## SESSION 3: 10:45-11:00



#### ESTEP workshop SecCarb4Steel

Preparation and use of biogenic and non-biogenic secondary carbon carriers (SCC) in processes for iron and steelmaking

# Hard-to-abate? Our solution for the EAF route within the BioRECAST project



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#### **Steelmaking sector**

State of the art





#### **Steelmaking sector**

#### **Europe Outlook**

#### EU27 crude steel production in 2023 (1)

in million tons



EU27 crude steel production in 2023 (1)

(1) https://www.eurofer.eu/assets/publications/brochures-booklets-and-factsheets/european-steel-in-figures-2024/EUROFER-2024-Version-June14.pdf



Project overview

- Project name: BIO-based Residues Conversion to Advanced fuels for sustainable STeel production
- Project acronym: BIORECAST
- **Project coordinator**: Politecnico di Torino
- **Call**: RFCS-2022
- **42-month project**, KoM in November 2023
- **2.362.962,00 €** European funding



Project partners







27.11.2024



### **BioRECAST** Project framework

**Main objective**: foster the consumption of biowaste streams as renewable carbon and energy source for steel sector and, at the same time, to valorize the waste heat of EAF steelmaking.









### **BioRECAST** Project framework



Urban biowaste Organic fraction MSW

Green waste



Industrial sludge Pulper sludge Food waste sludge



Sewage sludge Digested sludge Aerobic stabilized



Agricultural residues Lignocellulosic residues Digestate





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Objectives	Description
Production of high quality biocoal from waste	Optimization of thermo-chemical treatment plant with char chemical upgrading
Validate biocoal quality in industrial scale furnaces	Test and assess the biocoal applicability in Electric Arc Furnaces
Enable the utilization of pyrogas as bioenergy source for EAF steelmaking	Identification of most efficient and sustainable solution for slow pyrolysis pyrogas utilisation in EAF steelmaking site
Maximize the reuse of EAF waste heat for pyrolysis process	Development of effective heat exchanging system to reuse EAF waste heat for
Demonstrate economic and environmental benefits of the Pyro-EAF process	Evaluate the economic and environmental feasibility of the BioRECAST proposed solution for steel sector application,



## **BioRECAST** Conclusions

- The production of bio-coal from bio-waste could be a key player in the green transition of steel-making processes.
- Besides the environmental benefits of the solution, from an economic standpoint, this could be a game-changer. It opens up the possibility of benefiting from credits associated with reduced  $CO_2$  emissions in a sector covered by ETS.
- Further analysis will be conducted in the coming years to determine the optimal integrated solution.



## Thank you!

# **Bio** RECAST

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Partners





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