

VERIFICATIEBUREAU  
BENCHMARKING

Energie-efficiency

# From Energy-efficiency to CO<sub>2</sub> Benchmarking

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# From Energy-efficiency to CO<sub>2</sub> Benchmarking

- Energy-efficiency Benchmarking experience in The Netherlands
- Results and progress
- Way forward towards an European CO<sub>2</sub> Benchmarking approach
- Conclusion



# History of Energy-efficiency Improvement in The Netherlands

- **1989-2000: 'MJA' Covenant for energy conservation**
  - Multi-year agreement between government & industry.
  - Target: 20% improvement in energy efficiency for the sector.
  - Major contribution: CHP (Co-generation of Heat and Power)
- **1997: Kyoto Protocol**
  - Under EU 'burden sharing' 6% reduction in the Dutch GHG-emissions in the period 2008-2012 based on 1990 level.
- **1999: Covenant Benchmarking Energy-efficiency**
- **2004: Application of Benchmarking results in Dutch NAP1**
  - In the Dutch National Allocation Plan for the EU Emissions Trading Scheme (ETS), the CO<sub>2</sub>-emission rights allocated to an installation depend partly on the BM results (reward for early action).
- **2006: Application of Benchmarking results in Dutch NAP2**



# Energy-efficiency Benchmarking in The Netherlands

## The Benchmarking Covenant, Status 2006

- 149 Industrial Sites (>0.5 PJ) participate: 740 PJ ca. 85% of total Industry)
- 33 Power Generation plants participate: 590 PJ ca. 95% of total Power Plants)

## Commitment

Participants will achieve “World top energy-efficiency” in 2012

## Procedure

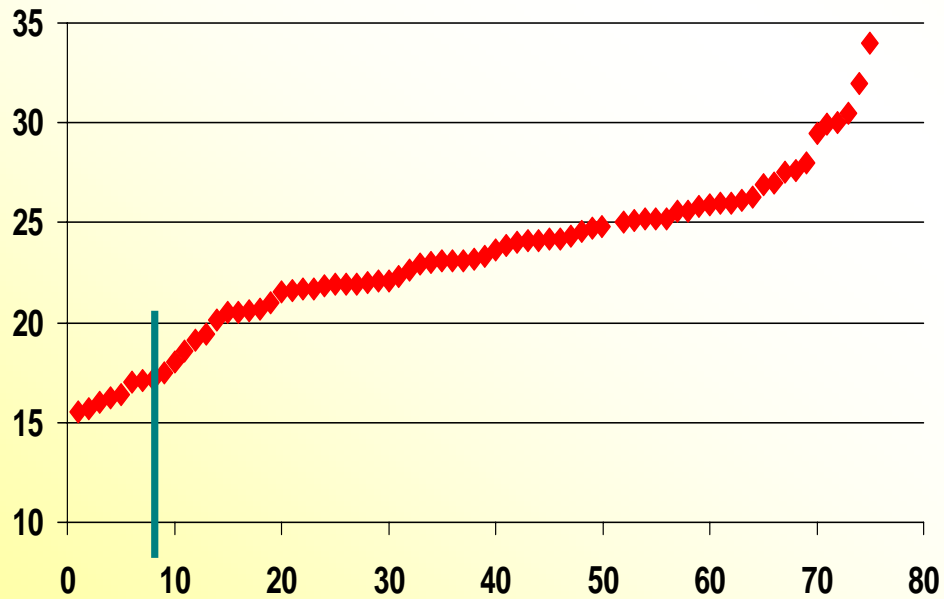
- Once every 4 years worldwide Benchmarking studies to be carried out by independent consultants
- Comparable Processes / Products
- Companies prepare an Energy Efficiency Plan

## Verification

- VBE verifies the consultant, BM-method, BM-result and monitors progress



# Shape of a typical BM curve



- Establishing Best International Standard
- Helps identifying scope for technical improvement
- Shows different abatement potential between sectors
- Establishment of PSR
- Shows leakage effects



# A number of the BM's applied in The Netherlands

- Refineries
- Olefins
- Polyolefins
- Ammonia
- Butadiene
- EB-Styrene
- BTX
- Salt
- Chlorine
- Sugar
- Beer
- Power Generation
- Aluminium



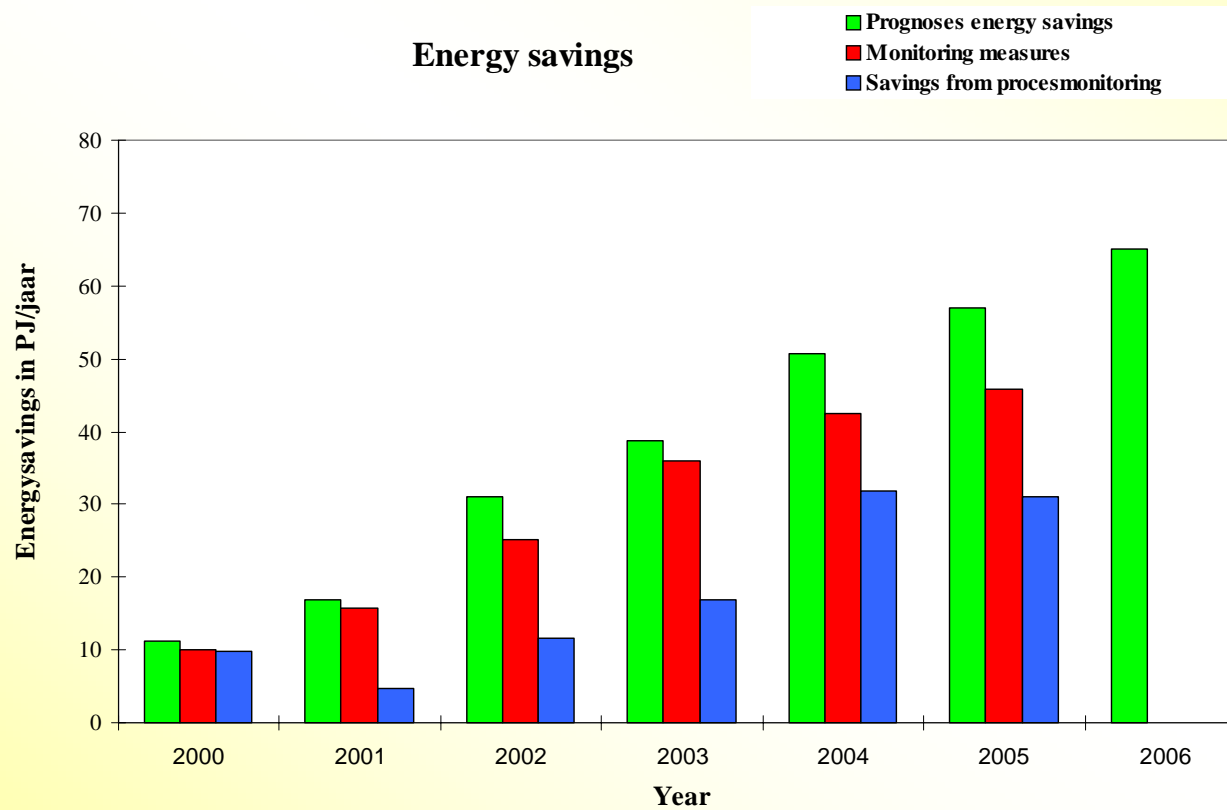
# Results and Progress

- **Covenant Benchmarking Energy efficiency**
  - Two BM rounds available for 1999 and 2004
- **Identification of Best International Standard**
- **A limited number of BM's covers ca. 70% of industrial energy / CO<sub>2</sub> emissions**
- **Importance of applying the right BM envelope**
  - Both direct & indirect energy carriers
  - Definition of activity or unit of product
- **Reduction potential becomes apparent**



# Covenant Benchmarking

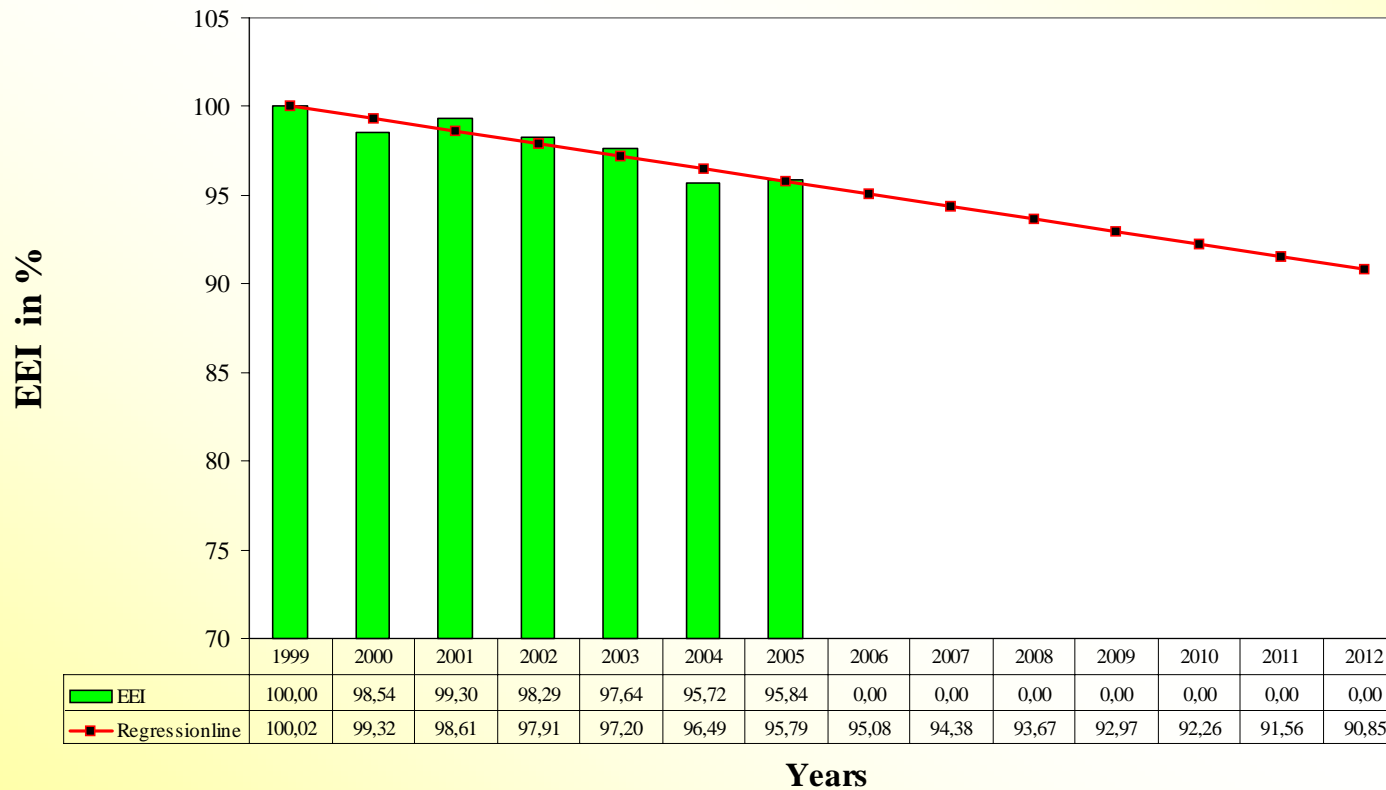
*- Progress of Industrial energy savings -*



# Covenant Benchmarking

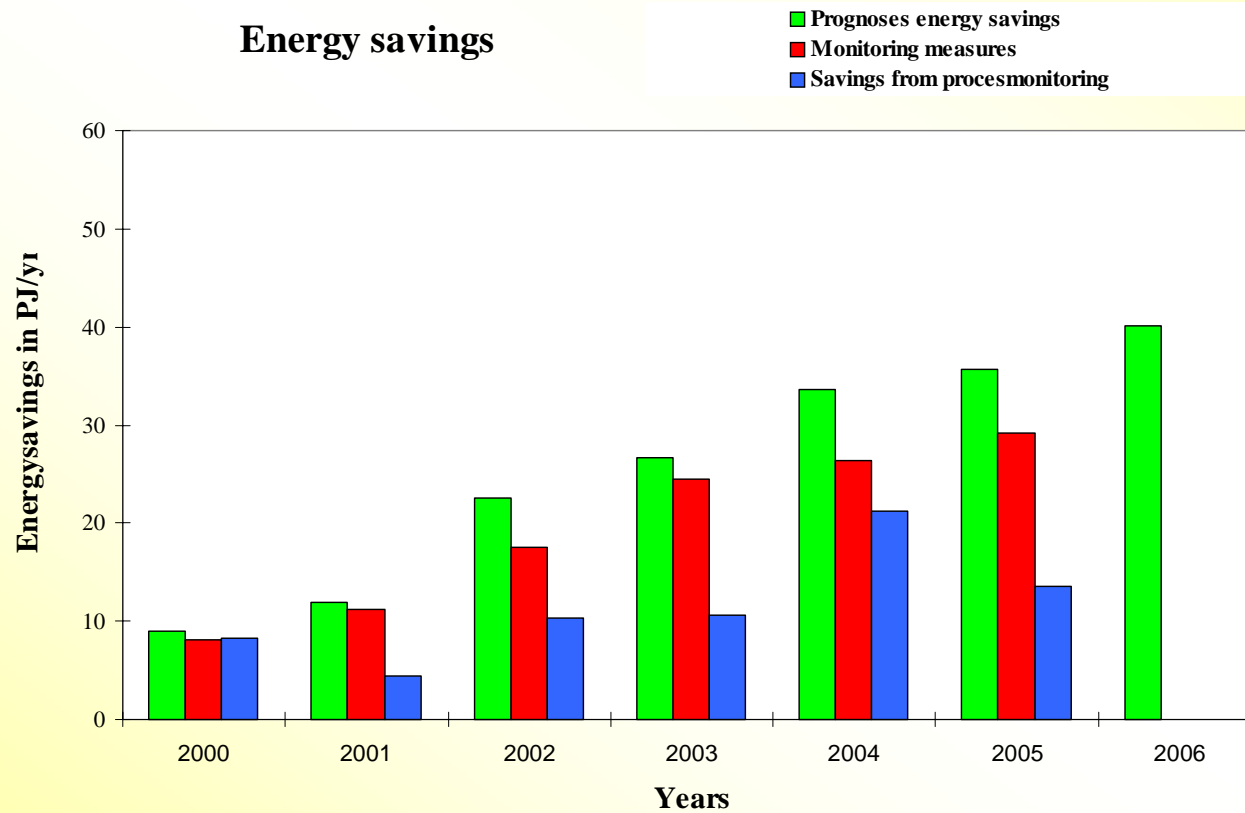
## - Progress of Industrial Energy Efficiency Index -

Energy Efficiency Index



# Covenant Benchmarking

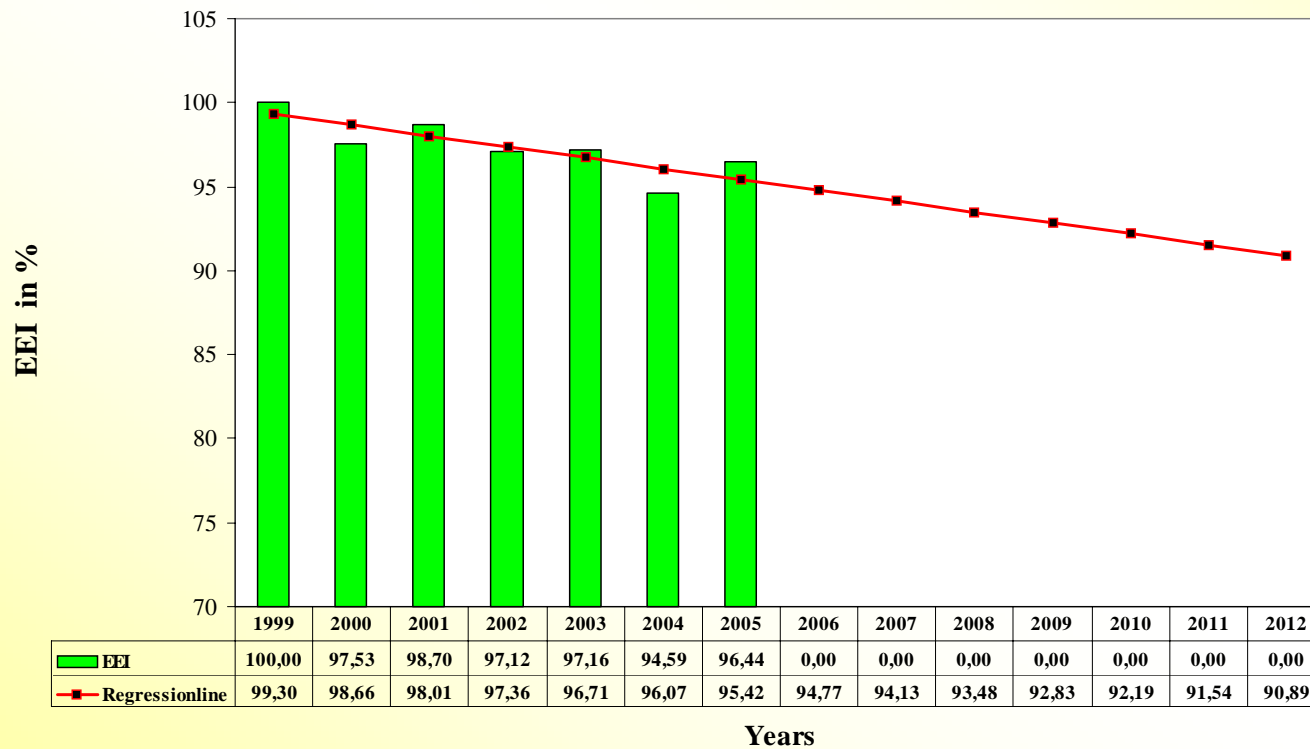
*- Progress of Chemical Sector energy savings -*



# Covenant Benchmarking

- Progress of Chemical Sector Energy Efficiency Index -

Energy Efficiency Index



# Summary Participants

## Dutch Covenant Benchmarking

- In total the 182 participants represent 40 % of total national energy consumption
- 54 % of the Industrial sites have an energy-efficiency equal or better than the Best International Standard
- 14 of the biggest Industrial sites represent ca. 80 % of sector energy consumption and are covered by only 15 Benchmarking studies

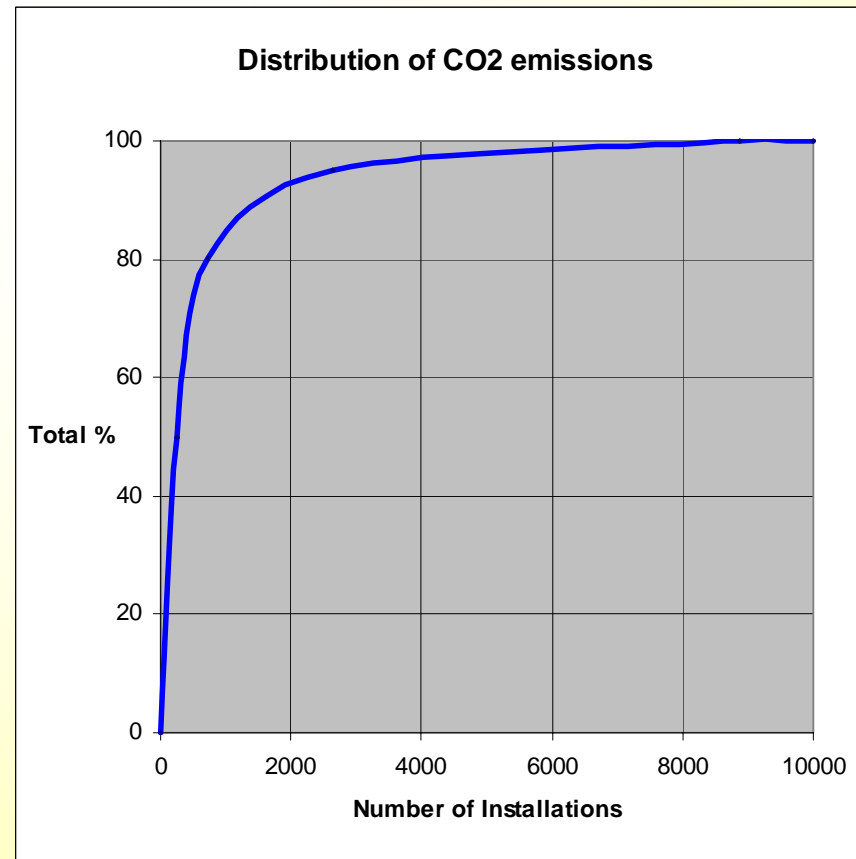


# Way forward towards an European CO<sub>2</sub> Benchmarking approach

- **EU Communication 13 november 2006**
  - *Building a global carbon market*
- **Key elements**
  - *Cost-effective and economically efficient*
  - *Simplicity*
  - *Predictability*
  - *Regulatory stability*
  - *Equal treatment also for new entrants*
  - *Linking EU-ETS to the rest of the world*



# CO<sub>2</sub> coverage of participants in 2005-2007 EU-ETS



# Challenges for future EU-ETS using CO<sub>2</sub> Benchmarking

- Apply the Pareto or 80/20 principle
- Include direct and indirect CO<sub>2</sub> emissions
- Only a limited number of Benchmarking studies will be required
- Equal treatment of existing plants and new entrants
- Global Benchmarking opens EU-ETS for the rest of the world



# Benchmarking meets important Criteria EU-ETS Directive

- Level Playing Field
- CO<sub>2</sub> / Energy-efficiency improvement
- Objective & Transparent
- Reward of Early Action
- Allocation in line with technological potential
- Non-discrimination between industries or sectors



# Benchmarking Pro's

- **Same Best International Standard for similar installations in EU and Rest of the World**
- **Benchmarking identifies efficient installations**
- **Benchmarking allows Performance based allocation**
- **“Polluter pays principle” will adequately be addressed when direct & indirect emissions are being included in Benchmarking studies**
- **Benchmarking fosters efficiency & competitiveness**
- **Benchmarking is a major step towards a global approach**



# Conclusion

**European CO<sub>2</sub> Benchmarking can be used to achieve a fair and transparent way to allocate emission rights in line with key criteria from the EU-ETS directive and provide a basis for a global system**

