

Annex 11: Analytical breakdown of person effort per WP

*Based on a workload of an “average” researcher
“Fictitious Work load” (differs from allocated pm)*

Workpackage 1: Country-wise analysis

The proposed distribution follows the rules:

project leader = BEL = 2 pm
1 country = 0.75 pm
2 reasonable size countries = 1.25 pm
2 small countries = 1.00 pm
3 small countries = 1.50 pm
5 reasonable size countries = 3.00 pm (1.5 + 1.5)

Sub 1.1: BeNeLux	partner from BEL	BEL = 1.25 pm
Sub 1.2: Germany & Austria	partner from DEU	DEU = 1.25 pm
Sub 1.3: Finland	partner from FIN	FIN = 0.75 pm
Sub 1.4: Greece	partner from GRC	GRC = 0.75 pm
Sub 1.5: Sweden	partner from SWE	SWE = 0.75 pm
Sub 1.6: Italy	partner from ITA	ITA = 0.75 pm
Sub 1.7: UK & Ireland	partner from GBR	GBR = 1.25 pm
Sub 1.8: France	partner from FRA	FRA = 0.75 pm
Sub 1.9: Spain & Portugal	partner from ESP	ESP = 1.25 pm
Sub 1.10: Denmark	partner from DNK	DNK = 0.75 pm
Sub 1.11: Baltic States	partner from FIN	FIN = 1.50 pm
Sub 1.12: Cyprus & Malta	partner from GRC	GRC = 1.00 pm
Sub 1.13: Hungary, Poland, Slovakia, Slovenia and Czech Republic	partner from GRC, BEL & DEU	GRC = 1.50 pm; BEL = 0.90pm, DEU = 0.60 pm

Workpackage 2: Anticipation of future electricity demand

Project leader = ITA = 1 pm

- 2.1 Economic evolution of the European Union (as part of a world-wide economy), primary energy provision and ‘projected’ fuel prices
ITA = 1 pm; GRC = 1 pm
- 2.2 Evolution of demand for energy services and the influence on electricity demand
ITA = 2 pm; BEL = 1 pm; GBR = 1 pm
- 2.3 Rational use of electricity, energy efficiency of end-use technologies and demand side management.
ITA = 1 pm; BEL = 1 pm; GBR = 1 pm

Workpackage 3: Electricity generation technologies and system integration

Project leader = FIN = 2 pm

3.1 Fossil-based electricity generation technologies:

1. Coal fired technologies DEU = 0.5 pm; DNK = 0.5 pm
2. Oil & gas fired technologies BEL = 0.5 pm
3. Combined heat and power BEL = 0.5 pm; DNK = 0.5 pm
4. CO₂ capture and storage DEU = 0.5 pm

Environmental aspects of the above ESP = 0.75 pm

3.2 Nuclear electricity generation

1. Nuclear fission FRA = 2.00 pm
2. Nuclear fusion (limited scope) BEL = 0.25 pm

3.3 Renewable flows & 'alternative' technologies & carriers

General considerations (potential, fluctuating nature, regional issues,...)

SWE = 0.50 pm; DNK = 0.50 pm; FRA = 0.50 pm

1. Wind power DNK = 1 pm
2. Photo-Voltaic conversion FIN = 1 pm
3. Biomass applications (including waste) FIN = 0.50 pm; GBR = 0.50 pm;
Environmental aspects ESP = 0.25 pm

4. Hydro power SWE = 0.50 pm

5. Geothermal conversion SWE = 0.50 pm

6. Fuel cells GBR = 0.75 pm; BEL = 0.50 pm

7. Hydrogen economy GBR = 0.75 pm; BEL = 0.50 pm

8. Electricity storage SWE = 1 pm

9. Less-conventional and speculative forms of renewables (ocean currents, space solar, other) SWE = 1 pm; FIN = 1 pm

3.4 System integration

1. Integration of centralised and decentralised generation; influence on the grid
BEL = 2 pm; GBR = 1 pm; SWE = 0.5 pm

2. Greenhouse-gas emissions due to interaction centralised and decentralised generation (because of operation-time effects and investment consequences)
BEL = 1.25 pm

Workpackage 4: Regulatory and Market Framework of Energy Markets

Project leader = BEL = 1 pm

4.1 Analysis of the current legislation & regulation of the liberalised market, the directives on obligatory renewables and CHP, and on emission trading BEL = 1.25 pm; DNK = 0.5 pm

4.2 Specification of 'boundary conditions' and 'guidelines' for proper functioning of future energy markets
BEL = 0.75 pm; DNK = 0.50 pm

Workpackage 5: Most optimal solution for electricity provision

Project leader = DEU = 2 pm

5.1 Determination of the overall static social cost for electricity

- i) Summarise private cost for generation technologies and project to the future, taking into account technology diffusion **FIN = 1 pm**
- ii) Considerations on 'shadow costs' such as back-up costs, risk premium etc
SWE = 0.5 pm; BEL = 0.5 pm; DEU = 0.25 pm
- iii) Identification of the differences in CO₂ emissions due to electricity generation, depending on the different generation systems in the EU-25 countries
BEL = 1 pm; GBR = 0.5 pm
- iv) Determination of global external costs **DEU = 2 pm; ESP = 2 pm; FRA (nuc) = 0.25 pm**

5.2 Comparison and evaluation of simulation models & codes and existing scenarios for electricity generation **DEU = 1 pm; GRC = 1 pm; BEL = 1 pm; DNK = 0.50 pm**

5.3 Performing and interpretation of four (contrasting) scenarios with the (two) most appropriate models (with 'improved' input data)

- i) Scenario 1: according to present policy in different EU-25 countries (maybe revisiting of existing scenarios);
- ii) Scenario 2: e.g., total nuclear phase out in EU-25 with stringent post-Kyoto limits;
- iii) Scenario 3: e.g., overall nuclear renaissance in EU-25 with stringent post Kyoto limits;
- iv) Scenario 4: based on the interpretation and conclusion of Scenarios 1, 2 & 3.
DEU = 2 pm; GRC = 2 pm; BEL = 2 pm
DNK = 0.50 pm; GBR = 0.50 pm (interpret and feedback)
All others = 0.25 pm (interpret)

Workpackage 6: Compatibility check & validation

Project leader = BEL = 2 pm

6.1 Timely consultations with Consultative Committee

BEL = 1 pm; ITA, FIN & DEU = 0.50 pm; others = 0.25 pm

6.2 Mid-term assessment peer review of the results

6.3 Compatibility with liberalisation of the electricity and gas markets **BEL = 1 pm; DNK = 1 pm**

6.4 Cross check concerning security of supply **FRA = 0.50 pm**

6.5 Compatibility and validation with other international studies

FRA = 1 pm; BEL = 1 pm; GRC = 1 pm

Workpackage 7: Dissemination of results

Project leader = BEL = 1 pm

- 7.1 Exchange of information through a website BEL = 1.5 pm
- 7.2 Organisation of International Seminar
BEL = 1.25 pm; ITA, FIN & DEU = 0.5 pm; others 0.25 pm
- 7.3 Co-ordination and editing of final public document BEL = 1 pm

Workpackage 8: Project guidance, coordination and management

- 8.1 Definition of scope, boundary conditions & hypotheses BEL = 1 pm
- 8.2 Development of conceptual framework for sustainable electricity supply DEU = 1 pm
- 8.3 Practical organisation of CC meetings and international seminar
- 8.4 Overall project coordination & management BEL = 3 pm
- 8.5 Editing of final technical report BEL = 2 pm