

# Energy efficiency in industrial processes (EEIP)

Yvonne van Delft, Joint Program Coordinator (TNO)

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#### Outline

- Why Energy Efficiency?
- ► The EERA approach
- Industry collaboration
- Present focus
- Value & impact
- Summary





European Energy Research Alliance

## European Energy Research Alliance

To catalyse European energy research for a climate-neutral society by 2050

The European Energy Research Alliance is the largest energy research community in Europe. EERA is a key player in the European Union's Strategic Energy Technology (SET) Plan and the Clean Energy Transition.

It is a membership-based, non-profit association and brings together 250 universities and public research centres in 30 countries.

18 EERA's joint research programmes cover the whole range of low-carbon technologies as well as systemic and cross-cutting topics.





### Why Energy Efficiency?

- Industry + services sector consume 39.3% of EU final energy
- Energy-efficient technologies and services contribute to about 40% of cumulative emissions reductions to 2070



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Final energy consumption by sector, EU, 2019



(\*) International aviation and maritime bunkers are excluded from category Transport. Source: Eurostat (online data code: nrg\_bal\_s)

eurostat 💿



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## Why Energy Efficiency?

Much has been done (large energy intensive industries), but untapped potential for EE remains huge





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Source: IEA

## Why Energy Efficiency?

Industrial energy efficiency results gives negative GHG abatement costs





#### Source: IEA

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#### Why Energy Efficiency?





Source: IEA



#### **Energy efficiency measures – low hanging fruits?**



The lowest hanging fruits are also the cheapest...



### Energy efficiency measures – low hanging fruits?

- A lot has been done
  - Waste heat utilisation
  - Process integration
  - Optimized manufacturing processes
  - Local energy systems development
  - Environmental friendly reductants (biocarbon...)



- But even if the "high" hanging fruits are hard to get higher energy efficiency still has the potential to make an significantly reduced environmental impact
  - Large investments
  - Longer time to return of investment
  - Poor business case
  - Industry is "cash driven"





## How to collect the "high hanging fruits"...?

The EERA JP EEIP way

- ► Focus on Energy Intensive Industries:
  - Assess industrial processes to contribute to the implementation of more efficient technologies and solutions;
  - Propose advanced concepts and designs;
  - Verify the viability and affordability of the proposed solutions through concrete demonstration projects.





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## EERA JP EEIP in numbers – our "task force"

- 17 R&D institutes
- 10 countries
- Complement the work of industry lead initiatives in research activities on EE (such as ASPIRE, FoF...) by focusing in activities with lower TRL
- Opening access to infrastructures across Europe and joining forces of the best institutes







#### From Innovation 2 Value creation

Energy efficiency – a "two fold" perspective;

- ► Governments, NGOs, IEA etc...;
  - Reduced environmental impact
  - ▶ Incentives, CO2 tax, NOx tax, ETS...
- Industry...;
  - Reduced cost through reduced energy consumption

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Higher output for the same input

A saved kW is 0 a good kW! A kW giving 2 kg product is better than a kW giving 1 kg product!







heat pump association

Industry

≈enpa

european











Federación Española de Asociaciones de Fundidores





confederation of

paper industries

Sustainable Process Industry through Resource and Energy Efficiency

Sociedad de Industrias de Forja por Estampación, S.L.

ASMET<sup>®</sup>

THE AUSTRIAN SOCIETY FOR METALLURGY AND MATERIALS





#### Present focus

- Focus on Energy Efficiency in Industry
- Involvement SETplan & CETP
- Collaboration & publication of whitepapers on relevant topics:
  - Heat pumps (2020), thermal energy storage (2022), role & impact of Energy Efficiency
- Knowledge sharing and exchange
- Access to marketplace for shaping EU proposals
- Increase collaboration with professional interest groups & industry
- ► Increase communication



**Strengthening Industrial Heat Pump Innovation** Decarbonizing Industrial Heat



SI		enterios	TNO	innovation for life	2
	UNIVERSIT FOLITECNI DE VALENO		NTB mercedicte Hartschatter Griterek Barts	RI. SE	DANISH TECHNOLOGICAL INSTITUTE



CETP Clean Energy Transition Partnership Input Paper to the Strategic Research and Innovation Agenda

Heating and Cooling

Final Version, December 2020 The Clean Energy Transition Partnership is a transmissional joint programming initiative to boost and accelerate the energy transition, building upon regional and national RDI funding programmes.



#### Value and impact

- Strategy and policy => SET plan
  - Partner of IWG6 focusing on Energy Efficiency in Industry.
- Knowledge sharing from workshops, conferences and collaboration
- Platform for coordinating large European efforts
- Mobility and community building

#### The European Strategic Energy Technology Plan









#### Vicion

Vision

To be the European leading R&D community in Energy Efficiency in Industrial Processes creating synergy advantages for European research organisations and industry in support of the energy transition and the SET-Plan goals.

- >> Strong connection to SETPlan IWG6 Energy Efficiency in Industry.
- >> Increase impact to the industry:
  - White papers
  - Increase communication
  - Increase connection to A.SPIRE

>> Create a research agenda indicating research priorities for medium to long-term by:

- Sharing of knowledge and infrastructure
- Joint prioritisation of research activities
- Alignment of research efforts
- Coordination with industry & provide research and innovation assistance to industrial partners

#### Key values for participants

- Be part of the strategic leadership for Industrial Energy Efficiency R&D
  - Contribute to development of and having a voice in R&D and funding priorities, EU and national
  - Dialogue with industry
  - Access to marketplace for shaping EU proposals

#### • Be part of the network of leading R&D groups

- Visibility and access to research area
- Knowledge sharing and exchange; collaboration across projects
- Dissemination and communication



