Linking science and policy : lessons learnt from the Air Convention

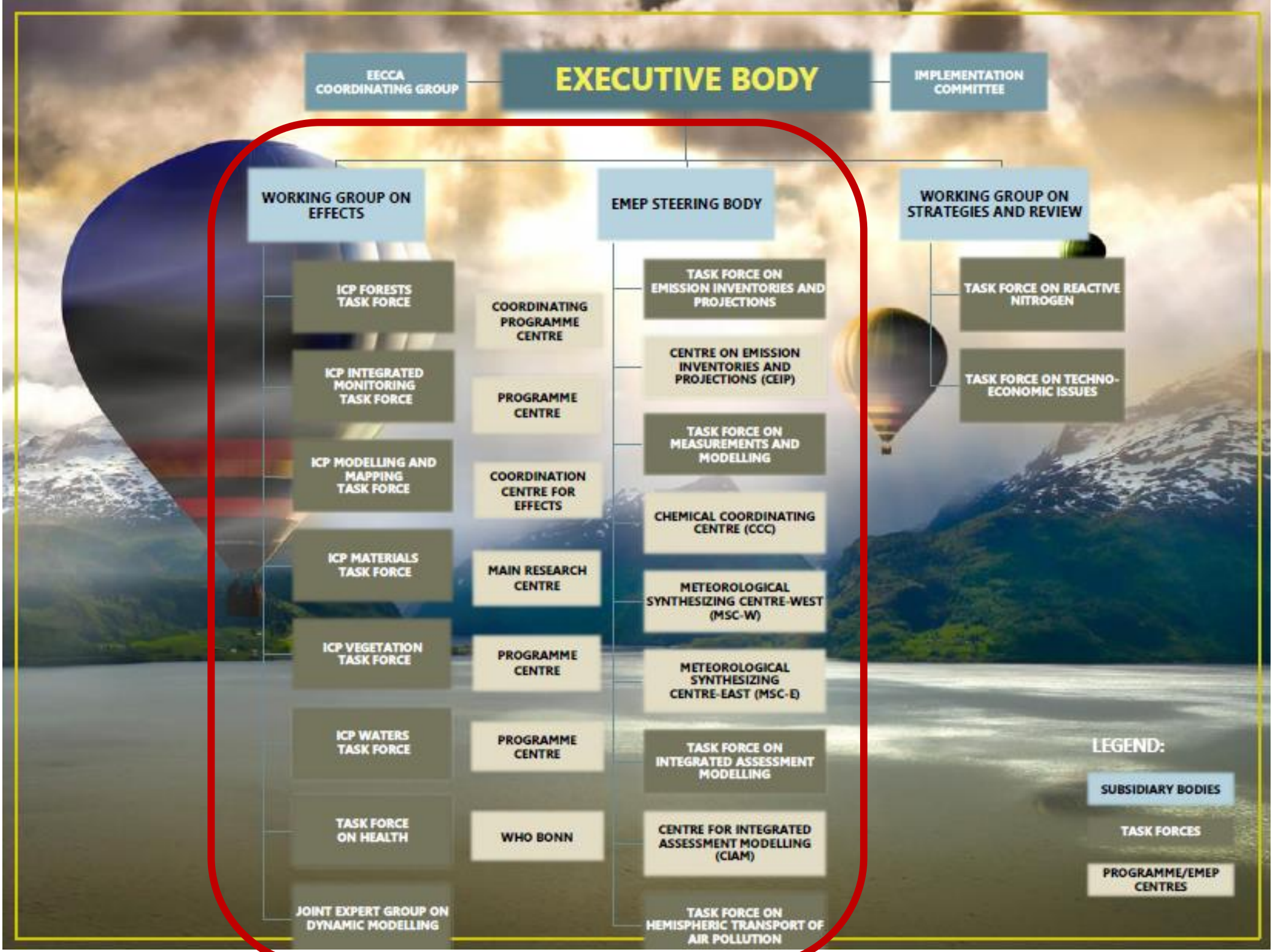
Laurence ROUÏL
Chair of the EMEP Steering Body

LRTAP
Long-range Transboundary Air Pollution

40 years of successful cooperation for clean air

Clean Air 40 YEARS

INERIS
maîtriser le risque
pour un développement durable


EECCA COORDINATING GROUP
EXECUTIVE BODY
IMPLEMENTATION COMMITTEE
WORKING GROUP ON EFFECTS
EMEP STEERING BODY
WORKING GROUP ON STRATEGIES AND REVIEW
ICP FORESTS TASK FORCE
ICP INTEGRATED MONITORING TASK FORCE
ICP MODELLING AND MAPPING TASK FORCE
ICP MATERIALS TASK FORCE
ICP VEGETATION TASK FORCE
ICP WATERS TASK FORCE
TASK FORCE ON HEALTH
JOINT EXPERT GROUP ON DYNAMIC MODELLING
COORDINATING PROGRAMME CENTRE
PROGRAMME CENTRE
COORDINATION CENTRE FOR EFFECTS
MAIN RESEARCH CENTRE
PROGRAMME CENTRE
PROGRAMME CENTRE
WHO BONN
TASK FORCE ON EMISSION INVENTORIES AND PROJECTIONS
CENTRE ON EMISSION INVENTORIES AND PROJECTIONS (CEIP)
TASK FORCE ON MEASUREMENTS AND MODELLING
CHEMICAL COORDINATING CENTRE (CCC)
METEOROLOGICAL SYNTHESIZING CENTRE-WEST (MSC-W)
METEOROLOGICAL SYNTHESIZING CENTRE-EAST (MSC-E)
TASK FORCE ON INTEGRATED ASSESSMENT MODELLING
CENTRE FOR INTEGRATED ASSESSMENT MODELLING (CIAM)
TASK FORCE ON HEMISPHERIC TRANSPORT OF AIR POLLUTION
TASK FORCE ON REACTIVE NITROGEN
TASK FORCE ON TECHNO-ECONOMIC ISSUES
LEGEND:
SUBSIDIARY BODIES
TASK FORCES
PROGRAMME/EMEP CENTRES

A policy framework driven by an « effect approach »

- Actions driven by observed effects of air pollution on human health, vegetation, crops, materials, waters, forests, etc..
  - Implementation of a monitoring strategy for airborne concentrations and deposition
  - International Cooperative programmes (ICPs) dedicated to effects monitoring

- Development of high level modelling tools to simulate past and future trends and the impact of control strategies
  - Emission inventories and projections
  - Simulation of the impacts of future emission reduction strategies
  - Integrated assessment modelling and cost-benefits analysis

- Science supported policy making
  - Strong interaction between the Executive Body which takes the decisions, WGSR which prepares the decisions and EMEP and WGE subsidiary bodies which provide scientific insights

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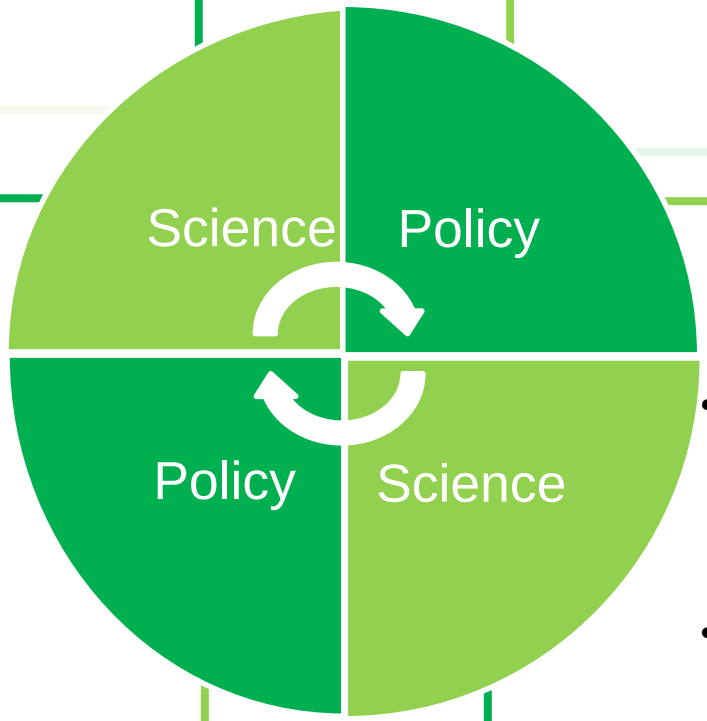
Science-Policy interaction within the CLRTAP

- Evidence of harmful air pollution impacts
- Pollutants to be targeted and metrics
- Physico-chemical processes



- Obligations for monitoring air pollution and its impacts
- Obligation for reducing emissions
- Reporting

- Revision of the legislation
- Development of co-operative frameworks for supporting new developments
- Amendment of the strategy with new scientific questions or priorities

- Use of data reported for analysis of trends and air pollution patterns
- Interpretation of new insights or unexpected results
- Identification of new issues

The starting point : emission inventories

- **A binding instrument of the Convention and a scientific challenge**

- Parties have to report emissions and projections every year. Gridded emission reporting mandatory since 2017 (10km*10km grid resolution)
- CEIP defines the technical framework for reporting activities, processes the data (QA/QC, gap filling…), provides assistance to the Parties
- Basic requirements that drive the process
  - Comparability : common methodology, emission factors..
  - Transparency: data and assumptions documented, expert reviews
  - Accuracy and Completeness: gaps avoided and best estimates
- Publication of the ***EMEP/EEA emission inventory guidebook*** which is the reference document
- Stringent review process which involves experts from all the Parties

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CEIP : the EMEP Centre on Emission Inventories and projections

Convention on Long-range Transboundary Air Pollution
emep Co - operative programme for monitoring and evaluation of the long-range transmissions of air pollutants in Europe

CEIP umweltbundesamt

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- CEIP
- CEIP Reports
- UNECE, CLRTAP, EMEP, TFEIP, AC
- Countries
- Reporting Instructions
- Check your inventory (RepDab)
- Status of reporting
- WebDab (Emission database)
- Interactive data viewers
- Review of Inventories
- Review results
- Amended GP
- Gothenburg protocol
- Adjustments under the Gothenburg protocol (GP)
- The new EMEP grid

> Home

Centre on Emission Inventories and Projections

CEIP **Learn more**
About the Centre on Emission Inventories and Projections

CEIP Reports
Reports of the Centre on Emission Inventories and Projections

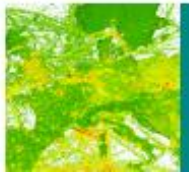
Reporting Guidelines
Learn more about what and how to report

How to use RepDab
Check completeness and consistency of your inventory

Submission overview
Check the emission reporting status of Parties to the CLRTAP

EMEP database (WebDab)
Get emission data

Review Process
Learn more about the review process and review results



Gridding
Spatial resolution of reported emissions -> EMEP grid

NEWS

Joint CEIP/MSC-E technical report on emission inventory improvement for **HMs modeling** [PDF, 2.0MB]

Joint CEIP/MSC-E technical report on emission inventory improvement for **POPs modeling** [PDF, 4.3MB]

2014 Revised reporting guidelines

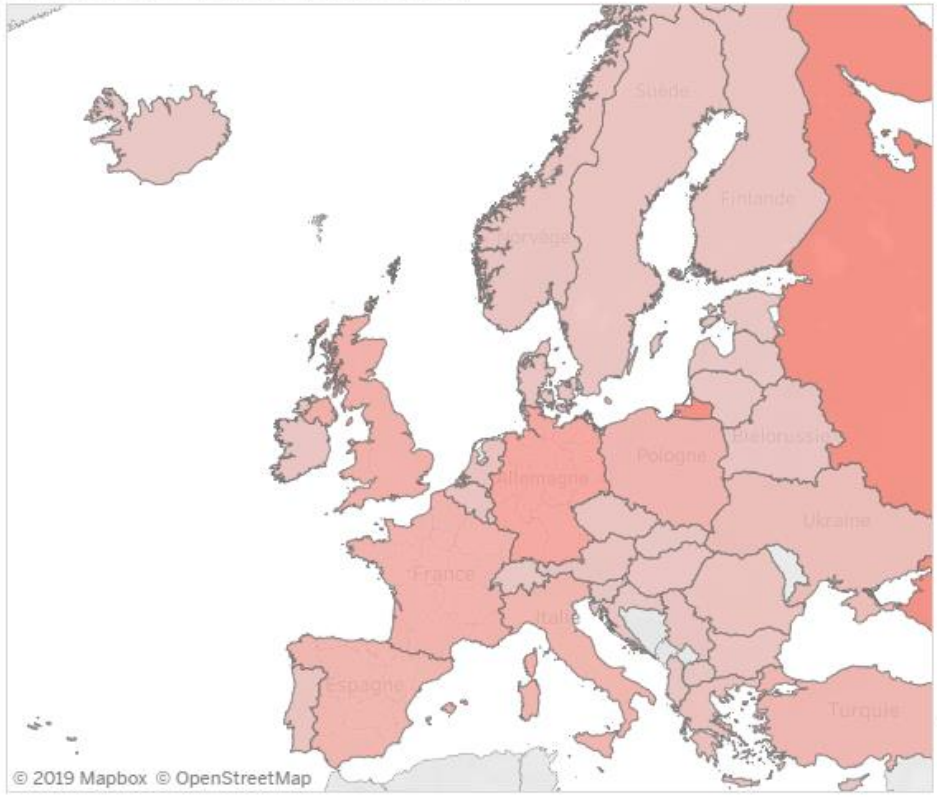
EB 2012 Decisions on Gothenburg Protocol

Information about the new EMEP grid

Glossary

CEIP umweltbundesamt

Emissions of NO_x (as NO_2) (kilotonnes)



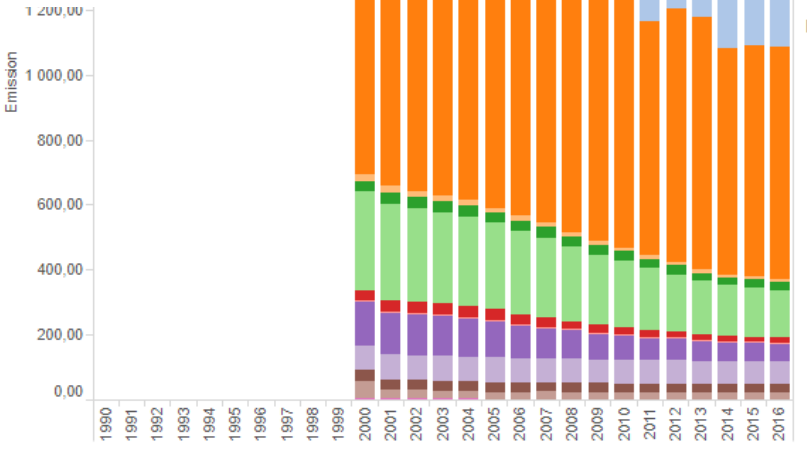
Year
2016

Pollutant
NO_x (as NO_2)

GNFR Sector
- (Tout)
- A_PublicPower
- B_Industry
- C_OtherStationaryComb
- D_Fugitive
- E_Solvents
- F_RoadTransport
- G_Shipping
- H_Aviation
- I_Offroad
- J_Waste
- K_AgriLivestock
- L_AgriOther
- M_Other
- Sectors not specified (onl…

Emissions (regular scale)
4,80 — 10153,00

.₅ (kilotonnes), European Union (EU 28)



Country
European Union (EU 28)

Pollutant
PM₂.₅

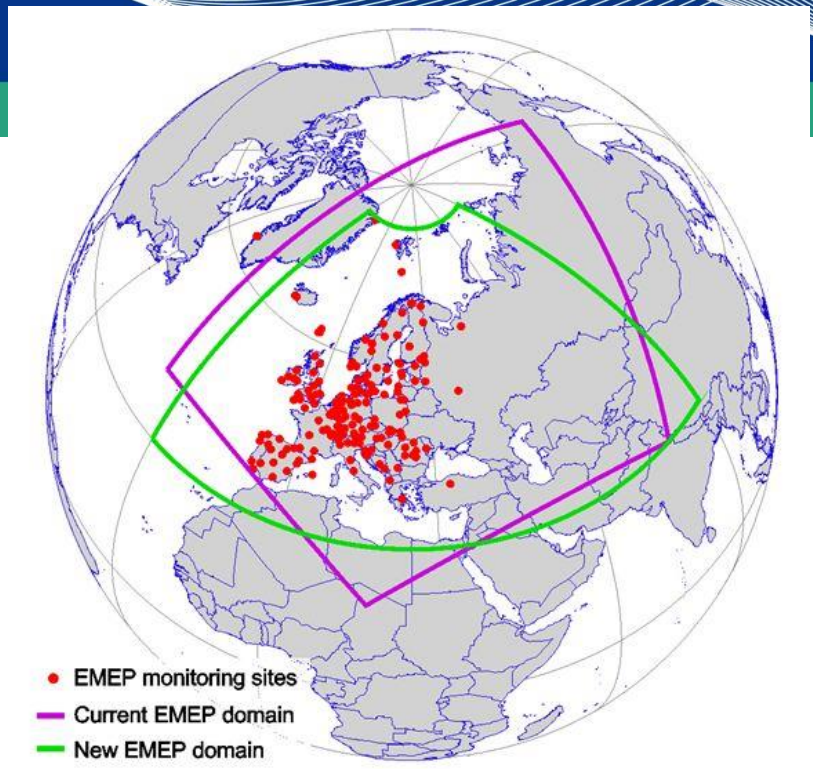
Select level of detail
GNFR Sector

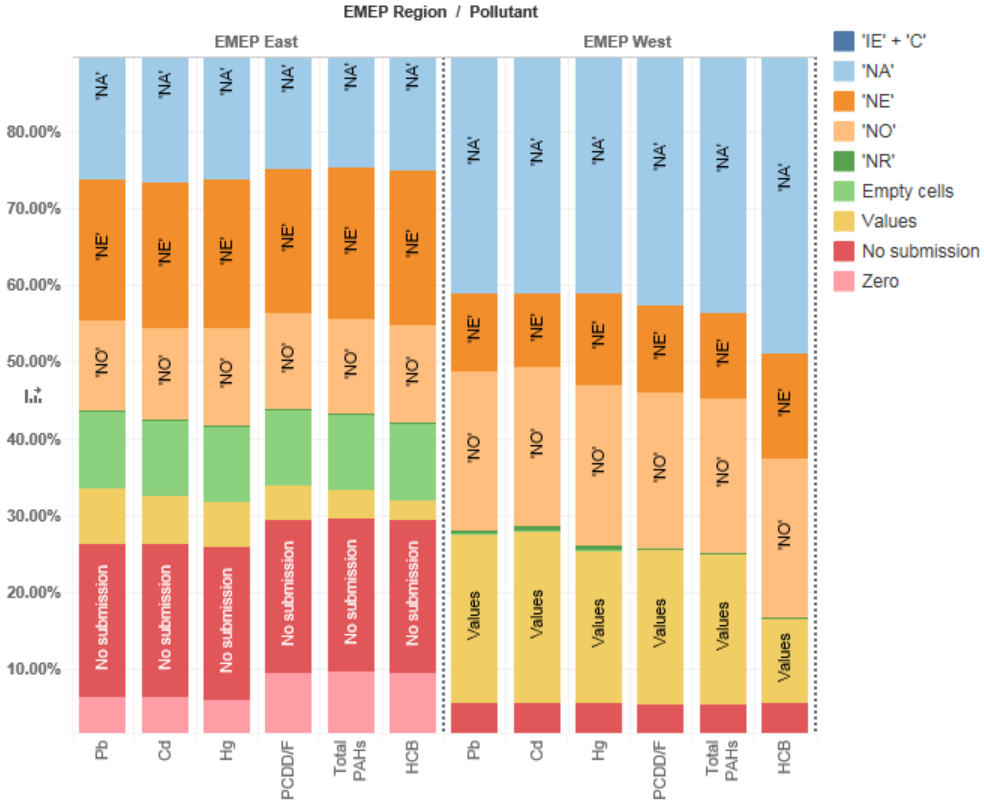
(Tout)

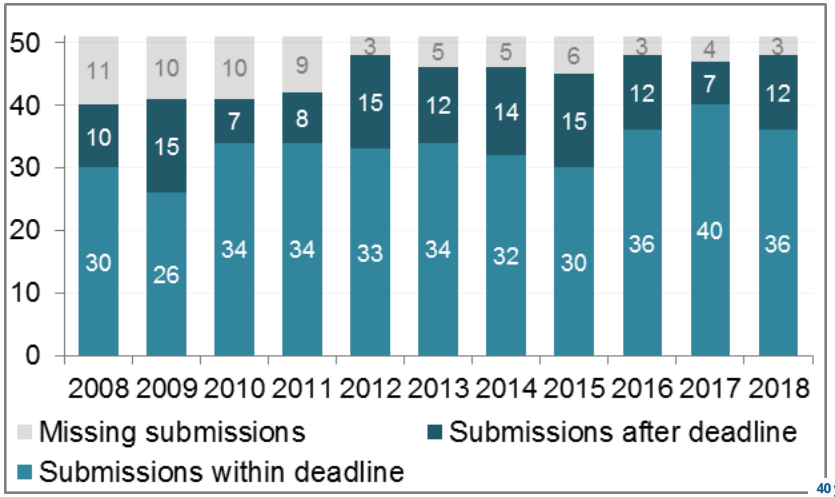
Level of detail
- A_PublicPower
- B_Industry
- C_OtherStationaryComb
- D_Fugitive
- E_Solvents
- F_RoadTransport
- G_Shipping
- H_Aviation
- I_Offroad
- J_Waste
- K_AgriLivestock
- L_AgriOther
- M_Other

Persisting challenges

- Gap filling (New EMEP Domain)
- Timeliness
- Format of activity data
- Completeness / non reporting
- Consistency across years, countries
- Recalculations
- Transparency (IIRs)







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Emissions : lessons learnt

- A unique reference framework (accurate and reliable) helps in achieving comparability of the data.
  - Essential to sustain the modelling activity (including IAM)
  - Essential for the policy dialogue
- There are still huge uncertainties for some pollutants (HM, POPs, PM2.5) and Parties are encouraged to improve their data and technical support still expected/needed in some countries
- Some remaining scientific issues : condensables , uPOPs..
- Comparison with other emission inventories (developed for scientific purposes) develops

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The EMEP monitoring network

- To assess the impact of the protocols (monitoring)

- The EMEP monitoring strategy (http://www.nilu.no/projects/ccc/index.html 2010-2019) establishes main principles :
  - Location and number of monitoring stations suited for evaluation of transboundary fluxes and background air pollution;
  - Long historical sets of observation data;
  - Selection of measured parameters driven by scientific needs, stepwise approach;
  - Quality assurance and comparability of the measurements ensured by the Chemical Coordinating Centre (CCC)
  - All data gathered and available through the EBAS database (http://ebas.nilu.no)

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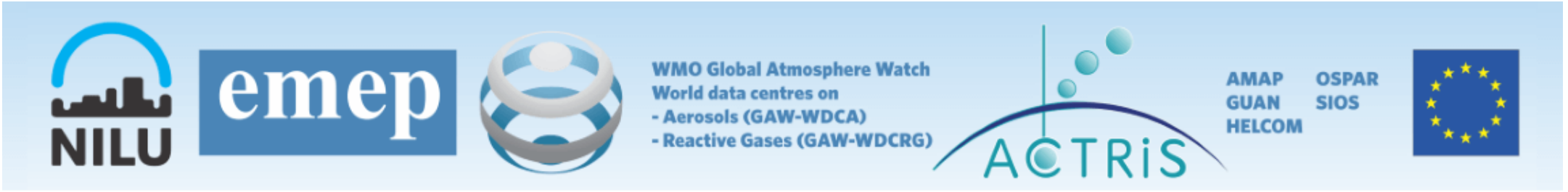
The EMEP Chemical Coordination Center (CCC°



EMEP models

- EMEP models are developed by MSC-W (sulfur, nitrogen, ozone, PM compounds) and MSC-E (HM, POPs)
  - Assessments and maps
  - Impact of emission reduction scenarios
  - Source-receptor (or blame) matrices used in IAM
- Reference models that need to be challenged to guarantee their relevance and accuracy, and build up confidence of the policy makers
  - Comparison to observations
  - Model intercomparison exercises (eg EURODELTA) with modelling teams in the Parties
- Model development supported by EMEP programme to include last scientific knowledge and future issues (e.g. BC)
- Data are available through the website (http://emep.int/mscw/index_mscw.html , http://www.msceast.org/)

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MSC-West and MSC-East : the EMEP modelling Centres

MSC-E

Convention on Long-range Transboundary Air Pollution

emep — Co-operative programme for monitoring and evaluation of the long-range transmissions of air pollutants in Europe

Home | General information | Cooperation | Publications | Pollution assessment | Models | Русский

Meteorological Synthesizing Centre - East (MSC-E)

is one of the international research Centres of the **EMEP programme** operating under the **LRTAP Convention** of UNECE.

The Centre focuses its efforts on model assessment of the environment pollution with various toxic substances.

More detailed

EMEP Status Reports - 2018

Peer-reviewed papers

Pollution assessment in 2018

- Modelling results on HM and POP pollution levels within the EMEP region
- Database on modelling results of HMs and POPs (1990-2016)
- Country-specific information for EMEP countries
- Country-specific information for EECCA countries in Russian

« June 2019 »

Mon	Tue	Wed	Thu	Fri	Sat	Sun
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10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

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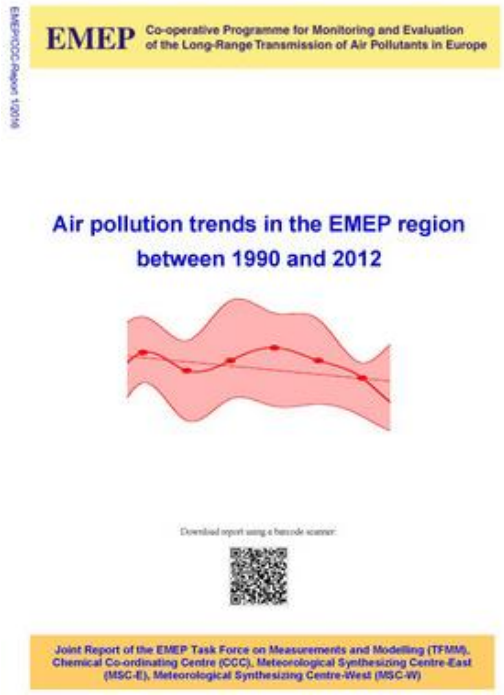
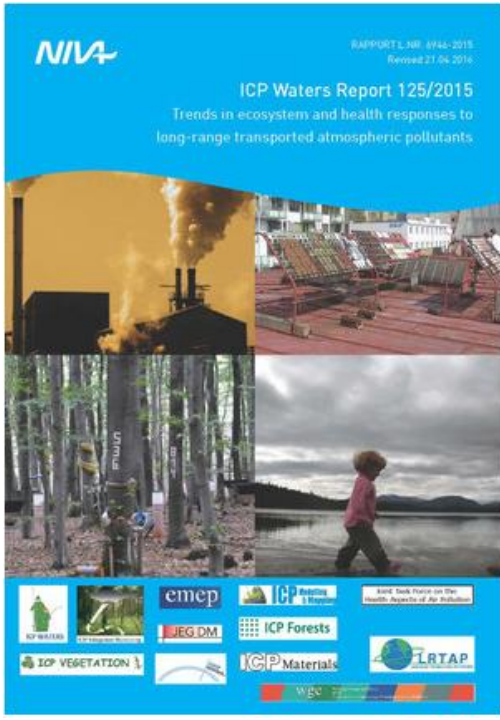
Monitoring and modelling : lessons learnt

- Very appropriate instruments to assess the impact of implemented policies: trends analyses
- Trends reports published in 2016
  http://www.unece.org/env/lrtap/welcome.htm





- Monitoring network benefits from cooperations with other networks (even at the global scale)
- Need to develop use of earth observations

- Challenging EMEP models helps in their improvement
- Multimodel approach has not been selected but can be an option to deal with uncertainties and to involve more teams

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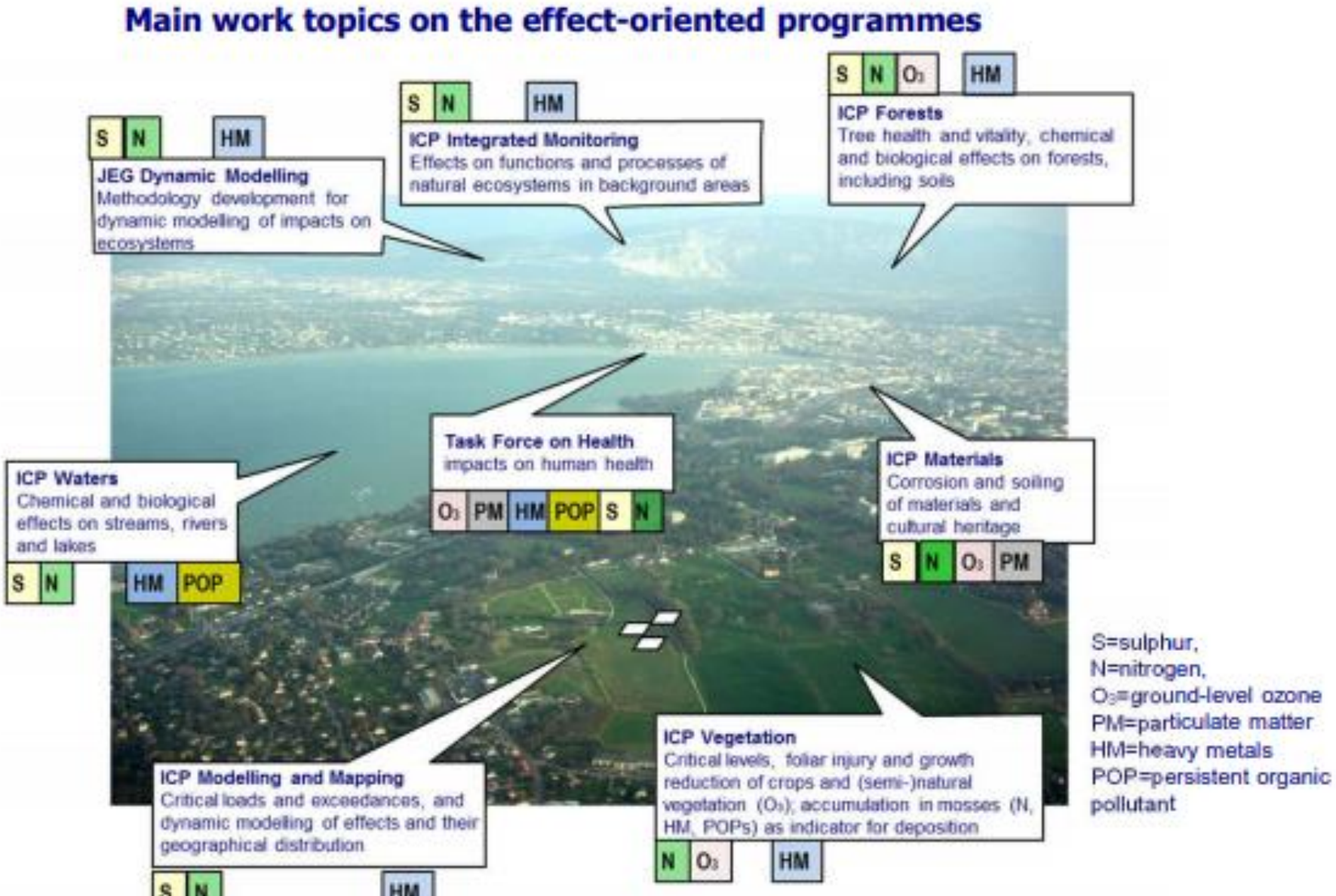
Accounting for the effects : the working group on effects (WGE)

- Chaired by Isaura Rabago Juan-Aracil (SP)



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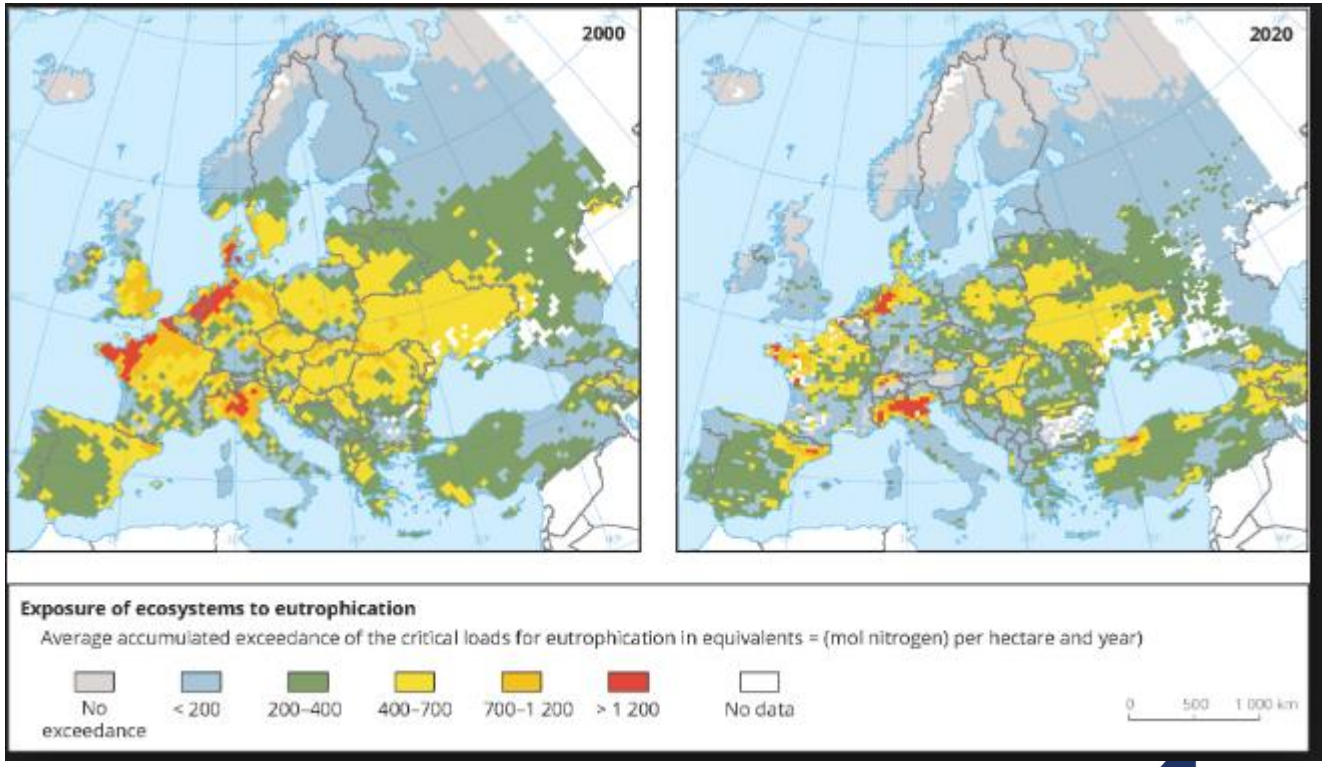
Monitoring effects of air pollution: networks and critical loads

- Effects monitoring sites implemented in all Parties. They target forests, mosses, waters and lakes, material
- Calls for data are launched by dedicated integrated programmes (ICPs) to collect updated information
- Critical loads/critical level concept developed to characterize air pollutant thresholds above which harmful effects occur on ecosystems (acidification, eutrophication, ground level ozone, heavy metals..)
- WHO leads the task force on health which supports the productions of guidelines
- Guideline and target values are used in integrated assessment modelling.



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Merci de votre attention !

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