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Economic Commission for Europe

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

Working Group on Strategies and Review

Geneva, 27–31 May 2024

Item 2 of the provisional agenda

Progress in the implementation of the 2024–2025 workplan

Outline guidance document on non-technical measures

Summary

At its fifty-ninth session (Geneva, 18–21 May 2021), the Working Group on Strategies and Review recommended developing a guidance document on non-technical measures. The development of such a document is included in the workplan 2024–2025 of the Air Convention. This guidance document should be based on best practices at the national level (focused on meeting national emission reduction obligations) and at the local or regional level (focused on reducing health and ecosystem damage in hot spot areas).¹ This document presents an annotated outline of the planned guidance document.

The present document corresponds to the informal document ECE/EB.AIR/WG.5/2024/INF.6 as mentioned in the agenda of the session (ECE/EB.AIR/WG.5/131).

The Working Group is invited to discuss the document and provide its comments to the Task Force for the documents' finalization.

¹ The document will build on an earlier informal document prepared under the Gothenburg Protocol review Group ([Informal doc on non-technical measures.pdf \(unece.org\)](#), 2021).

Outline guidance document on non-technical measures

Informal annotated outline TFIAM, 25 April 2024

1. Introduction

- The focus of the document will be on residential heating, mobility and food
- The focus will be on what citizens' (or consumers') behaviour can contribute and what governments and companies can do to encourage changes.
- The practical scope will be on demand side measures not regulated in the technical annexes of the Gothenburg protocol.
- We include behavioural measures with a technical component, e.g. installing heat pumps, early scrapping of old vehicles or wood stoves, etc.

2. Why do we need non-technical measures?

- The measures can offer a higher emission reduction potential than technical measures alone.
- Demand side measures could lower costs of technical measures
- Analyses by e.g. IPCC, TFRN and CIAM show a significant potential of additional emission reductions due to changes in mobility, domestic heating and diets, that are comparable to the remaining potential of technical measures in highly industrialized countries.
- Although we know quite well what can be done, the challenge remains how demand side measures can be best triggered (while remaining having political support).

3. Policy instruments to implement non-technical measures

- Citizens' behaviour can be influenced via a mix of policy instruments: regulation, economic incentives and social instruments, while in many cases also public investments will be required to facilitate a change in behaviour
- Examples of available policy instruments:
 - *Regulatory instruments*: low-emission zones; permits for new roads or traffic intensive services
 - *Economic instruments*: subsidies for clean alternatives (food, vehicles, wood stoves, heat pumps); charges for polluting vehicles, fuels (and meat), compensation for the early scrapping of cars or stoves; increased parking fees in cities. Removal of subsidies that stimulate fossil fuel use, car traffic or intensive farming
 - *Social instruments*: raising awareness, public involvement in monitoring and city planning, communication strategies to gain societal support for the use of one of the other policy instruments and adapt social norms that in turn influence individual behaviour, nudging
 - *Public investments*: investments in district heating, public transport, removal of parking spaces, traffic management via replacement of car lanes by bus or cycling lanes; investments in electric vehicle (EV) infrastructure and green electricity; green procurement, e.g. replacement of the government motor vehicle fleets with EVs

4. Success stories: inventories of effective measures

a. Mobility²

Most frequently used local measures: road pricing, fuel taxes, parking fees, (U)LEZ, EV

² Haneen Khreis et al., [Urban policy interventions to reduce traffic-related emissions and air pollution: A systematic evidence map - ScienceDirect, https://doi.org/10.1016/j.envint.2023.107805](https://doi.org/10.1016/j.envint.2023.107805), 2023

infrastructure, vehicle retrofitting subsidies, investments in public transport, traffic management.

Less frequently used: speed control, cycling infrastructure, green space, urban planning, working from home.

Effectiveness proven ex post (with air quality measurements) for (U)LEZ, congestion charges, and traffic management

b. Domestic heating³

Mostly used: financial incentives to replace old stoves (wood or coal), subsidies for heat pumps, information campaigns on “clean” burning.

Less frequently used: lower indoor temperatures; restrictions on wood burning during inversion episodes, wood burning free neighborhoods.

Significant reductions in residential heating emissions were found from the economic incentives to replace coal stoves in Poland. Ample ex-post evaluation studies using air quality measurements are available to prove the effectiveness of measures aimed at reducing emissions from wood burning.

c. Dietary change

Variations in meat/dairy consumption across countries are mainly the result of cultural differences instead of policy (e.g. the Mediterranean cuisine generally uses less meat).

Several countries have information campaigns on reducing food waste. Ex post evaluation studies showing their effectiveness on nitrogen use efficiency or nitrogen deposition, are scarce.

The Danish *fat tax* was abandoned after two years, due to its effect on export. Subsidies for small and organic farms proved to be successful in Austria, that has the high share of organic food consumption in the EU.

Dietary change requires coherent actions from governments and companies involved in the production-consumption chain.⁴

There is strong opposition against effective measures to reduce meat and dairy consumption from food companies and from a large part of the population.

d. Conclusion

There is no silver bullet. What is acceptable in one country, doesn't have to work in other countries. E.g. Road pricing is more acceptable in Anglo-Saxon countries, but encounters protest elsewhere. Effective instruments seem to encounter most societal and political resistance. Policies that involve a change in transport behaviour seem to be less acceptable than measures to stimulate the use of cleaner vehicles. Wood burning and meat consumption seem to be regarded as human rights by many people.

5. Challenges and limitations of non-technical measures

Public Health England, Improving outdoor air quality and health: review of interventions - GOV.UK (www.gov.uk), 2020

³ See Code of good practice for solid fuel burning and small combustion installations, 2019: https://www.unece.org/fileadmin/DAM/env/documents/2019/AIR/EB/ECE_EB.AIR_2019_5-1916518E.pdf

⁴ Appetite for Change: Food system options for nitrogen, environment & health. 2nd European Nitrogen Assessment Special Report on Nitrogen & Food | Task Force on Reactive Nitrogen (clrtap-tfrn.org), 2023

5.1 Political limitations

- a) They cannot easily be implemented via permitting specific activities. They often require *more coordination* with other ministries, government layers, stakeholders and the public than technical measures, such as emission limit values for installations or products.
- b) They often require a combination of policy instruments and *actions by various players* in the production chain, as well as by consumers.
- c) Their implementation and effectiveness are *less predictable*: much depends on the actual preferences and power of stakeholders.
- d) It is less easy to prove their cost-effectiveness as there are *non-monetary costs* involved: longer traveling time, less comfortable indoor temperatures, loss of freedom to choose, loss of personal control, etc.
- e) In specific situations, pragmatic policy choices must be made acknowledging that *public acceptance* of behavioural change has limitations, that long-term goals cannot be realized at once, and that one should be satisfied with small steps in the right direction.

5.2 What social sciences can tell us

Based on theoretical and empirical research, policies aimed at individual behavioural change are likely acceptable if the individual is:

- aware and concerned about the problem to be solved by the policy,
- aware of the most tangible consequences of the problem if not solved,
- feel a moral obligation to contribute to the solution,
- perceive the proposed policy as fair and environmentally effective,
- trust the institution from which the policy proposal originates.

In general, policy proposals seem to be discouraged if they imply considerable influence on the individuals' own behaviour and if the policy would restrict personal freedom.

5.3 Scientific challenges

- a) How to translate local experiences (with variable results) to the UNECE domain?
- b) How to monetize costs and benefits and optimize the "welfare" effects of non-technical measures
 - How to include the costs of enforcement? These are generally higher than for technical measures.
 - How to include additional direct health benefits of active mobility, healthy diets, improved indoor air quality?
 - How to attribute the costs of integrated transport-city planning plans to air quality management?
 - How to include rebound effects and cross-border impacts (e.g. of taxing fuels and meat)?
- c) Impacts on air quality and health are mainly based on ex ante model calculations; ex post evaluations are scarce

6. How to include non-technical measures in a cost-effective protocol?

TFIAM and other groups have discussed behavioural change /non-technical measures often. At least since 2005. Yet these types of measures are rarely analyzed explicitly in the modelling used to support air pollution policy in the Air Convention. The long-term research strategy aims to develop a method to calculate benefits and costs of non-technical measures. In the short run, the potential benefits from non-technical measures, including reductions in emissions from residential heating, from changes in (local) transport or from dietary changes and reductions of livestock numbers, can be mimicked in GAINS via an alternative LOW baseline. Planned structural changes in energy supply, including district heating and reduction of fossil energy use in power plants and industry are included in the GAINS-baseline scenario.

7. Lessons and conclusions

There is still much to learn from each other. Effective interventions to reduce car use in cities differ among countries. In some countries road pricing proved to be very effective, while in other countries this measure was not acceptable due to its social consequences. Instead, infrastructural changes, such as more public transport, removing parking places and narrowing main roads proved to be more acceptable. This shows that there is not one silver bullet.

Measures with the largest potential impact, such as dietary change, also seem to encounter most resistance among the public and farmers. Restriction of wood burning receives much opposition in all countries, although the health benefits are clear.⁵

⁵ E.g. the potential emission reductions and associated health benefits of changes in wood burning behaviour can be very significant. For example, the U.S. Environmental Protection Agency in a study estimating the benefit per ton of reducing PM2.5 precursors from seventeen sectors has estimated that health benefits of reducing PM2.5 emissions from the residential wood combustion sector are on the order of \$400,000 per ton.

https://www.epa.gov/sites/default/files/2018-02/documents/sourceapportionmentbpttsd_2018.pdf