

The logo for LXP GROUP, featuring the letters 'LXP' in a bold, dark blue font with a green 'X', followed by the word 'GROUP' in a dark blue, sans-serif font. The background is a low-angle shot of a dense forest of green trees against a clear blue sky.

LXP GROUP

The title text 'The Future of 2G Bioconversion' is centered within a white circular graphic. The text is in a bold, orange, sans-serif font. The background of the slide is a low-angle shot of a dense forest of green trees against a clear blue sky.

**The Future of
2G Bioconversion**

WHY [Our Mission]

We have a solution.

LXP Group was founded in 2012 with the intention to develop a technology that makes a broad range of biomasses available for 2G bioconversion:

THE LXP TECHNOLOGY

- > unlocks the potential of 2G biomass that is currently considered waste
- > enables the production of LXP Cellulose and LXP Lignin which can be processed into biofuels, and biochemicals
- > which can serve as sustainable drop-in replacements for fossil fuels and petrochemicals



Demonstration Plant
in Aholfing (500 tpa)

WHY [Status Quo]

We have a problem.

13 billion tons of forestry and agricultural biomass worldwide

Animal Feed

Food

Industrial Products

Energy

7 billion tons of highly valuable 2G biomass are not or insufficiently utilized every year

Food vs. Fuel conflict - 1G biofuels compete with food supply

Energy and Fuel are mainly obtained from **fossil raw materials**

State-of-the-art „green“ Bioethanol and Biomethane are **not sustainable**

Opportunity for 2G biofuels and biomaterials

WHY [Status Quo]

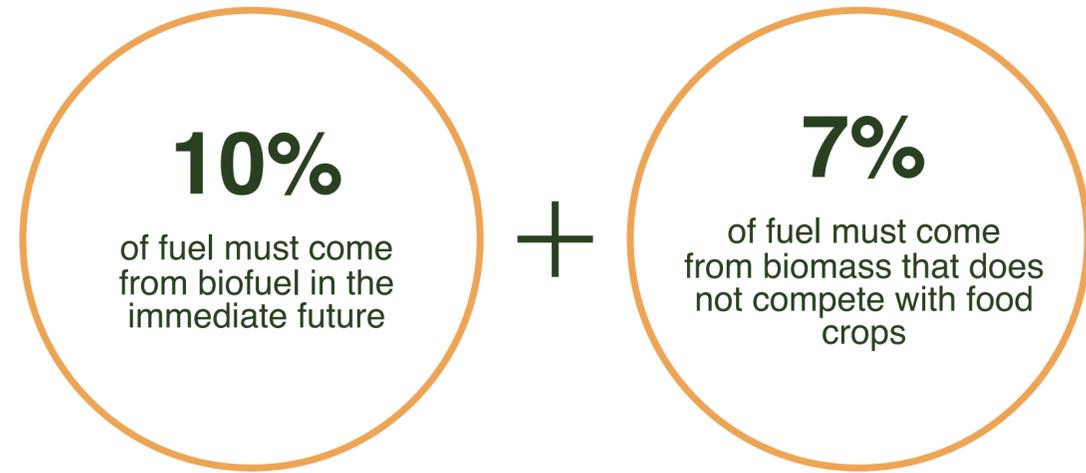
We have a problem.

To achieve the emission reduction goals laid out in the Renewable Energy Directive 21 (RED2), EC proposals estimate, that the minimum amount of renewable energy used in the transport sector in the EU must be 14%.

This demands that at least **10% of fuel must come from biofuel in the immediate future.**

To secure food supply in the EU, biofuel from food crops can make up only 7% of the final energy consumption in the transport sector in EU member states. Therefore, an equivalent percentage of **7% of biofuel must come from biomass that does not compete with food crops.**

Lignocellulose prevents the effective processing of 50% of available biomass. This means, with current technology, biogas plants are able to process only half of the available biomass, while the other **50% of biomass are currently burned or go to landfill which releases CO2 back into the air.**

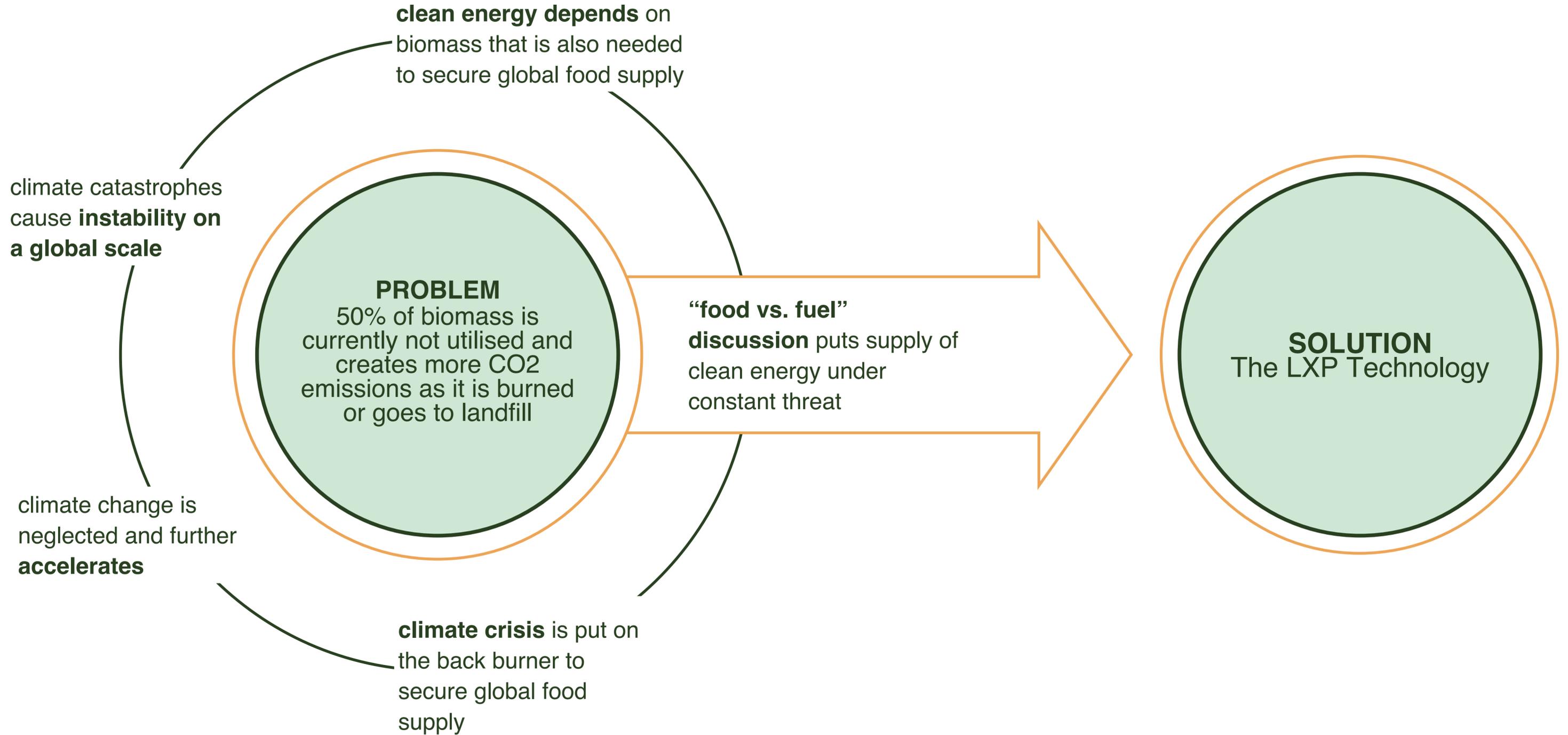


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OPPORTUNITY FOR LXP GROUP

WHY [Status Quo]

We have a solution.



WHAT [Our Solution]

The Green Energy Solution



2G Biomass

e.g. agricultural and forestry residues



LXP Plant + Technology

Makes Lignocellulosic 2G biomass that currently goes to waste viable for second-generation (2G) bioconversion in biogas and bioethanol plants.



LXP Cellulose ©

Processed into biomethane, sugar, bioethanol and (2G) biochemicals for the production of advanced, 2G (low-carbon) biofuels for transport and industry it can replace fossil fuels.



LXP Lignin ©

Sulfur free and with a purity degree of over 90%, it can be used to replace chemicals in cosmetics, carbon fibre, adhesives, flavourings or 3D printer ink.

WHAT [Our Solution]

The Green Energy Solution

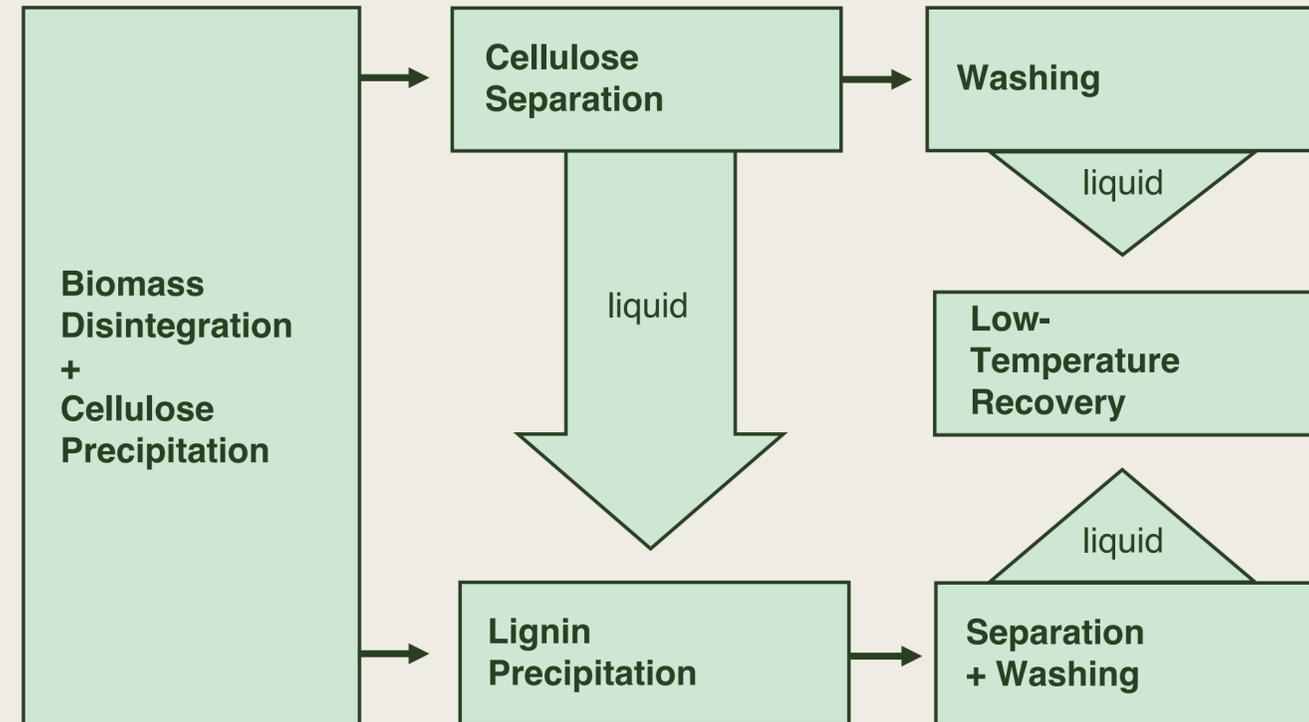
2G Biomass

7 billion tons
available per year



LXP Technology

LXP-Plant connected to
biofuel plants / bio-refineries



LXP Products

LXP Lignin
LXP Cellulose



Revenue Streams & Markets

Disruption of the petrochemical
market



LXP Cellulose

LXP Cellulose can be used directly in biogas plants to generate energy or also **converted into higher-grade chemical products** such as sugar, its chemical derivatives or bioethanol.



OPPORTUNITY

- + LXP cellulose is amorphous in structure which reduces the retention time for biogas plants
- + Free of toxic inhibitors for enzymatic processes into sugar and other biochemical products

CHALLENGE

- + collection of the raw material can be difficult
- + changing the value chain from fossil-based to natural, biochemical products

LXP Lignin

LXP Lignin is an **additional product of LXP Plants**. It is sulfur-free with an unparalleled purity degree of over 90%.

While there are other methods to produce some form of lignin, **no other method** properly preserves the natural fibre structure or **creates nearly the same level of purity** compared to LXP Lignin.



OPPORTUNITY

- + replacement for fossil chemicals and components in cosmetics, carbon fibre, adhesives, flavourings or 3D printer ink
- + provides a new standard for the highly valued, emerging lignin market

CHALLENGE

- + high-purity Lignin currently doesn't exist in the market, there are only markets for low-quality lignin
- + impact and full potential to replace various chemicals in industrial production is yet to be determined and requires further research

WHAT [Our Products]

LXP Technology + Plant

Pre-treatment with the **LXP Technology** enables an **increase of biogas yield from biomass waste** between 30% and 400%, depending on the feedstock type, and makes **biomass waste viable for second-generation (2G) bioconversion**.

- > patent protected
- > tested at LXP Lab & Demo Plant
- > independently verified by Fresenius Institute



OPPORTUNITY

- + extends the economic lifetime of existing biogas plants
- + has the potential to turn the production of 2G biofuel into a zero-emission business

CHALLENGE

- + collection of the raw material can be difficult
- + market is inflexible and needs to be convinced

WHO

Our Approach

We believe, that reaching the necessary reduction in CO2 emissions that we need can only be achieved through a collaborative effort.

Rather than making a one-time sell, our business model is based on healthy competition as well as collaborative, long-lasting business relationships with customers and partners alike, because we are all working towards the same goals:



WHERE

LXP Revenue Streams

PRIMARY REVENUE STREAM

LXP Plant Planning + Licensing of LXP Technology



2G Biomass

e.g. agricultural and forestry residues



LXP Plant + Technology

Makes Lignocellulosic 2G biomass that currently goes to waste viable for second-generation (2G) bioconversion in biogas and bioethanol plants.

SECONDARY REVENUE STREAM 1

Royalties on production + usage of LXP Cellulose

LXP Cellulose ©

Processed into biomethane, sugar, bioethanol and (2G) biochemicals for the production of advanced, 2G (low-carbon) biofuels for transport and industry it can replace fossil fuels.

Target Group

Biogas & Ethanol Plants

SECONDARY REVENUE STREAM 2

Buyback + selling of LXP Lignin

LXP Lignin ©

Sulfur free and with a purity degree of over 90%, it can be used to replace chemicals in cosmetics, carbon fibre, adhesives, flavourings or 3D printer ink.

Target Group

Production Companies

WHEN Agenda



2025 ESTABLISH

3 commercially usable LXP plants

Target Group
Biogas Plants

_ 150.000 tons of cellulose per year

_ saving 162.000 million tons of CO2-eq per year



equivalent to
402.983 cars
OFF THE ROAD

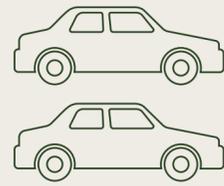
2030 SCALE

8 commercially usable LXP plants

Target Group
Bioethanol Plants

_ 1.104 million tons of cellulose per year

_ saving 1.194 million tons of CO2-eq per year



equivalent to
2.970.127 cars
OFF THE ROAD

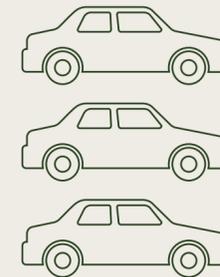
2050 EXPAND

Complete shift to advanced 2G biofuels within the EU

Target Group
Biogas & Bioethanol Plants

_ 12.5 million tons of cellulose per year

_ saving 22 million tons of CO2-eq per year



equivalent to
54.752.959 cars
OFF THE ROAD

Replacing 3% of fossil fuel in the EU with 2G biofuel



LXP GROUP

The Green Energy Solution

Let's talk.