

AIR CONVENTION

(CONVENTION ON LONG-RANGE TRANSBOUNDARY AIR POLLUTION)

Cooperative Programme for Monitoring and Evaluation of the
Long-range Transmission of Air Pollutants in Europe (EMEP)

TASK FORCE ON INTEGRATED ASSESSMENT MODELLING (TFIAM)

47th session, 8 - 9 May 2018
Brescia, Italy

Chairs report, DRAFT as of 2018-05-17

I. INTRODUCTION

1. This report describes the results of the 47th session of TFIAM, held from the 8th to the 9th of May 2018 in Brescia, Italy. The presentations made during the meeting and the reports presented are available at:
http://www.iiasa.ac.at/web/home/research/researchPrograms/air/policy/past_meetings.html.
2. 25 experts attended, representing the following Parties to the Convention: Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Sweden, and the United Kingdom of Great Britain and Northern Ireland. Other bodies represented were the EMEP Centre for Integrated Assessment Modelling (CIAM), the Task Force on Techno-Economic Issues (TFTEI), Airclim/the European Environment Bureau (EEB), and CONCAWE.
3. Mr. R. Maas (Netherlands) and Mr. S. Åström (Sweden) chaired the meeting.
4. The principal of Brescia University, Professor Marina Pizzi, welcomed TFIAM to Brescia and opened the meeting. Professor Rodolfo Faglia, gave a short overview of the Engineering school of the University of Brescia.

II. NEWS FROM OTHER BODIES AND OBJECTIVES OF THE MEETING

5. Mr. Maas and Mr. Åström presented the latest developments within the Air Convention and other air pollution policy arenas, the recommendations from the Saltsjöbaden VI workshop, and defined the purposes of the 47th TFIAM meeting (TFIAM 47).
6. The most relevant latest developments within the Air Convention are that the conclusions from the Ad Hoc Policy Response Group (PRG) to the CLRTAP Scientific Assessment Report 2016 has been accepted by the Executive Body (EB) in December 2017, and that this group has now started the process of updating the Air Convention Long Term Strategy (LTS). Furthermore, the EMEP/WGE Bureaux in February 2018 has identified the importance of continuing work on modelling urban scale pollution, increasing the knowledge base on air pollution impact on human health, as well as on identifying global/regional sector solutions.

7. The upcoming Air Convention meetings will discuss ways forward with respect to Saltsjöbaden VI recommendations, reviewing the 2018-2019 work plan, as well as discussing proposals for the LTS update with an ambition to have an LTS decision by December 2018.

8. Within the EU, the recently amended NEC Directive is now being followed up in countries and national air quality plans are to be presented during 2019.

9. The Saltsjöbaden VI workshop was attended by some 180 participants from 35 countries and 20 international organisations and delivered eight main recommendations to air pollution scientists and policy makers. The recommendations were that: the EECCA coordination group should lead an exploration of the possibilities for a step-wise ratification of inter alia the revised Gothenburg Protocol; that TFIAM should set up an expert panel to support local air policy development; that various Air Convention bodies should initiate efforts to harmonize global air pollution monitoring networks; that EB should establish a global air pollution policy dialogue; that WGE et al. should set up an expert group to coordinate monitoring of ecosystem effects of human activities; that maritime emission control areas in all coastal maritime areas and emission reductions from existing ships should be encouraged; that TFTEI et al. should ensure that emissions and health impacts of solid fuel burning are better addressed; and that TFRN et al. should develop criteria to link agricultural subsidies to emission reduction obligations.

10. Some recommendations were of special relevance to TFIAM. The suggested TFIAM expert panel is evidently one of these. It was also expressed that local air pollution policies need to be supported with national and international policies to ensure efficiency. It was emphasised that continued efforts of identifying cost-efficiency of policies leading to trade-offs and/or co-benefits with other environmental policy arenas are needed. The importance of ozone flux modelling of air pollution on quality and quantity of crop production can also be linked to TFIAM work.

11. The 2018-2019 mandate of TFIAM is to guide and review further development and application of integrated assessment models, to exchange experiences by national integrated assessment modellers, to produce deliverables defined in the 2018-2019 work plan items, and to suggest items for the long term strategy needed for future support of the Air Convention objectives.

12. The Task Force supported a request to the EMEP-steering Body for an update of the TFIAM mandate in order to include work on multi-scale multi-objective integrated assessment modelling, aimed at cost-effective policy strategies that combine international, national and local actions and include links between air quality policy and other policy processes, such as the implementation of the UN Sustainable Development Goals.

13. Correspondingly, the purposes of TFIAM 47 were to:

- assess the status of models,
- assess available scenarios,
- learn from national/regional/sectoral analysis,
- propose items to be included in the 2018-2019 TFIAM work plan, and
- propose items to include in the Long Term Strategy of the Air Convention.

III. UPDATES ON EUROPEAN SCIENTIFIC ASSESSMENTS

14. TFIAM took note of the CIAM presentation of the latest IIASA research made for the European Commission. It can now be confirmed that several (~10-25%) EU countries have changed their base year emission reporting with $\geq \pm 10\%$ for the years 2005 and 2010. Some outlier countries have, especially for PM_{2.5} changed base year emissions with +200% and -40%.

15. Given the recent policy development (Ecodesign, NRMM, transport, EU Climate & Energy) new reference scenarios and climate policy scenarios have been calculated. The review shows that little extra effort is needed from EU countries to reach the NEC Directive targets for SO₂, and NO_x, while much extra effort is required for many countries to reach NH₃ targets. For PM_{2.5}, many countries will reach targets through requirements in the Ecodesign Directive, and through other co-control policies (such as reducing forest fires). Furthermore, the results show that ambient air quality will be reduced to below WHO guidelines for PM_{2.5} for ~90% of the EU population by 2030. A similar positive picture is seen for NO₂. Costs for dedicated NEC emission reductions are estimated to € 1.05 – 1.9 per person per year.

16. On the other hand, the NEC Directive targets will not reach the biodiversity improvements envisaged in the EU Commission NEC Directive proposal from December 2013. Even if all technical measures are implemented, in some 50% of all EU Natura 2000 protection areas depositions will exceed the critical loads.

17. TFIAM took note of the presentation of the JRC on the work of EU Forum on Air Quality modelling in Europe (FAIRMODE). FAIRMODE is focused on developing modelling tools that can support the implementation of the EU Air Quality Directive. Of particular interest for FAIRMODE is spatial representativeness of measurements and modelling, composite mapping of air pollution, and source appointment techniques. FAIRMODE recommendations to policy makers and scientists are currently under development.

18. TFIAM acknowledged the presentation from EMRC updating TFIAM on benefit assessments. In summary there is new knowledge regarding the health impacts of NO₂ exposure, but there are still uncertainties that require attention.

19. There is also a fair amount of new studies on the morbidity effects of air pollution, that would increase the damage cost estimates for: asthma, chronic obstructive pulmonary disease, coronary heart disease, stroke, diabetes, lung cancer, low birth weight, and dementia. Also new studies point at higher damage costs due to work days lost (productivity) from air pollution.

IV. DISCUSSION ON TFIAM WORK PLAN ITEMS

Updates of GAINS control costs / estimating costs of inaction

20. The Co-Chair of TFTEI presented the updated TFTEI 2018-2019 work plan. TFTEI is planning to extend its work with a TFTEI Clearing House for control technologies. For two work plan items, suggested by the Review Policy Group and adopted by the WGSR, TFTEI proposes to co-operate with TFIAM and CIAM, if

feasible: 1) to analyse the costs of air pollution policy inaction, and 2) to undertake a review of control costs of air pollution in GAINS.

21. EMRC presented earlier experiences of identifying the costs of inaction. Especially, the OECD CIRCLE project has provided interesting output.

22. On the opportunities to study the costs of inaction within the 2018-2019 work plan, TFIAM agreed that the request from the WGSR needs to be clarified, e.g. what is the baseline to take into account (no policy or current policy)? Earlier CIAM studies could be reused that show benefits of action (which by definition are the same as costs of inaction). Alternatively, the question can also be geared towards showing the potential damage costs that are associated with specific activities, which is a practice in project appraisals in countries: Ireland, Finland, Netherlands, and to some extent France, Italy, and Sweden are examples..

23. Regarding the suggested work plan item on updating costs of air pollution control in GAINS, the priority is to update control costs for sources not yet controlled in existing legislation and to focus on regions that have yet to implement advanced control, i.e. countries in the eastern region of the Air Convention. However, updating the GAINS cost data is completely depending on ongoing research by specific parties that is communicated to CIAM.

Scientific Assessment report on ammonia

24. Several parties and centres showed interest to contribute to a thematic report on ammonia, inter alia MSC-W, CIAM, WMO, France and the Netherlands. Work has already been done in the *European Nitrogen Assessment*, so the question is what new value that can be added to already existing knowledge? A possibility is to address the cost of inaction explicitly to ammonia measures and compare policy scenarios with and without additional ammonia measures.

Global sectoral strategies

25. TFIAM noted the presentation by CIAM on the importance of global sectoral strategies based on a recent study for Asia-Pacific. A wider perspective on air pollution control (considering more than end-of-pipe measures) would be needed to reach WHO air quality targets. This also reconfirms the need for an integrated approach to air pollution taking into account other environmental issues.

26. Currently only a very limited number of TFIAM experts would have the means to contribute to hemispheric issues.

Towards cleaner cities

27. TFIAM acknowledged the need for information sharing with local experts. Air pollution in cities is still to a large extent affected by influx from sources outside the cities and other countries, and it is not evident that the most cost effective measures to improve air quality are local. Also, it is important that at all governance levels air pollution strategies are linked to policies on spatial planning, energy policy, and agricultural policy.

28. TFIAM appreciated the presentation from JRC on lessons learned from the air quality Atlas and the analysis of air pollution co-benefits from local climate and energy plans proposed under the global Covenant of Mayors.

29. TFIAM concluded that its mandate should be updated to include multi-geographical scale management issues. This type of mandate would also promote a

strong research development. In addition to the FAIRMODE/TFIAM workshop that will take place on 28-29 June 2018 in Tallinn, it was proposed to have an additional TFIAM autumn 2018 workshop on local air quality management that would allow for a well prepared and in-depth discussion on the purpose and value added of an expert panel on clean air in cities.

V. UPDATES ON NATIONAL ASSESSMENTS

30. TFIAM noted the presentation by the representative from the University of Brescia. Using a multi-objective multi-scale tool (MAQ), the GAINS-scenarios for the Lombardia Region (Northern Italy) have been compared with regional cost-effective solutions. The analysis at regional scale shows that optimized European scenarios are not efficient and in some cases not effective (as for ozone). This suggests that the top-down decision process would be not adequate in controlling secondary pollution in the area. The analysis provided opportunities for understanding different positions during negotiations.

31. TFIAM appreciated the presentation by the representative from the United Kingdom of Great Britain and the Northern Ireland. Of special interest is the new 25 year plan for air quality with an ample amount of policy initiatives under implementation. Apart from traffic measures to meet air quality limit values for NO₂, measures to reduce emissions from domestic wood burning and shipping, and agricultural measures to reduce biodiversity risks for Natura2000 areas are important issues.

32. Also, TFIAM took note of the project presentation on damage costs from air pollution by the Finnish expert. Finnish experts have produced online tools enabling quick estimates of damage costs associated with emissions and emission reductions. However, there is still a need to update damage cost estimates and to increase the consideration of non-health damage costs.

33. TFIAM acknowledged the presentation from the Swedish expert on ongoing emission inventory and IAM activities in Belarus and Russia. Several activities are ongoing. In Belarus, BC emission inventories are improved, emission reduction potentials for PM_{2.5} are estimated, and cost-benefit analysis of emission control is calculated. In Russia, the GAINS Russia model was developed in 2010, and lately more focus has been on regionalised emission inventories and EMEP modelling.

34. Further, TFIAM noted the presentation from the Netherlands. Large improvements have been observed in the Netherlands for both PM_{2.5} and NO₂ exposure, but challenges remain. Diesel vehicles and ammonia-emissions in the country and surrounding countries would have to be targeted to meet WHO guideline values for NO₂ and PM_{2.5} respectively.

35. For Sweden, TFIAM could note that the main focus in the development of a national air quality plan is to reduce NO_x emissions. Also, co-benefit analysis has showed that a substantial part of the Swedish NEC NO_x requirements can be reached by climate measures.

36. TFIAM acknowledged the presentation from France on the French air quality plan. The national plan was developed from 2015-2017 and is now published. It

includes consideration of both NEC and with EU air quality standards. Several measures and instruments were investigated and are now implemented: the measures and instruments are wide-ranging and cover industry, transport, housing, and individual behaviour change inter alia. France is also currently studying the potential impacts of a SECA and NECA in the Mediterranean Sea.

37. Furthermore, TFIAM appreciated the presentation by Germany on development of a German air quality plan. There is ongoing scenario development work that will include different ambition levels and options. The analysis includes most traditional aspects of air pollution emission reductions, including high-resolution spatial and sectoral analysis of emissions. The results are not yet complete, but the current understanding is that different ambitions might imply different spatial occurrence of emission intensities. TFIAM recognised the call for establishing an EU dataset with gridded scenario emission data of EU countries. TFIAM also took note of the presentation from the UCL expert on energy storage and transmission in Europe as a response to variable electricity production. One of the key conclusions is that there is enough storage capacity in hydro and biomass and transmission capacity so as to balance the variability of solar and wind in a 100% renewable energy system in Europe.

38. Finally, Ireland shared a presentation with TFIAM, in relation to the public consultation on the development of a Clean Air Strategy in Ireland. This work highlighted the focus of interest amongst various stakeholders in relation to air pollution concerns, as well as how their priorities differed. It also outlined the range of actions encouraged by the consultation submissions. Interestingly, there were many calls for enhanced communication strategies to support the clean air strategy..

VI. UPDATE OF WORK PLAN / FURTHER WORK

39. Based on the discussion some items proposed by the Executive Body will be added to the TFIAM-work plan: *Ammonia assessment* (1.1.3.2); *Global sectoral strategies* (1.1.4.6); *GAINS Cost review / Costs of inaction* (2.3.4, 2.3.7, & 2.3.10); *Towards clean cities* (1.1.3.3). See annex.

40. The FAIRMODE/TFIAM workshop on local versus regional measures will take place on the 28-29th of June 2018 in Tallinn, Estonia.

41. There is a call for an additional TFIAM workshop establishing an expert panel on clean cities in autumn 2018.

42. The next TFTEI meeting will take place in Brussels, October 2018.

43. The 48th session of TFIAM will take place in Germany early May 2019.

Annex: work plan items 2018-2019

Item	Activity	Deliverable	Who
1.1.3.2	Ammonia: Improve understanding of cost effectiveness of local vs regional agricultural emission control for protection of human health and ecosystems in Europe.	Presentation of TFIAM at TFMM Synthesis report focussing on agriculture in 2019	TFIAM with support from TFMM and countries experts (France, Netherlands a.o.)
1.1.3.3	Local assessment modelling of measures to reduce population exposure	Workshop in 2018	TFIAM with support from local and national experts
1.1.4.6	Sectoral opportunities to mitigate intercontinental transport	Workshop in 2018 and synthesis report in 2019	TFHTAP with support from TFIAM/CIAM
2.3.4/ 2.3.9	Collect and provide data for inclusion in the GAINS model, in cooperation with the Centre of Integrated Assessment Modelling and other institutions and organizations. Review of the control costs currently used with a view to improving, on an ongoing basis, the cost-effectiveness analyses produced by the GAINS model	Updated data for selected sectors provided to CIAM for inclusion in GAINS	TFTEI, with support from national experts and CIAM
2.3.10	Assessment of the cost of inaction		TFTEI with support from TFIAM