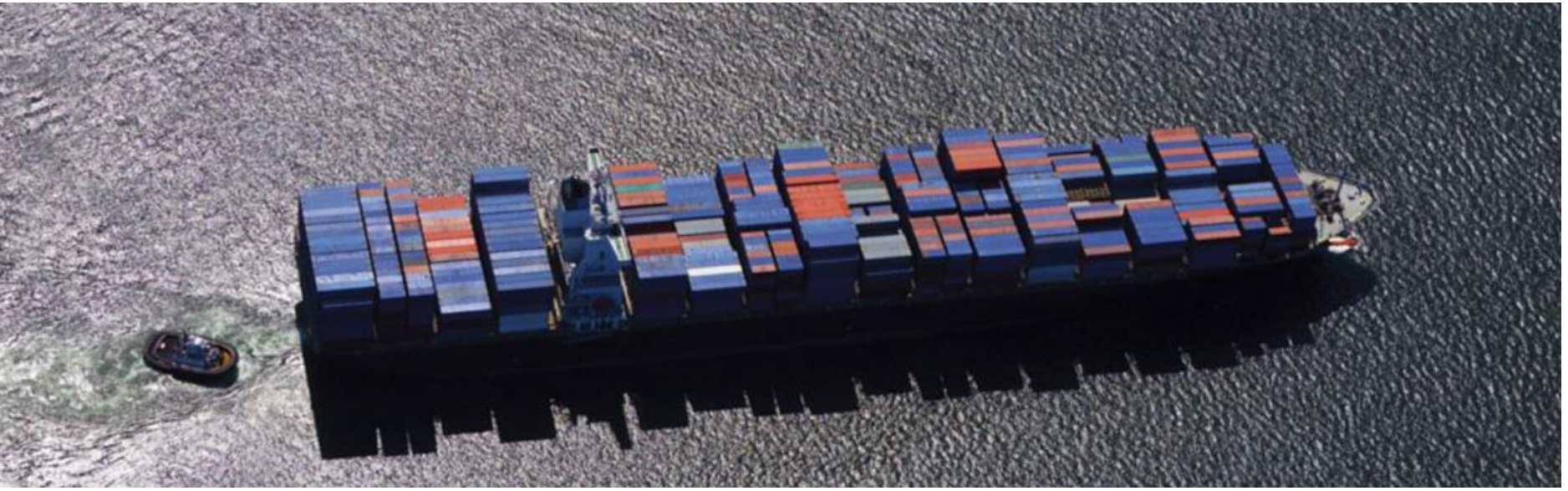
DNV·GL



MARITIME ADVISORY

DNV GL Energy Management Survey

Presentation of study results

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Copenhagen, January 2015

Agenda

1. **Motivation**
2. **Study scope**
3. **Findings**
   - 3.1 Energy strategy & targets
   - 3.2 Organisational anchoring
   - 3.3 Energy efficiency measures
   - 3.4 Reporting & monitoring
   - 3.5 Change management & Implementation
4. **Summary**

1. Motivation

Market developments have provoked many questions — and most businesses are facing the same uncertainties!

What are measures others in the industry have selected to save fuel?

What needs to be considered when implementing energy management/ SEEMP?

Which measures have the biggest impact?

What are success factors for energy management and SEEMP implementation?

What are your energy savings initiatives for 2014 and 2015?

To whom should I assign the control for energy management?

How much can you save with energy management?

...

The study results will answer those questions

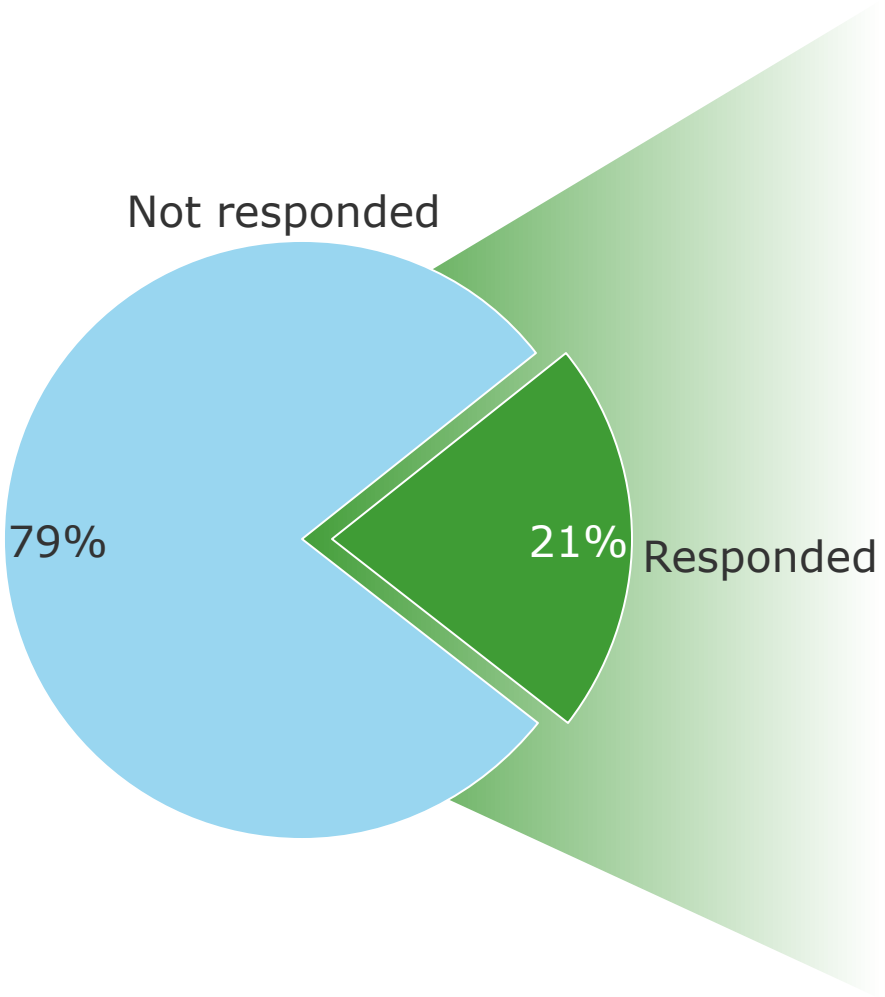
The study provides an overview:

*"How have shipping companies handled the **need to decrease fuel consumption** in a **challenging market environment**"*

- **Importance of energy management** across the shipping industry and its **effect** on **business performance**
- Unveil what have been the **reasons for establishing energy management** and with whom the **responsibility** lies
- What **measures** have been **selected** most widely and what are the respective **implementation success** rates
- What are **challenges** and **how** should they be **dealt** with
- By combining the **survey results** with **DNV GL's insight** on energy management this report aims at providing participants with **knowledge** that can be used to **improve energy usage** and **compare** the **own performance vis-à-vis the industry**

2. Study scope

Our investigation's results cover 85 companies representing more than 2.000 vessels with an annual bunker bill of ~25 billion USD



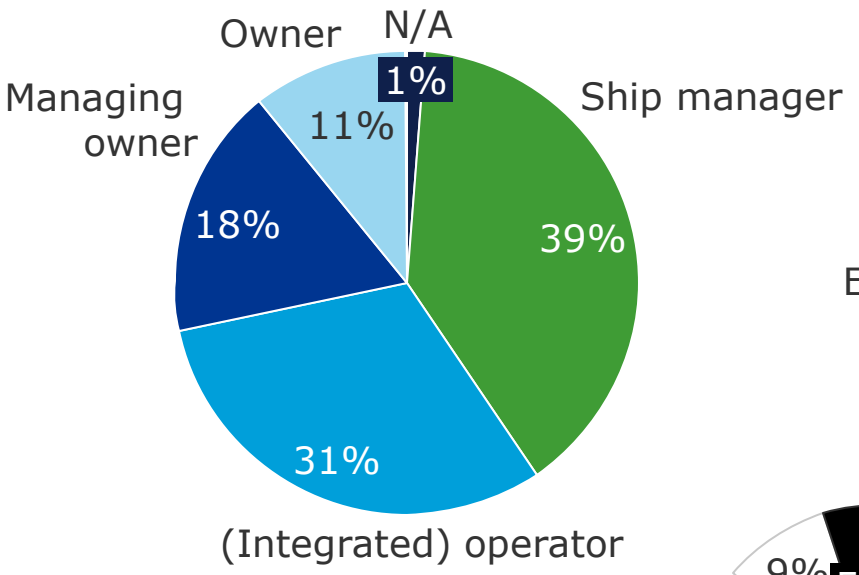
- More than **400 owners, ship managers** and **operators** across the globe received the survey
- **Response rate** of about **21%**
- Resulting in **85 replies**, representing
  - More than **2.000 vessels**
  - Yearly fuel consumption estimated at more than **40 million tons** or almost **$25 billion USD**[1]

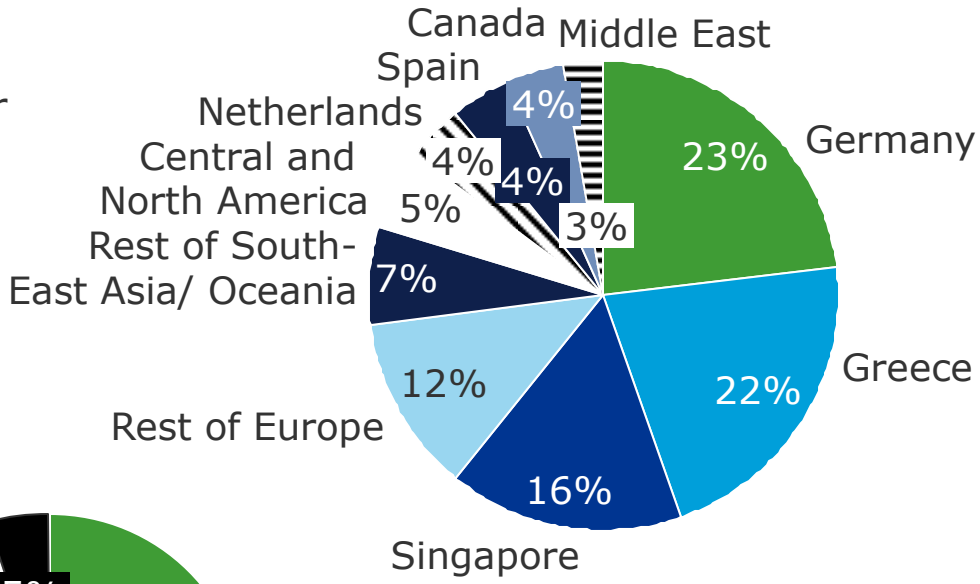
1. Fuel price 600 USD/t

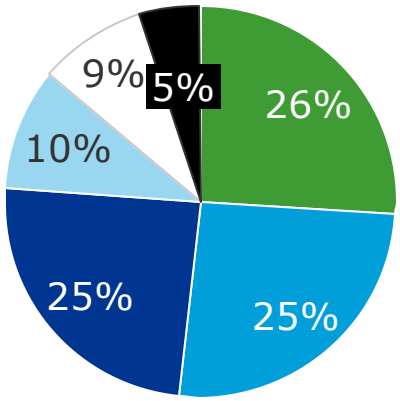
A holistic sample covering all facets of the shipping industry

Total 85 participants

Survey participant characteristics



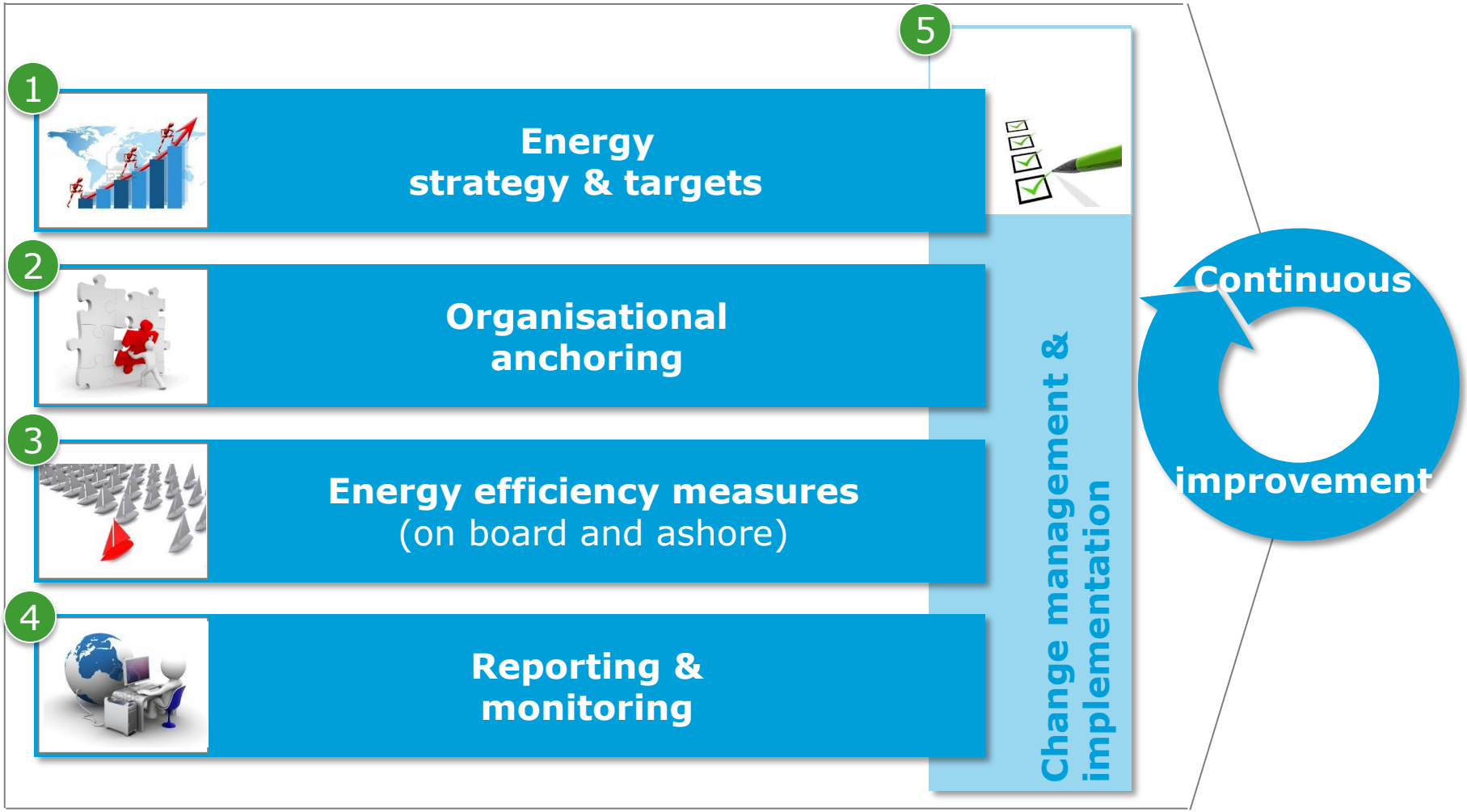




Bulker
Tanker
Container
Others
General cargo/ MPV
Offshore

3. Findings

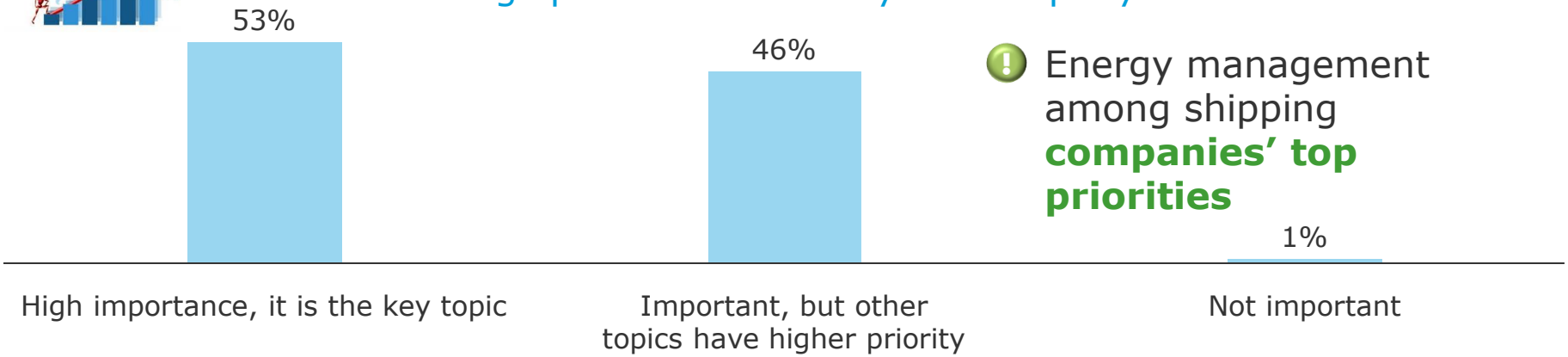
The presentation is structured along the different components of an effective energy management concept



1 Energy management is shipping industry's KEY topic

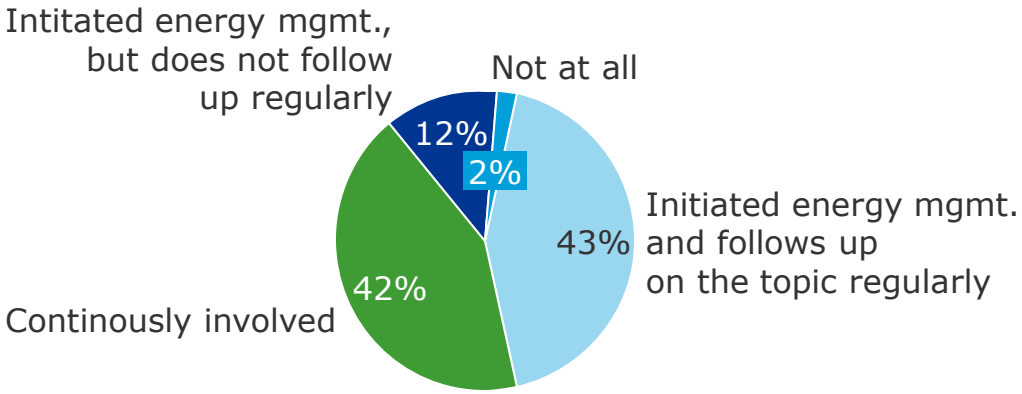
Total 85 participants

How are energy savings/bunker savings positioned within your company?



- Energy management among shipping **companies' top priorities**

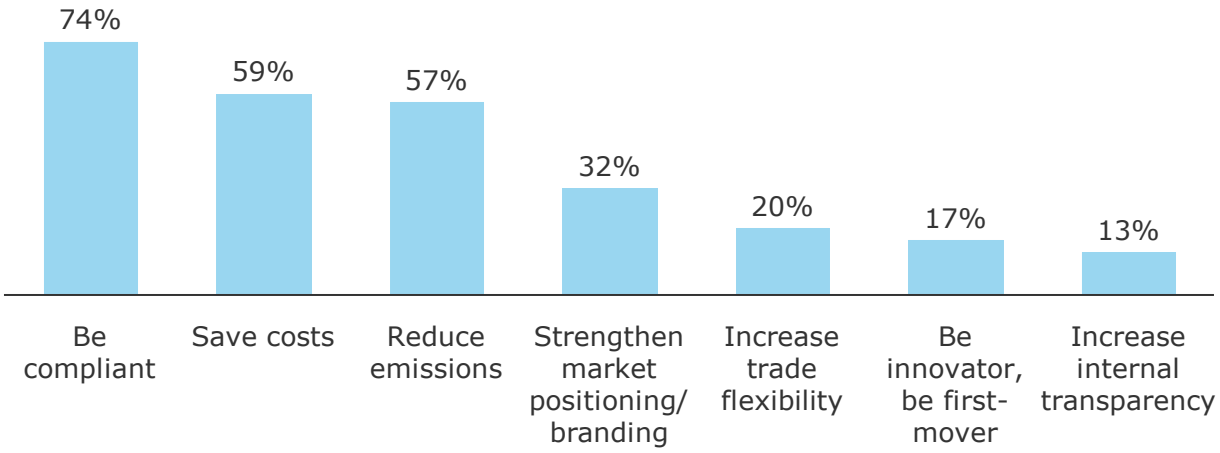
How is the top management involved in energy management?



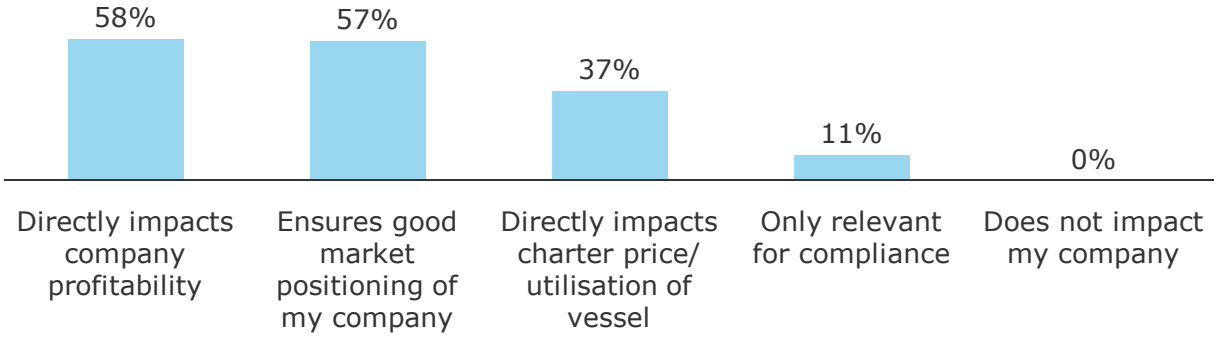
- EM is part of **top management agendas**
- External **stakeholders' interest** drives top management involvement

1 Energy management has become a competitive factor beyond compliance

What was your company's goal when developing the SEEMP/ establishing energy management?



How does energy efficiency impact your company?



- **Ecological industry** trend due to institutional/ regulatory pressure and increasing demand for sustainable shipping
- Companies do **not** recognise benefits of **increased transparency**
- Important factor for market **positioning**, charter **rates** and vessel **utilisation**

1 Companies' targets vary from extremely vague to specifically defined consumption reduction goals

Total 85 participants

Lower fuel/ bunkering cost

Not yet defined comprehensively

Application of weather routing in >= 80% of all cases

Reduce the CO_2 emission and consequent fuel reduction of 5%

2014: Reduce consumption with 12,000 ton HFO

Trim optimisation, changing to Slide type fuel valves, retrofit of PBCF etc.

Our Goal is to reduce the fuel consumption around 2% for 2014. In addition (…) working with our Training department to raise crew awareness for energy efficiency with proper operation method/ implementation

A 1 – 2% reduction has been announced for all vessels

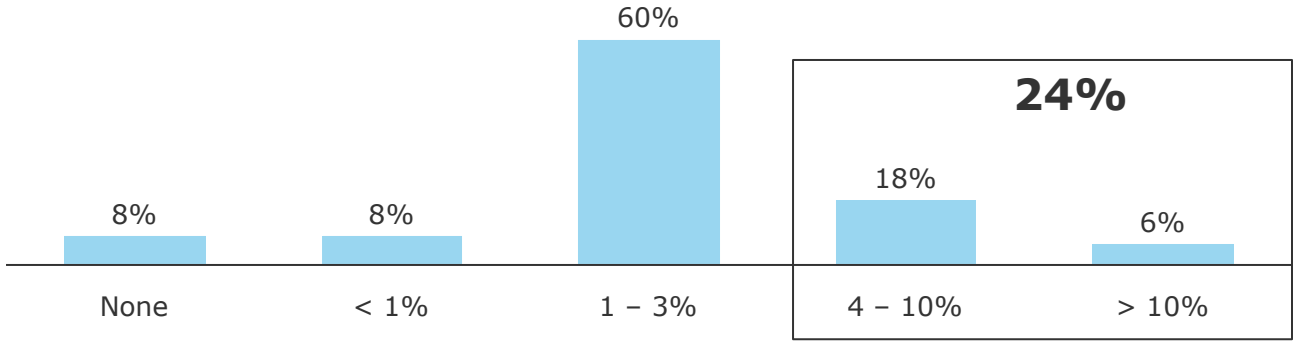
Compare M/E ,D/G fuel consumption to the sea trials in order to have no more deviation than 5%

On average, firms aim for 2 - 3% fuel reduction

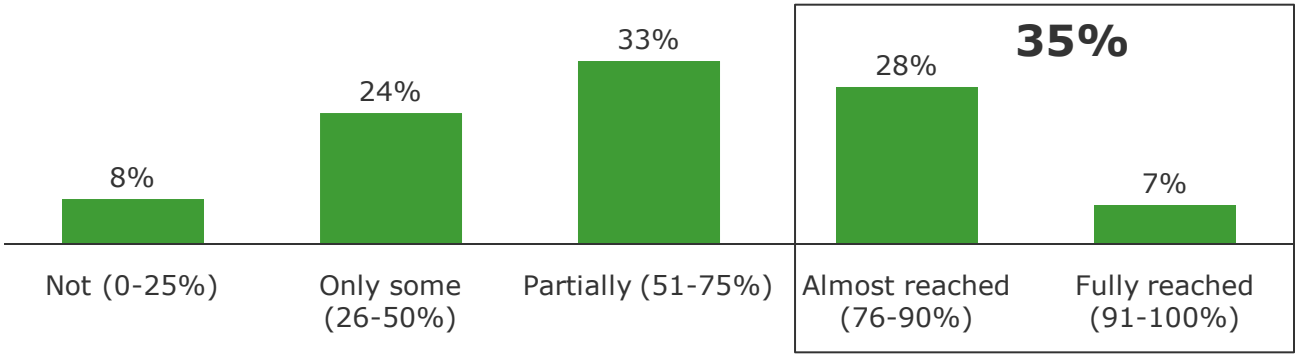
1 Generally, industry only achieved low savings and showed a weak performance on target achievements

Total 85 participants

How much fuel reduction did you experience (estimate) since your company implemented SEEMP/ energy mgmt.?

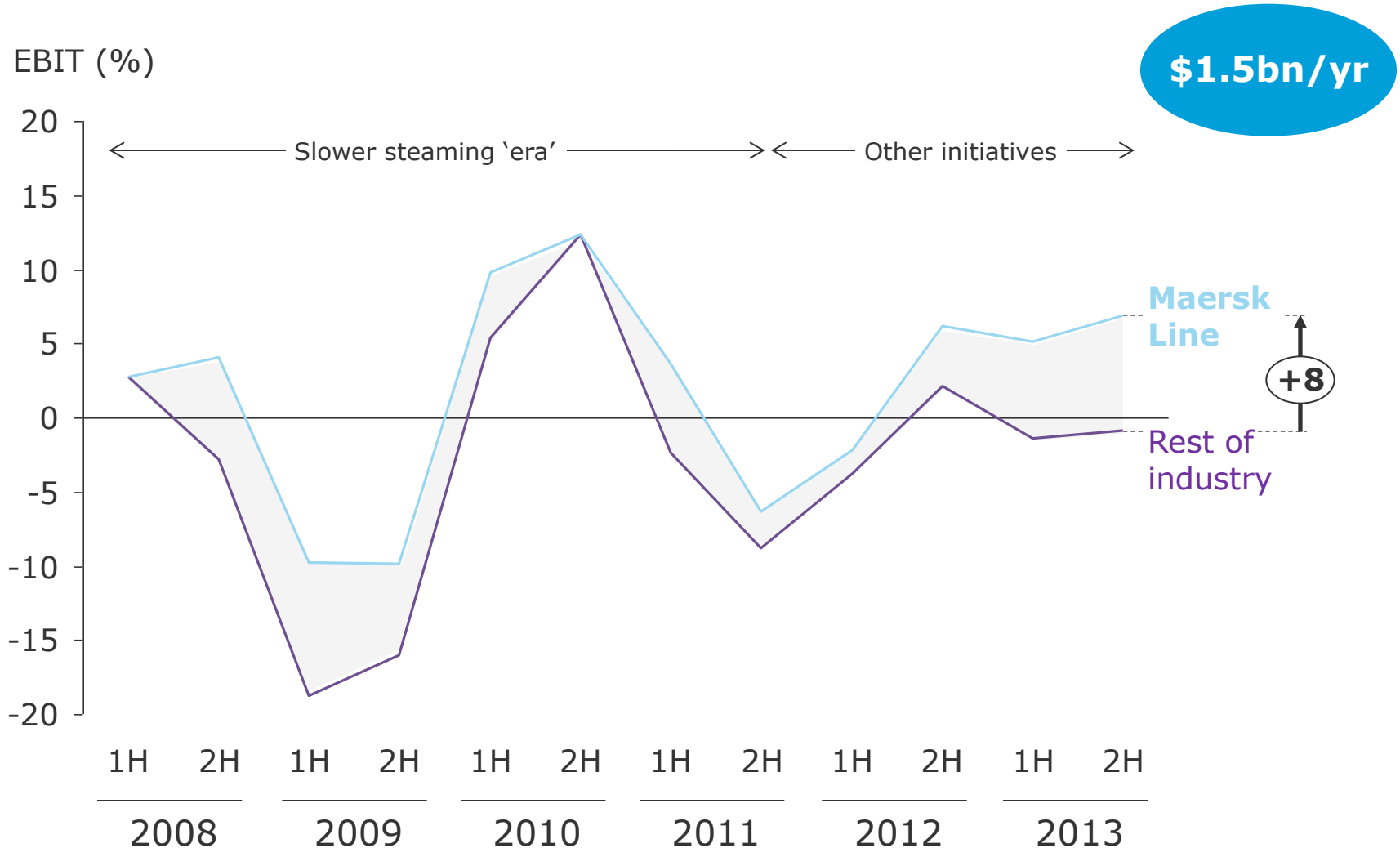


From 0 – 100% to what degree did you reach your targets?

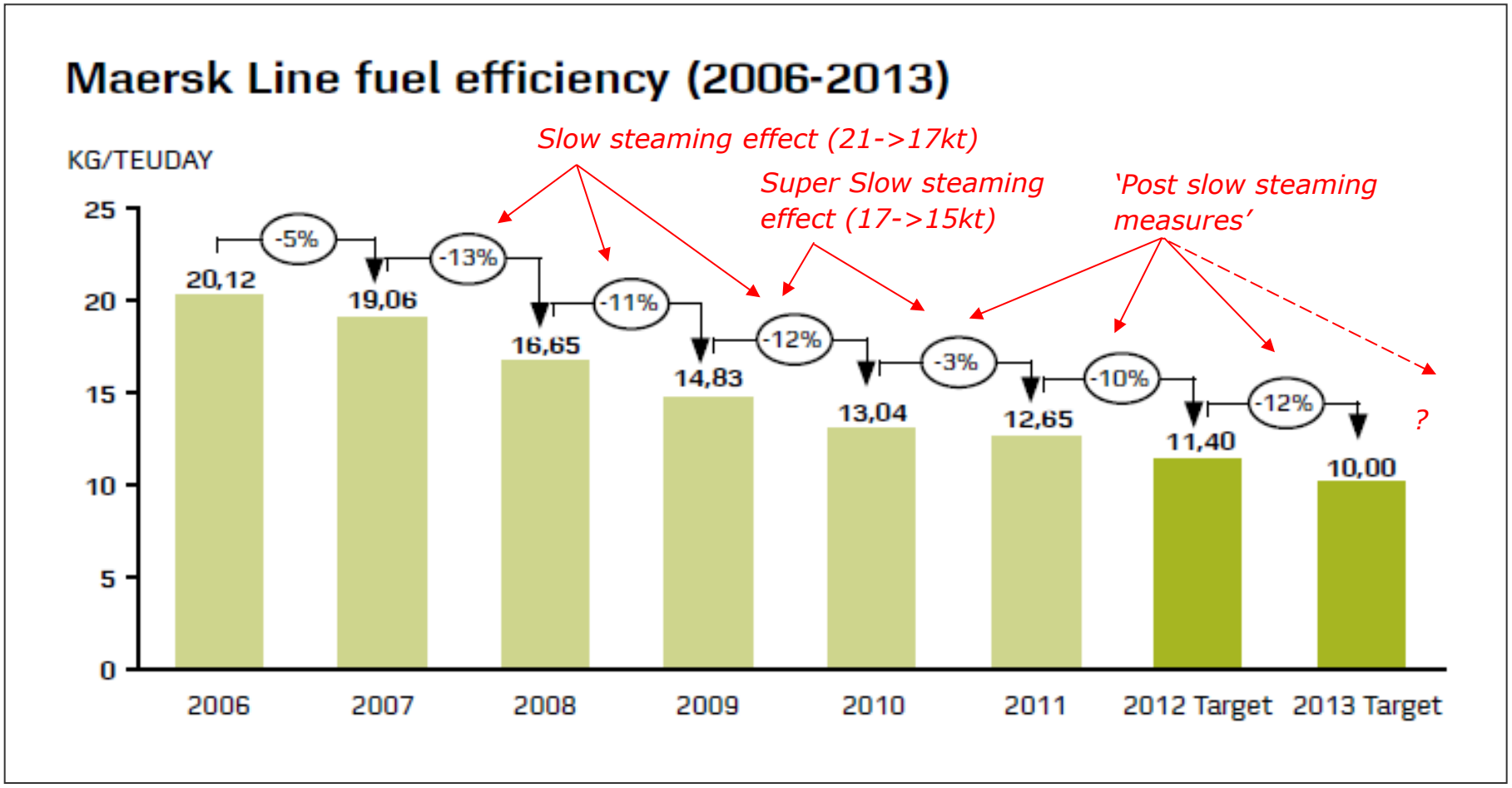


- The **full potential** of energy management remains untouched
- Many **struggle** with **imple-mentation** and lag **behind** own **ambitions**

Top focus and performance make a difference



Main driver behind recent profit improvement are 'post slow steaming' measures

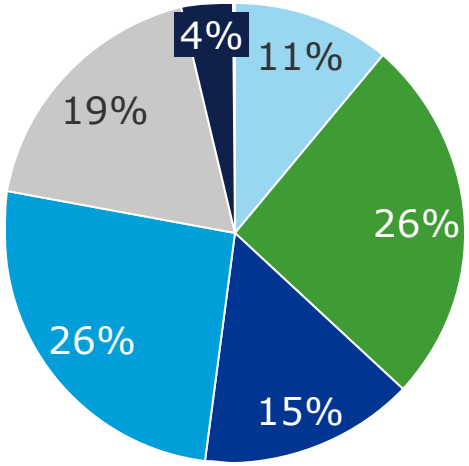


2 Onshore control and adequate resource allocation produce a positive effect on target achievements

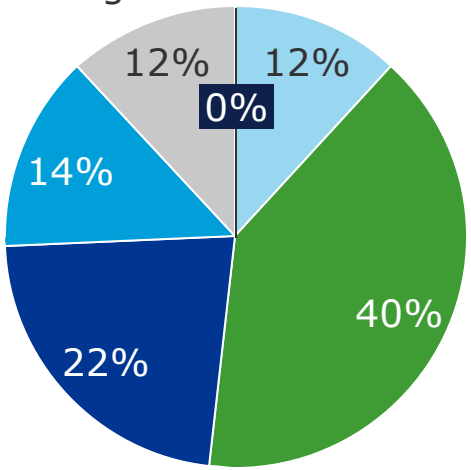
Total 85 participants

Who has the key responsibility within your organisation for energy management?

Companies with 0 - 50% target achievement



Companies with 51 - 100% target achievement



all Superintendents | Alternative | Captain/ Chief Engineer
Energy Manager | Select Superintendent | No dedicated person

- Establishing **energy manager** has **positive impact** on targets achievements
- Assigning responsibility to a **selected Superintendent, Captain or Chief Engineer underestimates complexity** of the task

3 Most popular measures are not necessarily the most implemented — companies struggle with execution

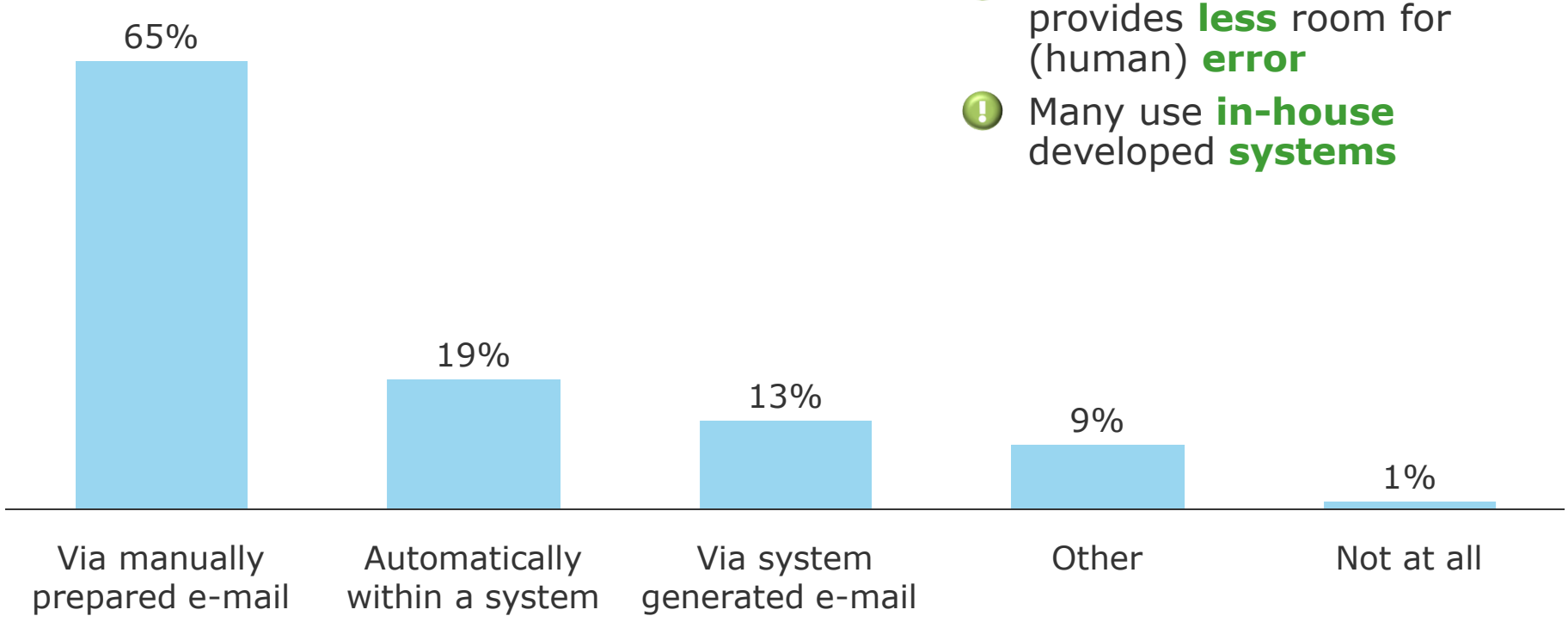
Total 85 participants

4 Manual data transfer, although outdated, remains the most common method for data exchange between ship and shore

Total 85 participants

How is energy management related data transferred to shore?

- **Manual data transfer prevails** in the shipping industry
- **Automatic data transfer** provides **less** room for (human) **error**
- Many use **in-house** developed **systems**



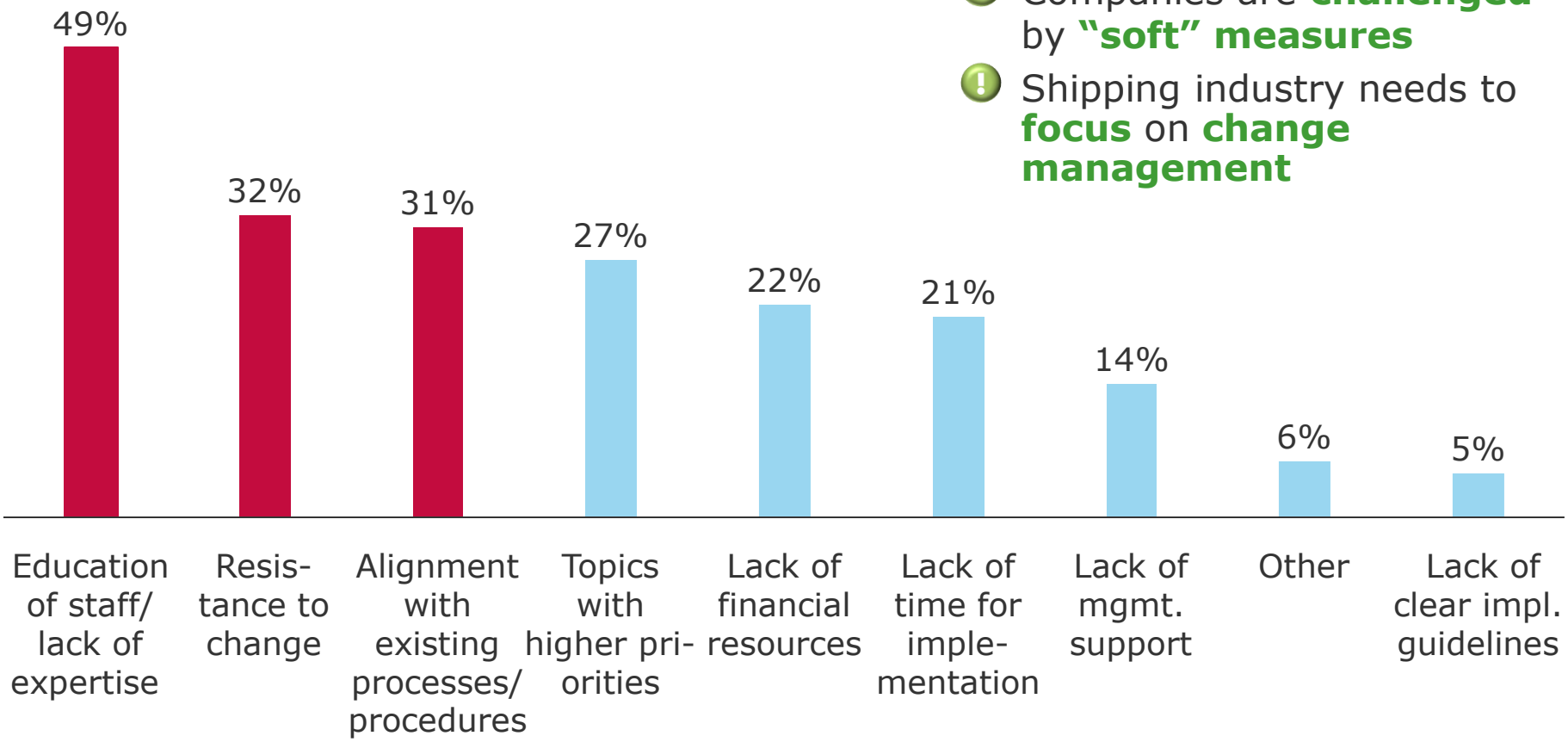
Energy Management Study

5 Despite companies paying little attention to "soft" measures, these are key for companies' pursuit of energy efficiency

Total 85 participants

What challenges have you encountered when implementing energy management/SEEMP?

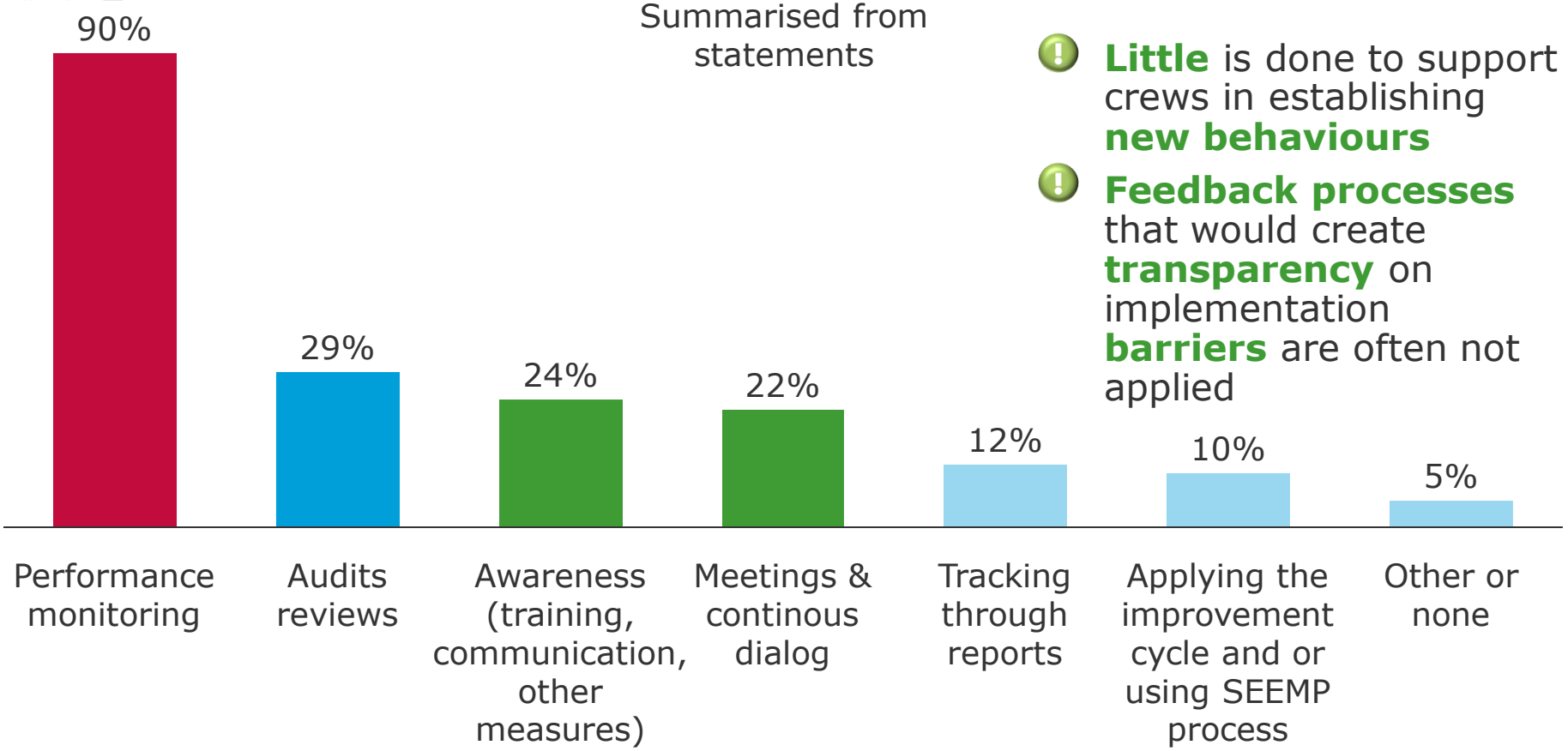
- Companies are **challenged** by **"soft" measures**
- Shipping industry needs to **focus** on **change management**



5 Performance monitoring as dominating method for controlling implementation of energy saving measures

Total 85 participants

How do you ensure that your office staff and crew actually implement/ apply the defined energy saving measures?



Summarised from statements

- **Little** is done to support crews in establishing **new behaviours**
- **Feedback processes** that would create **transparency** on implementation **barriers** are often not applied

4. Summary

Energy performance will be key to survive in future markets

- Energy management has become a **competitive factor** beyond compliance
- **Many** have realised **minor savings** but significant potentials remain as demonstrated by a **few success stories** (savings >10%)
- **Soft measures** are **key** to an **effective** pursuit of **energy efficiency**
- **Automatic data transfer** and proper **performance management** are **crucial** for energy management
- Companies **excelling** support implementation with **change management activities**
- The **next level** of **savings** can only be reached by fully **embracing** the **topic** and ensuring **effective execution**

Thank you for your attention!

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