



2014-06-04

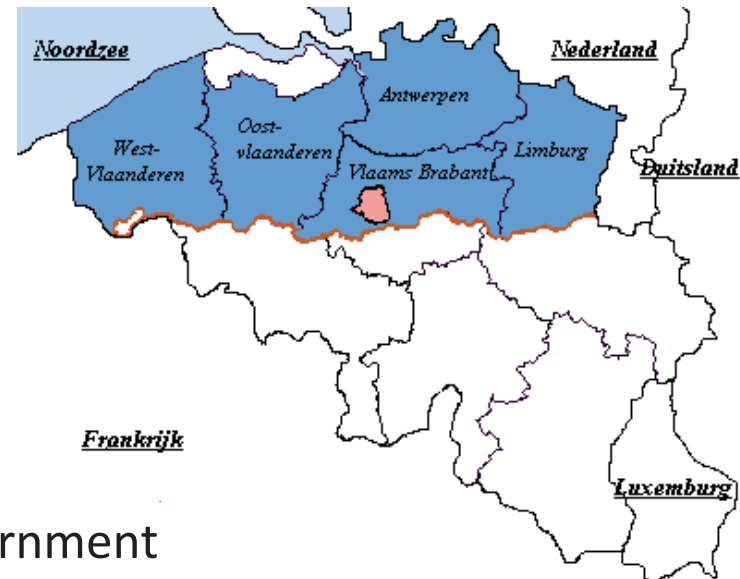
Two voluntary agreements on energy efficiency in Flemish industry – lessons learnt

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ECEEE – Arnhem – June 2-5, 2014

Outline of this presentation

- » Comparison of two voluntary agreements on energy efficiency in industry in Flanders, Belgium
 - » Benchmarking Covenant
 - » Auditing Covenant
- » Comparison of design
 - » Political acceptance
 - » Target group
 - » Obligation for the participants
 - » Compensation from the Flemish Government
 - » Administration



Outline of this presentation

- » Comparison of operational results
 - » Number of participants – industrial energy consumption covered
 - » Determination of benchmark / energy saving potential
 - » Monitoring results: energy efficiency improvement
 - » Monitoring results: CO₂ reductions
- » Lessons learnt from both covenants
 - » On the metrics to monitor the progress in voluntary agreements on energy efficiency
 - » On whether to impose an energy efficiency target or commitment to take action
 - » On the relation between achieved energy efficiency improvements and the energy-intensity of the companies

Comparison in design

	Benchmarking Covenant	Auditing Covenant
Political acceptance	Part of Flemish Climate Action Plan 2002-2005: focus on continuous improvement of energy efficiency in industry <ul style="list-style-type: none"> • No absolute emission cap • No equal relative emission reduction target for each company 	
Duration	2002 – 2012 (prolonged until end of 2014)	2005 – 2013 (prolonged until end of 2014)
Target group	Energy-intensive industry <ul style="list-style-type: none"> • Annual primary energy consumption > 0,5 PJ OR • ETS company 	Medium sized industry <ul style="list-style-type: none"> • Annual primary energy consumption: 0,1 – 0,5 PJ AND • No ETS obligations

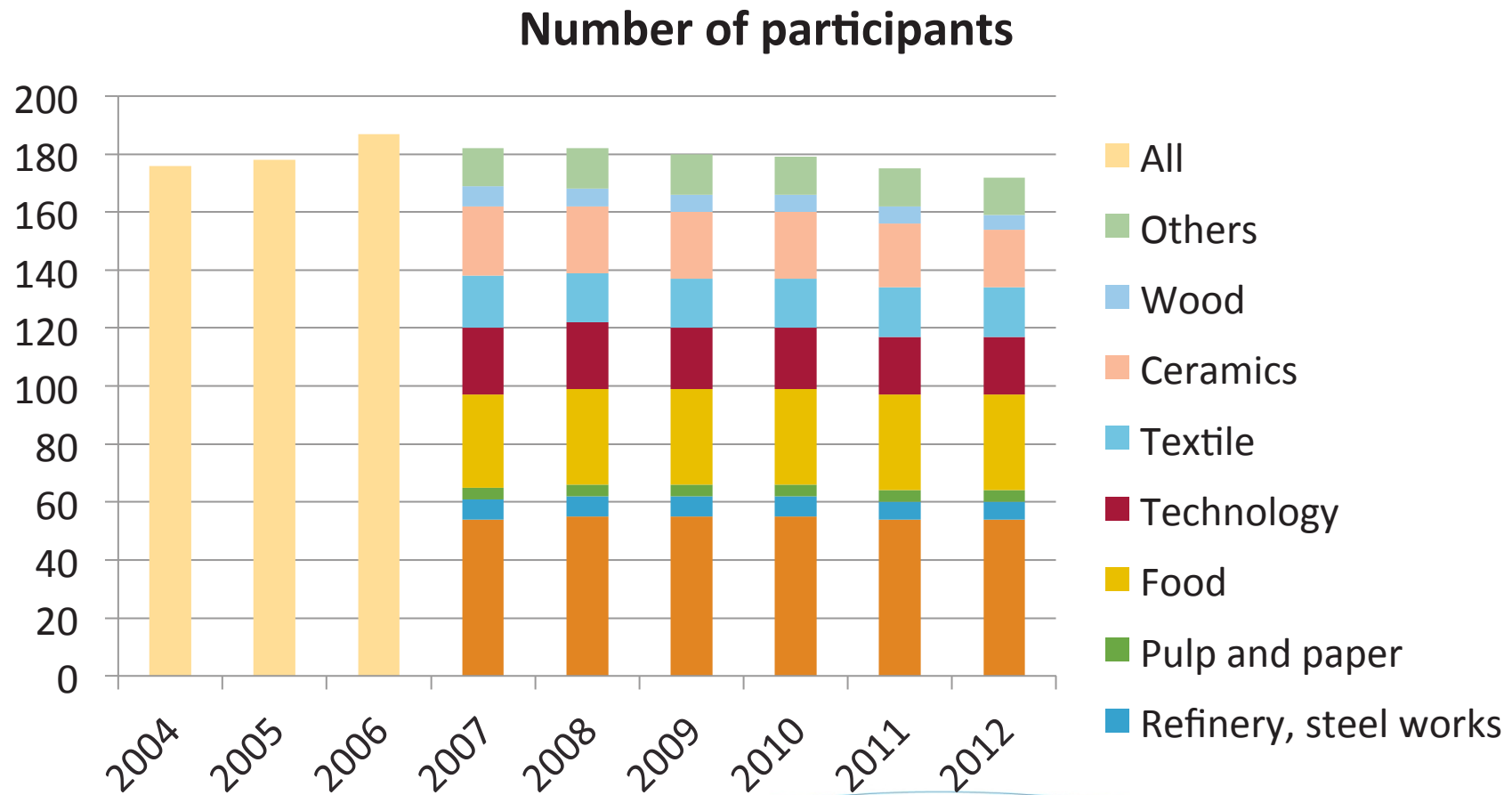
Comparison in design

	Benchmarking Covenant	Auditing Covenant
Obligations	<p>Determining world's leading edge for each installation</p> <ul style="list-style-type: none"> • Method 1: comparison and benchmark of process installations, get to top10% most efficient installations • Method 2: comparison and benchmark of regions, get to lowest average • Best practice: get to best practice + 10% • Auditing: implement all energy savings with IRR > 15% 	<p>Determine economic feasible energy saving options by auditing:</p> <ul style="list-style-type: none"> - 1st phase (2005-2009): implement all energy saving measures with IRR > 15% - 2nd phase (2008-2012): implement all energy saving measures with IRR > 13,5%

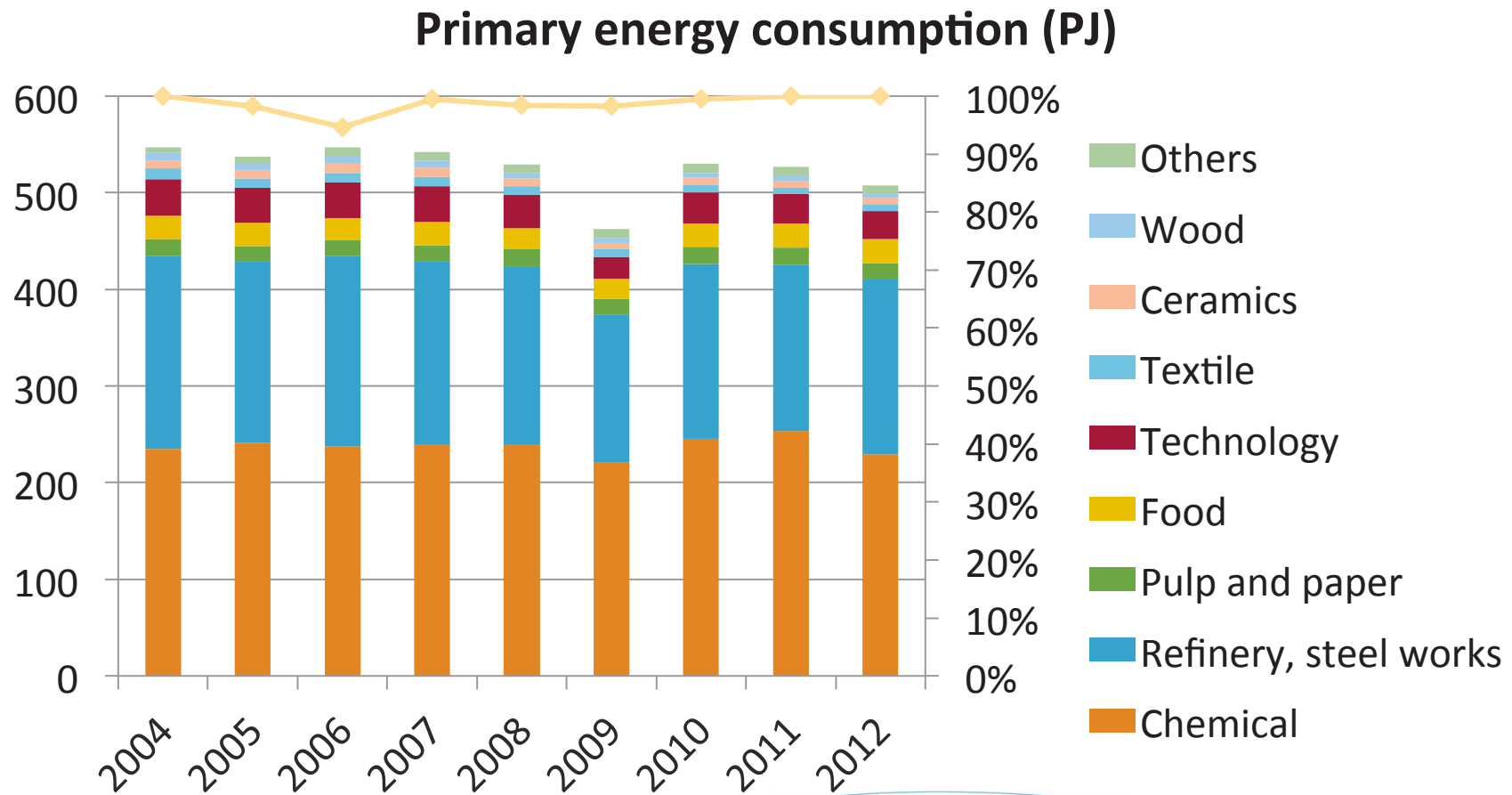
Comparison in design

	Benchmarking Covenant	Auditing Covenant
Compensation for participation	<ul style="list-style-type: none"> • No additional measures or policies on energy efficiency or GHG reduction: nor from Flemish, federal or EU level • Free emission allowances under EU ETS • Exclusivity in ecology premium scheme 	<ul style="list-style-type: none"> • No additional measures or policies on energy efficiency or GHG reduction: nor from Flemish, federal or EU level • Priority in ecology premium scheme
Administration	Benchmarking Covenant Verification Office: reports to Benchmarking Covenant Commission	Auditing Covenant Verification Office: reports to Auditing Covenant Commission

Comparison of operational results: Benchmarking Covenant

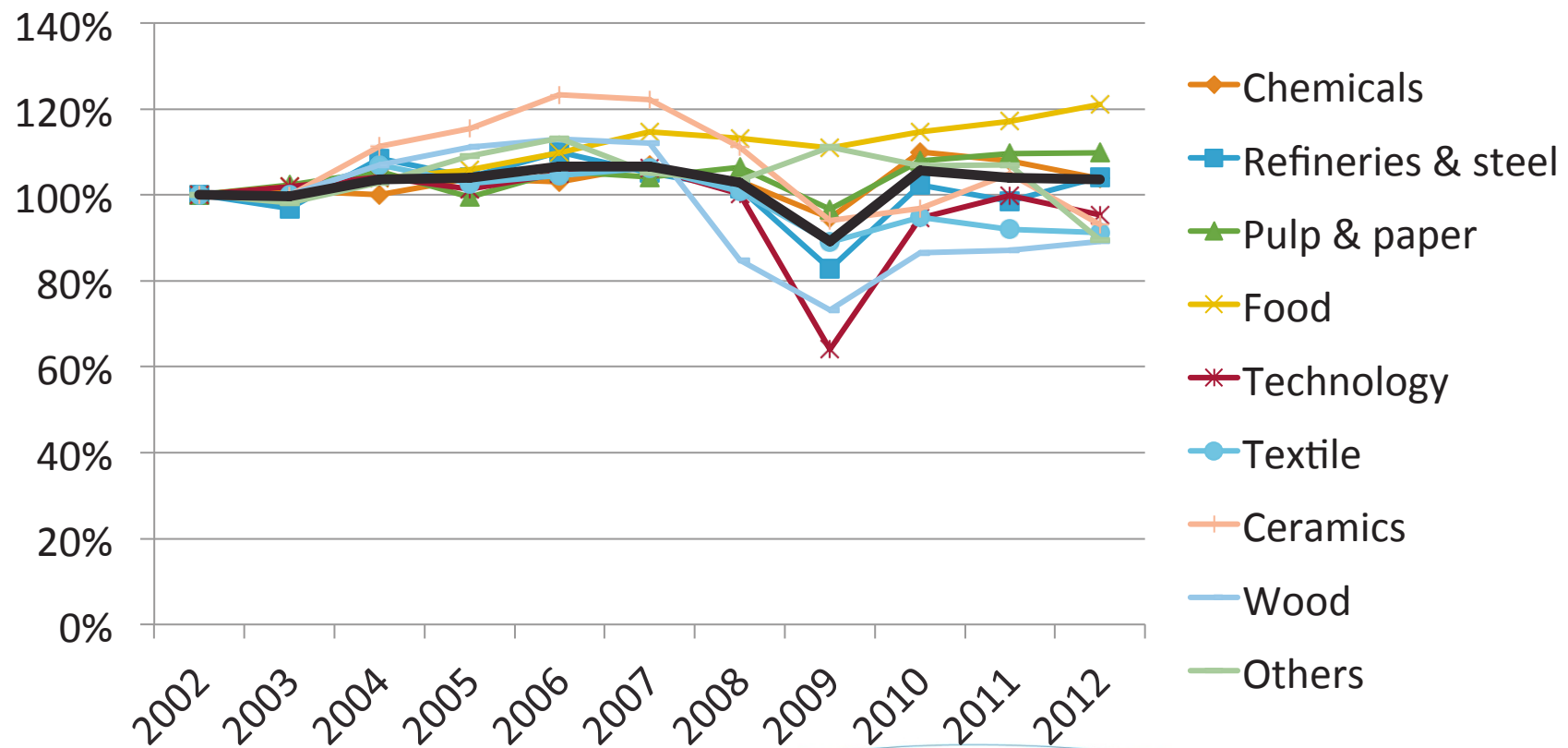


Comparison of operational results: Benchmarking Covenant



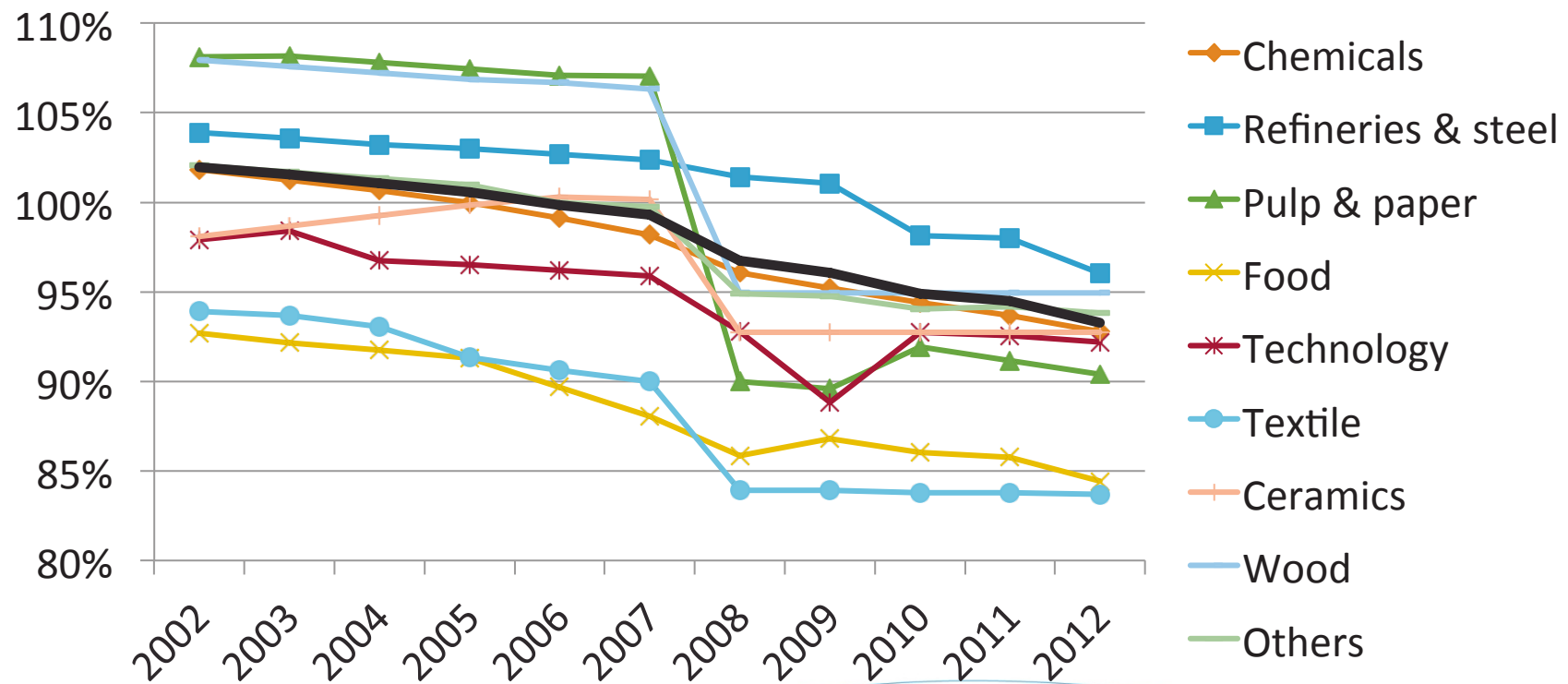
Comparison of operational results: Benchmarking Covenant

Evolution in production levels (2002: 100%)



Comparison of operational results: Benchmarking Covenant

Evolution in specific energy consumption of benchmark
(100%: average position of participants in 2002)



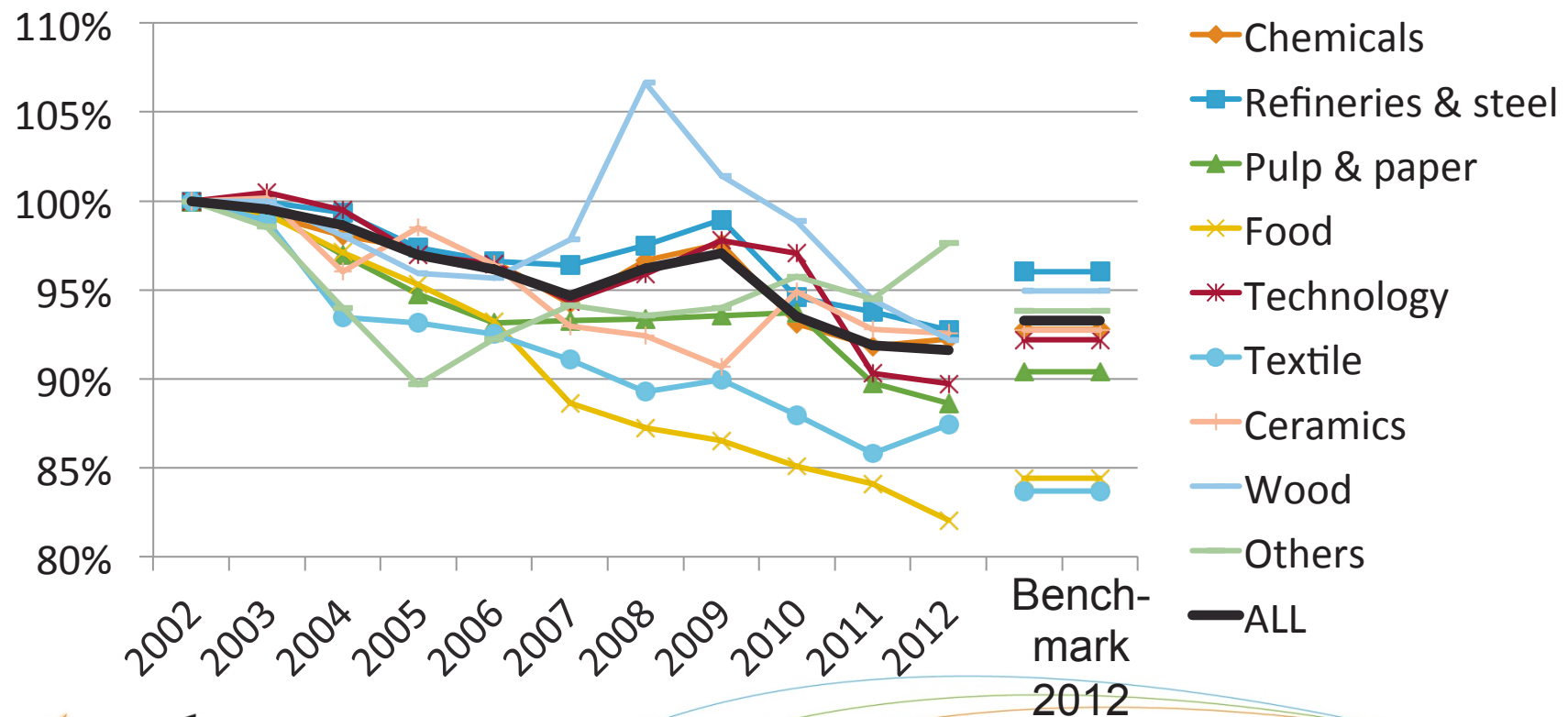
Comparison of operational results: Benchmarking Covenant

- » Monitoring of energy efficiency improvement
 - » First option: an absolute metric
 - » Monitored energy consumption of participating companies
 - » Comparison with energy consumption of benchmark and with energy consumption to get to the benchmark
 - » With real production levels – with production levels fixed at 2002 level
 - » In 2005-2006:
 - » With real production levels – with production levels fixed at most recent year
 - » In 2009: relative metric: Energy Efficiency Index

$$EEI_{i,y} = \sum_{i=1}^n (SEC_{i,y} / P/M_{i,y}) / \sum_{i=1}^n (SEC_{i,2002} / P/M_{i,2002})$$

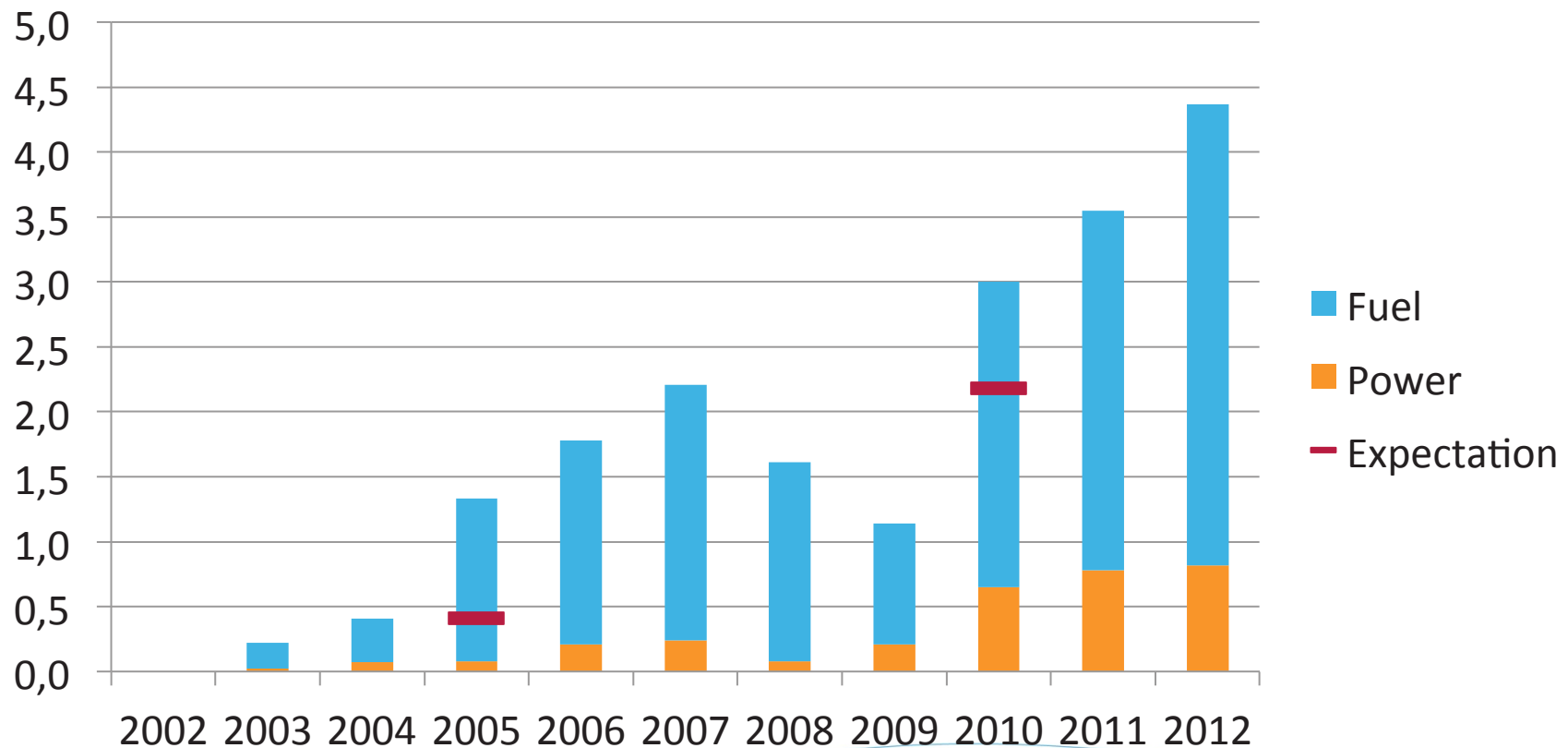
Comparison of operational results: Benchmarking Covenant

Evolution in Energy Efficiency Index
Comparison with benchmark in 2012

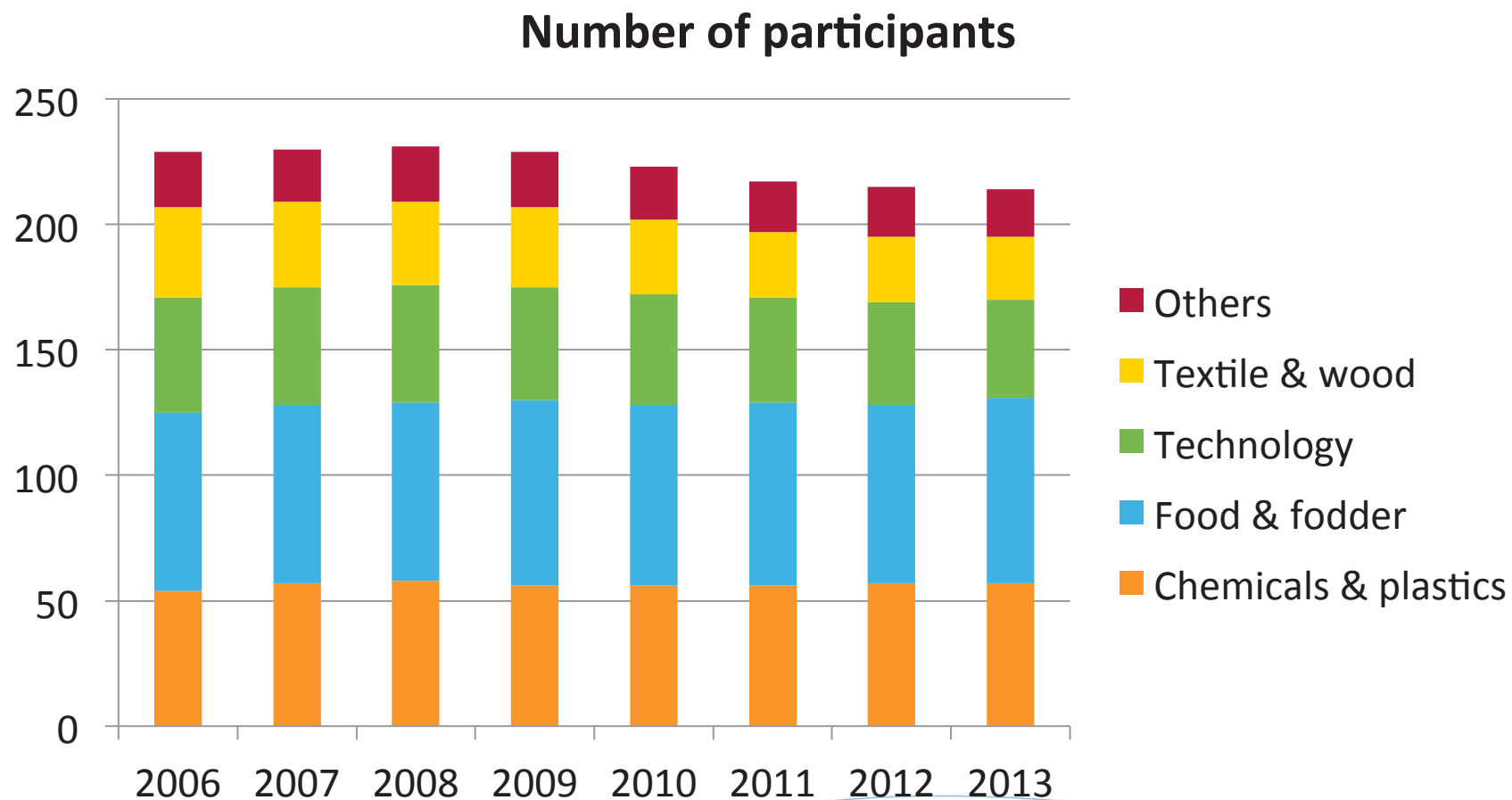


Comparison of operational results: Benchmarking Covenant

CO₂ emission reductions (Mton)

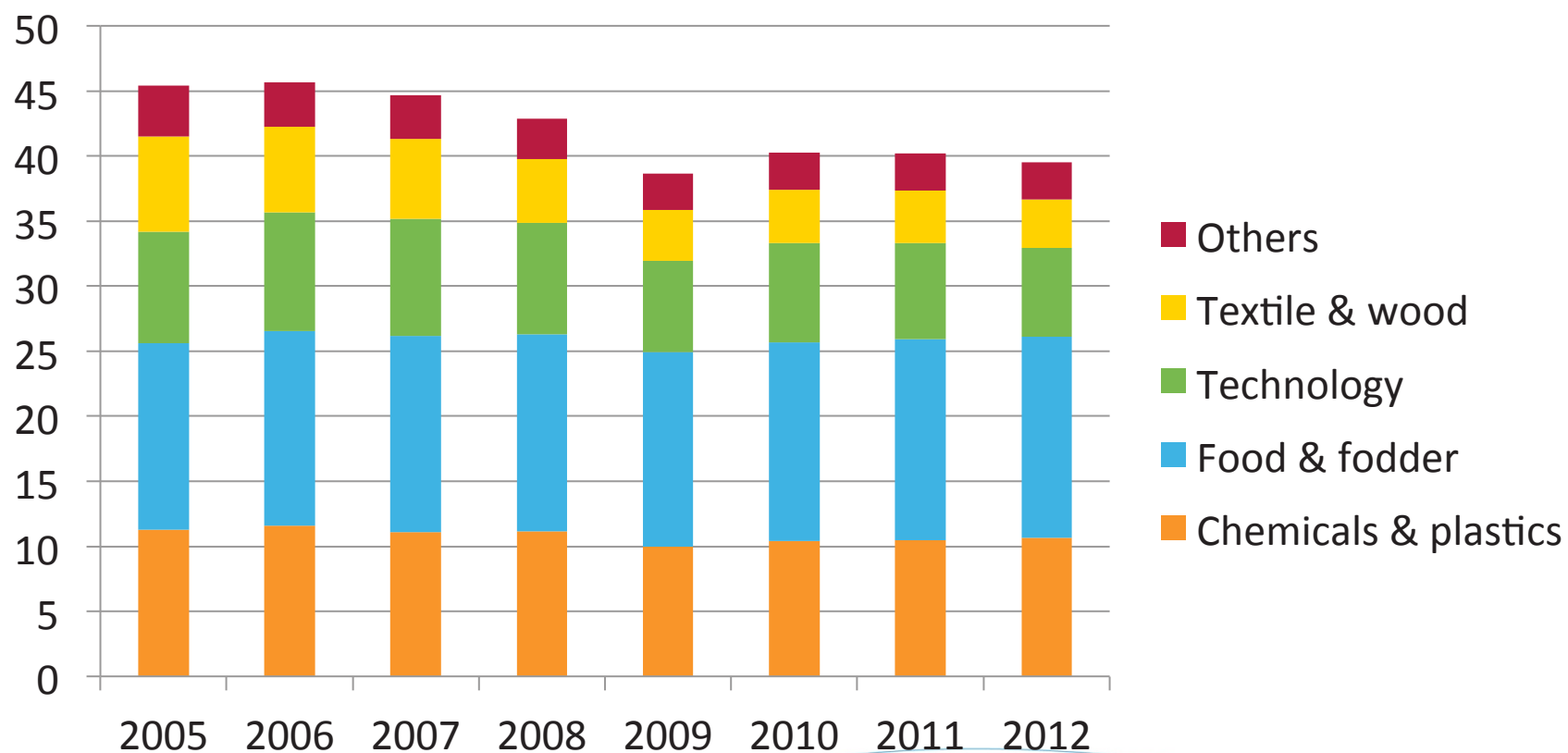


Comparison of operational results: Auditing Covenant



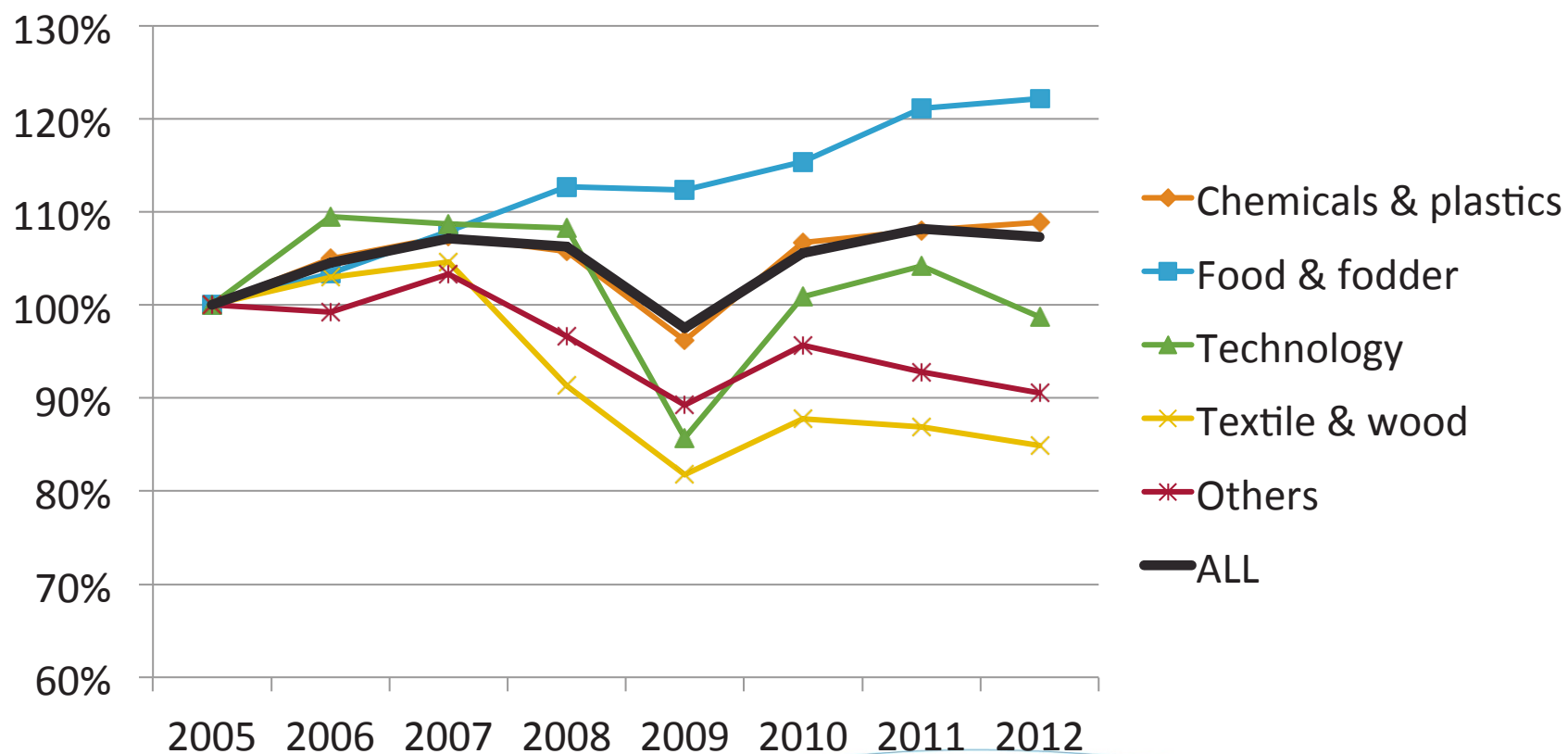
Comparison of operational results: Auditing Covenant

Primary energy consumption (PJ)



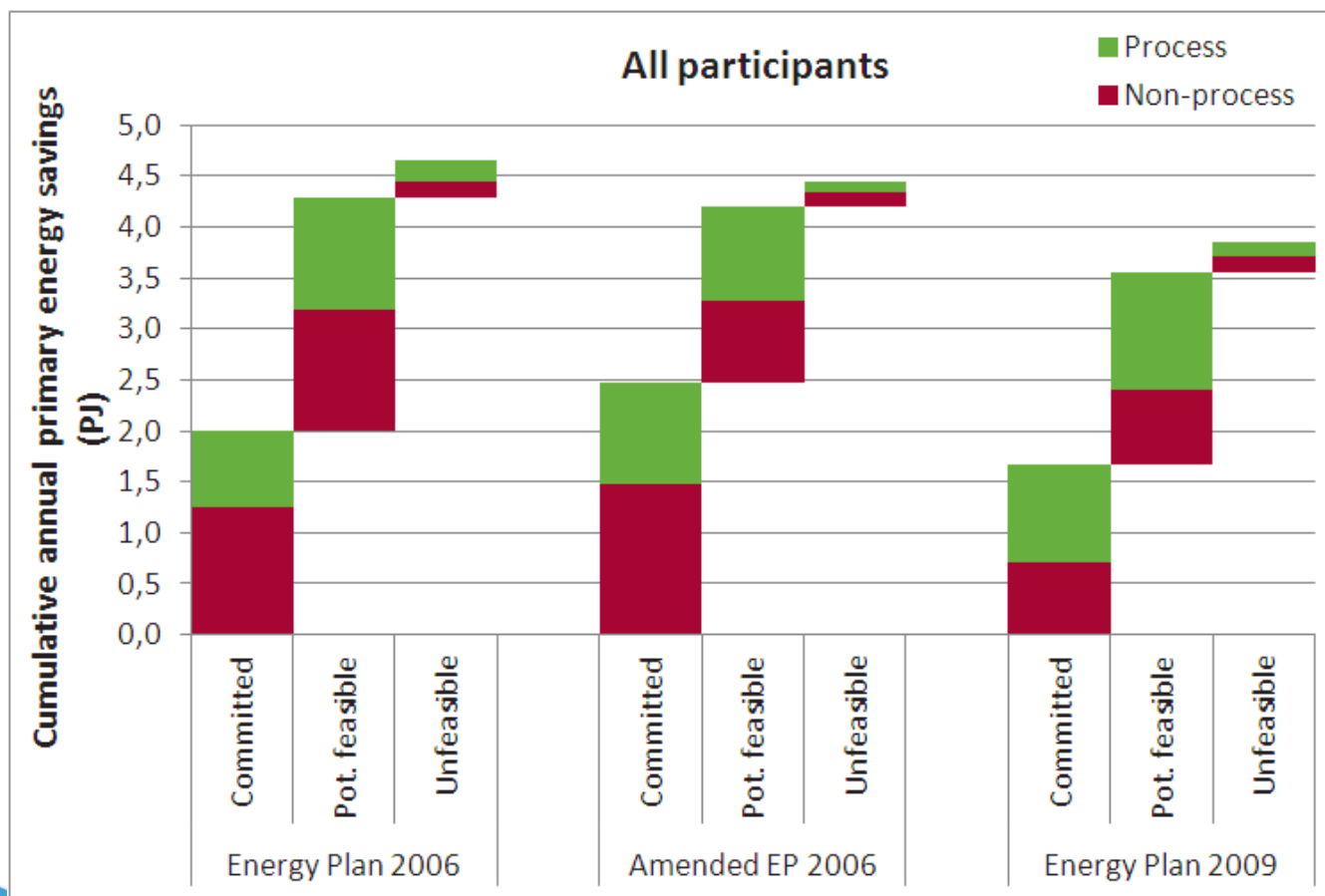
Comparison of operational results: Auditing Covenant

Evolution in production levels (2005: 100%)



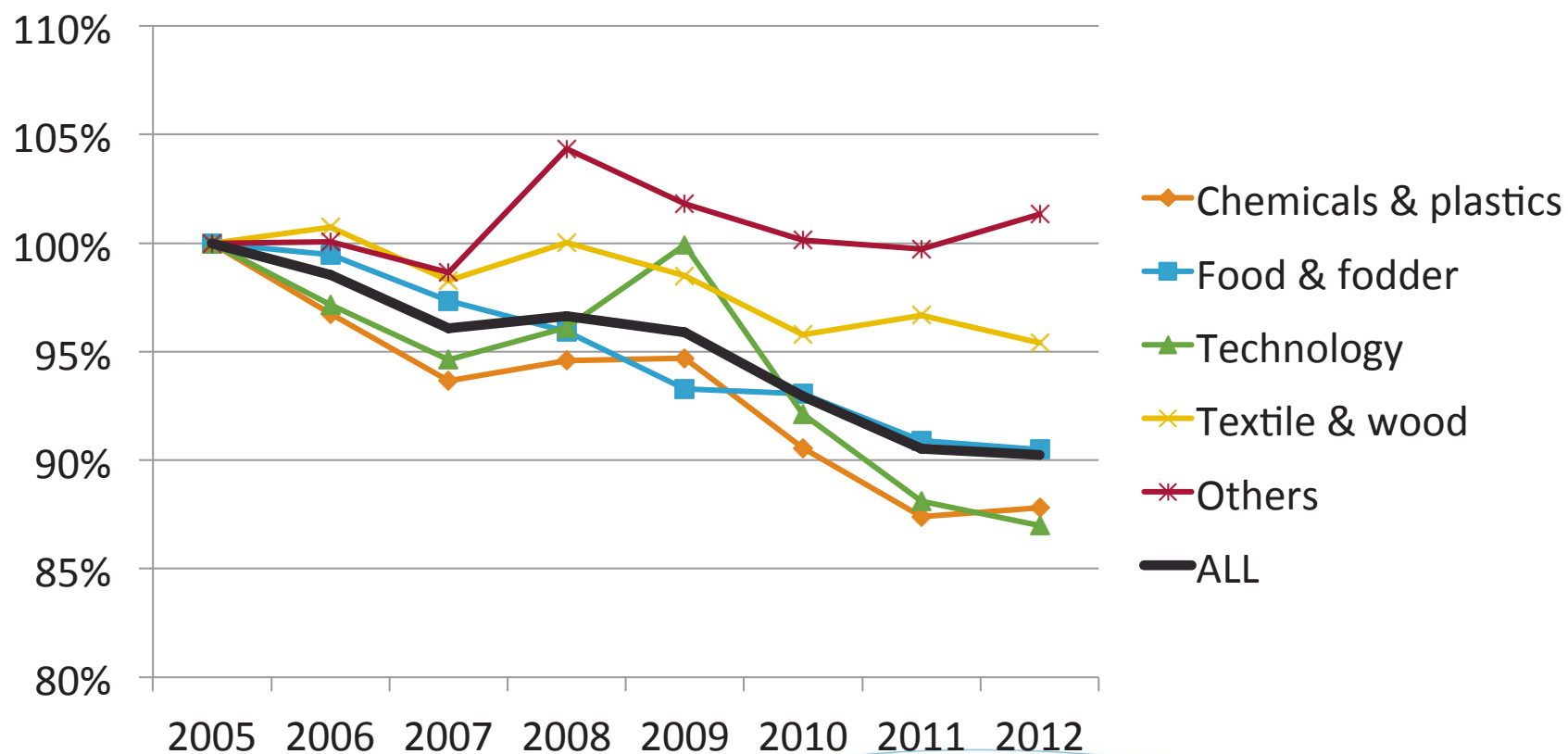
Comparison of operational results: Auditing Covenant

» Measures proposed in energy plans 2006-2009



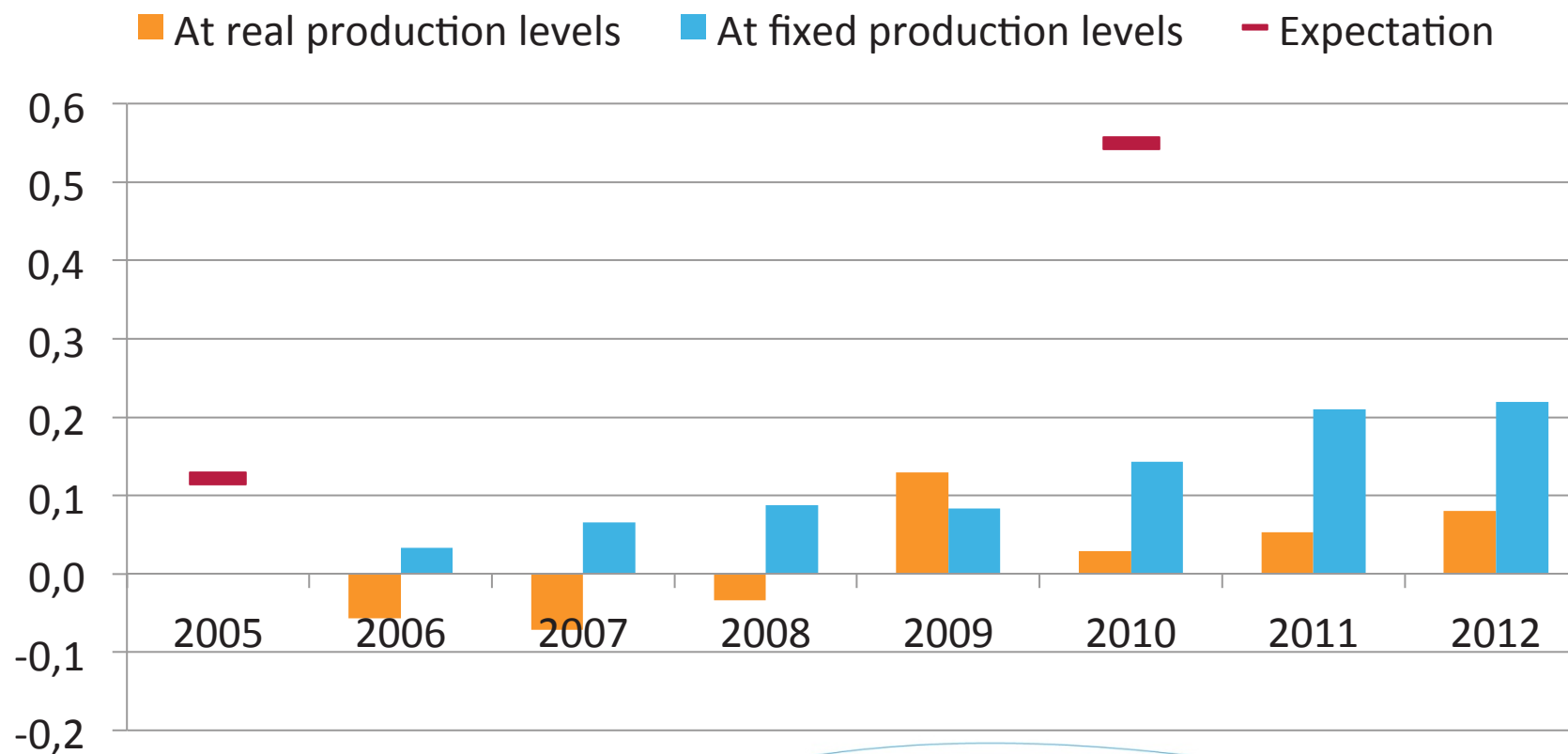
Comparison of operational results: Auditing Covenant

Evolution in Energy Efficiency Index (2005: 100%)



Comparison of operational results: Auditing Covenant

CO₂ emission reductions (Mton)



Lessons learnt: on the metrics

What metric to use to monitor the progress in voluntary agreements in energy efficiency?

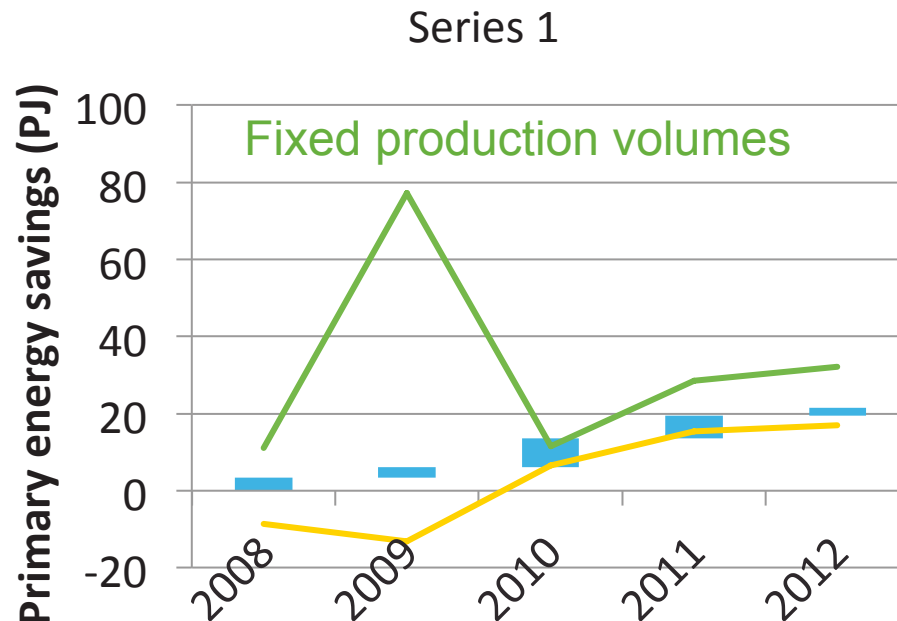
- » Absolute metric OR Relative metric?
 - » Depends whether target is an absolute or relative one
 - » Both approaches tested in benchmarking covenant; finally chosen for relative metric (Energy Efficiency Index)
- » How to deal with varying number of participants?
 - » Finally chosen to focus on most recent situation + hindcast of energy efficiency for newcomers
- » What if production levels suddenly drop?
 - » Absolute metric will decrease; target will be easily met
 - » Relative metric will increase; achieving target at risk
 - » In successors of covenants: concept of “excuse for economic reasons” introduced

Lessons learnt: on the metrics

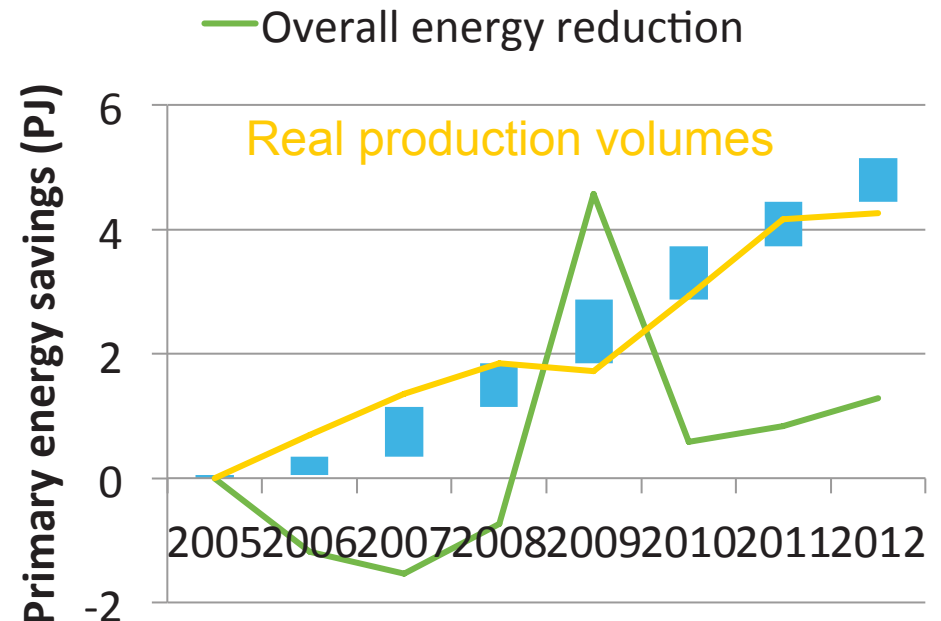
What metric to use to monitor the progress in voluntary agreements in energy efficiency?

- » Alternative: focus on aggregated energy savings of implemented energy saving measures
 - » Risk of overestimation of energy savings

Benchmarking covenant



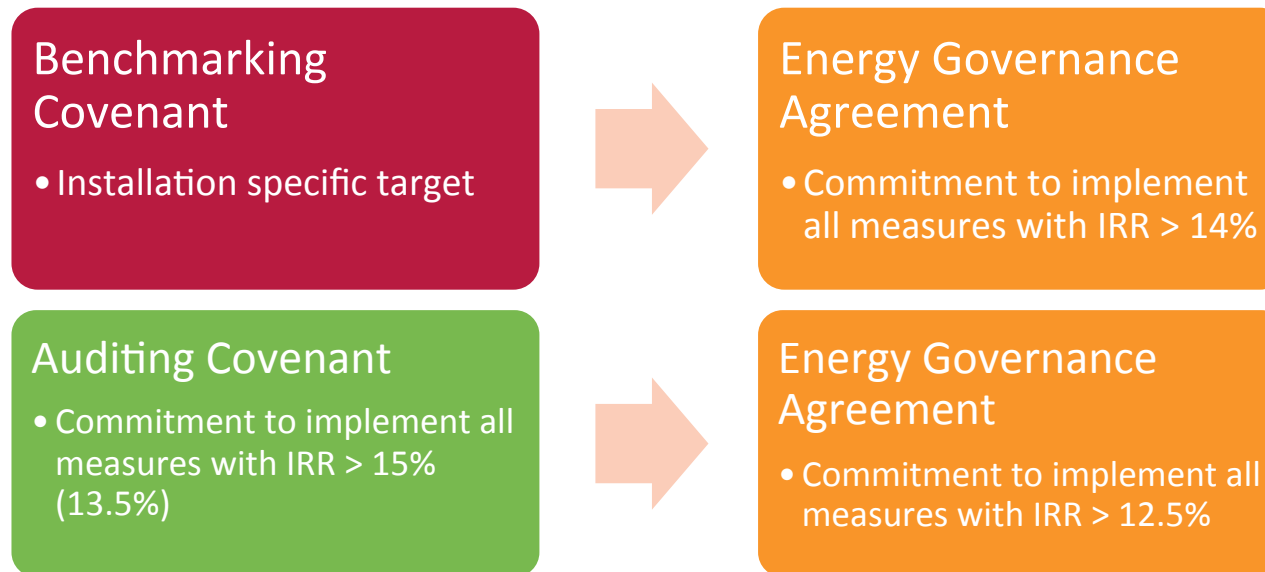
Auditing covenant



Lessons learnt: imposing target or commitment?

What to impose to the participants :

- » an energy efficiency target to achieve OR a commitment to take action?

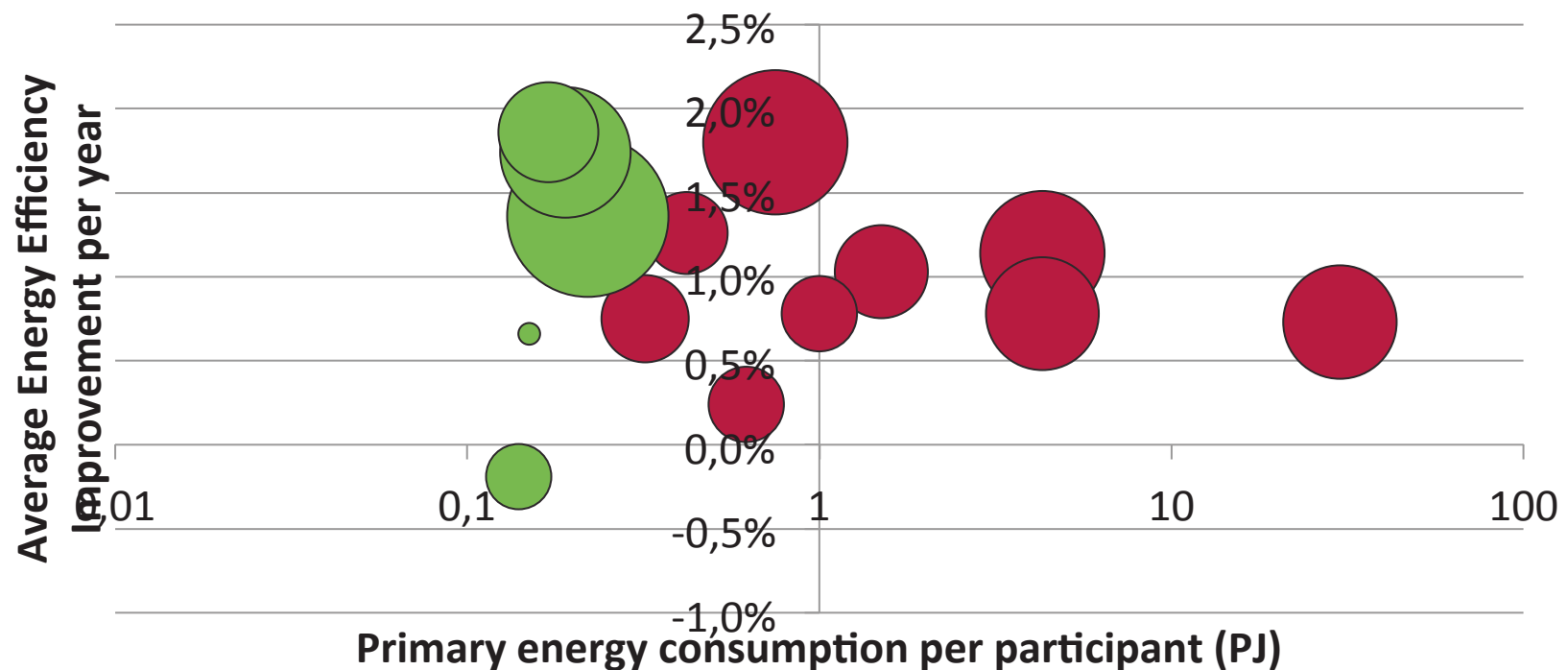


- » Should the voluntary agreement as whole have a target?
 - » No, because it will conflict with the targets of the individual participants
 - » Yes, because one needs to assess whether the instrument has delivered or not

Lessons learnt: energy efficiency improvements – energy intensity of the participants

- » Data suggest: the less energy-intensive: the higher the improvement in energy efficiency
 - » Energy-intensive industry has a longer history in energy efficiency than less energy efficient ones, leaving more potential in the latter group

Green: auditing – Red: benchmarking covenant





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Thanks for your attention – Any questions ?

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