



HOTLIMELABS

Global Greenhouse Potential for CCU+S
Bio360 Expo, Jan '24





A Large Industry

60,000 Hectares of Hi-Tech (2020)

Produce > **\$90B p.a.** growing (+5%)

Vegetables, Flowers, Cannabis

Resilient to Climate Change

Major User of Heat & CO₂

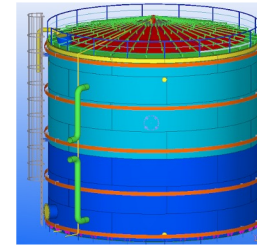
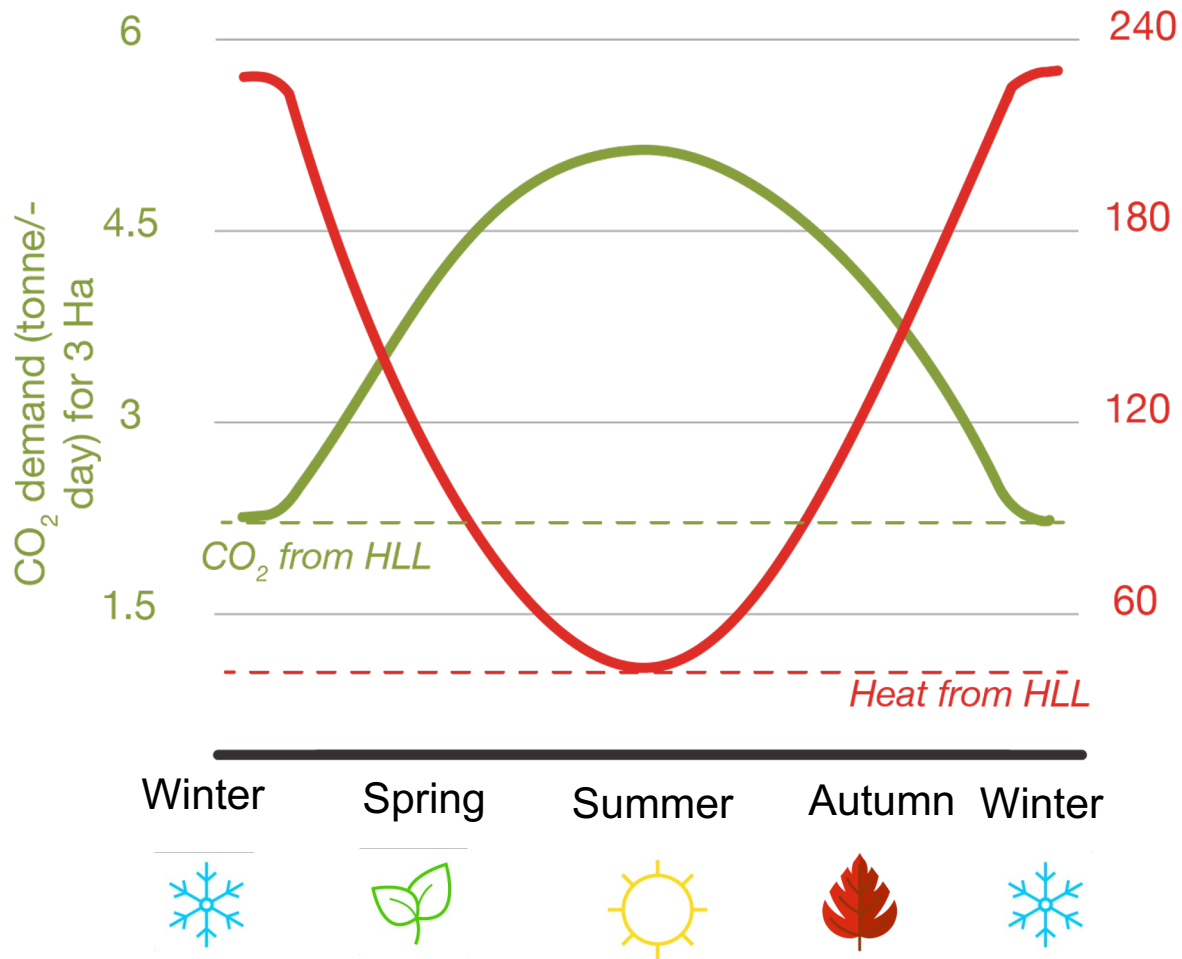
5Ha houses maintained at 20°C

Tomato Production > **50 kg/m²**

Clean CO₂ essential (15% yield)

CO₂ value ≈ 200 €/ ton

Heat & CO2 demand profiles



Storage



3ha Tomatoes

Heat demand
(GJ/day)

	Daily Max Heat Demand	Daily Max CO ₂ Demand
Winter	240 GJ (3 MW)	2 ton (20 GJ eq.)
Spring/Autumn	120 GJ (1.3 MW)	3 ton (30 GJ eq.)
Été	45 GJ (0.5 MW)	6 ton (60 GJ eq.)



Winter

240 GJ
(3 MW)

2 ton
(20 GJ eq.)

LED
x2-3



Spring/Autumn

120 GJ
(1.3 MW)

3 ton
(30 GJ eq.)

Drying
x2



Été

45 GJ
(0.5 MW)

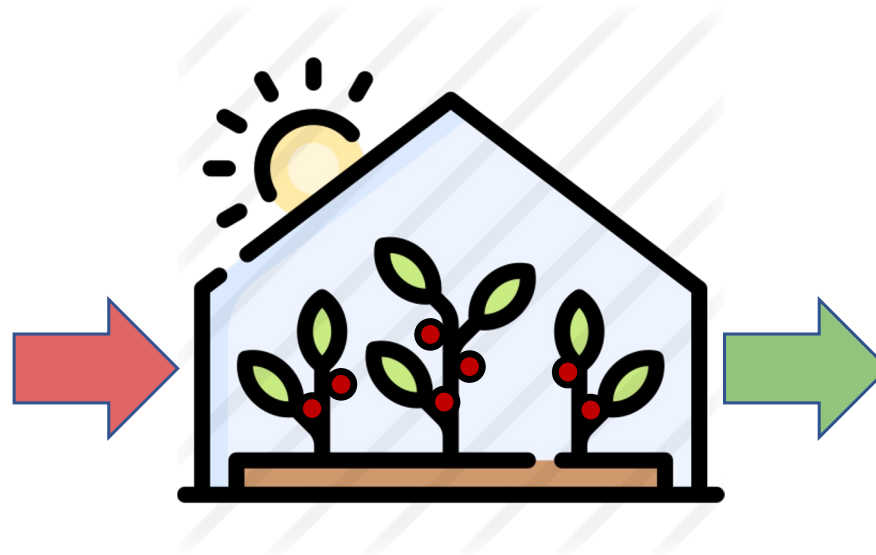
6 ton
(60 GJ eq.)

Cold
x2

Cold Climate - 3Ha Tomato Greenhouse I/O

Inputs p.a.

36,000 GJ/pa *Heat*
360 t/pa CO_2
420 MWh *Elec*
Fertilizer, Labor, etc..



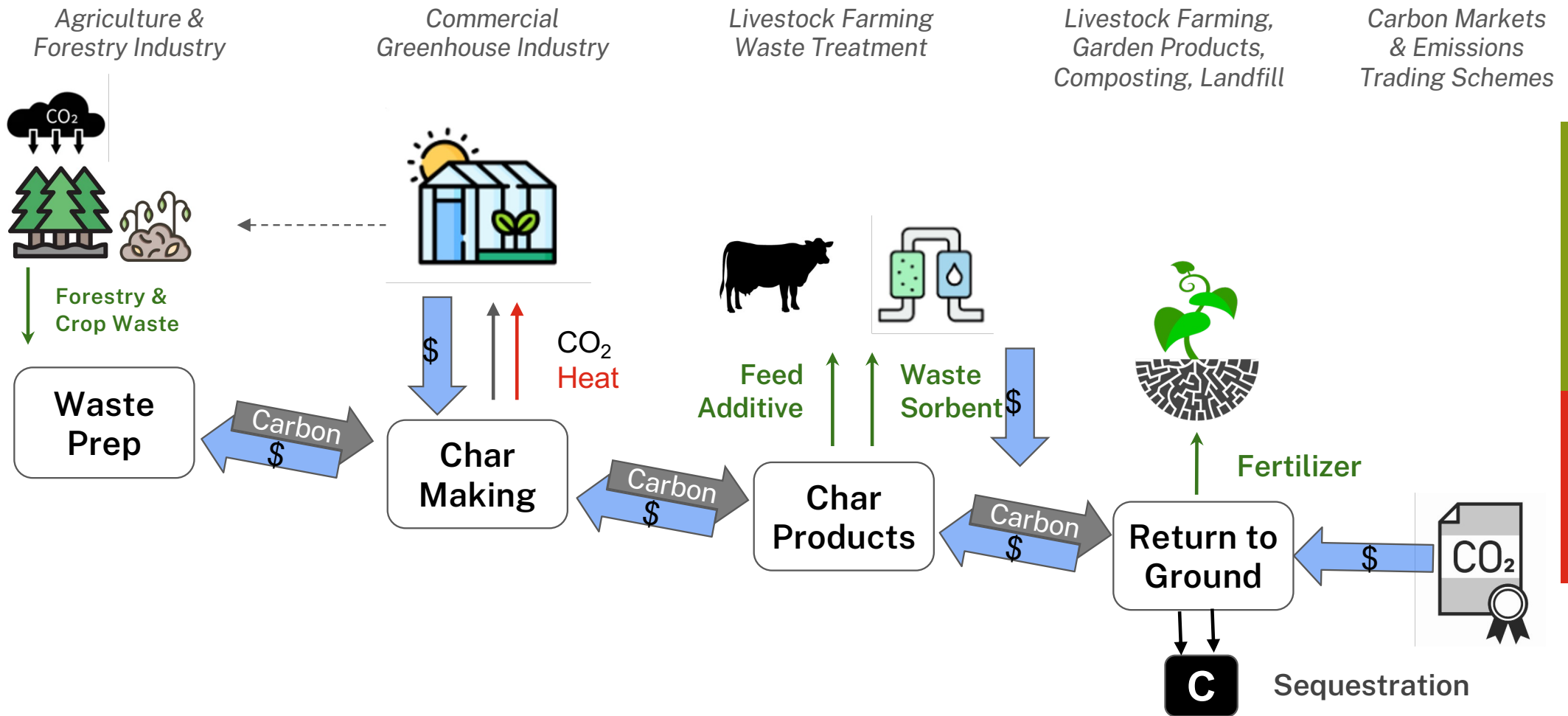
Outputs

Tomatoes - 1,500 ton

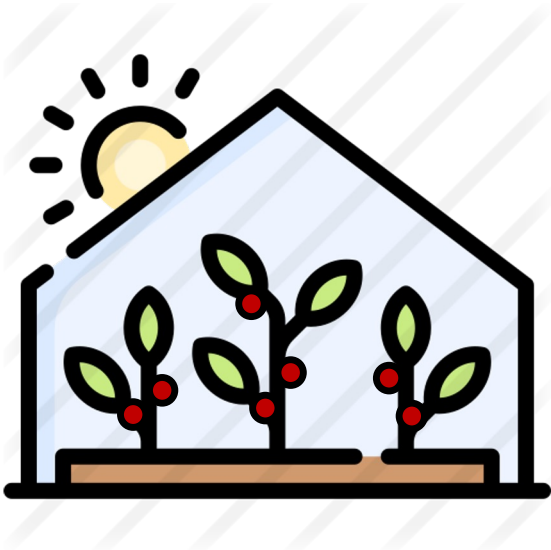
Waste

Green Waste - 900 ton
Plastic Waste \lesssim 30 ton
 CO_2 emiss. (NG) 2,200 ton

CCS for Greenhouses - Carbon Cascade



Greenhouse CCUS is Low Hanging Fruit



CCUS potential 2050 - 107 Mt → 4.2 G€ income

Activity	CO2	Income	Source
CCU - CO ₂ for enrichment	12 Mt	2.5 G€	More crop
CCS - Biochar GH waste	15 Mt	0.5 G€	BC app.
CCS - Biochar misc. waste	20 Mt	0.7 G€	BC app.
Avoided - Waste to Energy	60 Mt	0.5 G€	Fuel Savings

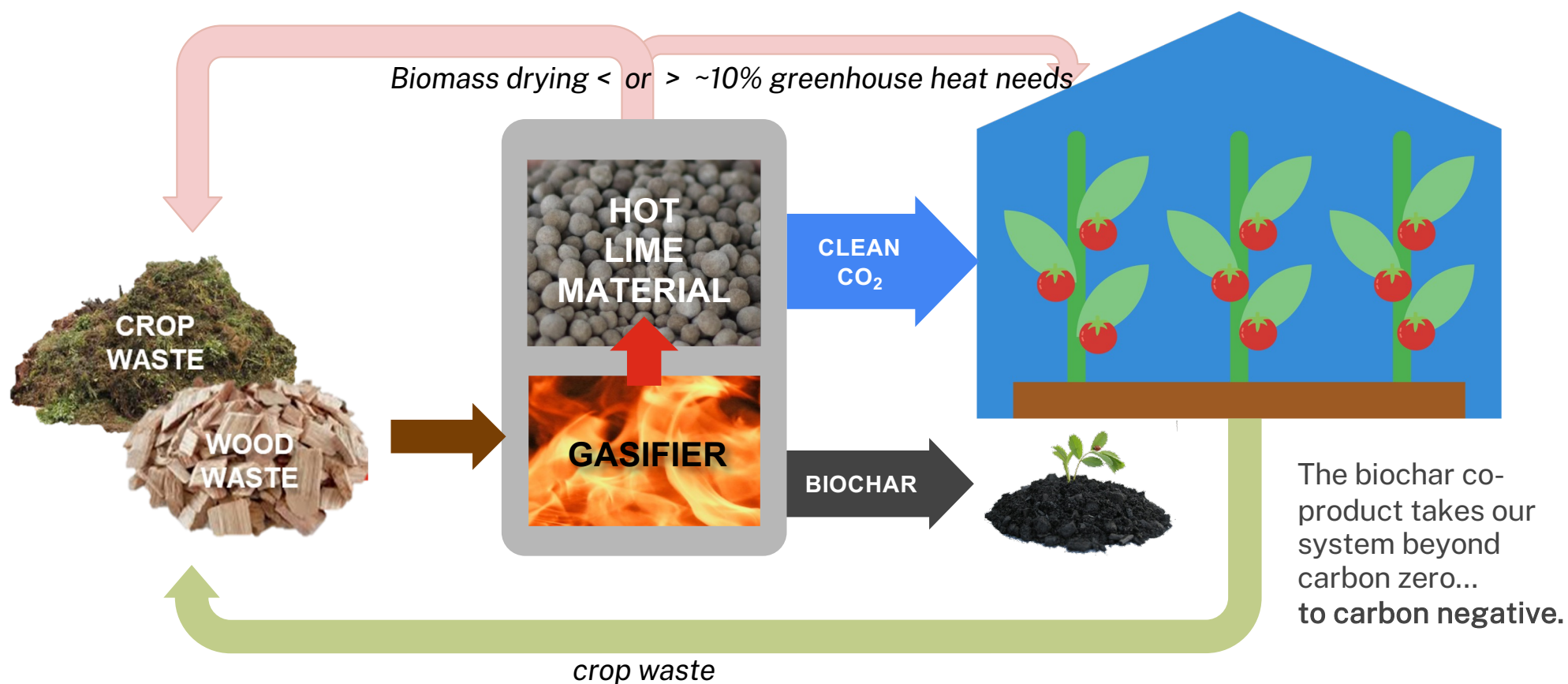


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Putting the Green back in Greenhouses
Bio360 Expo, Jan '24



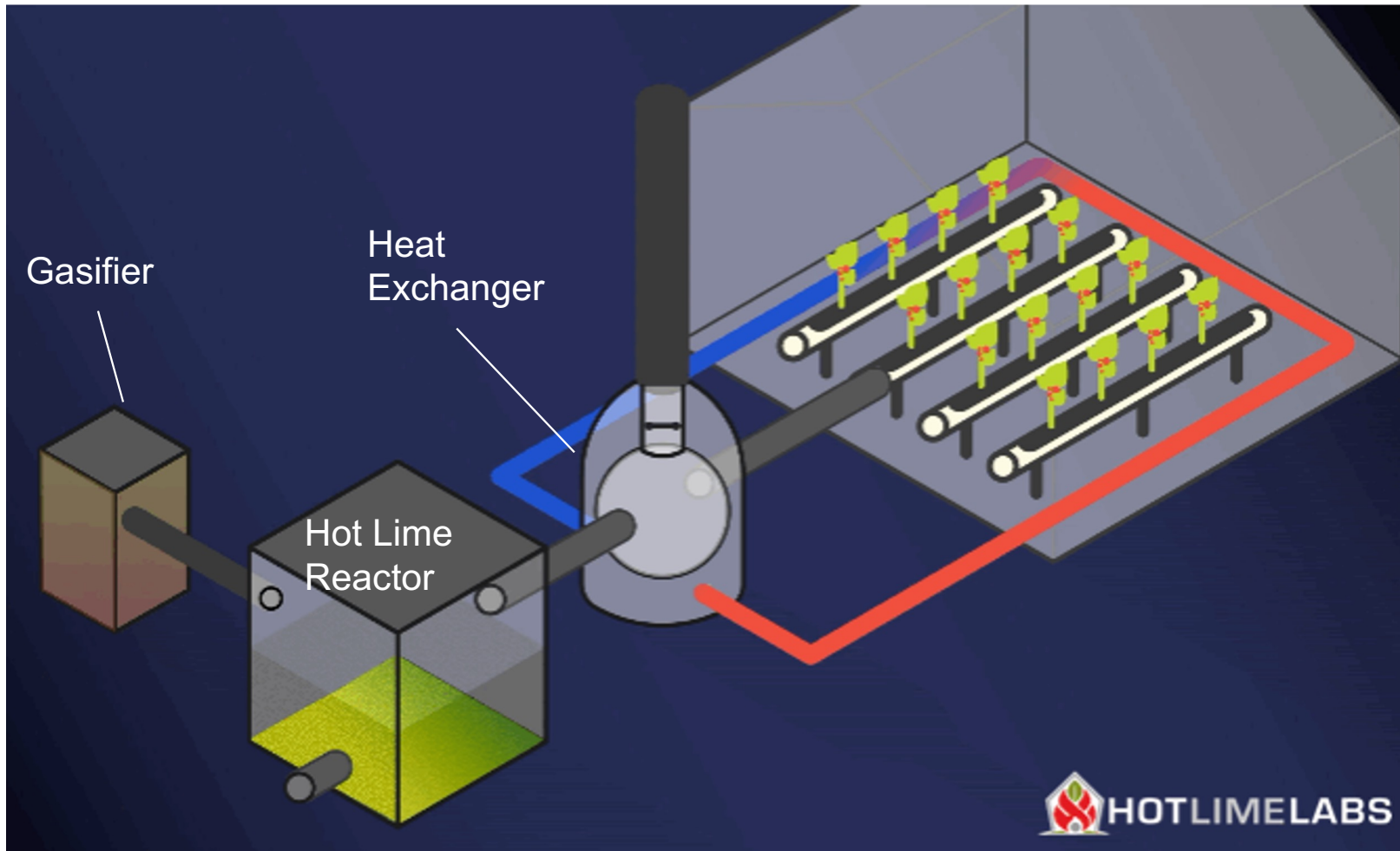
Hot Lime Systems for CO₂ & Biochar



The biochar co-product takes our system beyond carbon zero... to carbon negative.

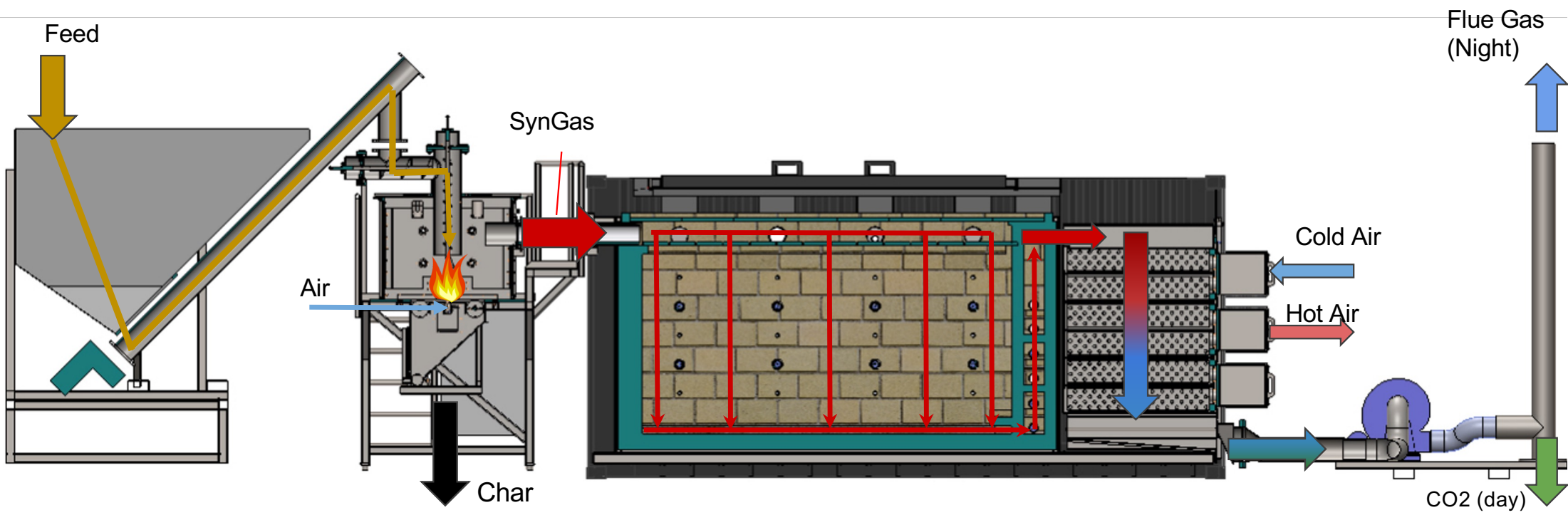
[Process Animation on YouTube](#)

HLL TECHNOLOGY BASICS



- Hot Lime pellets are “CO₂sponge”
- Combines Calcium & Chemical Looping Technology
- Works with any Hot or combustible gas e.g. syngas, hot flue

SYSTEM PARTS & FLOW



Dry Feed Hopper
Day storage for Dry Feed
Woodchip/Green Waste

Gasifier
“Partial Burner” turns
Feed → SynGas + Char

Furnace Reactor
Hot Lime Pellets clean up Gas and
Capture, Store & Release Clean CO₂
Operates at High Temperature >800C

Heat Exchange
Air Cooling Flue Gas
Produces Hot Air for
Drying / Heating

Gas Moving
Fan creates draft
Gas Quality sensing
Direction Stack or GH

SCALE-UP PROGRESSION



2016

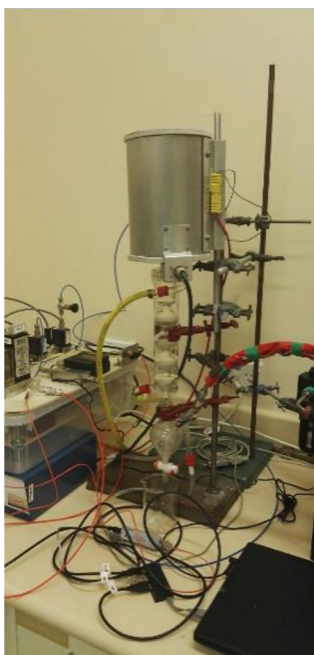
Research Scale



0.1 g CO₂/day

2017

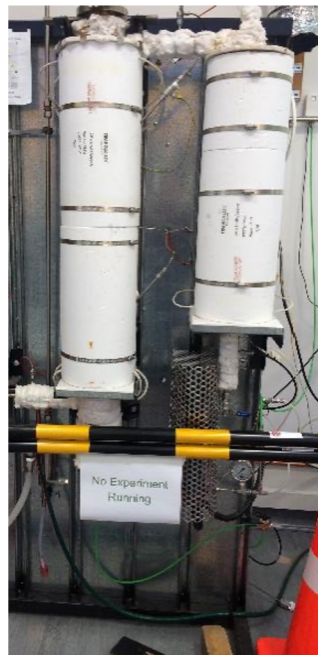
Lab Scale Test Bed



40 g CO₂/day

2018

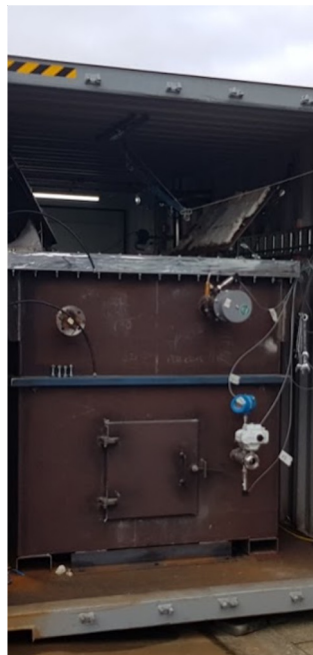
Prototype Test Bed



10 kg CO₂/day

2020

Pilot Plant



250 kg CO₂/day

2022

Demonstration unit



3,000 kg CO₂/day

30,000,000 x Scale-up

DEMONSTRATION UNIT



“Working with Hot Lime Labs lets us produce reliable CO₂ from locally sourced wood chip and our own crop waste, reducing costs and creating a circular economy.”

Roelf Schreuder, Production Director at New Zealand Gourmet



Growth Plans for HLL

2024

- Demo Unit Optimisation
- Set-up Serial Production
- Deployment of 1st Serial unit in NZ

2025

- Design of Series 2
- Deployment of 1st Serial Unit in EU

Looking For:

- EU Investors or Green Finance
- EU Manufacturing Partners



THANK YOU

For more information:
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