

Sector proposal templates – Overview and lessons learnt

Presentation at the

'Technical workshop on sectoral approaches: Benchmarking, sector boundary and monitoring, reporting & verification issues'

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Overview

1. Overview - Sectoral approaches under the UNFCCC
2. Introduction: Sector Proposal Templates

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What are sectoral approaches?

FIRST:

Definition of sectoral approach in question

THEN:

‘Technical issues’ (e.g. boundary, baseline setting, monitoring, reporting and verification)

Ecofys – Studies on sectoral approaches

- Analysis and evaluation of different sectoral approaches
- Possible integration of sectoral approaches in the international climate regime post-2012
- Explore development of sector crediting baselines (Sector proposal templates)

Scaling-up developing country contributions within the UNFCCC



Transnational sectoral approach

Sector no-lose targets (SNLT)

- Some developing countries voluntarily pledge sector crediting baselines (NOT a benchmark!)
- Based on detailed, national, transparent analysis for each sector
- “No lose”: credits to government for reductions beyond baseline, no penalty if not achieved
- Governments have to pass on incentive to private entities (policies and measures)

Overview

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2. Introduction: Sector Proposal Templates

Project on Sector Proposal Templates

- Project partners:
 - GtripleC (Murray Ward)
 - Ecofys (Martina Jung, Niklas Höhne, Marion Vieweg)
- Funding from:
 - World Bank
 - UK DEFRA
 - VROM Netherlands
 - GTZ (Germany)

Sector proposal templates

- Background: Sector (no-lose) targets need development of sector crediting baseline at national level
- Learning-by-doing tool to test the approach
- Sector proposal templates developed:
 - Electricity production
 - Cement production
 - Transport
- First 'road-testing' in Mexico

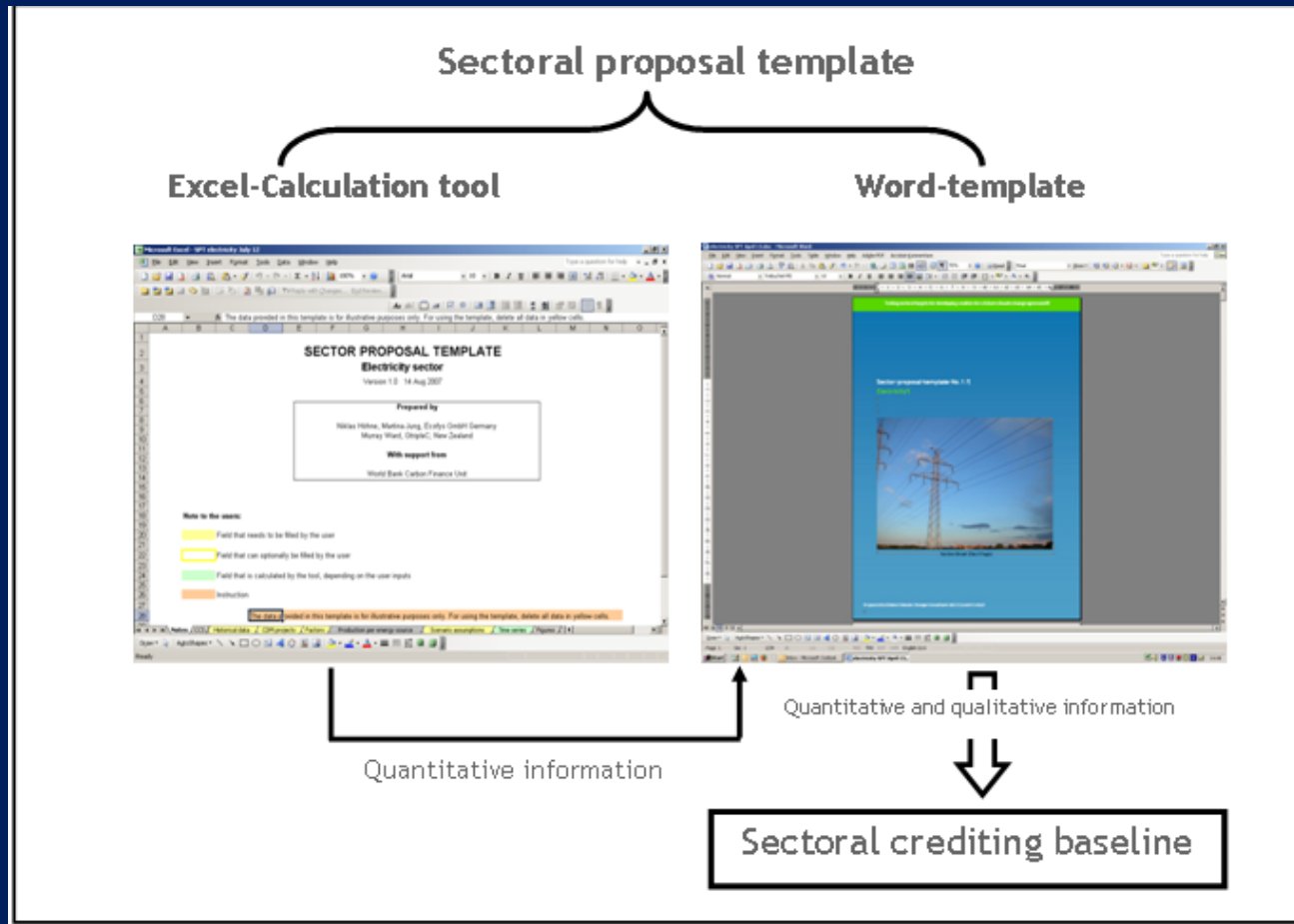
Work in progress

- Development of iron & steel template

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Structure of the templates



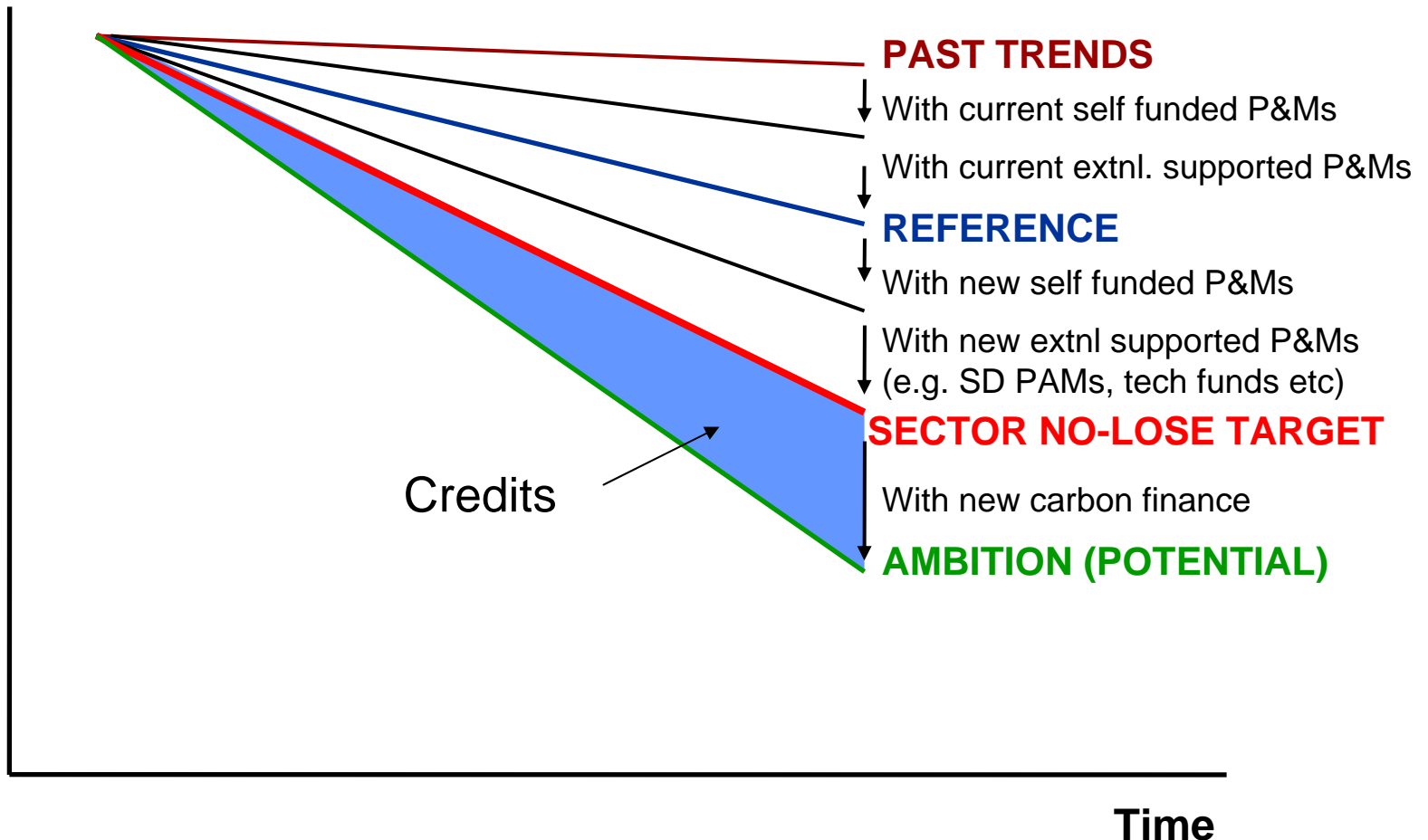
M18

1. Background information on the country
2. Past and present situation of the sector
3. Policies and Measures affecting the sector
4. Scenario assumptions and results

Mju, 09/05/2008

Concept: Sector crediting baseline

GHG Intensity



Template

1.3. Data from IISI methodology

Please fill in the yellow fields in this sheet with the energy and emissions data that have been calculated using the IISI data collection methodology. Alternatively you can fill in section 1.2

Scope 1 direct emissions	Unit	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Caking coal	metric tonnes CO ₂ -e	500	490	520	560	555	590	700	710	730	735	745	790	810
BF injection coal	metric tonnes CO ₂ -e													
Sinter / BOF coal	metric tonnes CO ₂ -e													
Steam coal	metric tonnes CO ₂ -e													
EAF coal	metric tonnes CO ₂ -e													
SR/DRI coal	metric tonnes CO ₂ -e													
Coke	metric tonnes CO ₂ -e													
Charcoal	metric tonnes CO ₂ -e													

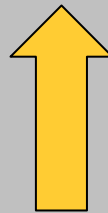
+ Assump-
tions



Fill in your assumptions for the future scenario! In your assumptions, include the effects due to CDM projects (currently registered). See also worksheet 'CDM projects'.

Scenario assumptions	Scenario name	Scenario 1 BAU			Scenario 2 Sector crediting			Scenario 3 Ambitious		
		Average 1990-2007	2010	2015	2020	2010	2015	2020	2010	2015
Population	1.3%	1.50%	1.80%	1.95%	1.50%	1.80%	1.95%	1.50%	1.80%	1.95%
GDP	2.3%	2.10%	2.20%	2.30%	2.10%	2.20%	2.30%	2.10%	2.20%	2.30%
Future production iron (growth per year)	4.50%	4.80%	5.20%	4.50%	4.80%	5.20%	4.50%	4.80%	5.20%	
Future production crude steel (growth per year)	8.70%	9.50%	10.20%	8.70%	9.50%	10.20%	8.70%	9.50%	10.20%	
Future production final product (growth per year)	8.30%	8.80%	9.30%	8.30%	8.80%	9.30%	8.30%	8.80%	9.30%	
	2007	2010	2015	2020	2010	2015	2020	2010	2015	2020
A Iron production										
BF (pig iron)		66%	63%	61%	63%	59%	55%	62%	57%	52%
DRI (gas-based)		31%	34%	34%	34%	36%	37%	36%	37%	40%
DRI (coal-based)		0%	0%	0%	0%	0%	0%	0%	0%	0%
Small reduction (molten iron)		3%	3%	5%	3%	6%	8%	3%	6%	8%
B Steel Production										
BOF		62%	61%	60%	60%	58%	57%	56%	55%	54%
DRI - EAF (coal-based)		0%	0%	0%	0%	0%	0%	0%	0%	0%
DRI - EAF (gas-based)		26%	26%	26%	26%	27%	27%	29%	28%	28%
EAF		13%	13%	14%	14%	15%	16%	15%	17%	18%
CHF		0%	0%	0%	0%	0%	0%	0%	0%	0%
Other		0%	0%	0%	0%	0%	0%	0%	0%	0%

Aggregation
on country
level

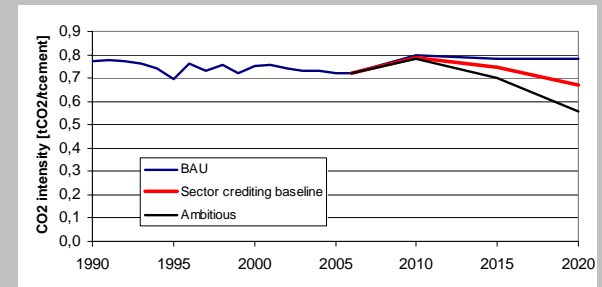


Baseline



Data collection

Bottom-up
data collection



Lessons learnt

- Data collection efforts prior filling templates are essential (e.g. by industry associations, WRI/WBCSD GHG Protocol)
- Confidentiality of data can be a barrier in competitive sectors (less in others, e.g. electricity) – solution: aggregation?
- Institutional issues (government capacity, MRV etc.) crucial for implementation
- Time is short until the end of 2009, more knowledge needed if crediting baselines are to be part of a post 2012 framework

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Back-up slides

3. Overview of sectoral approaches

- List of AWG chairs summary:
- Bottom-up sectoral analysis to inform the discussion on mitigation potentials of Annex I Parties
- Cooperative sectoral approaches supported and enabled by finance and technology (e.g. Asia Pacific Partnership, APP)
- Sectoral crediting in non-Annex I Parties
- Complementary sector-specific goals for Annex I Parties (e.g. “all cement plants less efficient than a benchmark are phased out by 2020”)
- Other approaches
- Transnational sectoral approach
- Policy-based approach

Why do we need sector proposal templates ?

Support developing countries (governments) in developing sectoral crediting baselines

- **Present:** *Capacity-building tool*

Exploring data issues, learn about institutional needs, testing feasibility of the approach

- **Future:** *Negotiation facilitation tool*

Delivering maximum transparency in setting of sector crediting baselines

Scenario assumptions and information on other countries

Scenario assumptions

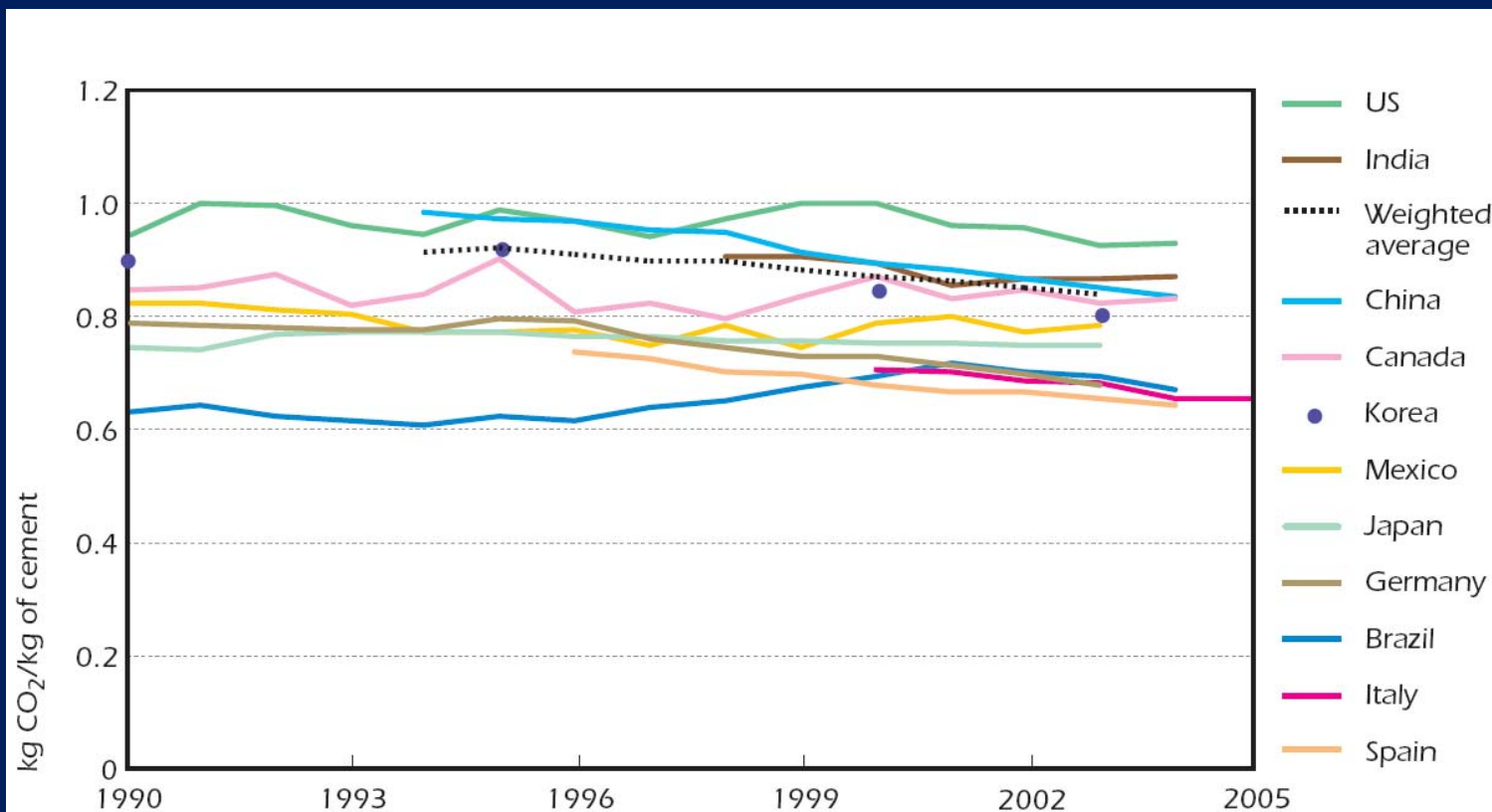
Scenario name	Average 1990-2006	Scenario 1			Scenario 2			Scenario 3		
		BAU			Sector crediting baseline			Ambitious		
		2010	2015	2020	2010	2015	2020	2010	2015	2020
Future electricity production [growth per year]	3.7%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Future electricity demand [growth per year]										
Distribution losses (in % of electricity produced)										

Generation mix (% of TWh per source)	2006	2010	2015	2020	2010	2015	2020	2010	2015	2020	
	Coal without CCS	14.3	15.0	15.0	15.0	14.0	12.0	10.0	14.0	9.0	6.0
Petroleum without CCS	32.4	32.0	Example values for 2003								
Natural gas without CCS	35.4	35.0	Australia	Austria	Belgium	Brazil	Canada	China	Colombia	Denmark	Finland
Nuclear	4.8	5.0									
Hydro	9.1	10.0									
Geothermal	2.9	3.0	3.0%	1.7%	1.3%	3.9%	1.5%	9.0%	2.1%	4.5%	3.4%
Solar/wind/other	0.0	0.0	6.7%	4.8%	4.5%	0.6%	5.8%	6.8%	12.8%	4.7%	4.1%
Biomass waste	1.1	0.0									
Heat	0.0	0.0									
Total	100	100									

Electricity imports/exports (TWh)	Average 1990-2006	2010	2010	2015	2020	2010	2015	2020	2010	2015	2020
	Electricity imports	0.08	0.1	77.2%	15.4%	13.9%	2.4%	19.6%	79.4%	35.7%	54.7%
Electricity exports	0.10	0.0	1.0%	2.9%	1.2%	3.0%	3.0%	3.0%	3.3%	5.1%	1.1%
Net electricity imports	-0.02	0.1	13.8%	18.3%	25.9%	3.6%	5.9%	0.7%	9.1%	21.2%	16.6%
			0.0%	0.0%	56.7%	3.7%	13.0%	2.2%	0.0%	0.0%	27.0%
			7.0%	59.4%	0.3%	83.8%	58.4%	14.6%	51.1%	0.0%	11.4%
			0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
			0.3%	0.6%	0.1%	0.0%	0.2%	0.0%	0.0%	12.2%	0.1%
			0.6%	3.3%	1.9%	3.5%	0.0%	0.1%	0.8%	6.8%	12.1%
			100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
			0.000	19.003	14.665	0.037	24.458	13.375	0.070	7.025	11.886
			0.000	13.386	31.157	0.012	26.307	13.351	1.186	15.573	7.036
			0.000	5.617	-16.491	0.026	-1.849	0.023	-1.116	-8.548	4.850



Example: Different starting points



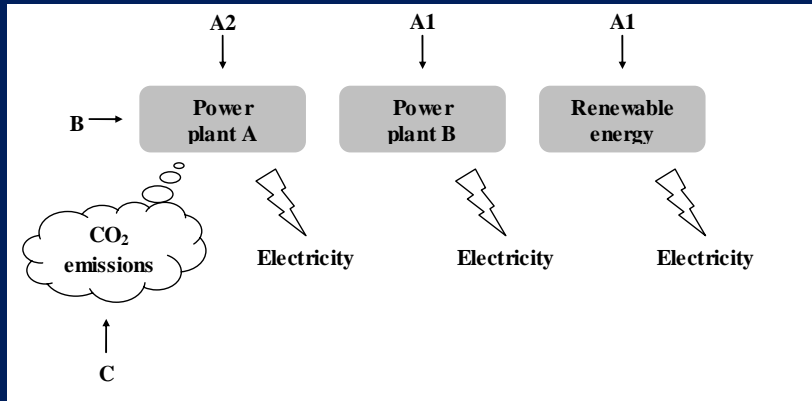
Note: Includes impact of electricity generation from waste heat in Japan. Boundary definitions may differ by country.

Sources: As for Figures 6.4, 6.5, 6.8 and 6.9; IEA statistics.

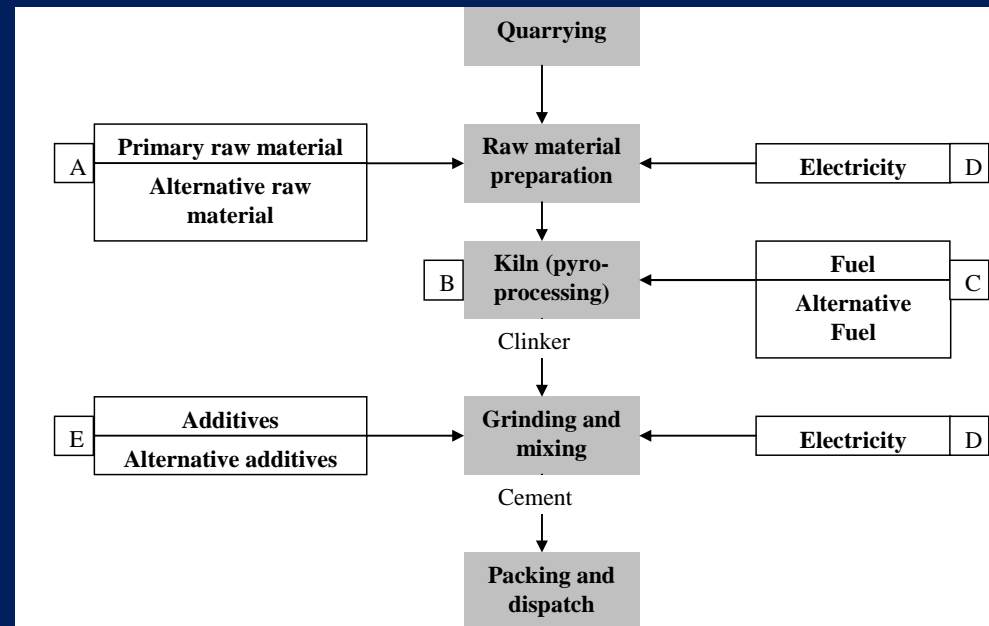
Source: IEA 2007, Tracking industrial energy efficiency and CO₂ emissions

Emission reduction options

Electricity



Cement



- A. Decreasing carbon intensity of the fuel mix
- B. Improving energy efficiency
- C. Carbon capture and storage (CCS)

- A. Clinker adaptation
- B. Efficiency improvements (kiln technology) M61
- C. Fuel switch
- D. Reduction in electricity use
- E. Blending

M61

e.g. by: more efficient power plant technologies, better management and maintenance of power plants, using better quality fuels
Mju, 13/11/2007

Scenario assumptions

Scenario assumptions			Scenario assumptions									
Scenario name	Average 1990-2006		Scenario 1 BAU			Scenario 2 Sector crediting baseline			Scenario 3 Ambitious			
	2010	2015	2020	2010	2015	2020	2010	2015	2020			
Future cement production [growth per year]	2.8%			2.0%	2.5%	2.8%	2.0%	2.3%	2.5%	2.0%	2.1%	2.2%
A Process emission factor [kgCO ₂ /tonne clinker]	2006 Best practice			2010	2015	2020	2010	2015	2020	2010	2015	2020
	520	-		520	520	520	520	520	520	520	520	520
B Percentage of kiln types	2006 Best practice			2010	2015	2020	2010	2015	2020	2010	2015	2020
wet	31%	0%		31%	28%	27%	28%	25%	23%	27%	23%	20%
semi wet/dry	38%										30%	27%
long dry	0%											
short dry preheater	31%											
short dry p.h. and calcinated	0%											
shaft vertical	0%											
Total				100%	100%	100%	100%					
Resulting energy efficiency [PJ fuel / Mt clinker]	3.5	2.8		4.783	4.651	4.607	4.609	4.469	4.396	4.346	4.360	4.239
C Fuel mix	2006 Best practice			2010	2015	2020	2010	2015	2020	2010	2015	2020
Coal	9%	60%		9%	9%	9%	9%	9%	9%	9%	9%	9%
Coke/Pet Coke	0%	20%		0%	0%	0%	0%	0%	0%	0%	0%	0%
Fuel Oil	80%	0%		80%							60%	40%
Lignite	0%	0%		0%							10%	10%
Fossil waste fuels	0%	0%		0%							10%	10%
Gas				4%							4%	4%
Biomass				7%							7%	27%
Other				0%							0%	0%
Sum				100%							100%	100%
D Electricity eff. index				2010	2015	2020	2010	2015	2020	2010	2015	2020
Electricity efficiency					0.92			0.91			0.89	
Electricity efficiency of cement grinding/blending (GJ/t)	53	67		61	55	50	61	55	50	61	55	50
	53	67		53	50	45	53	50	45	53	50	45
E Clinker cement ratio	2006 Best practice			2010	2015	2020	2010	2015	2020	2010	2015	2020
	86%	-		86%	86%	86%	86%	86%	86%	86%	86%	86%

Reduction of

Scenarios

Past or best
practice values

Scenario
assumptions

- M62** Data for some example countries provided!
Mju, 09/05/2007
- M63** best practice not benchmark to be reached, but background info on where country stands, makes countries comparable to some extent
Mju, 29/06/2007
- M64** Additionality, indicators and data for a range of countries
Mju, 29/06/2007