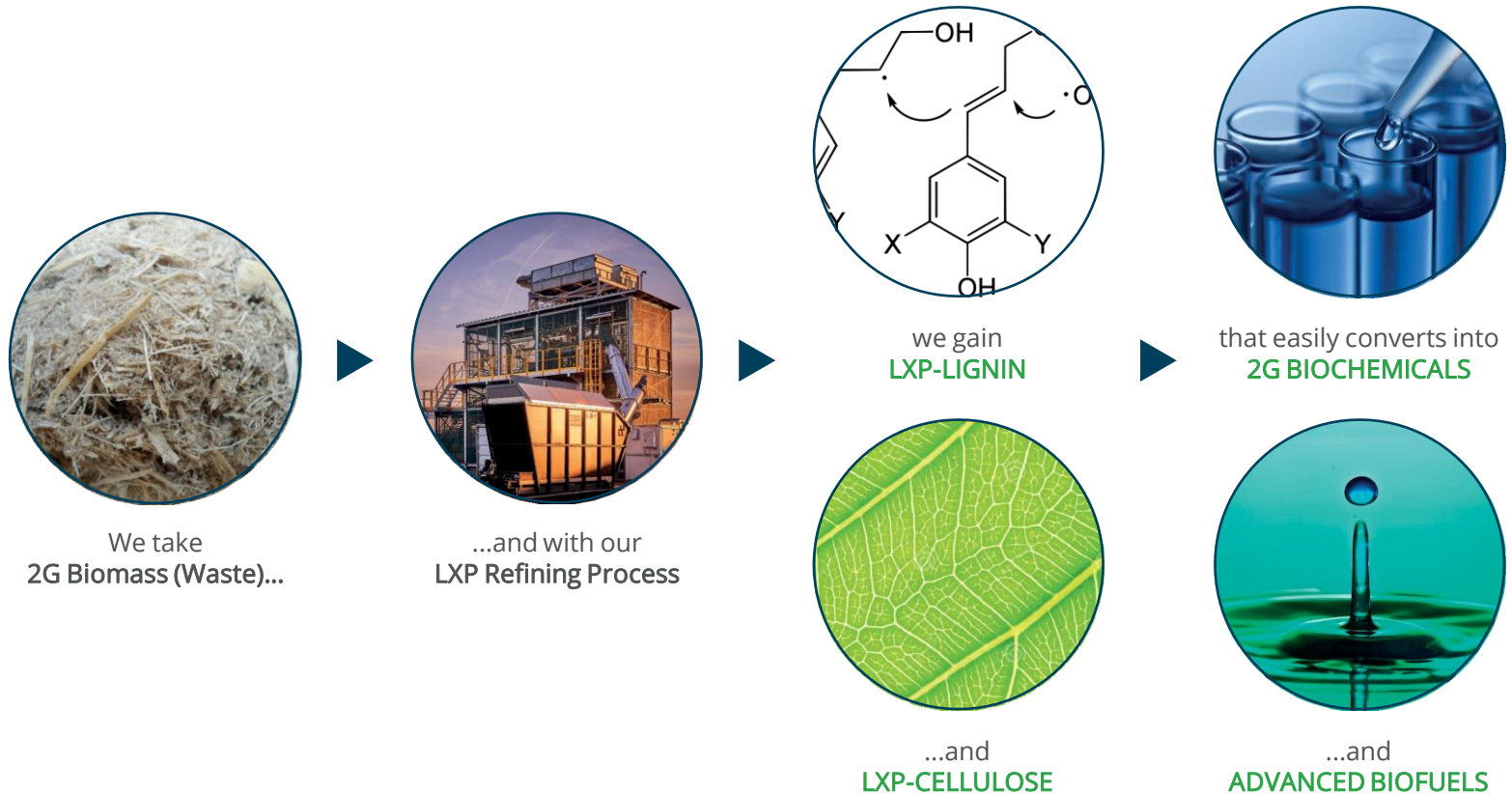




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- THE PROBLEM
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- OUR HIDDEN USP – THE LXP LIGNIN
- LIGNIN MARKET

Unlocking the potential of 2G biomass for more efficient, more sustainable biofuel and biochemical production



Our propriety process 'gently' cracks 2G biomass to produce cellulose and natural lignin for processing into disruptive drop-in chemical replacements and advanced biofuels.

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FACTS AND FIGURES

Foundation: 2012

Headquarter: Teltow (by Berlin), Germany

Executive team: Dr. Volker Bauer (CEO)
Zino Soyka (CSO)

Employees: 9 employees

Industry focus: Energy and Chemistry sector with focus on sustain and CO2 neutral production.

PRODUCTS



LXP
PLANT



LXP
LIGNIN



LXP
CELLULOSE

49 patents

SHAREHOLDER AND INVESTORS



Pool of Business Angels

COMPANY PARTNERS



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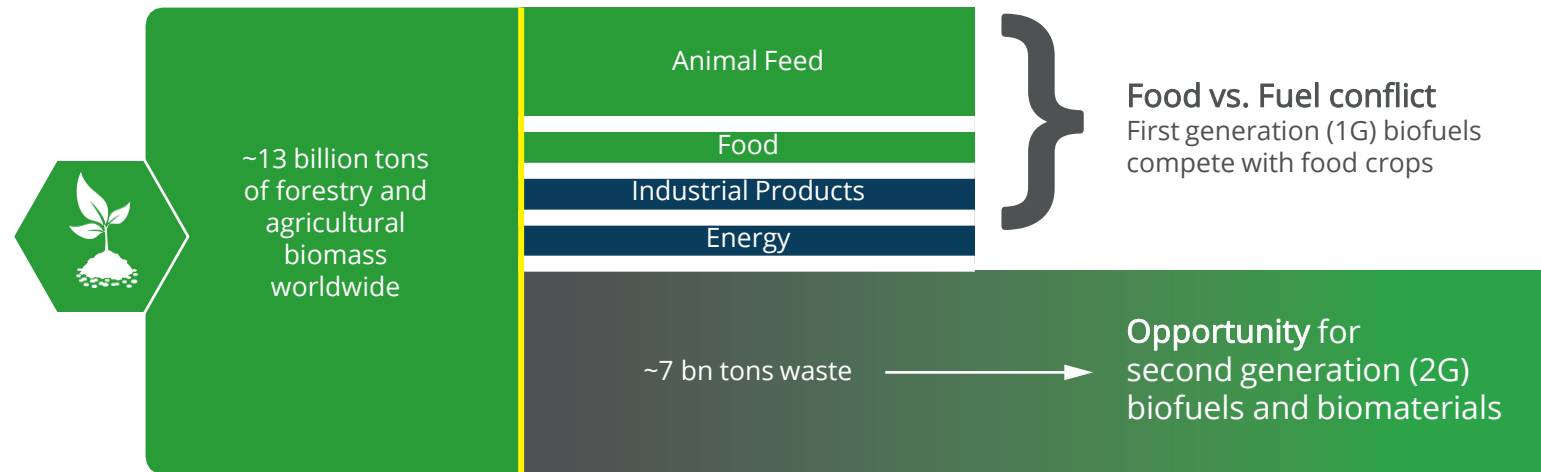
PROPRIETARY TECHNOLOGY 5

PROPRIETARY TECHNOLOGY 6

OUR HIDDEN USP – THE LXP LIGNIN

LIGNIN MARKET

Today 7 billion tons of highly valued biomass are not or insufficiently utilized every year



Energy and Fuel
are mainly obtained from
fossil raw materials

The CO2 emission from fossil fuel and energy is around 37 bn tonnes every year while energy and fuel from 2G raw material is still not commonly established.

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

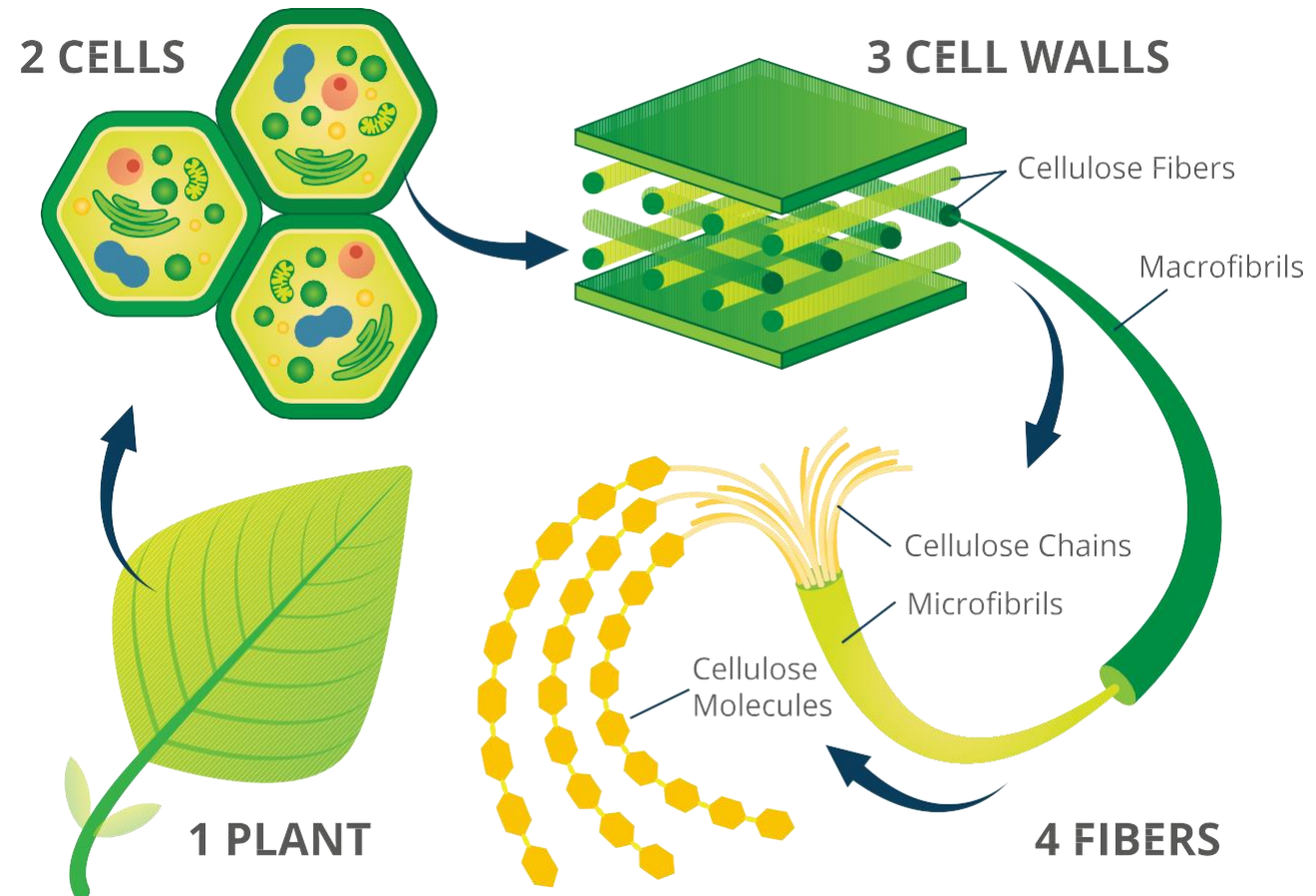
Currently 1G raw materials are used for the production of bioethanol and biomethane. Hereby, energy crops planted on agricultural land and thus these areas are blocked for food production.

2G
raw materials keep
unutilized

Raw materials such as green-cut, bagasse, empty fruit bunches, straw or wood waste contain valuable cellulose and natural lignin are currently wasted or discarded

LXP-LIGNIN

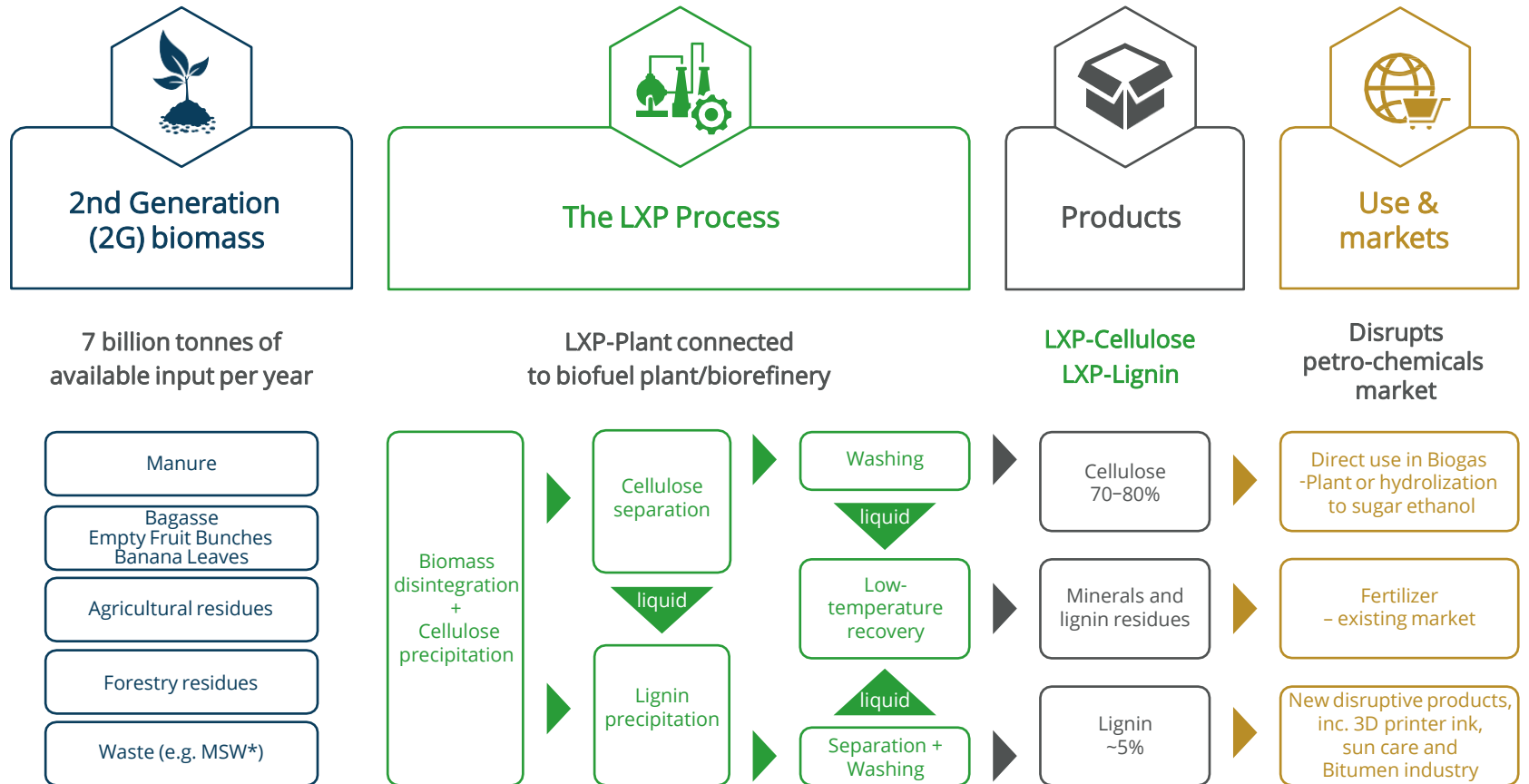
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LXP converts biomass waste residues to high value-added biofuels and bio-based chemicals.


We have developed and patented (49 patents) a proprietary technology that “gently” dissolves the structural bonds of 2G biomass, making available the main components cellulose, hemicellulose (both complex sugars) and natural lignin.




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- 2G Rohstoffe – Strauchschnitt, Grünschnitt, Stroh.....
- 25% geringere Verweilzeit in der Biogasanlage erf.
- Substratkosten 0-10€/t
- Lignin-Verkauf



- Lignin: Substitut für Kunststoffe, Einsatz Klebstoffe
- Cellulose zu Zucker ermöglicht neue Nutzung
- High value



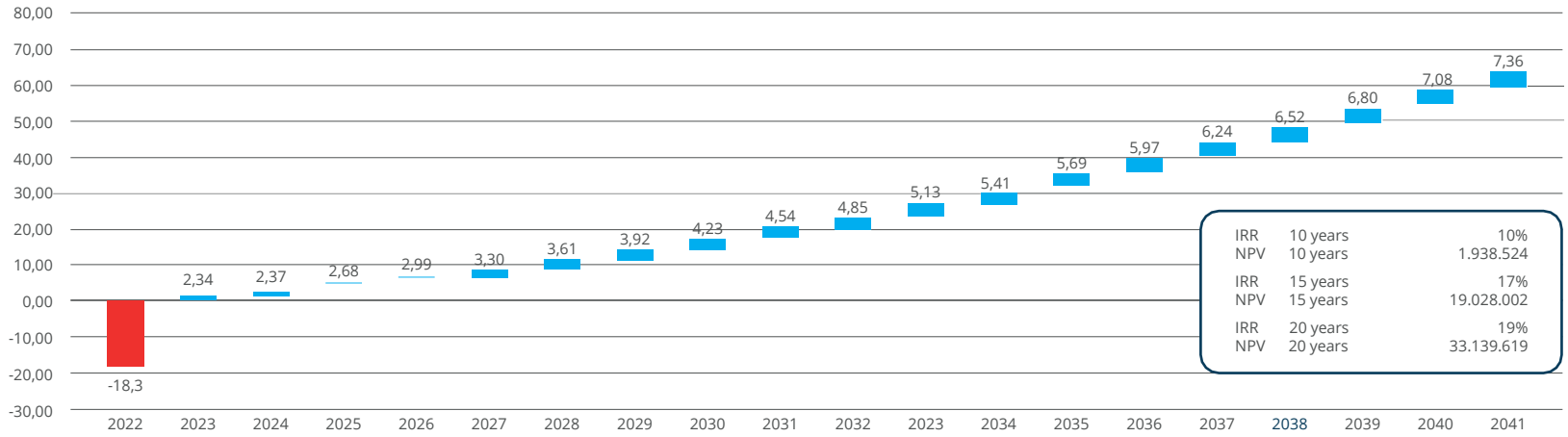
2G BIOETHANOL (long-term)

- We provide the ability to increase 2G bioethanol production to fulfill REDII requirements

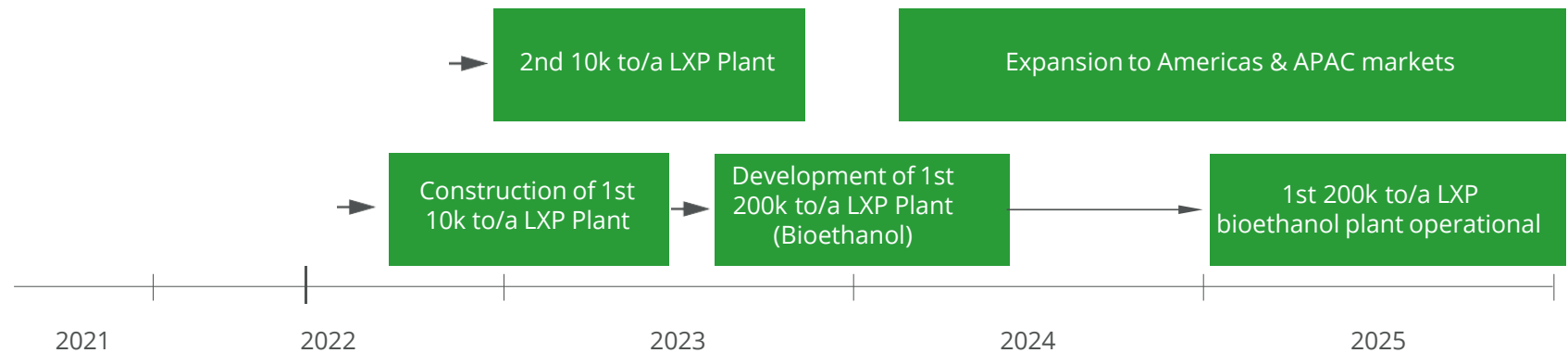
IDENTICAL BIOMETHANE PRODUCTION

CONVENTIONAL BIOGAS PLANT		BIOGAS PLANT + LXP PLANT + LIGNIN BENEFIT
<div>Corn silage (33k tons)</div> <div>Cattle manure (13.3k tons)</div> <div>Poultry manure (8.6k tons)</div> <div>Grass silage (0.5k tons)</div>	VS	<div>Green cut (23.5k tons)</div> <div>Softwood (10k tons)</div> <div>Christmas trees (4.1k tons)</div>
0,032€ per kwh raw material cost		-0,02€ per kwh raw material cost

CASH-FLOW OF ONE LXP PLANT (10000 to/a) IN MIO €

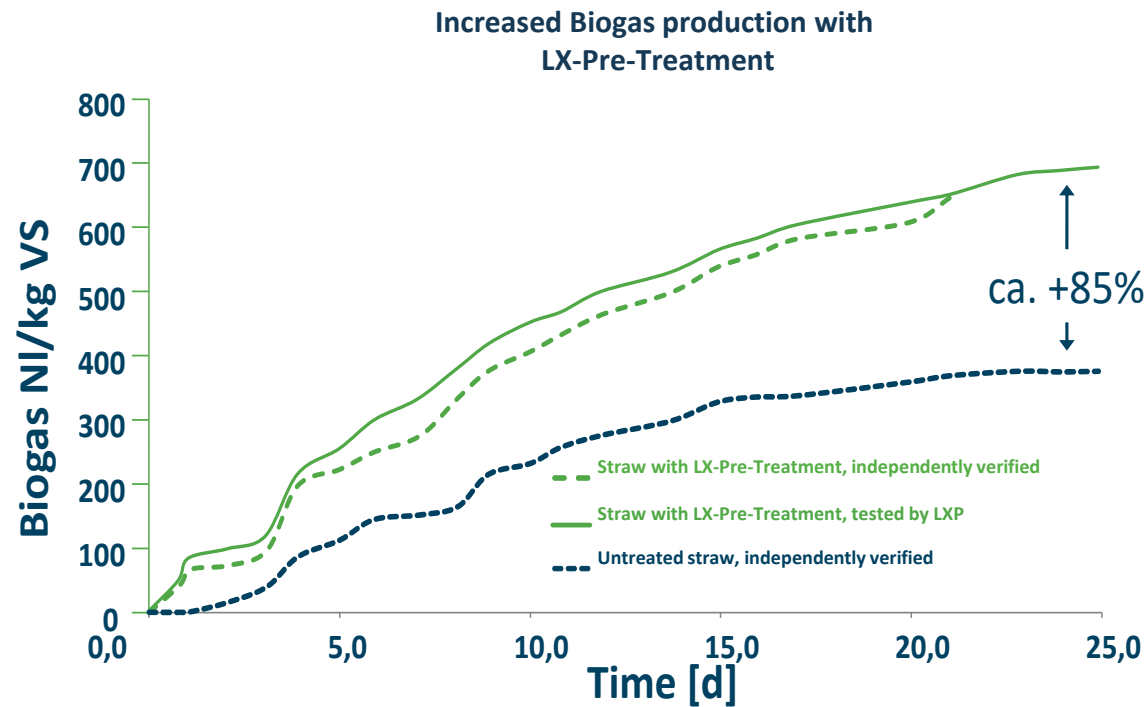


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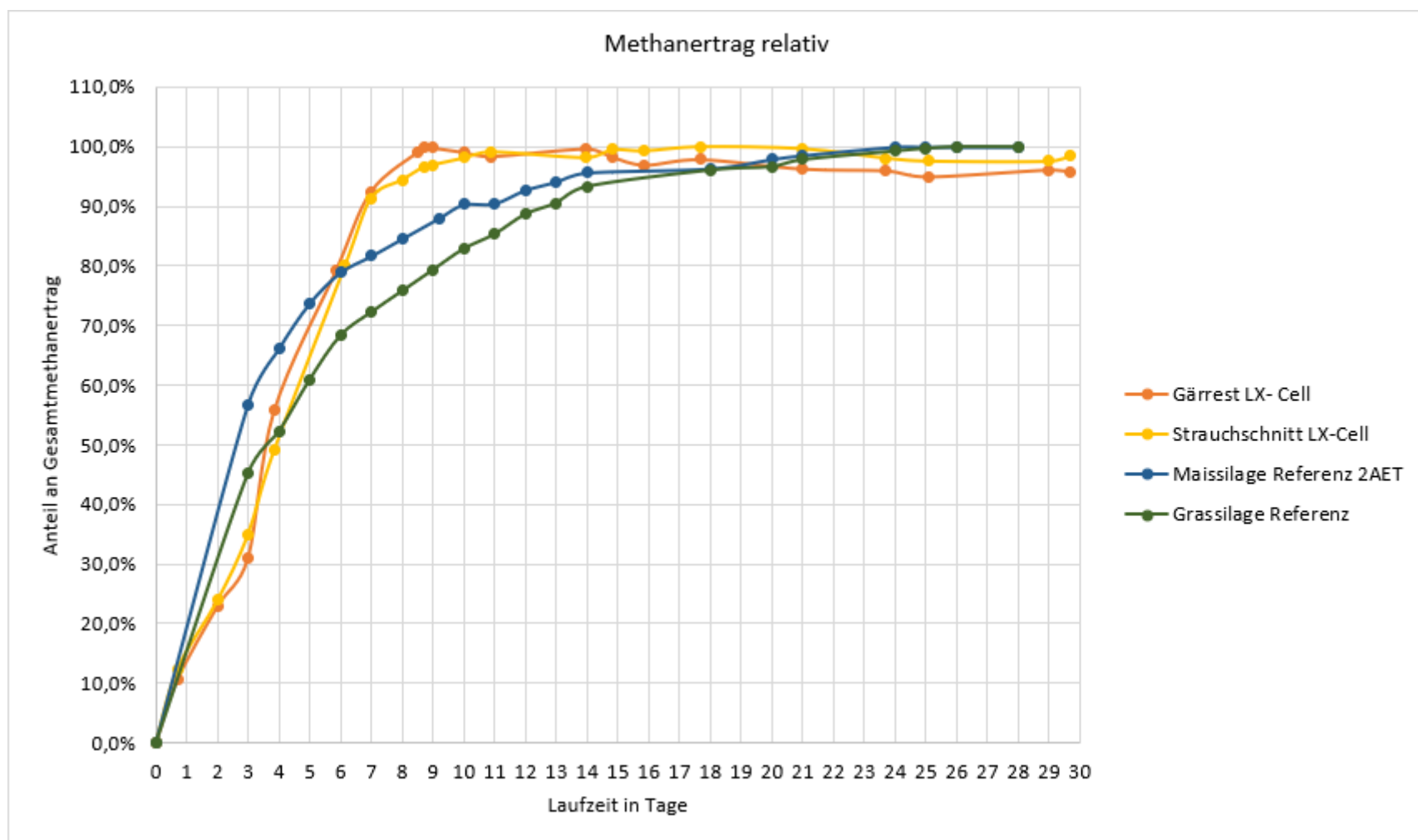




Warum 2G Biogas ?



Aufschluss der mit LXP
zusätzlich freigesetzten
Cellulose



Comparison of Lignin produced from different treatment methods

Alternative methods that crack lignocellulose also produce some form of lignin, however, no other preserve the aromatic compounds present in natural lignin (Figure 6).

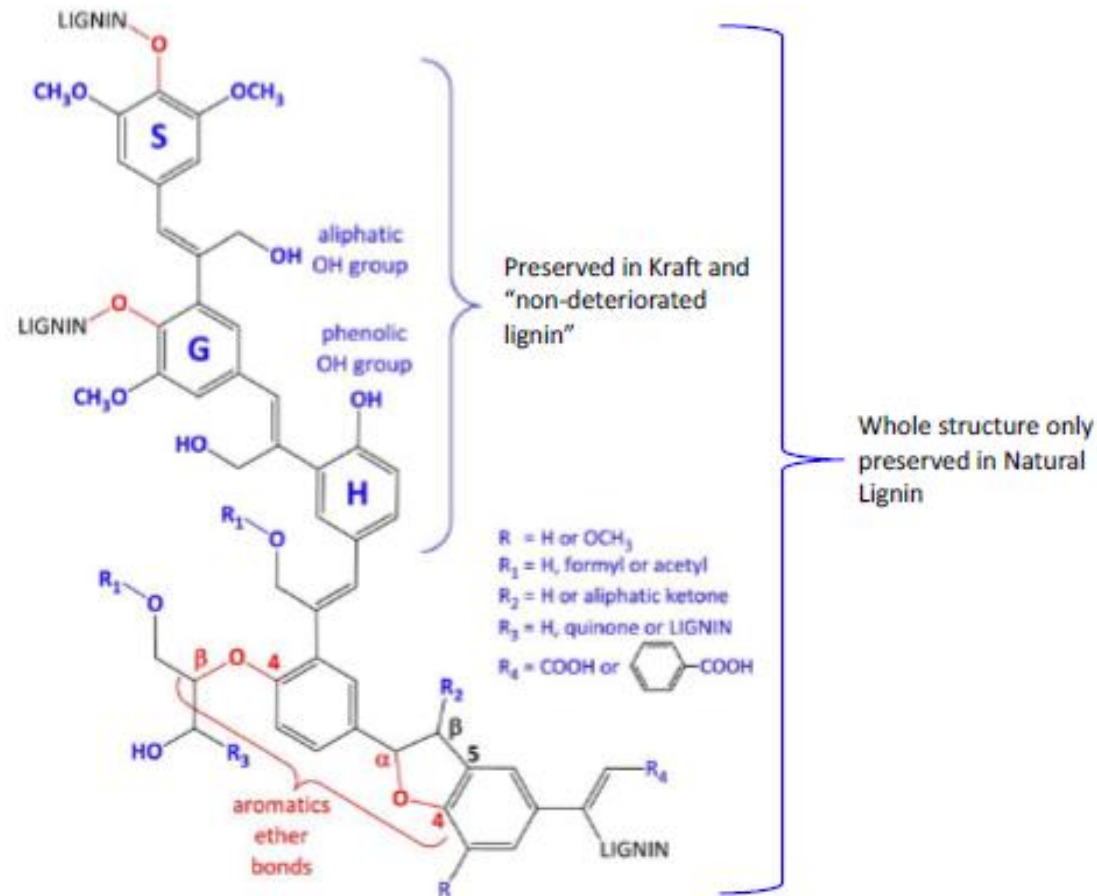


Figure 6: Chemical structure of lignin and preservation of the aromatic compounds

No other method creates the same level of purity in their lignin in terms of sulphur purity or lower molecular weight. Both of these factors directly correlate with how easily the lignin is incorporated into polymers. (Table 1)



3. Addressable Markets: Natural Lignin

Product diversification with Natural Lignin

Sun Care



LXP's natural lignin is perfect for sun care products. "The global sun care market is poised to expand to \$24.9 bn by 2024."

3D Printer Ink



More than half a million 3D printer sold last year. "The 3D printing market will be worth \$22 billion in 2028."

Vanillin



The natural and unchanged lignin out of the LX process is perfect for the production of vanillin.

Adhesives



"Global bio-adhesives market expected to reach \$2.55 bn by 2022."

High margin markets for natural lignin!

Sources: Forbes Wohlers Report 2018, Transparency Market Research, Bio-based News

CONTACT

Thank You for you attention!

You like to know more and get further Information?
Don't hesitate and get in touch -
we are happy about your feedback.



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