FICAP

Forum for International Cooperation on Air Pollution

1st Taskforce Meeting of The Forum for International Cooperation on Air Pollution

11th & 12th October 2022
Engineers House
Bristol, UK

UK Government

NATUR VÅRDS VERKET

SWEDISH ENVIRONMENTAL PROTECTION AGENCY

FICAP

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Opening and Welcome

11th & 12th October 2022
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Capacity-Building & Regional Cooperation on air pollution, including lessons learned

1st Taskforce Meeting of the Forum for International Cooperation on Air Pollution

11-12 October 2022

Soraya Smaoun (Ms.)
Air Quality Coordinator
Pollution and Health Unit

UN environment programme

UNEP Mandate: Resolution 3/8

Preventing and Reducing Air Pollution to Improve Air Quality Globally

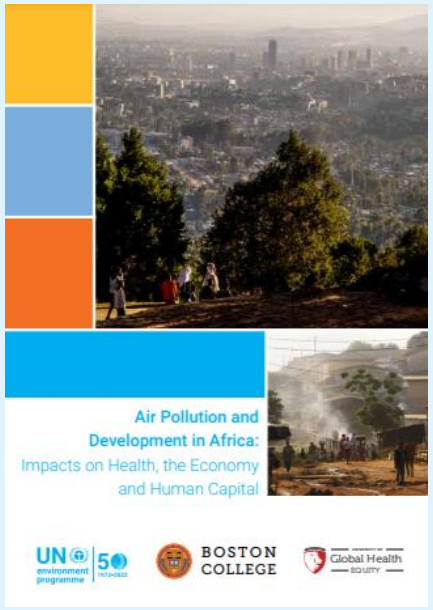
- Member States to join/cooperate with (para 2/3/4)
  - Specific initiatives (e.g. Climate and Clean Air Coalition, Batumi Action for Cleaner Air)
  - Specific issues (e.g. small particulate matter/ black carbon, methane)
  - Specific sectors (transport, energy etc)
- Share knowledge at regional level (para 5)
- Inter-Governmental and institutional cooperation (para 6)

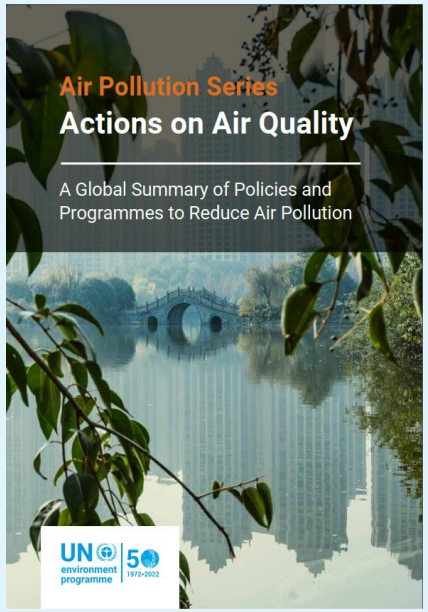
  - Transport (7a + 7b)
  - Transboundary (7c)
  - Info sharing platform (7d)
  - Country support (7d) and technical support (7f)
  - Assessments (7g)
  - Indoor air quality (7h)
  - Global approaches (7i)
  - Second global policy assessment (by UNEA-5) (7j)

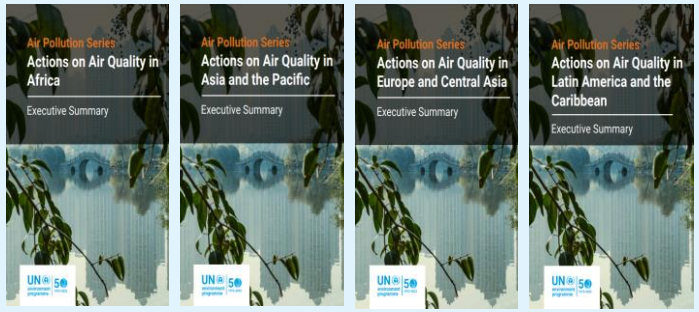
UN environment programme

Global and regional trends from recent reports

Science & Knowledge Management







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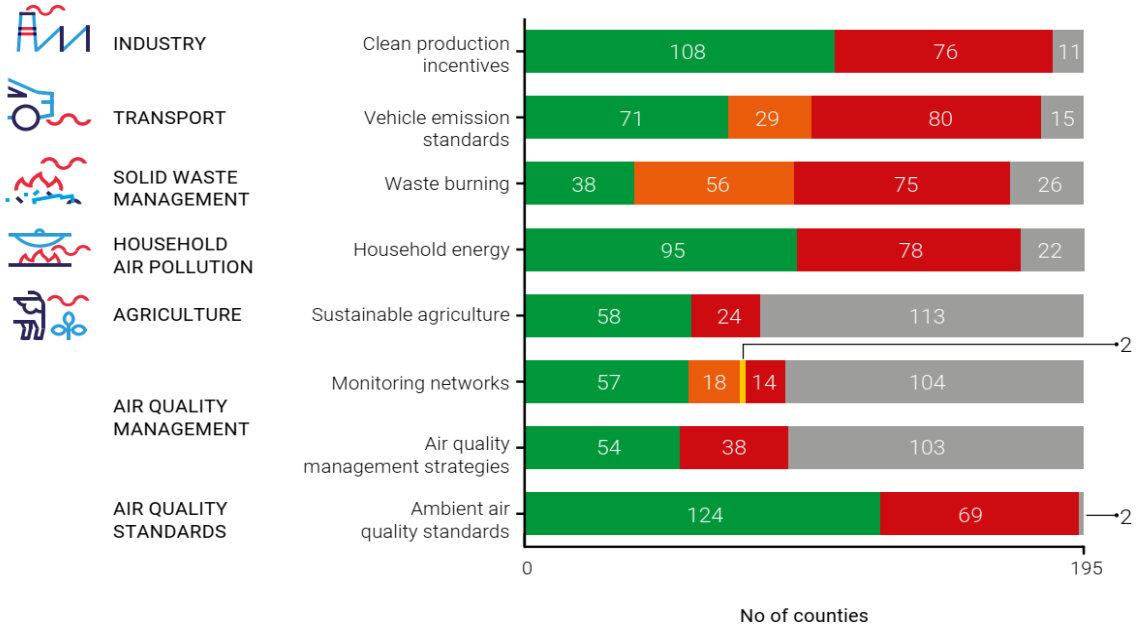
Global and regional trends from recent reports

Figure ES.1 Progress towards adoption of key actions that can significantly improve air quality



→ Green to indicate policy target met

→ Orange/Yellow to indicate policy target on track but acceleration needed

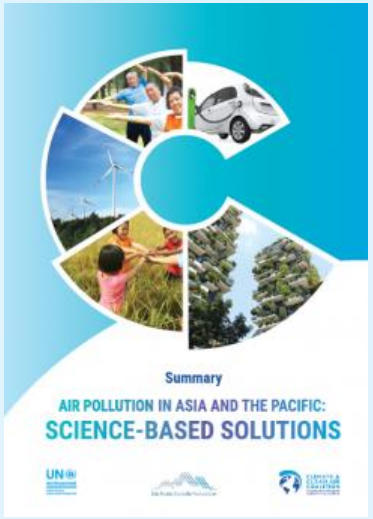
→ Red to indicate policy target not met

→ Grey to indicate no data available

UN environment programme

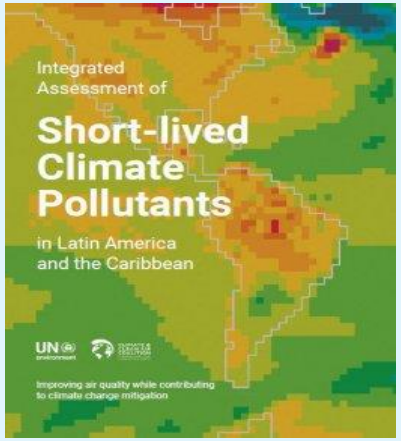
Key UNEP/CCAC Assessments & Air Pollution dashboard

Science & Knowledge Management



Air Pollution in Asia and the Pacific: Science-based Solutions

Integrated Assessment of Short-lived Climate Pollutants in Latin America and the Caribbean



Africa Integrated Assessment of Air Pollution and Climate Change
To be released in 2022

UN environment programme

Regional cooperation at political level

XXII Forum of Ministers of Environment of Latin America and the Caribbean (2021)
Decision 1: Pollution - IV. Atmospheric pollution

- ✓ The **Intergovernmental Network** on Atmospheric Pollution has been re-established, with UNEP Secretariat support
  - 23 countries with designated Focal Points
  - 7 countries in the Steering Committee (Chaired by Peru and Colombia)
- ✓ New **Regional Action Plan on Air Quality 2022-2025** agreed by LAC countries, including a Resources Mobilization Strategy
- ✓ Development of initial **information exchange and capacity building actions** on priority related issues
  - Series of webinar - more than 400 attendees
  - In-depth trainings – participation of more than 15 LAC countries

INTERGOVERNMENTAL NETWORK ON ATMOSPHERIC POLLUTION FOR LATIN AMERICA AND THE CARIBBEAN

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Regional cooperation at political level

7th Committee on Environment and Development at ministerial level, 29 November to 1 December 2022 (Bangkok, Thailand)

- ✓ The Committee on Environment and Development (CED) is an intergovernmental body of UNESCAP.
- ✓ It will be convened on the theme: Protecting our planet through regional cooperation and solidarity in Asia and the Pacific.
- ✓ Expected outcome: (a) Ministerial declaration on Asia-Pacific environment and development challenges and regional responses. (b) Asia-Pacific programme on air pollution, as a platform for cooperation for improved air quality management. The draft covers a wide scope of actions, including identifying technical and financial resources to accelerate action.

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Regional cooperation at technical level

Advisory services and regional Communities of Practice in Africa and Asia Pacific

In accordance with UNEA Resolution 3/8 and thanks to U.S. DOS financial support:

- **Direct technical support to Ethiopia, Uganda, Kenya and Rwanda to develop**:
  - Affordable air quality monitoring networks, using a cloud-based platform to analyse this data, and compile and disseminate the data generated by these networks;
  - Sources apportionment studies & assessments to better understand the sources of air pollution and main emitting sectors,
  - Strategies and action plans to improve urban air quality; and,
  - Networks or Community of Practice (COP) in the East Africa region

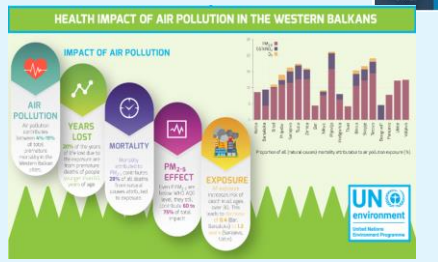
- **Promote and Strengthen regional COP in Asia and the Pacific through**:
  - Case studies on Air Quality monitoring (filling air pollution data gaps), Open burning of waste (status, impacts & solutions), e-mobility (guidelines to assess vehicle fleet emission reductions), integration of air pollution & health data towards AQM
  - Nine clean air solutions webinars convened between 2019-2022, reaching over 600 air quality practitioners
  - Eight training toolkits were completed based on clean air solutions webinar topics
  - The community of practice has grown to over 1,000 air quality practitioners, linking with APCAP

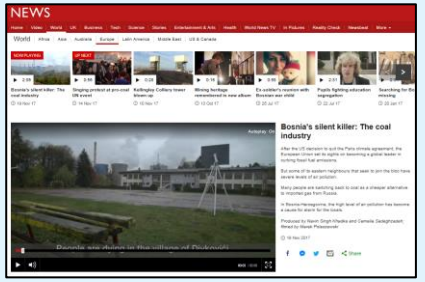
UN environment programme

Regional cooperation at technical level

Western Balkans

- Development of a joint inter-agency programme on air pollution from domestic heating through UNRCO & UNCT of Serbia
- Southeast Europe Pollution Platform (SEEP)
- Sub-regional assessment of AQ impacts on Human health in selected cities in the Western Balkans
- Nature-based Solutions for addressing urban air pollution in the Western Balkans (focus on Serbia) and Central Asia (UNEP with UN-Habitat)
- Assessing air quality management and air quality monitoring in Western Balkan countries via UNECE Environmental Performance Reviews (EPR): Albania, North Macedonia
- Deployment of AQ monitoring stations in Bosnia and Herzegovina
- Feasibility studies for district heating systems in Belgrade and Banja Luka (Bosnia and Herzegovina)
- Landfill fires Air Pollution assessment in Serbia





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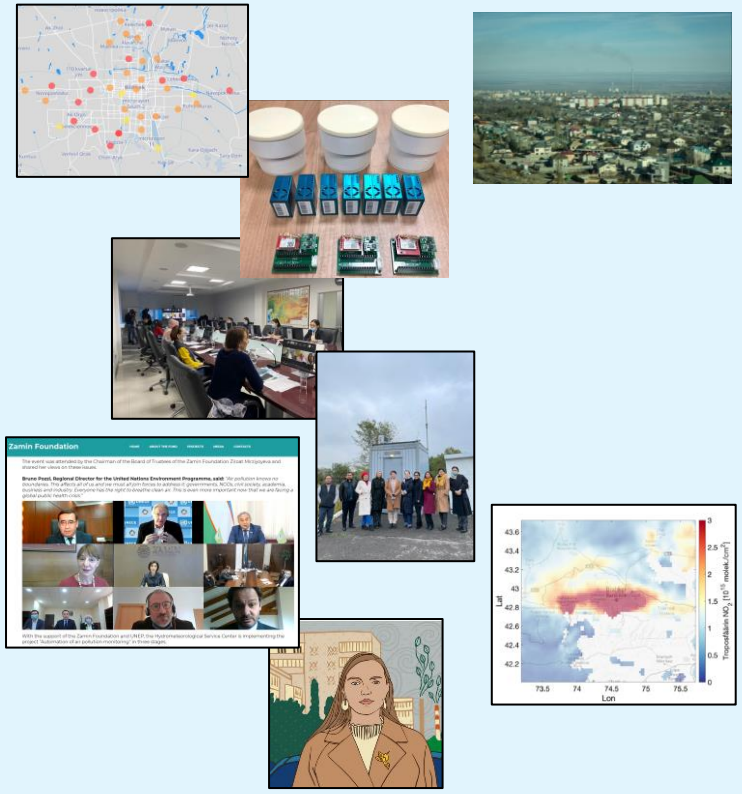
Regional cooperation at technical level

Central Asia

- Central Asian Air Quality Dialogue Platform
- Nature-based Solutions for addressing urban air pollution in Central Asia (focus on Kyrgyzstan and Tajikistan) and the Western Balkans (UNEP with UN-Habitat)
- Cooperation with U.S. Embassies/U.S. State Department in Central Asia
- Assessing air quality management and air quality monitoring in Central Asian countries via UNECE Environmental Performance Reviews (EPR): Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan
- Partnership with UNECE CLRTAP (Air Convention) in support for the automatization of AQ monitoring in Uzbekistan
- Joint UNEP-UNDP Assessment of AQ in Kyrgyzstan's capital Bishkek
- UNEP "Champion of the Earth" 2021 – air quality monitoring in Kyrgyz Republic



UN environment programme

Regional cooperation at technical level

The Fifth Montevideo Programme for the Development and Periodic Review of Environmental Law

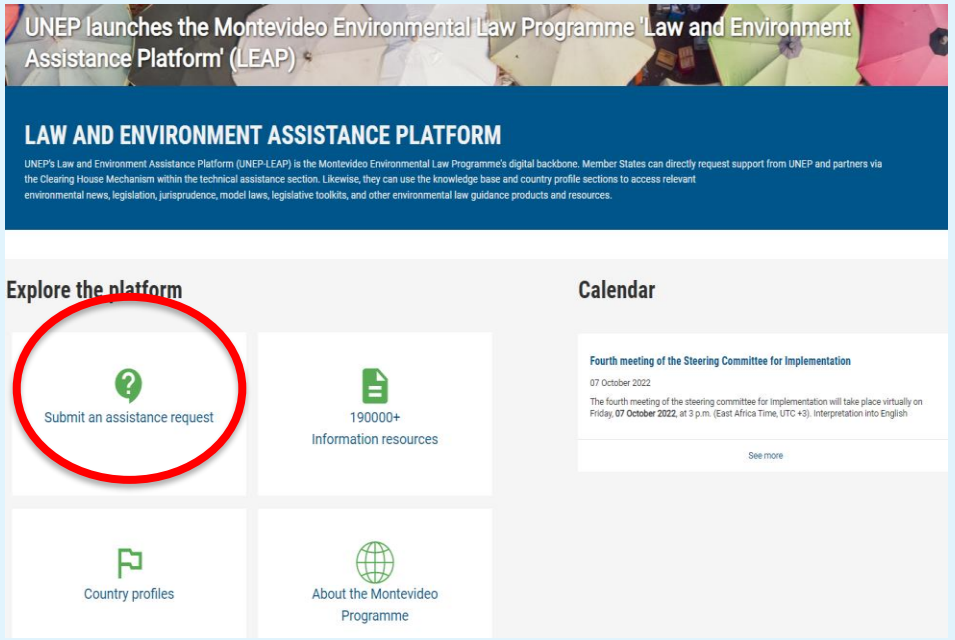
- **Montevideo Programme V** promotes the development and implementation of environmental rule of law, strengthens the related capacity in countries and contributes to the environmental dimension of the 2030 Agenda.
- **Legal responses to address the air pollution crisis** defined as a priority area by National Focal Points for Montevideo Programme V in 2021. An air pollution roadmap was developed to implement this.
  - Launch of the **First Global Assessment of Air Pollution Legislation**
  - Identification of potential activities to **support countries in managing transboundary air pollution**

UN environment programme

Regional cooperation at technical level

- Under Montevideo V, UNEP will also continue to provide **technical legal support to Member States** to address air pollution.
- **UNEP's Guide on Air Quality Legislation** to be published in 2022 provides support on the implementation and enforcement of air quality legislation.
- UNEP's Law and Environment Assistance Platform (UNEP-LEAP) is the Montevideo Environmental Law Programme's digital backbone. **Member States can directly request support from UNEP and partners**.

https://leap.unep.org/



Conclusion

- **Sharing of experiences** on, and **identification of good practices** for, addressing air pollution
- **Slow but increased understanding** of air pollution through air quality monitoring, assessments, emissions inventories, source apportionment, etc.
- **Policy action** targeting the most emitting sectors i.e., road transport, industrial emissions, residential energy, open burning of waste, agriculture, etc.
- Existence of AQM strategies & Action Plans **coupled with** regulatory frameworks
- **Regional** and **sub-regional cooperation efforts** critical to tackle air pollution: **increased momentum** toward creating and/or strengthening regional agreements, with a focus on science, coordination, planning & implementation

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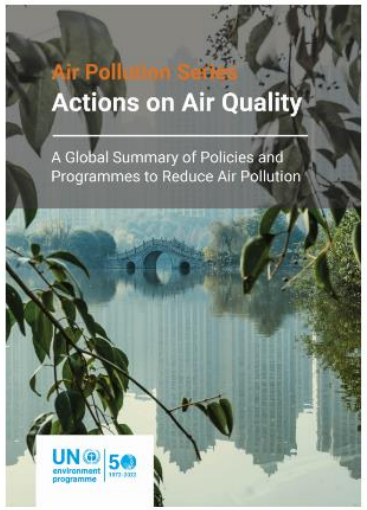
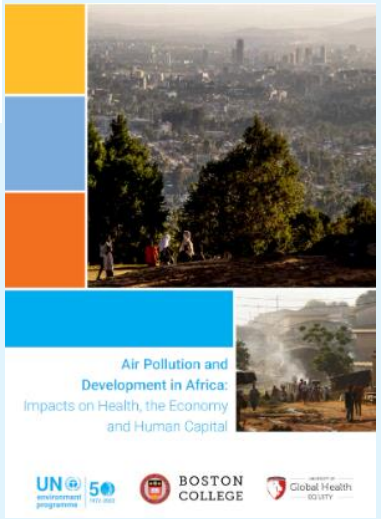
Thank you!





International Day of Clean Air for blue skies

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INTERGOVERNMENTAL NETWORK ON ATMOSPHERIC POLLUTION FOR LATIN AMERICA AND THE CARIBBEAN

1st Taskforce Meeting of the Forum for International Cooperation on Air Pollution
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Background of the Air Pollution LAC Network

XXII Forum of Ministers of Environment of Latin America and the Caribbean

Decision 1: Pollution - IV. Atmospheric pollution

Invite the Secretariat to **re-establish the Network** activity including the update of the focal points as well as its governance structure;

Request the LAC Network to **update the Action Plan** with the support of the Secretariat and other relevant organizations, and to **prepare a resource mobilization strategy**;

Promote the development of **initial information exchange and capacity building actions** on priority related issues, within the framework of the Network

Support efforts by countries to establish low-cost ambient **air quality monitoring networks and air quality pollution control policies and strategies** recognizing the linkages with the work on energy conservation and climate change.

Air Pollution LAC Network

Set up of the Steering Committee

Caribbean

✓ Barbados

Mesoamerica

✓ Honduras

✓ Panama

Andean

✓ Perú — **Chair**

✓ Colombia — **Co-chair**

Southern cone

✓ Uruguay

✓ Chile

23 countries with designated Focal Points

Note: 1 vacant position for Caribbean

Regional Action Plan on Air Quality 2022-2025

Objective

The **general objective** of this Regional Action Plan is to **establish a cooperation framework** to support the strengthening of integrated air quality management in the Latin American and Caribbean, at the national and sub-national levels, as well as to **facilitate and promote actions to reduce air pollution to protect health and the environment**, contribute to the mitigation of climate change and advance in the achievement of the related goals of the 2030 Agenda for Sustainable Development.

Regional Action Plan on Air Quality 2022-2025

Specific objectives

Reinforce the commitments made by the countries of the region to improve air quality and protect human health, with an emphasis on the most vulnerable and unprotected population, maximizing benefits in mitigating climate change and advancing the goals of the 2030 Agenda.

Enable cooperation efforts to address common barriers to be overcome and opportunities for international and regional collaboration.

Promote the design and implementation of comprehensive air quality and sectoral management programs, plans or strategies at the national and sub-national levels in order to reduce emissions from priority sectors in the implementation horizon of 2022 - 2030.

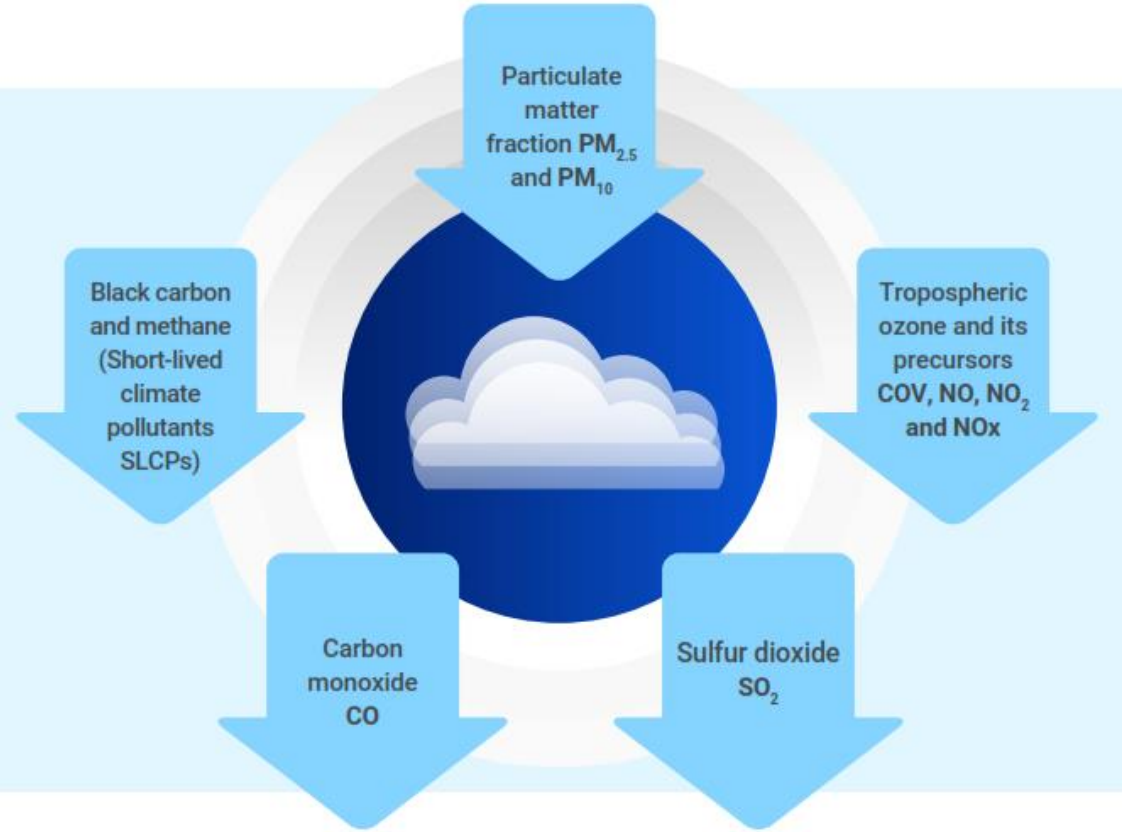
Develop cooperation, training and technical assistance actions based on identified strategic issues as priorities for the region: a) Monitoring and evaluation of air quality, b) identification of emission sources, c) development of policies, plans and sectoral actions for reduction emissions and d) awareness and communication.

Serve as a key instrument to catalyze technical and financial assistance resources for the implementation of cooperation actions of this Plan and the priority areas of action in the region.

Regional Action Plan on Air Quality 2022-2025

Scope

Criteria pollutants and O_3 precursors



THIS REGIONAL ACTION PLAN WILL CONTRIBUTE TO REDUCE AIR POLLUTION THROUGH:

1. Actions for air quality management
2. Actions to reduce emissions from priority sectors:
   - Electricity production and industry
   - Transport
   - Waste management and open burning
   - Cooking and residential heating
   - Agricultural and forestry activities

Regional Action Plan on Air Quality 2022-2025

Action lines

Resource Mobilization Strategy

Objective

Present a general guide for the **identification and the procurement of resources**, the construction of proposals and strategic alliances, as well as to foster the coordination of the Network with the goal of achieving all the expected results from the implementation of the Regional Air Quality Action Plan.

The principles running this RMS are:

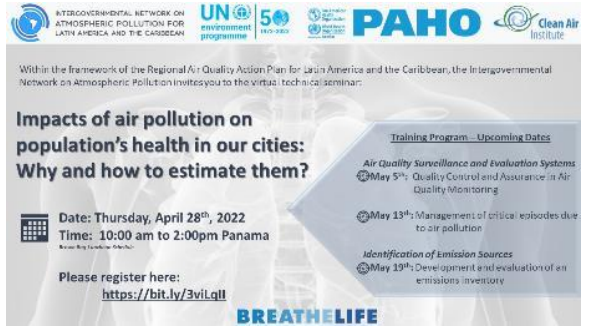
- Transparency
- Resources Optimization
- Cooperation
- Creation of Alliances
- Planning

Actions 2021 and 2022

Capacity building and information exchange activities

Series of webinars

Technical seminars – In depth trainings

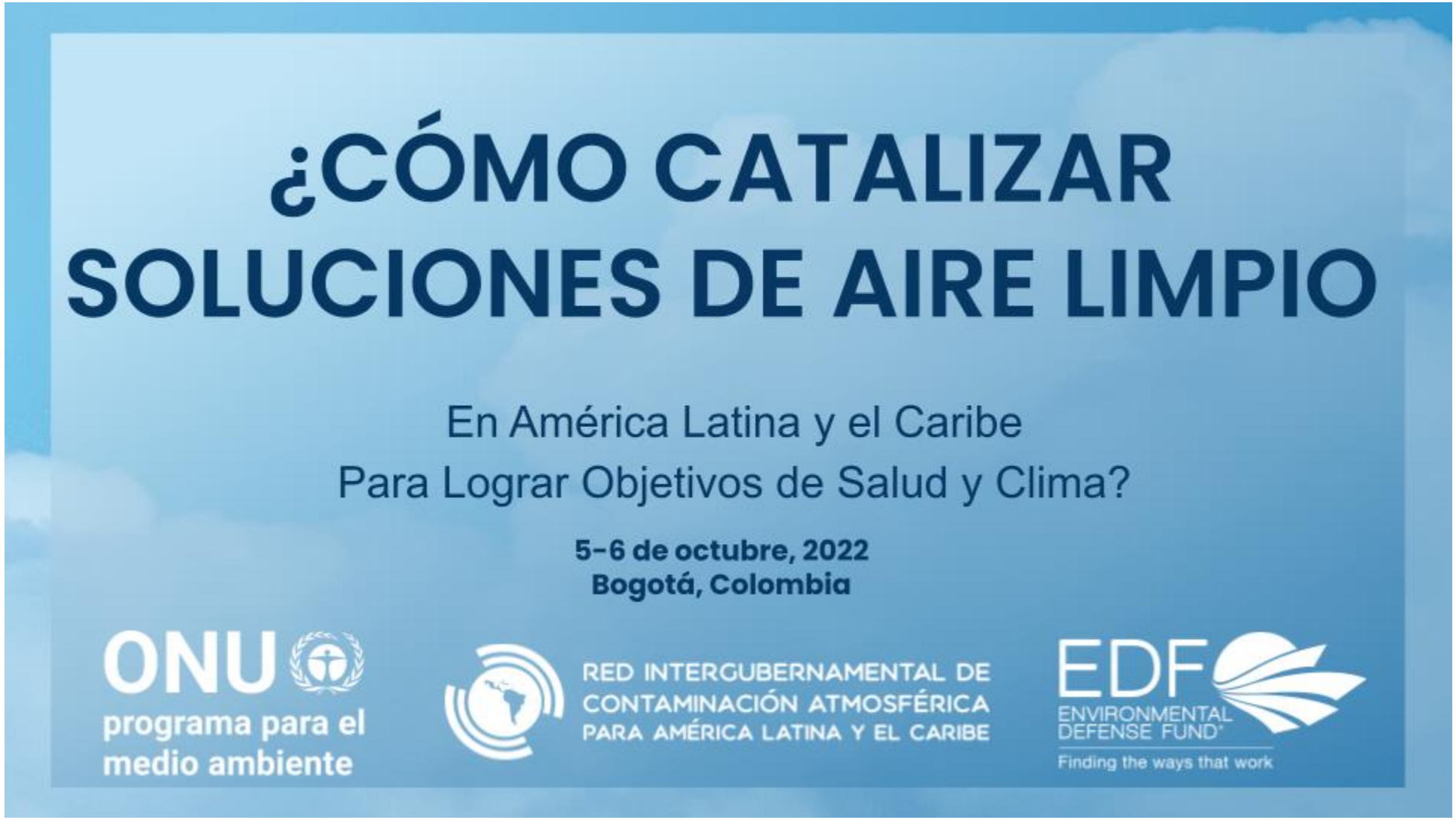


Repository – UNEP websites:

https://www.unep.org/es/events/online-event/seminarios-web-sobre-calidad-del-aire-y-salud-en-america-latina-y-el-caribe

https://www.unep.org/es/events/online-event/acciones-de-capacitacion-e-intercambio-de-informacion-sobre-la-gestion-integral

International event – Bogota, Colombia – 5th and 6th October



Muchas gracias
Thank you

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Ministry of Environment and Sustainable Development of Argentina

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SWEDISH ENVIRONMENTAL PROTECTION AGENCY

Cooperation between TFTEI and TFICAP

TFTEI Co-chairs
Tiziano PIGNATELLI & Jean-Guy BARTAIRE

tiziano.pignatelli@enea.it - *jean-guy.bartaire@citepa.org*

1st Taskforce Meeting of the Forum for International Cooperation on Air Pollution, 11-12 Oct 2022

Premise

In the last 20 years, in line with its mandate, TFTEI has carried out a number of activities concerning development of guidance documents, specific analyses on industrial plants, development of tools for technical analyses, review/revision of the Technical Annexes, in particular with a focus on the EECCA countries.

Most of the work done would be valuable also in countries outside the UN-ECE Area.

On this basis, synergies could be developed with TFICAP with the aim of sharing the technical and scientific heritage of the Air Convention with a larger audience.

Activities for the EECCA Countries

In the last 13 years, the EGTEI/TFTEI participated in the following events in collaboration with the EECCAs and RF:

Joint Workshop to promote the ratification of the Protocols on Heavy Metals, POPs and the Gothenburg Protocol, across the entire UNECE region. ***Saint Petersburg***, ***October 2009 (EGTEI***)

Meeting "Presentation of the activities of EGTEI wituin the LRTAP Convention" – Ministry of Natural Resources and Environment of the Russian Federation – ***Moscow, February 2011 (EGTEI)***

International Air Congress"Atmosphere" ***Saint Petersburg***, ***March 2011 (EGTEI)***

Development of the cooperation within the LRTAP Convention. Saint Petersburg, ***April 2012 (EGTEI)***

Workshop to Promote the ratification of the Protocols under the LRTAP Convention across the entire UNECE Region. TFTEI study on the Apatity Plant (https://tftei.citepa.org/images/files/eecca/EGTEI-report-Apatity-versb.pdf). ***Murmansk, November 2012 (EGTEI)***

Workshop to Promote the Understanding and Imple-mentation of Best Available Techniques (BAT) across the entire UNECE Region with Focus on Countries in the EECCA Region, ***Berlin, April 2016***

Activities for the EECCA Countries

Draft guidelines for estimation and measurement of emissions of volatile organic compounds
https://unece.org/fileadmin/DAM/env/documents/2016/AIR/WGSR/Docs_December/E_ECE_EBAIR_WG5_2016_4.pdf

Meeting of the EECCA Coordinating Group and joint Workshop with the Task Force on Techno-Economic Issues, under the LRTAP Convention, ***Saint Petersburg, October 2016***

Round Table "*Best Available Techniques and their economic effectiveness*", in the frame of the IV Moscow International Chemical Forum. ***Moscow, September, 2016***

Meeting of the EECCA Coordinating Group and joint Workshop with the Task Force on Techno-Economic Issues, under the LRTAP Convention, ***Saint Petersburg***, ***September 2018***

2nd Berlin - Workshop to *Promote the Ratification of Protocols of the UNECE Air Convention with focus on Countries in the EECCA Region* – Support from the UNECE Secretariat, ***Berlin May 2019***
Report at: https://unece.org/fileadmin/DAM/env/documents/2019/AIR/Capacity_Building/BAT_workshop_2019/Report_on_EECCAWorkshop_2019_5.pdf

Workshop on "*Assessment and measurement of emissions of volatile organic compounds* - Integrated environmental permits" - ***Minsk, Belarus***. ***November 2019.***

Activities for the EECCA Countries

Joint EECCA_Coordinating Group - TFTEI Workshop, ***April 2021(on line)***

"Technological Pathway toward the ratification of the Gothenburg Protocol, as amended in 2012". Case Study carried out on a number of EECCA countries. Main conclusions in the Annex II of the GPG Report on the Review of AGP". TFTEI ***September 2022***

In 2010, EGTEI introduced the English-Russian simultaneous interpretation in its annual meetings, to facilitate the participation of the EECCA representatives.

Technical documents developed by TFTEI

In the following, some examples of technical documents developed :

- Code of good practice for wood-burning and small combustion installations
- Guidance document on reduction of emissions from agricultural residue burning
- Background informal document on techniques to reduce emissions from aluminium production.
- Background informal document on techniques to reduce pollutant emissions from cement production and determination of their costs.
- Review on BC and PAH emission reductions induced by PM emission abatement techniques.
- Background informal document on techniques to reduce methane emissions in Europe from landfill gases, the natural gas supply system and biogas facilities.
- Background informal document on maritime shipping emissions, reduction techniques and determination of their costs.

Implement of the collaboration with TFICAP

The following options can be considered to realize, in practice, the collaboraztion with TFICAP:

1. Participation of TFTEI experts in the TFICAP meetings
2. Organization of seminar or webinar on specific subjects (i.e. wood burning in stoves and fireplaces, agricultural residue burning, shipping, estimation of VOC, etc.)
3. Training sessions (i.e. on emission inventory development), in CITEPA or in selected EECCA Countries, with financial support from the UN- ECE Secretariat to the EECCA experts.
4. Translation of existing guidance documents in NON Air Convention Languages (i.e. spanish)
5. Use of the CITEPA worldwide network to expand the action of dissemination to the largest audience.
6. Promoting guidance documents in other international contexts (i.e. UNFCCC)

Conclusions

A large amount of documentation exists, developed by TFTEI in the past, which can be useful for dissemination purposes.

Most of the documentation is available on line, already. Easy to share.

Other «ad hoc» activities can be organized in collaboration with TFICAP, although within the limits of the available resources.

TFTEI Web site : https://tftei.citepa.org

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Task Force on Hemispheric Transport of Air Pollution

TF-HTAP

Capacity building, outreach activities, and international network

Tim Butler, Terry Keating, Rosa Wu, and Jacek Kaminski

TFICAP meeting
Bristol, 11-12 October, 2022

Outline

- TF-HTAP and its mandate
- Key results from TF-HTAP
- International involvement in TF-HTAP
  - Contributions to scientific work of the task force
  - Participation in task force meetings
- Ongoing activities in TF-HTAP

TF HTAP and its mandate: 2004-2010

Mandate from Executive Body (2004):

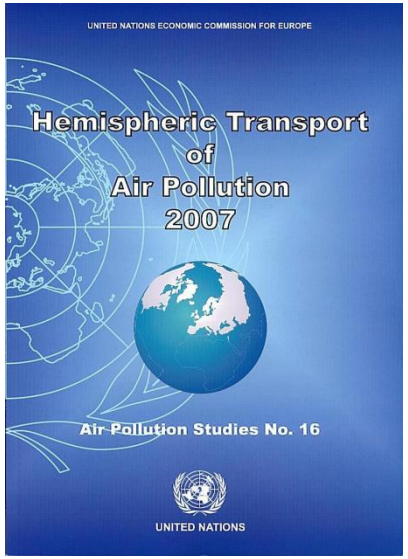
- To plan and conduct the technical work necessary to:
- develop a fuller understanding of the hemispheric transport of air pollution
- estimate the hemispheric transport of specific air pollutants for the use in reviews of protocols to the Convention,
- prepare technical reviews thereon for submission to the Steering Body of EMEP.
- **Chairs are encouraged to invite individuals with relevant expertise and experts from non-Convention countries in the northern hemisphere.**

Mandate from Executive Body (2010):

- Examine the transport of air pollution, including ozone and its precursors and PM and its components (including black carbon), **across the Northern Hemisphere**
- Assess potential emission mitigation options available **inside and outside the UNECE**
- Assess their impacts on regional and global air quality, public health, ecosystems, and near-term climate change
- **In collaboration with other groups both inside and outside the Convention.**

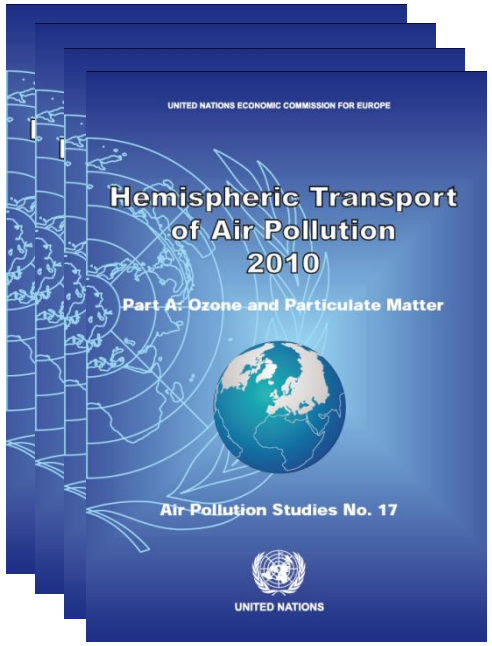
TF HTAP and its mandate: 2018

- The functions of the Task Force are to:
  - (a) Plan and conduct the technical work necessary to develop a fuller understanding of:
    - (i) The **impact** of air pollutant emissions from the Parties on human health, ecosystems and climate change **outside the ECE** (i.e. extraregional impacts);
    - (ii) The impact of air pollutant emissions **sources outside the ECE** on the achievement of the environmental objectives of the Convention and its Protocols (i.e. extraregional influences);
  - (c) Conduct the technical work identified above through coordination, **cooperation and collaboration with**:
    - (i) **Other technical bodies under the Convention**, including the Task Force on Measurements and Modelling, the Task Force on Emission Inventories and Projections, the Task Force on Integrated Assessment Modelling, the Task Force on Techno-economic Issues and the international cooperative programmes of the Working Group on Effects;
    - (ii) **Related international organizations and scientific efforts**, including the Arctic Council, the Arctic Monitoring and Assessment Programme, the United Nations Environment Programme, the World Meteorological Organization, the World Health Organization, the Intergovernmental Panel on Climate Change, the Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants, the Stockholm Convention on Persistent Organic Pollutants, the Minamata Convention on Mercury and other regional agreements and networks.
  - (d) Facilitate the **dissemination of knowledge and methodologies** developed within the Convention **to other regions of the world**, through cooperation with bodies inside and outside the Convention, to help build a common understanding of shared air pollution problems and improve technical capacity to evaluate emission reduction opportunities;



HTAP 2007

(O_3 & PM)



HTAP 2010

(O_3 & PM, Hg, POPs, Q&A)

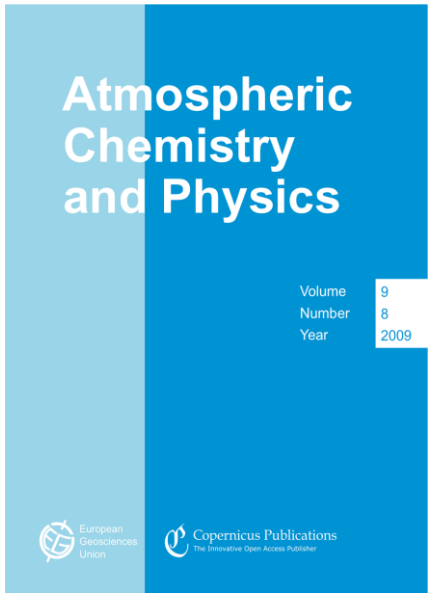
- 826 pages
- 178 contributors

ACP Special Issue (2015-2019)

Global and regional assessment of intercontinental transport of air pollution: results from HTAP, AQMEII and MICS.

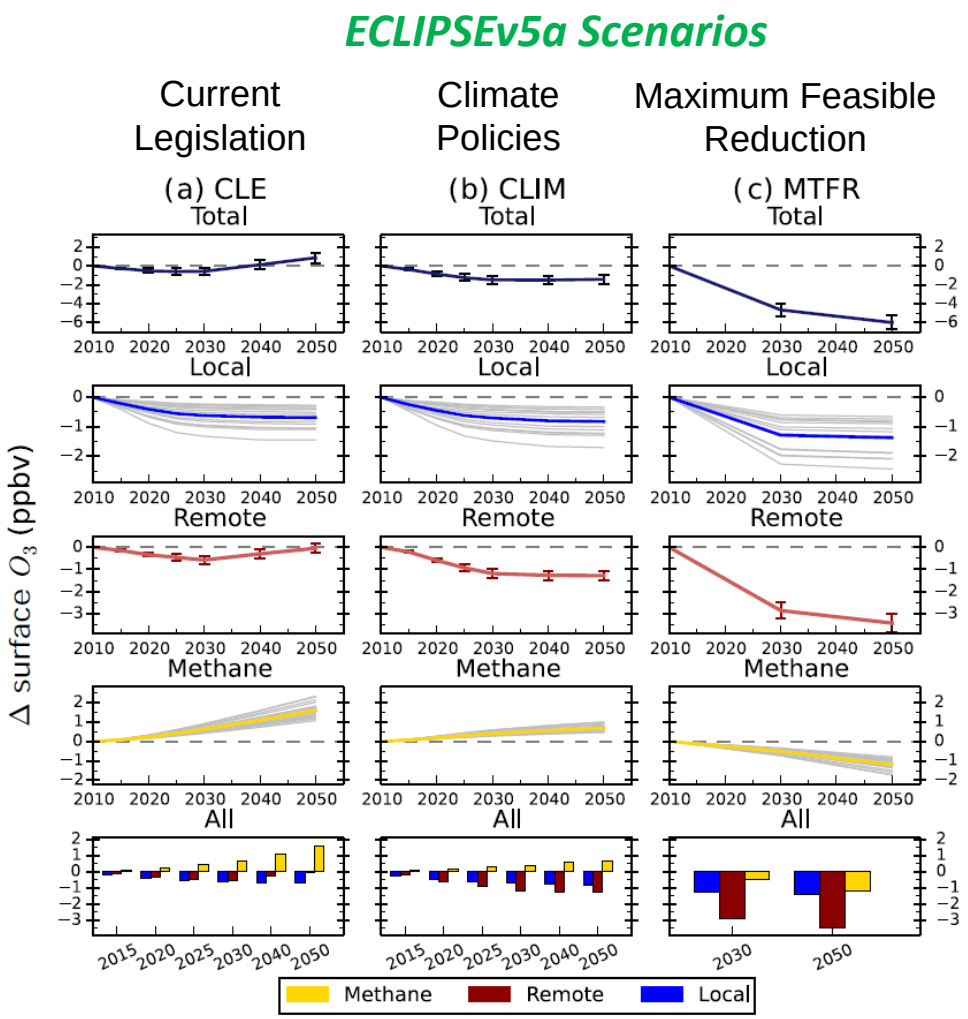
48 peer reviewed articles on O_3 & PM

https://acp.copernicus.org/articles/special_issue390.html



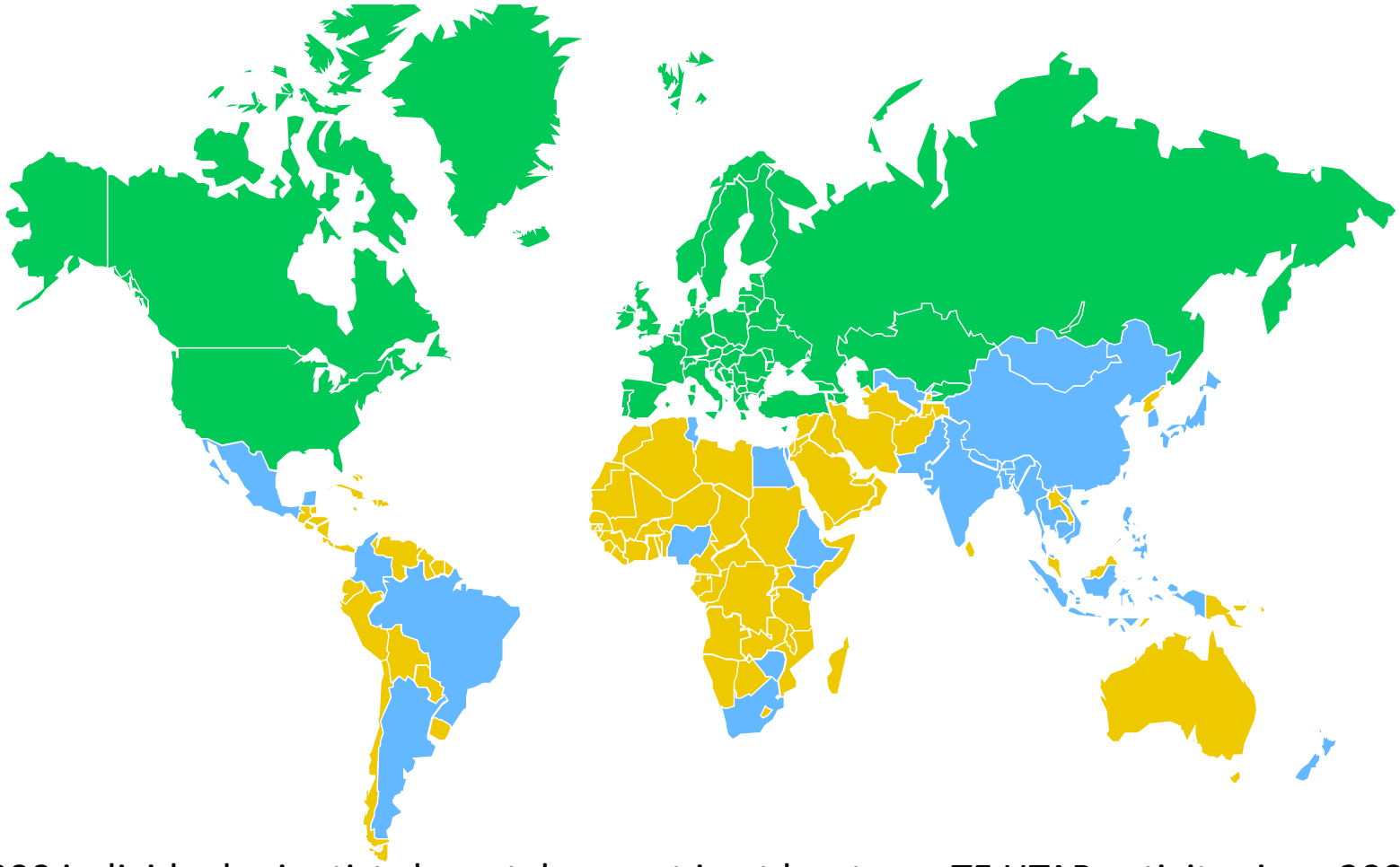
Regional and extra-regional components of surface ozone change in Europe

- CLE: O_3 in Europe will decrease as a result of European and (mainly) North American air pollution legislation. Increasing CH_4 will more than offset other emissions decreases after 2030.
- CLIM: Decreased CH_4 emissions and cobenefits from the energy sector will help to stabilize the O_3 concentrations after 2030.
- MTFR: Enhanced technologies inside and outside Europe will decrease emissions of O_3 precursors, including CH_4, and have strong benefits for air quality.



Turnock, 2018 HTAP2 Special Issue

Parties to the Convention on Long-Range Transboundary Air Pollution
And Other Participants in TF HTAP



- Approximately 1,000 individual scientists have taken part in at least one TF HTAP activity since 2005. Less than 10% have received specific funding support from the lead parties.
- TF HTAP has partnered with WMO, WHO, GEO, AMAP, UNEP Chemicals, IGBP/IGAC, EANET, Malé Declaration, Stockholm POPs Convention, US NAS/NRC, and GAPF

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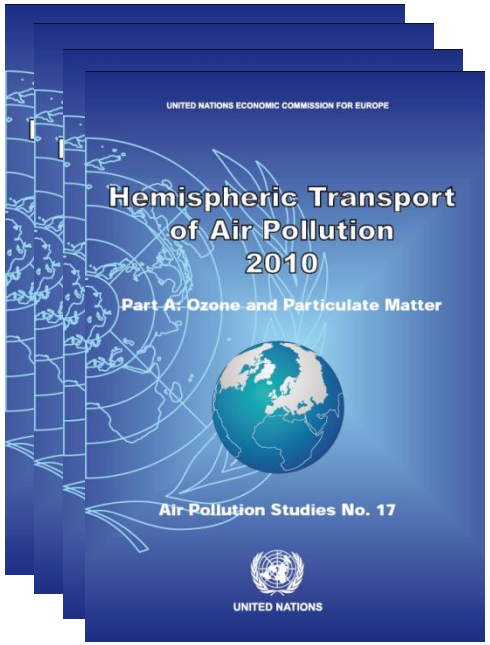

- 15/178 contributors from outside the convention
- About 8%

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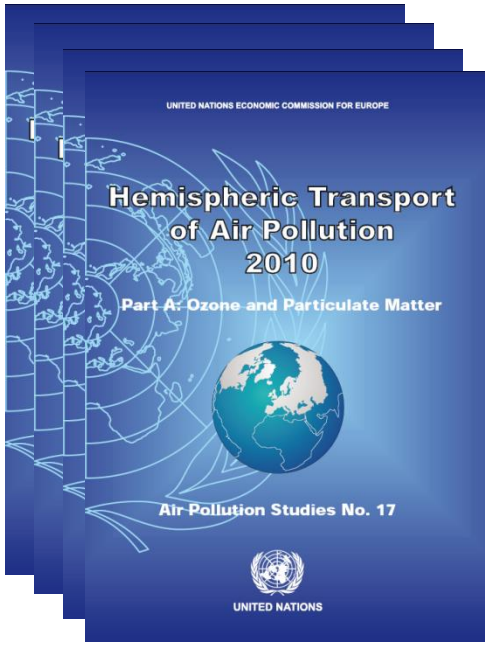
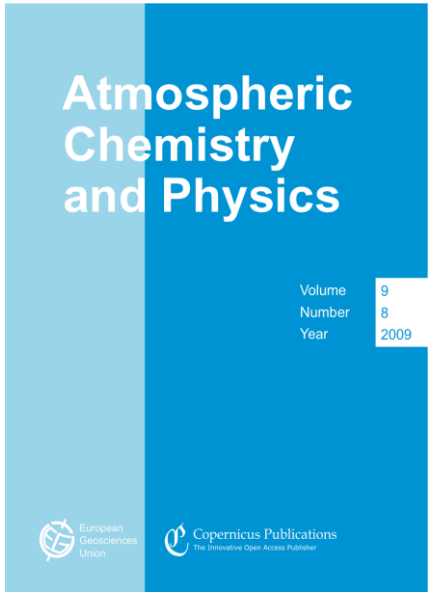
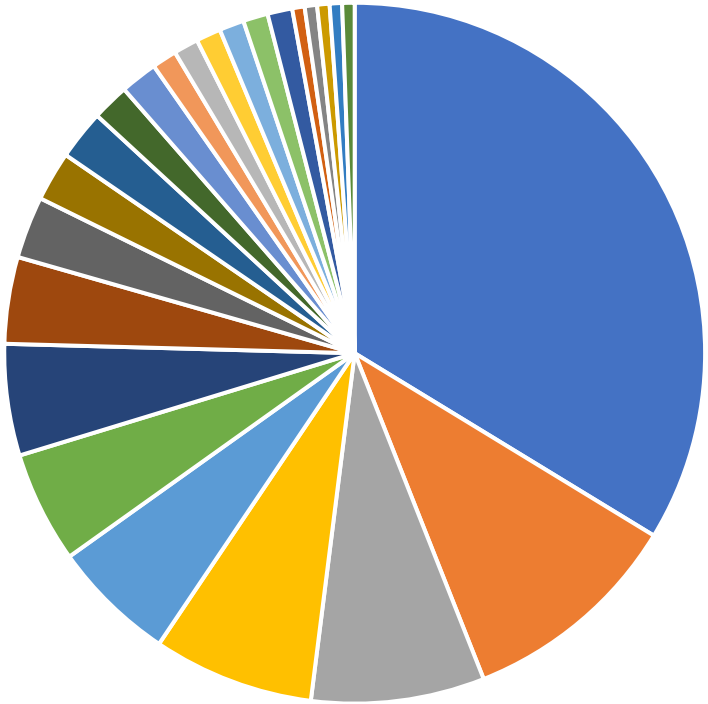


- 15/178 contributors from outside the convention
- About 8%

Contributions to the ACP/AQMEII/MICS special issue (by unique organisation)





ACP Special Issue (2015-2019)

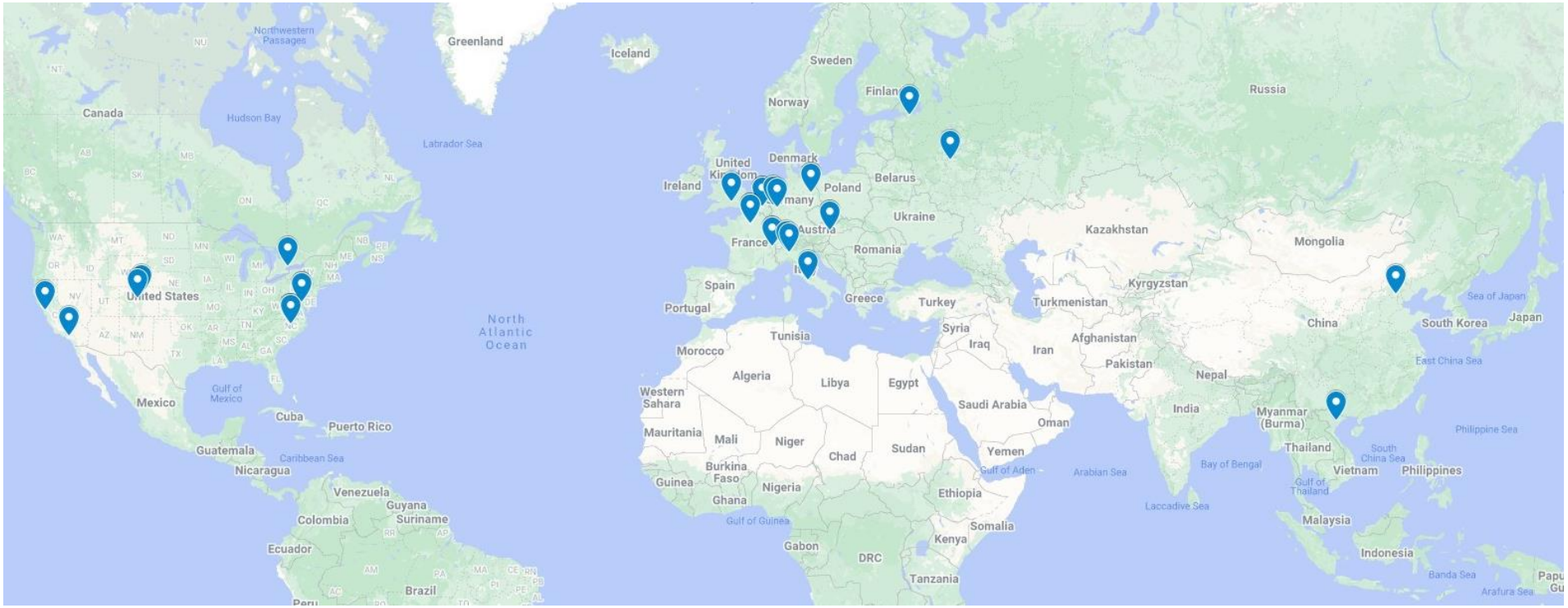
Global and regional assessment of intercontinental transport of air pollution: results from HTAP, AQMEII and MICS.

48 peer reviewed articles on O_3 & PM

~20% participation from outside the convention

https://acp.copernicus.org/articles/special_issue390.html

Prior to 2018, in-person meeting locations were often selected to increase engagement with specific communities or adjacent to other events. We've held two meetings in China, two meetings in Russia, and one meeting in Vietnam.



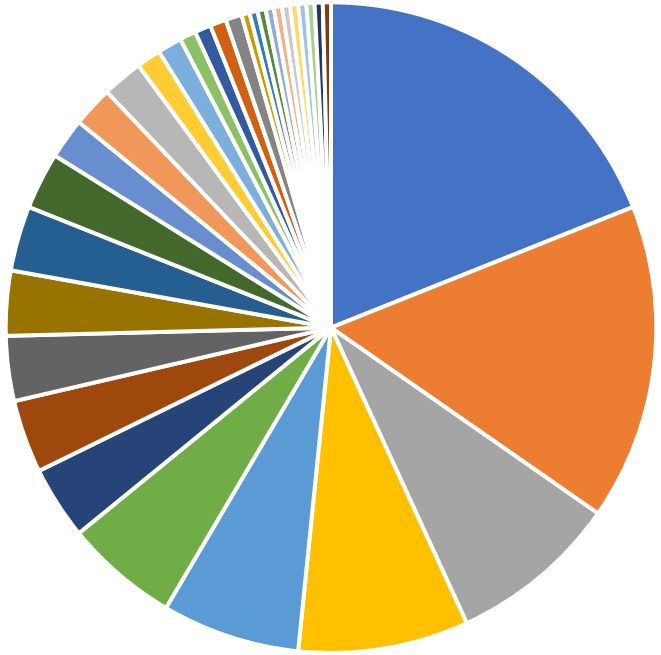
We have been broadcasting our meetings via web conferencing since 2013, and have had online only meetings since 2020.

2022 Task Force meetings (online)

- **17 May: Global PM and ozone precursor and emissions**
  - 136 participants
  - GEIA, CAMS, MICS-Asia
- **18 May: Global Hg emissions and modelling**
  - 66 participants
  - Minamata Convention, AMAP, GEO/GOS4M
- **19 May: Global ozone and PM modelling and scenarios**
  - 85 participants
  - TOAR-II, WMO/MMF-GTAD, CCMI, IGAC/PACES
- **25 May: Global POPs and CECs emissions and modelling**
  - 62 participants
  - AMAP, Stockholm Convention, GESAMP

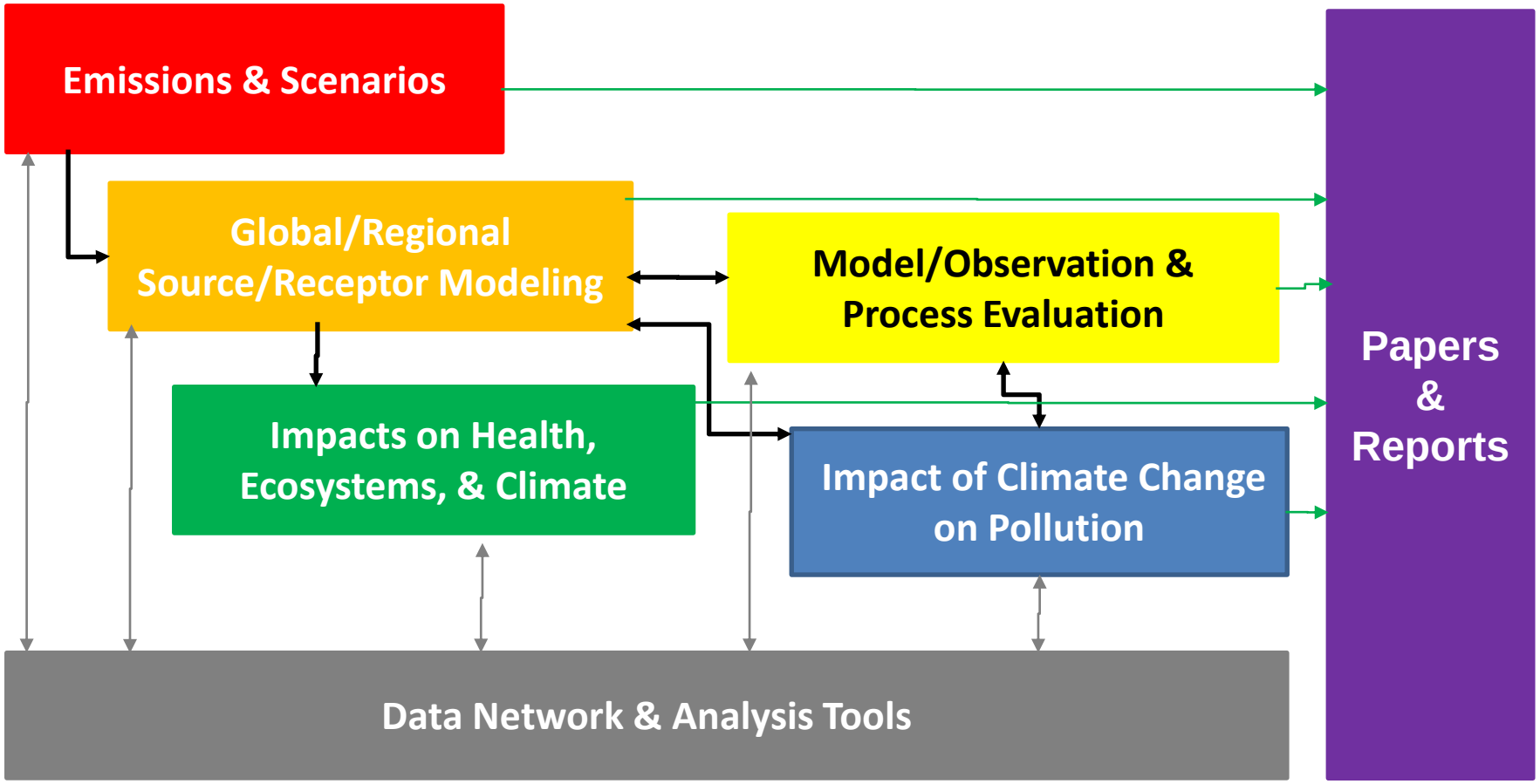
- **248 unique participants from ~30 countries**

Country of unique participants in the 2022 task force meetings

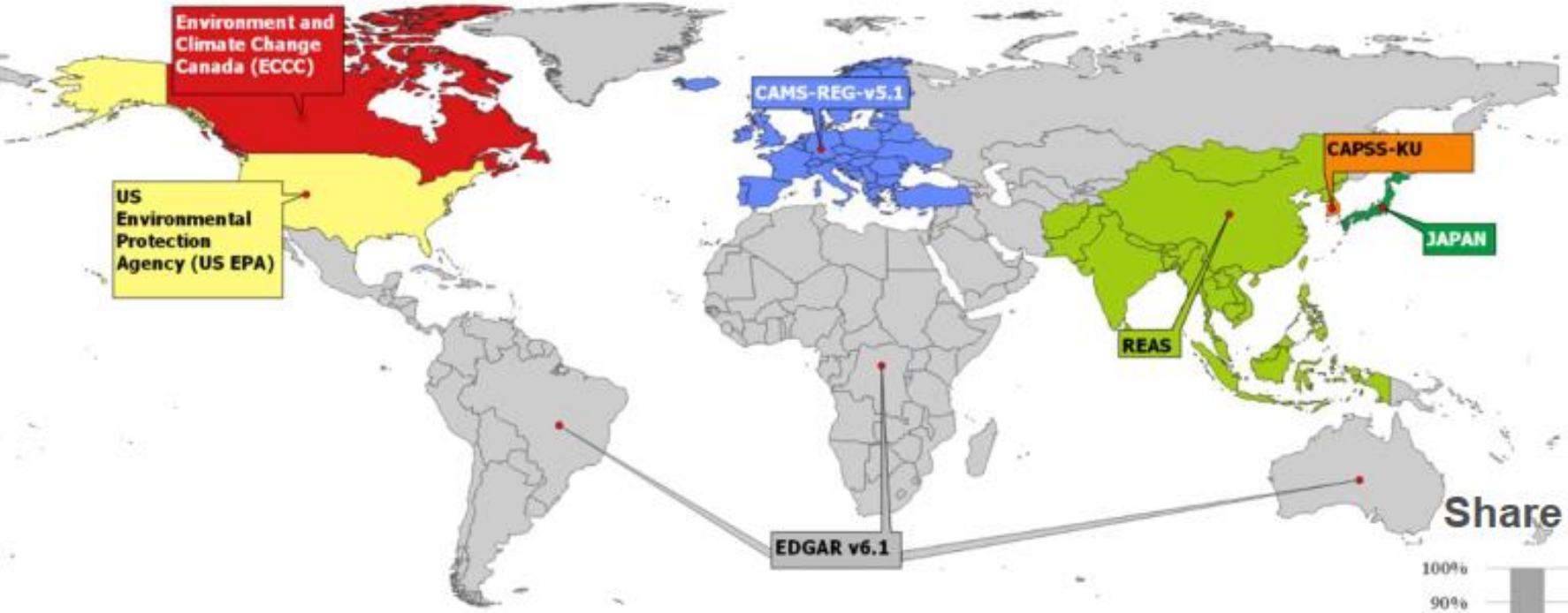


usa, private, de, uk, international, ca, eu, pl, jp, se, fr, cn, nl, no, it, in, ch, co, ar, es, at, pt, dk, tr, cz, il, gr, hk, be, fi, us, cl

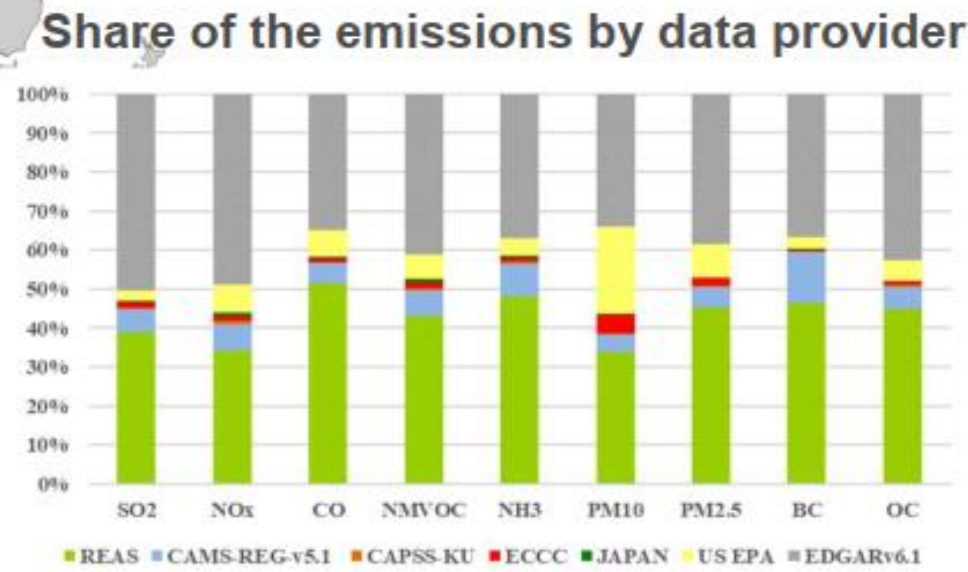
Cooperative Activities Under TF HTAP



Updated HTAPv3 global mosaic emission inventory



- Explicit spatial distribution with gap filling
- Timeseries 2000-2018
- High number of emission sectors (16)
- Dataset released April 2022
- Available at https://edgar.jrc.ec.europa.eu/dataset_htap_v3



Slide from Monica Crippa, JRC

Current international cooperative activities

- Ongoing development of the HTAP mosaic inventory
  - Including updates from current data providers
  - Adding emissions from new regions
- Ozone source apportionment studies
  - Intercontinental impacts of shipping emissions
  - Local responses to changes in global methane
- Mercury trend analysis (in conjunction with Minamata Convention)
  - Currently developing options paper on study design
  - Contributing to the first Effectiveness Evaluation of the Minamata Convention
- Multi-pollutant (PM, O_3, POPs, Hg), multi-impact fire modelling activity
  - Early planning stage, online meeting November 8
  - Hoping for broad participation from the global scientific community

Summary

- TF-HTAP draws on a large network of scientists around the globe
  - Inside and outside the convention
- TF-HTAP facilitates exchange between different international efforts
  - Primarily at the level of scientific experts
- TF-HTAP brings expertise from outside the convention into the convention
  - Creates opportunities for expertise from inside the convention to inform efforts outside the convention.

FICAP
Forum for International Cooperation on Air Pollution

Coffee Break

11th & 12th October 2022
Engineers House
Bristol, UK

UK Government

NATUR VÅRDS VERKET
SWEDISH ENVIRONMENTAL PROTECTION AGENCY

FICAP
Forum for International Cooperation on Air Pollution

Morning Session – Part II

11:30 – 13:00

Task Force Presentations on useful 'building blocks' for regional work on air pollution from :

- Task Force on Integrated Assessment Modelling (TFIAM)
- Task Force on Emissions Inventories and Projection (TFEIP)

Additional International Cooperative Programme Presentation

- ICP – Vegetation

FCAP website/toolkit presentation

11th & 12th October 2022
Engineers House
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NATUR VÅRDS VERKET
SWEDISH ENVIRONMENTAL PROTECTION AGENCY

FICAP

Forum for International Cooperation on Air Pollution

1st Taskforce Meeting of The Forum for International Cooperation on Air Pollution

11th & 12th October 2022
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UK Government

NATUR VÅRDS VERKET

SWEDISH ENVIRONMENTAL PROTECTION AGENCY

TFIAM contributions to regional work on air pollution

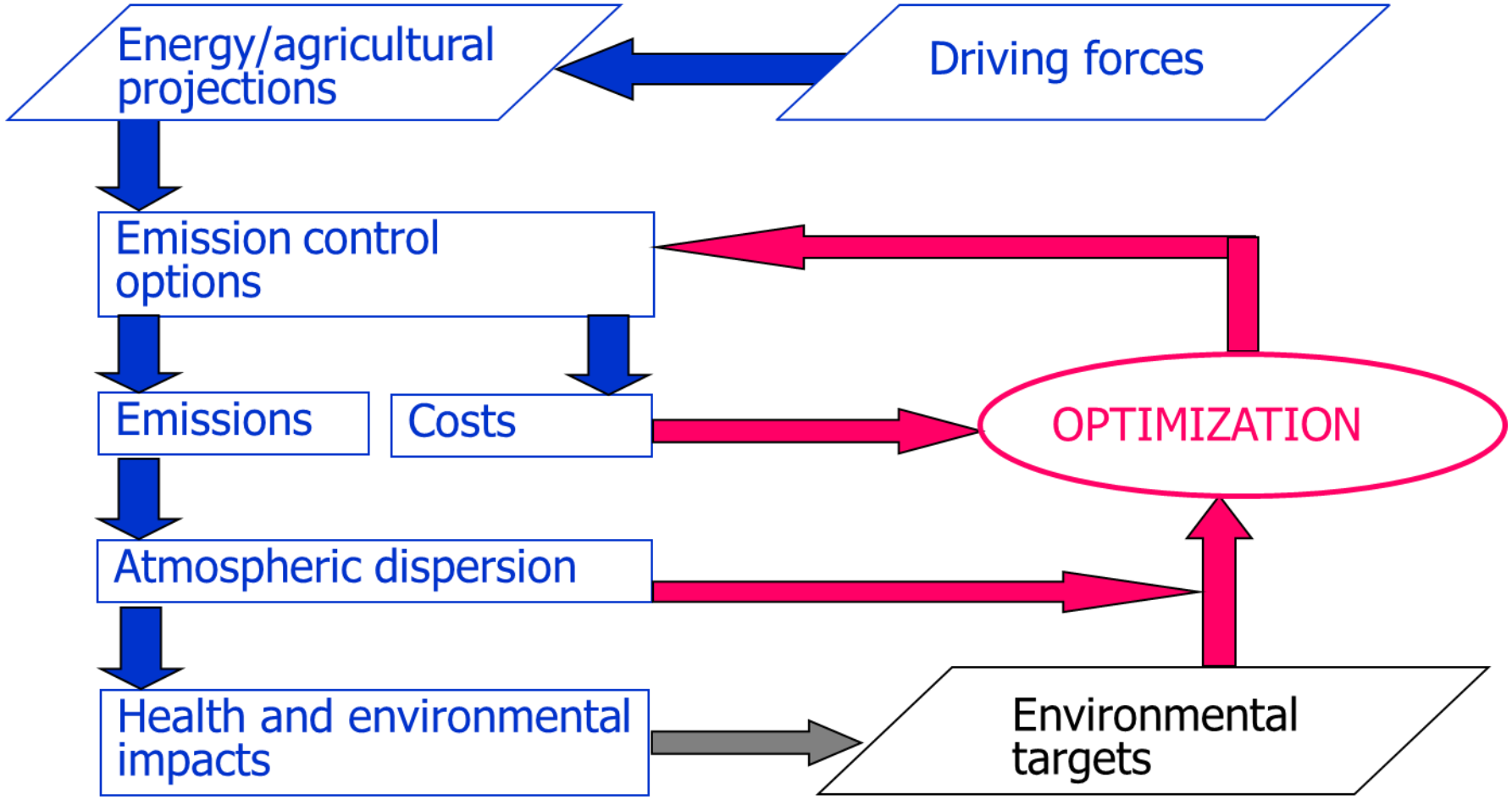
12 October 2022, Stefan Åström co-chair TFIAM

Outline

- Short introduction to Integrated Assessment Modelling
- TFIAM and CIAM regional co-operation activities?
- What role for TFIAM/CIAM to support TFICAP?

Integrated Assessment Modelling

Example: The Greenhouse Gas and Air Pollution Interactions and Synergies (GAINS) model



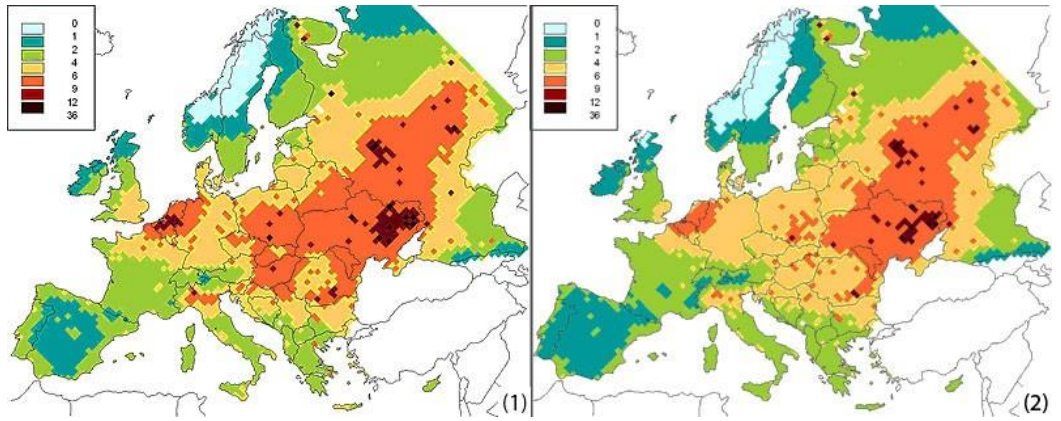
Courtesy of
Zig Klimont, CIAM

Integrated Assessment Modelling

The GAINS model provides a systems perspective to the multi-pollutant/multi-effect nature of air pollution control

	PM (BC, OC)	SO_2	NO_x	VOC	NH_3	CO	CO_2	CH_4	N_2O	HFCs PFCs SF_6
Health impacts: PM (Loss in life expectancy)	√	√	√	√	√					
O_3 (Premature mortality)			√	√		√		√		
Vegetation damage: O_3 (AOT40/fluxes)			√	√		√		√		
Acidification (Excess of critical loads)		√	√		√					
Eutrophication (Excess of critical loads)			√		√					
Climate impacts: Long-term (GWP100)	(√)	(√)	(√)	(√)	(√)	(√)	√	√	√	√
Near-term forcing (in Europe and global mean forcing)	√	√	√	√	√	√	(√)	√	(√)	(√)
Black carbon deposition to the arctic	√									

The GAINS model shows estimated loss in statistical life expectancy due to exposure to anthropogenic PM2.5 in 2020. In (1) GHGs rise by 3%. In (2) GHGs are reduced by 20%, in line with the EU target.



Courtesy of
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Integrated Assessment Modelling

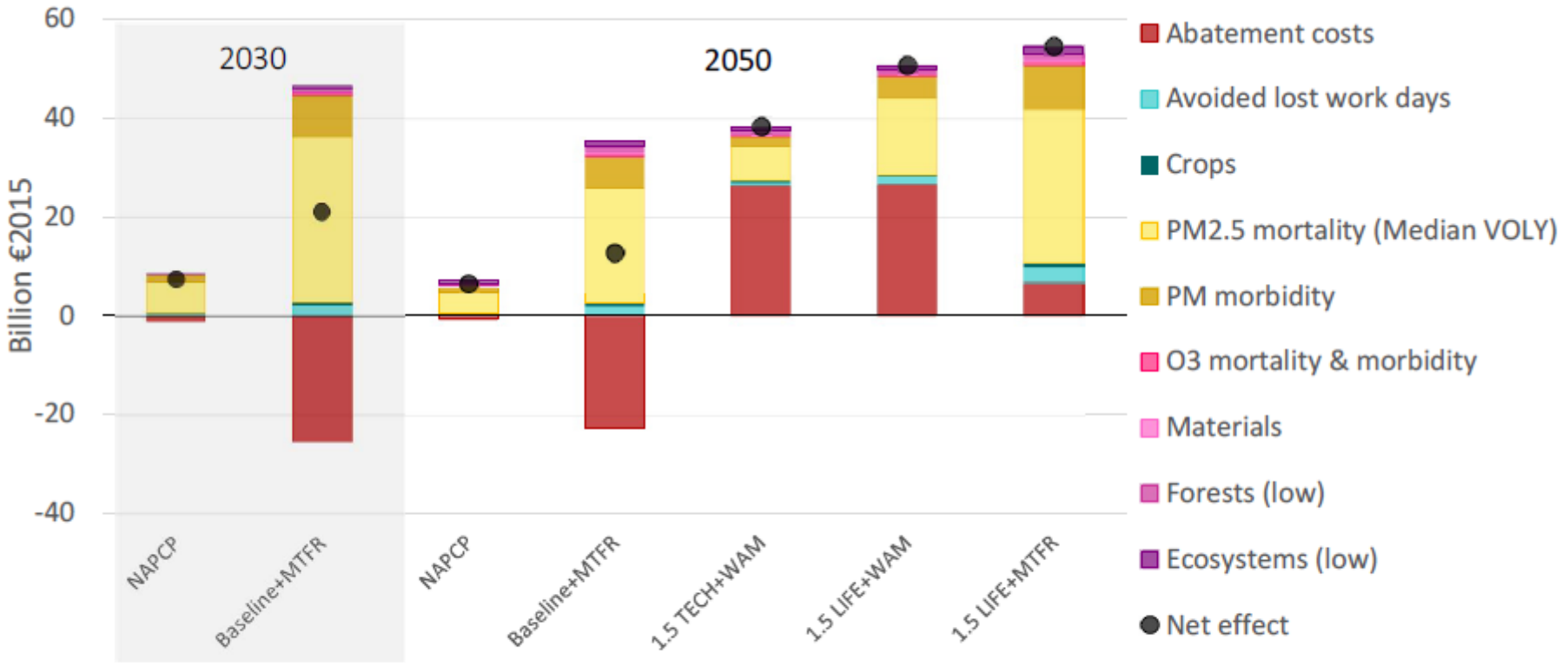


Figure 3.18: Cost-benefit assessment for the EU27, relative to the baseline. Source: GAINS, ALPHA-Riskpoll and JRC-GEM-E3 models.

Source: https://ec.europa.eu/environment/air/pdf/CAO2-MAIN-final-21Dec20.pdf

TFIAM & CIAM regional cooperation activities

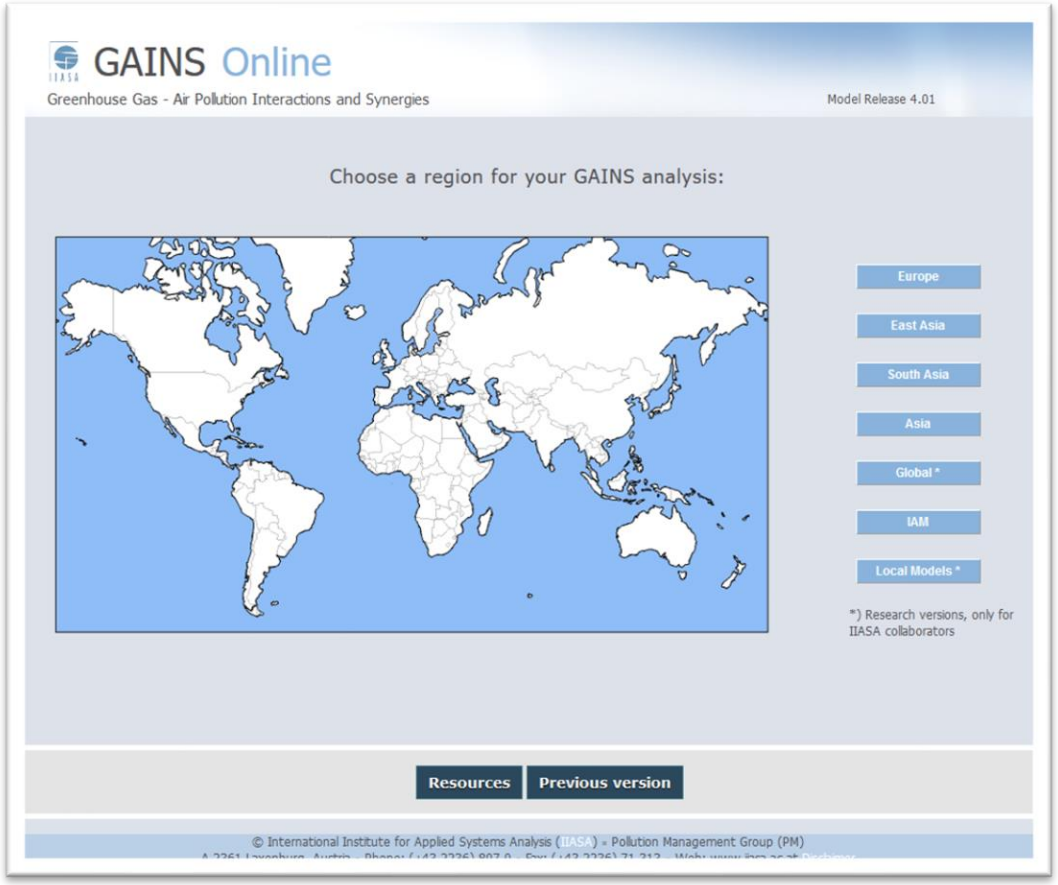
- The work with integrated assessment modelling requires regular training as well as regular communication on data and scenarios,
- GAINS model training activities have been arranged since 2009,
- Bilateral GAINS model data and scenario exchanges are important (currently utilised mainly as part of EU negotiations),

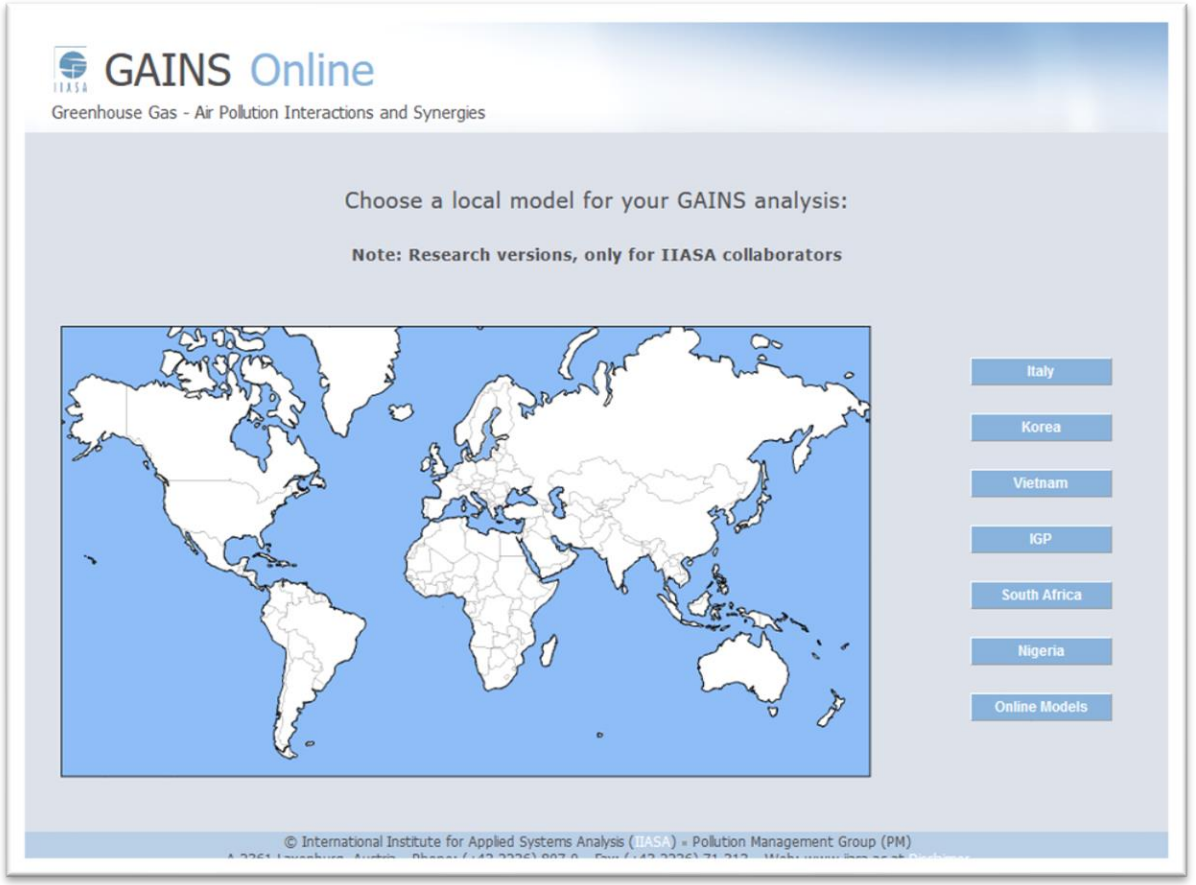
TFIAM & CIAM regional cooperation activities

- GAINS exchanges have been made with experts from for example Belarus, Canada, Russia, West Balkan countries, Moldova, Ukraine (within the UNECE),
- CIAM experts engaged in World Bank pollution management and environmental health projects in China, India, Vietnam etc.
- Exchange of experiences in the Expert Panel on Clean Air in Cities includes experts from Asia and the Americas (for example Mexico and South Korea),

What role for TFIAM/CIAM to support TFICAP

GAINS is a global model with both regional and national resolution





What role for TFIAM/CIAM to support TFICAP?

- Co-operation on model development,
- Co-operation on data and scenario development,
- Information sharing,
- TFIAM is open for suggestions

Thank you for your attention, questions?

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Presentations and conclusions from all earlier TFIAM and EPCAC meetings found at: https://previous.iiasa.ac.at/web/home/research/researchPrograms/air/policy/past_meetings.html

FICAP

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NATUR VÅRDS VERKET

SWEDISH ENVIRONMENTAL PROTECTION AGENCY

Useful ‘building blocks’ for regional work on air pollution: TFEIP

Chris Dore, TFEIP co-chair

European Environment Agency

Department for Environment Food & Rural Affairs

SYKE

Aether

Contents

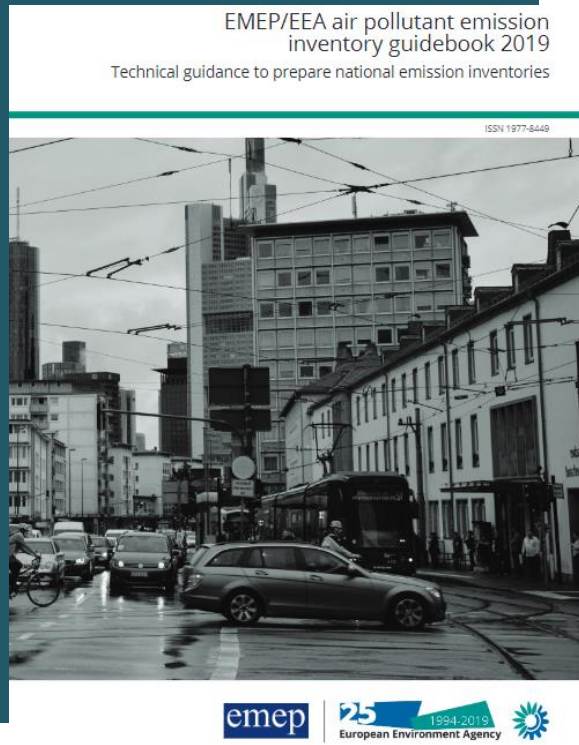
1. Existing Resources
2. Outreach & Capacity Building Activities
3. Common Challenges

1. Existing Resources

1.1 EMEP/EEA Emissions Inventory Guidebook

- **Flexible in methodological detail**
- **Source coverage is designed for EMEP**

- Content - shortcomings for developing countries
  - Brick kilns, Residential heating
  - Road transport, fuel quality
  - Waste burning
  - Windblown dust, unpaved roads

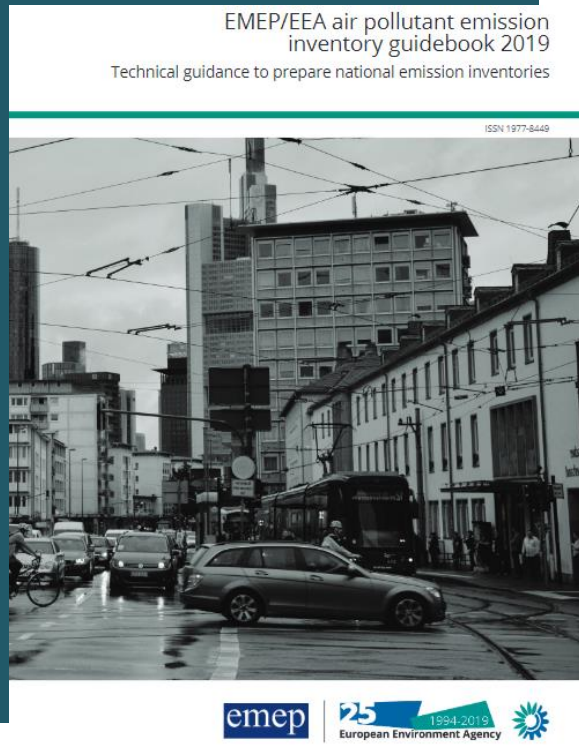


1. Existing Resources

1.1 EMEP/EEA Emissions Inventory Guidebook

- **Flexible in methodological detail**
- **Source coverage is designed for EMEP**

- Available in English & Russian
- No plan to extent the scope of the GB
  - … but supplementary documentation could be compiled (dependent on resources)



1. Existing Resources

1.2 Review tools & processes

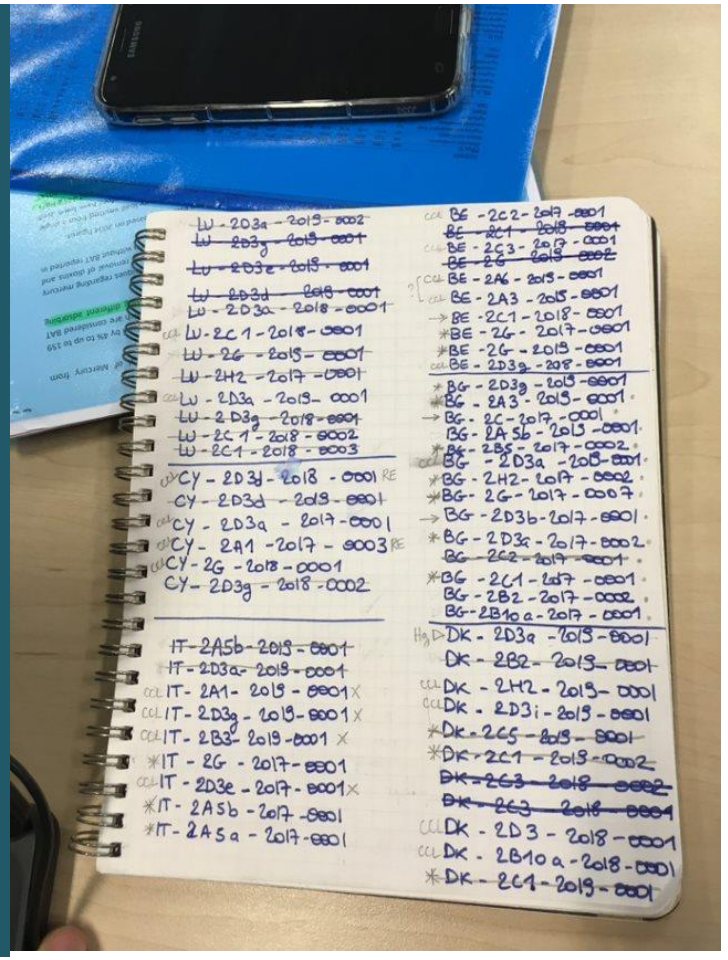
- Comprehensive suite of tools for emissions inventory review
  - Securing & managing review teams
  - Review platforms/communications
  - Approach, scope, focus etc.
  - Reporting findings.

1. Existing Resources

1.3 Emissions inventory technical expertise

- **Technical expertise** accessible through the CLRTAP (consultancies)

- Consultancies with good track record of international capacity building, training etc. (climate change as well as AQ)



2. Outreach & Capacity Building Activities

2.1 Caucuses & Central Asia

CLRTAP Secretariat activities

- Workshops since 2015
- **Uzbekistan, Azerbaijan*,Georgia* (& Republic of Moldova*)**

Many active int. agencies: UNDP, UNEP, World Bank, ADB

- **Kazakhstan*** - a leader in the region
- **Bishkek, Kyrgyzstan*** – city-level AQ management

2. Outreach & Capacity Building Activities

2.2 South East Asia

- No significant CLRTAP emissions inventory outreach??

- Extensive AQ emissions work being undertaken by European consultants (ADB and others):
  - **Thailand, Vietnam, Laos, Indonesia…**

2 Outreach & Capacity Building Activities

2.3 Africa

- No significant CLRTAP emissions inventory outreach??

- Numerous climate change projects… some AQ project work, often at the city scale.

3 Common Challenges

3.1 Institutional arrangements

- Some countries have institutional arrangements that are not very “stable”
  - **Challenging to make long-term investments**
  - **Challenging to move on from aid funded projects**
  - **No formation of national teams with long-term funding**

- Consequently, some countries are not well positioned to **receive** capacity building that will deliver long-term benefits.

Key points

Key Resources

- EMEP/EEA guidebook
- Technical experts
- Review expertise

Challenges

- There can be barriers to delivering long-term benefits

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Thank-you

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SWEDISH ENVIRONMENTAL PROTECTION AGENCY

Seeing is Believing

Outreach and awareness raising
by ICP Vegetation

Felicity Hayes

Overview of the problem

- Ozone reduces crop yields

  particularly in industrialising countries

- Ozone is difficult to detect.

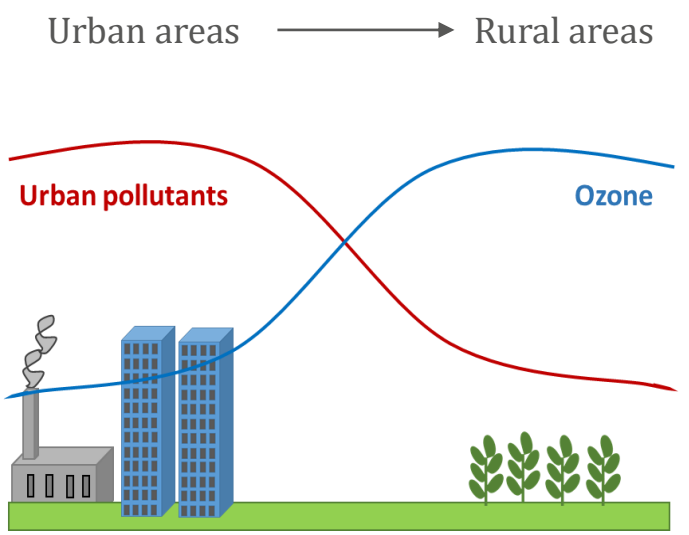
  odourless, colourless

  secondary pollutant, without 'obvious' local sources

- Precursors are increasing rapidly

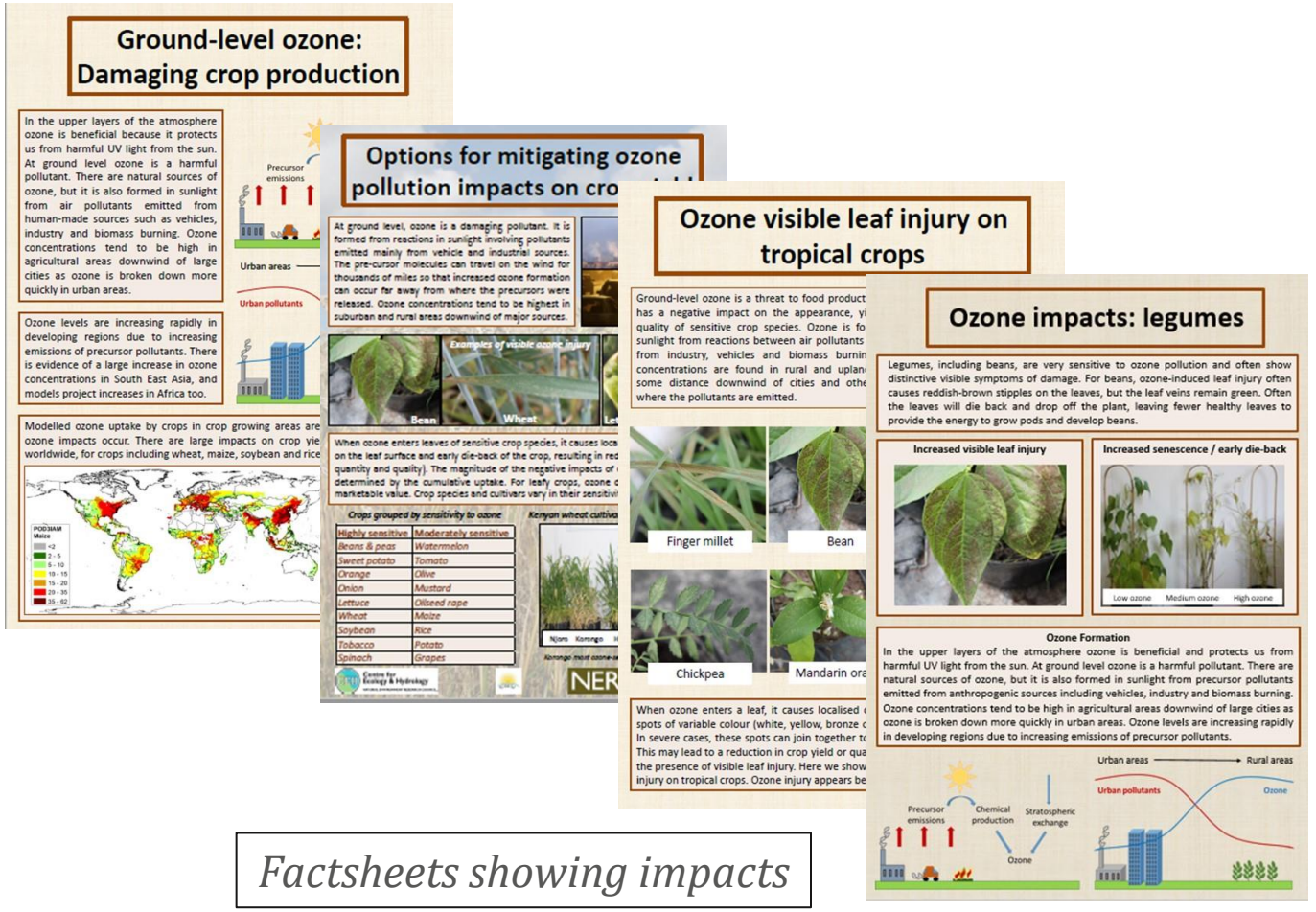
  car exhausts and industrial emissions.

Impacts on crops could affect sustainable development goals – but local growers and policy makers may be unaware of the problem



ICP Vegetation activities and opportunities

- ❑ Information sharing
- ❑ Gathering evidence
- ❑ Future possibilities



Factsheets showing impacts

Outreach – leaflets, youtube, webinars, online course

- ❑ Online course
  https://www.ceh.ac.uk/training/ozone-and-tropical-agriculture
- ❑ Youtube ozone overview
  https://youtu.be/OBEJB-60jQU
- ❑ Webinar on ozone and tropical agriculture. Q&A on ICP Vegetation website
- ❑ Leaflets/brochure on ozone impacts on vegetation
- ❑ Information for Plantwise Knowledgebank on ozone injury symptoms
- ❑ Images of ozone injury on App

Photos of impacts

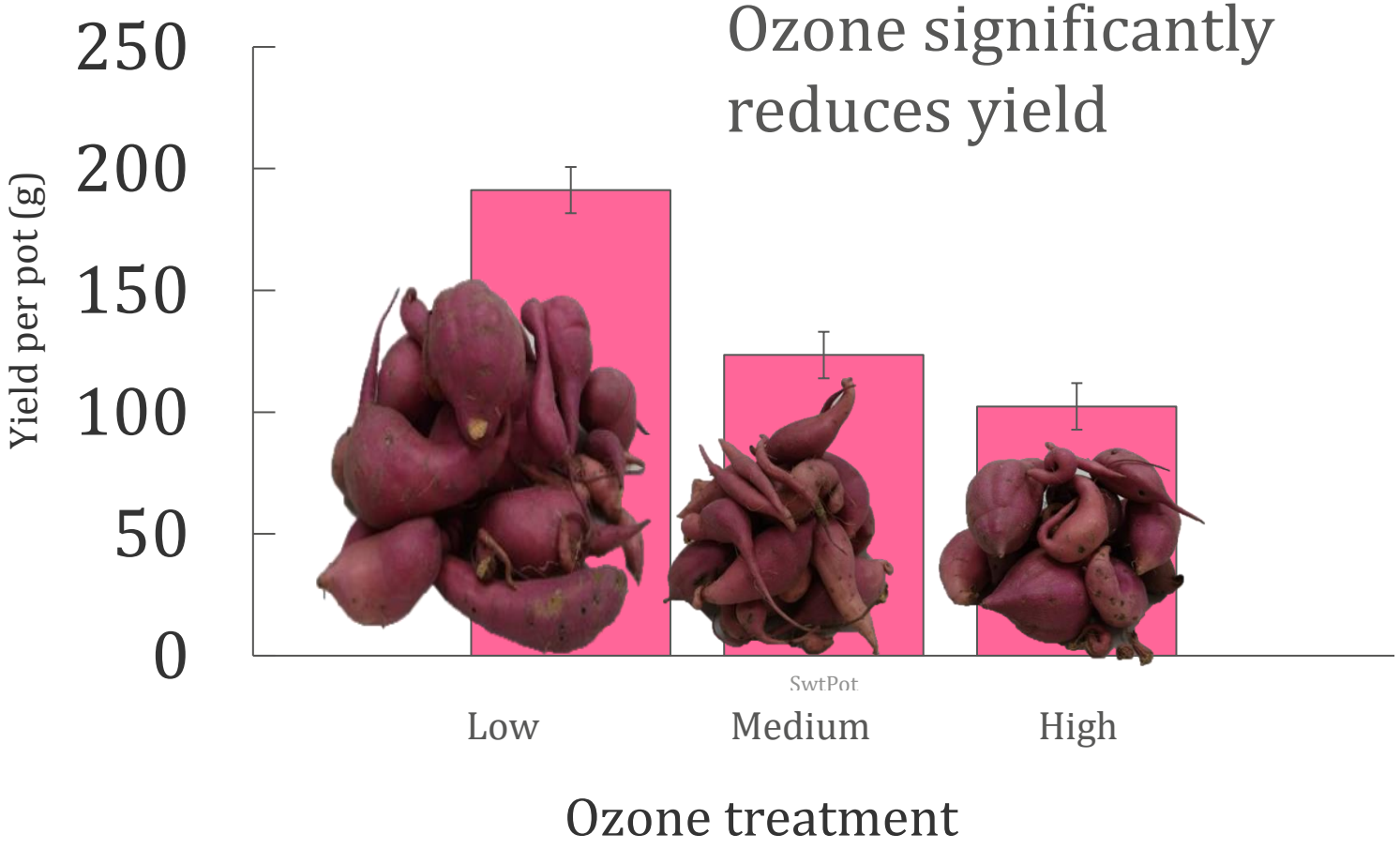
Sweet potato

Low ozone

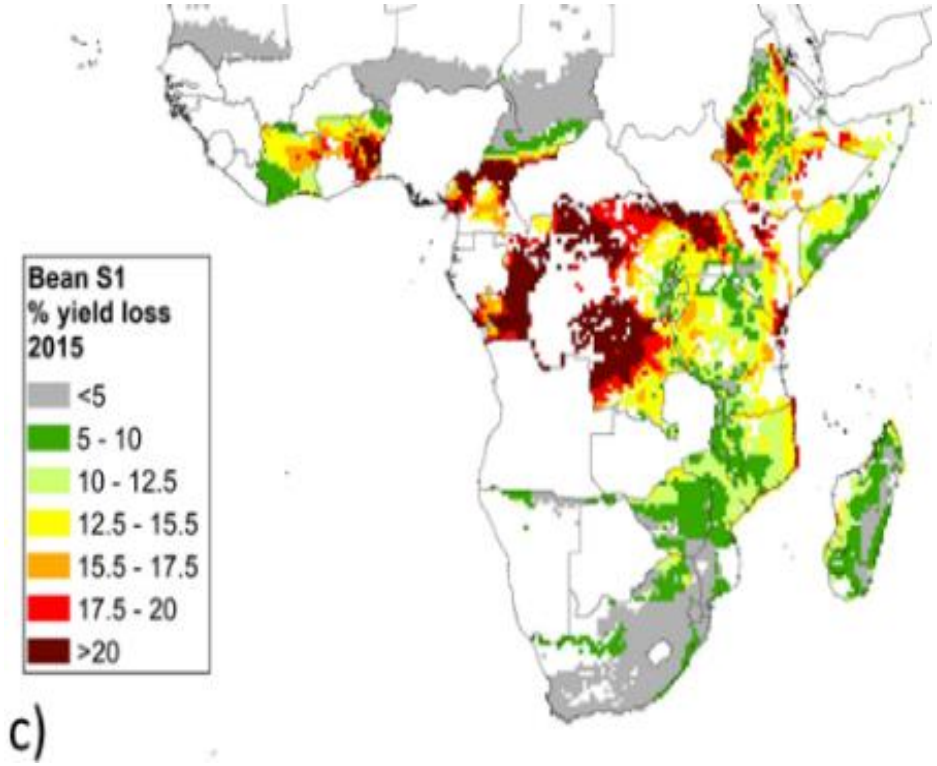
High ozone

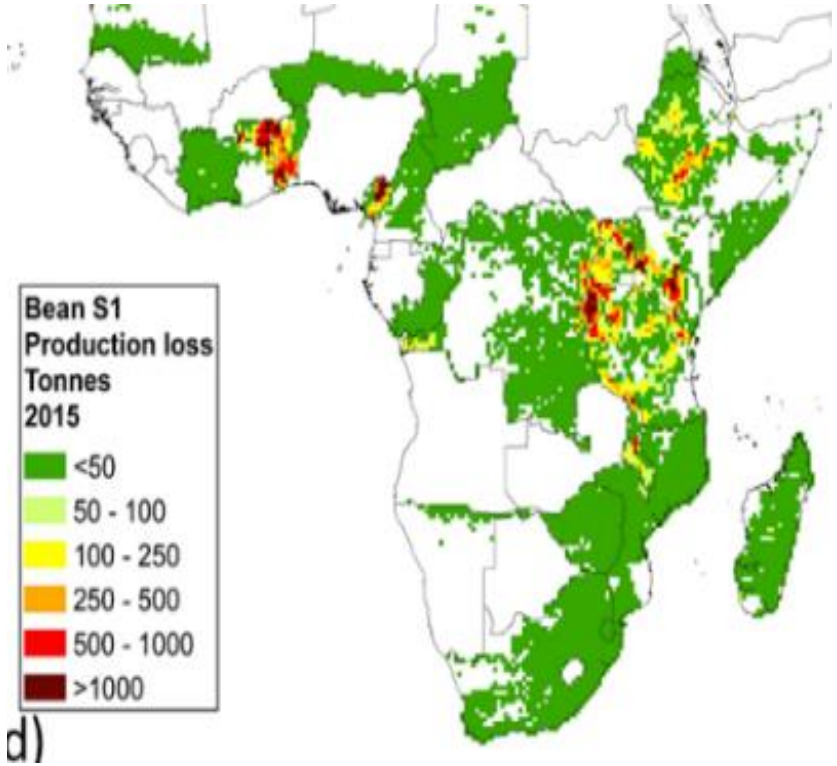
In high ozone treatments new leaves were continuously produced and appeared healthy, but quickly senesced, so that 'effective' leaf area was much reduced

Ozone significantly reduces yield



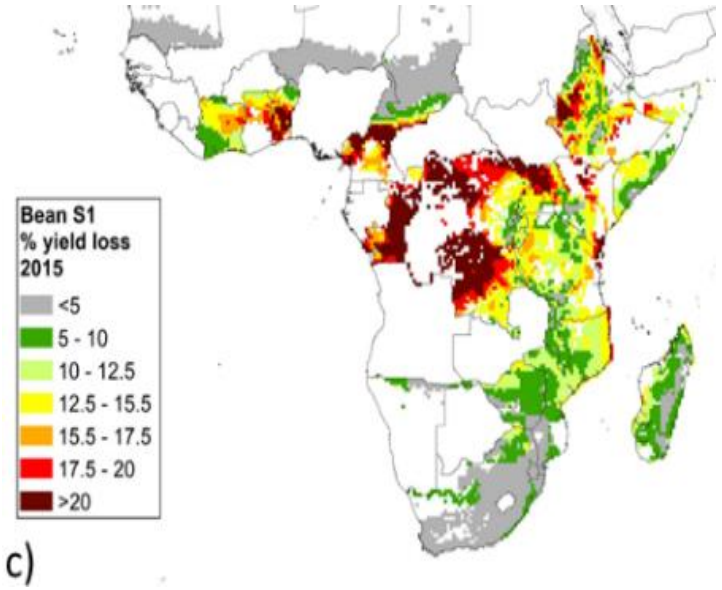
Season one bean yield losses (Malawi = 8%)





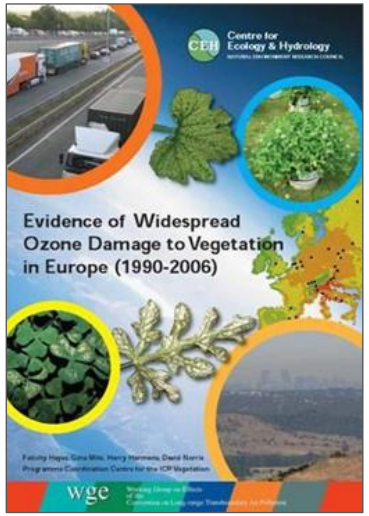
- % yield loss for common beans
- Modelled ozone flux data (for 2015) from EMEP MSC-W
- >20% estimated yield loss for some areas
- Large production loss in East Africa and Benin/Togo/Ghana

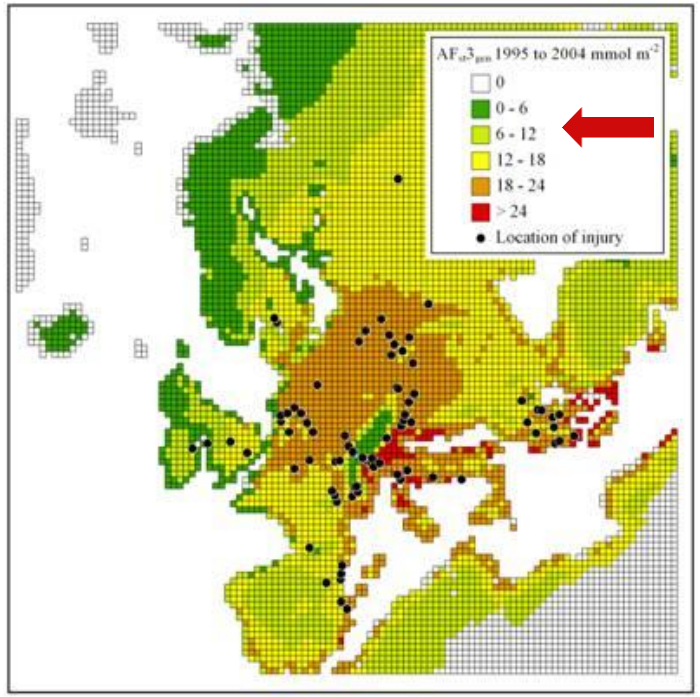
Tips for maps etc.



- ❑ Include crops / vegetation of relevance to the target region
- ❑ Focus on the region so that the detail can be seen
- ❑ Highlight the impact for individual countries – depending on the audience
- ❑ Where possible, highlight additional possibilities (nutritional quality, nitrogen fixation)
- ❑ Useful to highlight that this is model predictions, and the value of getting supporting/verification information from the region

European data has shown good correlations





Ozone flux
Locations of effects on ozone-sensitive vegetation (1995 – 2004)

For Europe we showed that locations of impacts corresponded well to where impacts (based on ozone flux) were predicted

This approach would be possible for other regions

Gathering Evidence

Involving local participants

Anyone who is interested

Targeted based on recommendations from existing contacts

Evidence is useful for us, as well as for the participant

Diffusion tubes installed by local scientists

We distributed diffusion tubes for local scientists to deploy in their local area at very low cost. This engaged scientists, and provided evidence to start/continue a policy dialogue.

UK Centre for Ecology & Hydrology

Biomonitoring experiments

ICP Vegetation biomonitoring using beans

R123 (resistant) and S156 (sensitive) biotypes of *Phaseolus vulgaris* provided by Kent Burkey, USDA

e.g. in 2013 Bean Biomonitoring Experiments were successfully completed in: Algeria, China, Croatia, Italy, Niger, Pakistan, Poland, Ukraine

- Visible leaf injury on S-156 was observed at all sites ield

Italy-Pisa (S-156)

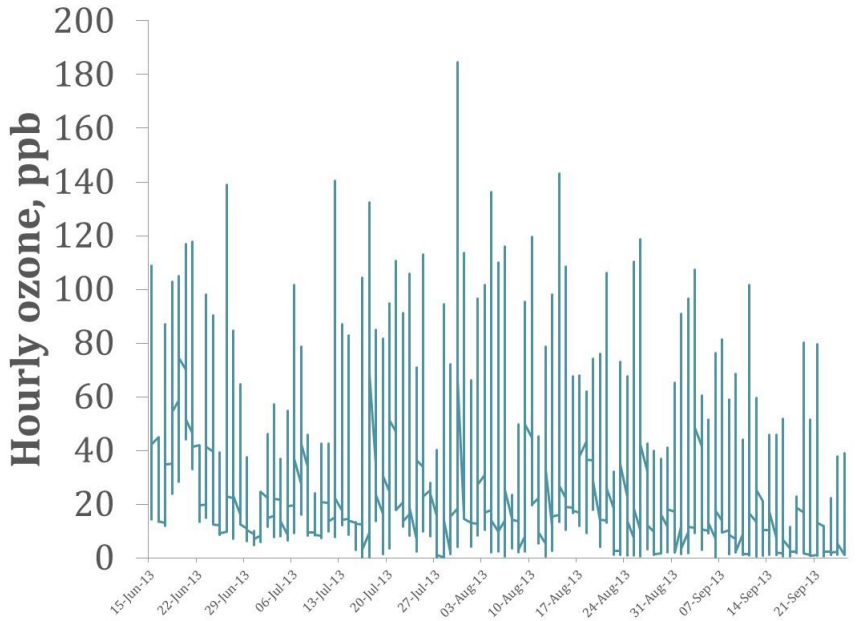
Pakistan-Rawalpindi

Poland-Poznan (S-156)

E.g. 3 sites in China (Zhaozhong Feng et al)

ChangPing (Beijng suburb) - HIGH

RCEES (Institute in Beijng centre) - MEDIUM



Local bean cultivars also show visible leaf injury

Yield benefit from cleaning the air by filtration

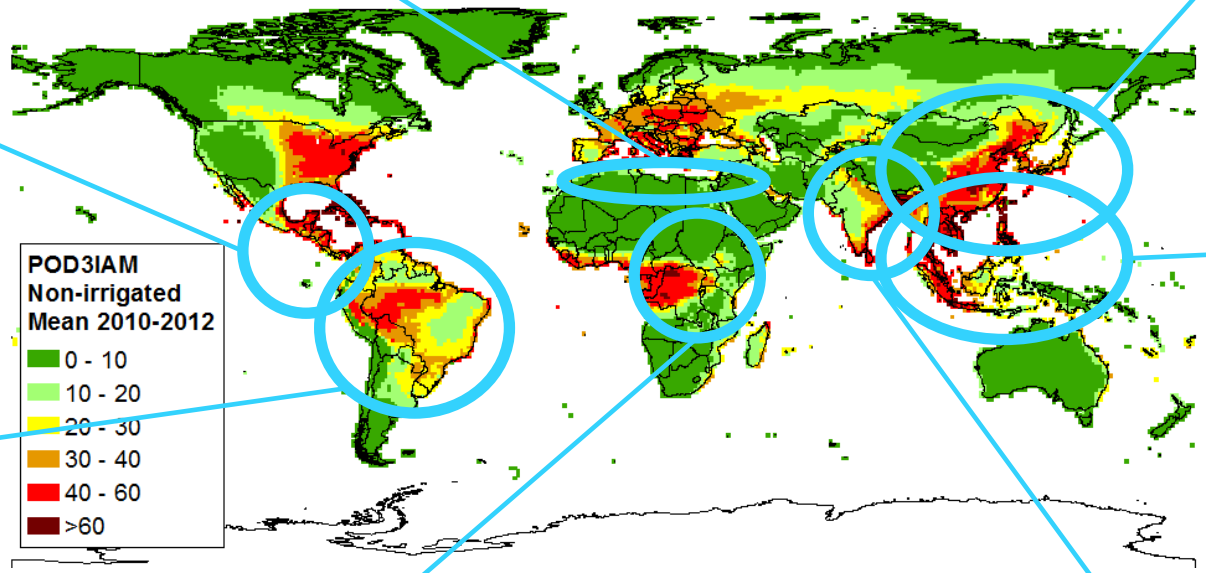
Crop	China (17-65 ppb)	India (33-56 ppb)	Thailand (25 ppb)	Malaysia (32 ppb)	Egypt (25-56 ppb)
Broad bean					39-41%
Cowpea					0-13%
Maize	9%	4-31%			
Mustard		7-19%			
Palak		27%			
Poplar	4%				
Rice	2%	17-22%	6-17%	0-6%	
Soybean	0-9%	30%	16-18%		51%
Wheat	2-25%	13-26%			61%

Data from a range of published studies 2004-2019

Options to strengthen collaborations

- ❑ Ensure there are benefits to collaborators / information recipients
- ❑ Identify something tangible that can be contributed
- ❑ Opportunities to attend and present at Task Force Meetings
- ❑ Include some information provided by new participants in overview presentations

Opportunities to engage scientists/policy makers (ozone)



No ozone measurements

No ozone measurements, thought to be higher

Ozone high, active researchers

Ozone high, little ozone impacts research

C-sequestration could be affected

No ozone measurements, upcoming problem

Ozone high, active researchers, large impacts on crops

Thank you

Any questions

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