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Refinery CO₂ benchmarking : What happens next

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9th CONCAWE Symposium
14-15th March 2011

- ▶ EC criteria for benchmarking
 - ▶ A benchmark in tCO₂/product
 - ▶ No allocations for electricity production, even self-consumed electricity production
 - ▶ No correction for size, type of feed, type of fuel, technology, new and old plants
- ▶ Consultants started working on refining (Öko, Ecofys)
- ▶ Existing indicators focused on energy (e.g. Solomon's EII)
- ▶ Simple benchmarks in tCO₂/t crude or tCO₂/t products don't work:
 - ▶ differences are firstly due to complexity not to efficiency
 - ▶ would favour simple refineries and penalise complex refineries.

(*) CWT = Complexity Weighted Tonne



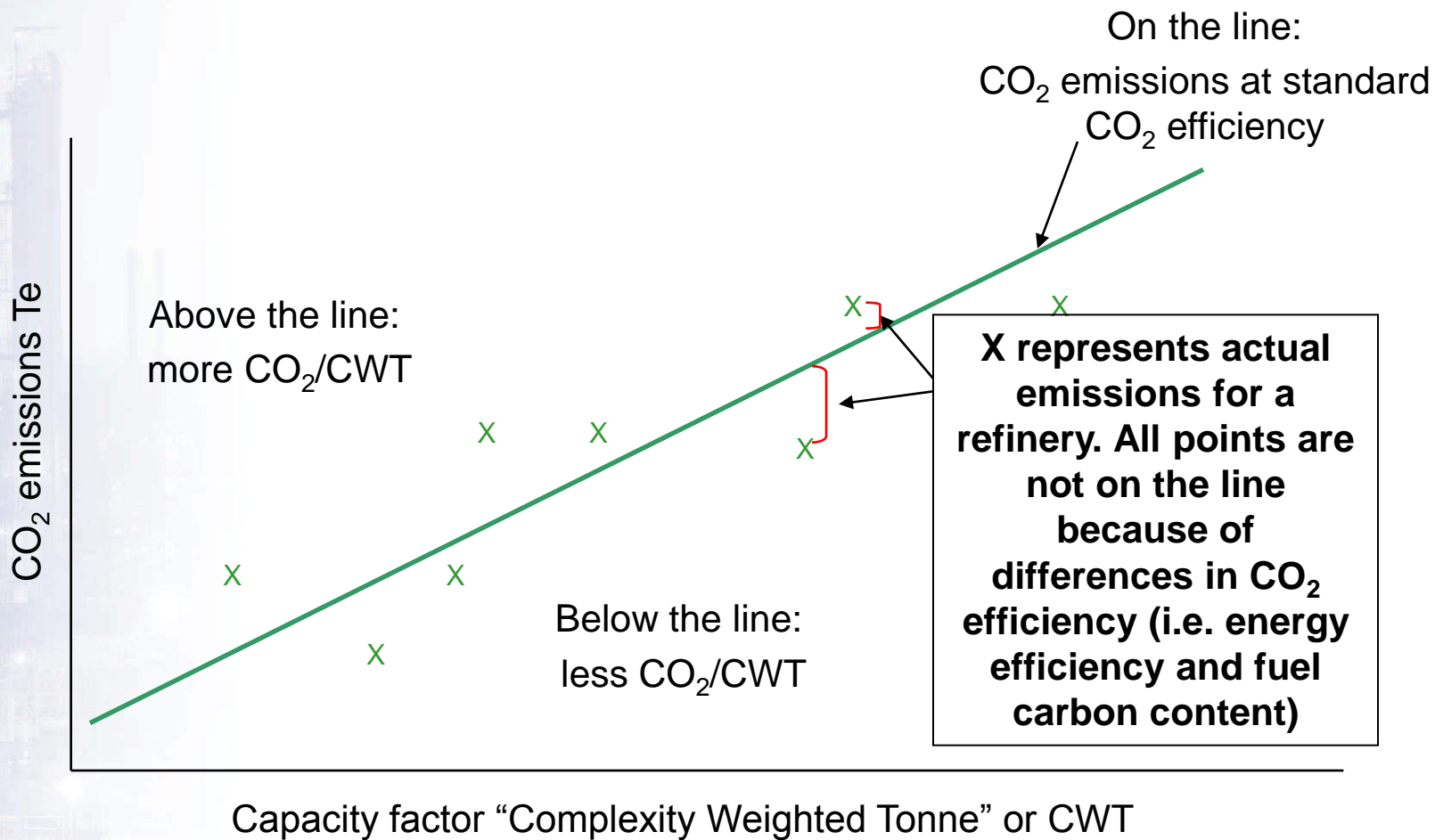
- ▶ Solomon Associates are recognised experts in performance comparison in refining and petrochemical sectors.
- ▶ Solomon has gained great credibility with global Refining:
 - ▶ Worked for 25+ years on performance benchmarking and has developed expertise and huge data base.
 - ▶ Over 80% of EU refineries participate in the biannual survey - on a fee basis.
 - ▶ Over 50% of world wide refineries also participate – potential for linking if future sectoral approaches develop.
- ▶ Ecofys Sector Report for the Commission (November 2009) regards the Solomon CWT approach to be sufficiently transparent and proposes its use to benchmark refineries
- ▶ Use of Solomon indicators has been accepted by some Authorities for ETS phase I&II or other purposes:
 - ▶ NL, BE and Japanese authorities have also used Solomon to set efficiency and emissions standards
 - ▶ Their benchmarking surveys allow performance comparisons between Refineries without breaching competition rules.

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- ▶ Although CWT is Solomon property, CONCAWE has a license to use and promote it in Europe
- ▶ Simplifications in refinery representation compared to Solomon survey (e.g. only 1 FCC, 1 H₂ plant, no additional splitters)
- ▶ Includes emissions due to syngas (from POX and Flexicoker plants), and process emissions from H₂ Plants
- ▶ Correction for electricity
 - ▶ Calculation of emissions net of electricity production
 - ▶ Ratio based on electricity consumption, as finally agreed by EC
 - ▶ Allows no allocation for electricity production
- ▶ This methodology considers the refinery as a whole, whereas other sectors have divided sites into many sub-installations
- ▶ CWT is the **activity** of the refinery for ETS phase III





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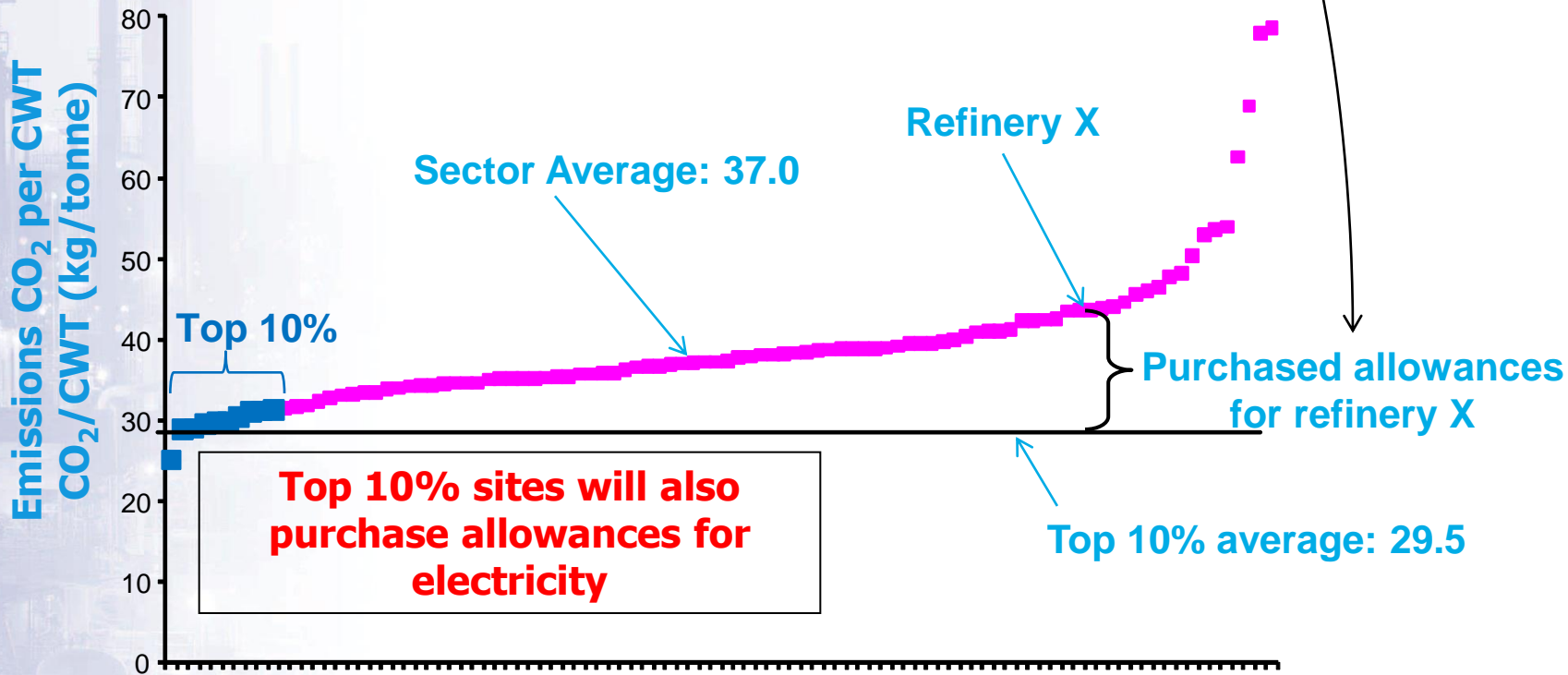
- ▶ Data collection from all the EU refineries (+Norway), done in 3 steps
 - ▶ 2006-2008, for the benchmarking curve (average of 2007-2008)
 - ▶ Improved detail and accuracy of methodology for electricity-related emissions
 - ▶ Addition of 2005 & 2009 for allocations methodology analysis
- ▶ Correction for net steam imports, in accordance with benchmark and allocations based on consumer emissions
- ▶ Separate analysis for specialty refineries, 15 atypical sites (not CWT)
- ▶ 98 mainstream refineries in the CWT benchmark
- ▶ Discussions with EIGA for H2 plants and CEFIC for aromatics, both finally rely on CWT benchmark
- ▶ Verification of top 20 sites for the final CWT benchmarking curve
- ▶ Extensions (threshold, definition, data analysis when extension in the reference period)

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All sites above the top 10% line will purchase allowances. Sector average purchase is about 25% of verified emissions, increasing to about 30% if purchased electricity is included.

Refining sector performance curve: 2007/2008 Average



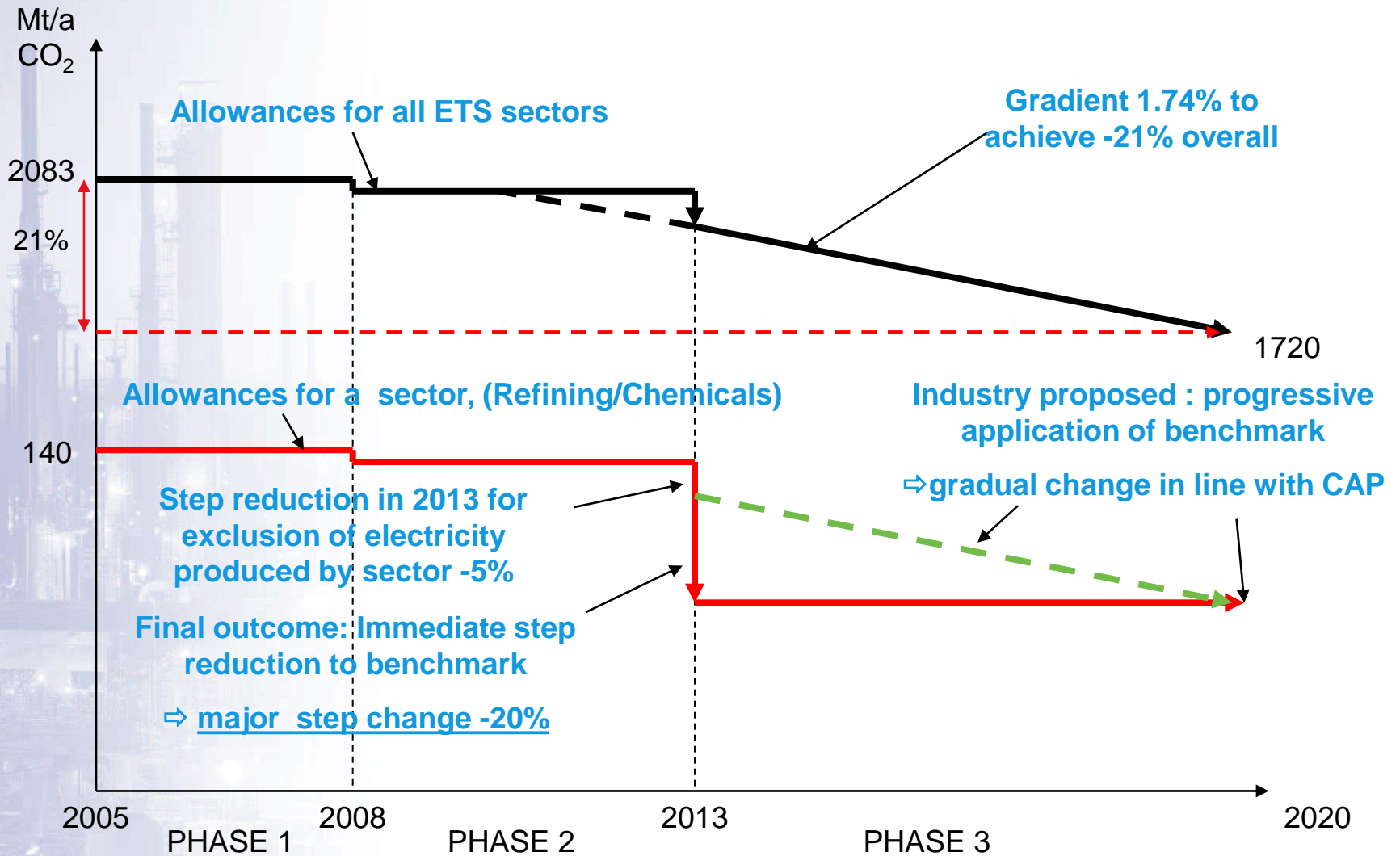
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- ▶ Technical discussions with DG-CLIMA, MS experts, EC consultants
- ▶ Presentation of the CWT methodology
- ▶ Estimation of allowances shortfall in different refining scenarios
- ▶ Impact of different options for the reference period
- ▶ Review of draft benchmarking Decision and guidance documents
- ▶ Analysis of proposals for treating capacity extensions/reductions
 - ▶ Impact of different threshold criteria
 - ▶ Contribution to CWT-based definition of extension/reduction
 - ▶ Data analysis when extension is in the reference period

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- ▶ CWT is the activity or the “product” of the refinery for ETS phase III
 - ▶ All calculations requested by the Directive or the Decision have to be done using the CWT (e.g. capacities, extensions)
- ▶ Continuing technical involvement in DG-CLIMA developments:
 - ▶ Data collection using the CONCAWE template to make sure the methodology is rigorously applied (e.g. for electricity production),
 - ▶ Analysis of EC data collection template and development of bridging tool to easily and reliably extract data from the CWT database
- ▶ Assistance to refineries
 - ▶ Guidelines for verification
 - ▶ Capacity calculation
 - ▶ Extension/Reduction calculation during reference period
 - ▶ CWT will be used for new entrants calculation
- ▶ CONCAWE now has a database on CO₂-related activities of the entire EU refining population
 - ▶ Unit throughputs
 - ▶ CO₂ Emissions
 - ▶ Electricity generation and consumption

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- ▶ April – September 2011
 - ▶ Collection and verification of operational data for each incumbent installation
 - ▶ Organised by Competent Authority of each Member State
- ▶ End-June 2011
 - ▶ Extensions after this date are considered as new entrants
- ▶ End-September 2011
 - ▶ Deadline for MSs to submit their NIMs (National Implementation Measures) to the EC
 - ▶ List of ETS installations
 - ▶ Preliminary amount of free allowances for 2013-2020 for each installation
- ▶ October-December 2011? (tbc)
 - ▶ Determination of the cross-sectoral correction factor (if any) by the EC
 - ▶ Determination of the final amount of free allowances for 2013-2020 by the MSs
- ▶ January 2013
 - ▶ Start of ETS Phase III

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Thank you for your attention



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