

# Financing Innovative Clean Tech Conference

## September 25, 2020

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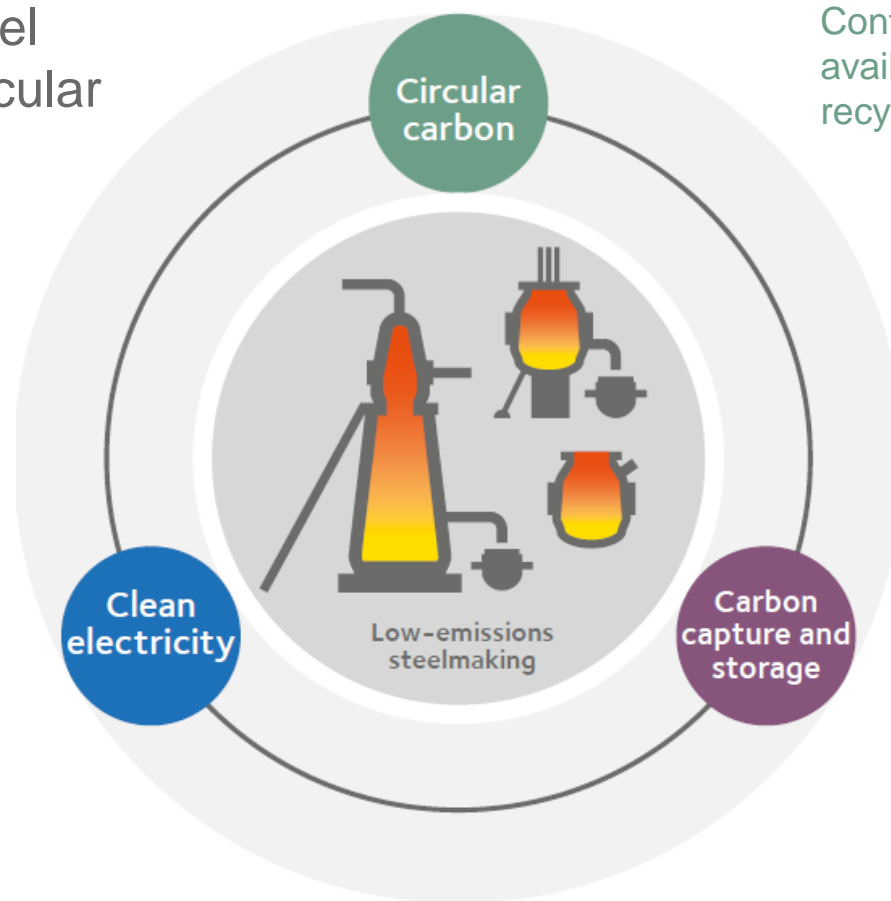


Steelmanol/Torero Project  
Carl De Maré, Vice-President Technology Strategy

## ArcelorMittal Europe Plan : -30% in 2030 & Carbon Neutral in 2050

We see three clean energy vectors to transition steel industry to net zero: circular carbon, CCS and clean electricity

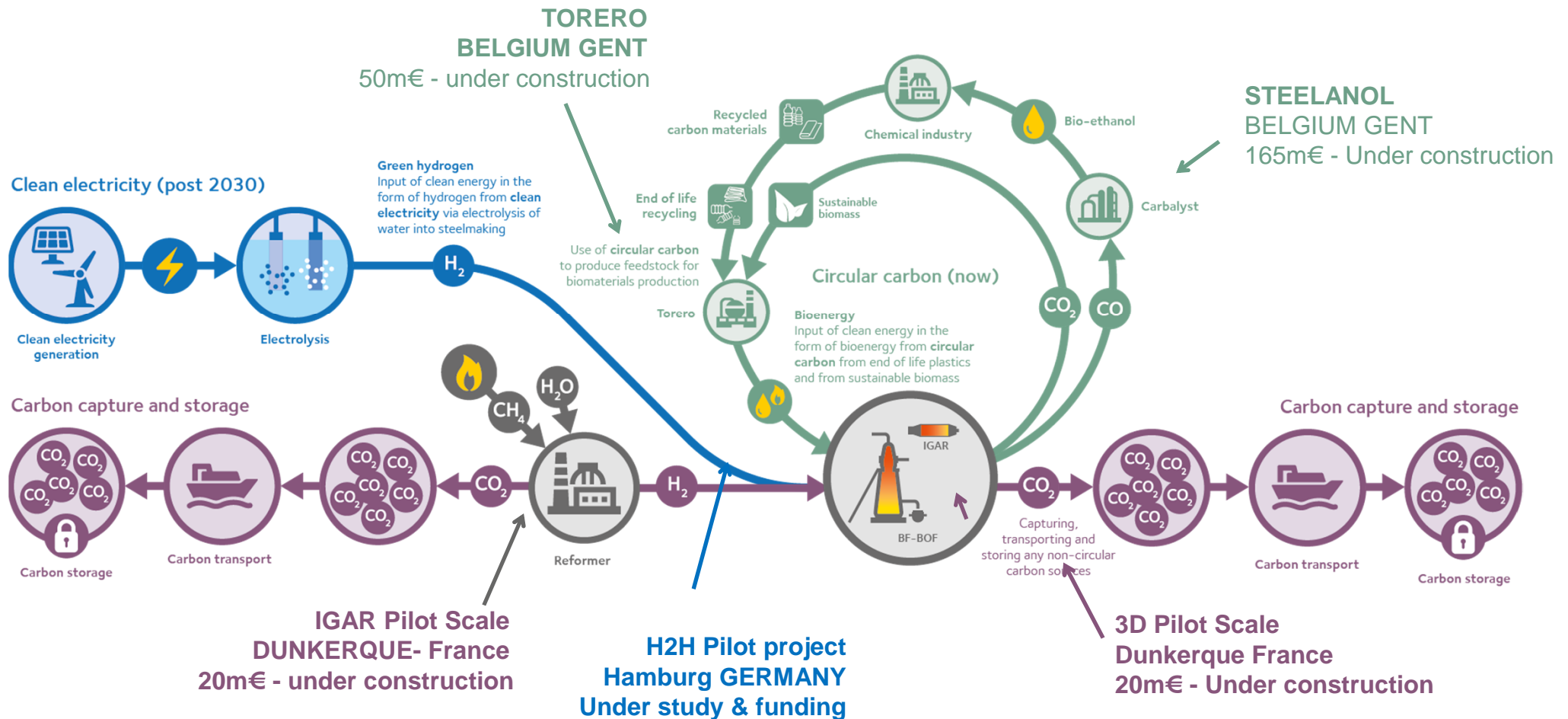
Recycle waste back into high valuable Chemicals through steelmaking  
Contingent on biomass & waste availability and technology for chemical recycling



Contingent on development of CCS infrastructure

Contingent on low electricity and green Hydrogen costs

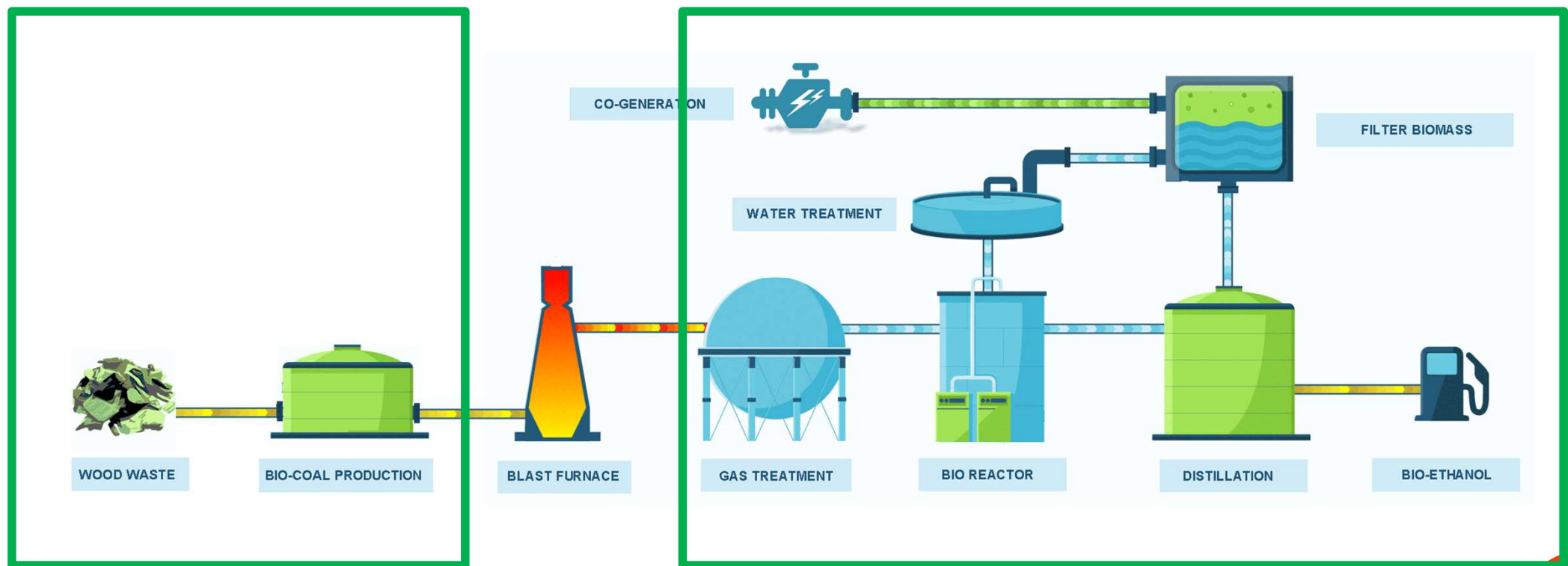
# Making carbon-neutral steel: Smart Carbon route Development with 5 large scale demonstration projects

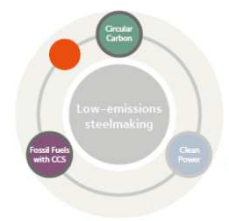


# Two Circular Carbon Demonstration projects named “Carbalyst” under construction at ArcelorMittal Gent, Belgium

## TORERO

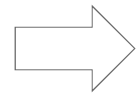
## STEELANOL



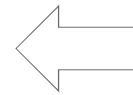
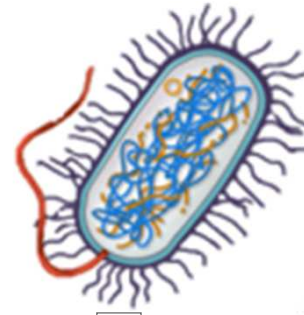


Carbalyse : Industrial Bio-Technology to convert waste gas into high value molecules (chemicals, proteins, ...)

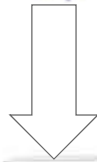
**Carbon Waste Gas**  
 $\text{CO (+H}_2\text{+CO}_2\text{)}$



**Microbe**



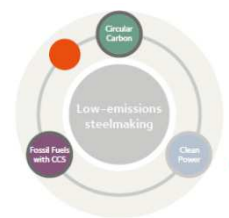
**Water**  
 $\text{H}_2\text{O}$



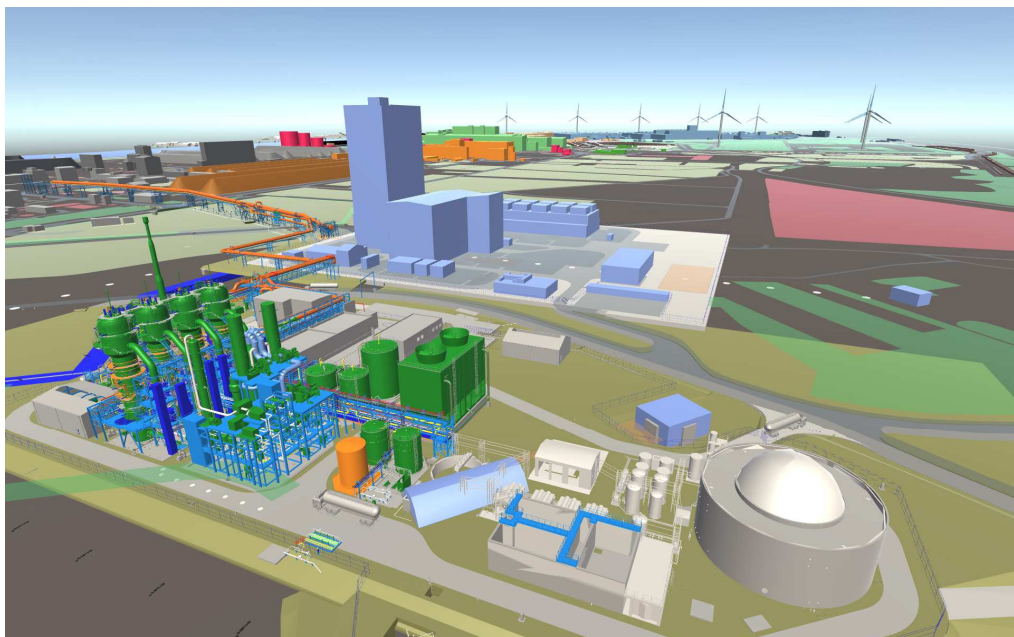
**Ethanol**  
 $\text{C}_2\text{H}_5\text{OH}$

**LanzaTech** 



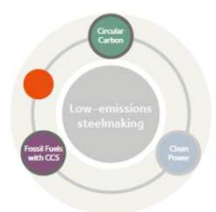


## Industrial Scalable Bio-Technology enables to convert CO and H<sub>2</sub> into valuable chemicals with high energy efficiency



This project is co-funded  
by the European Union





# Circular Carbon – Combination Torero & Steelanol is resulting in the largest cellulosic based ethanol plant world wide



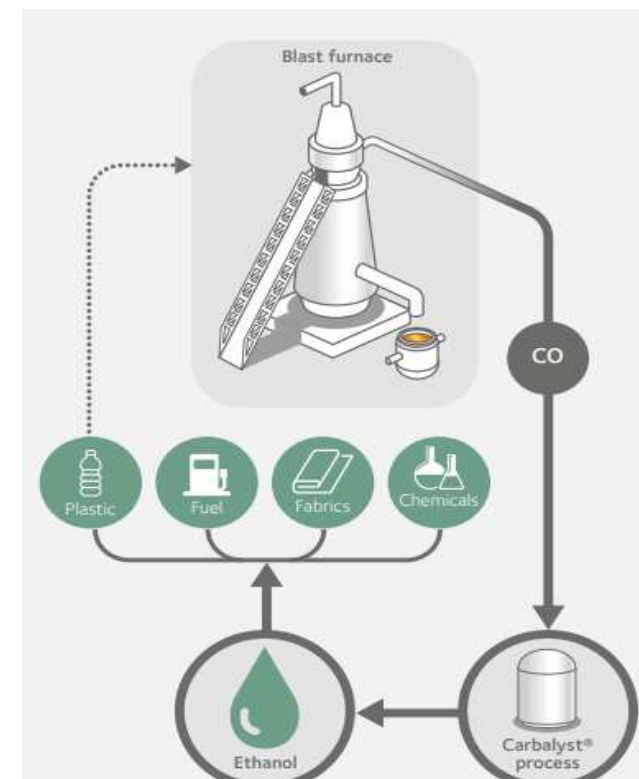
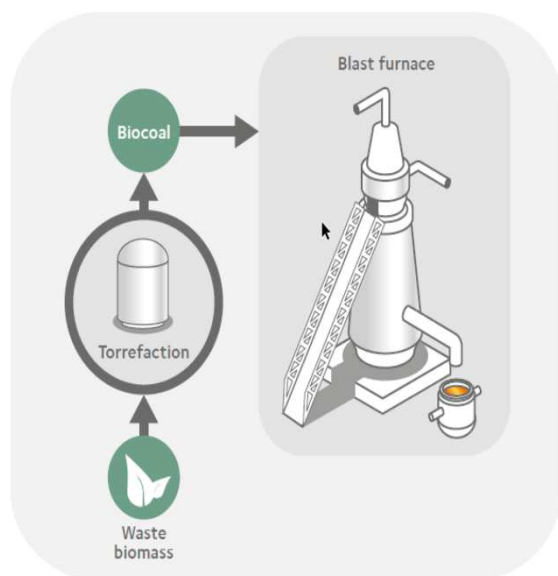
## Key Figures

120.000 ton waste wood into “bio-coal”

80 million liter of bio-ethanol production

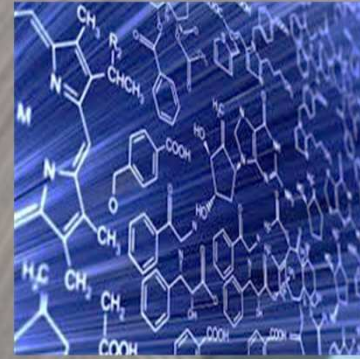
350.000 ton/yr CO<sub>2</sub> reduction

215m€ total investment



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**Thanks for your attention**

[Carl.demare@arcelormittal.com](mailto:Carl.demare@arcelormittal.com)  
[@carl\\_mare](#)