TASK FORCE ON INTEGRATED ASSESSMENT MODELLING (TFIAM)

40th session, 18-20 May 2011
Oslo, Norway

Chairs report – advance copy

I. INTRODUCTION

1. This report describes the results of the 40th session of TFIAM, held from the 18th to the 20th of May 2011 in Oslo, Norway. The presentations made during the meeting and the reports presented are available at: http://gains.iiasa.ac.at/index.php/tfiam/past-tfiam-meetings.

2. 69 experts attended, representing the following Parties to the Convention: Belarus, Belgium, Czech Republic, Croatia, Denmark, Finland, Germany, France, Hungary, Ireland, Italy, Moldova, Netherlands, Norway, The Russian Federation, Poland, Portugal, Spain, Switzerland, Sweden, The United Kingdom of Great Britain and Northern Ireland. Also the Working Group on Effects, the Network of Experts on Benefits and Economic Instruments (NEBEI), the Co-operative Programme for monitoring and evaluation of the long-range transmissions of air pollutants in Europe (EMEP), the EMEP Centre for Integrated Assessment Modelling (CIAM), the EMEP Meteorological Synthesizing Centre-West (MSC-W), the ICP on Modelling and Mapping, the Coordination Centre for Effects (CCE), the ICP on Waters, the Task Force on Health, the European Commission, the European Environment Agency (EEA), the European Environment Bureau (EEB), CONCAWE, and the Union of the European Electricity Industry (EURELECTRIC) were represented. A representative from the UNECE-secretariat also attended.

3. Mr. R. Maas (Netherlands) and Ms. A. Engleryd (Sweden) chaired the meeting.

II. OBJECTIVES OF THE MEETING

4. The deputy director of KLIF, Harald Sørby welcomed the Task Force to Oslo and the Norwegian Climate and Pollution Agency (KLIF).

5. Mr. Maas opened the meeting, presented the results of the 48th meeting of the Working Group on Strategies and Review (WGSR) in April 2011, and defined the purposes of the 40th TFIAM meeting, which were to: (1) assess the feasibility of ambition levels presented in the CIAM-report 1/2011 when using national data; (2) assess the impacts of key measures in EECCA/SEE countries; (3) provide input to the 49th meeting of the WGSR, and (4) discuss the outline of the joint TFIAM/WGE background report to the Gothenburg Protocol.

6. The UNECE-secretariat presented the latest developments under the Convention on Long Range Transboundary Air Pollution. The 28th meeting of the Executive Body (December 2010) requested all bodies to consider short lived climate forcers in their work plans. The EB adopted the Long-Term Strategy (decision 2010/18) and Rules of Procedure (decision 2010/19). Identifying long term needs and priorities the strategy gave high priority to increased ratification

of the latest three protocols, addressed remaining challenges related to PM2.5, ozone, eutrophication and reactive nitrogen and stressed the importance of outreach activities, and links between air pollution, climate change and biodiversity. Integrated Assessment modelling continues to have the prominent role as an important tool in maintaining the links between science and policy. The Task Force on Hemispheric Air Pollution had been given an extended mandate to include in its work substances like black carbon and short-lived climate forcers in addition to other ozone precursors and the task to focus on developing and providing policy relevant advice (decision 2010/1).

7. **The Task Force stressed the need of avoiding double work by the Task Force on Hemispheric Air Pollution on integrated assessment activities and offered to co-operate.**

8. The UNECE-secretariat also presented the latest UN restrictions that would also affect the level of support to LRTAP. For the UNECE, a budget cut of 3% was announced as a response to the financial crisis and difficulties that Parties face in meeting their contribution to the UN. This could mean reduced efforts in printing, translations and interpretations and less official documents. However, the reduction of posts is considered as a last resort. Some environment related UN-activities were already facing a cut in the number of secretary staff.

9. **The Task Force expressed its worries about a potential additional reduction in translation and interpretation capacity. It suggested parties to explore possibilities for funding of the translation of documents into Russian.**

III. FURTHER ANALYSIS OF AMBITION TARGETS FOR A REVISED GOTHENBURG PROTOCOL

10. The head of the Centre for Integrated Assessment Modelling (CIAM) presented the identification of key technical measures with respect to emission reductions and environmental impacts. This could be used to simplify the technical annexes to a revised protocol.

11. When identifying key measures, CIAM ranked emission abatement technologies from the cost optimized MID scenario with respect to the total emission reduction for each technology. A subset was then created by identifying which of these technologies would be needed to reach the Low*-ambition level. This analysis resulted in a list of 15 key measures (see table 1). However increased simplicity would imply reduced cost effectiveness. Implementation of the 15 key measures in all countries would however increase the costs of the Low*-scenario by ~ 80%, but also offer ~ 5% additional health protection.

Table 1: Smallest set of measures to achieve the emission reductions of the Low* scenario in the EMEP region*

SO_2	Desulfurization of new hard coal power plants
NO_x	Retrofitting low-NOx burners at existing gas power plants
	Low-NOx burners for gas in industry
	Low-NOx burners for refineries
	Cement and lime production
$PM_{2.5}$	Ban of open burning of agricultural waste
	Steel production, basic oxygen
NH_3	Urea substitution
	Pigs - liquid and solid slurry systems
	Dairy cows – liquid and solid slurry systems
	Other cattle - liquid slurry systems
	Laying hens and other poultry
VOC	Industrial solvents use
	Other industrial VOC sources
	Industrial use of adhesives

* All these measures are calculated in addition to the current legislation in each country

12. Enforcement of these key measures does not automatically define the national emission ceilings, but only the part of the national emission ceilings that is supported by European wide measures. Additional emission reductions could be achieved by national efforts.

13. **The Task Force took note of the analysis and requested CIAM to forward the information to the WGSR, and also supply additional information on the costs and impacts for individual countries. CIAM agreed to make information available on the website and would welcome comments and additional national data before June 30th. Major changes in emission inventories should however be communicated by the 3rd of June 2011 to amann@iiasa.ac.at with a copy to cofala@iiasa.ac.at . CIAM would then finalise a new report 3/2011 before the end of July. EGTEI and TFRN were invited to analyse to the extent possible how the 15 key measures correspond to the ambition levels for emission limit values used in the current draft technical annexes.**

14. A substantial part of the meeting was devoted to the assessment of the attainability of emission reduction ambition levels on a country by country basis. The analysis was limited to the technical attainability, not considering political preferences or positions or other non-technical barriers to the implementation of measures. Some countries also reported on the differences in cost-estimates compared to the GAINS-results.

15. General elements in the discussion were:

- For several countries differences remained with the PRIMES baseline when examined at a disaggregated level. Although PRIMES offers consistent scenarios for all parties, it should be reminded that ultimately compliance will be based on national inventories and that such inventories would in most cases be closer to the national estimations and forecasts than the PRIMES ones.

- Uncertainties in $PM_{2.5}$ and VOC-emission inventories make a judgement on the attainability of national ceilings difficult for many countries. This shows the importance of the introduction of flexibility in compliance checking.
- For the agricultural sector some countries questioned the national applicability of available abatement measures, although they were considered to be cost effective.
- The use in the transport sector of higher national emission factors than the COPERT-data used in GAINS was in some countries leading to higher national baseline emission projections for NO_x. This is seen as another reason for introducing flexibility in compliance checking.
- New sources such as NO_x-emissions from agricultural soils and VOC-emissions from crops were not included in GAINS, but it is expected that an increasing number of parties will report such emissions in their national emission inventories in the future. This also emphasised the need for mechanisms to address uncertainties in the process.

Table 2: Technical attainability of ambition levels, based on national data

Country	SO_2	NO_x	$PM_{2.5}$	NH_3	VOC
Belarus	LOW-MID	LOW-MID	?	LOW-MID	LOW-MID
Belgium#	MID	High*	High*	High*	High*
Croatia	None	None	?	None	BL
Czech Republic	Low*	Low*	None	Low*	None
Denmark	BL	BL	HIGH	HIGH	HIGH
Finland	None	MID	MID	?	High*
France#	MID	None	BL	BL	MID
Germany#	HIGH	HIGH	HIGH	LOW	FLEX
Hungary	BL	Low*	BL	MID	BL
Ireland	HIGH	?	FLEX	None	FLEX
Italy#	None	None	None	None	MID
Macedonia	None	BL	?	HIGH	None
Moldova	?	?	?	?	?
Netherlands#	HIGH	HIGH	HIGH	HIGH	BL
Norway	MID-HIGH	MID/FLEX	MID	?	?
Poland	LOW	LOW	LOW	LOW-MID	MID-High*
Portugal	?	?	?	?	?
Russian Federation	LOW-MID	High*	MID	?	High*
Spain	?	?	?	?	?
Sweden	HIGH	HIGH	FLEX	MID-HIGH	FLEX
Switzerland	MID-High*	MID-high*	MID-High*	MID	MID-High*
United Kingdom	LOW	?	FLEX	?	?
"AVERAGE"	MID	LOW-MID	FLEX	LOW	FLEX

depend on the implementation of climate and energy policies

? = no assessment; FLEX = uncertainties require flexibility in compliance; none = not even the baseline is attainable

16. Analyses from Belarus showed that attaining ambition levels for $PM_{2.5}$ was the most uncertain. The list of key measures was considered to be useful, but its applicability and effectiveness in real life could vary from pollutant to pollutant. There are also differences with GAINS in the contribution of sectors to the national emissions that require further analysis. There are preliminary indications that with full implementation of key measures and current legislation, ambition levels between low and MID would be feasible for SO_2, NO_x, VOC and NH_3, but further analysis of the attainability of ambition levels will be made after the update of national emission scenarios.

17. For Belgium, the PRIMES-baseline does not take into account the nuclear phase out as regulated by federal law. This, with other minor differences, leads to an underestimation of emissions compared to the national scenario. For 2020, the difference is limited, but this difference will increase in later years. As a consequence, for 2020 all ambition scenarios up to High* are technically feasible except for SO_2, where MID is the maximal technically feasible ambition level.

18. For Croatia all national emission projections are significantly higher than the GAINS estimates, meaning that even with additional measures emissions would still be above the baseline for SO_2, NO_x and especially NH_3. For VOC, the GAINS baseline can probably be reached. $PM_{2.5}$ has not been analysed yet.

19. In the Czech Republic a new national energy strategy will be introduced in June 2011, which might support higher use of coal in the energy and industrial sectors. Updated data of animal numbers lead to a higher NH_3 emission estimate. It will be difficult to comply with the Industrial Emissions Directive. The Low* scenario could technically and economically be achieved for SO_2, NO_x, and NH_3, while for $PM_{2.5}$ and VOC this might be a problem.

20. The Danish analysis focused on the discrepancies with GAINS regarding future fuel use. This had a large impact on the feasibility of the ambition levels especially with regard to NO_x (only BL possible). For SO_2 the differences between the ambition levels are small as limited technical measures are available to reduce emissions further. This poses a problem as changes in future fuel use can lead to unavoidable exceedance of the PRIMES BL scenario (e.g. due to increased use of biogas). For $PM_{2.5}$, VOC and NH_3 all ambition levels would be technically attainable.

21. The Finnish analysis concluded that any ambition level for SO_2 would be technically infeasible, mainly due to low estimates for the use of heavy fuel oil and for process industry volumes in the PRIMES baseline. Also the use of black liquor was not included. For NH_3 further evaluation was needed, while for all other pollutants at least the MID ambitions were judged technically possible.

22. The French analysis showed that for SO_2 and VOC the MID scenario was judged attainable while the baseline would be reachable for NH_3 and $PM_{2.5}$ if additional measures were implemented. For NO_x none of the ambition levels were judged possible since the national projections were significantly higher than the GAINS estimates. While climate policies contribute to reduce NO_x and SO_2 emissions, some climate measures could be counterproductive for VOC and $PM_{2.5}$.

23. The German analysis showed that for SO_2, NO_x and $PM_{2.5}$ all ambition targets (excluding MTFR) would be technically possible, provided that stringent energy efficiency policies would be implemented and depending on the use of renewable energy sources. For VOC the emission inventory shows significantly higher emissions than used in GAINS which would make attainment of all ambition levels unfeasible. For NH_3 the lower end ambition levels could potentially be achieved.

24. In Hungary the MID-scenario would be technically attainable for NH_3, and the low*-scenario for NO_x. For SO_2, VOC and $PM_{2.5}$ the baseline could be technically feasible. Hungary stressed that 2000 is not a good reference year for $PM_{2.5}$ since emissions were temporary lower that year.

25. The Irish analysis showed that the applicability of measures in GAINS is in some cases too optimistic. For SO_2 all ambition levels seemed technically feasible with implementation of current reduction plans, while additional measures will be needed to reach any of the ambition levels for NO_x. For $PM_{2.5}$ and VOC the attainability is less certain due to uncertainties in emission inventories and corresponding projections. Also the concern was raised that NH_3 ambition levels would limit the possibility for the agricultural sector to profit from the abolishment of the EU milk quota in 2013 and the economic recovery.

26. The Italian analysis showed large discrepancies between the national and PRIMES baselines and concluded that any ambition level for SO_2, NO_x and $PM_{2.5}$ would be technically infeasible mainly due to differences in non-commercial domestic wood burning and in the energy and transport sectors. For VOC, the MID scenario may be technically attainable, but this will also depend on the projected increase in biomass use in 2020, as a result of the current climate and energy policy.

27. Macedonia is working towards the ambition levels in the current Gothenburg Protocol for 2010. Based on national numbers, the GAINS baseline scenario for SO_2 and VOC will be difficult to reach, while most ambition scenarios are probably feasible for NH_3. For NO_x the baseline is probably reachable with additional measures. Currently, work is being done on developing a national plan to reduce emissions.

28. Moldova presented work in progress and further analysis needs to be performed in cooperation with CIAM. National emission estimates from construction of coal fired power plants appeared to be significantly higher than the data used in GAINS.

29. The Netherlands showed that the HIGH scenario would be technically attainable for SO_2, NO_x, $PM_{2.5}$ and NH_3. For VOC the MID scenario can only be reached with low economic growth and assuming further European VOC-measures. With high economic growth even attainment of the baseline is unfeasible for VOC. The study revealed that the costs for achieving the targets would be substantially higher when based on the national baseline instead of GAINS, especially when implementation of energy and climate policies would lead to less co-benefits than assumed in GAINS.

30. For Norway the MID scenario would be technically attainable for $PM_{2.5}$ and the MID-HIGH scenario for SO_2. More analysis is needed to judge the possibility for emission reductions of NH_3 and VOC. If the GAINS-data would be brought in line with the national emission inventory and baseline scenario for NO_x, the MID scenario would be feasible, provided that the scenario will be no more than ~ 16 kilotons lower than a "revised" 2020 BL; otherwise flexibility would be needed to incorporate new (e.g. off shore) sources later in the process.

31. The Polish preliminary assessment was performed by comparing 3 national scenarios with the GAINS scenarios. For all national scenarios decrease of coal consumption is projected. For SO_2, NO_x and $PM_{2.5}$ the LOW scenario could be technically attained, and the low-MID-scenarios for NH_3. For VOC the MID-high*-scenario seemed technically feasible. Further analysis of the attainability of ambition levels will be made after national emission scenarios based on projected activities for sectors are developed.

32. For Portugal, the analysis showed significant differences between national and GAINS baselines due to differences in emission factors and activity data. This leads to uncertain results which compromise the definition of an ambition level target. Currently, for NO_x and $PM_{2.5}$, the comparison with national projects suggests that it would be extremely difficult to achieve any ambition level, while for ammonia, VOC and SO_2 this might be feasible. Further analysis of data would be needed for a more precise evaluation. For $PM_{2.5}$ the applicability of certain measures was disputed. Especially to ban agricultural waste burning was seen as a challenge

33. The Russian Federation analysis was based on three different national scenarios for long term economic development. It was judged that with additional measures the LOW-MID scenario would be attainable for SO_2, the MID scenario for $PM_{2.5}$ and the high* scenario for NO_x and VOC. For NH_3 the attainability was difficult to judge.

34. The Spanish analysis concentrated on the differences in baselines. No assessment had been performed of the technical attainability of ambition levels. Further analysis is needed in co-operation with CIAM.

35. The Swedish analysis of the ambition targets showed that with additional measures all scenarios are potentially attainable for SO_2, NO_x and NH_3. For VOC and $PM_{2.5}$ the emission inventories remain uncertain, which could be solved by flexibility in compliance checking.

36. For Switzerland the MID-high* scenario is attainable for SO_2, NO_x, $PM_{2,5}$ and VOC, taking into account the proposed national policy plan on air pollution and climate change. For NH_3 the MID ambition level is judged as feasible. Switzerland stressed the importance of having binding requirements in the technical annexes and reminded the Task Force that joint international action is needed to abate black carbon and to implement cost-effective measures for cattle.

37. The UK analysis showed that the MID-scenario would be technically feasible for $PM_{2.5}$, but at significantly higher cost than estimated in the GAINS scenarios. $PM_{2.5}$ emission data in GAINS showed large differences with the national inventory and the uncertainties involved would require flexibility in compliance. For SO_2 the LOW-scenario could technically be reached. The Task Force was reminded that still a high potential for cost effective emission reductions still exist at the North Sea and the Atlantic Ocean.

38. **The Task Force concluded that even though the scenarios reported in CIAM report 1 / 2011 differ from national scenarios and estimates, the fact that these scenarios are coherent, consistent and available for in-depth analysis by all parties makes them suitable as a starting point for discussions on burden sharing. As stated in paragraph 13 parties were welcomed to deliver improved national emission data to CIAM as to improve its scenario analyses. WGSR was recommended to take remaining differences between GAINS**

and national perspectives into account in its deliberations, as further efforts in improving the data would probably not change the political willingness to take action.

IV. EX-POST IMPACT ANALYSIS AND JOINT WGE/TFIAM BACKGROUND REPORT TO THE REVISED GOTHENBURG PROTOCOL

39. The Task Force discussed the outline of a joint WGE/TFIAM scientific background report to the revised Gothenburg protocol. The reports made in 1999 for the Gothenburg Protocol would serve as an example. The plan is to deliver a report that presents scenarios, environmental impact analysis as well as assessment of the costs and benefits of the scenarios. The purpose of the report is to have a reference document that could be used in future reviews and implementation discussions of the protocol. The following content was suggested:

1. Activity trends,
2. Key measures,
3. Emissions,
4. Air quality and deposition,
5. Impacts,
6. Costs and benefits,
7. Long term prospects

40. The emission- and impact-scenarios that would be described in the report will cover the final protocol emissions for 2020, as well as the baseline, the MTFR scenario and the MID-scenario as references. If time permits also the Low*-scenario will be included. After CIAM has finalised the emission data for the last set of scenarios in July, EMEP-MSC/W could start making calculations in the second week of August 2011. Work by the WGE, its ICP's and Centres can follow in September. Analysis of the impacts of the final protocol obligations can only be made when a protocol proposal is available.

41. The Chair of ICP Modelling and Mapping, presented on the behalf of the WGE ICPs, the most recent developments in impact assessments. The ICP Vegetation had developed further its methodology to evaluate economic losses due to ozone impacts on crops, in particular on wheat. Ozone impacts were evaluated with the Phytotoxic Ozone Dose indicator and the modelled ozone concentrations over Europe. Scenario analysis showed that ozone concentrations in 2020 are projected to exceed critical levels in 80% of the EMEP grid cells where wheat is grown. The ICP Vegetation had focused on the UK to calculate the economic losses for a greater variety of crops (wheat, potato, oilseed rape, maize, barley, sugar beet, pea and beans, salad leaf) using a 12 year average of market prices for crops. Preliminary damage estimates were around €210 million per year for the UK in the period 2006-2008.

42. EMEP and MSC-West presented progress on the ex-post impact analysis. The work was initiated last summer and was using the earlier scenarios developed by CIAM (report 1/2010). The methodology for (re-) calculating GAINS-scenarios is operational and new calculations can be made within 2 weeks time.

43. The chair of the Task Force on Health gave an update in the latest assessment of health impacts of air pollution. The available research confirms the association of health indicators with black carbon exposure. However, the non BC-part of $PM_{2.5}$ still caused the major part of the

health effects attributed to PM. The recent CIAM-report 2/2011 applied a cause-of-death specific approach to estimate the months of life loss. This approach showed higher impacts on mortality, especially in non-EU countries, than the original all-cause mortality approach.

44. CCE presented progress and the structure of the ex-post impact assessment that is currently being prepared for the scientific background paper. The approach included analysis with both modelled critical loads and empirical critical loads. With dynamic models European maps of the exceedance of 2050-target loads were produced using GAINS- scenarios. The CCE also produced maps indicating the risks of changes in biodiversity.

45. Work was ongoing to analyse the impact of abatement strategies on the carbon sequestration in European forests. Forest growth has been linked to nitrogen deposition and ozone concentrations. The preliminary results showed that stringent air pollution policies will not diminish forest growth very much. CCE and CIAM would explore of effect oriented elements in the selection of 'key measures'.

46. **TFIAM concluded that many new directions are being explored to express the integrated modelling output in meaningful indicators. Health impacts is an area that continues to have much focus, but also the analyses of ecosystem target loads, the impacts on biodiversity and on ecosystem services are likely to provide useful policy support.**

V. OTHER PROGRESS IN INTEGRATED ASSESSMENT MODELLING

47. The chair of the Network on Economic Benefits and Economic Instruments (NEBEI) presented the latest developments and the conclusions from the back-to-back meeting on the 18th of May, 2011 (see Annex 1). Current activities included the finalisation of a guidance document on economic instruments and preliminary analysis of the costs and benefits for the revised Gothenburg protocol. The presentations of the NEBEI-meeting are available at www.niam.scarp.se/ .

48. A stakeholder survey on the future of NEBEI showed that there was support for continuation of NEBEI. The responses also indicated that NEBEI should continue to have a focus on air pollution and needs to ensure relevance for EECCA countries. NEBEI funding is currently explored.

49. The preliminary cost-benefit analysis for the revised Gothenburg protocol showed that in all countries the additional costs of the High*-scenario over the MID-scenario, was still lower than the additional benefits. For the HIGH-scenario additional costs would exceed additional benefits. NEBEI confirmed that the key measures-approach analysed by CIAM would imply a reduction in cost-effectiveness of the policy strategy.

50. The representative from the network of National Integrated Assessment Modellers (NIAM) presented the findings from the joint NIAM/EC4MACS-meeting in March 2011. NIAM members are involved in a number of different research projects. The future funding of the NIAM needed to be further explored.

51. TFIAM noted results of the EU research projects INTARESE and HEIMTSA, on the health impact assessment of climate policy. It showed that the inclusion of health impacts is important, as it changes the benefit/cost ratio of climate measures considerably. Indoor sources were included in the assessment as well as a sensitivity analysis with respect to the relative health impacts of the different PM compounds. Many climate measures reduced health risks due to outdoor air pollution, but some could increase health risks, especially wood burning and insulation of buildings, the latter leading to higher indoor concentrations of e.g. radon and tobacco smoke.

52. Norway informed about recent work on black carbon in the framework of the Arctic Council. The technical report, an assessment of emissions and mitigation options for black carbon for the Arctic Council, can be downloaded from: http://arctic-council.npolar.no/accms/export/sites/default/en/meetings/2011-nuuk-ministerial/docs/3_1_ACTF_Report_02May2011_v2.pdf . The summary for policy makers in both English and Russian can be downloaded from: http://arctic-council.npolar.no/en/meetings/2011-nuuk-ministerial/docs/ . AMAP will during the summer publish a scientific report on the impact of black carbon on Arctic climate. This report will be put on: http://www.amap.no/.

VI. WORK PLAN

53. A special GAINS-modelling workshop for EECCA and SEE countries will be held at IIASA. The workshop will be held on the 20th – 21st of June 2011 and aims at supporting the WGSR negotiations in September 2011. Financing will be available for 13 persons. The purpose is to have a common understanding of the data to be used in the CIAM-baseline and to assess the impact of the key measures that were identified by CIAM.

54. TFIAM is provisionally planning an autumn workshop at IIASA which will focus on topics raised at during the WGSR-meeting in September. The workshop could also be used to continue the preparation of the scientific background document to the revised Gothenburg protocol.

55. The 41st meeting of the Task Force will be held in May 2012. The venue is still to be decided.

ANNEX 1: Network of Experts on Benefits and Economic Instruments (NEBEI), Oslo-meeting, 18th May 2011

The NEBEI meeting was attended by 41 experts from a range of countries and organizations throughout Europe.

Cost benefit analysis of the revision of the Gothenburg Protocol

Analysis by Mike Holland and Anne Wagner was presented for a study financed by the European Commission on the revision of the Gothenburg Protocol. Results show that the health benefits of the LOW, LOW*, MID and HIGH* scenarios presented earlier by IIASA are forecast to exceed abatement costs for a range of assumptions. The analysis did not take account of benefits for ecosystems at the present time. Supplementary assessment of health effects has been undertaken during the project, by Fintan Hurley and Brian Miller of the Institute of Occupational Medicine. This was discussed at the Task Force on Health in May 2011 and shows that the current methods are likely to underestimate the health benefits to people in the newer EU Member States and the EECCA region. This will be taken into account in the finalization of the CBA report. Additional sensitivity analysis may also be carried out on the long term effects of ozone on mortality.

Updates were provided on refinements to impact assessment methodologies in the areas of health and crop production, drawing on information supplied by the Task Forces on Health and Vegetation respectively. Peter Roberts of Concawe presented research on an alternative approach to mortality valuation, introducing the metric of 'maximal societal revenue'.

Economic Instruments

A presentation on the revision of the Eurovignette Directive was made by Mikael Skou Andersen of the European Environment Agency, highlighting the use of estimates of external costs for setting charges for vehicles. Andrew Kelly presented a review of websites providing information on economic instruments from Ireland, the OECD and European Environment Agency.

Future plans for NEBEI

A questionnaire was distributed to experts around Europe prior to the meeting relating to the future of NEBEI. There was broad agreement that NEBEI could perform a useful role, though clarification of its remit was necessary. Most respondents felt that it should retain strong links with TFIAM and the Working Group on Effects. It was concluded that NEBEI meetings would be most successful if organized around these other meetings. A website should also be developed. There was little enthusiasm for extending the remit of NEBEI to cover other policy areas (e.g. chemicals) at this time, though this should be monitored where there was common interest. Most considered it important that NEBEI should extend its activities to the EECCA countries. In line with its origins as an informal network no formal membership was proposed, though contact points in each country and for certain organizations would be useful. Also stressed was the need to bring in stakeholder organizations such as NGOs and industry (representatives of both were present at the meeting). It was agreed to develop a work-plan for NEBEI for the coming 2 years, taking account of suggestions made by those at the meeting and respondents to the questionnaire.