



**UNECE**

Group of Experts on Energy Efficiency



ENERGY



# Decarbonising Industry & Businesses: what's new towards 2030? - Guiding Insights\*

**Stefan M. Buettner, Chair Group of Experts on Energy Efficiency**

EnR Panel Discussion

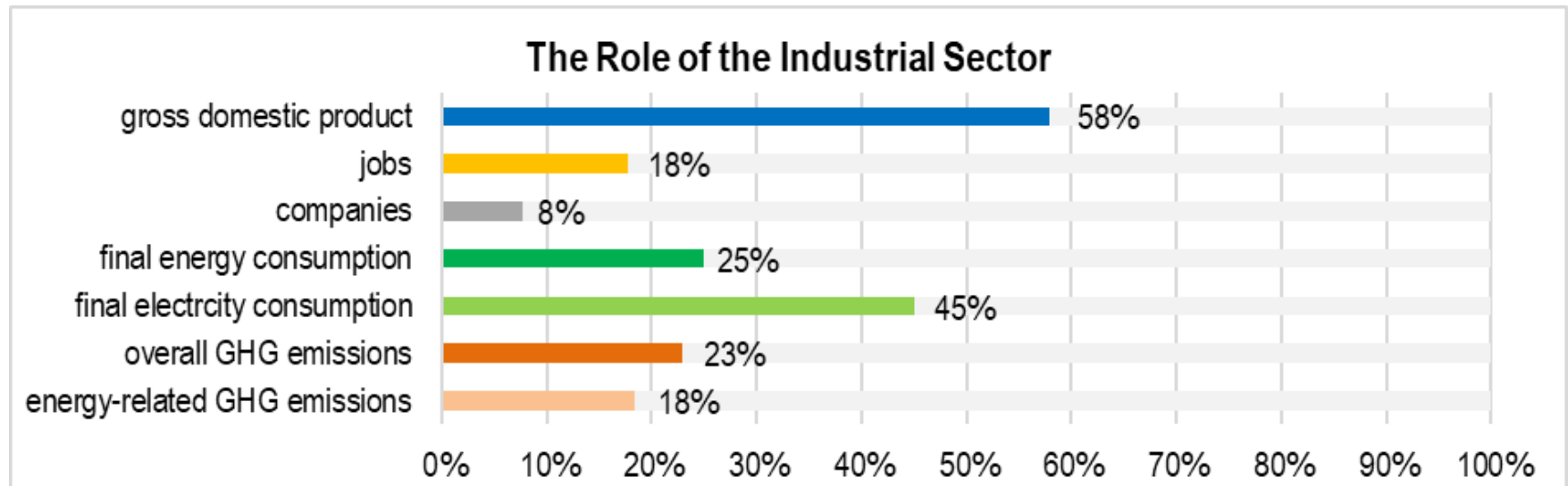
09 March 2023, Online



\*the following slides stem from a UNECE Workshop (25/01/2023, ECE design) and a EEFIG WG (24/01/2023, EEP design)

# Create understanding who we are dealing with?

**Why is industry of particular relevance to meet energy efficiency and climate goals in any sector?**



- Manufacturers play a significant role across a number of metrics in Germany
- Indirect role however remains invisible

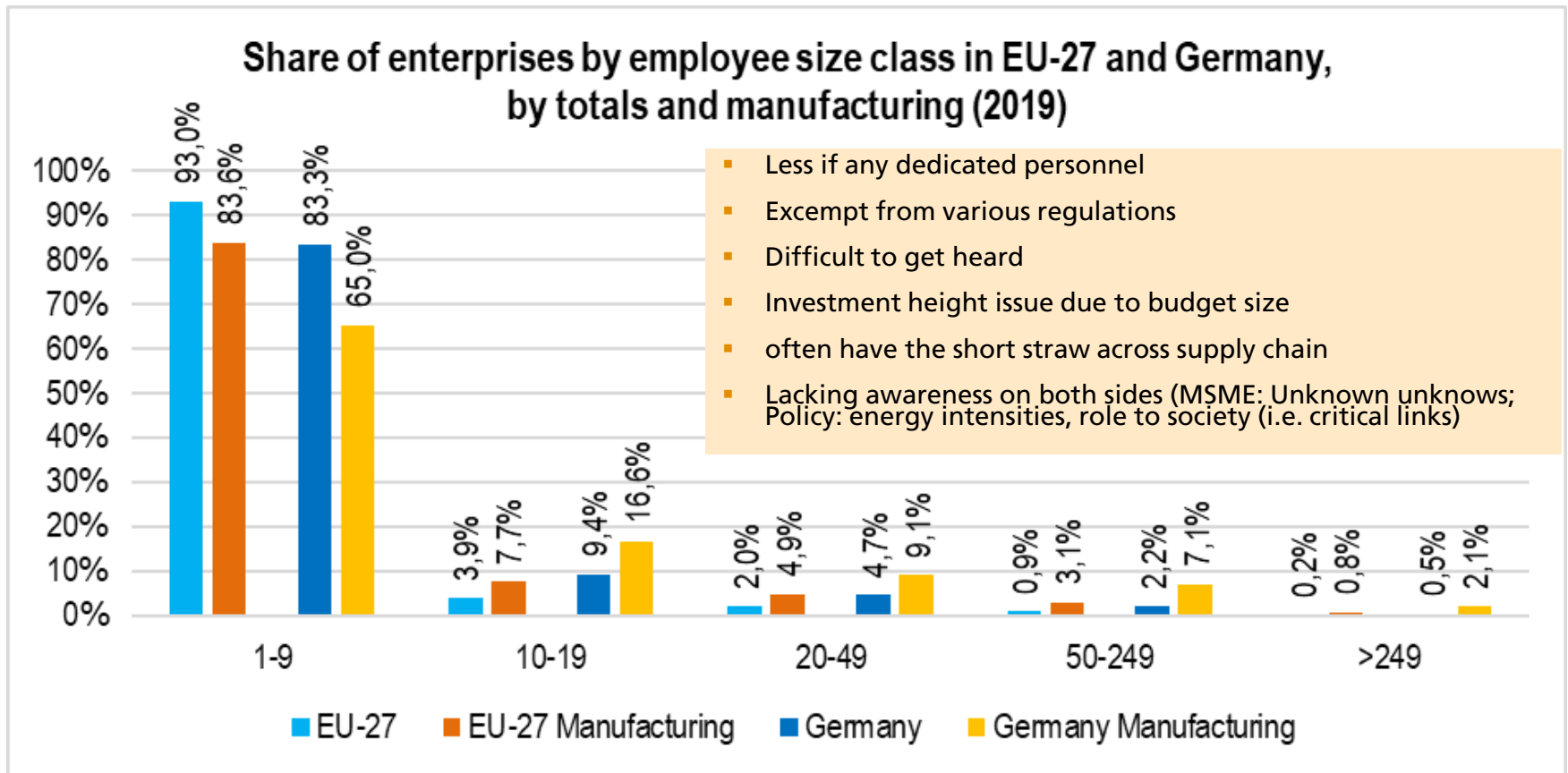
Source: Buettner 2023 „How can climate neutrality be achieved for industry?“ based on Eurostat, Destatis, IEA World Energy Balance

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# Create understanding who we are dealing with?

There is no „the industry“ – industry is hugely varied. SMEs find themselves in a special role



Source: Buettner 2023 „How can climate neutrality be achieved for industry?“ based on Eurostat

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# Measures to reduce emissions: the main categories and how they differ

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## Key findings

The six types of measures have different immediate and ongoing impacts necessitating consideration of external factors

### Reduction

#### Energy consumption



- (Often) initial investments
- ..... Lasting effect .....
- Energy costs
- Energy-related emissions

#### Process-related emissions



- Initial investments
- ..... Lasting effect .....
- Energy costs
- Ongoing costs
- Process-related emissions

### Substitution

#### On-site renewable-based generation



- Initial investments
- ..... Lasting effect .....
- Energy costs
- Energy-related emissions
- Maintenance costs (possibly)

#### Purchase of renewable energy



- No initial investments
- ..... Lasting effect .....
- Energy costs
- Energy-related emissions

### Compensation

#### Certificates and projects



- No initial investments
- ..... Lasting effect .....
- Expenses
- No effect on real energy- and process-related emissions

#### Carbon capture, use, storage (CCUS)



- Initial investments
- ..... Lasting effect .....
- Ongoing costs
- No effect on energy costs
- Net emissions

# 3. The role of opportunity costs, time, and external effects

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### Share of renewable generation compared to share of energy consumed by industry

2019 Shares Regions [49]	Electricity (Totals)			Energy (Totals)		
	Supply		Final Consumption	Supply		Final Consumption
	renewables	low carbon	Industry	renewables	low carbon	Industry
World	26%	36%	42%	14%	19%	29%
OECD	27%	45%	32%	12%	21%	22%
Non-OECD Total	25%	30%	49%	16%	19%	35%
Non-OECD Americas	68%	70%	38%	34%	36%	28%
Non-OECD Europe and Eurasia	19%	37%	42%	5%	12%	27%
Non-OECD Asia (incl. China)	25%	29%	55%	14%	16%	43%
Middle East	3%	3%	23%	1%	1%	28%
Africa	21%	22%	38%	48%	48%	14%
EU-27 [50,51]	34%	.	36%	20%	.	26%
China	27%	32%	60%	10%	12%	49%
Germany	40%	52%	45%	16%	22%	25%
Italy	40%	40%	41%	19%	19%	21%
Japan	18%	24%	36%	8%	12%	29%
South Africa	5%	10%	52%	6%	8%	38%
USA	18%	37%	20%	8%	18%	17%

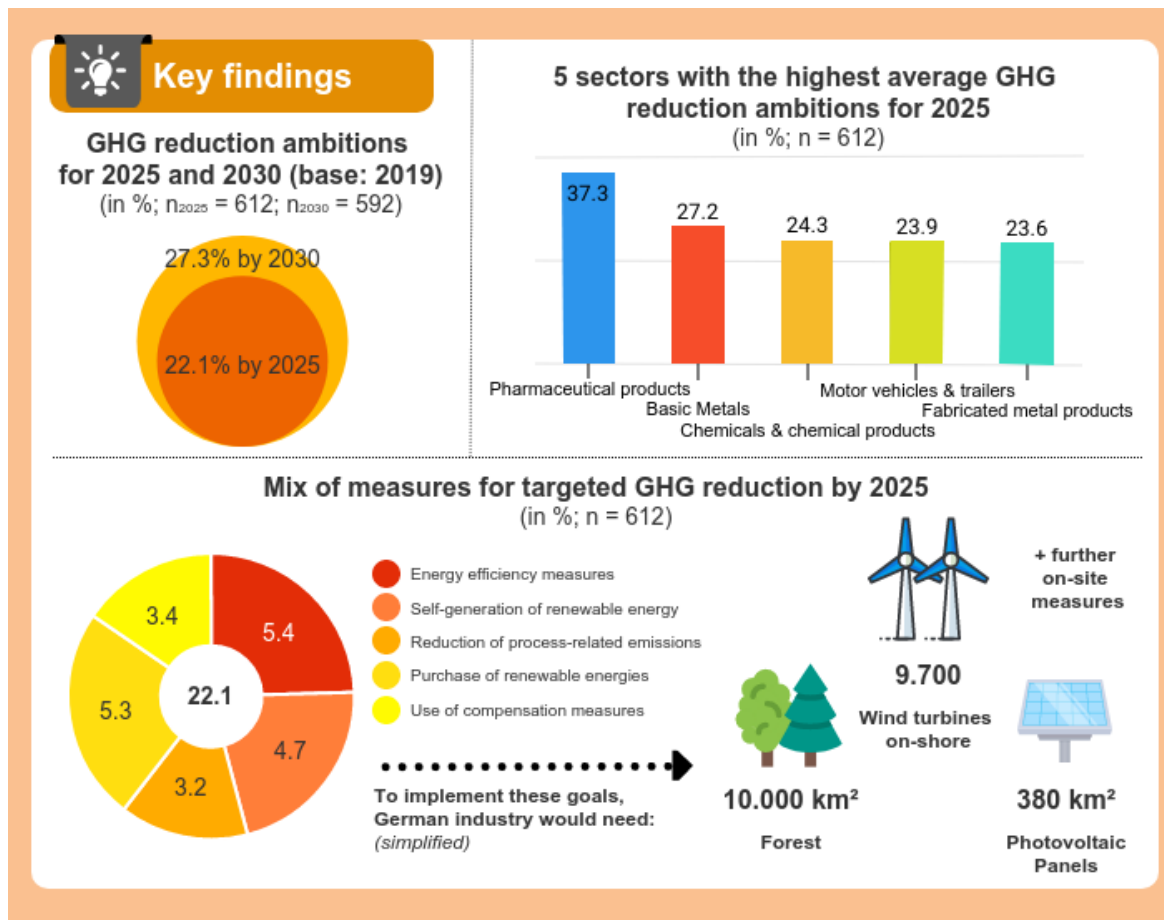
**orange:**  
demand exceeds supply

**yellow:**  
supply almost meets demand

**green:**  
demand is met by supply

low carbon  
= renewables + nuclear

Source: Buettner & Wang 2022  
based on IEA World Energy Balances  
Highlights and Eurostat



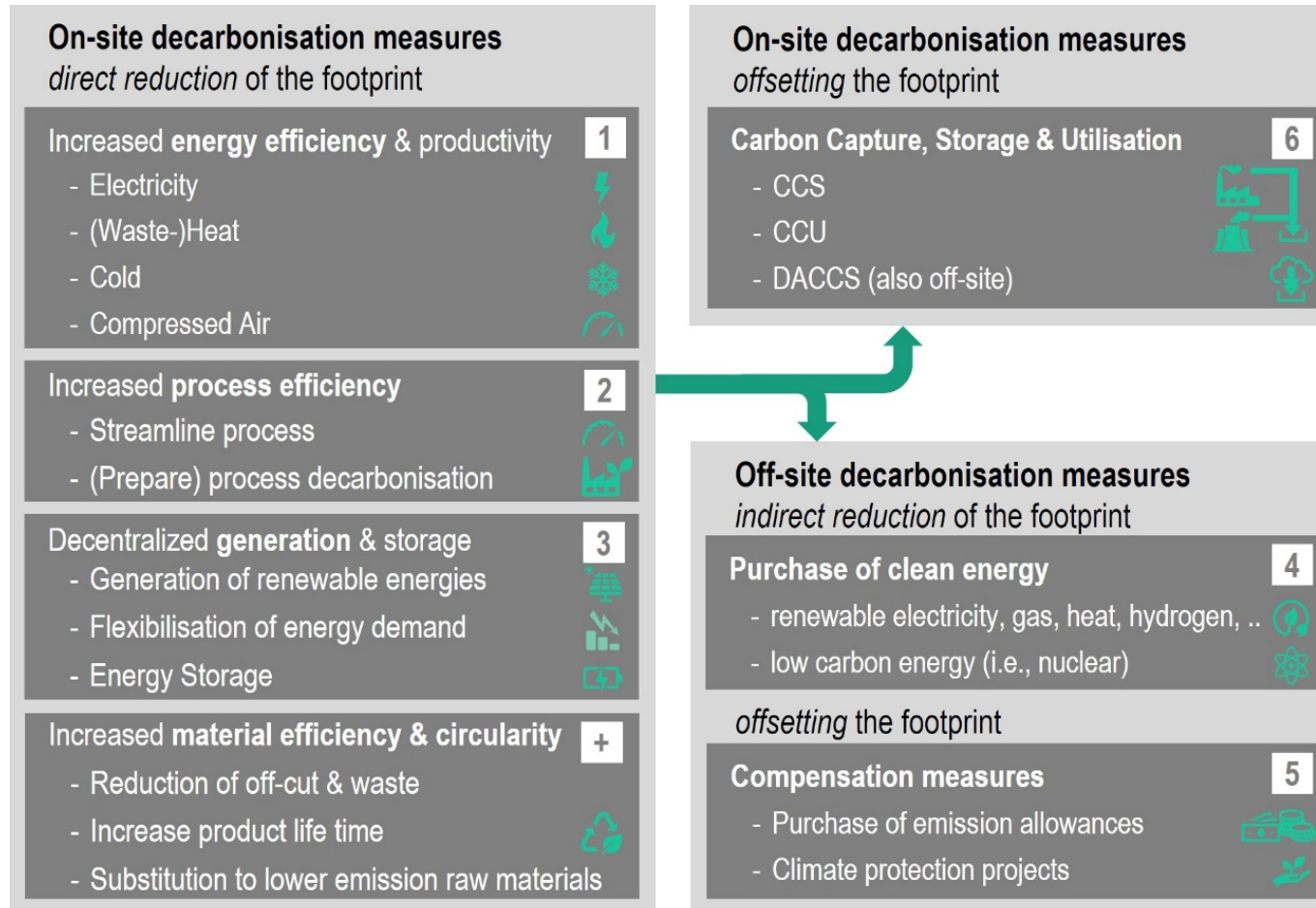
Buettner et al. (2023) „Increasing the Voltage“ <https://www.preprints.org/manuscript/202302.0495/v1>; data: Germany, May/November 2020)

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# 6. Advanced application: scoring, ranking, and dynamic adaptation to changing environment

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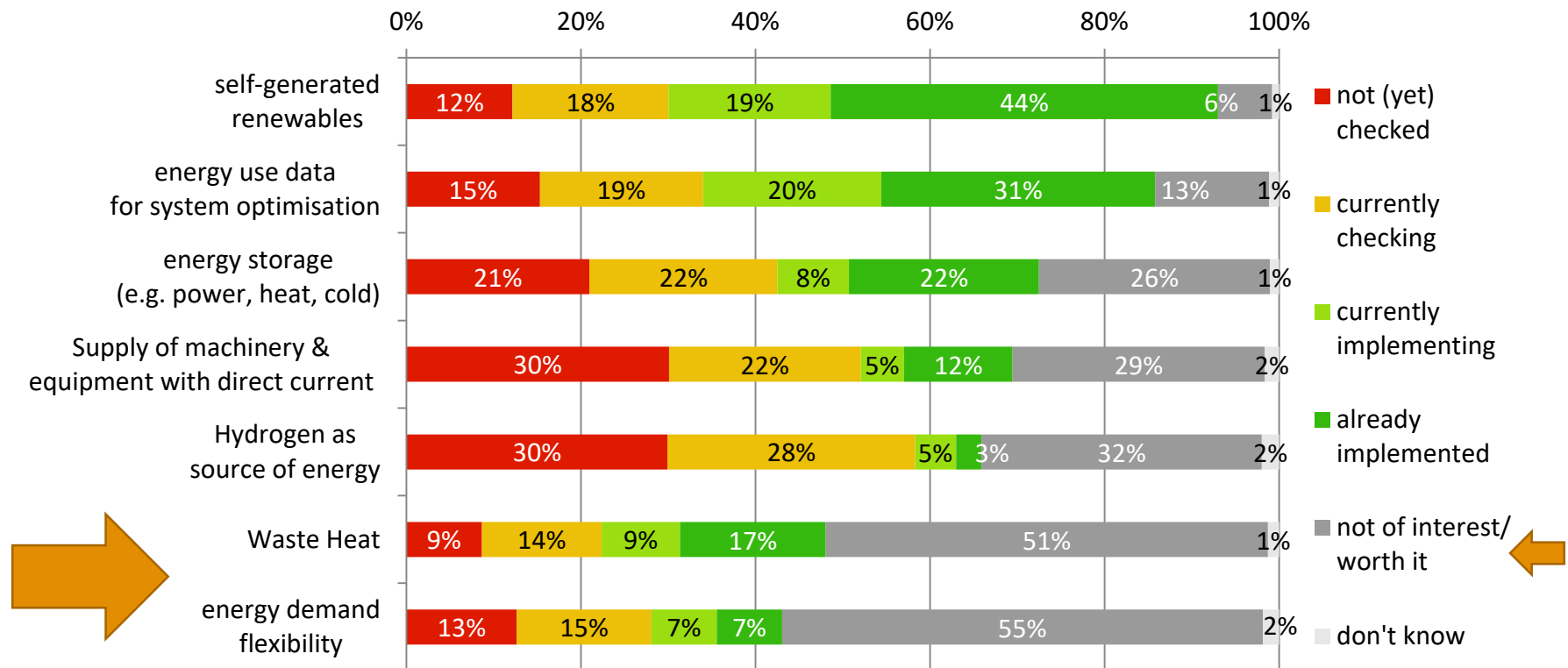
Source: Buettner & Wang 2022 based on EEP & Fraunhofer IPA

# Where do companies stand in the use of different approaches to systemic resilience?

**Alleged lack of information leads to blatant misjudgement - problematic in view of gas emergency.**

Where does your company currently stand with regard to the use of...

(851 ≤ n ≤ 858)



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# How to stimulate consumer demand

## ,empathic listening' and attention to detail

- What are the perceived points of pain
- What are the unknown needs and what the communicated ones
- Shape language how efficiency & decarbonisation toolkit can address these
- Empower to self-action

## Most important to stimulate demand

- awareness  $\neq$  perception
- enforced results  $\neq$  intrinsic results
- removing barriers  $\neq$  nudging / drivers

# Save the date(s)

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## SAVE THE DATE



### UNECE Group of Experts on Energy Efficiency

Task Force on Energy Efficiency in Industry: bi-monthly open discussion forum

4 April 2023, 14h00–15h30 CEST (online)

Tentative agenda is currently under development and will be communicated closer to the date of the event.

## REGISTRATION



<https://forms.office.com/e/dVhTmDVbKn>

For further information, please visit

<https://unece.org/sustainable-energy/energy-efficiency>

To get involved in the activities of the Group of Experts on Energy Efficiency, please contact

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