European Sustainable Electricity; Comprehensive Analysis of Future European Demand and Generation of Electricity and its Security of Supply

- EUSUSTEL -
Brussels
January 24th, 2006

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Leander Cosijns

University of Leuven Energy Institute

09:00 – 09.20	**Introduction** - Welcome and presentation of participants - Presentation of Peer-review committee - Objectives of EUSUSTEL	W. Raldow and D. Rossetti – 20'
09.20 – 09.45	- State of affairs of project - Country analysis	W. D'haeseleer – 25'
09.45 – 10.35	- Boundary conditions - Concept Sustainability - Discussion	W. D'haeseleer – 10' A. Voss – 10' Review – 30'
10.35 – 11.25	- Economic growth and energy services - Demand side measures - Discussion	U. Farinelli – 20' Review – 30'
11.25 – 11.45	**Coffee break**	
11.45 – 12.45	- Technology description - System integration - Discussion	J. Paatero – 20' R. Belmans – 10' Review – 30'
12.45 – 14.00	**Lunch**	
14.00 – 14.50	- EU energy-related legislation - Guidelines on liberalised markets - Discussion	R. Belmans – 20' Review – 30'
14.50 – 15.30	- Simulation models and existing scenarios - Static social cost (progress) - EU-SUSTEL Scenarios (progress)	A. Voss – 20' G. Pepermans – 10' P. Capros – 10'
15.30 – 16.10	**Overall Discussion**	Partners and Review committee – 40'
16.10 – 16.40	**Conclusions** - Administrative matters - Planning - Summary	W. D'haeseleer M. Poireau and D. Rossetti – 30'

PARTICIPANTS

1. University of Leuven (K.U.Leuven) BEL
2. University of Stuttgart (USTUTT) DEU
3. Helsinki University of Technology (HUT) FIN
4. Nat Tech University of Athens (NTUA) GRC
5. Uppsala University (UU) SWE
6. Ass Italiana Economisti dell'Energia (AIEE) ITA
7. Imperial College London (Imperial) GBR
8. ECRIN / CEA (ECRIN) FRA
9. Centro …Energeticas… (CIEMAT) ESP
10. Risoe Natl Laboratory (Risoe) DNK

Consultative Committee

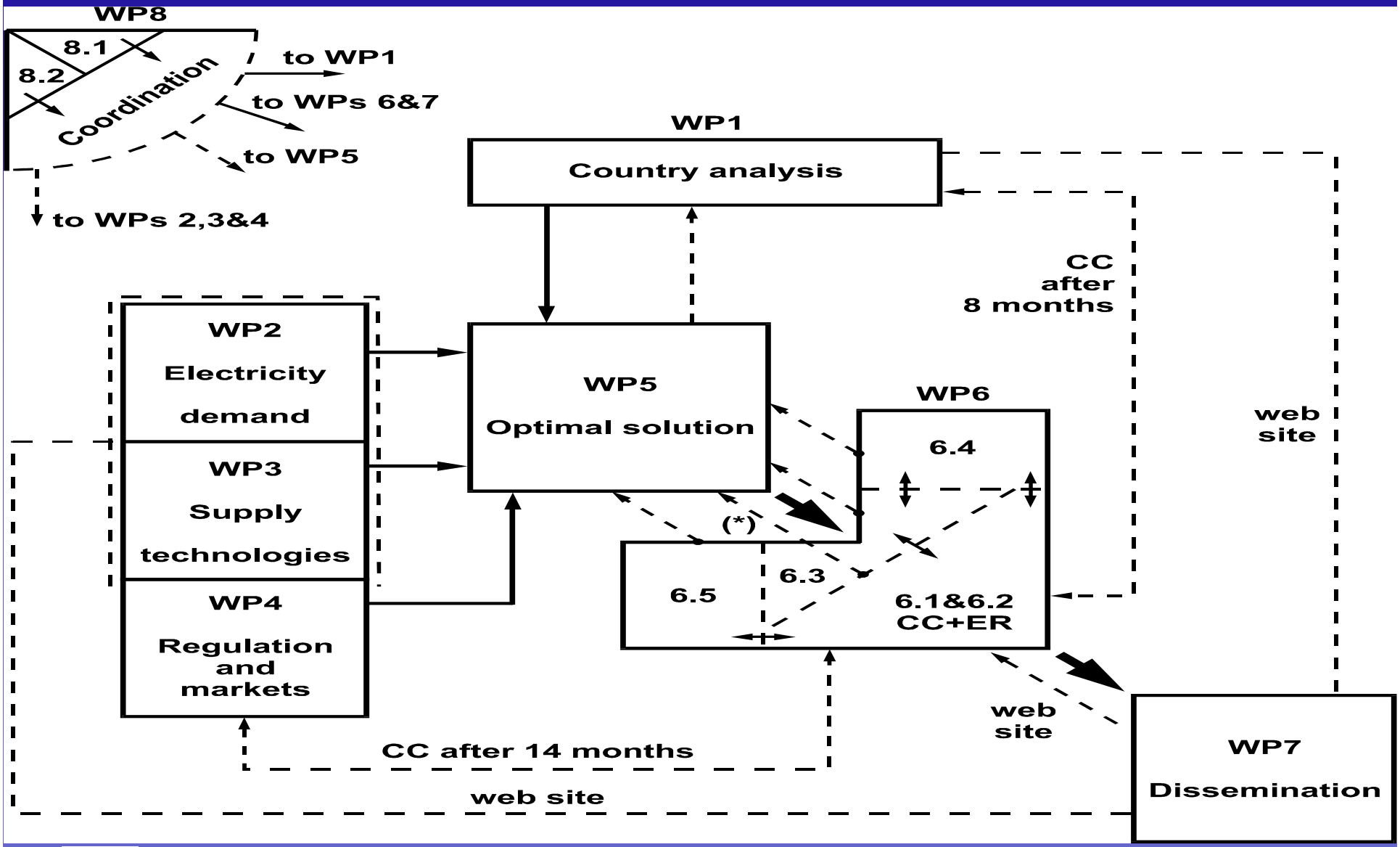
1. EURELECTRIC (Special focus industrial advisor)
2. Alstom, BNFL (manufacturers)
3. Tractebel Engineering (architect engr)
4. VGB, Erec, Eurogas, Euracoal, Foratom (umbrella)
5. UCTE, ETSO (electric grid)
6. CEU DG Energy

7. Regulators, IEA

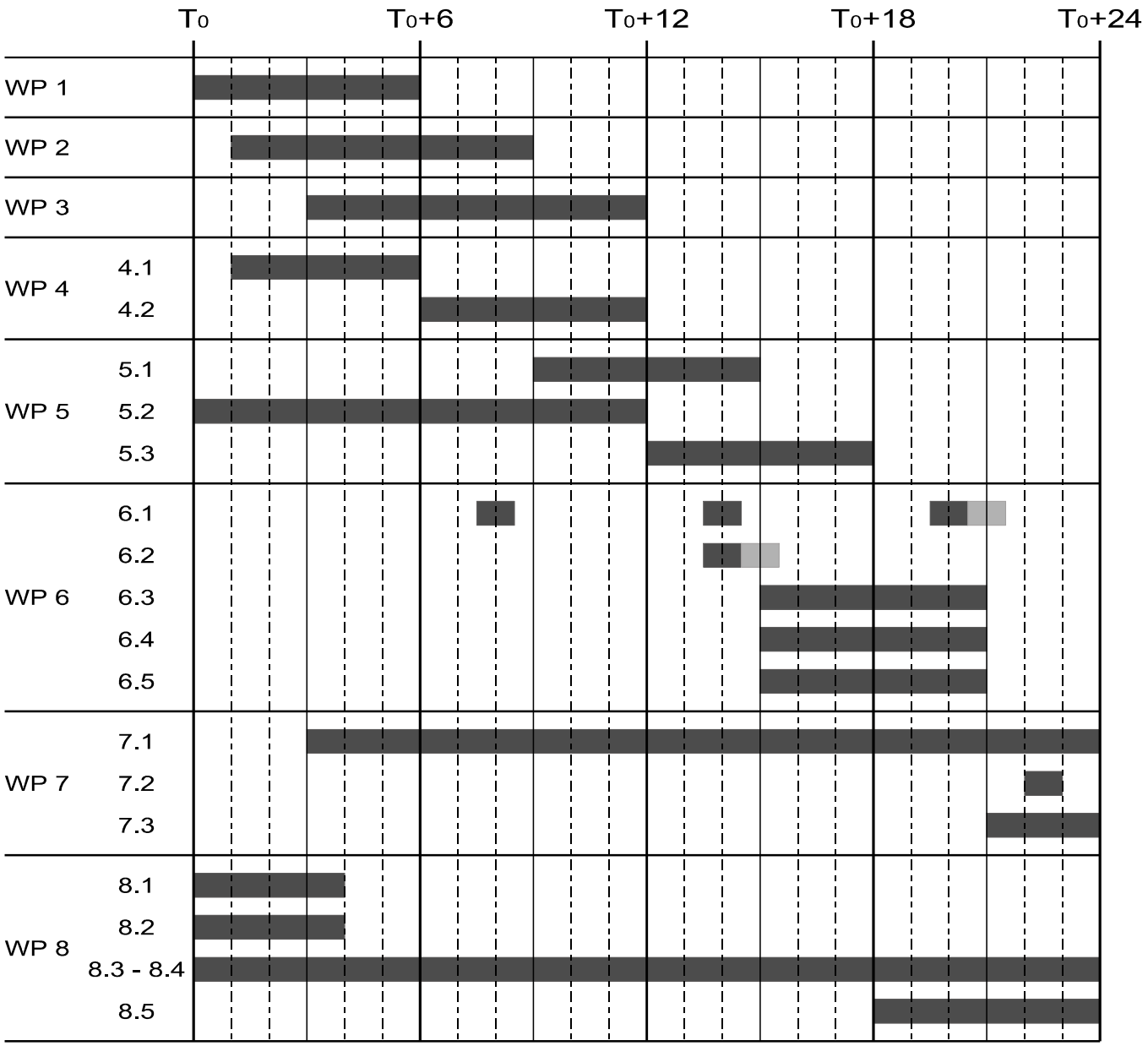
WORK PACKAGES

1. Country-wise analysis for EU-25
2. Anticipation of future electricity demand
3. Electricity generation technologies and system integration
4. Regulatory framework of energy markets
5. Most optimal solution for electricity provision
6. Compatibility check and validation
7. Dissemination of results
8. Project guidance, coordination and mgmt

Interaction of the work packages



Planning and timetable for the WPs



WP1: Country-wise analysis EU-25

- Horizontal overview
- Review based on energy-related and 'relevant' documents
  - International reviews (e.g. IEA)
  - European reports (e.g. European Energy and Transport; Trends to 2030)
  - National documents (e.g. reports of generators, regulators...)
  - Info gathering through local people (esp. newcomers EU)
- Outline policy orientation
- Critical analysis of national policy

WP1: Template

- Factual information
  - Geography
  - Demography
  - Economy
  - Energy
  - Electricity
  - Environment
- Trends
  - Past, present, future

WP1: Template (2)

- results of energy studies
- policy
  - energy
  - electricity
  - environment
- peculiarities

WP1: Deliverables & result

- 25 detailed reports
  - Basic structure as in template
  - Different emphases depending on country's interpretation
- General trend
  - Snapshot → be careful when extrapolating the results
  - The reports reflect the European Union as it is: a mosaic of 25 countries, with their own culture and heritage, but within a global framework
  - All countries faced with comparable challenges concerning energy, electricity and environment, and very often, comparable policies exist – within the national context – to cope with them.

WP8.1: Scope, boundary cond. & hypo's

- Strategic objective
  - Guidelines & recommendations → affordable, clean and reliable, i.e. ***'sustainable'*** electricity supply system
- Measurable and verifiable objectives
  - Implemented into different WPs

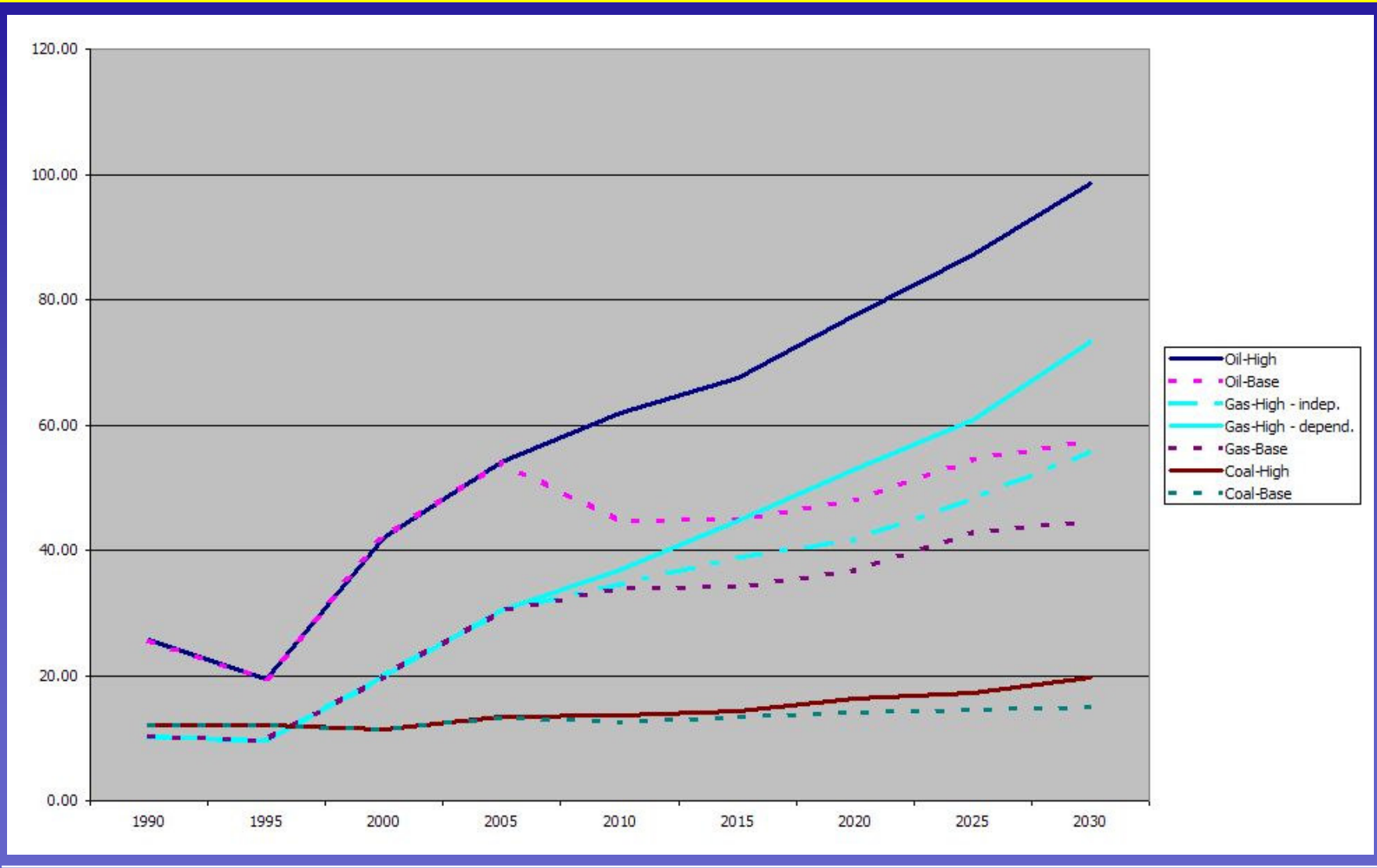
WP8.1: Boundary conditions

- Time horizon: 2030; reflections upon 2050
- Physical constraints
- No physical shortage of fuels (price??)
- Energy markets ~ current directives
- Accept current environmental & safety standards of EU (but not on GHG)
- Post-Kyoto: too uncertain → hypotheses
- Existing legislation & regulation of EU & MS as basis

WP8.1: Hypotheses

- Reference scenario, sensitivity analysis...
  - Varying schemes for DSM
  - Post-Kyoto: -16% in 2030 (linear extrapolation)
  - Nuclear policies: phase out or not?
- Fuel price assumptions
  - Latest PRIMES evolution (fall 2005)

Assumed fuel prices (PRIMES fall 2005)



PRIMES prices scenario									
Euro'00 per boe	1990	1995	2000	2005	2010	2015	2020	2025	2030
Oil high	18.71	14.14	30.57	39.32	45.05	49.21	56.51	63.49	71.74
Gas - independ.	7.55	6.95	14.47	22.07	25.19	28.28	30.41	35.12	40.66
Gas - depend.				22.07	26.82	32.55	38.61	44.33	53.38
Coal high	8.84	8.72	8.23	9.69	9.92	10.34	11.86	12.57	14.38
$05 per boe	1990	1995	2000	2005	2010	2015	2020	2025	2030
Oil	High			54.00	61.87	67.58	77.61	87.21	98.53
	Base			54.00	44.61	44.91	48.06	54.44	57.60
Gas	High - indep.			30.31	34.60	38.84	41.77	48.23	55.85
	High - depend.			30.31	36.84	44.70	53.03	60.89	73.31
	Base			30.31	33.89	34.22	36.98	42.87	44.75
Coal	High			13.31	13.63	14.20	16.29	17.27	19.75
	Base			13.31	12.54	13.36	14.07	14.59	14.95
(ratios)	1990	1995	2000	2005	2010	2015	2020	2025	2030
Oil/gas-base	2.48	2.03	2.11	1.78	1.32	1.31	1.30	1.27	1.29
Oil/gas-high depend	2.48	2.03	2.11	1.78	1.68	1.51	1.46	1.43	1.34
Oil/gas-high independ	2.48	2.03	2.11	1.78	1.79	1.74	1.86	1.81	1.76
Coal/gas base	1.31	1.55	0.81	0.63	0.52	0.53	0.52	0.46	0.46
Coal/gas high depend	1.31	1.55	0.81	0.63	0.48	0.41	0.36	0.33	0.28
Coal/gas high independ	1.31	1.55	0.81	0.63	0.51	0.47	0.46	0.41	0.37

WP8.1: Scenarios

- Baseline scenario: High prices + no post-Kyoto limit + baseline nuclear and other options
- Idem baseline scenario, but with post Kyoto
- Idem scenario 2, but free nuclear option

  (no extra promotion on other options)
- Idem scenario 3, but promoted energy efficiency and distributed generation.

- More elaborated in WP5