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Energy Transition requires numbers that are indisputable

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Agenda

1. The case is clear.
2. Who needs to be convinced?
3. Entice investors.
4. Entice managers.
5. Discussion and Conclusions.

1. The case is clear

Or is it?

Against the case of transition

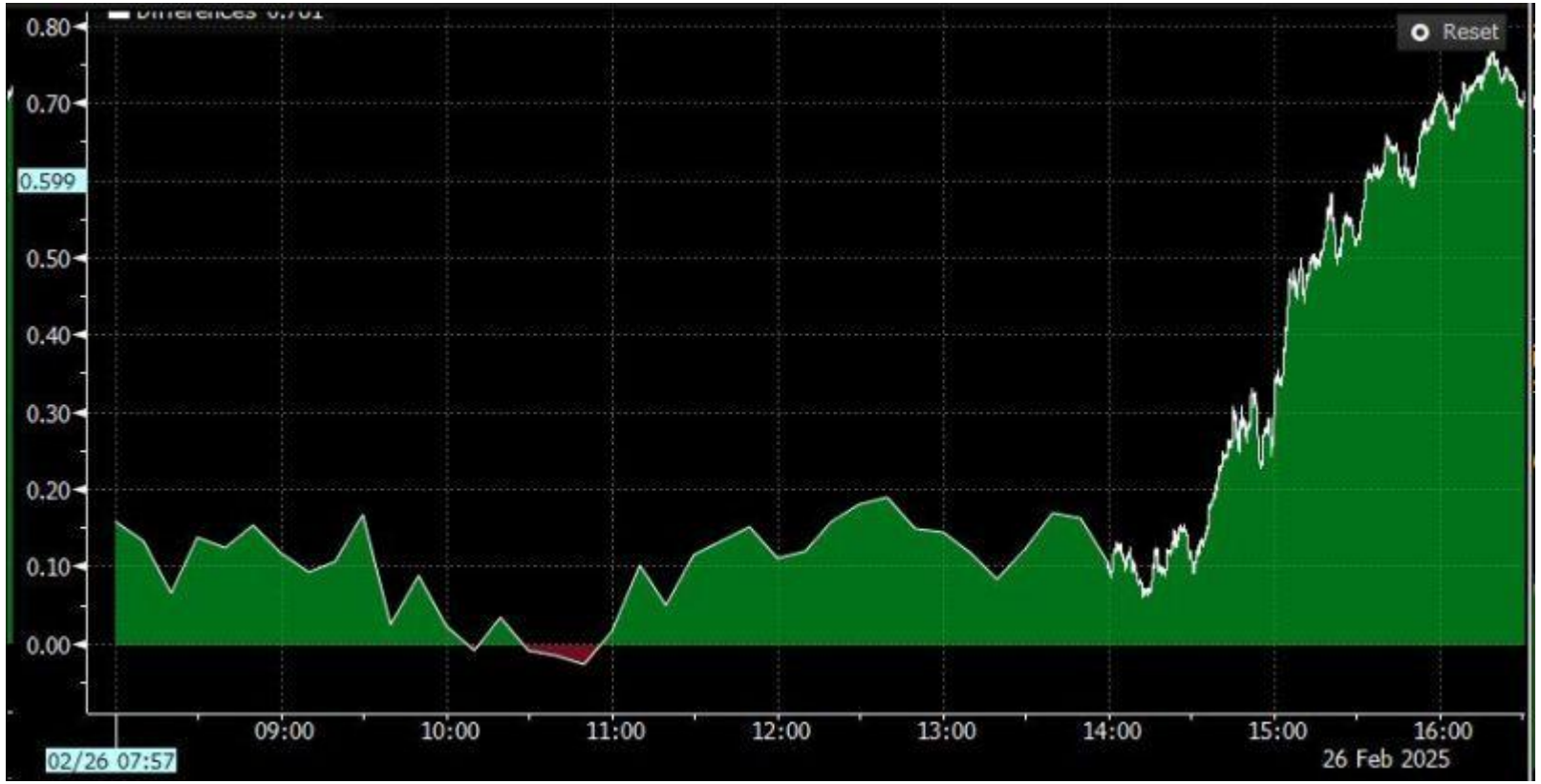
Is it?



Markets and mandatory ESG reporting

- Leaked news of the policy? High-emission stocks jumped 4%.

- Official announcement? Another 0.7% surge within hours.



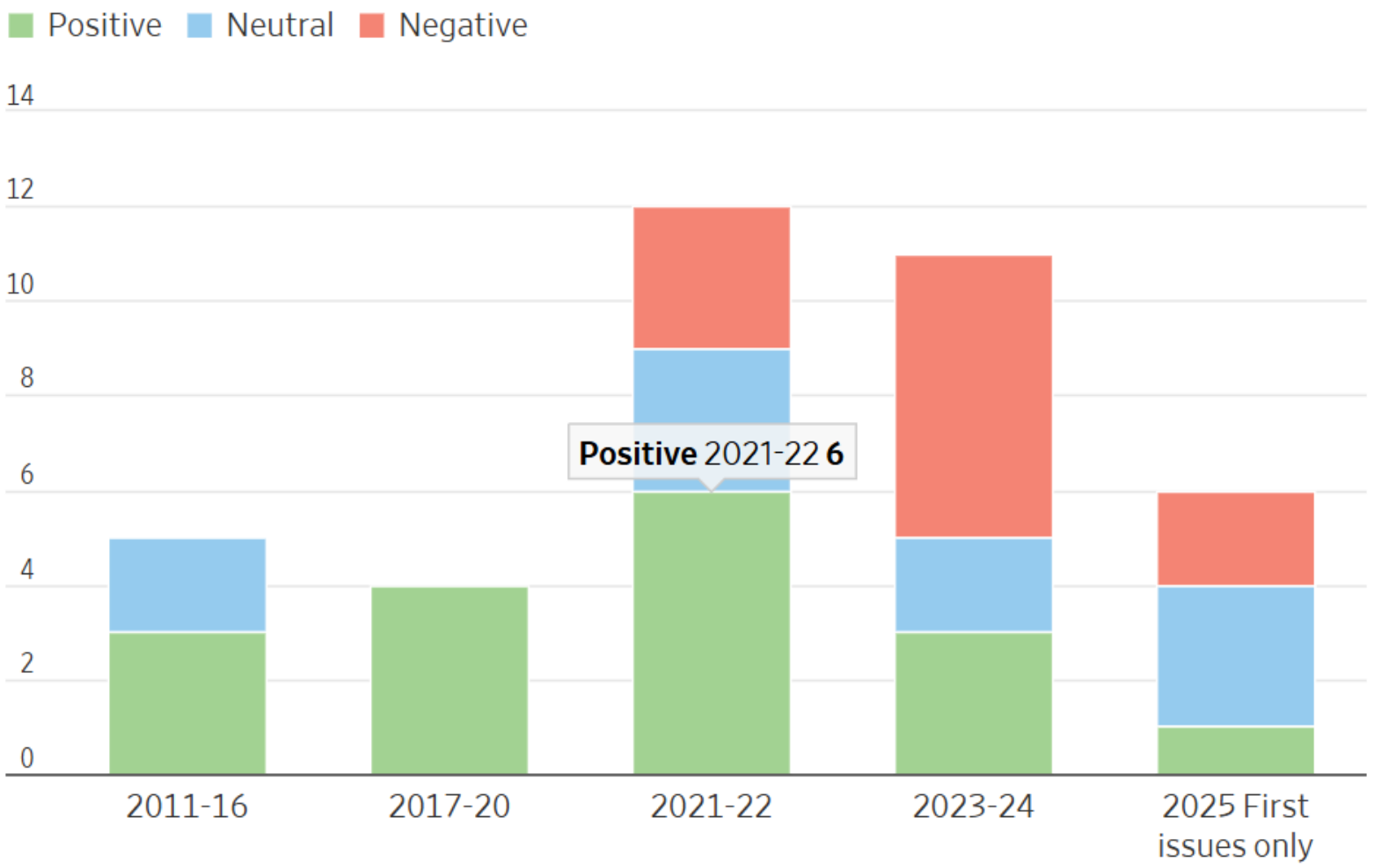
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Wei Jiang

WSJ, 9/2/2025

Academia Turns Against ESG

Number of papers in top five finance journals showing link between ESG and corporate financials or investment returns is:

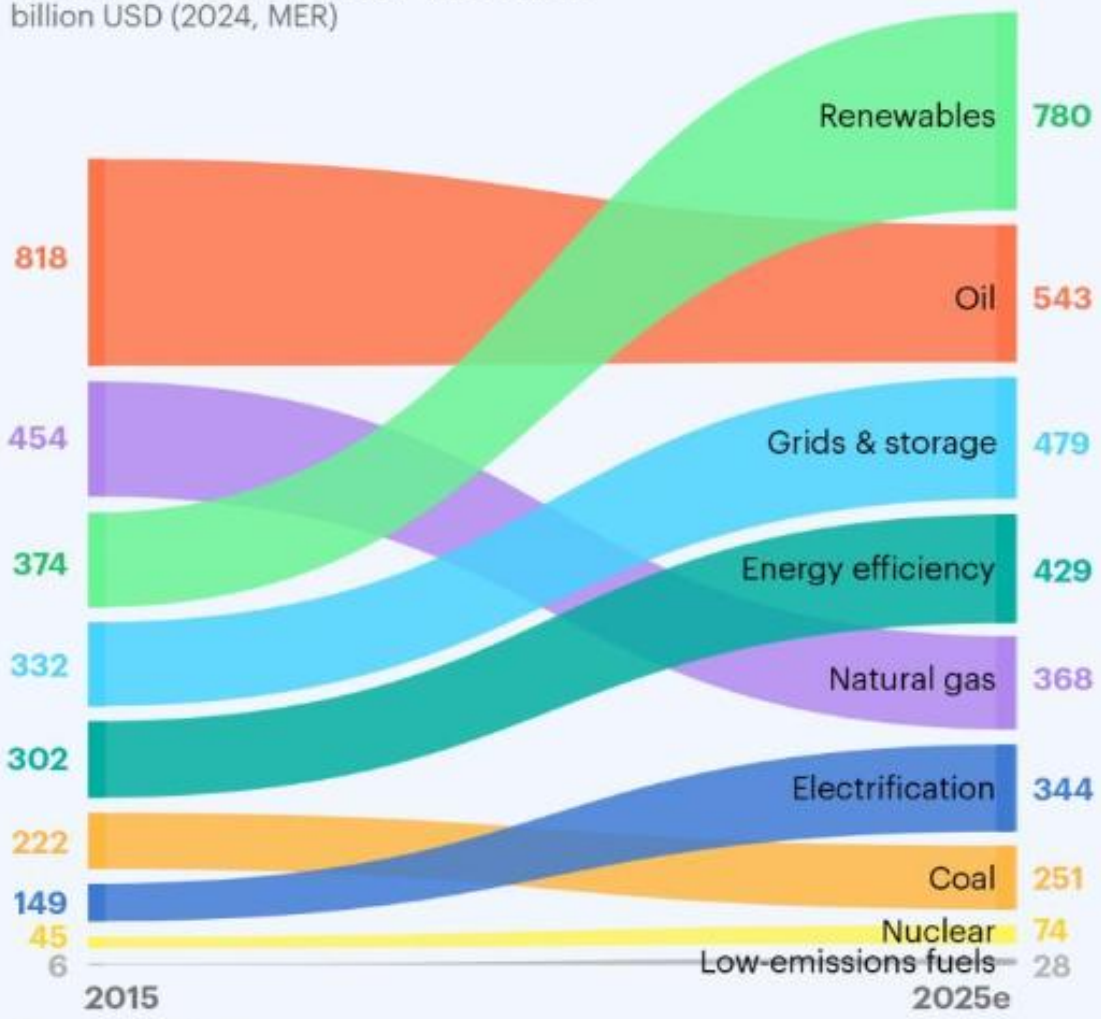


In support of the case of transition

The energy investment landscape is changing

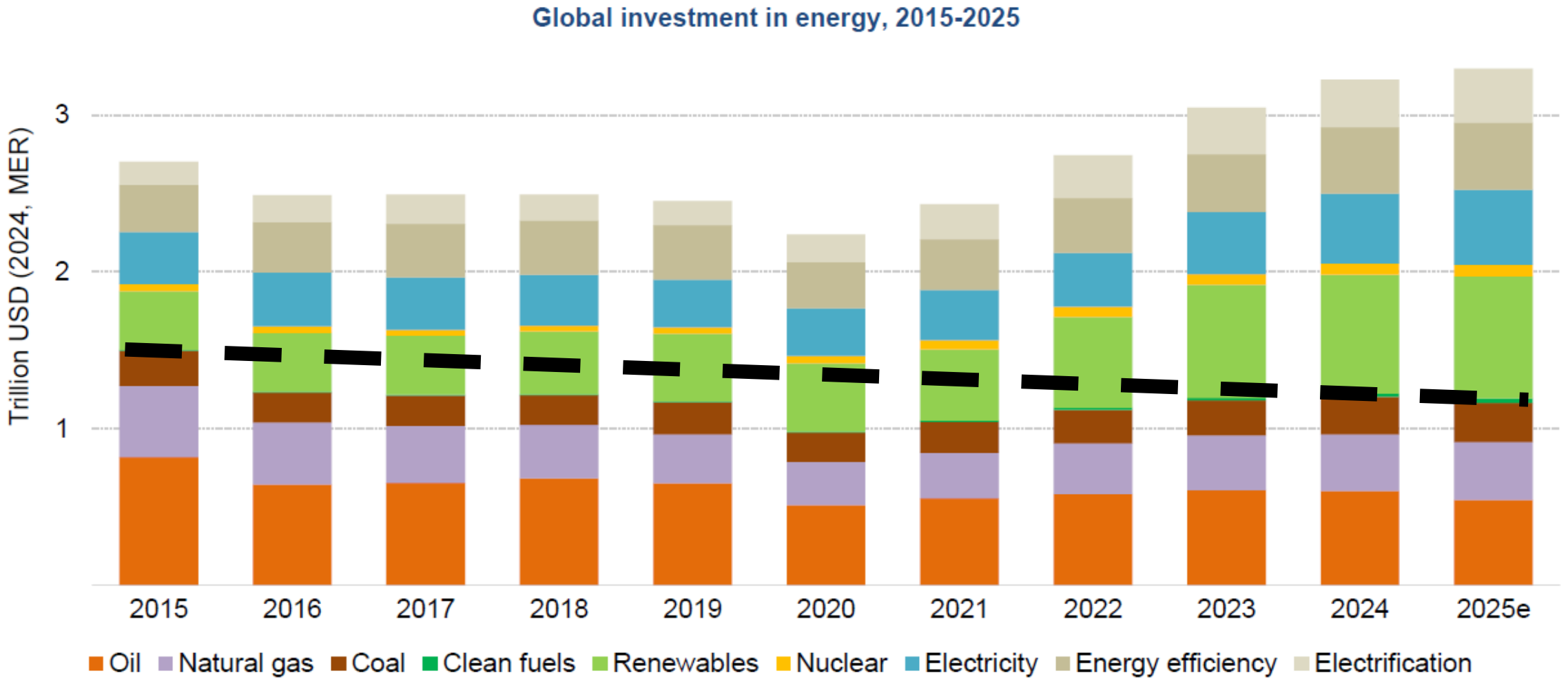
iea

Evolution of global energy investment
billion USD (2024, MER)



Note: e = estimate

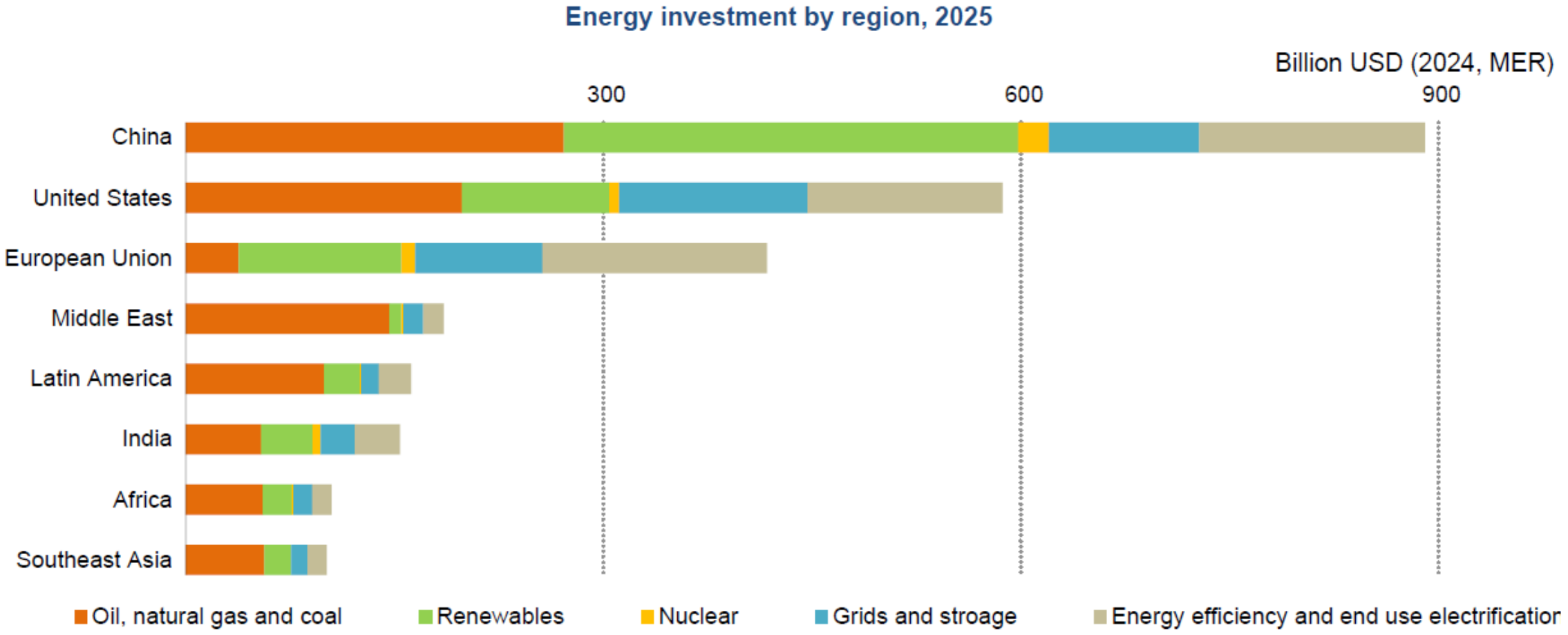
Energy investment continues to rise amid economic uncertainty



IEA. CC BY 4.0.

Global energy investments in 2025 are set to reach USD 3.3 trillion. Clean energy hits a new high of USD 2.2 trillion with record additions of

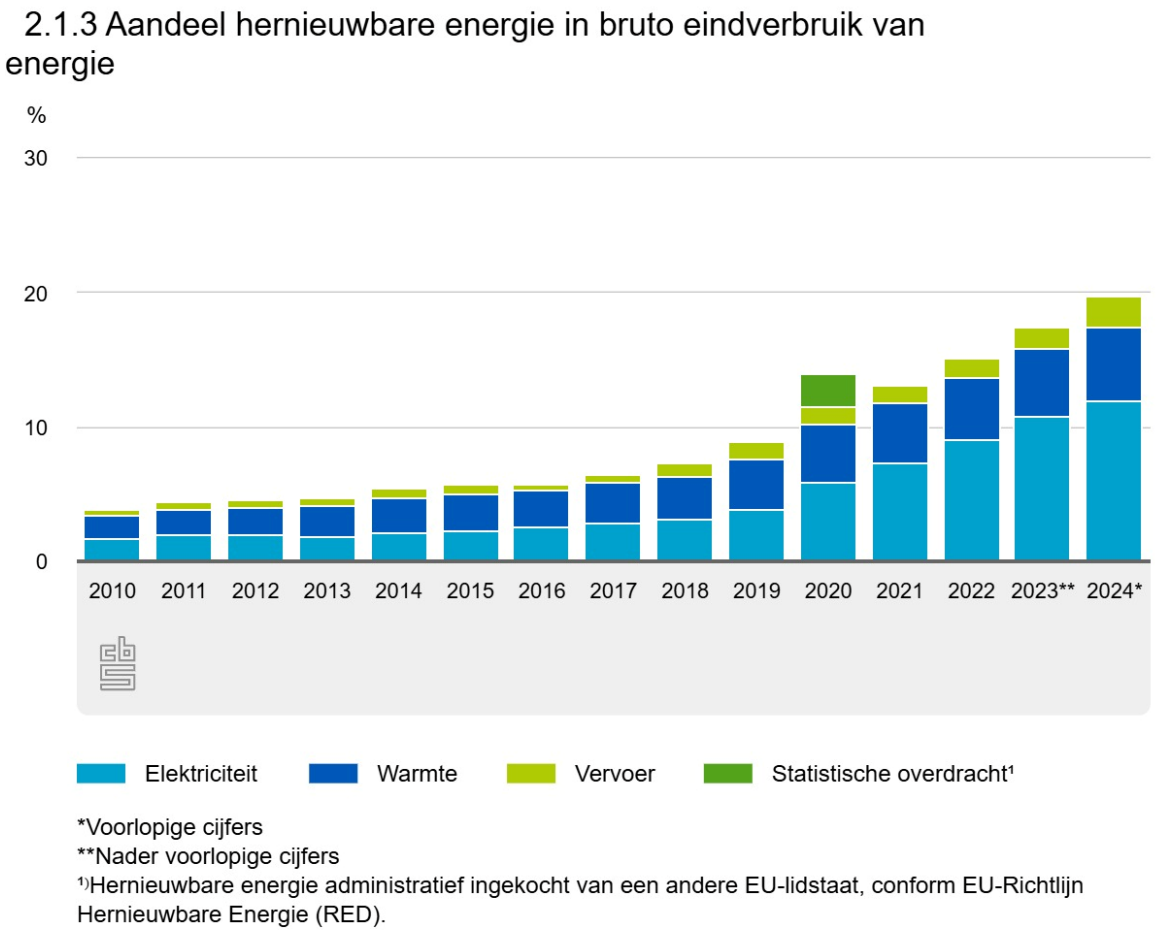
China sets the pace, as energy security drives spending growth



IEA. CC BY 4.0.

More than one-quarter of global energy investment takes place in China. Most of the growth in spending in recent years has been in fossil fuel importing countries looking to bolster their energy security by accelerating transitions

Renewable Energy in The Netherlands



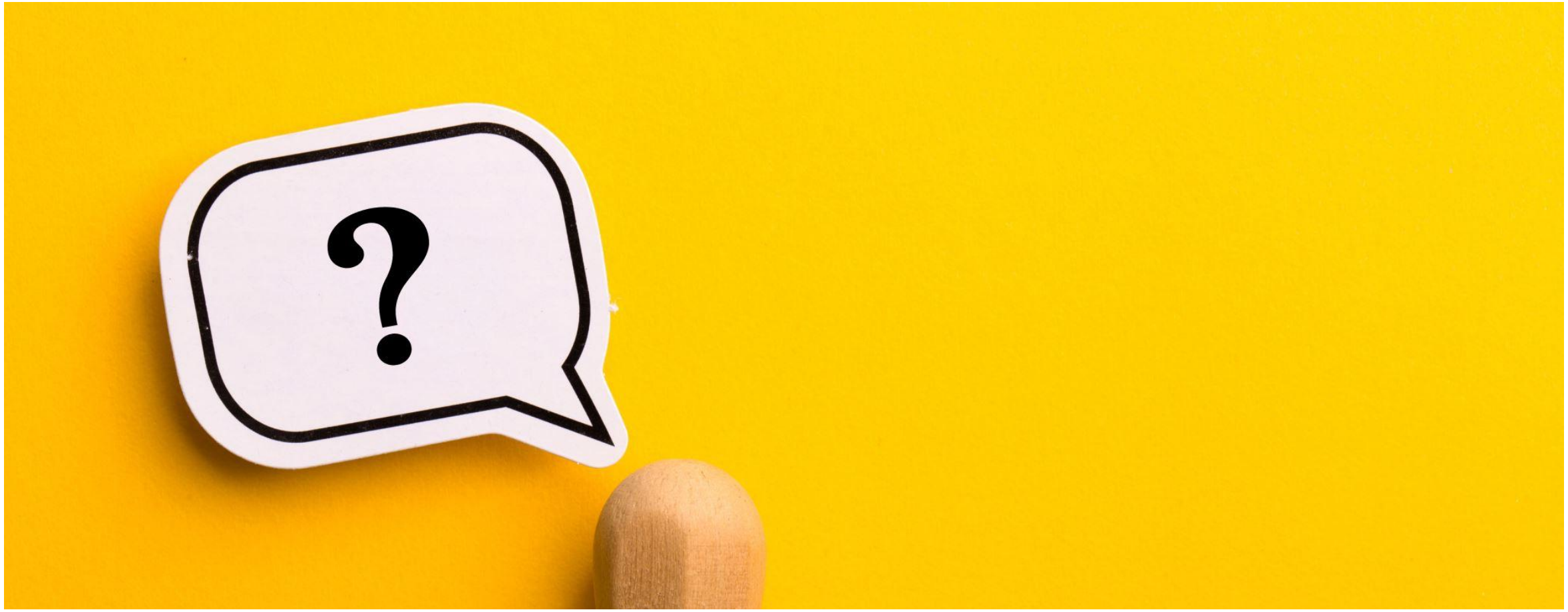
Yes, it is!

Policy choice: Firms must lead!

- What does transition require?
  - Knowledge of: exploration, (electricity) generation, transportation, storage, CO2 capture and storage.
  - WHO?
    - Selection of the most promising projects
    - Financing these projects.
    - Execute the projects.

Decision: firms must lead the transition.

2. Who needs to be convinced?



2. Who needs to be convinced?

Investors: equity/debt	Managers	Employees
Clients	Suppliers	Regulators

Need to convince at least two major stakeholders

Investors: ESG investments are like any other investment

Employees: Make sure they want to think about new.

3. Entice investors

Credible numbers!

Reporting as an instrument to convince stakeholders

Cost of environmental effects

in thousands of guilders

Atmospheric emissions

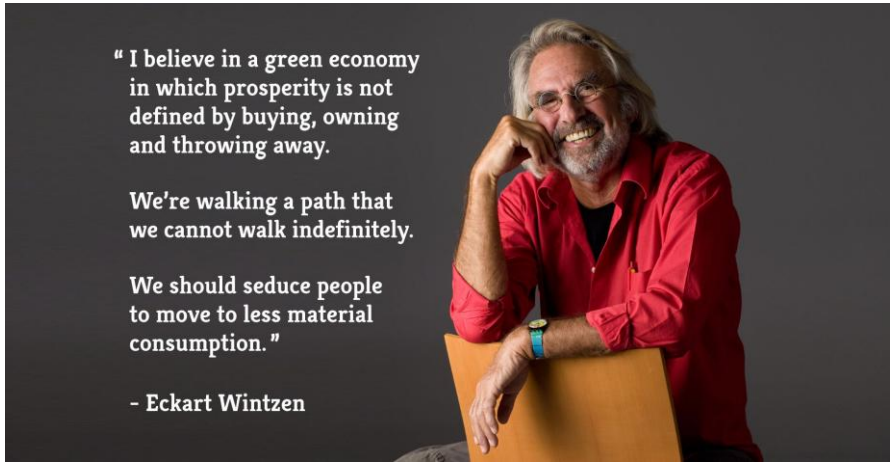
	Emission	Unit cost		Total
			Dfl.	
Natural gas for heating purposes				
NO_x	456 kg	10 Dfl./kg	5	
CO_2	483 t.	100 Dfl./t.	48	
Total				53
Electricity consumption				
SO_2	7934 kg	14 Dfl./kg	111	
NO_x	6202 kg	10 Dfl./kg	62	
Particulate emissions	667 kg	10 Dfl./kg	7	
CO_2	2515 t.	100 Dfl./t.	252	
Total				432
Road traffic				
NO_x	20585 kg	40 Dfl./kg	823	
HC	14948 kg			
CO	55452 kg			
CO_2	7232 t.	100 Dfl./t.	723	
Total				1546

Whatever happens, we must not allow ourselves to be blinded by the financial aspects of our economy, unable (or unwilling) to see that the ship is in danger of sinking.

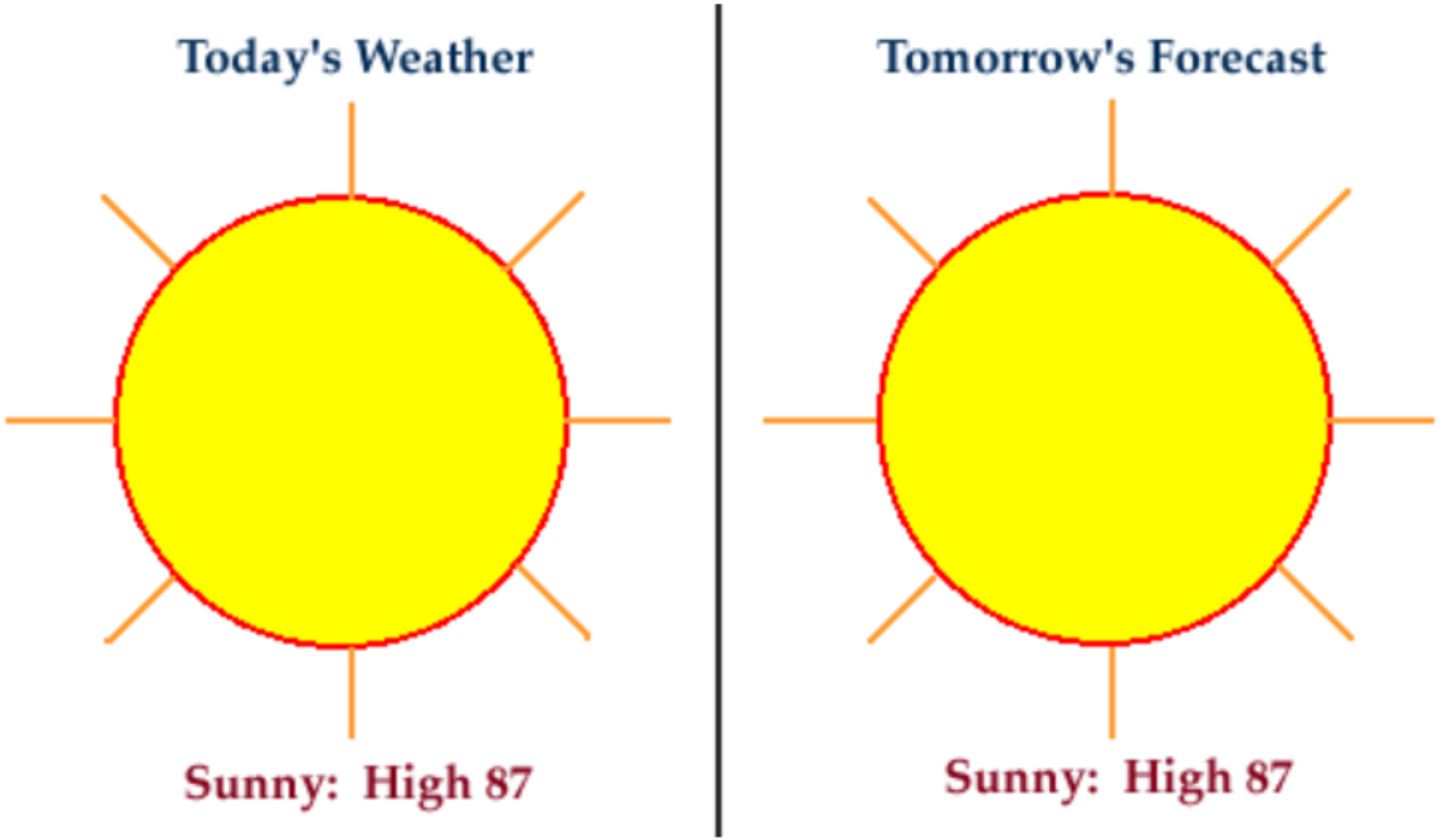
We mustn't play on as though nothing was wrong, so that the future generation will ask 'How was it possible?'

Eckart J. Wintzen
President BSO / Holding

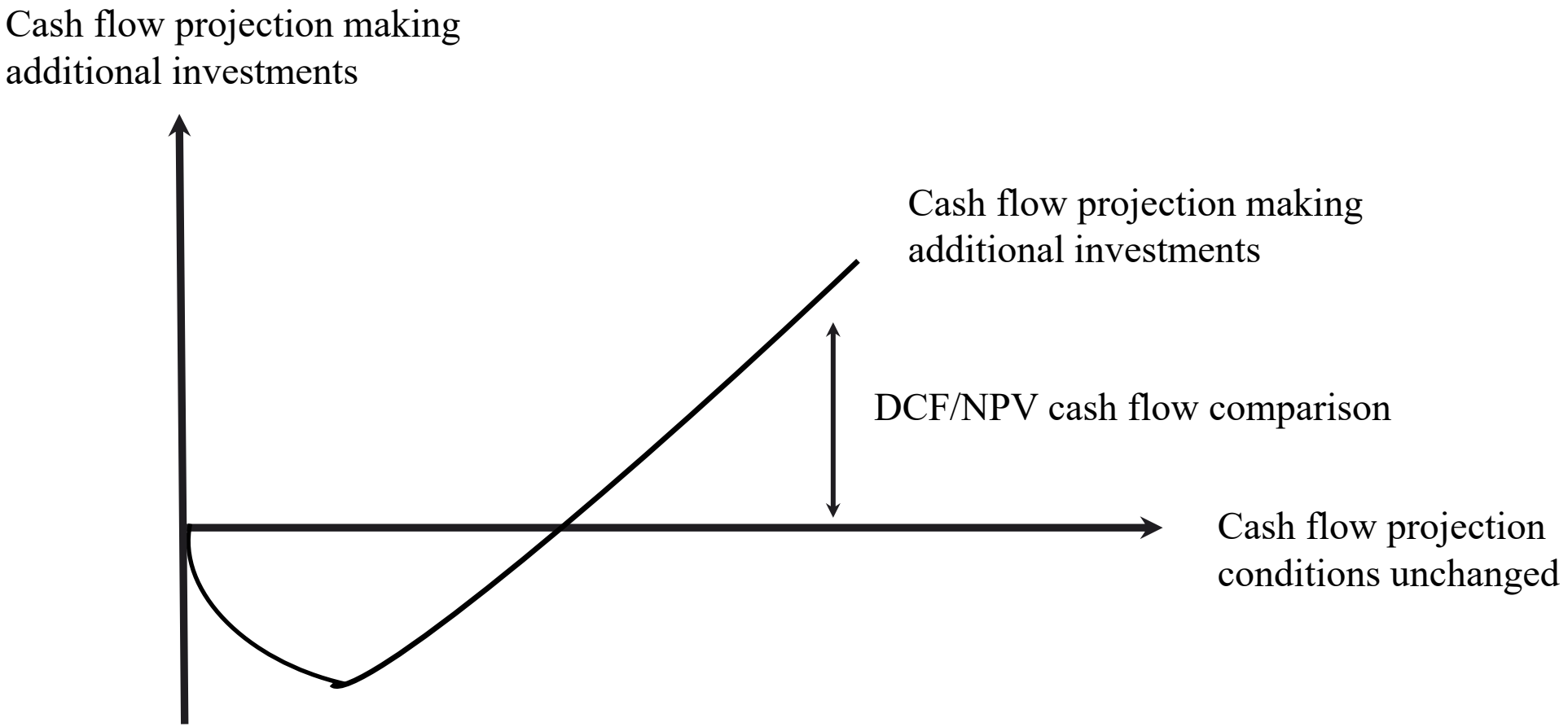
BSO Annual report 1990



Persistent forecast method



The basic problem of convincing: dig deep!



Choosing the appropriate benchmark (Adapted from Ghemawat, 1991. page 19)

When do you lose Investor Support as a firm?

1. Set goals without tying them to clear business objectives: *e.g., Tractor Supply did not tell how achieving net zero in 2040 would improve financial performance.*

2. Overstate what it can(not) do about this problem: *Tractor Supply: "create "a regenerative future through our commitment to helping farmers"*

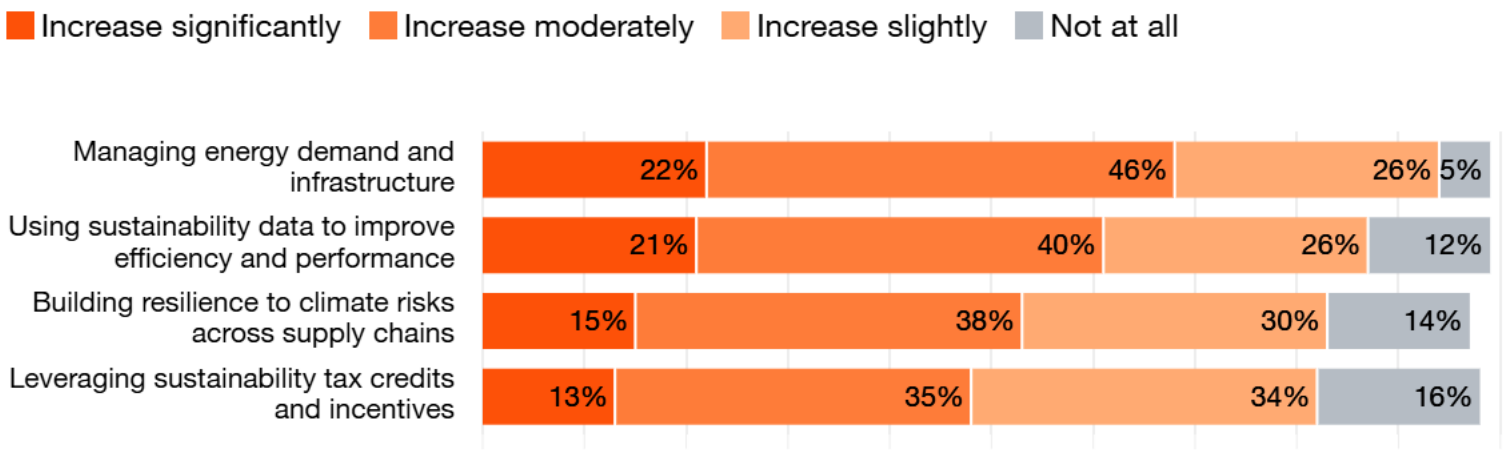
3. Discuss climate change in a way inconsistent with its brand and divorced from political reality: *Tractor supply set a broad but vague goal which skips talking about where they can be meaningful, namely how their product can help farmers in the future in dealing with climate change.*

Good news: climate-related investments

How to attract more investment

Q: How much would you increase your investment in companies that are taking the following actions?

Significantly/moderately increase | Full breakdown



Note: Not showing "Not applicable/Don't know" responses. Sum of "Increase significantly" and "Increase moderately" answers may not match aggregated figures on these charts due to rounding.
Source: PwC's Global Investor Survey 2025

Investors: shareholders differ in their preferences

Compare Shell with Exxon:

- Exxon (successfully) prosecutes shareholders with different views
- Shell moved to its shareholders and moved away from its sustainability objectives (could not convince shareholders).
- RQ1: what does it take to persuade shareholders?

Investors: Banks (and other debt)

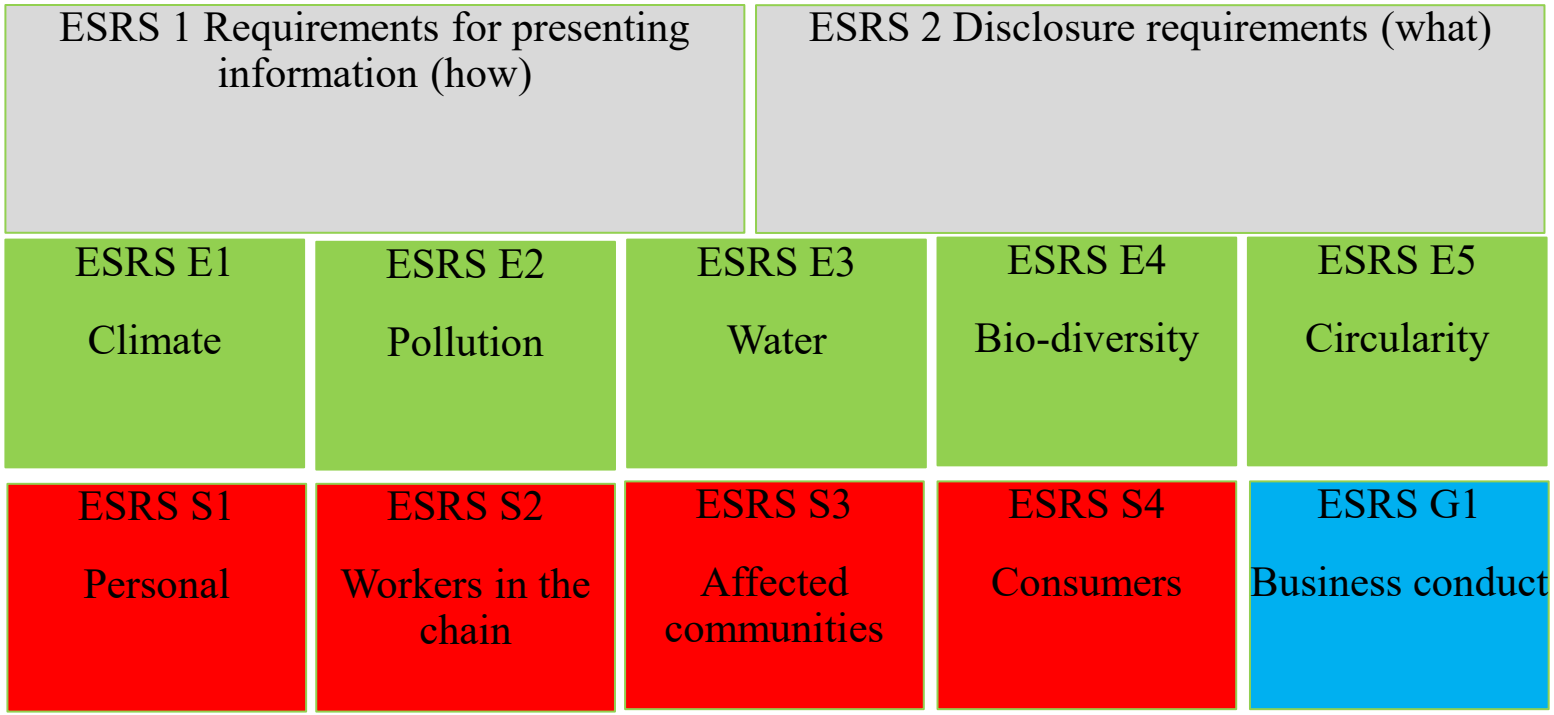
- Banks want to see results:

In august Christine Lagarde president of the ECB warned that banks will be unable to report on how their loan decisions contribute to transition.

Banks in the EU must report about the investments they finance

RQ2: how credible is this information?

European Sustainability Reporting Standards System of reporting: 10 dimensions



RQ3: how can this framework convince investors?

Some issues with reporting requirements

- An individual can only process five to seven items at the same time (Miller 1956). How can (s)he process > 50 items simultaneously?

- We need to aggregate

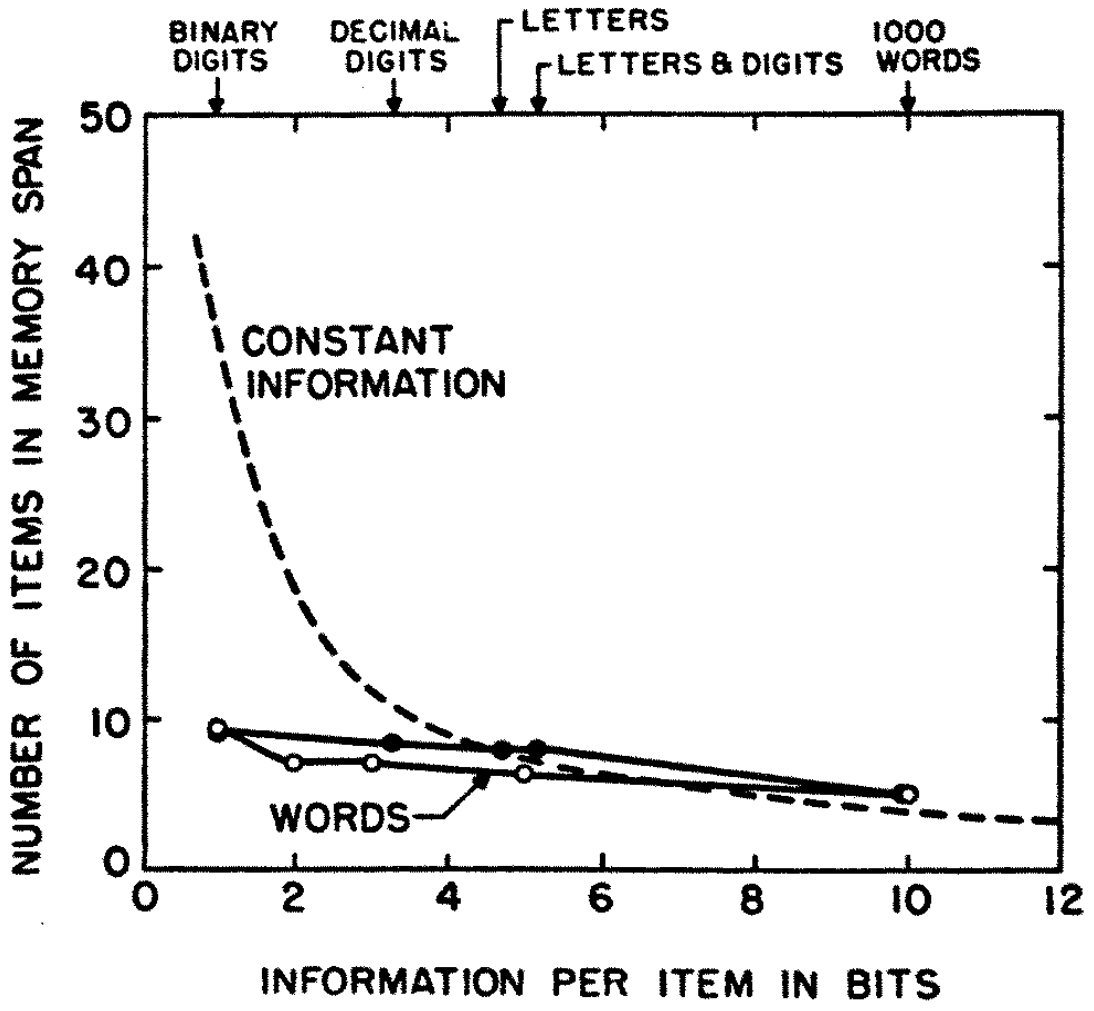
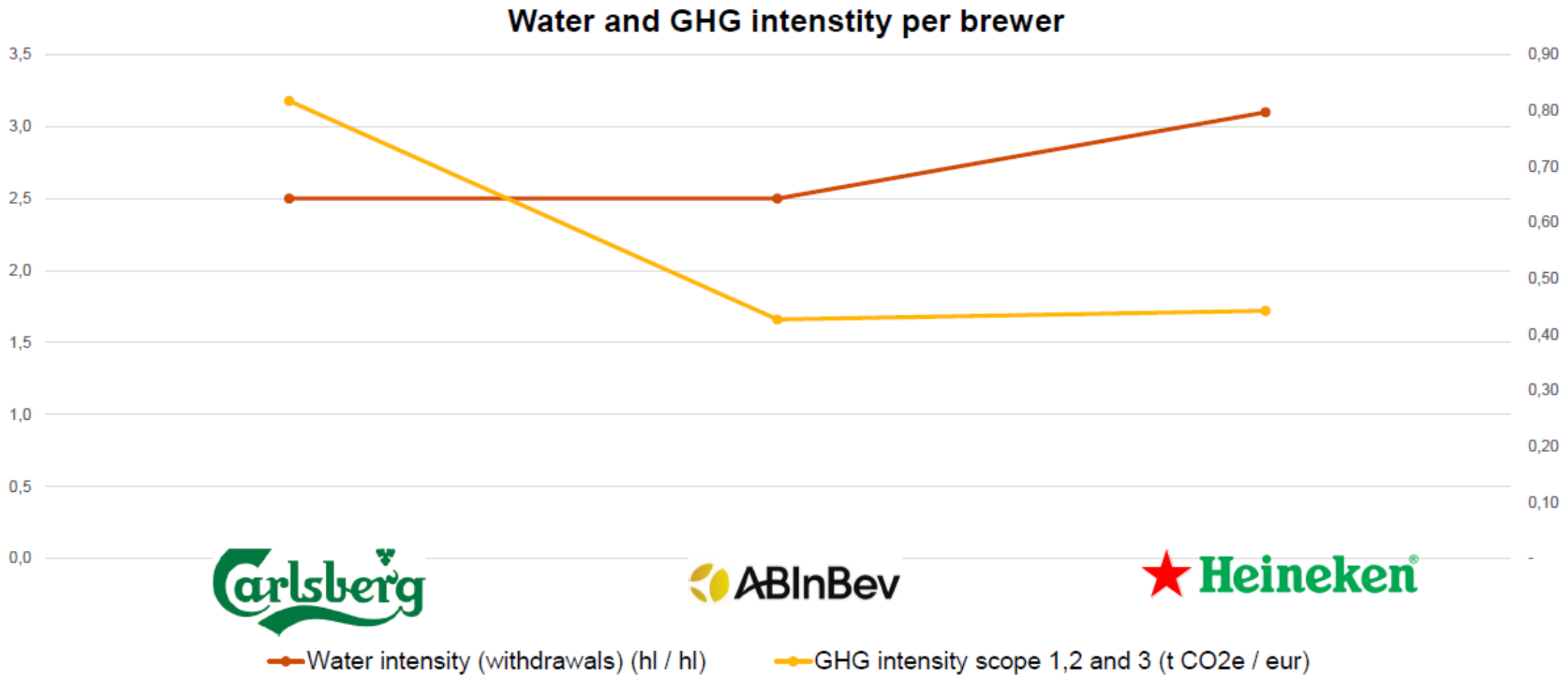


Figure 7. Data from Hayes (10) on the span of immediate memory plotted as a function of the amount of information per item in the test materials.

But, aggregation fails: Companies with good ESG scores pollute as much as low-rated rivals



What should carry a higher weight?



Regulation does have an effect

- Sustainable Finance Disclosure Regulation (SFDR) achieved significant results by influencing mutual funds and investors;
- Affected mutual funds increased their ESG scores after the announcement of the SFDR.
- High ESG fund flows rose significantly relative to low ESG fund flows

  (Becker et al. 2022).
- Public opinion affects how investors respond
  (Bauer et al. 2021)

Long-term consequences

"Ultimately, the principles of ESG are linked to a company's operational excellence and its ability to be futureproof in a changing world." (Alexandra Mihailescu Cichon, 2024)

1. If ESG principles are to be *linked* we need to understand this link: fiduciary/societal duty:
   Are ESG metrics correlated with future earnings, cash flows and perhaps even current stock returns?

2. *Futureproof* entails that ESG measurements are consistent over time.

3. They need to retain relevance in a *changing world*.

What happens if in hindsight these reports show flaws in meeting the three criteria?

Long-term consequences: Double Materiality

1. Impact materiality: how the company affects people/environment, "inside-out";

2. Financial materiality: how sustainability issues affect the company's finances, "outside-in“

Verification as an imperative

- Who will hold Firms and ESG funds accountable for ESG promises made but broken?
- How credible are the new ESG auditors (non-Big 4)?
  - Qualification staff members
  - How much primary work do they actually do?
- Who will police the inevitable conflicts of interest?
  - E.g., Sustainalytics acts as an auditor, but they also put out ESG ratings. Conflict of interest
- Quid pro quo of mandatory assurance of ESG for audit process data for financial reports?
  - E.g., more access to work papers?

Verification procedures

The goals of obtaining an understanding of the sustainability information are:

- identify areas where a material misstatement of the sustainability information is likely to arise;
- provide a basis for designing and performing procedures to respond to the assessed risks.

General procedures for the sustainability assurance

- Thorough understanding of the entity and its value chain
  - The entity's objectives and strategies and related business risks (ESG specific)
  - Review of minutes & contracts
- Understand and evaluate the organizational boundaries
- Understand the sustainability statement preparation process
- Understand IT environment supporting sustainability information
- Determine quantitative materiality for (a set off) indicators (between 0-5%), qualitative materiality for disclosures
- From fraud risk factor to fraud risk (remuneration, themes under scrutiny, manual processes).
- Reviewing double materiality assessment
- Understand and assess the eligibility of activities – EU Taxonomy

Additional specific procedures for the sustainability matter

Gaining an understanding of (data and reporting processes), perform walkthroughs

Risk assessment analytics

More work required

- Auditors exhibit excessive optimism when evaluating ICFR effectiveness in the presence of material ESG incidents.
- Auditors often fail to detect material weaknesses in ICFR when clients experience negative ESG incidents, which leads clients to restate their financial statements.
- These results are driven by the post-SASB and the 2013 COSO period and are the strongest when ESG incidents are illegal and occur well before the fiscal year-end.
- Overall, audit firms do not seem to fully understand the implications of material ESG issues from an ICFR standpoint and make assessments that are incorrect.

More (multidisciplinary) work required

1. Companies produce reports through specialists about firm achievements:
   - Who are these specialists?
   - How do these teams work (roles of specialists)?

2. In audit firms:
   - How do these teams work (roles of specialists)?
   - How good is the data they attest (model of emission?)

3. What can we say about the long-term effects? → Science *and* Economic researchers teaming up to enhance our understanding!

4. Entice employees

Enticing managers

- Individuals are inclined to procrastinate:
  - cost of postponing a decision is low
  - It is still possible to realize the benefits in the future

  (Akerlof, pensions)

  - Individuals must make a career: better results now than 3 years down the road.

Findings on attention shifting from *short to long term*

	Predicted effect	Long	Medium
Focal performance metrics:			
Weight on Accounting Return Metrics	+	+	+
Weight on Nonfinancial Metrics	+	NS	+
Other performance metrics:			
Weight on Profit Metrics		NS	NS
Weight on Cost Metrics		+	+
Weight on Sales Metrics		NS	NS

Abernethy, M. A., Bouwens, J., & Van Lent, L. (2013). The role of performance measures in the intertemporal decisions of business unit managers. *Contemporary accounting research*, *30*(3), 925-961.

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Measurement: Value creation, prioritization and motivation

- Balanced scorecard
  - How many measures?
- Fewer measures?
  - How many measures should that be?
  - Miller 1956, Vogel et al. 2004



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Weights to get people to improve the metric

Measure	Motivate?	Creation of firm value?
Firm profit	50%	70%
Energy consumption	50%	30%

- Creation of value?

Weights on metrics: how to best prioritize!

Measure	Motivate?	Firm value	Societal value
Firm profit	50%	70%	20%
Energy consumption	50%	30%	80%

Managers' lack of knowledge

- Examples of how green solution incur cost reductions (less packaging, fewer costs of unpacking and waste management).
- Effects energy savings:
  - Risk reduction (e.g. political dependence)
  - Future cost savings

Again, calls for multi disciplinary work: understand the long-term effect/potential

5. Discussion and conclusion

Conclusions: understanding long term effects

1. Transition to net-zero emission is inevitable.
2. Governments bet on firms to do the work.
3. Can only work if stakeholders are convinced: problem long term effects.
4. Investors are difficult to convince of long-term effects.
5. Employees want to show short-term effects.
6. Important that science and economics team together to better understand the long-term effects.

Accounting

Research activities:

- Jan: research on target setting; chapter accounting book; preparing for empirical study into target setting. Use of financials to measure long term progress (LMU)
- Ulrike: research on the effect of mandating sustainability assurance.
- Susanne Preuss: research on whether firms "put their money where their mouth is?", including in relation to environmental claims.
- Ann-Kristin Grosskopf: research on carbon footprint information and consumer choice; environmental contracting; involvement in the Sustainability Reporting navigator (https://www.srnav.com/)
- Phd student Sanne Gaspersz on attesting for sustainability
- PhD student Jason Wang on peer firm disclosure reactions to allegations of environmental misconduct

Accountability in a sustainable world:

- Conference recording https://care-mendoza.nd.edu/accountability-in-a-sustainable-world-conference/
- Journal: https://care-mendoza.nd.edu/accountability-in-a-sustainable-world-quarterly/ (Jan as advisory board member)