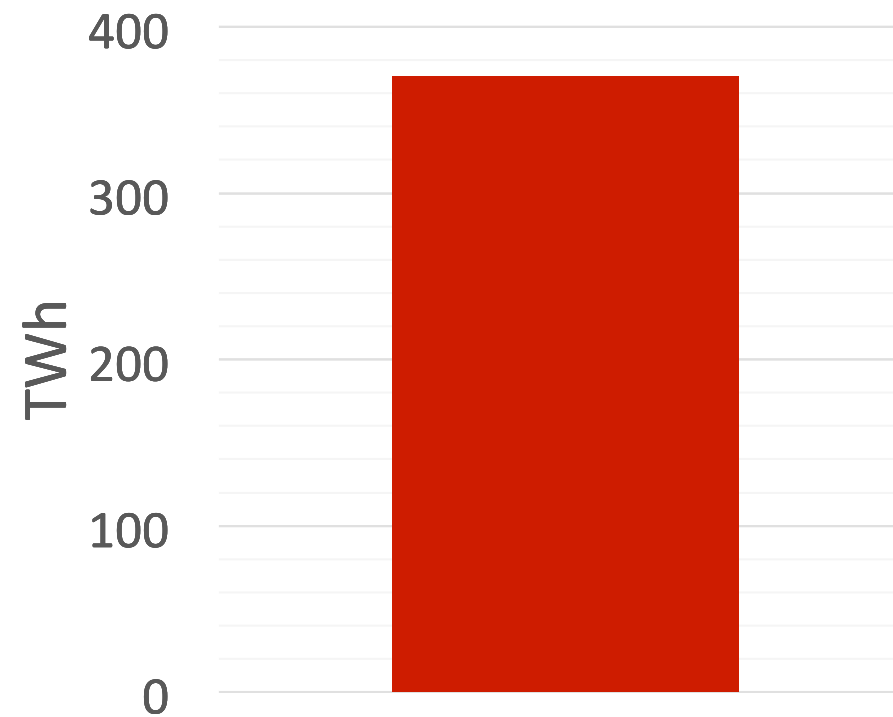


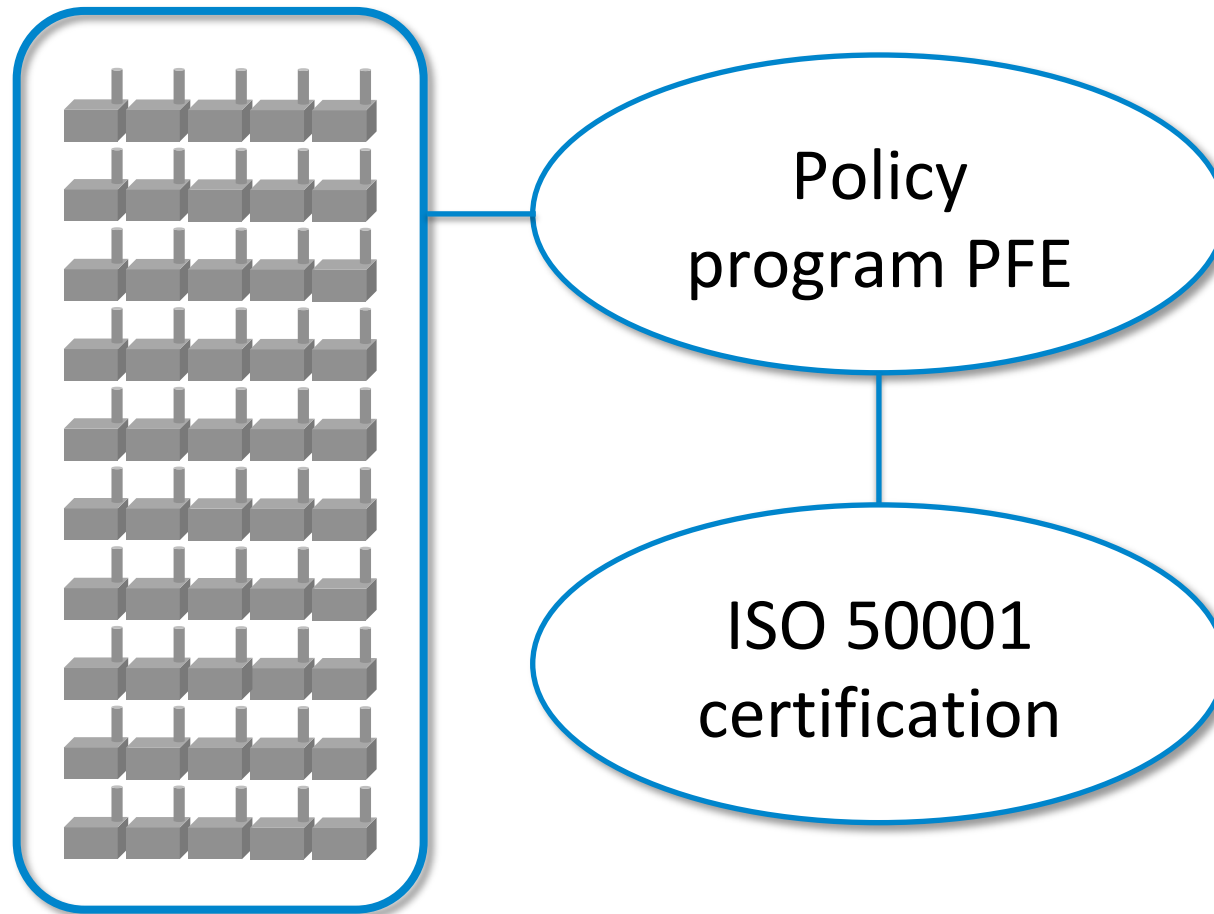
Benchmarking and non-energy benefits

Elias Andersson and Therese Nehler

Energy end-use in Sweden



Energy management



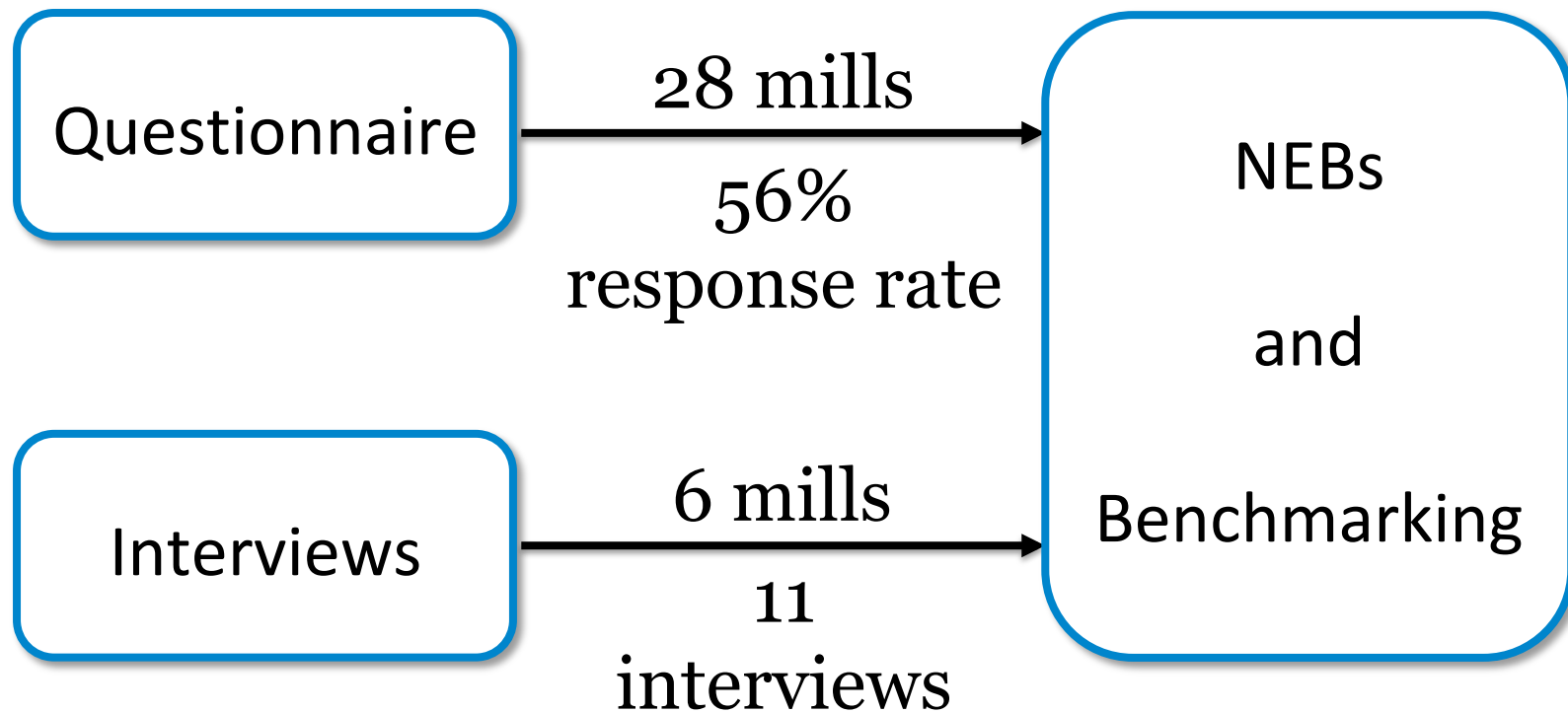
Energy management

Non-energy
benefits
(NEBs)

Energy
performance
benchmarking

*Study NEBs and Benchmarking practices within the
Swedish pulp and paper industry*

Methodology



Non-energy benefits

Classic industrial NEBs:

E.g. *'improved conditions in external environment',
 'cost reductions in addition to energy cost
 reductions'*

Non-energy benefits

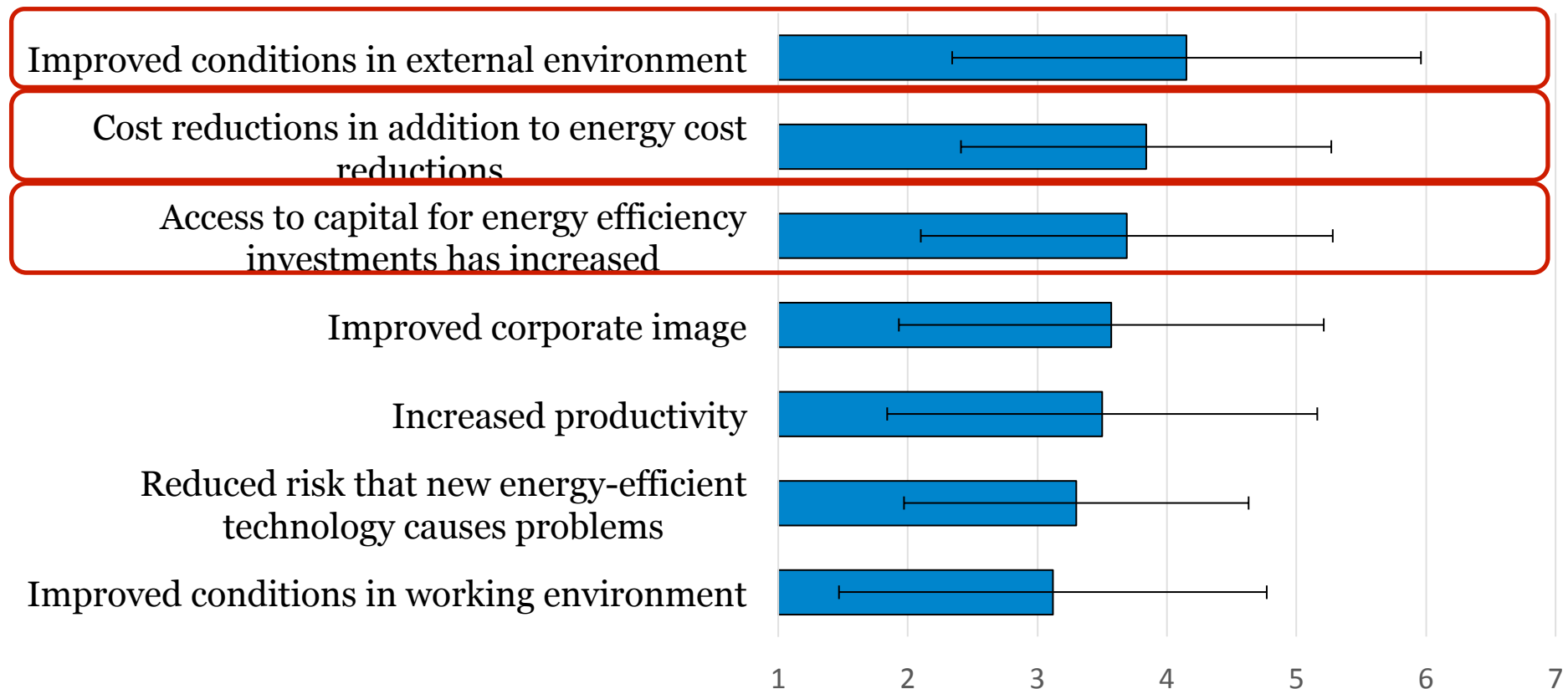
Classic industrial NEBs:

E.g. *'improved conditions in external environment',
'cost reductions in addition to energy cost
reductions'*

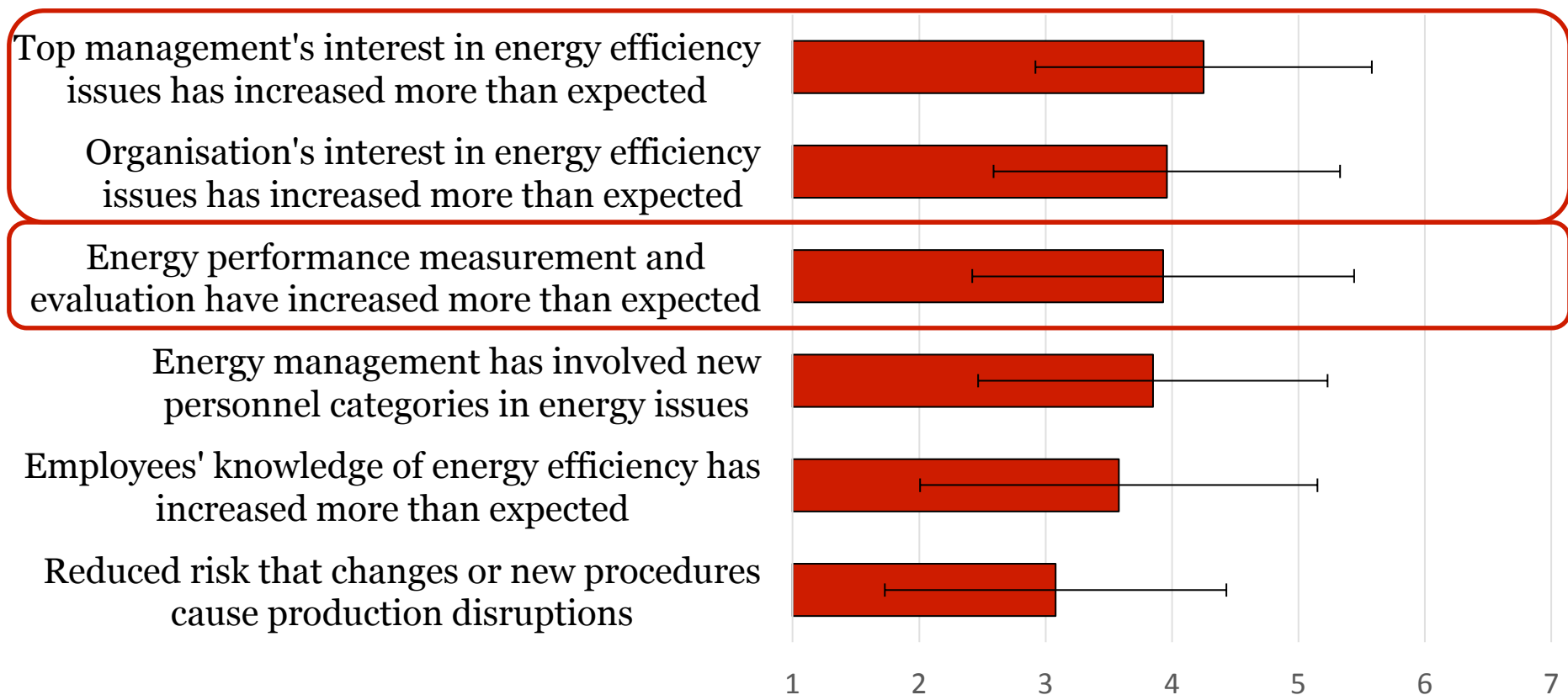
Energy management NEBs:

E.g. *'knowledge increased more than expected',
'increased interest in energy efficiency issues'*

Non-energy benefits



Non-energy benefits



Non-energy benefits

Energy management NEBs

Classic NEBs

Top management's interest in energy efficiency issues has increased more than expected

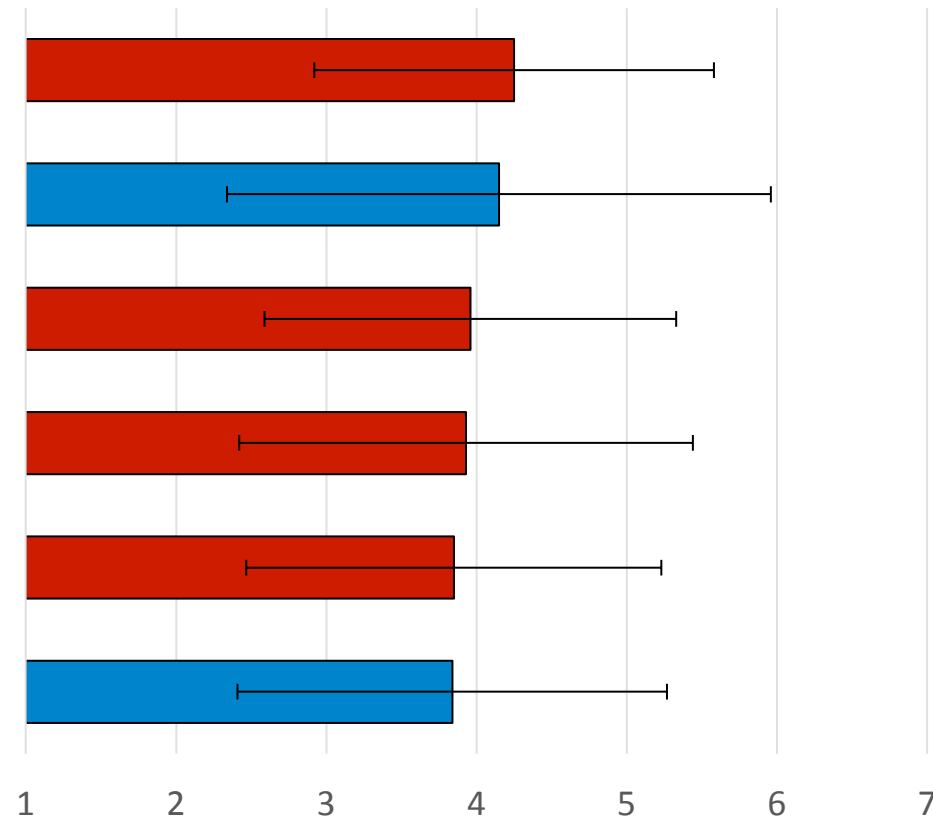
Improved conditions in external environment

Organisation's interest in energy efficiency issues has increased more than expected

Energy performance measurement and evaluation have increased more than expected

Energy management has involved new personnel categories in energy issues

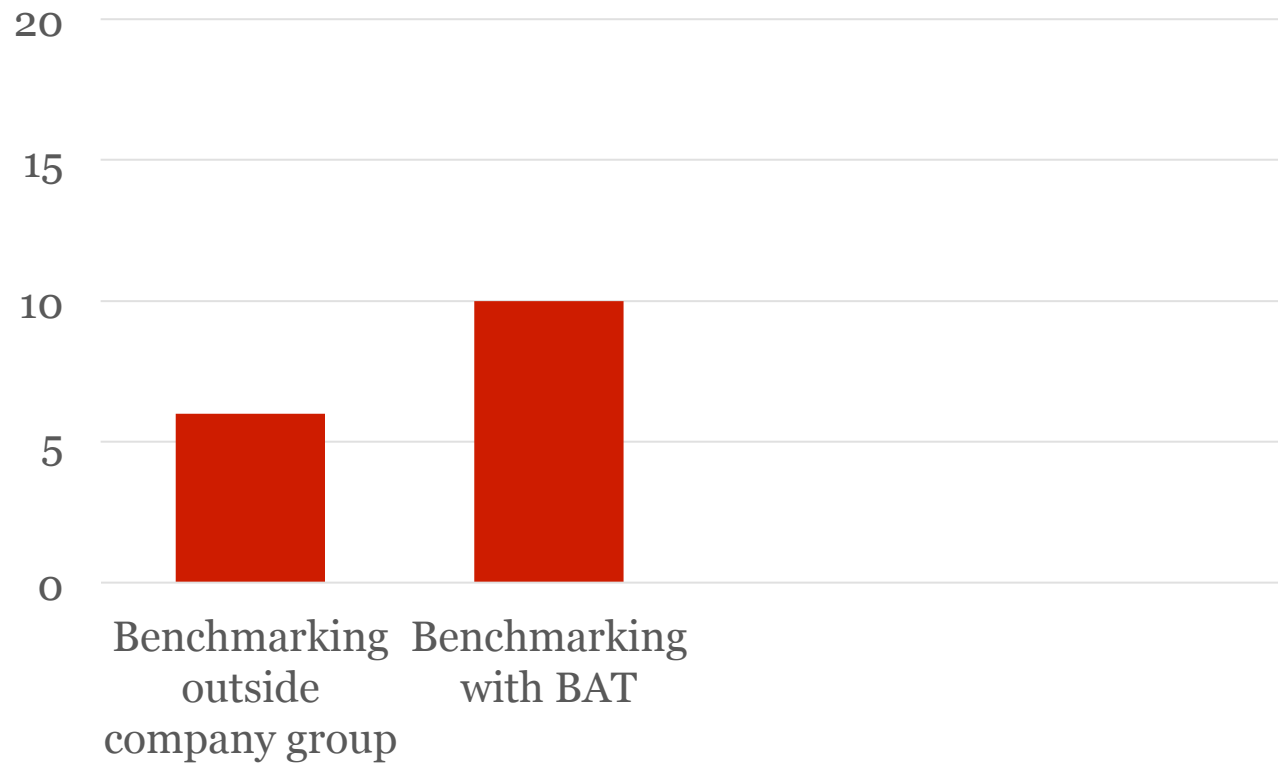
Cost reductions in addition to energy cost reductions



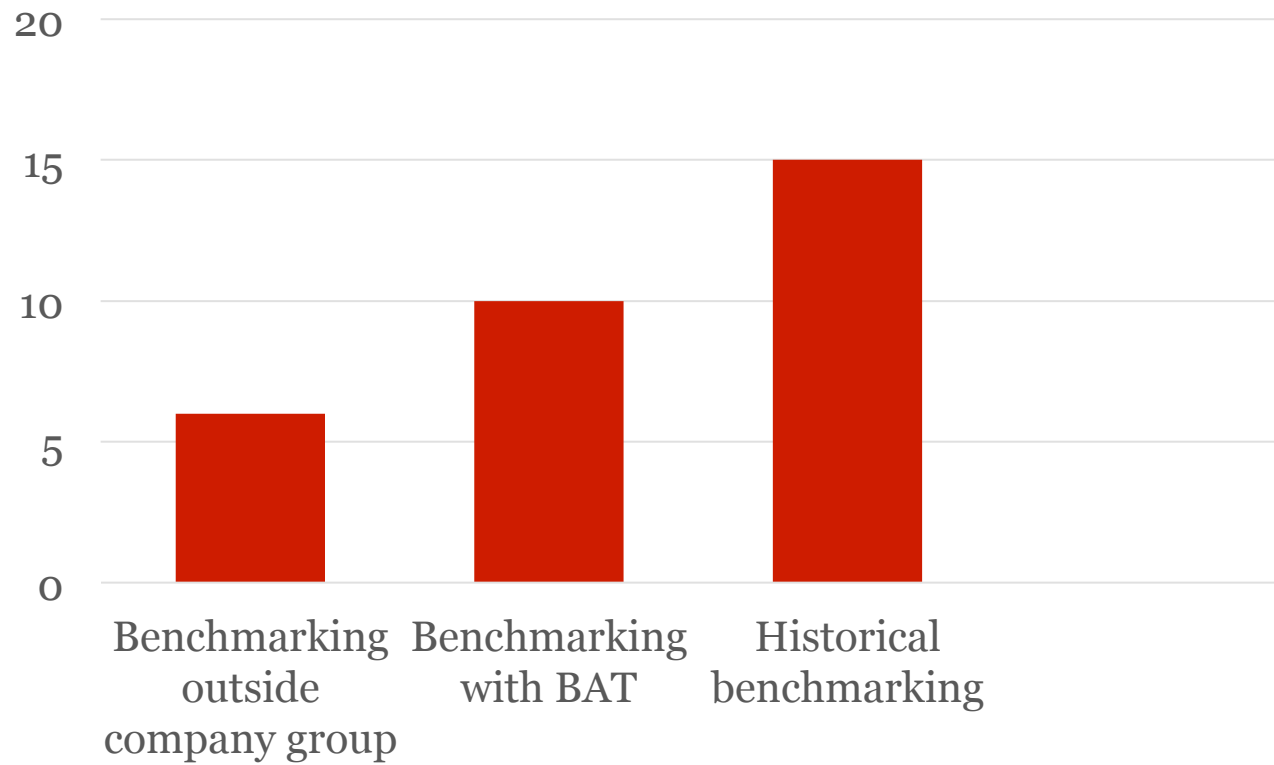
Energy benchmarking



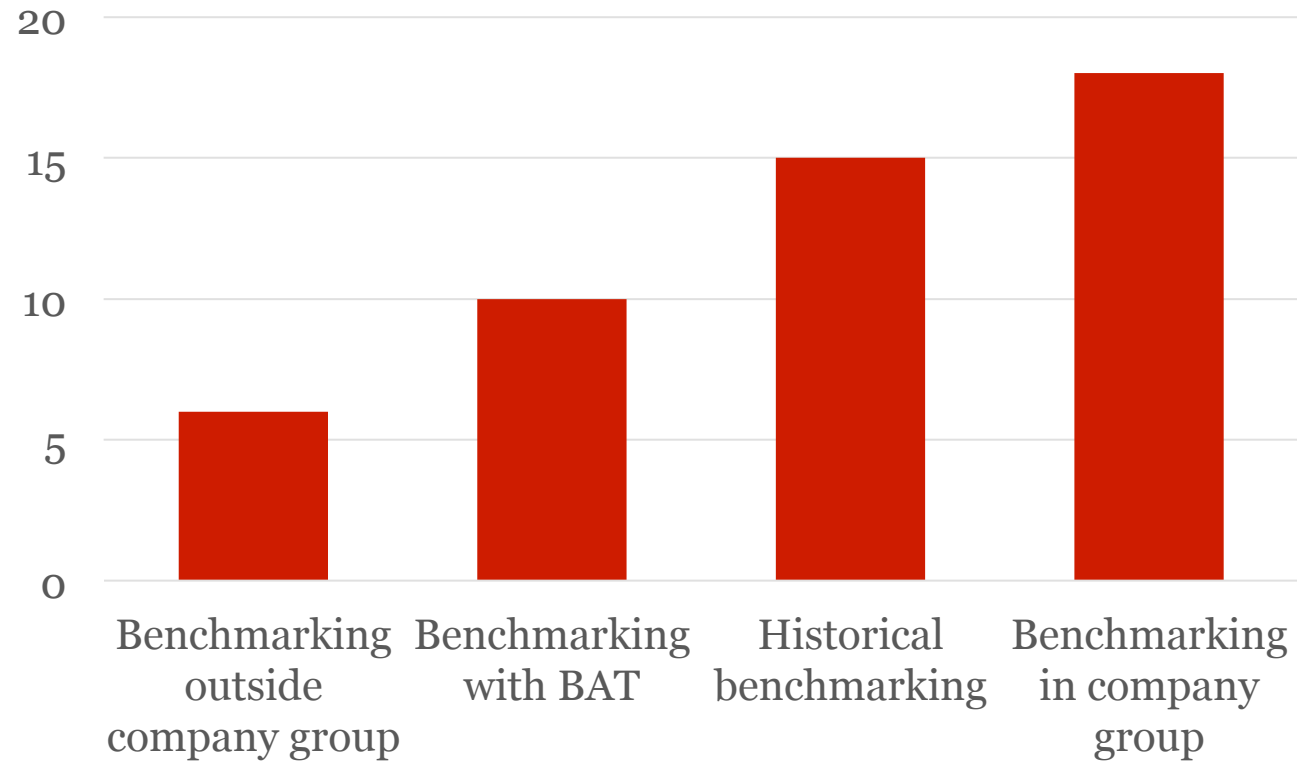
Energy benchmarking



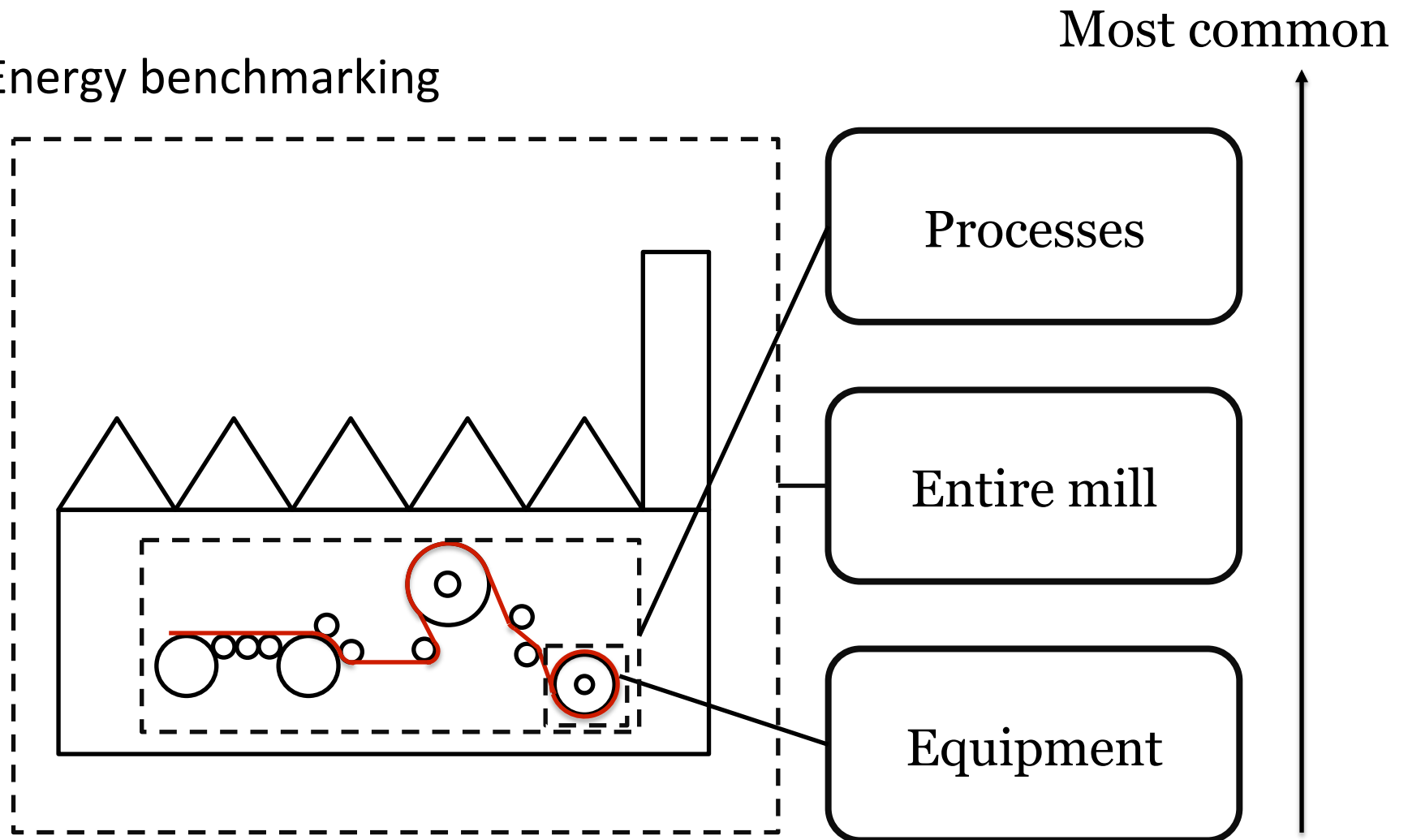
Energy benchmarking



Energy benchmarking



Energy benchmarking



Energy benchmarking

Benefits mentioned from interviews

**Creates incentives
for further
investigations**

**A positioning
toward peers**

Difficulties mentioned from interviews

Heterogeneity

**Different
taxonomies used**

**Process
integrations**

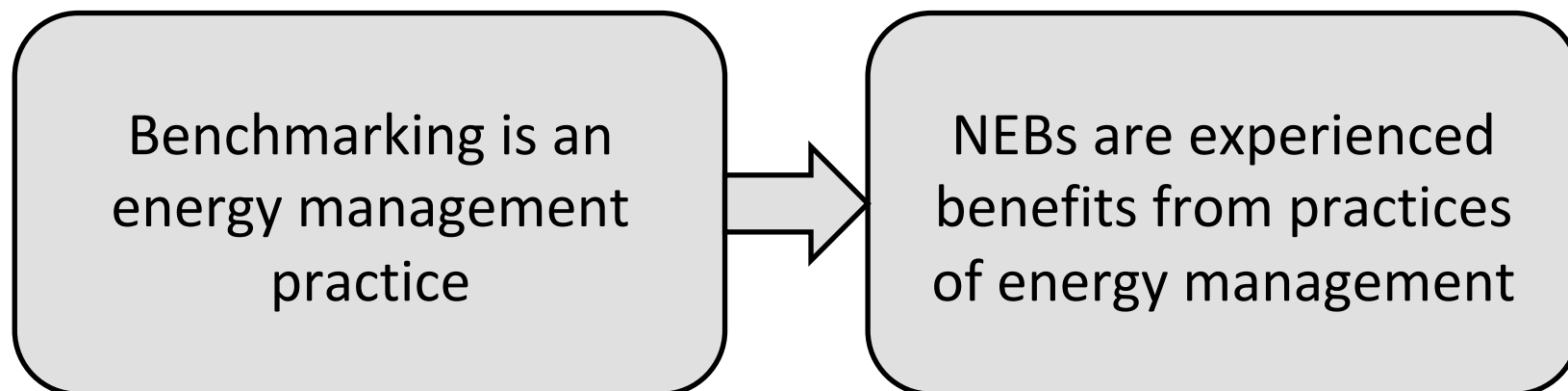
Conclusions

NEBs – a new, novel approach

Top management's interest in energy efficiency increased

Benchmarking in company group

Benchmarking on process level



Thank you for listening

liu.se