Biomass: From waste and environmental problem to valuable products

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Fortum in 2017

Key figures 2017

Sales
EUR 4.5 bn

Comparable operating profit
EUR 0.8 bn

Balance sheet
EUR 22 bn

Personnel
8,800

Markets

Nordic countries

Power generation	45.4 TWh
Heat sales	4.3 TWh
Electricity customers	2.4 million

Poland

Power generation	0.5 TWh
Heat sales	3.7 TWh

Russia (PAO Fortum)

Power generation	26.3 TWh
Heat sales	19.8 TWh

Baltic countries

Power generation	0.7 TWh
Heat sales	1.4 TWh

India

Power generation	0.3 TWh

Fortum in India

- India is the first country Fortum has decided to enter in solar.
- The country offers one of the best solar resources and a sound government support for the development of the solar sector.
- India has set 100 GW capacity target for solar by 2022
- The country provides a good platform for Fortum to further develop its business in solar also elsewhere.
- Fortum seeks to allocate of its planned growth capital in the range of EUR 200–400 million in solar projects in India.
- Focus in large-scale greenfield development and large BtB customer projects to reach economies of scale.

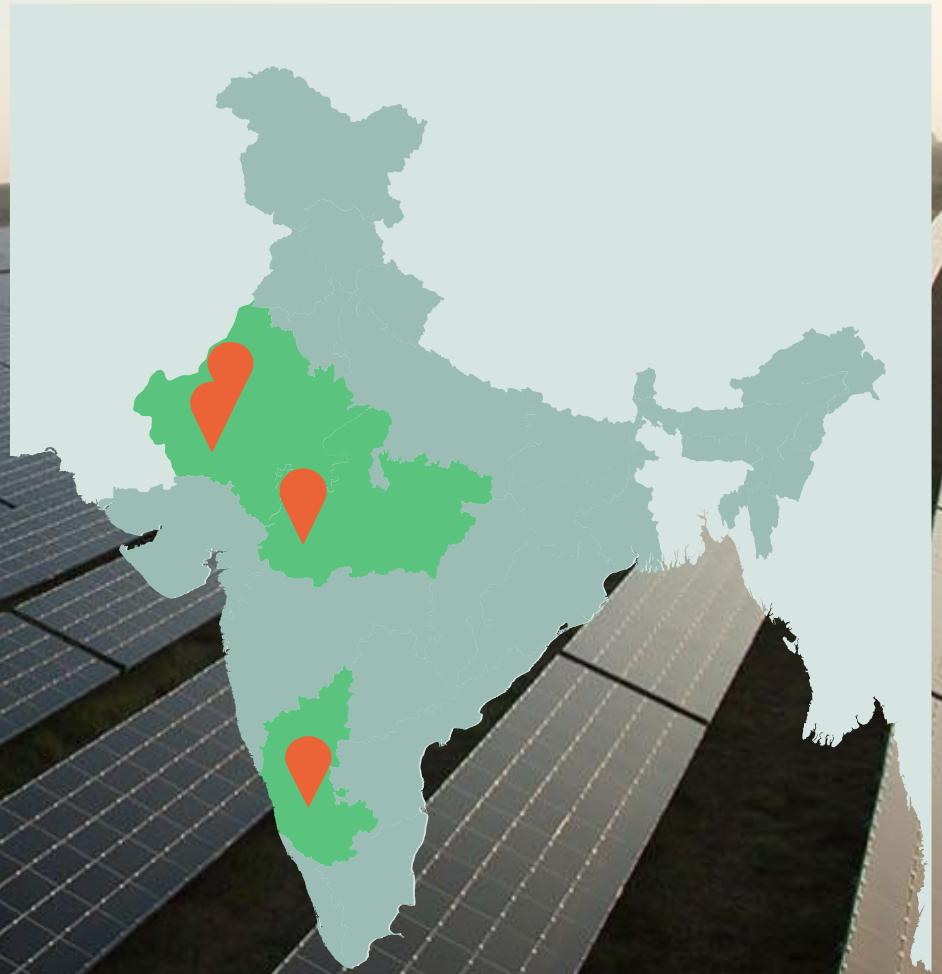
Our solar plants in India

5 MW Amrit solar plant, Rajasthan

10 MW solar plant in Kapeli, Madhya Pradesh and 70 MW Bhadla Solar park, Rajasthan

New investments

In June 2016 Fortum won a bid and NTPC will build up 100 MW solar plant at Pavagada solar park in Karnataka



Charge & Drive offers the most advanced EV charging business solution on the market.

CLOUD SERVICE

Business software for operating any smart charging network

TURN-KEY SOLUTION IN NORDIC HOME MARKETS

Comprehensive charging solutions for B2B & B2C

Fast facts

- Charge & Drive offers **simple & secure** EV charging solutions.
- Connected chargers in **16 countries**
- **1800 connected chargers**
  - of which **36%** are fast chargers
- **Market leader in Norway**, the frontrunner in the global EV market
- Turn-key installations, **proven charging business model**, Nordic public charging network
- **75 000+** unique registered users
- **60 000+** paid transactions per month
- Average **4 000** tagged & analyzed customer service calls per month
- Operations in **India** from 2017

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Solar2Go enables Off-grid Solar Potentially to Millions Through Open Innovation Project

We have teamed up with the software agency **Futurice** to embark on a new kind of cooperation that combines our expertise in solar energy and Futurice's expertise in software design. Piloting on-going in India with local partners.

(The image is from TRINE and our cooperation on a solar power project in Sidonge, Kenya).

Fortum Bio2X

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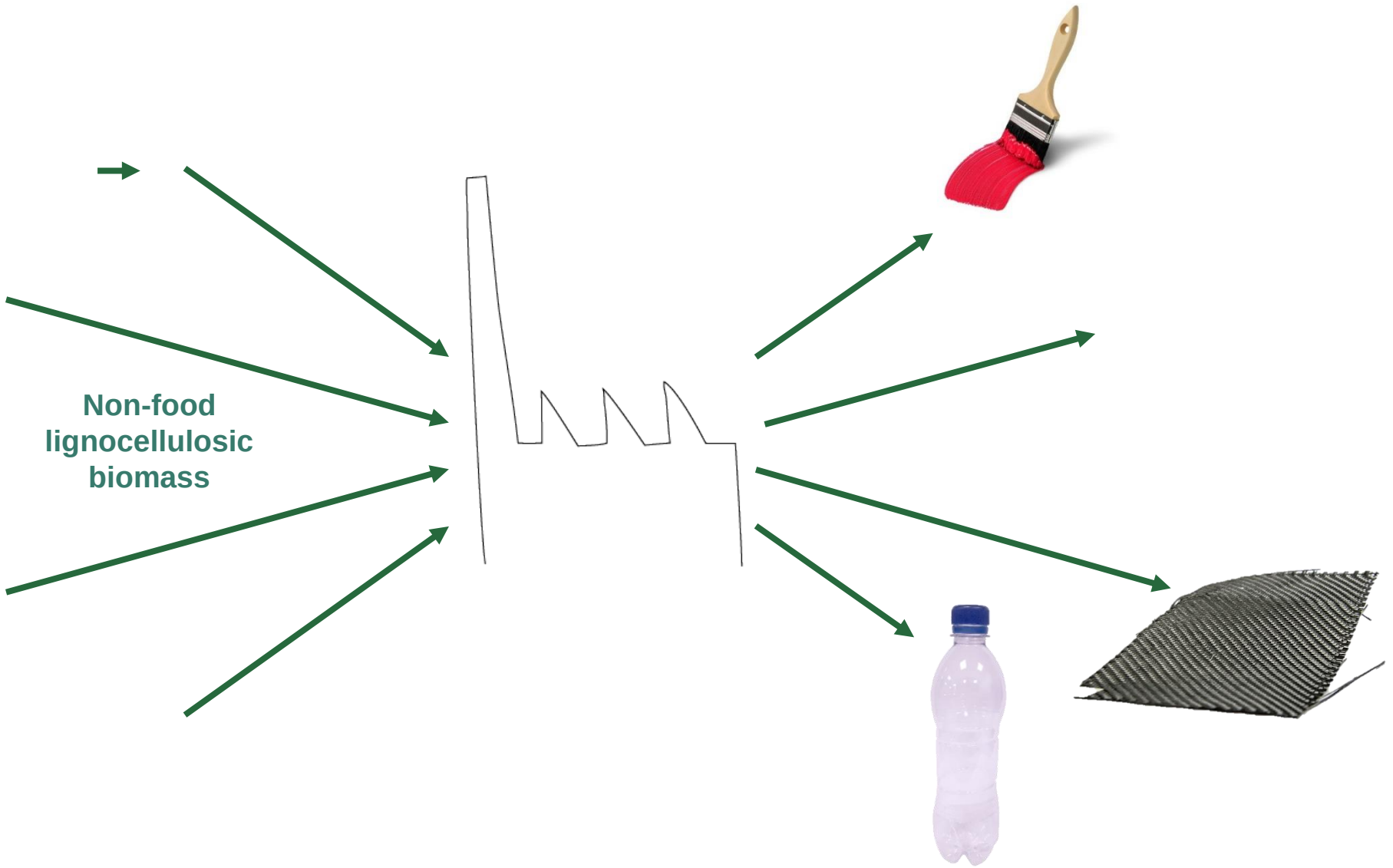
WE WORK FOR BIOWENDE

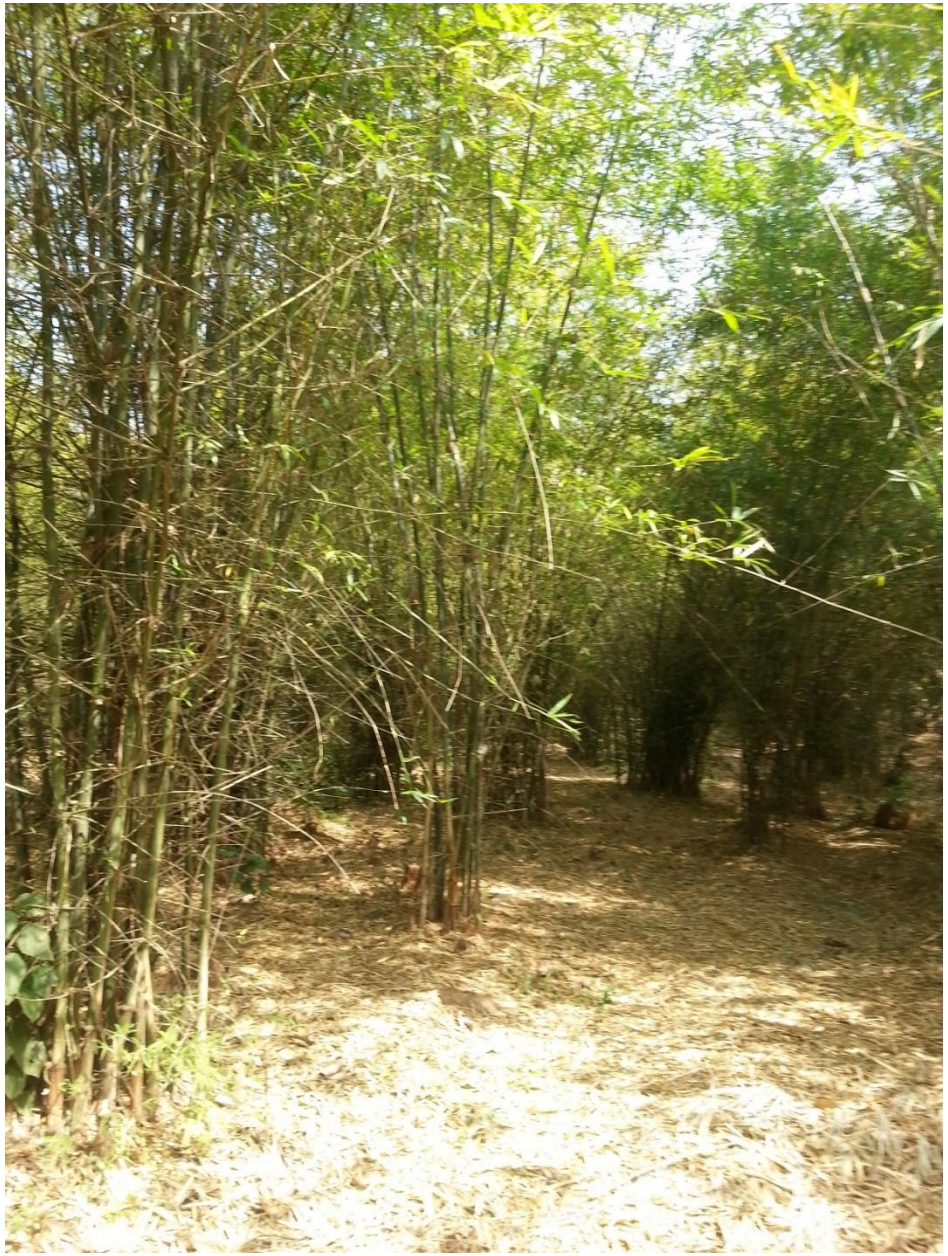
Can we disrupt fossil-based industry in similar way as solar and wind technology development is disrupting energy?


Non-food
lignocellulosic
biomass

This is Biowende!

Biomass fractioning will disrupt fossil-based industry in similar way as solar and wind technology development is disrupting power markets:

- New sources and flexibility of raw materials e.g. straw and bamboo are especially sustainable
- Raw material availability and new technology processes are driving bio-refineries sizes into smaller and decentralizing locationing
- Possibility to replace fossil raw materials in huge variety of products
- Purity of intermediate products (cellulose, lignin and hemi-cellulose) enables cost-effective production of end-products
- Flexibility of end-products
- Sustainable textile fibres



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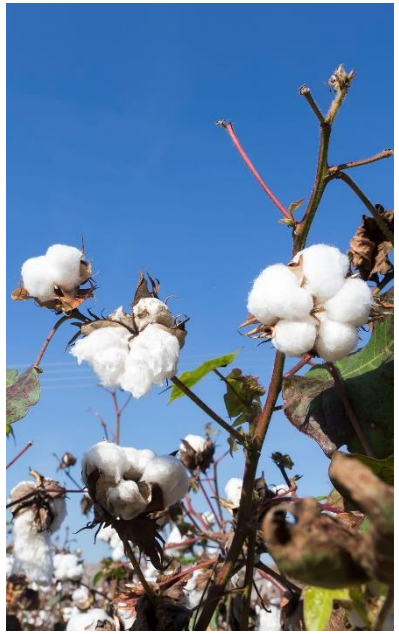
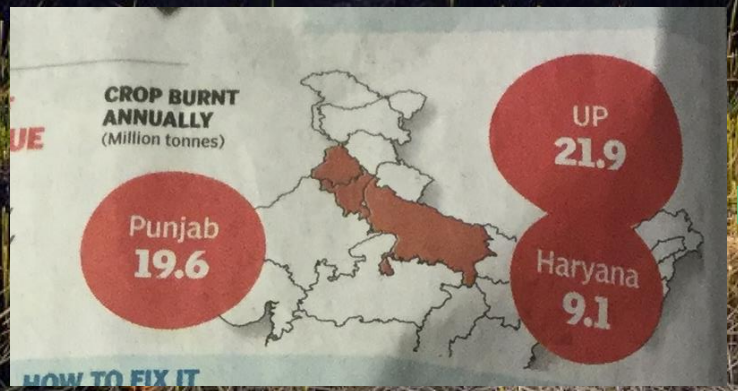
If cotton field is replaced with wheat and 30% of wheat straw is utilised, we get the same amount of yarn and in wheat fields also grains with technologies we are evaluating.



India - Breathing in Delhi air equivalent to smoking 44 cigarettes a day



100 Biorefinerys

Could replace over 50 % of global cotton production

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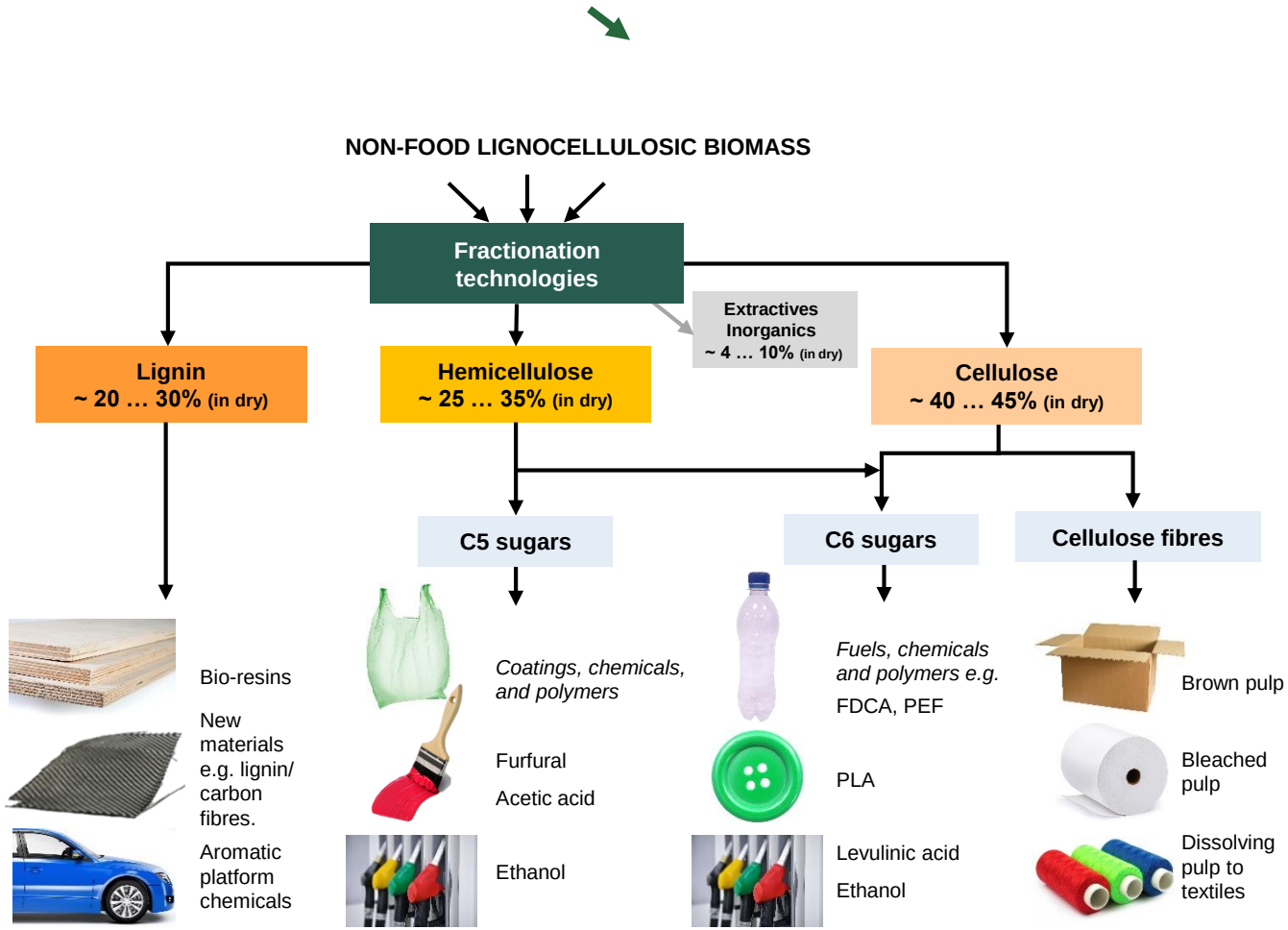
Fortum´s Bio2X turning Biowende into feasible business

- Raw materials
  - First phase: Wood biomass, Bamboo
  - Next step: Flexibility of raw materials
- Technology to fractionate biomass to its ”building blocks”
  - Investment in Chempolis
  - Evaluating other technologies
- Understanding consumer markets, trends
- Collaboration with brand owners
  - Several business model alternatives



Join the change!
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