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EXPERTISE

Comparative study on the role of the European Energy Network agencies in the implementation of industry decarbonisation public policies

Presentation at the EnR Regular Meeting
February 15th 2022

Agenda

0 | Introduction

1 | Dynamics of industry decarbonisation in EnR network countries

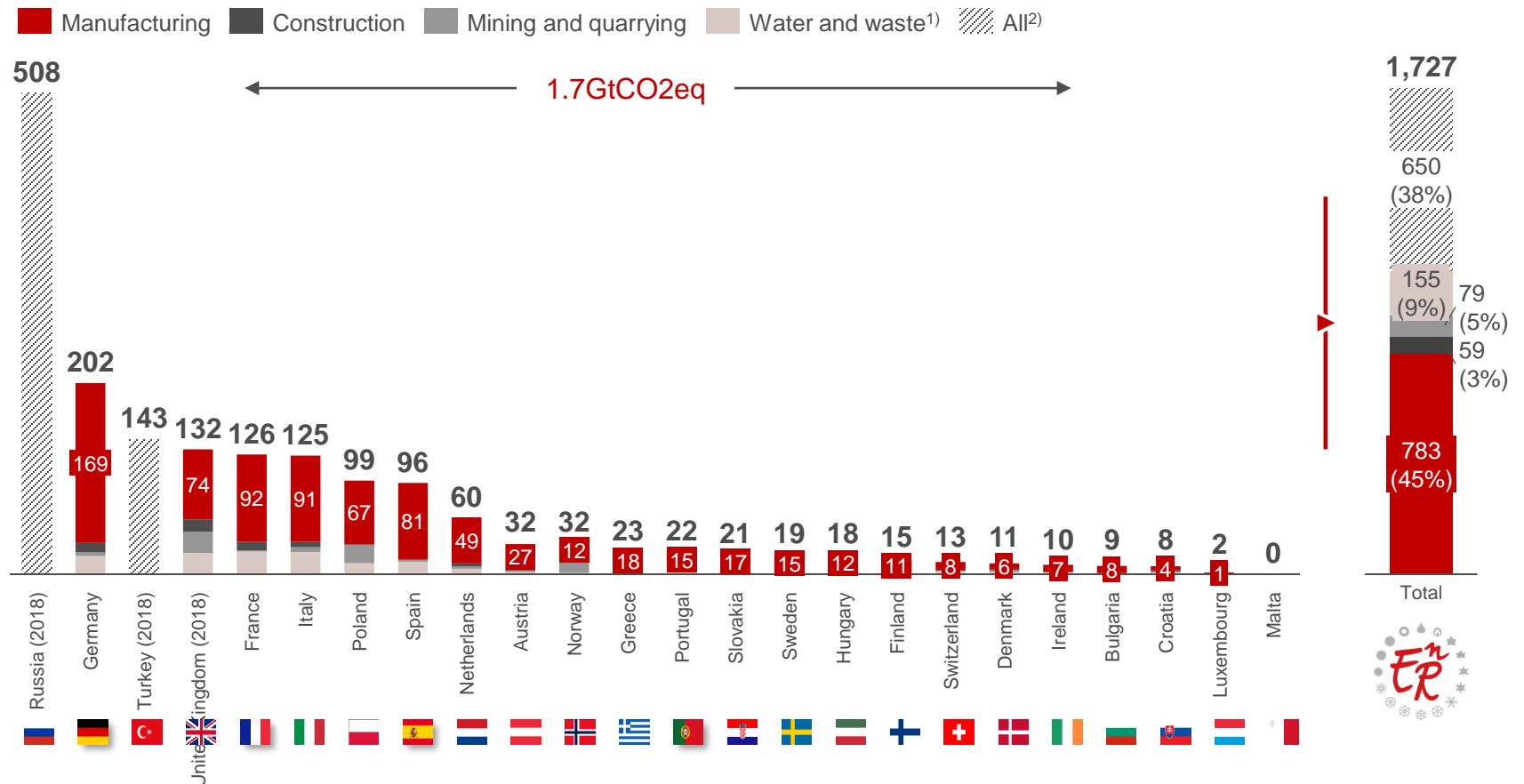
2 | Key stakes, obstacles and drivers to industry decarbonisation among EnR network countries

3 | Role of EnR Network Agencies in the field of industry decarbonisation

4 | Conclusion

The industrial sector has emitted ~1.7 GtCO₂eq in 2018-2019 among the 24 countries of the European Energy network

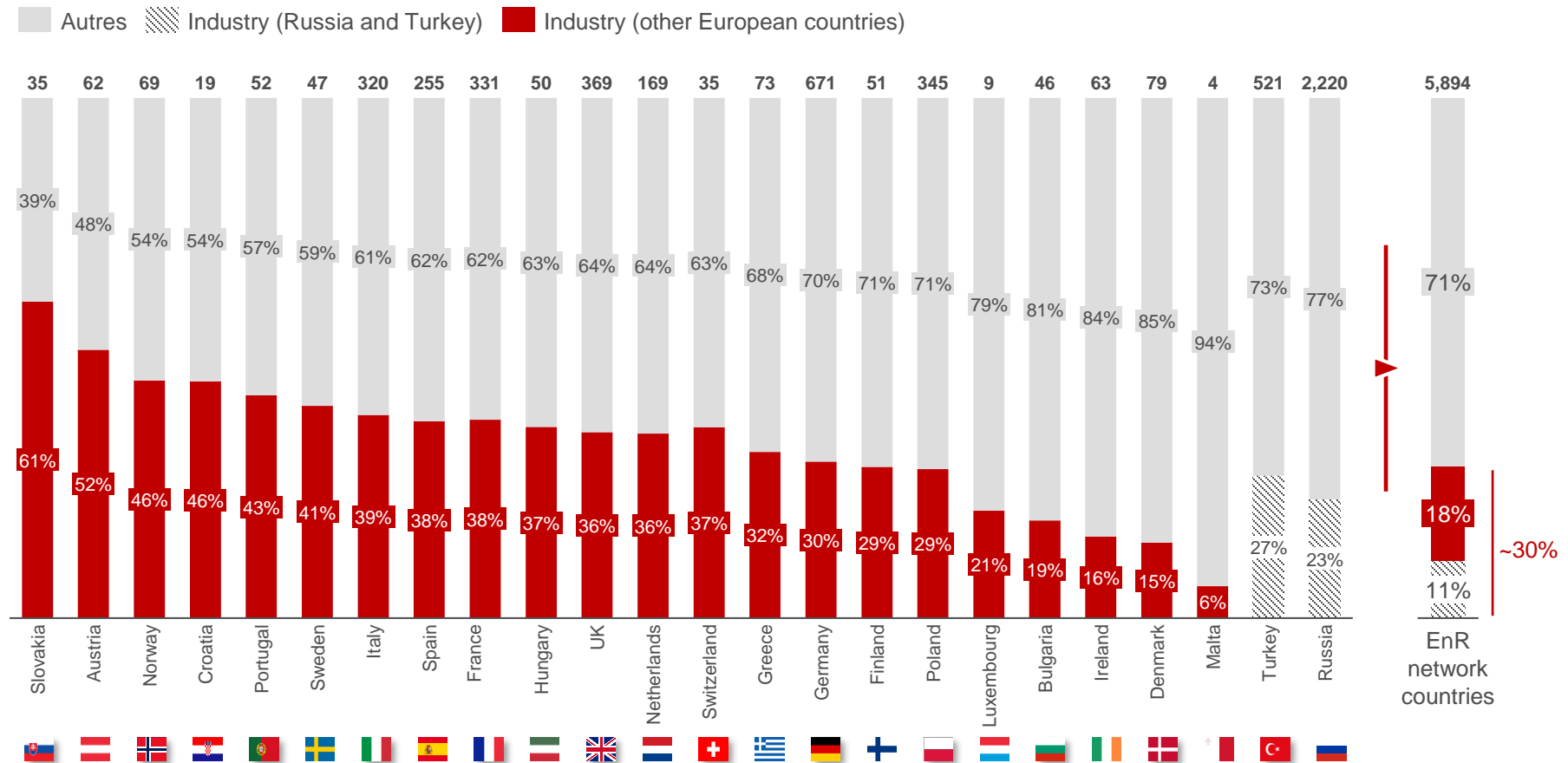
GHG EMITTED BY INDUSTRY (EXCL. ENERGY) BY EnR MEMBER COUNTRY, EXCL. LULUCF 2019 unless indicated otherwise, MtCO₂eq



1) Water supply; sewerage, waste management and remediation activities
 2) Industry and construction, industrial processes and product use and waste

However, the industrial sector represents a significant share of national emissions in the majority of countries (~30% on average), therefore most countries are highly concerned

SHARE OF INDUSTRY EMISSIONS (EXCL. ENERGY) BY MEMBER COUNTRY in 2019¹⁾, in MtCO₂eq



1) Sweden, Norway, Turkey and Russia data are from 2018 / hypothesis that emissions are stable from 2018 to 2019

2) Including industry processes, industry and construction, and waste

This study pursues three key objectives, related to establishing a synthesis of the status of industry decarbonisation in Europe, and highlighting the role of the EnR network in fostering this dynamic

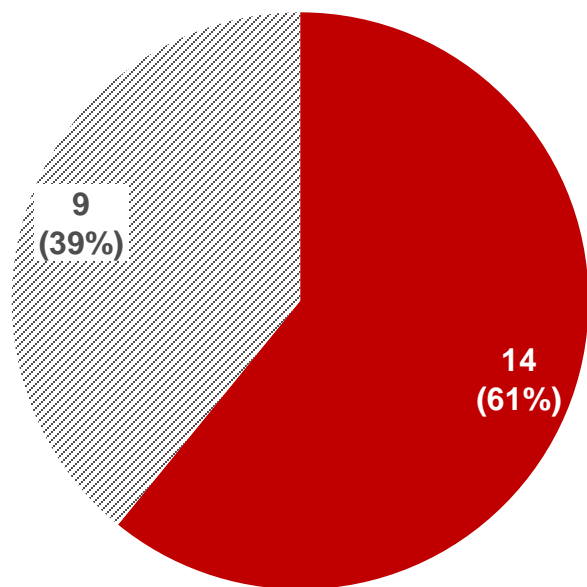
- 1** Drawing up a synthesis of the current dynamics, solutions and obstacles in the field of industrial decarbonisation in Europe



Identifying key instruments and flagship projects put in place by EnR agencies in terms of supporting and implementing public policies in this field
- 2** Encouraging feedback and the sharing of good practices between the EnR agencies in the field of industrial decarbonisation;
- 3** Highlighting the role, the expertise and the resources of the EnR Network in supporting the various European players to achieve the objectives of the EU's industrial strategy.

The following analyses are based on the answers of 14 EnR Network Agencies which participated in the survey, which represent ~60% of the Network's members

OVERVIEW OF AGENCIES HAVING ANSWERED THE QUESTIONNAIRE

Σ = 23 agencies surveyed





 Number of answers
 Number of agencies that did not give an answer

Agencies with programmes specifically targeted at industry decarbonisation

	ADEME (France)		EWA (Malta)
	ENEA (Italy)		ADENE (Potugal)
	MOTIVA (Finland)		RVO (Netherlands)
	SwissEnergy (Switzerland)		SEA (Sweden)
	DENA (Germany)		SEDA (Bulgaria)
	AEA (Austria)		IDAE (Spain)

Agencies which mandate do not include industry decarbonisation or do not have instruments specifically targeted at industry decarbonisation

	EST (UK)		CRES (Greece)
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 EST having no activities in the field of industry decarbonisation, EST answers presented in the following pages pertain to the activities of Carbon Trust, which manages industry decarbonisation programmes on behalf of the UK government

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Recovery plans have notably been accompanied by a strong acceleration of H2 development objectives, as shown by the numerous national H2 strategies recently published ...

NATIONAL HYDROGEN STRATEGIES

2021, electrolysis capacity and investments by 2030

Legend

- H2 Strategy adopted
- H2 Strategy in progress

Expected electrolysis capacity by 2030 (GW)

- Energy produced (TWh)¹⁾
- Expected support by 2030 (€B)

Up to 5 GW

- ~15 TWh (est)
- £500m (~€580M)³⁾

3 – 4 GW

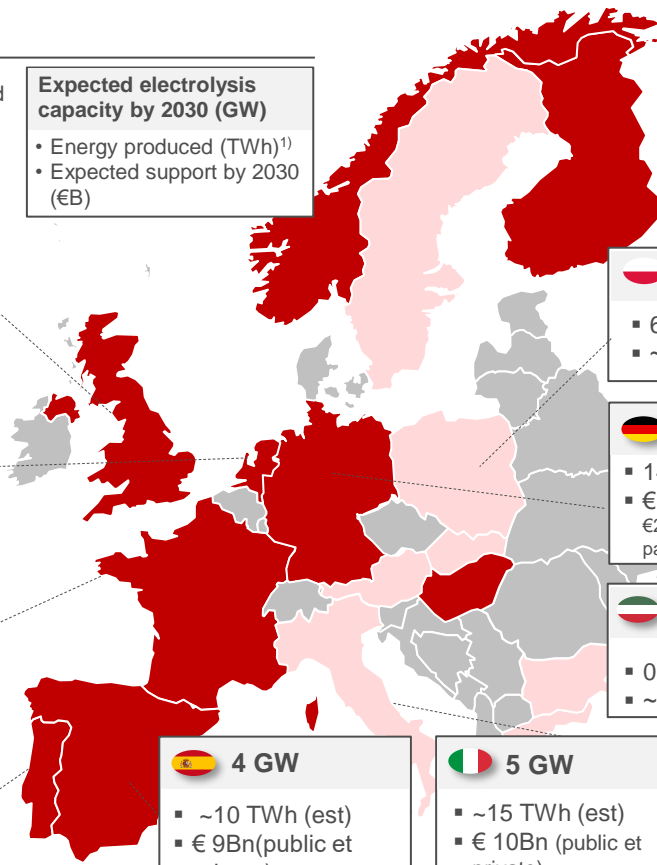
- ~10 TWh (est)
- n.c.

6,5 GW

- ~20 TWh (est)
- €7B (public)

2 – 2,5 GW

- ~10 TWh (est)
- € 7-9 Bn (25% public, 75% private)



2 GW

- 6 TWh
- ~220M€ (public)⁴⁾

5 GW

- 14 TWh
- € 9Bn(public) including €2B for international partners

0,2 GW

- 0,7 TWh
- ~M€ (public)⁵⁾

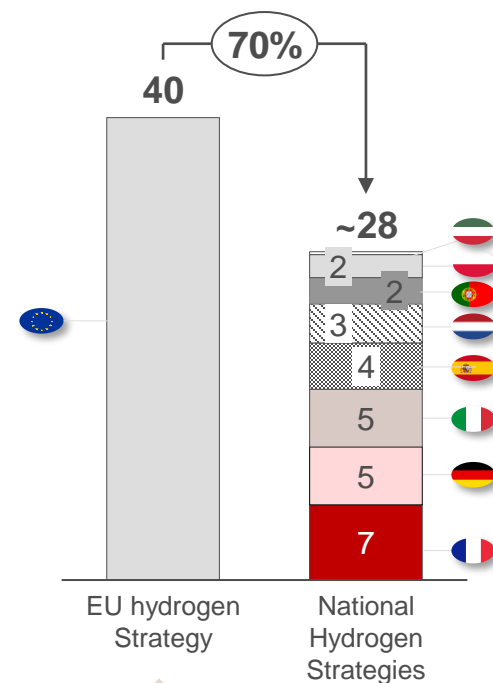
4 GW

- ~10 TWh (est)
- € 9Bn(public et private)

5 GW

- ~15 TWh (est)
- € 10Bn (public et private)

Announced targets of electrolysis capacities in the EU by 2030 (GW)



European hydrogen strategy:
 up to 333 TWh of hydrogen production (10 Mt/year) by 2030
 – and a global investment of 320-460 Bn€

1) Load factor hypothesis: ~3 000h/year (2800 in Germany, H2 Germany strategy)

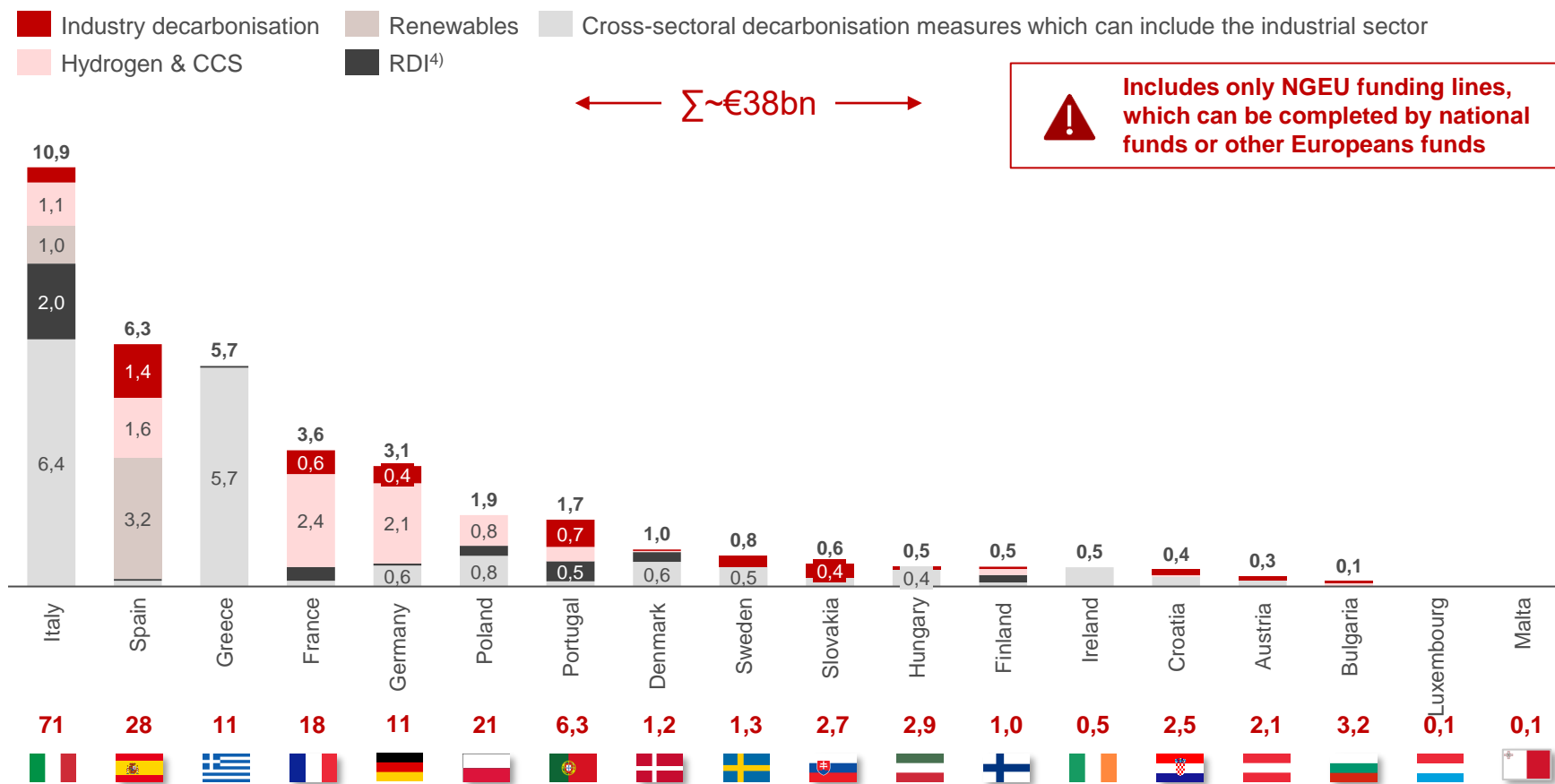
2) Including both consumer and producer subsidies (industry, transport)

3) GBP/EUR : 1,16 – o.w. £240m for new H2 production facilities / 5GW of H2 production capacity planned, electrolysis share non specified 4) PLN /EUR : 0,22 5) HUF/EUR 0,0029

1 | Dynamics of industry decarbonisation in EnR Network countries

Recovery plans have played a role of accelerator with ~€38Bn within the NextGeneration EU budget directly or indirectly related to industry decarbonisation

FUNDING LINES FROM NGEU¹⁾ RELATED TO INDUSTRY DECARBONISATION IN EU STATES RECOVERY PLANS⁵⁾ [€Bn, 2020-21]



Green budget in the recovery plan : at least 37% of total budget (€Bn)

1) Next Generation EU, EU recovery plan – national plans may also include funding lines taken from national budgets or other EU funds (e.g. Cohesion Fund, Just Transition fund) not represented here 2) Includes funding not directed to industry decarbonisation (e.g. development of end-uses) 3) Funding lines targeted at the industrial sector, which can include funding for industry decarbonisation 4) Research, Development and Innovation 5) Only EU countries published a Recovery Plan (it excludes Russia, Turkey, UK and Norway) and Netherlands have not yet published

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2 | Key obstacles and drivers to industry decarbonisation among EnR network countries

EnR Network agencies identify four major categories of obstacles preventing from efficiently achieving the industry decarbonisation challenge today

Very high	Key obstacles identified by $\geq 80\%$ of surveyed agencies
High	Key obstacles identified by $\geq 50\%$ of surveyed agencies



Technical / technological

High

Associated issues

- Level of **technological maturity** of possible solutions
- **Technical potential** available



Organisational / competencies

High

Associated issues

- **Organisation** of the company
- **Financial** capabilities
- In house or externally available and reliable **competencies**
- Access to **knowledge**

Challenges of industry decarbonisation



Economics

Very high

Associated issues

- **Total cost** of decarbonisation solutions
- **CAPEX intensity** of decarbonisation solutions



Behavioural

High

Associated issues

- **Issue prioritization:** feeling the obligation to tackle the issue
- **Influenced by institutional factors** such as incentives, regulation, awareness-raising programmes)

2 | Key obstacles and drivers to industry decarbonisation among EnR network countries

EnR Network Agencies identify five categories of drivers to foster industry decarbonisation, the 3 most important being economic incentive schemes, R&D programmes and external pressures


























OVERVIEW OF MAIN DYNAMICS / SOLUTIONS (1/2)

 Key drivers identified by ≥ 60% of surveyed agencies

Types of solutions / drivers contributing to create a dynamic

Description / Examples

Impact on challenges identified

		Technical-technological	Economics	Organisational competencies	Behavioural & institutional
 Economic incentives schemes	<ul style="list-style-type: none"> Through carbon / energy penalties: ETS market, carbon taxation Through subsidies: support funds, white certificates, tax reliefs 	 Moderate – indirectly incentivizes research	 Strong – improvement of investments' IRR	 Weak	 Strong – economics as key driver of decarbonisation decisions
 Research and development programmes	<ul style="list-style-type: none"> R&D&I programmes publicly run or funded for new technologies, methods, or policies development 	 Strong	 Moderate – in the long run improves the economics	 Moderate – may point out policies shortcomings	 Weak
 Decarbonisation on services / value chain	<ul style="list-style-type: none"> Offers of / support to the development of decarbonisation services such as energy audits, GHG footprint assessment, integrated utilities management. 	 Weak	 Moderate – more efficient values chains, better economics	 Strong – fills technical/competencies gaps	 Weak
 Regulatory & institutional measures	<ul style="list-style-type: none"> Air pollution regulations Thermal and building regulations generating risks and opportunities regarding construction materials 	 Moderate – indirectly incentivizes research	 Moderate – indirect economic incentives for decarbonisation	 Moderate – Incentive organisational structuring	 Strong – regulatory pressure as key driver of decarbonisation decisions
 External pressures	<ul style="list-style-type: none"> Shareholders and investors pressure (green taxonomy) Customers pressure (BtB or BtC) Civil society and public image pressures 	 Moderate – indirectly incentivizes research	 Moderate – indirect economic incentives for decarbonisation (impact on demand)	 Moderate – Incentive organisational structuring	 Strong – external pressure as key driver of decarbonisation decisions

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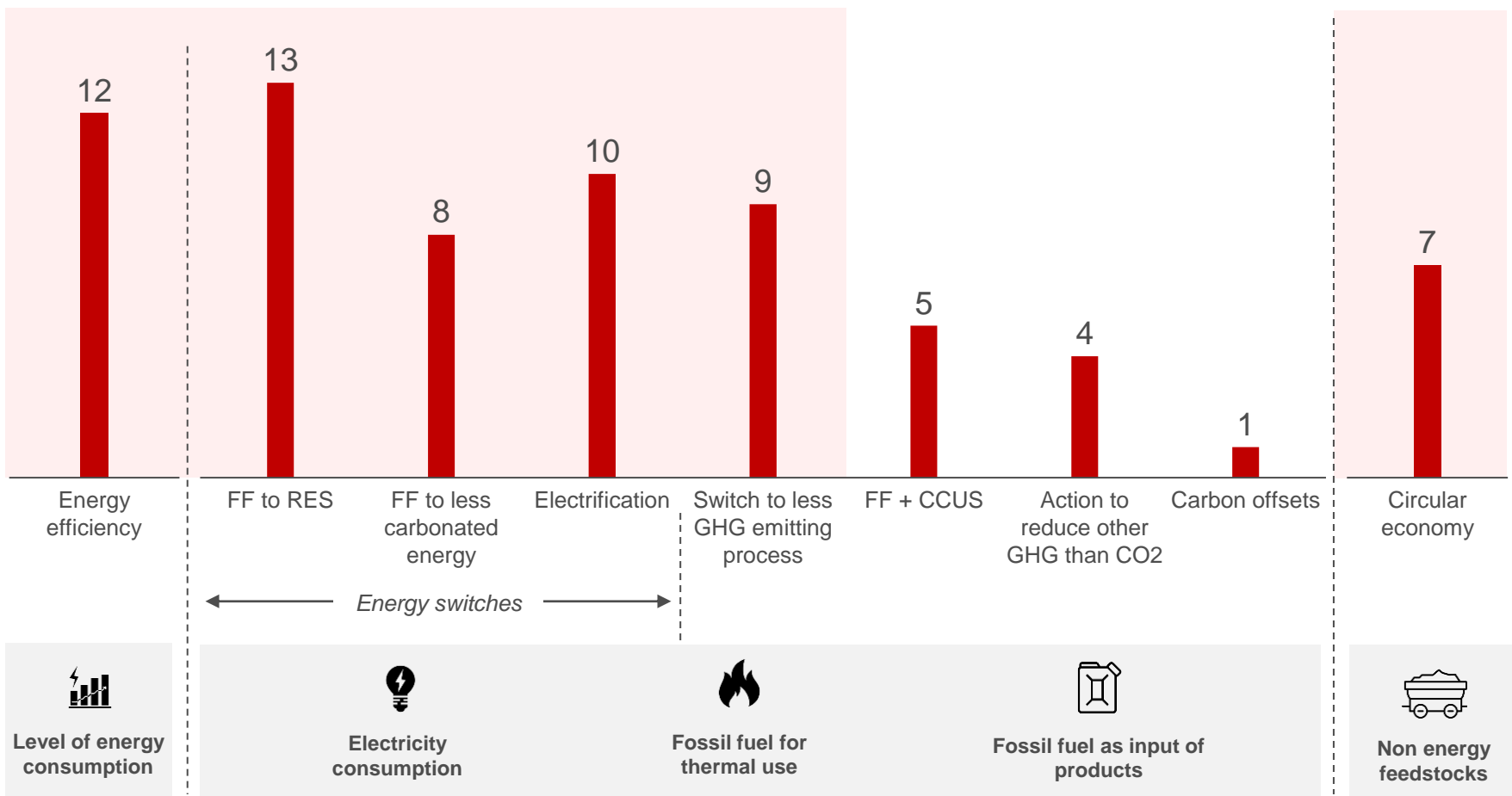
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Most energy agencies are active in the fields of energy efficiency, energy and process switches, as well as circular economy while few specifically target non-CO2 gases or incentivize carbon offsets

OVERVIEW OF MAIN DECARBONISATION ACTIONS SUPPORTED BY ENERGY AGENCIES

2021, sample of thirteen European energy agencies

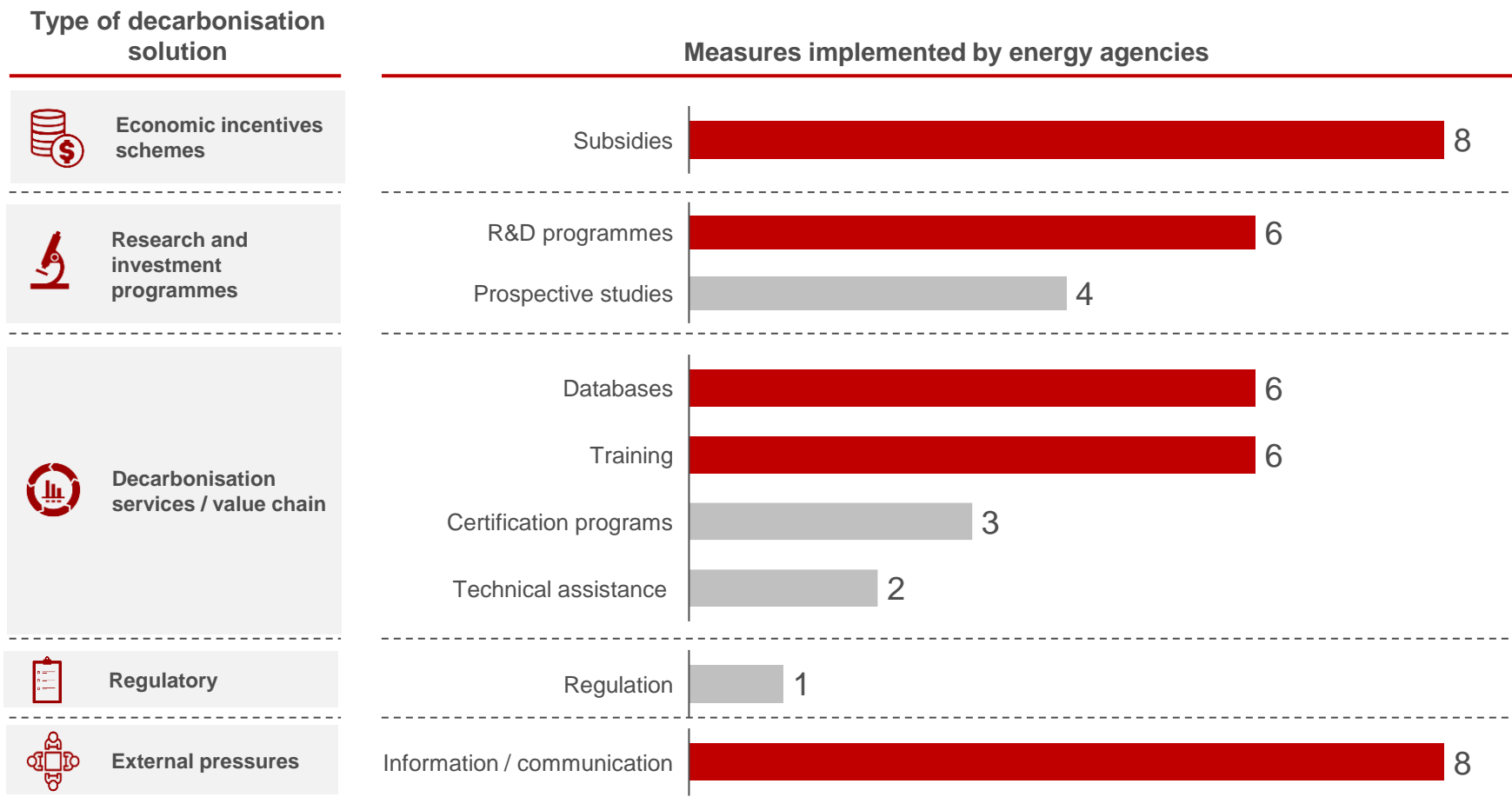
 ≥ 50% of the respondents



EnR Network Agencies constitute states' key operational bodies to implement and manage the instruments providing industry decarbonisation concrete solutions

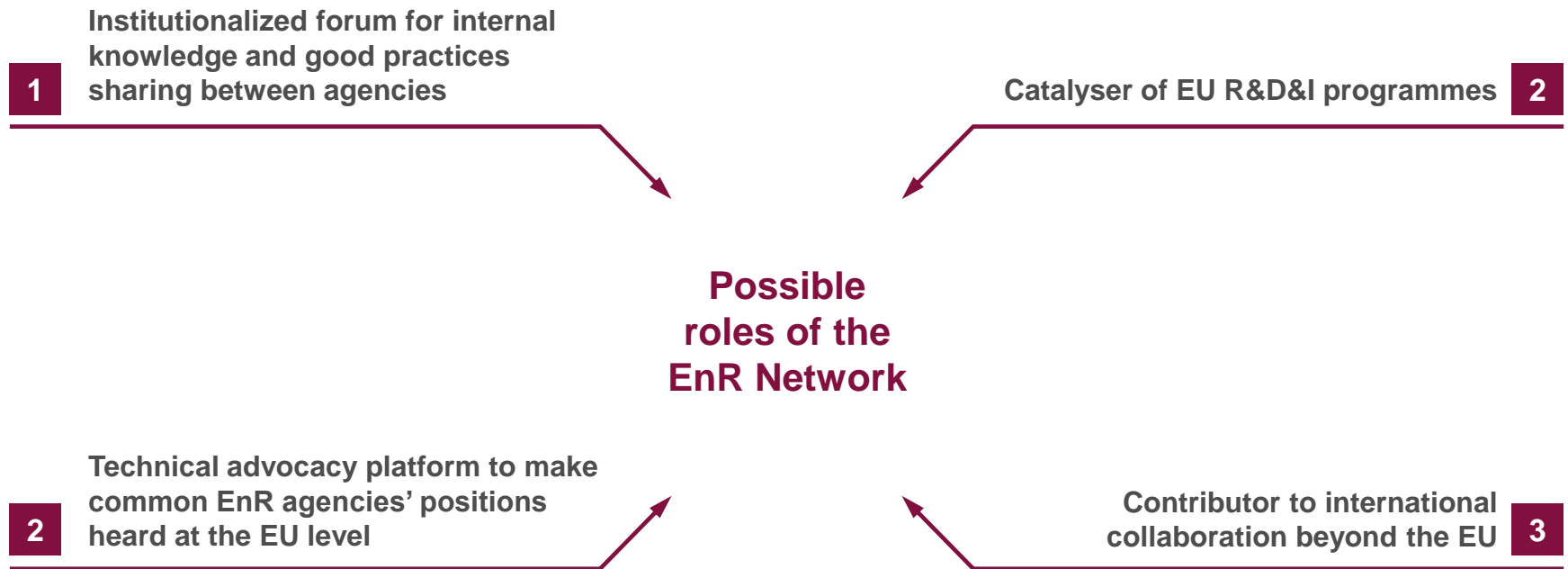
OVERVIEW OF MAIN INSTRUMENTS USED BY ENERGY AGENCIES
2021, sample of thirteen of European energy agencies

■ ≥ 6 respondents (~50%)
■ < 6 respondents



Four roles of the EnR Network regarding industry decarbonisation were identified based on interviews, respondents' answers, and analysis of past actions of the network

ROLES OF THE ENR NETWORK AT THE EUROPEAN LEVEL ON INDUSTRY DECARBONISATION



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