



Rijksinstituut voor Volksgezondheid
en Milieu
*Ministerie van Volksgezondheid,
Welzijn en Sport*

Dutch AQ policy:

- Clean Air Agreement
- Feasibility WHO guidelines 2021

Meeting EPCAC, 11.17-2022

Paul Ruysenaars, RIVM
Netherlands

Agenda for this presentation:



> Air Quality Policies in the Netherlands:

- Clean Air Agreement: collaboration National, Regional, Local governments
- Objectives: Exposure based (a.o. -50% life expectancy loss 2030)
- Health Impact Assessments:
 - Impacts Clean Air Agreement
 - WHO guidelines 2021 feasible in 2030?



Multi level governance

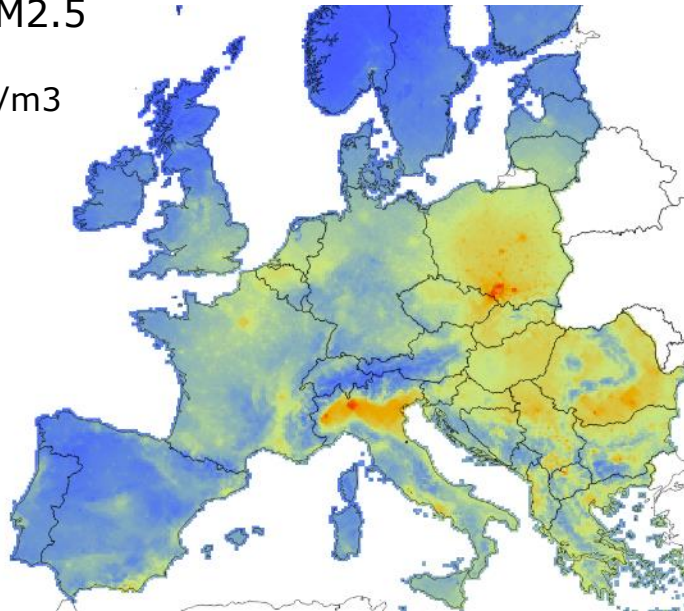
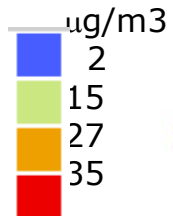
contribution

50%

30%

20%

PM2.5

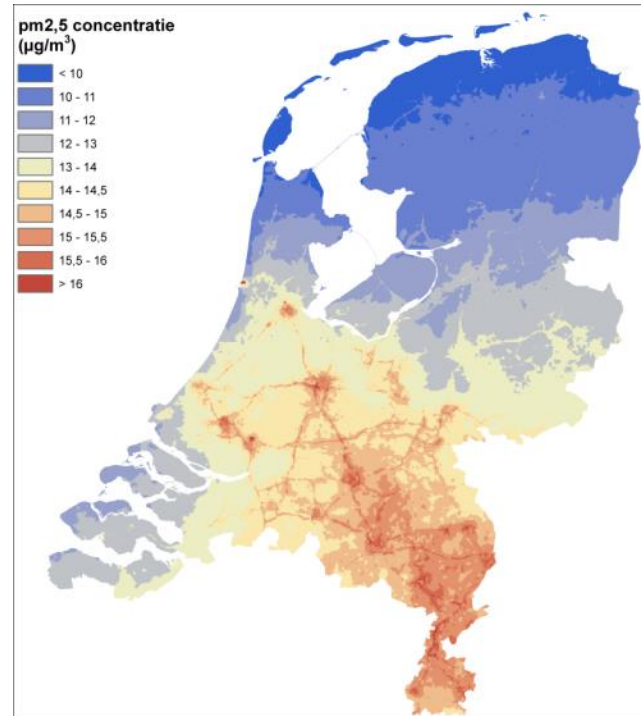


EU-policies

- NECD
- Emission standards
- CAP
- 0-pollution action plan (-55% premature deaths in 2030)
- Climate & Energy: "fit for 55"

National policies

- Taxes, subsidies
- Energy, road transport, N-policy



Local policies

- Licences
- LEZ
- Infrastructure/ local planning



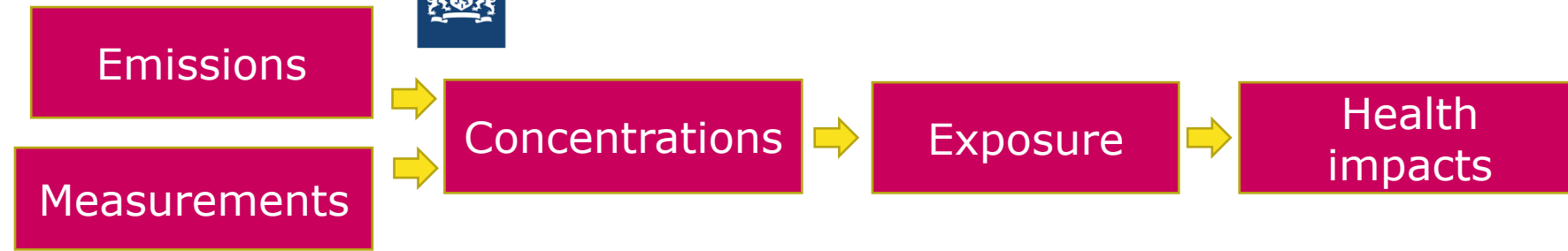
"hot-spots"



Clean Air Agreement

- > Collaboration national, regional, local governments (100+)
- > Main objectives:
 - Reduce Health Impacts (Life Expectancy Loss, Years of Life Lost)
 - Bring WHO AQ guidelines within reach
- > Generic measures:
 - include health objectives in (regional) transport and mobility plans
 - assess health impacts of building infrastructure (e.g. roads), in the planning phase
 - Phase out diesel vehicles; stimulate cleaner alternatives
- > More specific national/regional/local plans
- > Communication/exchange of information: thematic working groups
- > Evaluation, (bi-) annual monitoring, ***RIVM Health Impact Assessment Tool***

Methodology



- > **Emissions:** *NL PRTR*, 1*1 km and (large) point sources
- > **Concentrations:** *OPS Lagrangian concentration and deposition model* for NO₂ and PM10 (EMEP model for OC) at 350,000 locations
- > **Health Impacts:** *DUELS cohort study*, Fischer et al. (2015)
<http://dx.doi.org/10.1289/ehp.1408254>
 - PM10 and NO₂
 - *Combined* exposure (*rr* 1.02 for NO₂ and 1.04 for PM10)
 - 2030 compared to 2016
 - Life Expectancy Loss; Years of Life Lost (CBA)



Results *HIA Clean Air Agreement*

Scenario's:

➤ ***With measures 2030***

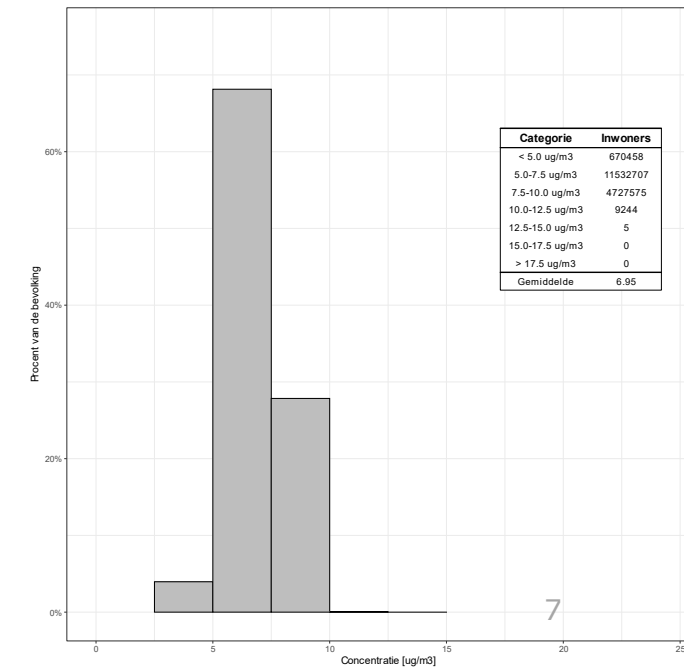
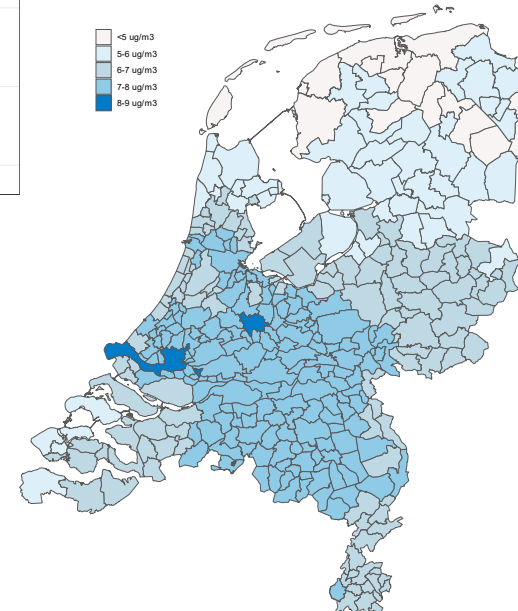
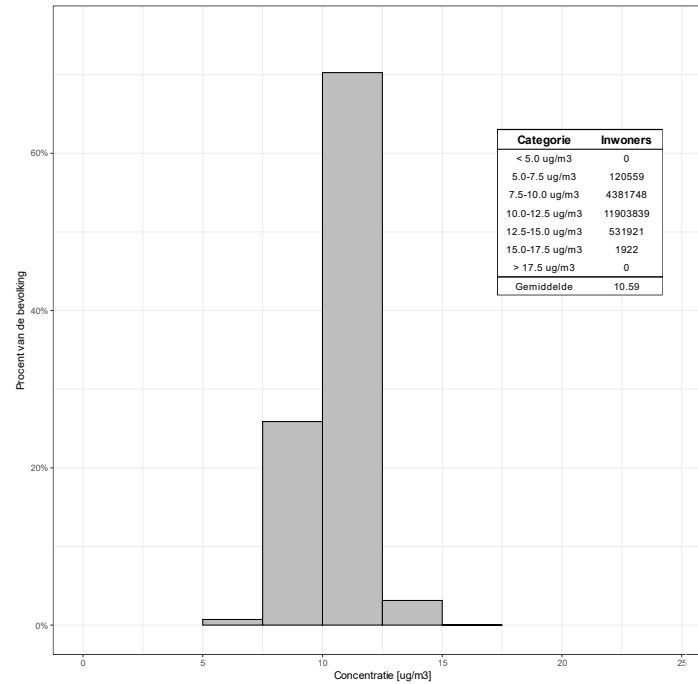
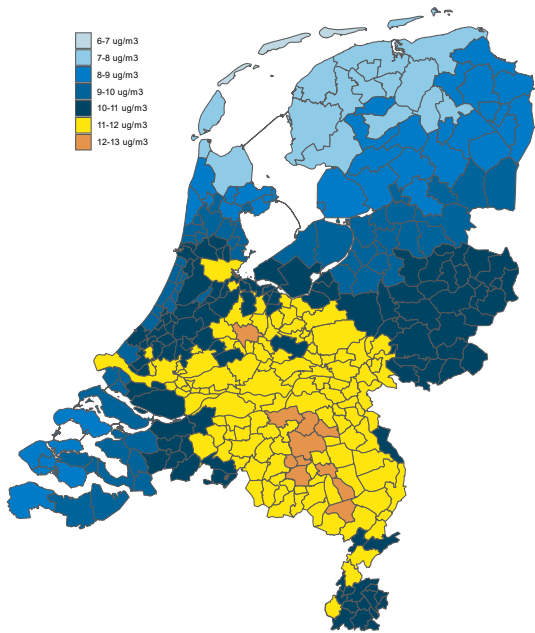
Based on Climate and Energy-, Nitrogen-, AQ policy, already implemented

➤ ***With additional measures (including CAA additional plans) 2030***

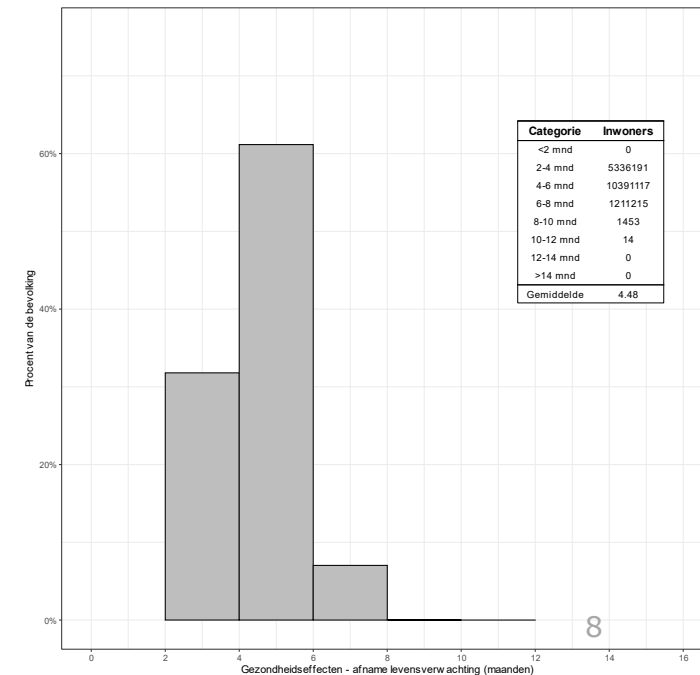
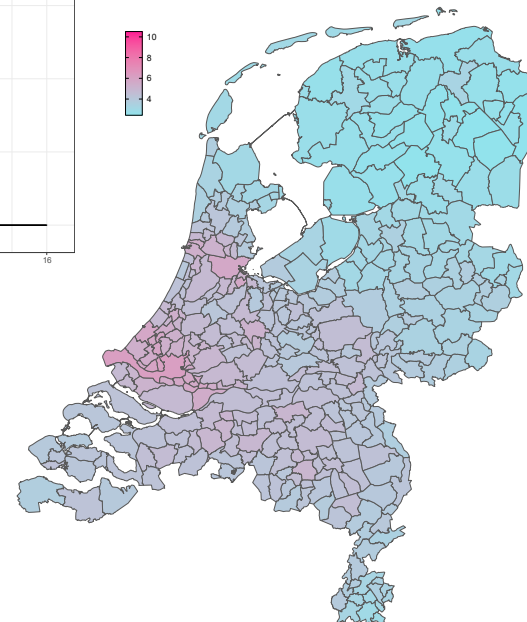
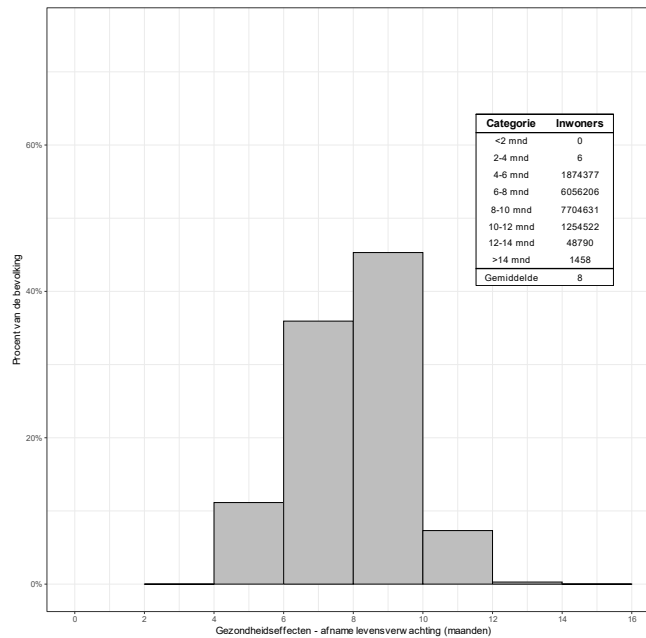
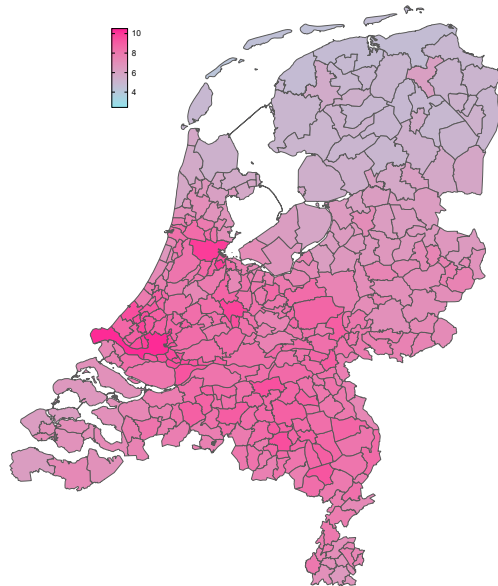
Based on Climate and Energy-, Nitrogen-, AQ policy, to be implemented



Population exposure PM2.5 (municipality)



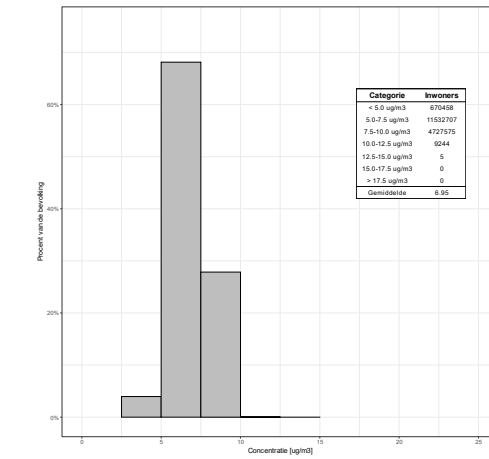
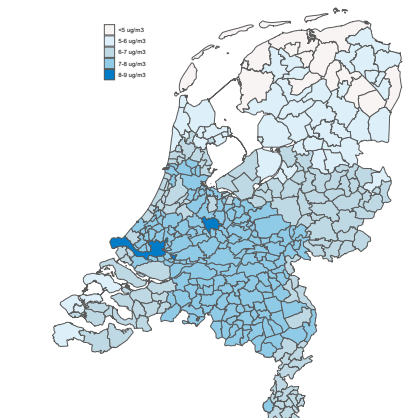
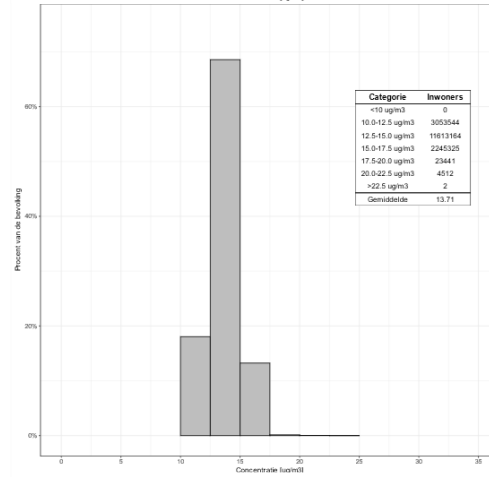
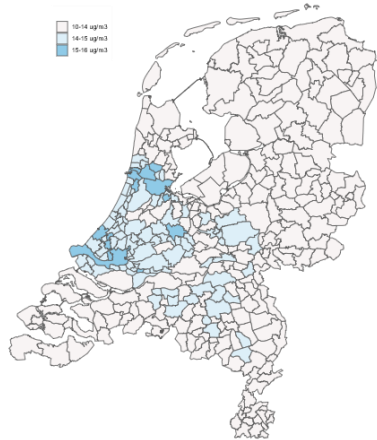
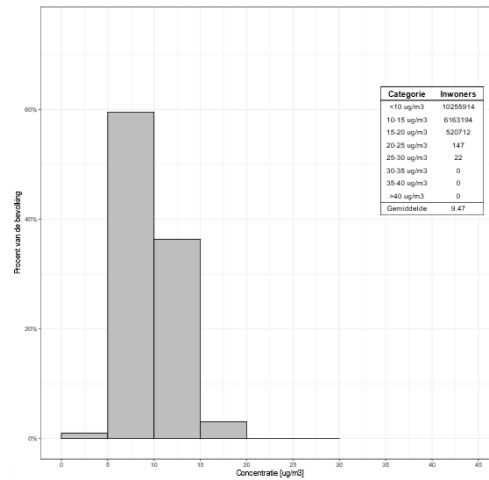
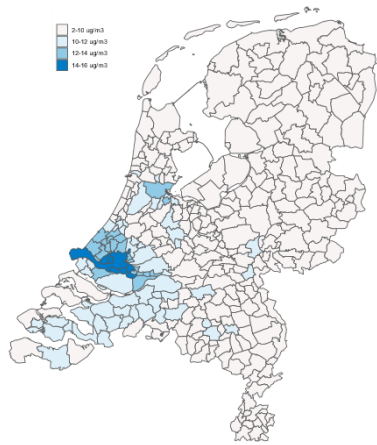
Life Expectancy Loss 2016 - 2030



Sector	2030 t.o.v. 2016		
	KEV	VES	ILL
S22 Industrie (incl. energie, afval, op- en overslag)	-5%	-11%	-13%
S44 Totaal wegverkeer	-50%	-56%	-67%
S45 Mobiele werktuigen	-48%	-54%	-55%
S41 Luchtvaart, rail	21%	13%	13%
S43 Zeescheepvaart, visserij	-15%	-14%	-15%
S42 Binnenvaart, recreatievaart	-1%	-17%	-17%
S31 Landbouw	-33%	-36%	-41%
S21 HDO en bouw	-28%	-28%	-28%
S19 Totaal consumenten	-30%	-30%	-31%
S88 Totaal binnenlandse bronnen	-43%	-47%	-52%
S99 Totaal buitenlandse bronnen	-51%	-51%	-51%
S00 Natuurlijke en onbekende bronnen	4%	4%	4%
Totaal	-41%	-44%	-47%



CALCULATION OF POPULATION EXPOSURE & LEVEL OF DETAIL....



NO₂

AQG: 10 UG/M³
IND. POPULATION: ~ 40% > AQG

MUNICIPALITY: ~23% > AQG

POP. WEIGHTED MEAN NL: 9.5 UG/M³

PM10

AQG: 15 UG/M³
IND. POPULATION: ~ 13% > AQG

MUNICIPALITY: ~3% > AQG

POP. WEIGHTED MEAN NL: 13.7 UG/M³

PM2.5

AQG: 5 UG/M³
IND. POPULATION: ~96% > AQG

MUNICIPALITY: ~94% > AQG

POP. WEIGHTED MEAN NL: 7 UG/M³



Results *HIA WHO AQ guidelines, 2030*

Scenario's:

Maximum Feasible Reduction:

NO_x: 100% ZE buses, LDV in cities;

40% ZE HDV, passenger cars & NRMM in 2030

PM: Street washing (prevent resuspension);

BAT principle applied strictly for new/existing installations (30%);

Powerplants closed in 2030 > renewables wind, solar,....;

Storage and handling facilities capped (50-90%);

Wood combustion prohibited, as well as bonfires,....

Shipping: retrofit (30%)



Results *HIA WHO AQ guidelines, 2030*

Low

Most strict emission standards;

Coalition agreement for N reduction:

-50% NH_3 : (compared to 2019) = technical measures? Livestock reduction (CH_4 !)?

-50% NO_x : More renewables, nuclear (?); insufficient abatement options might entail lower production volumes in specific sectors.

Climate policy (-55%) may help, but adverse effects possible: additional PM and NO_x (CCS, hydrogen, biomass)



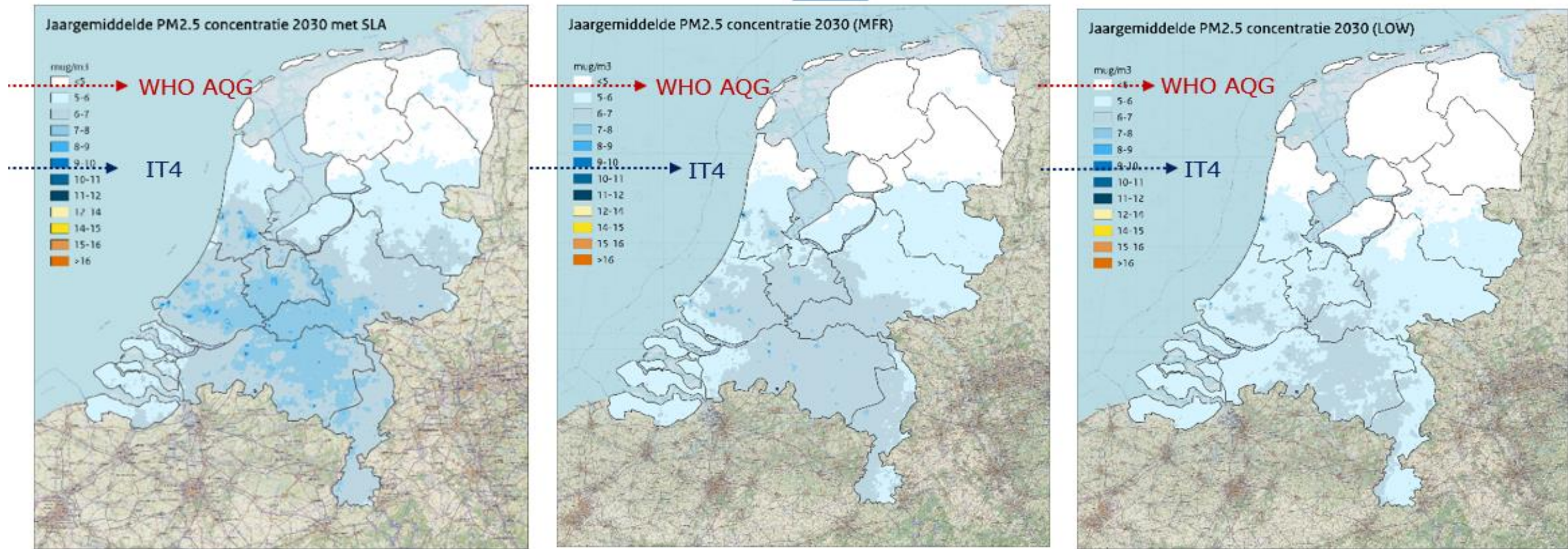
Results *HIA WHO AQ guidelines, 2030*

Remarks:

- > Neighbour countries implement the same policies and measures
- > “What-if” scenario’s. Feasibility not assessed

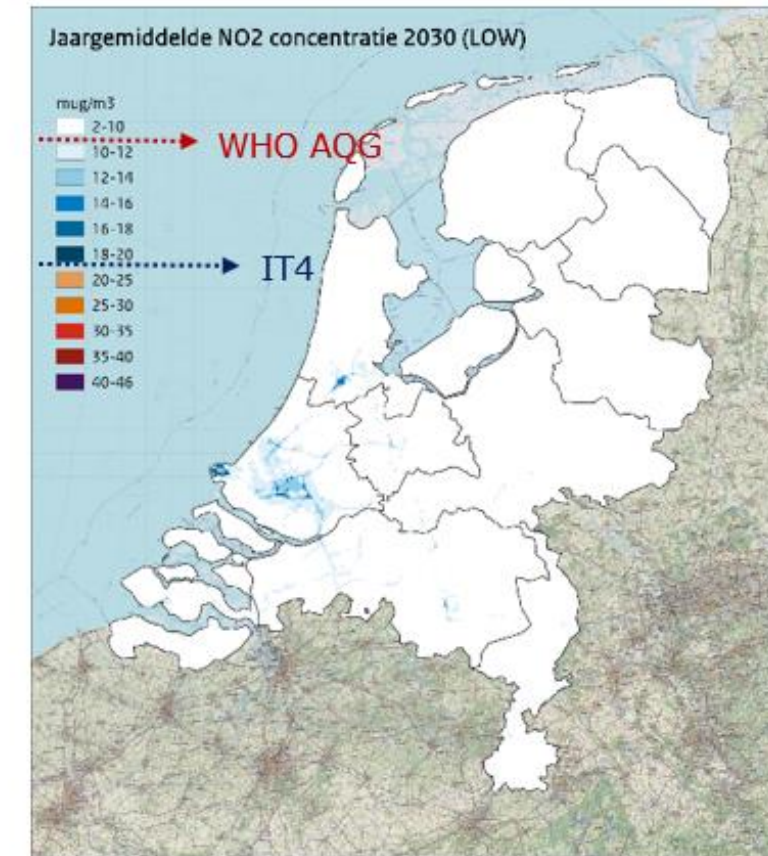
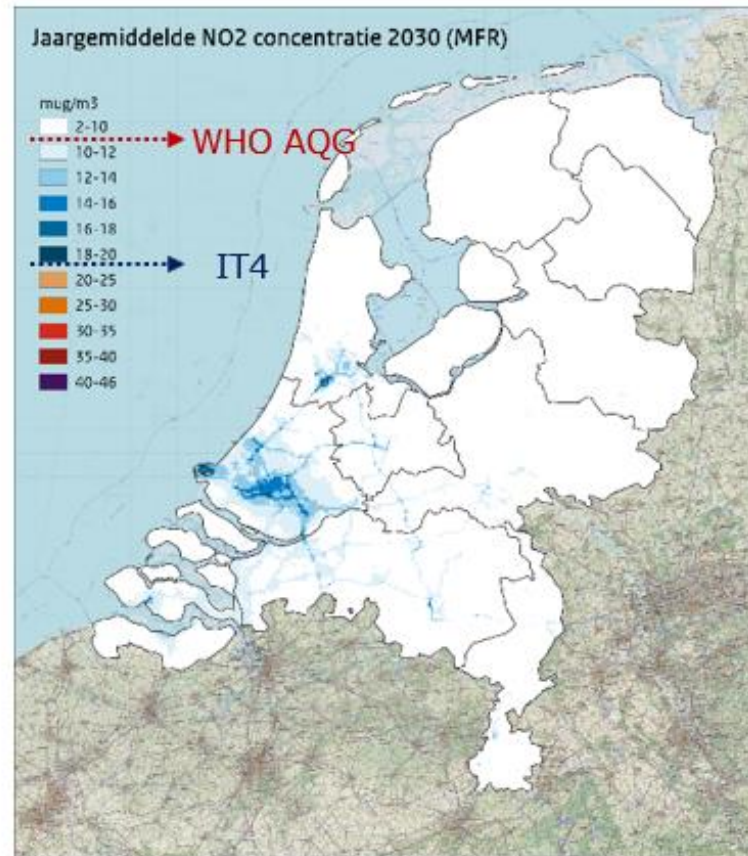
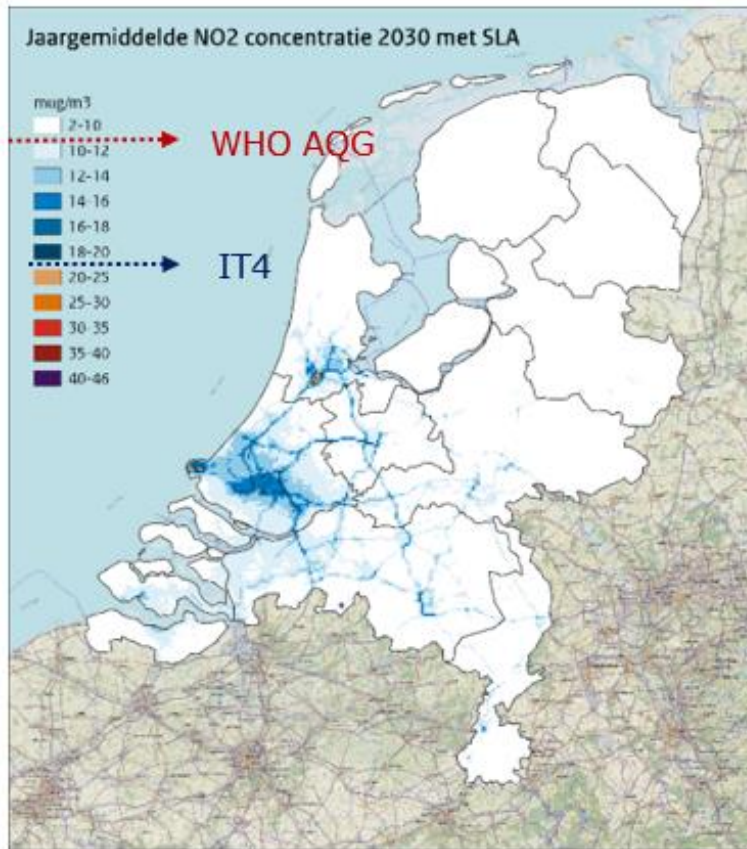


Feasibility WHO guidelines – scenario's PM2.5





Feasibility WHO guidelines – scenario's NO₂





Health impacts 2016 - 2030

Scenario	Life Expectancy Loss (months)	Years of Life Lost (total)	Relative to 2016 (%)
2016	8,0	122900	0
VES (= CAA)	4,5	69200	-44
MFR	3,9	60500	-51
LOW	3,5	54100	-56
WHO-AQG	2,5	38900	-68



Conclusions

- Multilevel governance necessary for achieving health objectives (both efficiency- & equity perspective).
- Health impacts: motivation for AQ policy local governments.
- WHO AQG 2030 demanding. Under IT4 some hotspots remain.
- Exposure approach:
 - Cost effective.
 - Detail required, means data-demanding.
 - Metric matters! (pop. weighted average >...> (calculated) exposure per citizen
AERO in EU proposal revision AAQD: not assessed yet
- Integrated approach: Nitrogen and Climate policies helpful for AQ objectives.
Vice versa: take AQ objectives in consideration in elaborating climate policy