



Biorefineries for Carbon recovery

@Ingelia copyright_2021

@Ingelia HTC Proprietary Technologies



Landfilling and coal consumption have an impact of ~4Gtons of GHG emissions annually



66% of waste is dumped or disposed of in landfills,
Landfilled biowaste is estimated to be 962 Mtons annually.



Industrial coal consumption is estimated to be 844 Mton in the iron, steel and chemical industry.

CO₂ emissions from transportation of coking coal increase significantly the CO₂ foot print (i.e. 1,5 to 3 times greater from Australia to EU than local production)



Ingelia HTC process recovers carbon from all types of organic wastes



Sustainable

- ✓ Recycling >98% Carbon and Nutrients
- ✓ No process emission – no bad odours
- ✓ Low energy consumption

Easy design

- ✓ Stable, simple process
- ✓ Modular scalability
- ✓ No process moving parts

Made efficient

- ✓ Fast and continuous operation,
- ✓ Little space requirement,
- ✓ Integrated Process Control

Attractive

- ✓ Low OPEX and CAPEX
- ✓ High end products market value
- ✓ Reduced payback time

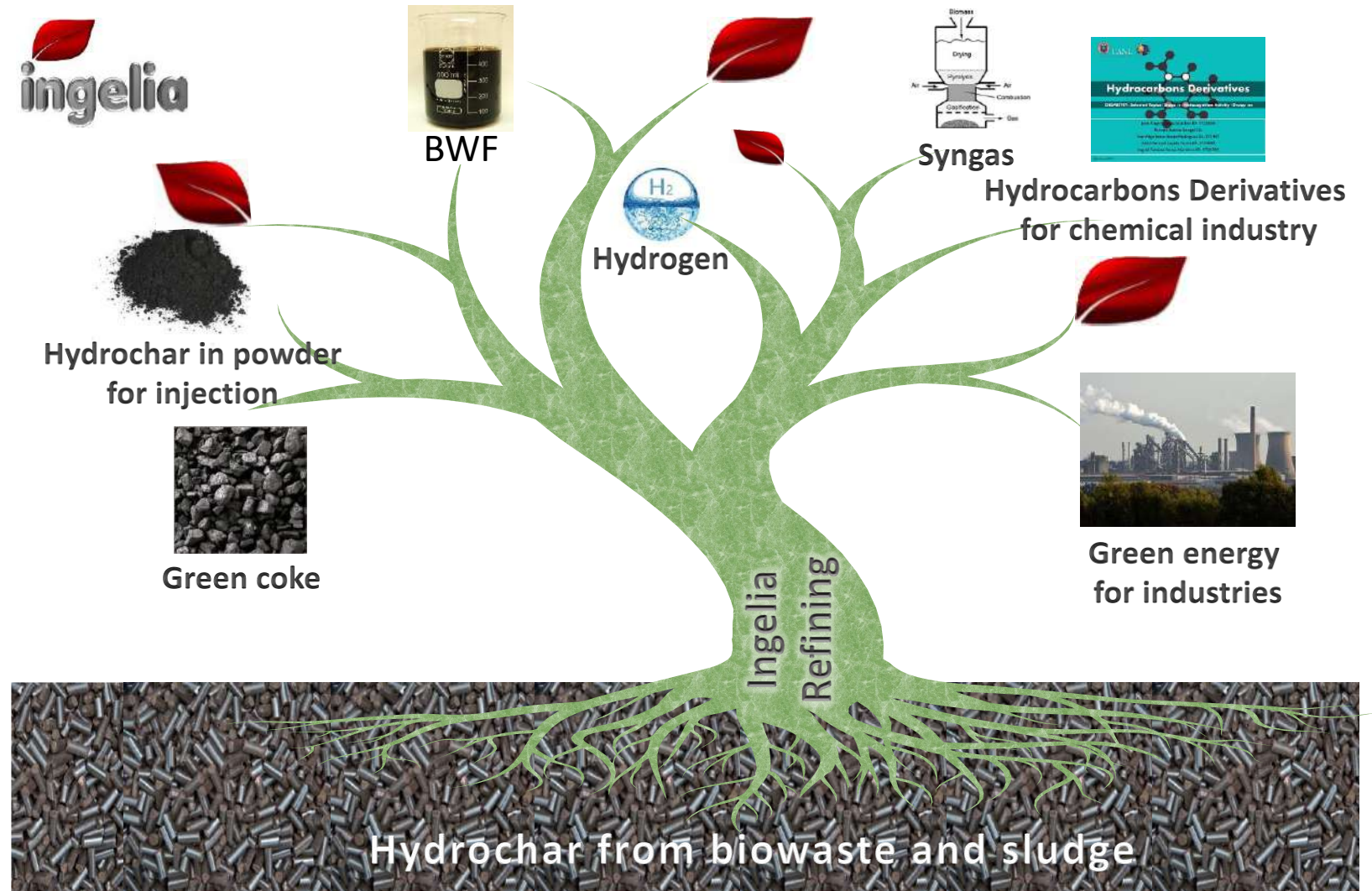


Technology further developments

@Ingelia copyright_2021

New added value applications for the hydrochar can be developed with specific post-treatments. Ingelia has previous experience in:

- Reducing ash (PH) by acid leaching, washing steps for chlorine and Sulfure reduction and mechanical separation of inerts
- Increasing fixed carbon by thermal posttreatment
- Applications in the Steel sector (cupola and blast furnace)
- Renewable energy (combustion and gasification)
- BWF for gasification or HTL Process





Ingelia commercial deployment to date

Ingelia started commercial deployment in 2017 having to date two plants in operation, one plant under construction and four additional plants under licensing proceedings in Spain, Belgium, Italy, Portugal, Ireland and South Korea.

**Own plant in
operation since
2010**



**UK Plant in operation since
2018**



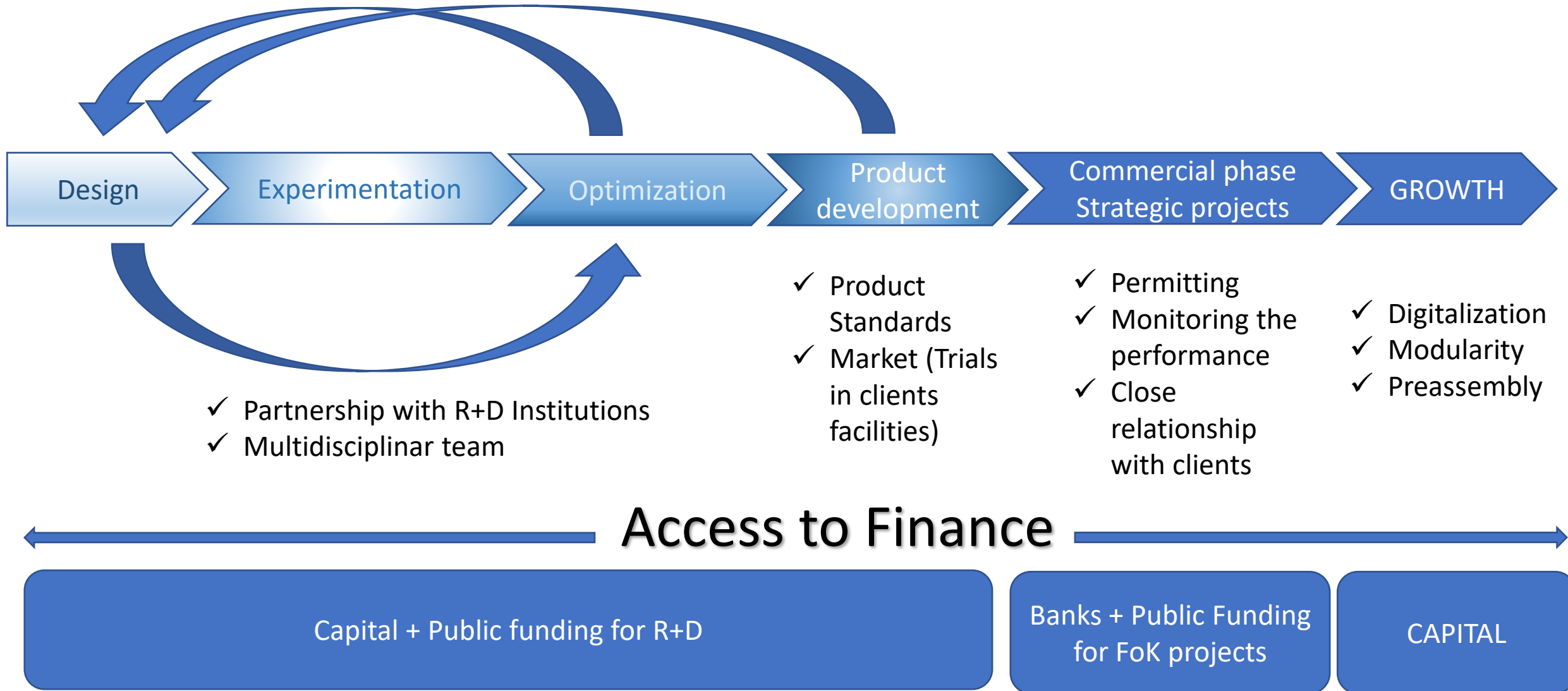
Belgian Plant under construction



Plants under licensing proceedings within Europe



Key factors for the development of Industrial Innovation





OFFICIAL PARTICIPANT – EUROPEAN UNION

Thanks for your kind attention

marisa.hernandez@ingelia.com