TFIAM-CIAM

Progress in activities and outlook

Simone Schucht, Stefan Åström (co-chairs TFIAM)

Zbigniew Klimont, Gregor Kiesewetter (lead CIAM),

Rob Maas (TFIAM advisor)

EPCAC, annual meeting, 18-19 November 2025

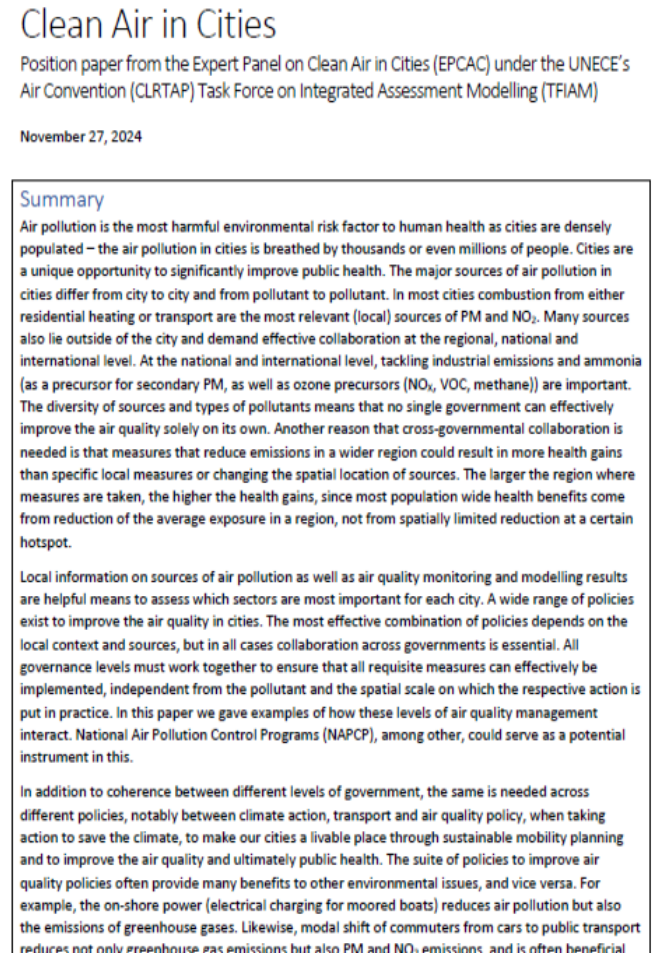
Contents

- Documents finalised and in progress
- Activities focussing on the revision of the Gothenburg Protocol

Reports - EPCAC position paper on clean air in cities (WP item 2.1.4)

- Informal document to WGSR63, for information to EB-45
- Key messages
  - Sources of air pollution differ between cities and pollutants and so do the most effective measures
  - Contribution from areas outside the city are important, collaboration at local, national, regional levels is needed
  - Collaboration across different government levels also important for implementation
  - Measures in agriculture are important to control $PM_{2.5}$ exposure in cities
  - To maximise health benefits, measures with a city-wide effect should be prioritized over hot-spot measures

https://unece.org/sites/default/files/2025-04/EPCAC_Position_Paper_27nov2024_2.pdf



Clean Air in Cities

Position paper from the Expert Panel on Clean Air in Cities (EPCAC) under the UNECE's Air Convention (CLRTAP) Task Force on Integrated Assessment Modelling (TFIAM)

November 27, 2024

Summary

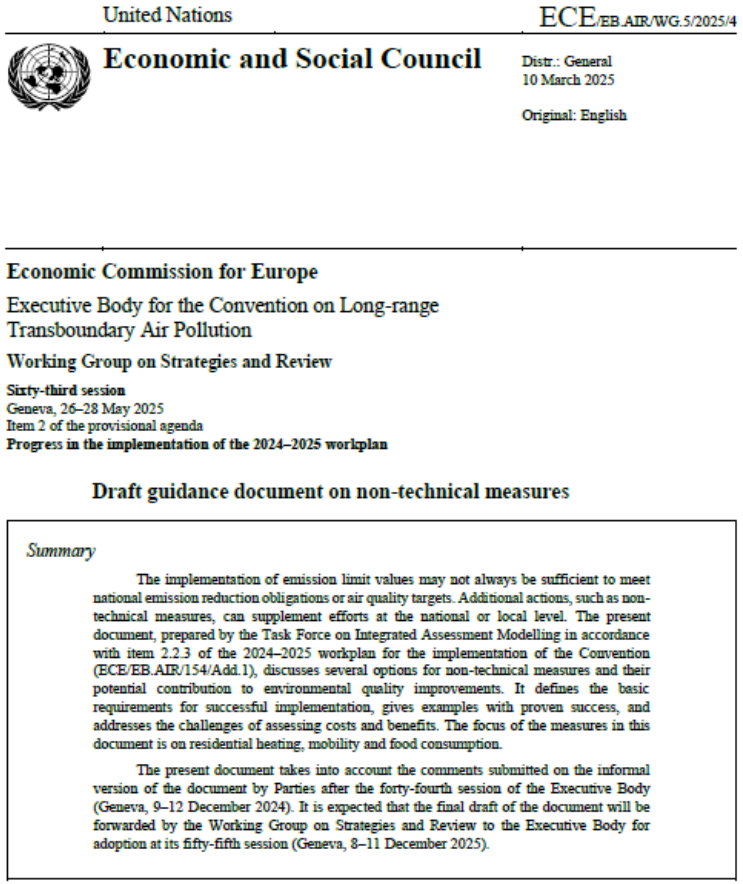
Air pollution is the most harmful environmental risk factor to human health as cities are densely populated – the air pollution in cities is breathed by thousands or even millions of people. Cities are a unique opportunity to significantly improve public health. The major sources of air pollution in cities differ from city to city and from pollutant to pollutant. In most cities combustion from either residential heating or transport are the most relevant (local) sources of PM and NO_2. Many sources also lie outside of the city and demand effective collaboration at the regional, national and international level. At the national and international level, tackling industrial emissions and ammonia (as a precursor for secondary PM, as well as ozone precursors (NO_x, VOC, methane)) are important. The diversity of sources and types of pollutants means that no single government can effectively improve the air quality solely on its own. Another reason that cross-governmental collaboration is needed is that measures that reduce emissions in a wider region could result in more health gains than specific local measures or changing the spatial location of sources. The larger the region where measures are taken, the higher the health gains, since most population wide health benefits come from reduction of the average exposure in a region, not from spatially limited reduction at a certain hotspot.

Local information on sources of air pollution as well as air quality monitoring and modelling results are helpful means to assess which sectors are most important for each city. A wide range of policies exist to improve the air quality in cities. The most effective combination of policies depends on the local context and sources, but in all cases collaboration across governments is essential. All governance levels must work together to ensure that all requisite measures can effectively be implemented, independent from the pollutant and the spatial scale on which the respective action is put in practice. In this paper we gave examples of how these levels of air quality management interact. National Air Pollution Control Programs (NAPCP), among other, could serve as a potential instrument in this.

In addition to coherence between different levels of government, the same is needed across different policies, notably between climate action, transport and air quality policy, when taking action to save the climate, to make our cities a livable place through sustainable mobility planning and to improve the air quality and ultimately public health. The suite of policies to improve air quality policies often provide many benefits to other environmental issues, and vice versa. For example, the on-shore power (electrical charging for moored boats) reduces air pollution but also the emissions of greenhouse gases. Likewise, modal shift of commuters from cars to public transport reduces not only greenhouse gas emissions but also PM and NO_x emissions, and is often beneficial

Reports - Guidance document on non-technical measures (WP item 2.2.3)

- Official document to WGSR63, for adoption to EB45
- Key messages
  - All types of policy instruments (and combinations) can be useful
  - Measures exist for all key sectors studied
  - Higher emission reduction potential, often at lower cost than with technical measures alone
  - But: effectiveness and costs depend on the location; no one-fits-all best measures
  - Costs and effects hence not easily assessed and generalized
  - Most effective measures are not always popular – non-monetary cost
  - Progress more likely to come in small steps



United Nations ECE/EB.AIR/WG.5/2025/4

Economic and Social Council

Distr.: General
10 March 2025

Original: English

Economic Commission for Europe

Executive Body for the Convention on Long-range Transboundary Air Pollution

Working Group on Strategies and Review

Sixty-third session
Geneva, 26–28 May 2025
Item 2 of the provisional agenda
Progress in the implementation of the 2024–2025 workplan

Draft guidance document on non-technical measures

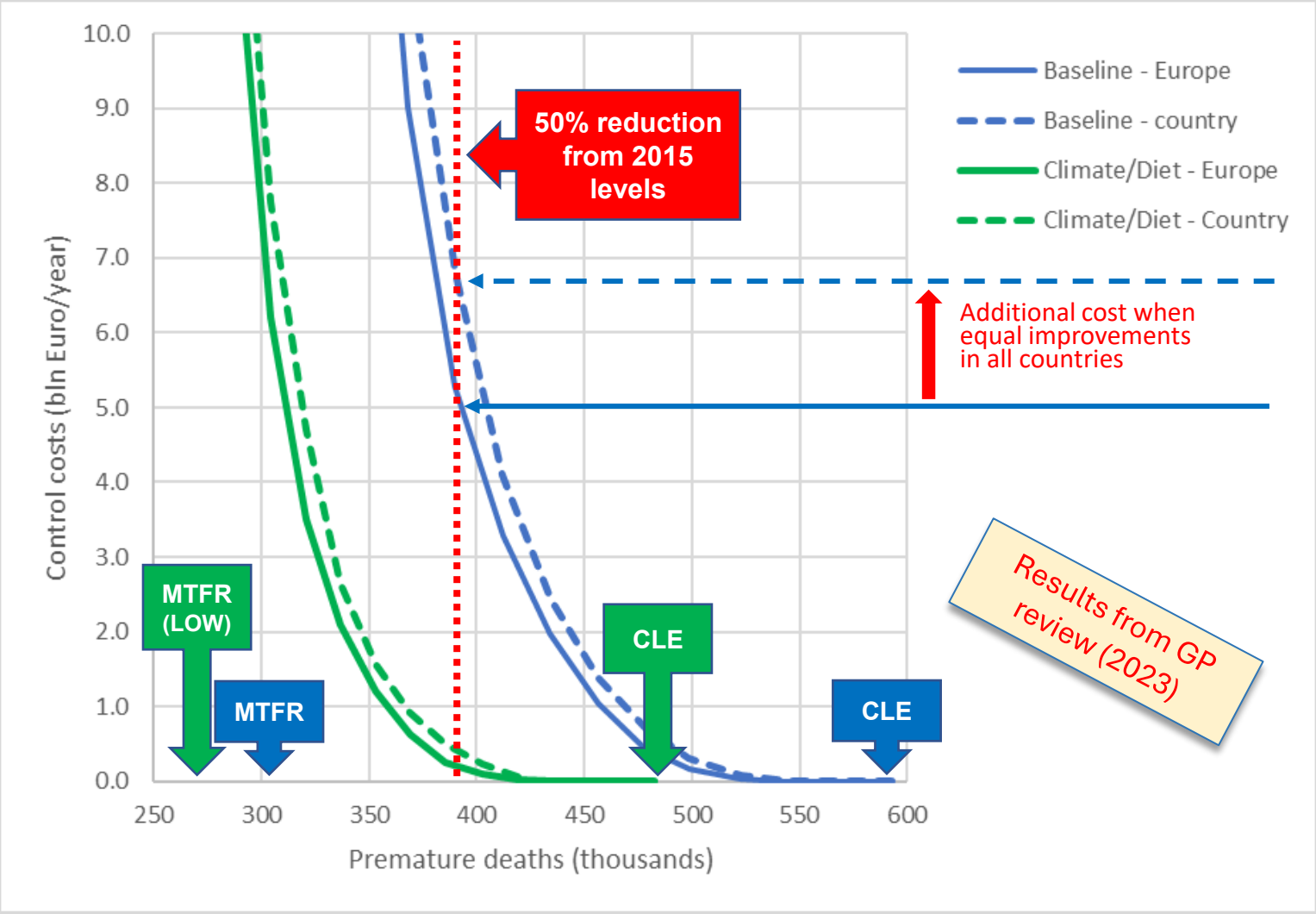
Summary

The implementation of emission limit values may not always be sufficient to meet national emission reduction obligations or air quality targets. Additional actions, such as non-technical measures, can supplement efforts at the national or local level. The present document, prepared by the Task Force on Integrated Assessment Modelling in accordance with item 2.2.3 of the 2024–2025 workplan for the implementation of the Convention (ECE/EB.AIR/154/Add.1), discusses several options for non-technical measures and their potential contribution to environmental quality improvements. It defines the basic requirements for successful implementation, gives examples with proven success, and addresses the challenges of assessing costs and benefits. The focus of the measures in this document is on residential heating, mobility and food consumption.

The present document takes into account the comments submitted on the informal version of the document by Parties after the forty-fourth session of the Executive Body (Geneva, 9–12 December 2024). It is expected that the final draft of the document will be forwarded by the Working Group on Strategies and Review to the Executive Body for adoption at its fifty-fifth session (Geneva, 8–11 December 2025).

https://unece.org/environment/documents/2025/05/informal-documents/agenda-item-2-eu-comments-draft-guidance-document

”Non-technical measures” can reduce air pollution control costs



- Full enforcement of ***Baseline*** **policies** achieve significant reduction of premature mortality
- About 70% reduction of the feasible range allows to achieve the 50% health target
- Preliminary estimates indicate nearly 30% higher costs for the case where equal improvements in all countries are achieved

- Introduction of **climate and dietary change policies** could achieve over half of the necessary reduction to reach the 50% health target, compared to the *Baseline scenario*
- Additional air pollution control costs would be over ten times lower
- In either case, some countries are not achieving 50% target

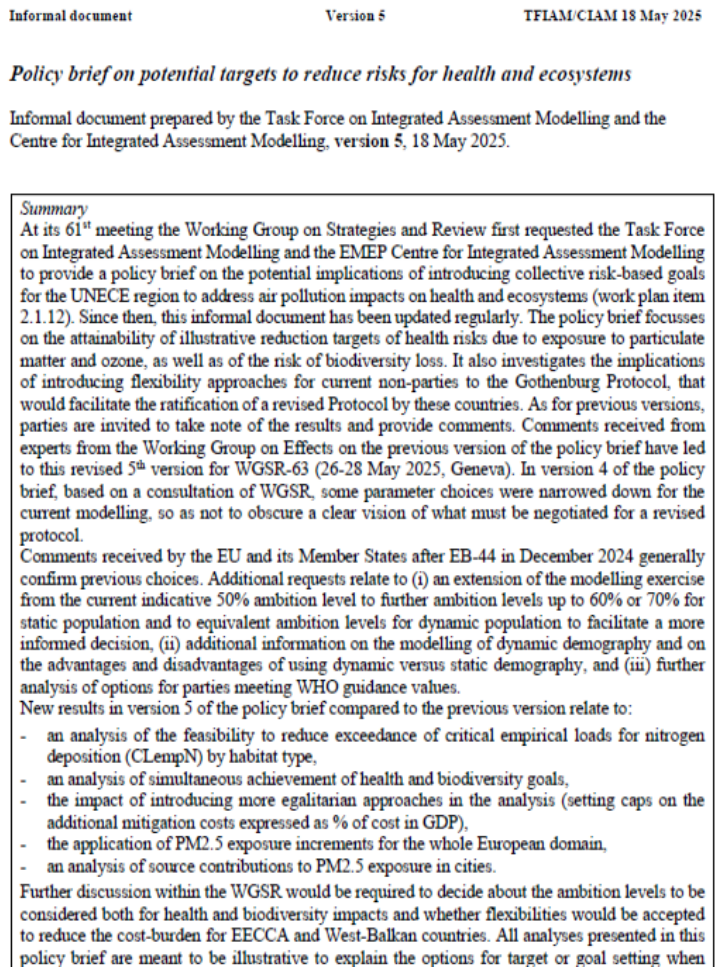
The analysis considers population growth and aging

Source: GAINS model (CIAM/IIASA); results from the GP review (2023)

Reports - Policy brief on potential targets to reduce risks for health and ecosystems (WP item 2.1.4)

- V5 as informal document to WGSR63
  - Presents latest scenario analysis by CIAM for the GPR
- V6 to be published soon

https://unece.org/environment/documents/2025/05/informal-documents/agenda-item-3-policy-brief-potential-targets



Informal document Version 5 TFIAM/CIAM 18 May 2025

Policy brief on potential targets to reduce risks for health and ecosystems

Informal document prepared by the Task Force on Integrated Assessment Modelling and the Centre for Integrated Assessment Modelling, **version 5**, 18 May 2025.

Summary

At its 61st meeting the Working Group on Strategies and Review first requested the Task Force on Integrated Assessment Modelling and the EMEP Centre for Integrated Assessment Modelling to provide a policy brief on the potential implications of introducing collective risk-based goals for the UNECE region to address air pollution impacts on health and ecosystems (work plan item 2.1.12). Since then, this informal document has been updated regularly. The policy brief focusses on the attainability of illustrative reduction targets of health risks due to exposure to particulate matter and ozone, as well as of the risk of biodiversity loss. It also investigates the implications of introducing flexibility approaches for current non-parties to the Gothenburg Protocol, that would facilitate the ratification of a revised Protocol by these countries. As for previous versions, parties are invited to take note of the results and provide comments. Comments received from experts from the Working Group on Effects on the previous version of the policy brief have led to this revised 5th version for WGSR-63 (26-28 May 2025, Geneva). In version 4 of the policy brief, based on a consultation of WGSR, some parameter choices were narrowed down for the current modelling, so as not to obscure a clear vision of what must be negotiated for a revised protocol.

Comments received by the EU and its Member States after EB-44 in December 2024 generally confirm previous choices. Additional requests relate to (i) an extension of the modelling exercise from the current indicative 50% ambition level to further ambition levels up to 60% or 70% for static population and to equivalent ambition levels for dynamic population to facilitate a more informed decision, (ii) additional information on the modelling of dynamic demography and on the advantages and disadvantages of using dynamic versus static demography, and (iii) further analysis of options for parties meeting WHO guidance values.

New results in version 5 of the policy brief compared to the previous version relate to:

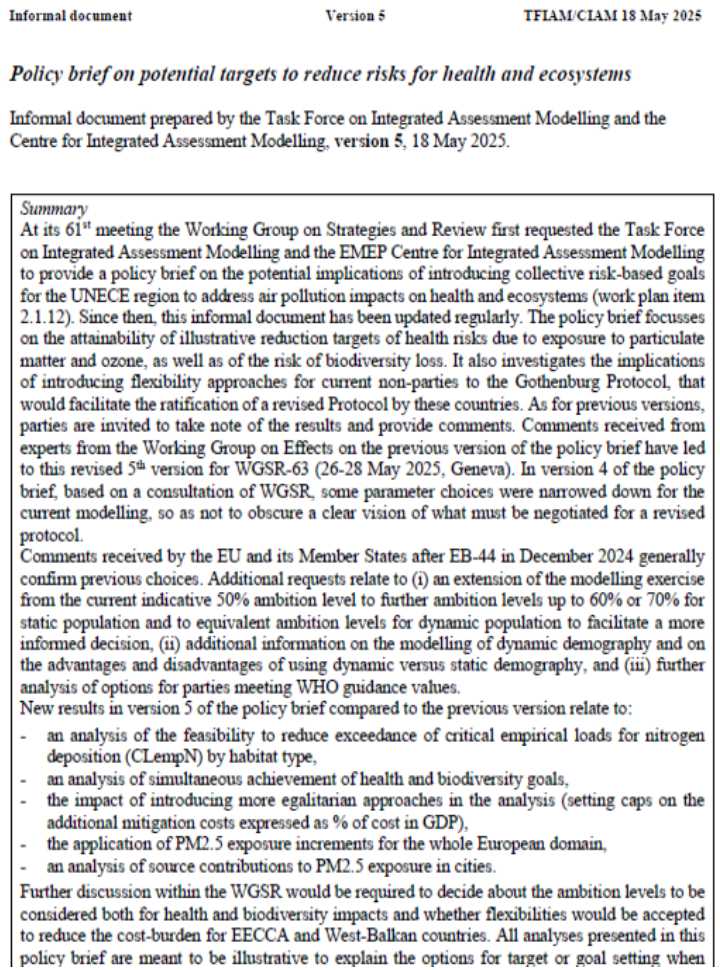
- an analysis of the feasibility to reduce exceedance of critical empirical loads for nitrogen deposition (CLempN) by habitat type,
- an analysis of simultaneous achievement of health and biodiversity goals,
- the impact of introducing more egalitarian approaches in the analysis (setting caps on the additional mitigation costs expressed as % of cost in GDP),
- the application of PM2.5 exposure increments for the whole European domain,
- an analysis of source contributions to PM2.5 exposure in cities.

Further discussion within the WGSR would be required to decide about the ambition levels to be considered both for health and biodiversity impacts and whether flexibilities would be accepted to reduce the cost-burden for EECCA and West-Balkan countries. All analyses presented in this policy brief are meant to be illustrative to explain the options for target or goal setting when

Policy brief - Summary for policy makers

- Provided to HoD meeting (October 2025, Elsinore)
  - Process of development and role of goals, cost-effective emission reduction efforts and emission reduction commitments
  - Summary of key decision items for the negotiation process
  - Presents key results from latest analyses
  - Least cost analysis versus approaches to more egalitarian efforts or benefits across countries

https://iiasa.ac.at/sites/default/files/2025-10/POLICY%20BRIEF%20SPM%20v20251010%20final_clean.pdf



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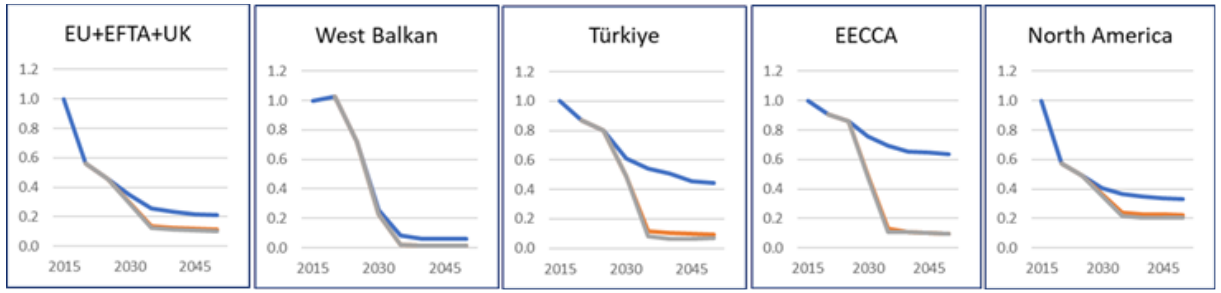
Current status of IAM - Knowledge from science bodies integrated in GAINS

- Policy scenarios (v6b), update BL & MTFR
- Integration of updated CLempN from CCE/WGE

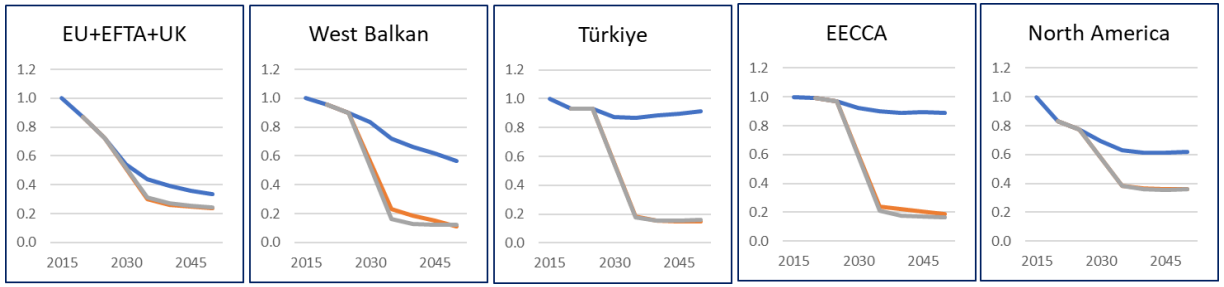
Emission trends across the UNECE region

(scenario version v6a)

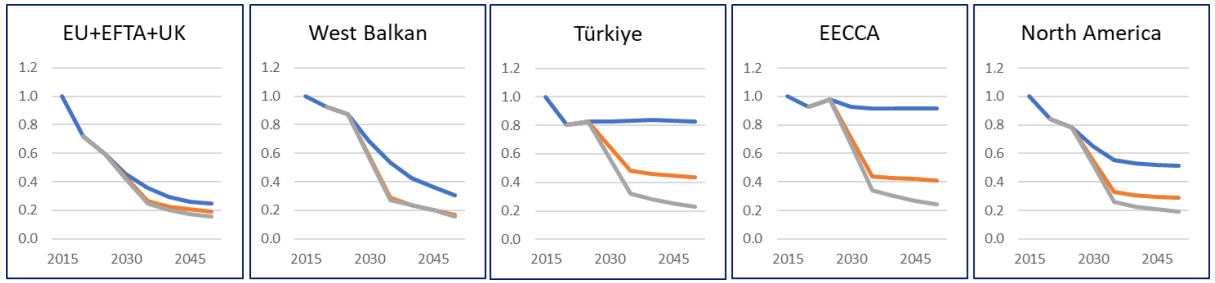
SO_2



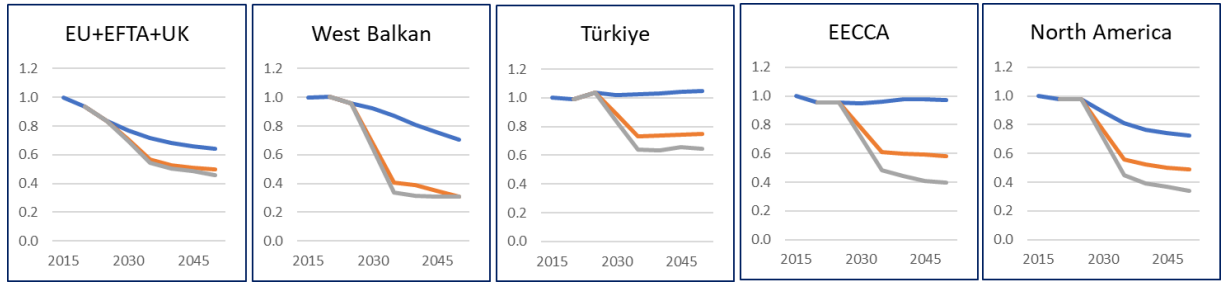
$PM_{2.5}$



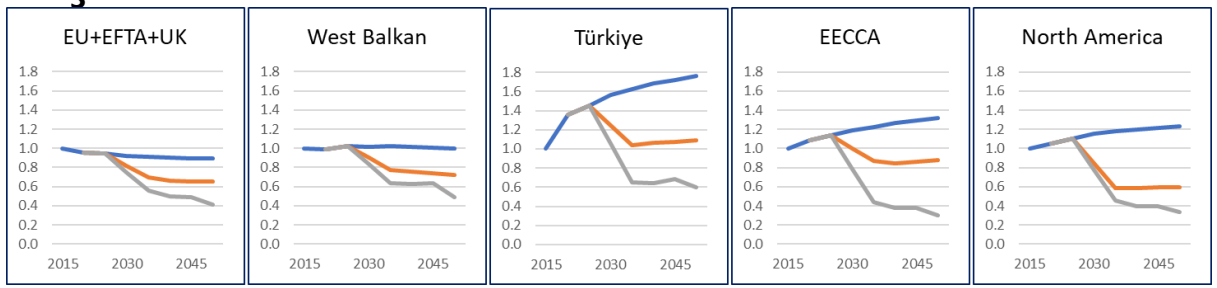
NO_x



NMVOC



NH_3



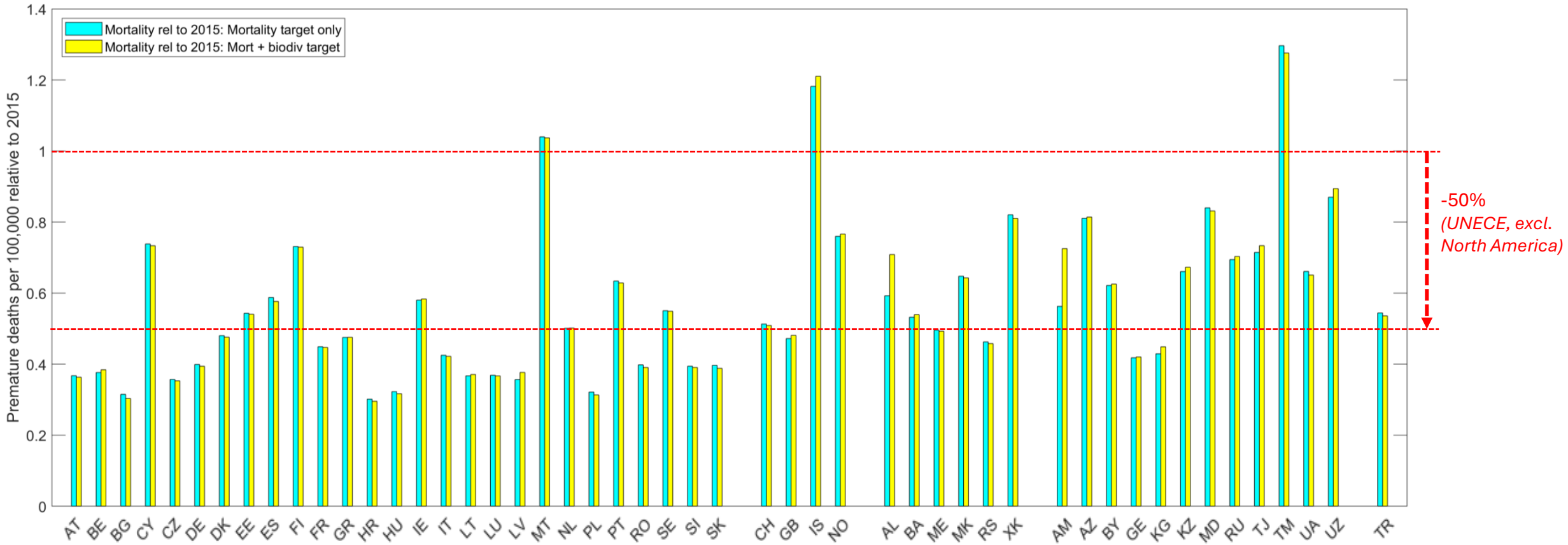
LOW scenario is not entirely consistent for energy sources; work in progress

Current status of IAM - Support to the policy process

- Feasibility of risk reduction and results for indicative targets for health (PM) and biodiversity

Health benefits: mortality risk reductions between 2015 and 2040

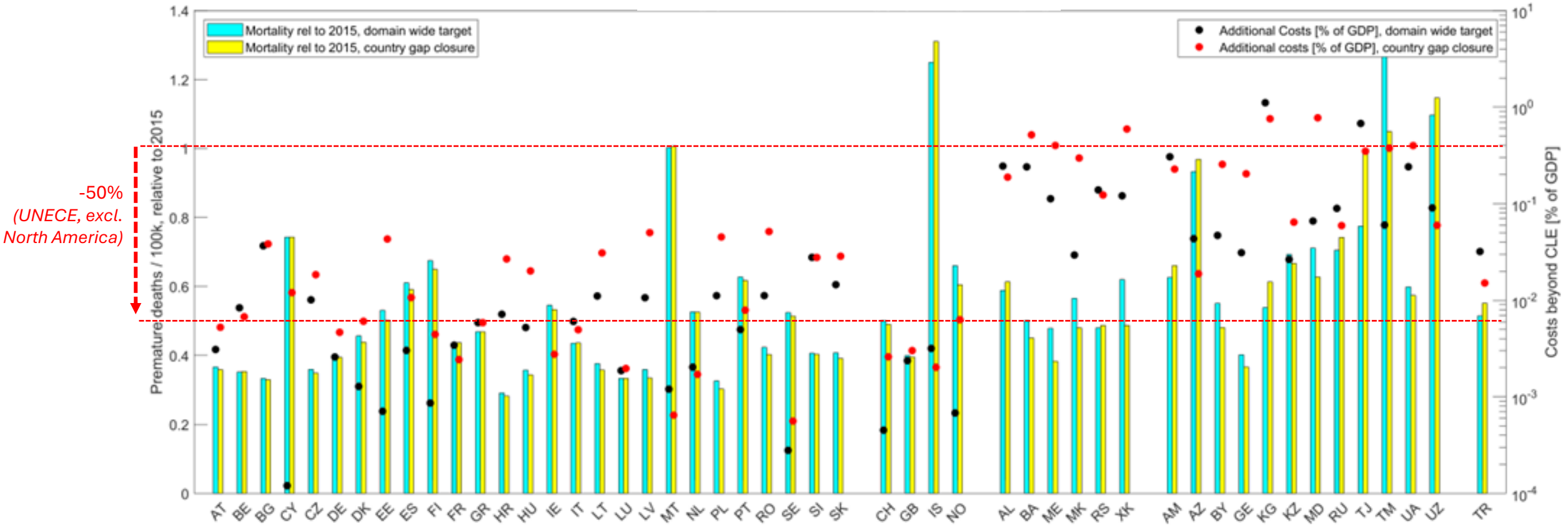
- for a least-cost domain wide 50% reduction ambition for health (blue bars)
- for a combined 50% risk reduction for health and biodiversity (yellow bars)



Source: CIAM/IIASA - GAINS model; scenario set v6b

Additional costs between 2015 and 2040

- Comparison between a domain wide least-cost solution (blue bars, black dots) and the country gap closure approach (yellow bars, red dots)
- Both approaches will meet the overarching 50% risk reduction ambition



Source: CIAM/IIASA - GAINS model; scenario set v6a

Current status of IAM - Support to the policy process (continued)

- Limiting cost differences between regions
  - Gap-closure approach:
    An additional constraint requiring each country to realize the same percentage reduction of impact between the one estimated for the baseline projection for 2040 and the maximum feasible reduction case for the same year
  - Burden sharing approach:
    A constraint limiting the total additional costs for a country to the equivalent of a certain maximum percentage of GDP
  - Staged/phased approach:
    Excluding certain measures from the optimization or postponing expensive measures until after 2040 or 2050
  - Split ambitions approach:
    Setting of different collective goals for different regions, higher ambitions for high-income countries and lower ambitions for low-income countries
- Comes at additional overall (UNECE wide) costs

Plans for cost-benefit analysis

- Project proposal submitted to Nordic Council of Ministers in mid November
  - If approved, project start in January 2026, result delivery end April, report September, Online publication October
  - Project group: TFIAM co-chair & staff, WGE chair, Menon Economics (NEBEI experts), EMRC (TFIAM expert)
  - Reference group: TFIAM & CIAM
- Economic valuation of biodiversity (WGE)

Current status of IAM - Support to the policy process (continued)

- Varying reduction targets for health
- Analysis of exposure reductions in urban centres by scenario
- Feasibility of achieving health target for joint $PM_{2.5}$ and O_3; optimization later this year
- Data on emissions & costs for different scenarios, incl. optimised, available at our internet sites by country and sector

All reports and data available at our internet sites

TFIAM:
Task Force on Integrated Assessment Modelling (TFIAM) under the LRTAP Convention | IIASA

CIAM:
Centre for Integrated Assessment Modelling (CIAM) | IIASA

Thank you!

TFIAM co-chairs

Stefan Åström (Sweden) Stefan.Astrom@anthesisgroup.com

Simone Schucht (France) simone.schucht@ineris.fr

CIAM head & deputy head

Zbigniew Klimont klimont@iiasa.ac.at

Gregor Kiesewetter kiesewet@iiasa.ac.at

TFIAM advisor

Rob Maas robertus.maas@gmail.com

For presentations & conclusions from TFIAM and EPCAC meetings and documents:

Task Force on Integrated Assessment Modelling (TFIAM) under the LRTAP Convention | IIASA

For data and documents from CIAM:

Centre for Integrated Assessment Modelling (CIAM) | IIASA