MUSIC
Market Uptake Support for Intermediate Bioenergy Carriers

WELCOME AND INTRODUCTION TO MUSIC PROJECT

WORKSHOP: PROSPECTS OF BIOCOAL FOR THE METALLURGICAL INDUSTRY

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About Us

Common voice of European bioenergy since 1990

Unites **40+ national associations** and **150+ companies**

Hosting the European Pellet Council (EPC)

Quality & Sustainability **Certifications**

Our Services:

- **EU Policy Monitoring & Influence**
- **Market Data**
- **Visibility**
- **Networking**
- **Free & Discounted Events**

Our Working Groups

Members Only

Domestic Heating

Next Date: 21st February 2023

Promotes biomass in the domestic heating sector and discusses building regulations, air emissions and stove & boilers certifications.

Pellets

Next Date: 22nd March 2023

Discusses common issues and opportunities regarding the development of the European pellet market (residential, commercial, industrial) and proposes actions to overcome current barriers.

Agro-biomass

Next Date: 30st May 2023

Promotes underutilized biomass feedstocks (e.g. residues from agriculture, dedicated perennial lignocellulosic crops) through ad 'hoc policies.

Wood Supply

Next Date: 23rd May 2023

Provides with active exchanges of data, market trends and news in legislation.

Competitiveness

Next Date: 28th March 2023

Provides updates on key existing and emerging policy topics determining the competitiveness of bioenergy sector within the EU (e.g. carbon tax, state aid)

Sustainability

Next Date: 7th March 2023

Monitors climate and energy legislation impacting the European bioenergy sector and advocates for an efficient EU sustainability policy for biomass for heating and electricity production.

Carbon Dioxide Removals

Next Date: 4th April 2023

Establishes an interactive forum to explore policy options for the creation of negative emission certificates and incentives within EU energy and climate policies.

Task Force National Advocacy

Provides regular updates for national associations on relevant EU policies and enhances cooperation between EU and national levels.

Two ongoing EU H2020 projects addressing bioenergy use by the energy intensive industries

RE4INDUSTRY
Renewable energies for industries

Increased renewable energy use in the European Energy Intensive Industries (EIIs) sector.

Website: https://re4industry.eu/

MUSIC
Market Uptake Support for Intermediate Bioenergy Carriers

Focus on Intermediate Bioenergy Carriers (IBCs): torrefied biomass, fast pyrolysis bio-oil, microbial oil.

Website: https://www.music-h2020.eu/

The RE4Industry and MUSIC projects have received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 952936 and 857806 respectively.

Bioenergy and Energy consumption in Energy Intensive Industries

Energy demand by industry and share of bioenergy for sectors dealing with biomass wastes and residues and for other sectors in EU27 in 2020 (ktoe and %)

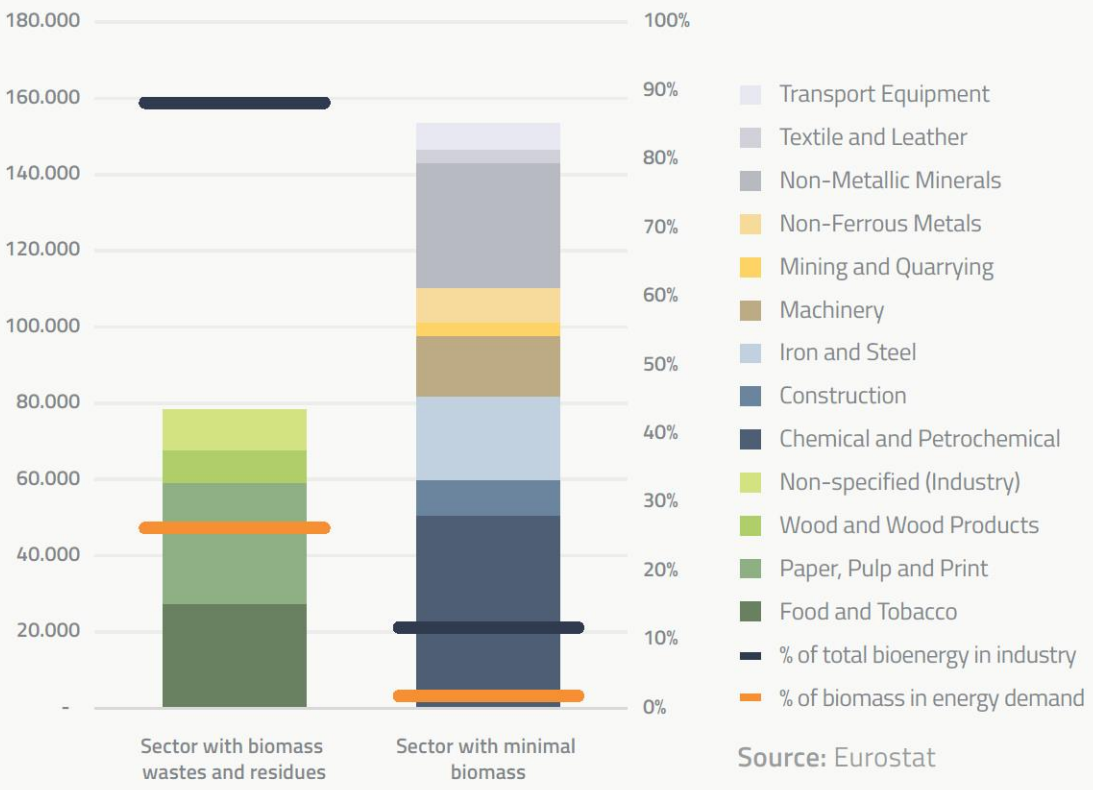


Image source: Bioenergy Europe, Statistical Report 2022 / Heat

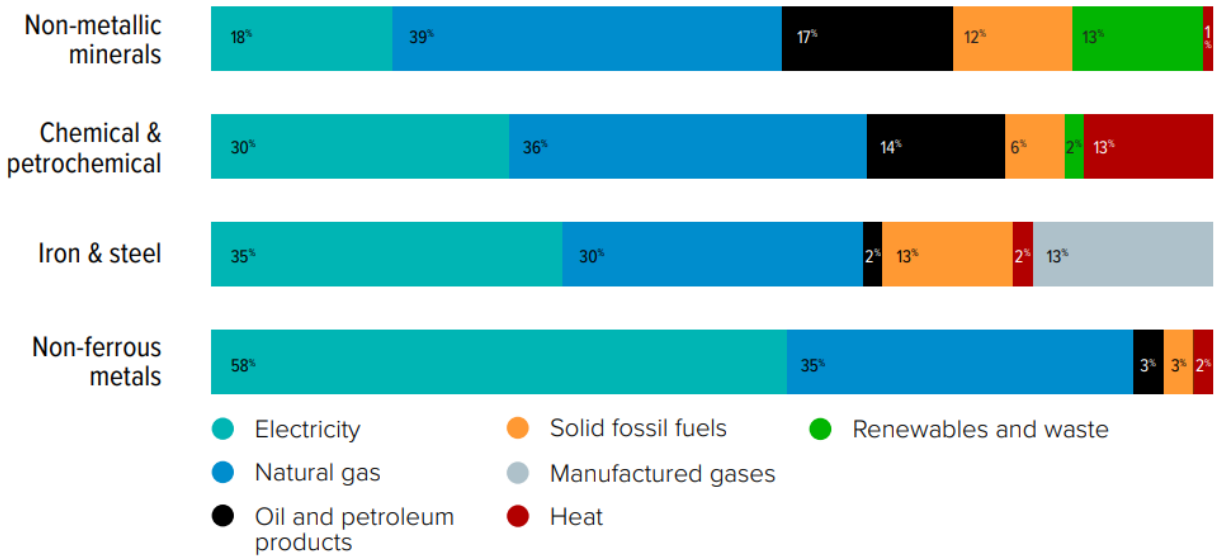


Figure 20: Relative shares of energy carriers in the final energy use of select energy intensive industries (2017) (Source: Eurostat, 2018)

Image source: Institute for European Studies (IES), Metals for a Climate Neutral Europe: A 2050 Blueprint

The role that bioenergy plays in the global energy mix has expanded over the last decades, from predominantly domestic space heating and industrial heat until the 1990's to increased use in the electricity sector and more recently also large scale production of transportation fuels. According to the IEA 2DS scenario, the use of biomass to produce high temperature heat in industry will not decrease, but quadruple from 8 EJ today to about 24 EJ in 2060.

Quote source: IEA Bioenergy - Bioenergy for High Temperature Heat in Industry

Bioenergy EUROPE

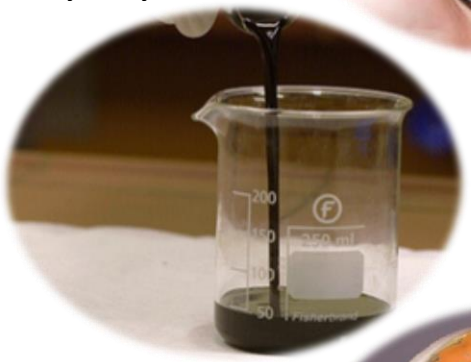
THE MUSIC PROJECT – INTERMEDIATE BIOENERGY CARRIERS

Intermediate Bioenergy Carriers (IBCs) are densified biomass 'energy' – similar to coal and oil. IBCs are easier to store, transport and use than regular biomass.

In the MUSIC project, the market uptake of IBCs is facilitated, by developing feedstock mobilisation strategies, improved cost-effective logistics and trade centres.

Torrefied biomass

Pyrolysis oil



Microbial oil

THE MUSIC PROJECT – CONSORTIUM

Renewable energy advisory SME's

WIP RENEWABLE ENERGIES

btg biomass technology group

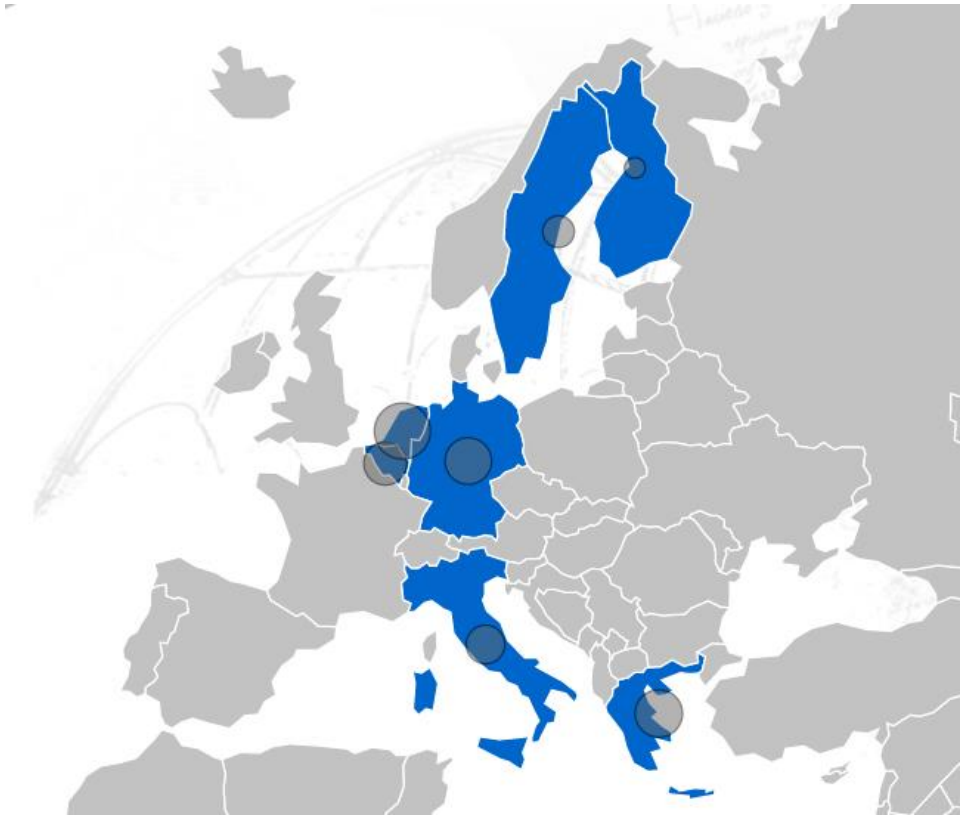
(Bio)energy RTD institutes

ΚΑΠΕ CRES

RE·CORD

DBFZ

CERTH CENTRE FOR RESEARCH & TECHNOLOGY HELLAS



Member organisations

BioFuel Region

CluBE Bioenergy & Environment Cluster

Bioenergy EUROPE

Case study partners (economic actors)

renewi

GoodFuels

ArcelorMittal

GREEN FUEL Nordic Oy

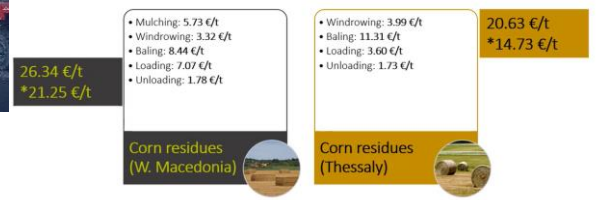
TORR®COAL

Eni

btg-btl biomass-to-liquid

THE MUSIC PROJECT – ACTIVITIES

- Framework assessment
- Stakeholder engagement
- Logistical models
- Four case studies
  - Nordic case study – pyrolysis oil transport and upgrading to transport fuels
  - Greek case study – torrefied biomass for district heating
  - Italian case study – Microbial oil for green transport fuels
  - International Case Study – Torero project



WHITE PAPERS

- Three White Papers were published at https://www.music-h2020.eu
- Concise and accessible overview of the technologies, status, applications, benefits and market prospects
- Also available as hardcopy (limited edition)

AGENDA OF THE BUSINESS MISSION

Wednesday, 15 February 2023

MUSIC Workshop: Prospects of biocoal for the metallurgical industry

Venue: Ghent Marriott Hotel (Korenlei 10, 9000 Gent, Belgium)

Time	***Topic, Presentation***
13:00-14:00	Arrival & Welcome Coffee
14:00-14:10 (10 min)	**Welcome & Introduction to MUSIC project** - Manolis Karampinis, Business Development & Membership Director | Bioenergy Europe - Patrick Reumerman, Senior Consultant | BTG Biomass Technology Group
14:10-14:30 (20 min)	**Overview of biomass use in the steel industry** - Åsa Ekdahl, Head of Environment and Climate Change | World Steel Association
14:30-14:50 (20 min)	**SmartCarbon Technologies at ArcelorMittal: Steelanol & Torero** - Wim van der Stricht, CTO – Technology Strategy – CO_2 and Circular Economy | ArcelorMittal
14:50-15:10 (20 min)	**The Torero project – technology** - Randolph Hagenbeek, Sr. Technologist/Applied Torrefaction Expert | Torrcoal
15:10-15:30 (20 min)	**The Torero project – biomass sourcing** - Daneel Geysen, Material Development Manager | Renewi
15:30-16:00	Coffee break
16:00-16:20	**Swedish bio-coal for the steel industry** - Pawel Donaj, Head of Process Technology | Envigas
16:20-16:40	**Alternatives to coal in industrial processes** - Johan Lilliehöök, Director Business Development | AIREX Energy
16:40-17:00	**Prospects in using biomass for manganese alloys production** - Sten Yngve Larsen, R&D Senior Specialist | Eramet
17:00-18:00	**Open discussion on prospects and challenges for biomass use in the metallurgical industry** - Moderator: Manolis Karampinis, Business Development & Membership Director | Bioenergy Europe
19:30	Networking dinner @ Novotel Gent Centrum / Gruuthuuskelder

Thursday, 16 February 2023

MUSIC Field Visit: ArcelorMittal Gent

Venue: ArcelorMittal Gent Steel Mill (John F. Kennedylaan 51, 9042 Gent)

Time	***Topic, Presentation***
08:30	Bus pick-up from Poel 14, 9000 Gent (around 5' min walking from Ghent Marriott Hotel)
08:30-09:15	Travel to ArcelorMittal Gent
09:15-09:45	**Introduction to ArcelorMittal Gent steel mill / safety instructions**
09:45-12:30	**Visit of the steel plant, including Torero and Steelanol units**
12:30-13:30	Light lunch break
13:30-14:30	Return to Ghent train station
14:30	Drop-off at Ghent train station / end of event

Hosts:

In collaboration with:

The projects MUSIC, Torero, Steelanol and RE4Industry have received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 857806, 745810, 656437 and 952936 respectively.

RE4INDUSTRY

Renewable energies for industries

100% Renewable Energies for Industries

www.re4industry.eu

Consortium

TECHNOLOGICAL AND SOCIAL EXPERTS

circe

btg biomass technology group

CERTH CENTRE FOR RESEARCH & TECHNOLOGY HELLAS

WIP RENEWABLE ENERGIES

WHITE

RENEWABLE ENERGY-ORIENTED ASSOCIATIONS

Bioenergy EUROPE

ENERGY EFFICIENCY in Industrial Processes

eseia european sustainable energy innovation alliance

ENERGY INTENSIVE INDUSTRIES

sidenor

MYTILINEOS

Corbion

Vision

SHORT-TERM VISION

2030

TECHNOLOGY OPTIONS

Conventional RE heating
- Biomass
- Bioenergy carriers
- Solar (high temperature)
- Geotherm

ACHIEVABLE RATES

- CO2 balance > 0 (reduced according to RE use)
- RE use <50%

CURRENT SECTOR NEEDS

- Existing options for retrofit
- Cases already implemented
- Lessons learned
- Insight in cost / economics
- Opportunities (e.g. for financing, long term RE contracting)
- Positive social perception
- Influence for a better framework

LONG-TERM VISION

TECHNOLOGY OPTIONS

- Conventional RE heating / power
- New RE (solar thermal, bio syngas)
- H2 (electrolysis / syngas)
- E-fuels (synthesis fuels from RE based hydrogeneration of CO2 captured)

ACHIEVABLE RATES

- CO2 balance ≤ 0
- RE use = 100%

CURRENT SECTOR NEEDS

- Scope to understand the future options on RE
- Implications for retrofitting to produce and adopt e-fuels
- Energy balances and key indicators of adopting each RE alternative (for an early decision making in short-medium term)
- Expected costs for RE use

2050

RE4Industry actions

RE4Industry methodology can be expressed through 7 action axes targeted to generate confidence, facilitate vision, provide support and ensure market options to EIIs.

A strong engagement strategy following a multiactor approach

A dialogue with and within EIIs and EII organizations

A thoughtfully review of RE technologies and options for a 100% RE production by 2050

Insights into industry retrofitting and promotion of RE integration

Recommendations for the uptake of RE by EIIs and advocacy

Multiplication and replication

A solid dissemination and communication strategy

Thank you for your attention!

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