

Pilot-SBG

New value for biofuels – Monetizing low emissions exemplified by biomethane

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EUBCE, June 26, 2024 | Session 3 CO.9 Valorisation in biobased value chains

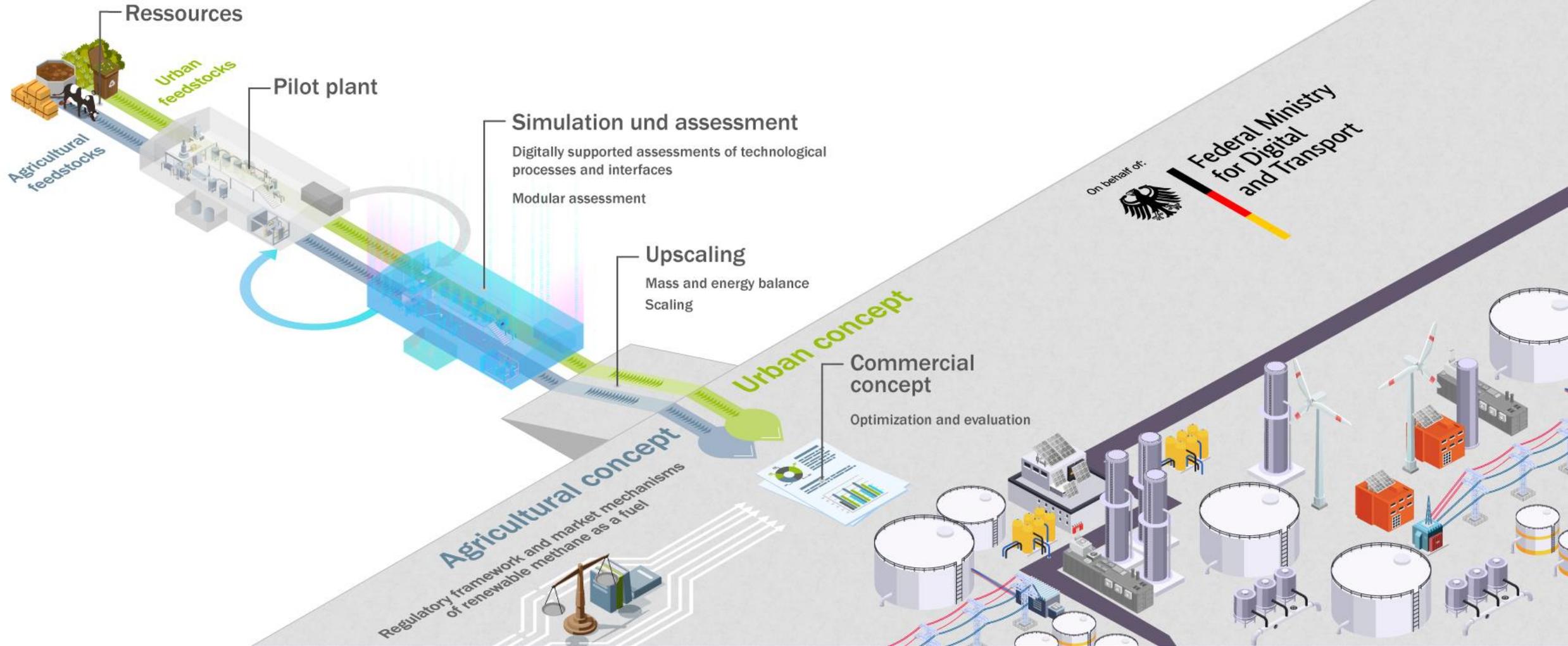
On behalf of:



Federal Ministry
for Digital
and Transport

Pilot-SBG

Scope & Motivation



Scope & Motivation



Climate-friendly,
renewable methane as a
fuel

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Innovative process
concept following a
zero waste approach

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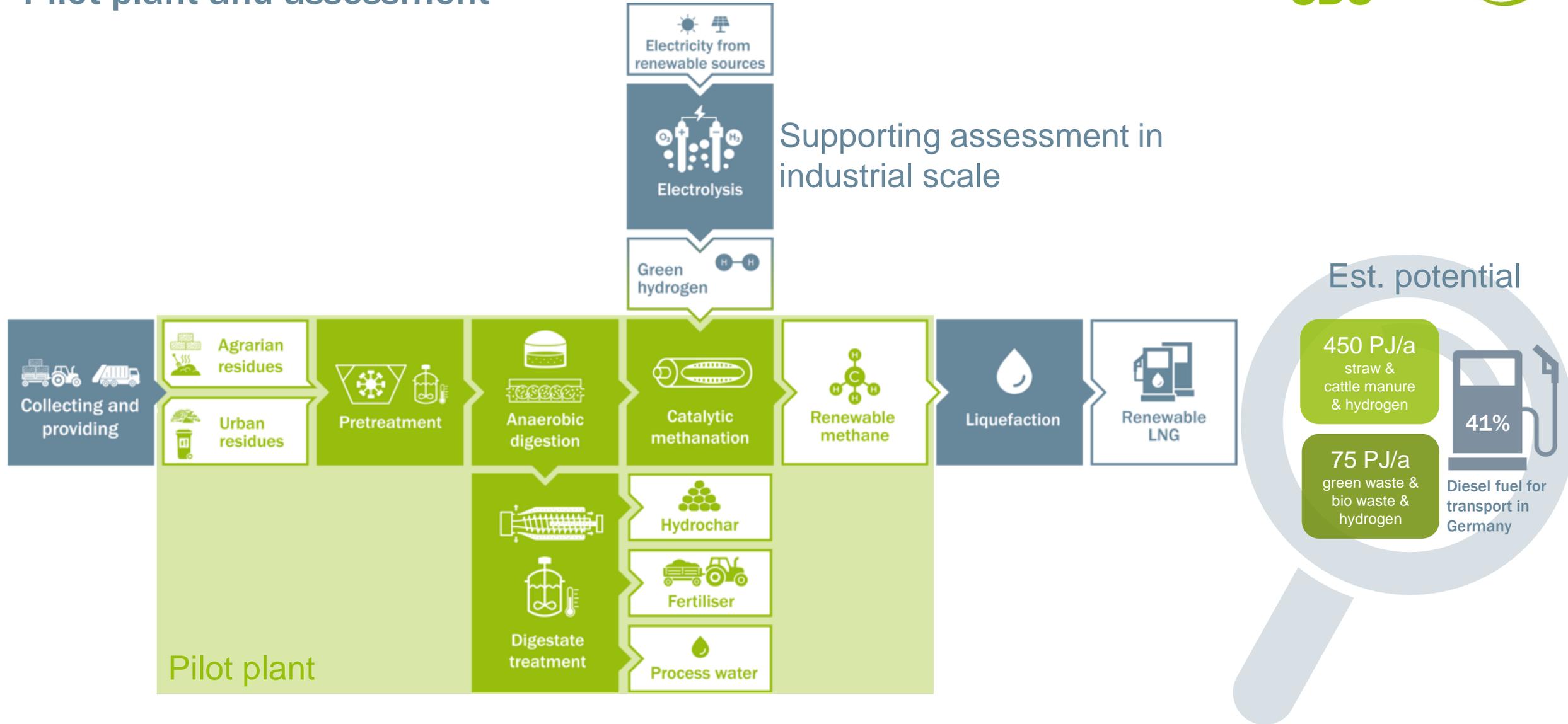
Utilization of **residues and
waste materials** for advanced
fuels production

+



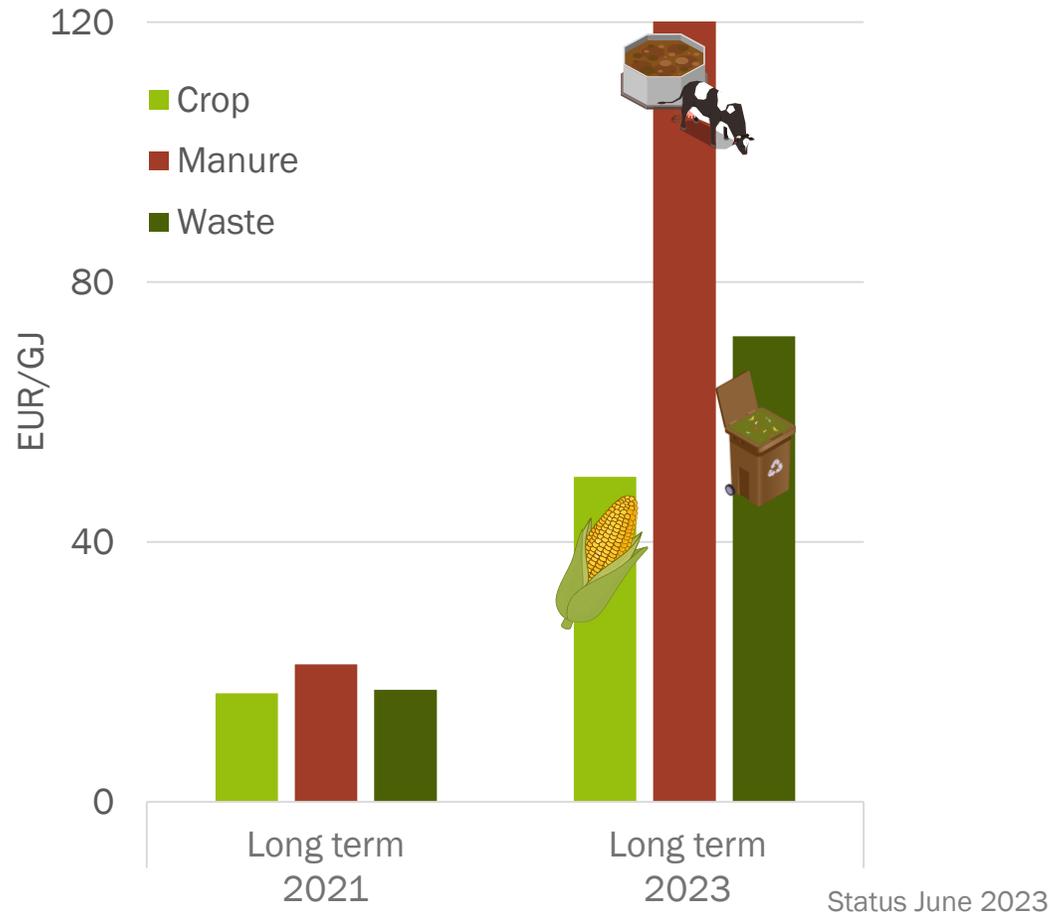
Integration of **electricity
& green hydrogen**

Pilot plant and assessment



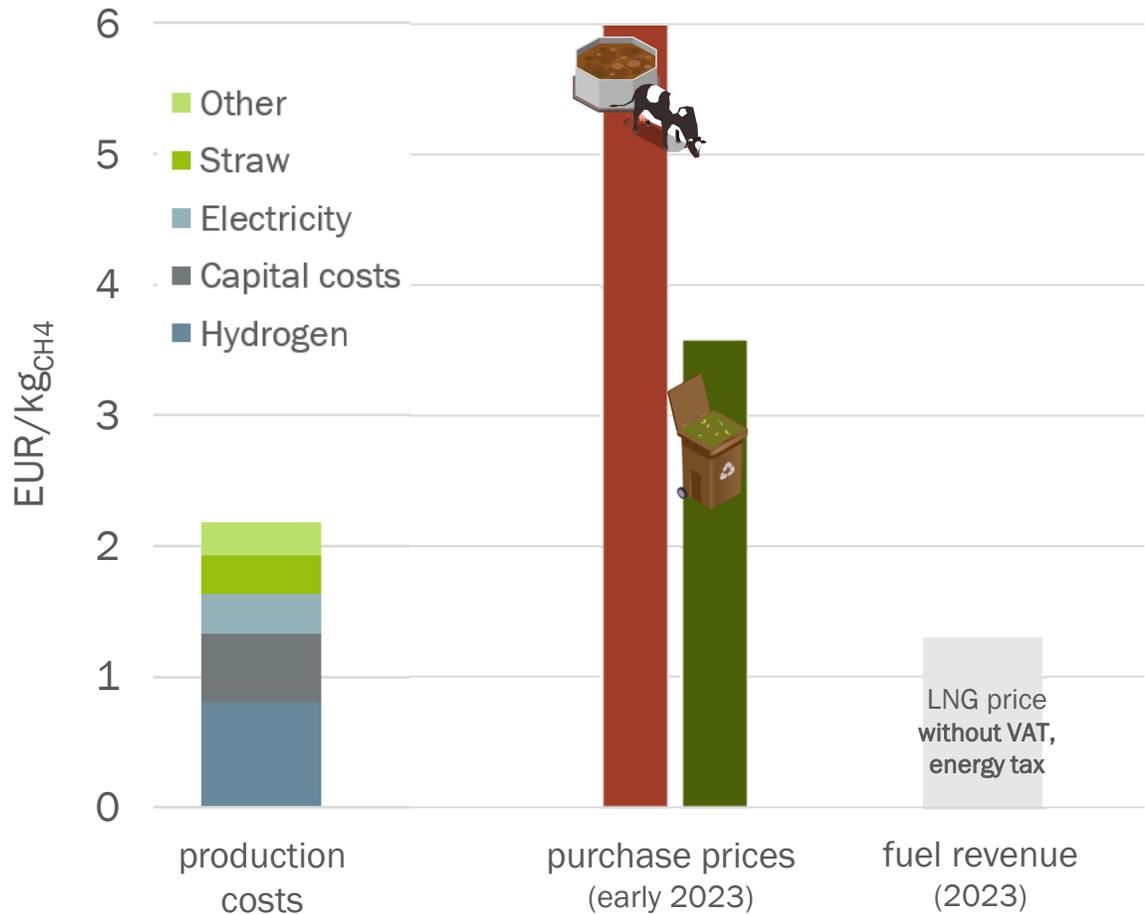
The German biomethane market

Average purchase prices of biomethane in Germany



- **Price increases** range from 200 % to 470 %
- General price increase for energy sources
- **Increasing difference** between methane from different sources
- Manure biomethane **140 % more valuable** than crop biomethane

Project-based production costs and revenues for biomethane



- Production costs approx. **2.2 EUR/kg**
- Fossile LNG gross price approx. **1.3 EUR/kg**
- Pilot-SBG production costs higher than fossil fuel price
- Large gap between potential revenues and purchase prices
- **New value** due to GHG quota trading



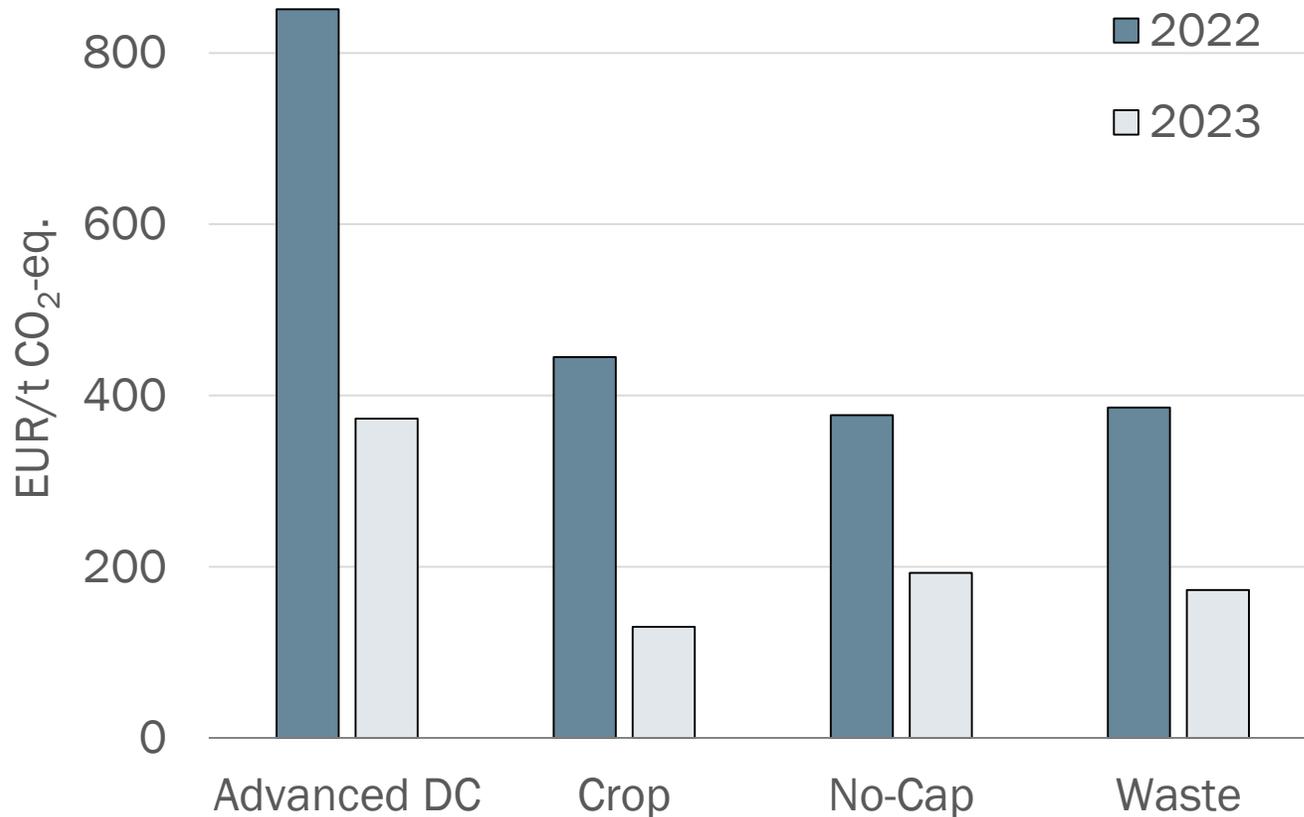
GHG quota in transport sector

- Implementation of RED II in Germany

Obligation	Rising reduction of total GHG emissions of supplied fuel		
Obligated party	Fuel distributors (e.g. mineral oil companies, fuel traders) Can buy emission reduction		
Options	Biofuels	Green hydrogen	Electricity used in BEV
Third party	Biofuel suppliers	Hydrogen producers	Electricity providers for BEV



GHG quota trading – average prices



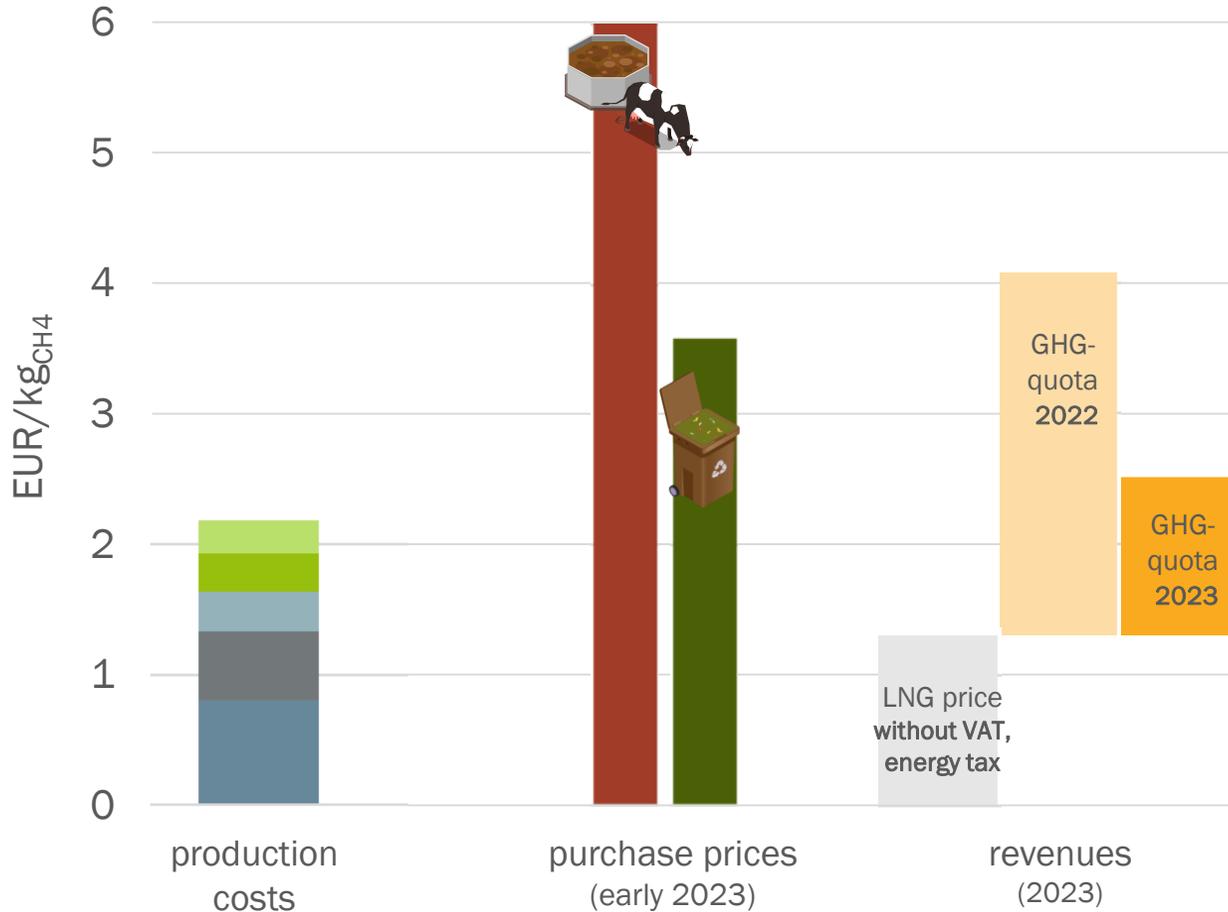
- No-Cap price is base reference
- Crop and waste (§ 13a 38. BImSchV) lower value due to restrictions in regulation
- Advanced double counting (DC) approx. **1.8 to 2 times higher value**
- Price **decline** of approx. 50 % in **2023**, expected to be even lower this year
- Range for advanced GHG quota **370–850 EUR/t CO₂-eq.**

GHG-quota revenues for advanced biomethane

- Bandwidth of 370 to 850 EUR/t CO₂-eq.
- Assumption: advanced biomethane with emissions of **20 g CO₂-eq./MJ**

	GHG quota	Comp.	Emission reduction (ER)	Comp.	ER in g CO ₂ -eq./MJ CH ₄	ER in kg CO ₂ -eq./kg CH ₄	Low revenue from quota EUR/kg	High revenue from quota EUR/kg
2024	9.25 %	94.1	74.1 (79 %)	85.3	65.3 (77 %)	3.3	1.21 EUR	2.62 EUR
2026	12 %	94.1	74.1 (79%)	82.8	62.8 (76%)	3.1	1.16 EUR	2.51 EUR
2028	17.5 %	94.1	74.1 (79%)	77.7	57.7 (74%)	2.9	1.07 EUR	2.31 EUR
2030	25 %	94.1	74.1 (79%)	70.6	50.6 (72%)	2.5	0.94 EUR	2.02 EUR

GHG quota revenues for biomethane



- GHG quota revenues have a **high** positive **impact** on the business case
- **Revenues** to be **doubled or tripled**
- **Emission reduction value \geq energetic value**
- 50 % price drop in one year problematic
- **Business cases/investments need more predictable revenues**

Why so unpredictable? Case „Brown Grease“

- High quota prices → **High incentive to make money**
- Large imports of **probably falsely certified** advanced biofuels
- Cheap imports → GHG quota price fall
- Legislators trying to find a solution
- Reliable **certification system** is crucial

MARKETS / PRO FARMER ANALYSIS

Germany, France Push EU to Halt Import of Fraudulent Biofuel

Germany triggers EU investigation into Chinese biofuels

EU under pressure to tackle fraudulent biofuels imports

By Sean Goulding Carroll | Euractiv.com | Est. 5min | 12. Sept. 2023 (updated: 1. Feb. 2024)

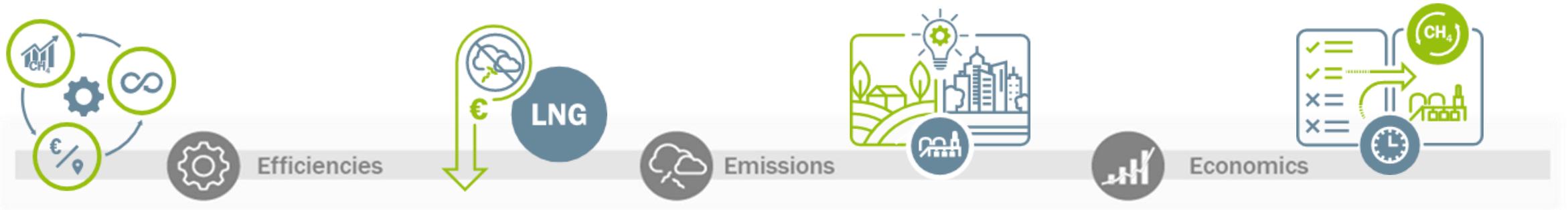
Content-Type: News, Underwritten

Under the 2018 revision of the Renewable Energy Directive, the European Commission was tasked with creating a database to monitor biofuels. [symbiot / Shutterstock.com]

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- **Improve fuel production process**

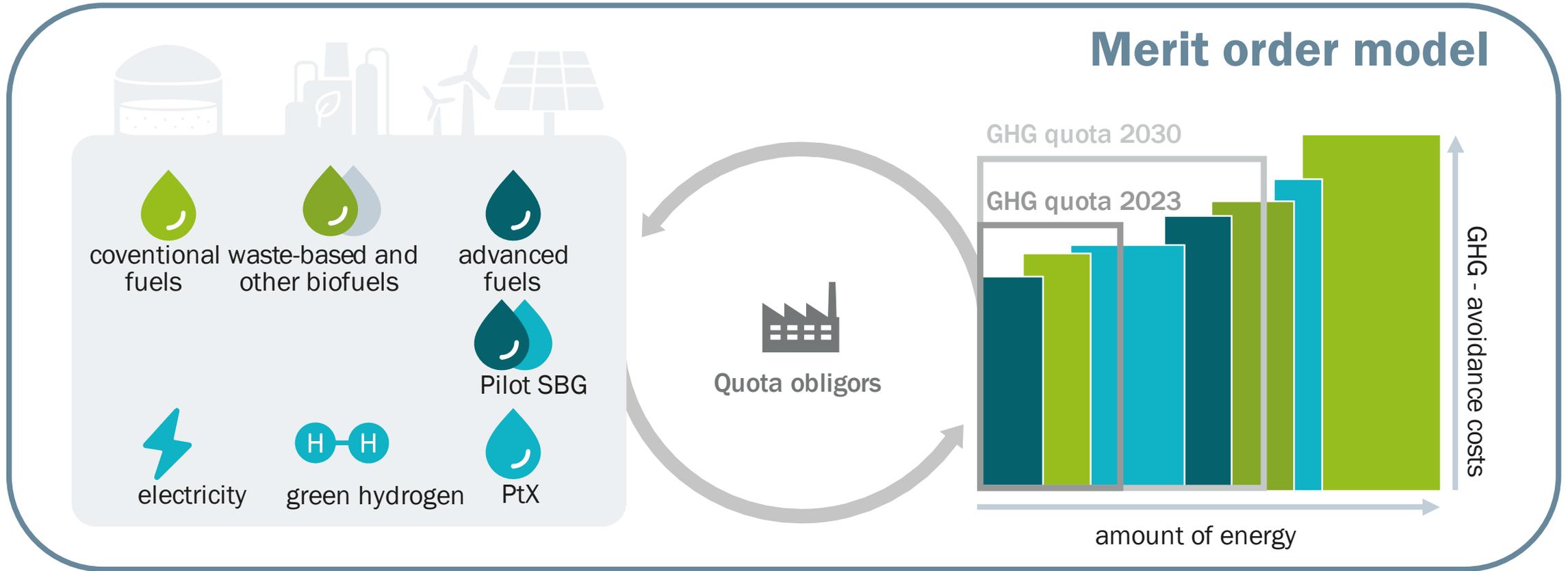


- **Estimation of quota trading**

- Forecasting market development
(Traffic scenarios, fuel production capacities)
- Regulatory developments

Modelling approach





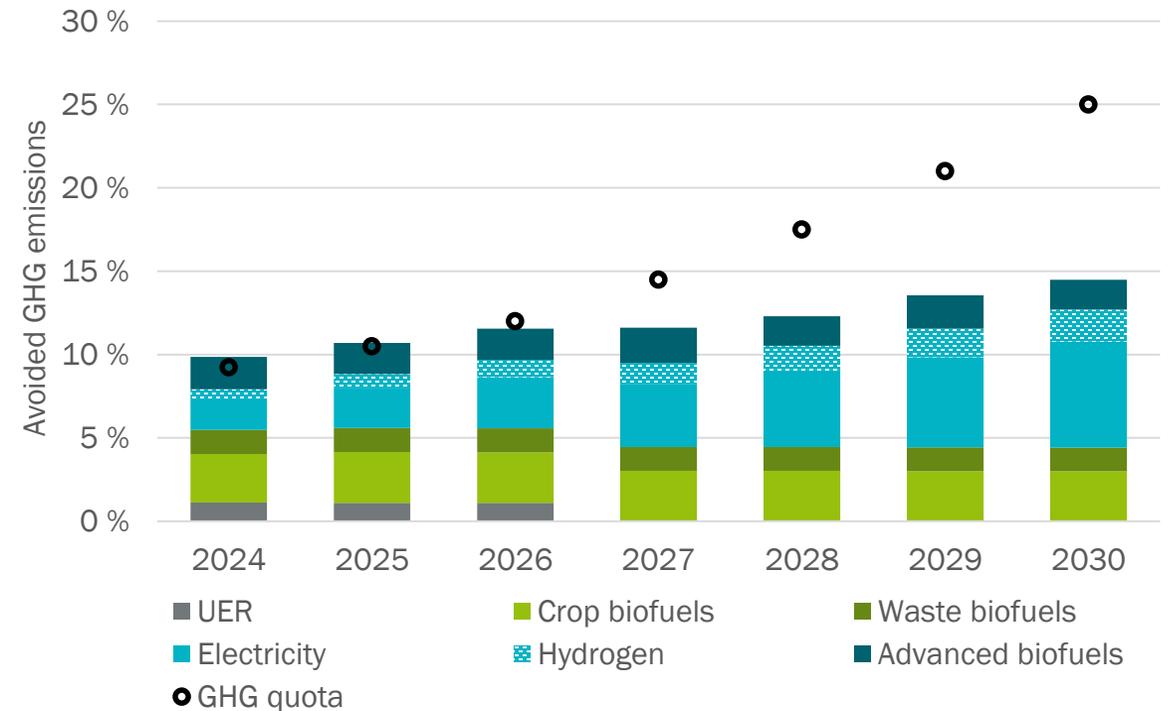
The scientific paper on the methodology of the model, including all assumptions, is currently under review.

Modelling GHG quota in the transport sector in Germany

Preliminary results

- High **rising quota** requires high volumes of renewable fuels
- Advanced **biomethane is competitive** in all scenarios analysed
- Advanced GHG quota price forecast up to 2030 is between 300 and 740 EUR/t CO₂-eq.
- In some scenarios GHG quota cannot be met → leading to **even higher prices**

Example for GHG quota development and fuel distribution by 2030



Conclusions | New Value for Biofuels – Monetizing Low Emissions exemplified by Biomethane

- Quota trading promotes low-emission fuels
- **Revenues** from GHG quota are/were **high**
- GHG quota revenues are **highly volatile**
- Global fuel trade can have high influence
- Need for regulation to **prevent abuse of certification**
- **GHG quota rising** ambitiously in the coming years

Focus article in Pilot-SBG

Marktanalyse und Treibhausgasquote für erneuerbares Methan im Verkehr

Market analysis and GHG quota for renewable methane in transport

Overview of greenhouse gas avoidance quota

Merit order within the GHG quota

Mechanisms in the GHG quota market

Market prospects for biomethane



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