

# Decarbonising industry through science for policy

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### Outline



R&D industrially





### Brief History of the JRC

- 1957- JRC by the EURATOM Treaty (The "Joint Nuclear Research Centre")
- 1994 Institute for Prospective Technological Studies (IPTS) in Sevilla
- Today JRC has 6 sites: Brussels, Geel (BE), Karlsruhe (DE), Ispra (IT), Petten (NL), Sevilla (ES). +2000 scientific staff (400 in Sevilla)



 JRC is the EU Commission's science & knowledge service, providing scientific & technical advice to support EU policies.



### Directorate B Circular Economy & Industrial Leadership





# European Integrated Pollution Prevention and Control Bureau – EIPPCB

- Established in 1997 under Directive 96/61/EC
- Steers the information exchange between stakeholders to elaborate
  Best Available Techniques (BAT)
  Reference Documents (BREFs) to evaluate the environmental impact of large industrial installations
- 16 scientific staff + support
- <u>https://eippcb.jrc.ec.europa.eu/</u>





### Key Figures of the JRC BREFs

2022

32 BREFs Best Available Techniques (BAT) reference documents (300-1300 pages each)





Cooperation

with 1900 +

experts

today in TWGs





**200 000 +** BREF downloads in 2020 from across the world



BAT conclusions

- Consensual
- Voted upon by MS
- Published in the OJEU

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### 2. Path to uptake R&D industrially

Can the "Sevilla process" play a role in the decarbonisation of industry?





# Sevilla Process: evidence-based & participatory decision process



Commission

### Framework: Industrial Emissions Directive (IED)

Key instrument for minimising emissions and consumption of industrial activities in Europe.

General framework:

- prevent and, if not feasible, reduce pollution
- high level of protection for the environment as a whole
- permit based on Best Available Techniques (BAT)

In total ~54000 agro-industrial installations in EU

IED currently under revision





### What makes a "good" Best Available Technique (BAT)?

- Stakeholder consensus: Industry, Environmental NGOs, EU Member States
- Setting BAT-AELs (Assoc. Emission Levels, e.g. TVOC, dust, NO<sub>X</sub>, NH<sub>3</sub>, SO<sub>X</sub>...for air; TSS, total N & P,...for water) & BAT-AEPLs (Assoc. Environmental Performance Levels, e.g. specific energy consumption, water consumption, waste water discharge, gross & net mechanical energy efficiency, etc.) for Key Environmental Issues (KEI) for each sector.
- Criteria:
  - Well-performing plants
  - Description including applicability
  - Decisions based on data availability, comparability & contextual information
- Including techniques for pollution prevention/abatement, decarbonisation, and circularity



### Example (LCP BREF) $NO_x$ emissions from coal-fired PC boiler > 300 MWth



For existing plants, the lower end of the range is considered achievable when using SCR.



## Can BATs reduce greenhouse gases (GHG) emissions?

Synergies exist in both reducing emissions under the scope of IED (non GHG) and GHG reduction

- BATs are evaluated for energy-intensive industries (steel, cement, chemical process)
- BATs evaluate techniques that can also reduce GHG emissions such as:
  - Energy efficiency & energy consumption
  - Abatement techniques of channelled emissions
  - Reducing diffuse emissions
- Specific working groups on decarbonisation and circularity techniques are forming in current BREF reviews (Ceramics)





### Classical R&D uptake scenario

How is your solution turned into a recommended technique?





### **INCITE** EU INnovation Centre for Industrial Transformation and Emissions

Circular economy





Accelerate the uptake of emerging techniques (decarbonisation, circular economy, depollution)

Identify emerging techniques and characterise their advancement (TRL) and performance (ET-AELs)		Publish industrial sector updates - a "progress scoreboard" per IED sector		
Inject information into the BREF process	Recommend the full or partial reviews of BREFs	Trigger policy updates in climate, environment, and research	Improve public access to information	

**Accelerating Innovation**: From Best Available Techniques (BAT) to Best Emerging Techniques (BET)

- Cover several European Green Deal objectives: Zero Pollution, circular economy and decarbonisation.
- Operated by the European Commission ensuring a high degree of independence with respect to economic interests.
- Provide legal flexibility to industrial frontrunners for testing/implementing emerging techniques.
- Evolution of the Sevilla process (more dynamic, forward-looking approach).



# The role of policy in promoting R&D and transforming industry



### BAT/BREFs: Key enablers of the EU Green Deal

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- "Review EU measures to address pollution from large industrial installations"
  - "Ensure consistency with climate, energy and circular economy objectives"
  - "Decarbonisation of energy-intensive industries"
- "Assessing options for further promoting circularity in industrial processes in the context of the review of the IED"



### EU Taxonomy & Financing

What? A list of technical criteria to determine when activities are "green"





### Summary & Conclusions

- The JRC, among other things, evaluates technologies to determine BAT. BAT-AELs (& maybe BAT-AEPLs in the future) are the mandatory basis for Emission Limit Values in permits.
- Until now, this process was based on implemented technologies.
- In order to stimulate green transition & uptake of new technologies, the analysis of emerging technologies will increase.
- Industry may have to report transformation plans (decarbonisation, zero pollution, circularity).
- Financing instruments will be based on EU Taxonomy. The impact of your R&D is wider!



### Keep in touch



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### Thank you



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