot and demo plants)

Group Cash-Flow

GROUP CASH-FLOW (€ thousands)	2016	2015	2014	2013
Operating cash-flow	(9,279)	(8,840)	(8,009)	(4,333)
Investing cash-flow	(6,120)	(4,488)	(2,798)	(785)
Financing cash-flow	12,676	7,873	2,720	22,523
Net cash-flow	(2,722)	(5,454)	(8,087)	17,404
Cash at start of the year	*10,153*	*15,608*	*23,695*	*6,291*
Cash at year-end	*7,431*	*10,153*	*15,608*	*23,695*

Figures above include accrued interest non yet due

Global Bioenergies

Market data

Financial analysts	
Gilbert Dupont *(Paris)*	Edison *(London)*
ODDO *(Paris)*	Baader *(Munich)*
Invest Securities *(Paris)*	

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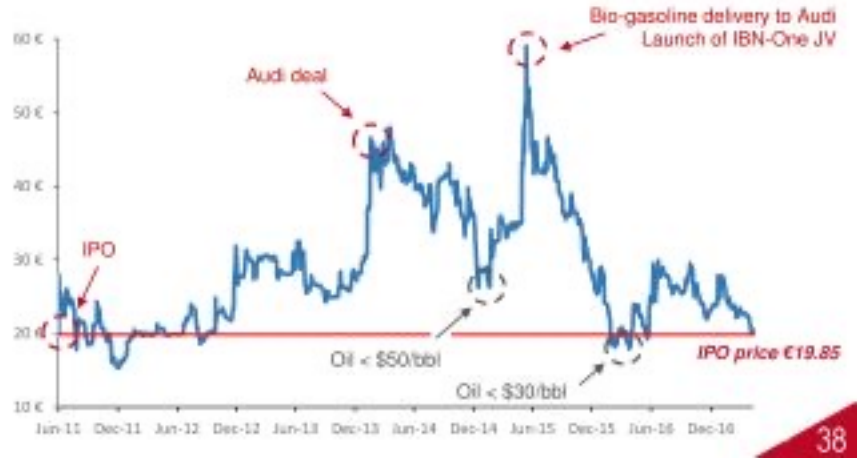
LISTED NYSE ALTERNEXT
FR 0011052257

ELIGIBLE PEA PME

ENTERNEXT TECH40

Average daily liquidity	
2012	€16 K
2013	€32 K
2014	€77 K
2015	€96 K
2016	€90 K
2017 YTD	€127 K



Global Bioenergies

An intense newsflow expected in the short term

1. Leuna Demo plant
   - Start-up of large scale production
   - Production of a first large batch of e-gasoline for Audi, first cars on the roads
   - Off-take from various industrialists
2. IBN-One
   - Financing to run the basic engineering phase
   - First off-take agreements
3. 2nd Generation: progress on collaborations and future perspectives
4. 3rd Generation: Successes at new subsidiary Syngip
5. Further commercial agreements with industrial leaders

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