NewExt

New Elements for the Assessment of External Costs from Energy Technologies

EC Contract No. NNE5-2000-00045

Summary of Fourth Progress Meeting - Draft version
Paul Scherrer Institut, Villigen/Switzerland
Monday, May 26th 2003, 10.30 a.m. to 6.30 p.m.
Tuesday, May 27th 2003, 9.00 a.m. to 1 p.m.

Present:

Stijn Vermoote VITO, Mol/Belgium
Alistair Hunt University of Bath
Ramon Arigoni Ortiz University of Bath
Ari Rabl (Monday 26th) ARMINES/CENERG, Paris
Marie-Anne Salomon (Monday 26th) EdF, Paris
Stefan Hirschberg Paul Scherrer Institut Villigen
Peter Burgherr Paul Scherrer Institut Villigen
Thomas Heck Paul Scherrer Institut Villigen
Rainer Friedrich IER, University of Stuttgart
Alexander Gressmann IER, University of Stuttgart
Till Bachmann IER, University of Stuttgart

Minutes: Alexander Gressmann, IER, University of Stuttgart

All presentations of the meeting (that are referred to in the minutes) can be found and downloaded as PowerPoint files on the NewExt homepage http://www.ier.uni-stuttgart.de/newext/ - section “project partners only”.

The points covered in the meeting are as follows:

✦ Overview, Time plan
✦ Work package 2: Monetary valuation
✦ Work package 3: Valuation based on standard-price approach
✦ Work package 4: Multi-media impact pathways
✦ Work package 5: Assessment of externalities from major accidents
✦ Structure of the final report
✦ Work package 6: Revision of external cost estimates – Time plan and input needed
✦ Dissemination, participation at conferences and further points
Overview, Time plan

Rainer Friedrich reminds that the 30th of June 2003 is the official end of the project. According to a phone call with Domenico Rossetti, a formal prolongation is not possible, so we should strive for having the main parts ready by the end of June, the final reports of the work packages 2 – 5 should be ready about 1 month later.

Stijn Vermoote introduces himself as new member of the VITO team who especially continues the work on the standard-price approach.

Work package 2: Monetary valuation

Alistair Hunt shows his presentation about the results of the survey for UK and France (Italy not yet available) (bathwp2.ppt). The discussion leads to the following points agreed upon:

- The question of using the arithmetic mean versus “an adjusted median value” should be explained in the report
- The values based on a 5/1000 risk reduction will serve as main value, since it appears more reliable than the values based on a 1/1000 risk reduction, and 5/1000 is more in the range of the increase in risk with regard to air pollution mortality.
- The 1/1000 based results can serve as an upper boundary, a lower boundary might be based on the French variant based on the explanation of life expectancy
- Ari Rabl will make calculations for a combined approach of acute and chronic mortality (for the question how WTP is affected by latency). He will further transfer the risk reductions to changes in life expectancy also for the age groups other than 40 years; i. e. those which are not yet included in the table of the presentation.

Some variants and extensions have been done in the French survey (only possible by additional financing from EdF); the following conclusions can be drawn by these variants:

- The open question for WTP (without using a starting value) shows that the starting point bias is very effective; the open question gives the more reliable figures than the question with a starting point, but this would require much more testing.
- The additional mentioning of the increase in life expectancy leads to much lower results in WTP than the question focus on risk reduction probability only. An explanation for that might be that the component of risk aversion and the fear of death is not adequately taken into respect when people interviewed are confronted with the (relatively small) value of additional life expectancy. This aspect is also a need of further research and testing (e. g. in the NEEDS project).

Methodological points yet to be cleared:
- How to deal with the non-age-dependency of the VSL and thus an age-dependency of the VLYL having appeared from the surveys?
- Which age distribution do we take as basis? (e.g. 40 versus 56 years)
• The team of the University of Bath will make a suggestion how very long
time horizons can be discounted. Aspects such as disadvantages of long
time discounting for future generations on the one side and the argument
of medical progress in favor of discounting on the other side shall be
represented within the range of discount rates applied. (This point was
agreed upon in a phone call conference with Anil Markandya who
confirmed the results discussed up to this point). This contribution of Bath
university will also deal with an adequate suggestion for evaluating
mortality based on the results of the survey concerning the age-
dependency of the VSL and/or YOLL. This suggestion has to be ready by
the mid of June.

• Ari Rabl volunteers to calculate the life expectancy out of the mortality
risks once more for the respective age groups based on the new input
from Bath university.

The overview of results shows that at the average we will get lower mean
results than the ones used before, but we still have a range of about a factor
of four. However, this seems okay and it is only natural that some questions
remain left.

Work package 3: Valuation based on standard-price approach

Stijn Vermoote presents the overview of the work done on work package 3
(vitowp3a.ppt and vitowp3b.ppt).

Figures for acidification and eutrophication should be used in ExternE in the
shape of one figure per country. Regarding critical loads exceedance,
alternatively to the focus on hectares of ecosystems protected/exceeded, we
should look for a measure which is proportional to the amount of exceedance,
e. g. reduction of protons exceeded, and discuss this.

An updated version of the questionnaire to policy makers is discussed; some
further simplifications and restructuring is agreed upon (meanwhile Stijn
Vermoote has produced a final version to be distributed).

A list of participants for the questionnaire has to be identified - Leo de Nocker
will check his contacts, and so will the IER team for Germany.

For CO₂, it is asked whether the level of a CO₂ tax could be another
possibility for an approach of evaluation. If the tax is accepted, it could be
taken into consideration as a lower boundary (e. g. for Sweden and Norway).

Thomas Heck presents his (slightly updated, compared to the version of the
Stuttgart meeting) paper on the evaluation of willingness to pay per reduction
of ton CO₂ from results of Swiss referenda (psiwp3c.ppt). This innovative
approach is found as an interesting complement to other approaches and its
results should be shown in comparison.

Summary of work to be achieved by the work package leader:
1. To give a concrete number or range of numbers as a conclusion (i. e. €
per hectare of ecosystem exceeded that then can be transferred to € per
ton of NO resp. SO₂ emitted)
2. To have another look at the questionnaire of acidification and
eutrophication and make the questionnaire as simple as possible
3. To apply the questionnaire and analyze the results
Work package 4: Multi-media impact pathways

Ari Rabl and Till Bachmann show the presentations about the three models developed within this work package (armwp4a.ppt and ierwp4b.ppt).

The conclusion of Ari Rabl’s presentation shows that the principal impacts will be cancer, for the other impacts we do not have monetary values. Ari Rabl will speak with Roberto Dones who has data on mining waste leaching rates.

Ari Rabl shall provide figures in €/kg for cadmium, chromium, lead, mercury, and arsenic (as far as dose-response functions are available)

Dealing with the question of discounting, rates of 0 %, 1 % and 3 % shall be taken into the report, taking into respect e. g. the aspect of medical progress.

Since the comparison of the Uniform world model and Watson-Europe shows a deviation of a factor of 10, Till Bachmann will check especially his results due to potatoes since these make 95 % of the overall result.

Ari Rabl will verify his calculated results with measurements in the blood; he will compare intake values measured in the human body with his calculated values and write about it in the report.

Summary of work to be done by the work package leader:
1. To get from PSI transfer functions from mining wastes and try to incorporate that
2. To provide data for 5 heavy metals, and include discounting
3. To add a part where some evaluation is explored, a comparison of the three models, differences explained, etc.
4. Discussion for some additional substances: Some further hydrocarbons could be added (benzene, dioxins)

Work package 5: Assessment of externalities from major accidents

Stefan Hirschberg and Peter Burgherr show the progress on their work since the meeting in Paris in October 2002 (psiwp5a.ppt); Alistair Hunt contributes the aspects of monetary valuation of accident impacts (bathwp5b.ppt).

The problem of an incomplete reporting of “smaller” accidents is highlighted. From the discussion on the valuation of deaths caused by accidents versus illness it is concluded that as a central estimate the same VSL shall be taken as in air pollution, and in addition a suitable range that takes e. g. into respect a different valuation of fatal accidents in developing countries.

Another point of debate is how much of the damage costs is already internalized because the victims get paid for that; in tendency smaller accidents are to a higher degree internalized than larger ones.

Stefan Hirschberg volunteered to add some considerations for nuclear power plants based on the methodologies for the other accidents (e. g. latent fatalities due to late cancer).
Also he is asked for providing a more differentiated structure of results, depending e. g. where the coal comes from for a coal-fired power plant in Germany. In addition to the assumption that a fixed percentage of resources stems from OECD- and Non-OECD countries, the results should be also shown for the case that the origin of energy carriers would be completely either from OECD- or Non-OECD countries. (Taking into respect the three categories exploration, transport, and production for this differentiation would be enough.) This would be very helpful for estimating marginal costs under various assumptions.

Structure of the final report

Alexander Gressmann shows some overview of the proposed structure of the final report and of the work to be done in work package 6 (in the presentation ierwp6.ppt).

• The final report will – due to the structure of this project - probably not be suitable to be published as a book but rather the results of the work packages should be published separately, e. g. in journal articles or conferences.
• Each work package leader shall prepare a separate document (with a literature list of its own) – this will serve both as deliverable of work package and as chapter of the final report.

Work package 6: Revision of external cost estimates (Time plan and input needed)

For new power plant emissions, we will have four cases (generated by two emission sets and two methodological models) and thus four sets of numbers. EcoSense calculations will be done by IER.

For all four sites under consideration (Germany, France, Belgium, Great Britain) the key technologies (coal-fired / oil-fired power plant / combined-cycle plant using natural gas / photovoltaic plant / wind turbine) generate a maximum of 20 cases (as far the combination of technology and country has been applied).

In addition, some work on hydro plants should be added; Stefan Hirschberg will provide an additional chapter on hydro including average and dam-specific break frequencies.

For new calculations for power plants, IER will need the following data:
• United Kingdom: data on stack heights in power plants, e. g. that have been used in the National Implementation by AEA Technologies. Alistair Hunt will check this (data are needed by the end of June), and will provide a recommendation how to deal with the evaluation of mortality and morbidity.
• Belgium: The VITO team shall provide some information on the Belgian power plants, both of the old status (National Implementation) and the newer status (including heavy metals).

For the finalization of the report, the following time plan is essential:

• Bath: Monetary valuation data by mid of June
• All figures and basis for the EcoSense calculations: by the end of June
• Stefan Hirschberg / Peter Burgherr: numbers till the beginning of July, if necessary with some adjustments later.
• VITO tasks: figures; checking the assumptions of the standard-price approach by the response of the questionnaire. The proton exceedance should at least be explained in the report as an alternative method. Report ready by the end of June.
• Ari Rabl: Co-ordinates of the power plants and emissions; values for calculation (by June 15th); Report of Work Package 4 (by July 20th)

Reports of work packages (as parts of the final report): all ready by the 20th of July.

Dissemination, participation at conferences and further points

• The workshop on "Valuing Externalities" organised by the U.S. Department of Energy's National Energy Technology Laboratory on February 20-21 2003 in McLean, Virginia was attended by Ari Rabl, PSI contributed a poster presentation.
• Rainer Friedrich motivates all to undertake efforts of a publication of the work package results.
• Anil Markandya will present NewExt results on a workshop in Bergen (9th and 10th June)
• Stefan Hirschberg invites the team to submit papers for the 7th PSAM conference (http://www.psam7.org/) on 14th to 18th of June 2004 in Berlin – the deadline for the call for papers has been extended to 30 June 2003. Organizers seem very keen on the subjects of sustainability and externalities. Domenico Rossetti will also submit a presentation for the EU perspective on using the externality figures; further contributions should be co-ordinated with Stefan Hirschberg who can suggest which section will be suitable. The contributions will be printed in four large volumes before the conference.
• A final presentation of results to the European Commission will probably take place in September. Travel costs can not be paid from project money.

End of the meeting: Tuesday 27th May 2003 1.00 p.m.

Alexander Gressmann, IER