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Presentation of the scenarios and modelling results for air pollutants for Serbia 2030 (WEM, WAM-A, WAM-B)

Meeting: First Conference – Programme of Air Protection and Action Plan

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16 April 2021

Outline

- Emissions in 2015 and main sources of emissions
- The scenarios developed and their characteristics
- Expected evolution of emissions according to scenarios
- Conclusions and next steps

- Emissions in 2015 and main sources of emissions

Main sources of emissions of pollutants in 2015

SO₂: 366 kt

NO_x: 114 kt

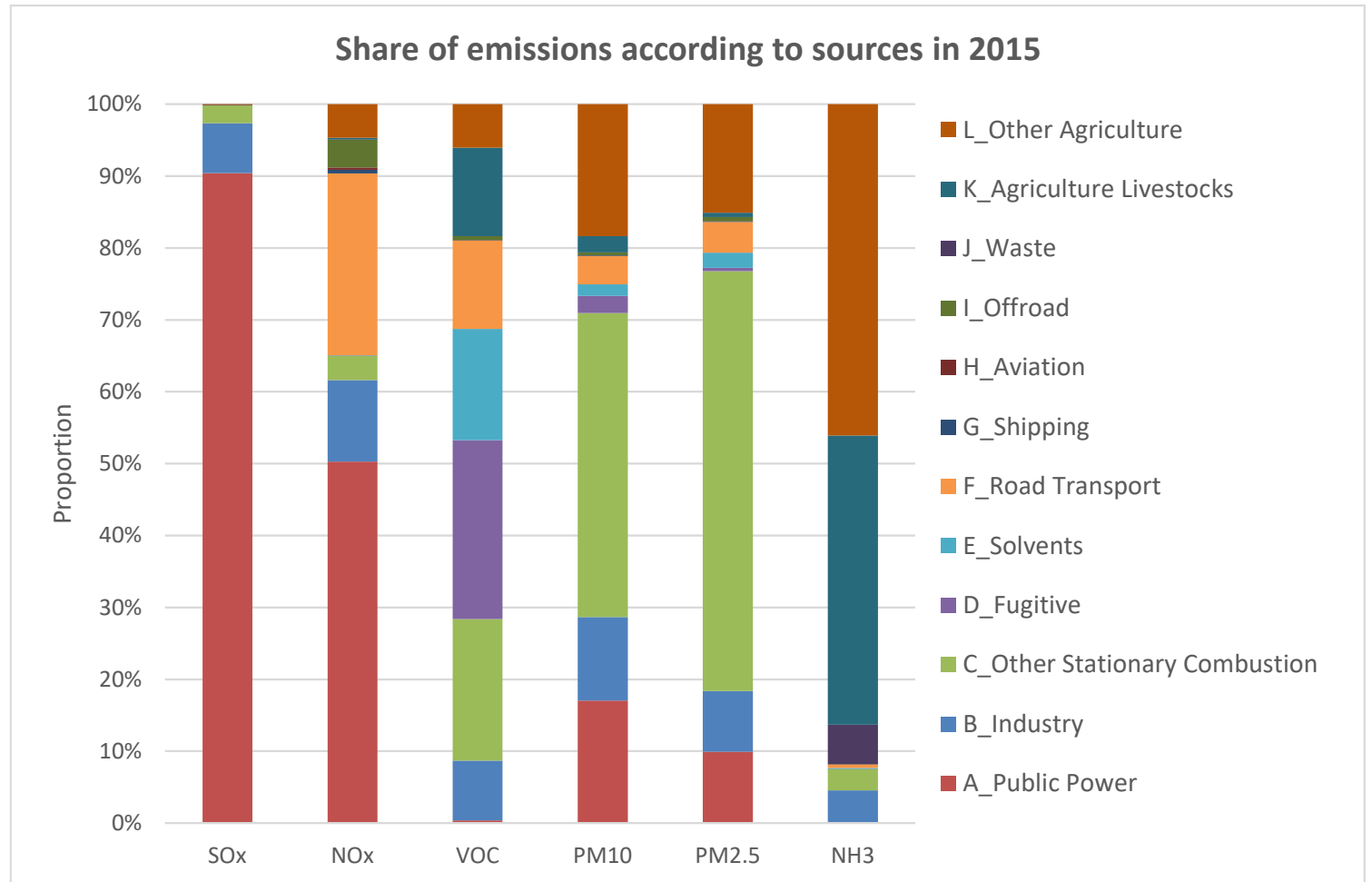
VOC: 127 kt

PM₁₀: 71 kt

PM_{2.5}: 50 kt

NH₃: 84 kt

Source: SEPA emission inventory
adapted by the EAS3 Project



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- The scenarios developed and their characteristics

The different scenarios tested

4 emission projection scenarios developed as follows:

- **WEM: with existing measures**. Scenario including policies and measures adopted and implemented by 1.1.2019
- **WAM A: with additional measures A**. Full implementation of all relevant EU directives and Regulations not yet fully transposed and implemented
- **WAM B: with additional measures B**. More intensive control scenario than WAM A. In addition to WAM A, introduction in some sectors, of stricter ELVs and introduction of national financial and fiscal policies and measures in key emission source categories (such as scraping and promotion schemes for passenger cars and household wood/coal appliances)
- **WAM C: With additional measures C**. Full control scenario. In addition to WAM B, new measures possibly including local specific measures (such as incentives, restrictions and possibly bans) aiming to ensure compliance with air quality limit values (Directive 2008/50/EC, especially for particle matters PM₁₀ and PM_{2.5})

Directives not fully transposed, or for which additional period of time for compliance was necessary, considered as additional measures. The NERP considered as an existing measure

Future activity levels and fuel consumption based on the scenario M2 prepared in the scope of EU IPA Project “ Climate Strategy and Action plan” thus ensuring **full consistency between GHG emission reduction pathway M2 as contained in the Climate change Strategy**

Measures considered in the scenarios WEM, WAM A and B

Source of emissions	WEM	WAM A	WAM B
Large combustion plants	Regulation on limit values of emissions of pollutants from combustion plants (OGRS n°6/16)	Industrial Emission Directive (IED) chapter II (BAT AELS) Compliance by 31/12/2024	
		Upper BAT AELs levels	Medium BAT AELs levels
Medium combustion plants		Medium Combustion Plant Directive (MCPD) Compliance by 01/01/2025 for largest inst. to 01/01/2030 for smallest ones	
Old large combustion plants in the production of electricity and refineries	NERP	NERP	
Small domestic appliances using solid fuels	No regulation considered	EU regulations from 01/01/2025 30% of appliances replaced by the end of 2030 and 55% in 2035	EU regulations from 01/01/2025 + Financial incentives 55% of appliances replaced by the end of 2030 and 80% in 2035
Sulphur content of heavy fuel oil	No regulation considered	Heavy fuel oil with less than 1% S available from the 1st January 2021	

Measures considered in the scenarios WEM, WAM A and B

Source of emissions	WEM	WAM A	WAM B
Industrial installations under the scope of the IED regulation	Regulation on limit values of emissions of air pollutants from stationary pollution sources, excluding combustion plants (OGRS N°111/15)	IED chapter II (BAT AELS) Compliance by 31/12/2024	
		Upper BAT AELs levels	Medium BAT AELs levels
Other industrial installations	Regulation on limit values of emissions of air pollutants from stationary pollution sources, excluding combustion plants (OGRS N°111/15)		
Industrial uses of solvents	No regulation considered	IED chapter V and annex VII (or “Regulation on the list of industrial installations and activities in which volatile organic compounds emissions are controlled (OGRS N°100/11)”)	

Measures considered in the scenarios WEM, WAM A and B

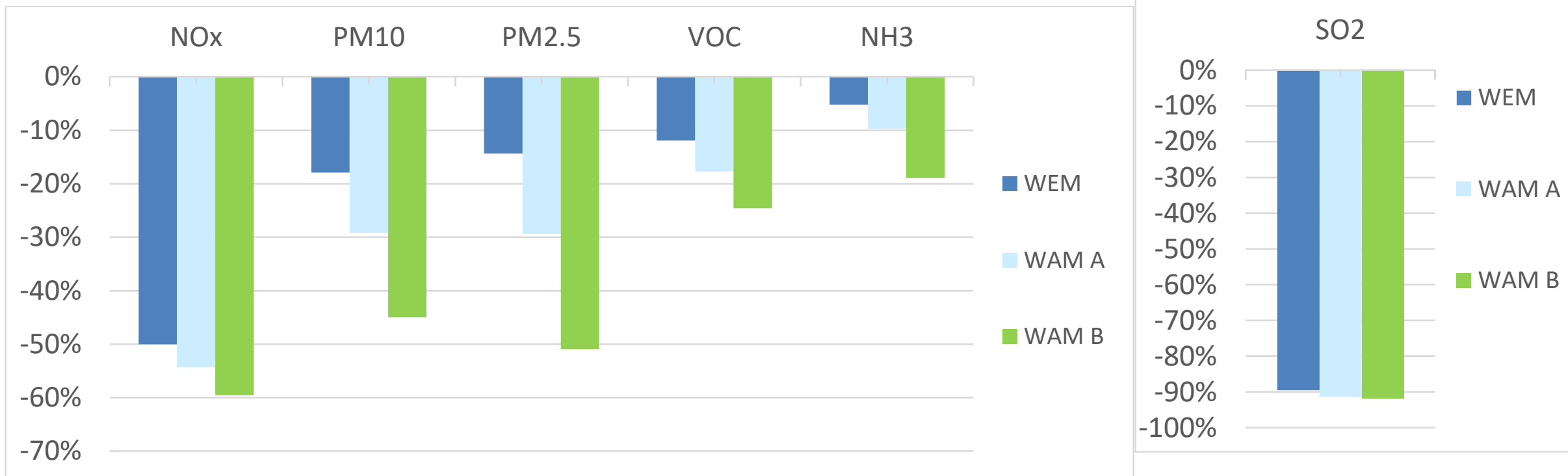
Source of emissions	WEM	WAM A	WAM B
<u>Imported of second-hand vehicles</u>	No measure	Minimum Euro standards for imported second-hand vehicles	
Second-hand passenger and light duty vehicles		Euro 4 from 1 st January 2023 Euro 5 from 1 st January 2025 Euro 6 from 1 st January 2030	Euro 5 from 1 st January 2023 Euro 6 from 1 st January 2025
Second-hand heavy duty vehicles, coaches and buses		EURO IV from 1 st January 2023 EURO V from 1 st January 2025 EURO VI from 1 st January 2030	EURO V from 1 st January 2023 from EURO VI from 1 st January 2024
Oldest diesel vehicles (passenger cars, light duty vehicles and buses)		No measure	Scrapping programme targeting 140 000 of oldest diesel passenger cars and light duty vehicles (pre-euro to Euro 3) and diesel buses (pre-euro to Euro III) from 2024 to 2026
Distribution of petrol	No measure	Rulebook on technical measures and requirements relating to VOC resulting from the storage and transport of petrol Continuation of the equipment of petrol terminals and service-stations for complete equipment by 1 st January 2030	
Non road mobile machineries (NRMM)	No measure	Regulation (EU) 2016/1628 from 1 st January 2025 Use of gasoils with a sulphur content of 10 mg/kg (i.e., 0.001%) for NRMM	

Measures considered in the scenarios WEM, WAM A and B

Source of emissions	WEM	WAM A	WAM B
Solid manure applied to soils	1 - Rapid solid manure incorporation within 24 hours	Rapid solid manure incorporation within 24 hours, 12 hours or 4 hours Different rates	
	In intensive farms (IPPC) from 1 st January 2020 onwards		
Liquid manure applied to soils	2- Slurry application by trailing hose/trailing shoe And possibility of incorporation within 12 hours	2- Slurry application by trailing hose/trailing shoe, and incorporation within 12 hours or 4 hours Different rates	
	In intensive farms (IPPC) from 1 st January 2020 onwards		
Liquid manure applied to soils	No measures considered	No measures considered	3- Slurry application by injection From 1 st January 2024
Use of inorganic fertilizers	No measures considered	No measures considered	4- Substitution from urea to ammonium nitrate fertilizer From 1 st January 2024
Manure storage	No measures considered	No measures considered	5 - Covering of slurry stores From 1 st January 2024
Use of inorganic fertilizers	No measures considered	6 – Incorporation of urea into soil Increasing rate from 1 st January 2020	Replaced by measure 4, taking into account the diminution of urea use
Field burning of agricultural waste	No measures considered	No measures considered	7 – Progressive phase-out (0% in 2035)

- Expected evolution of emissions according to scenarios

Trends in emissions according to scenarios in 2030/2015



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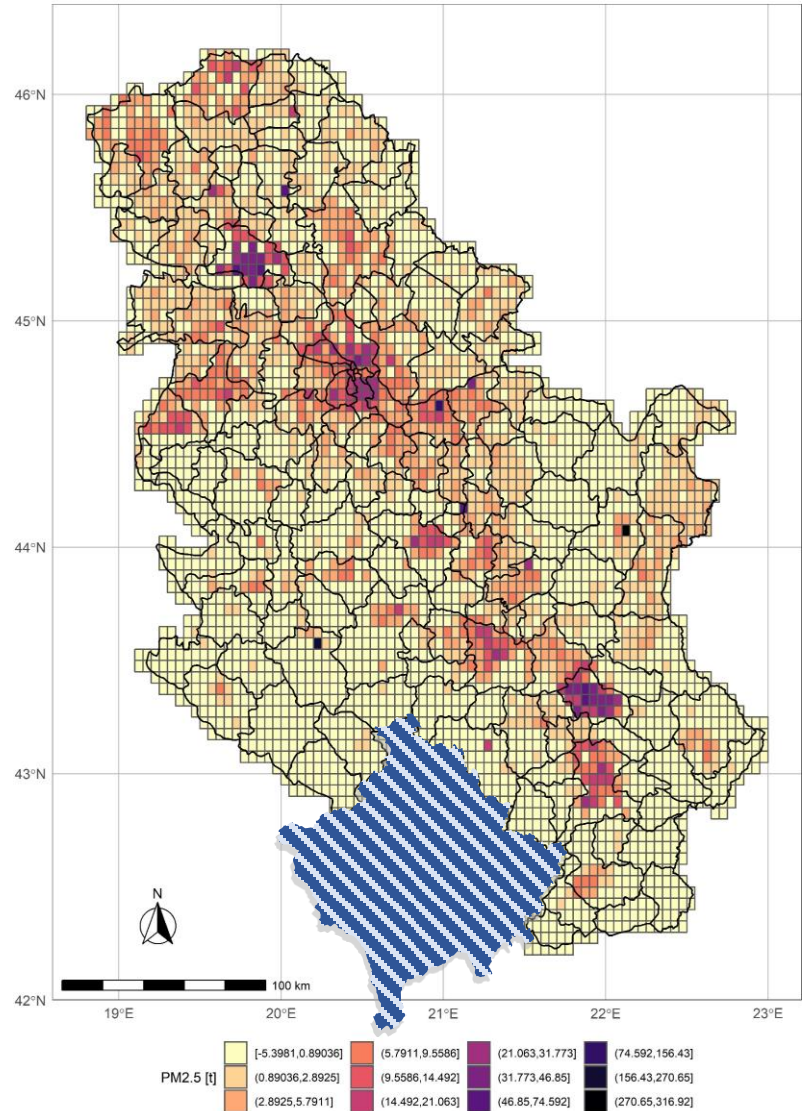


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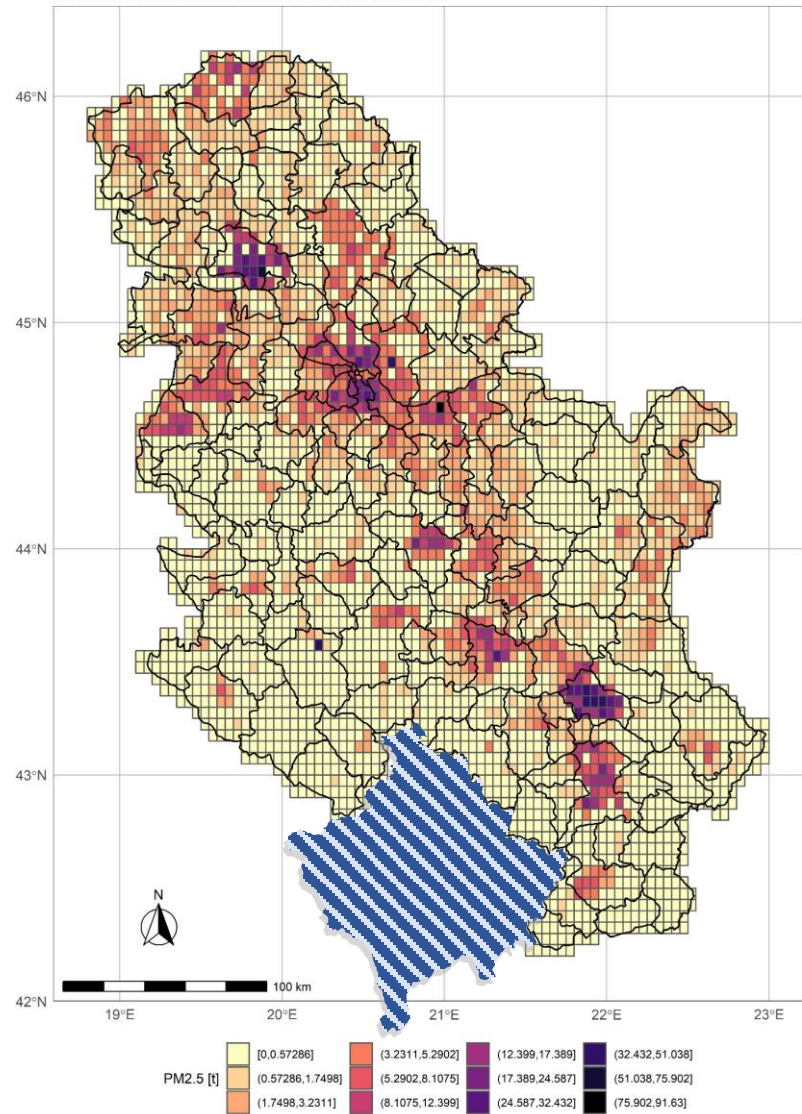
PM2.5 emissions avoided from WEM to WAM A and WAM A to WAM B

Emissions avoided from WEM to WAM A (2030 Projeted Year) - PM2.5
Spatial resolution 0.05°x0.05°, Territory of the Republic of Serbia



UBFCE (2021)

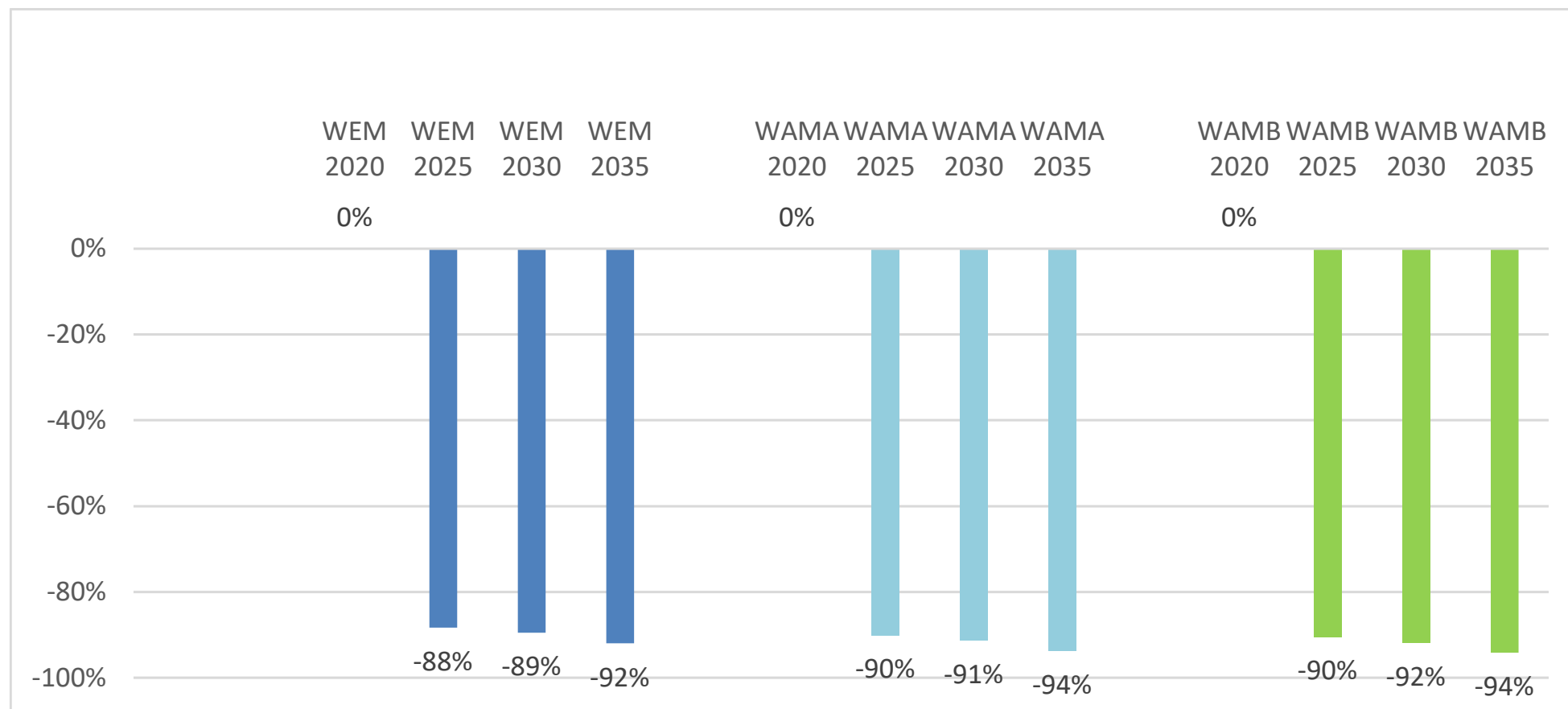
Emissions avoided from WAM A to WAM B (2030 Projeted Year) - PM2.5
Spatial resolution 0.05°x0.05°, Territory of the Republic of Serbia



UBFCE (2021)



Evolution of emissions according to scenarios / 2015: SO₂



Evolution of emissions

WEM

WAM A

WAM B



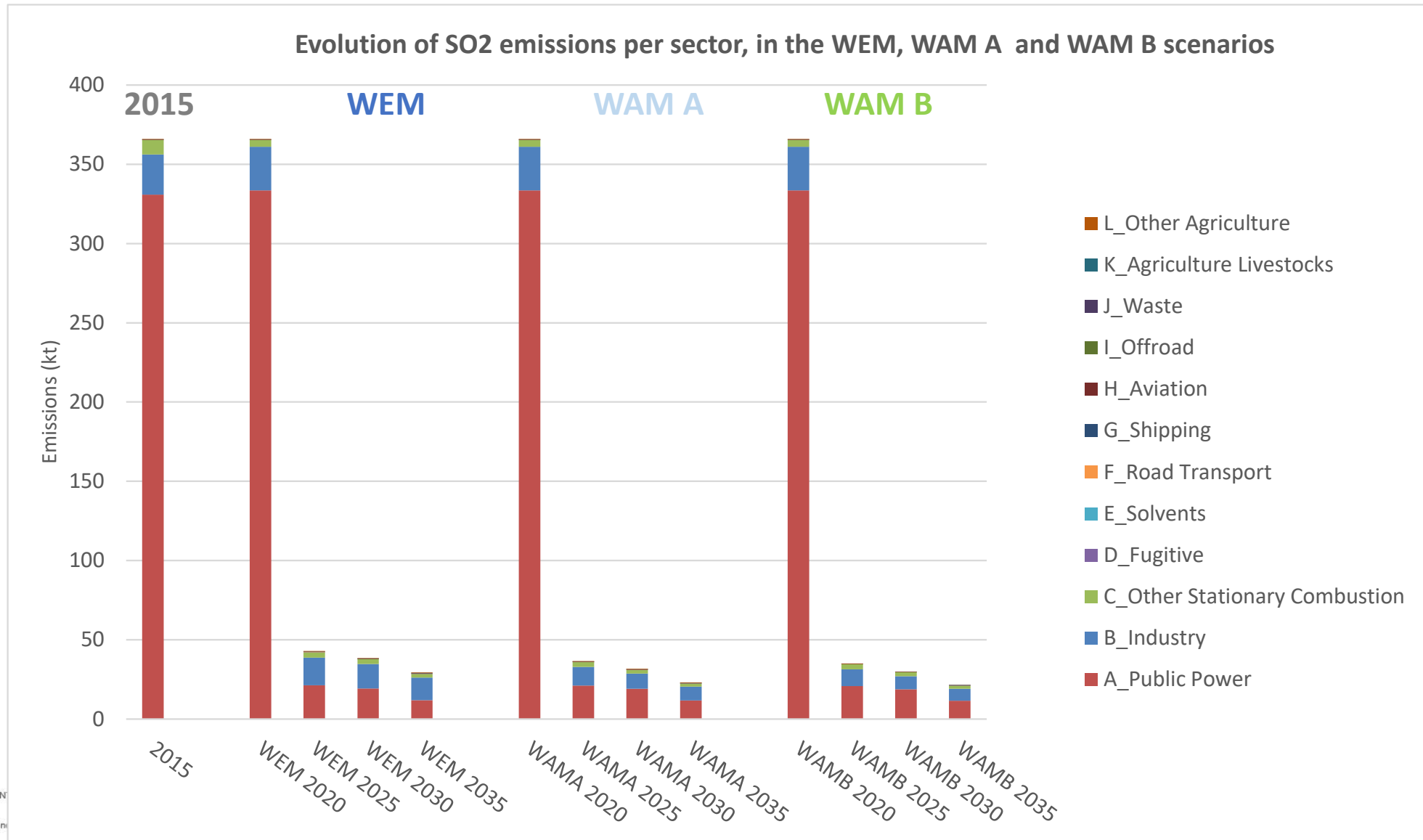
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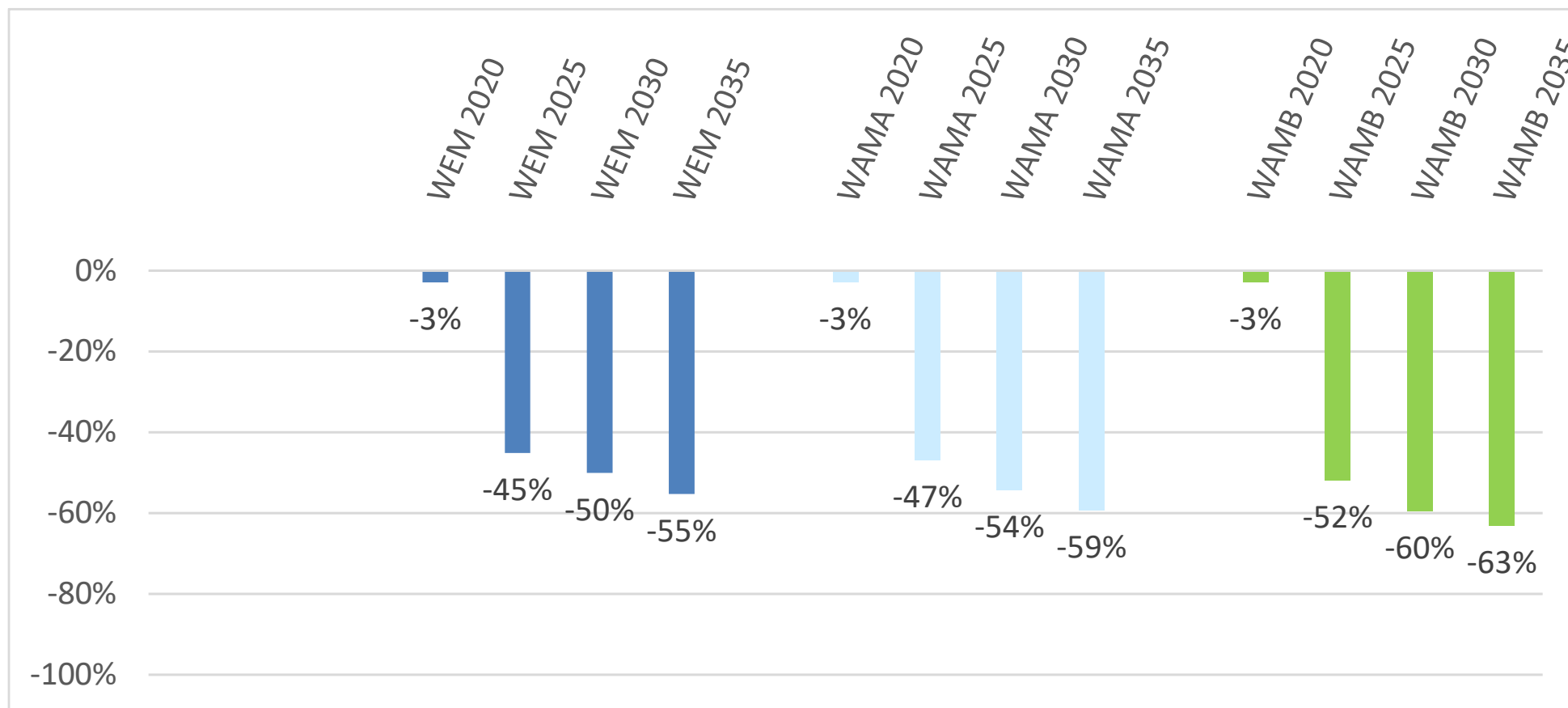
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Trends in emissions according to scenarios: SO₂



Evolution of emissions according to scenarios / 2015: NOx



Evolution of emissions

WEM

WAM A

WAM B



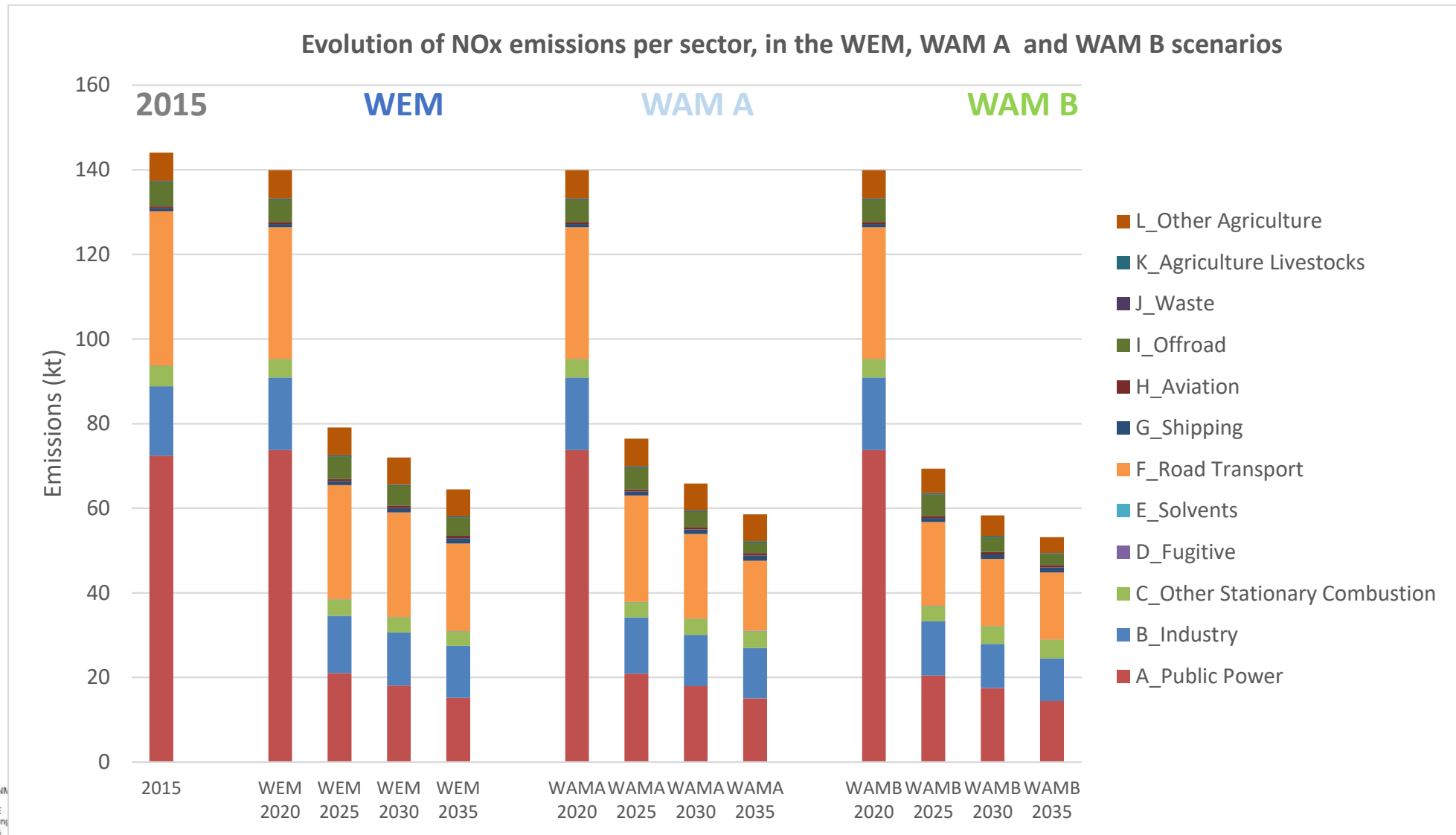
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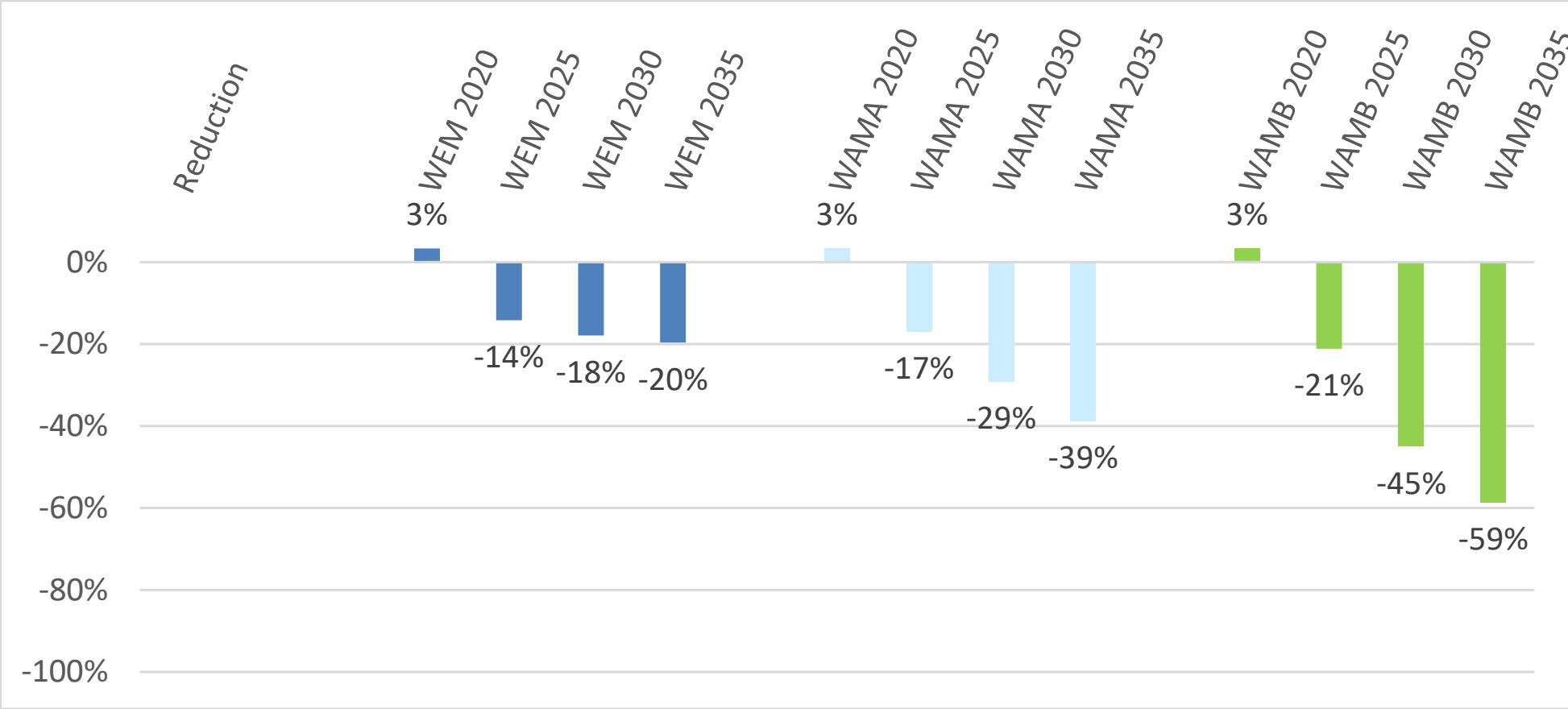
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Trends in emissions according to scenarios: NOx



Evolution of emissions according to scenarios / 2015: PM10



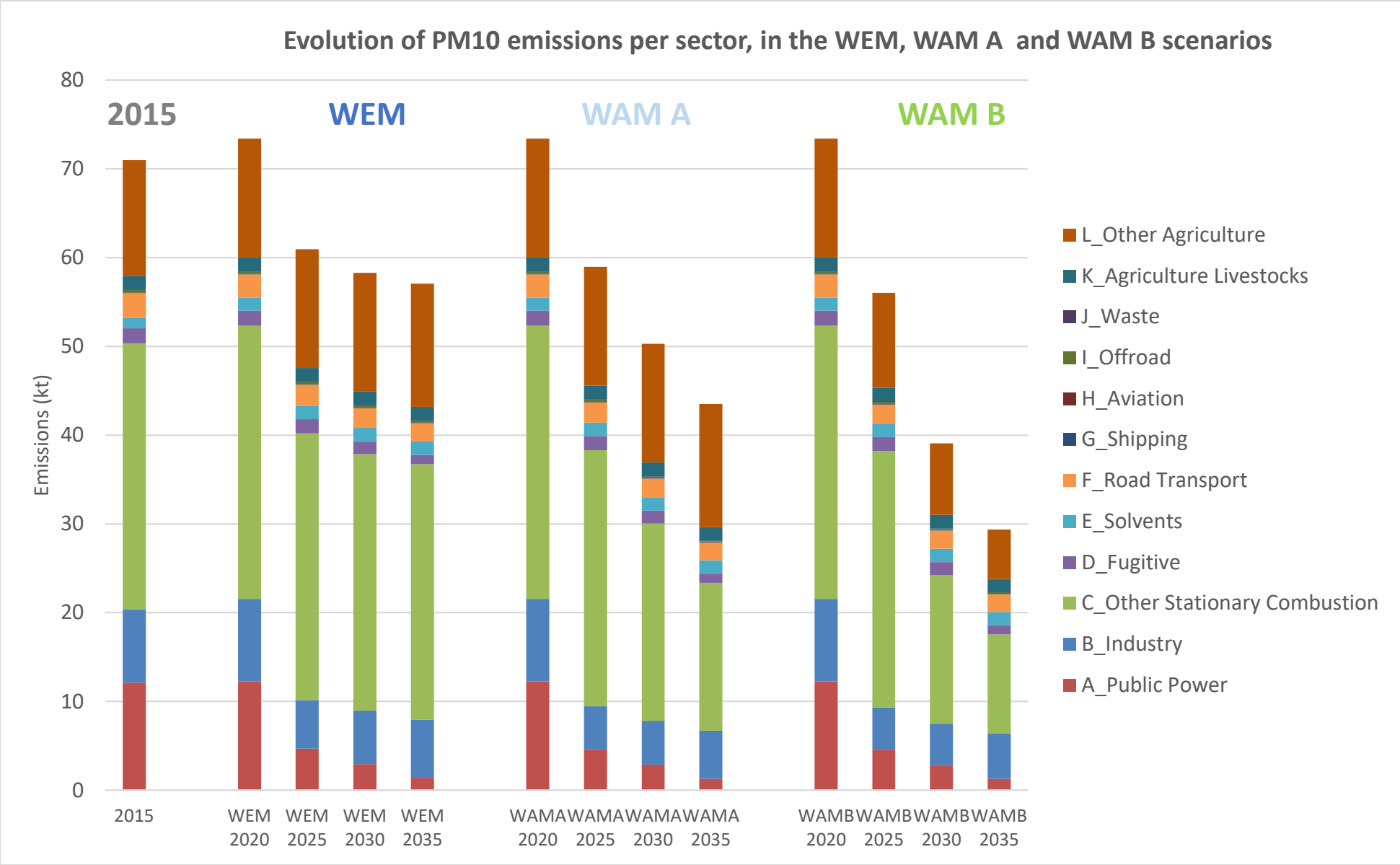
Evolution of emissions

WEM

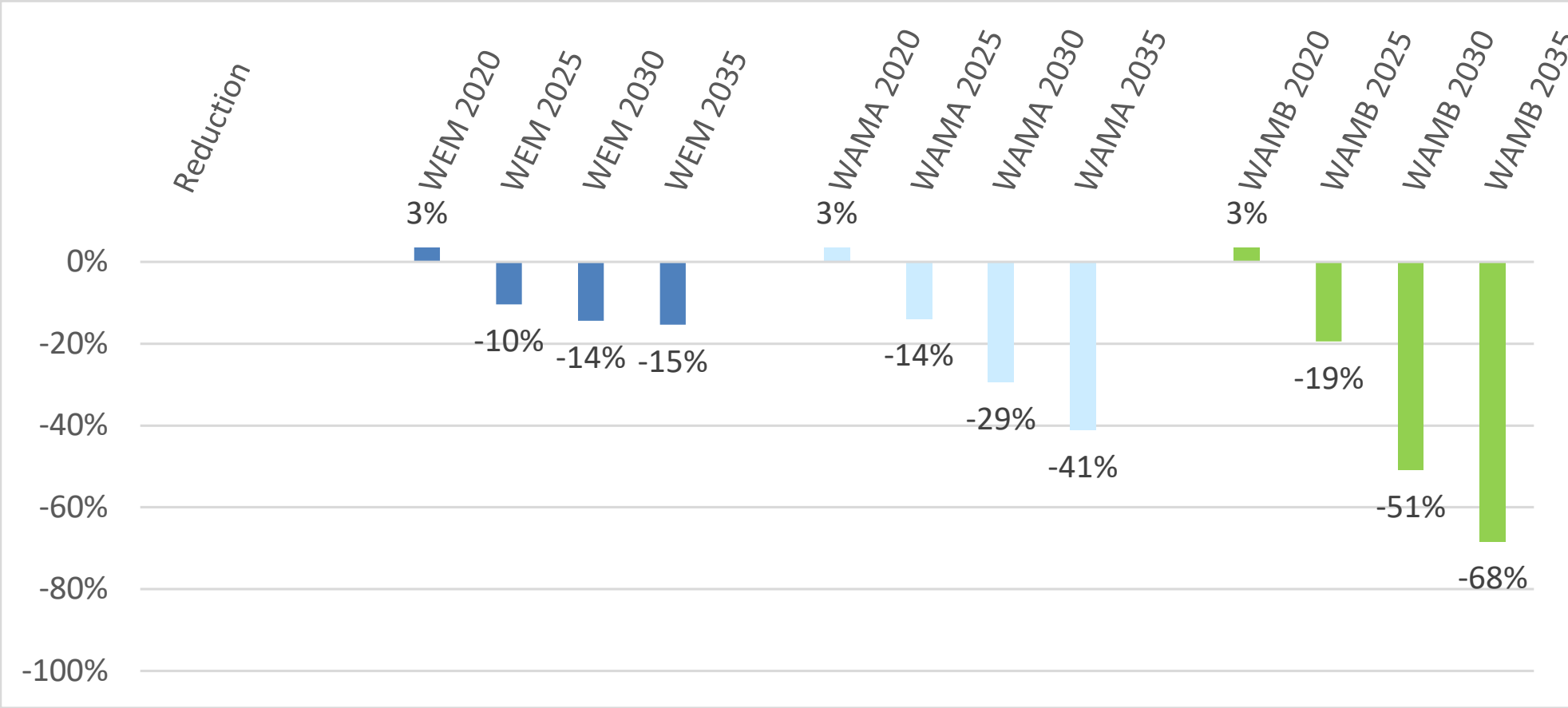
WAM A

WAM B

Trends in emissions according to scenarios: PM10



Evolution of emissions according to scenarios / 2015: PM2.5



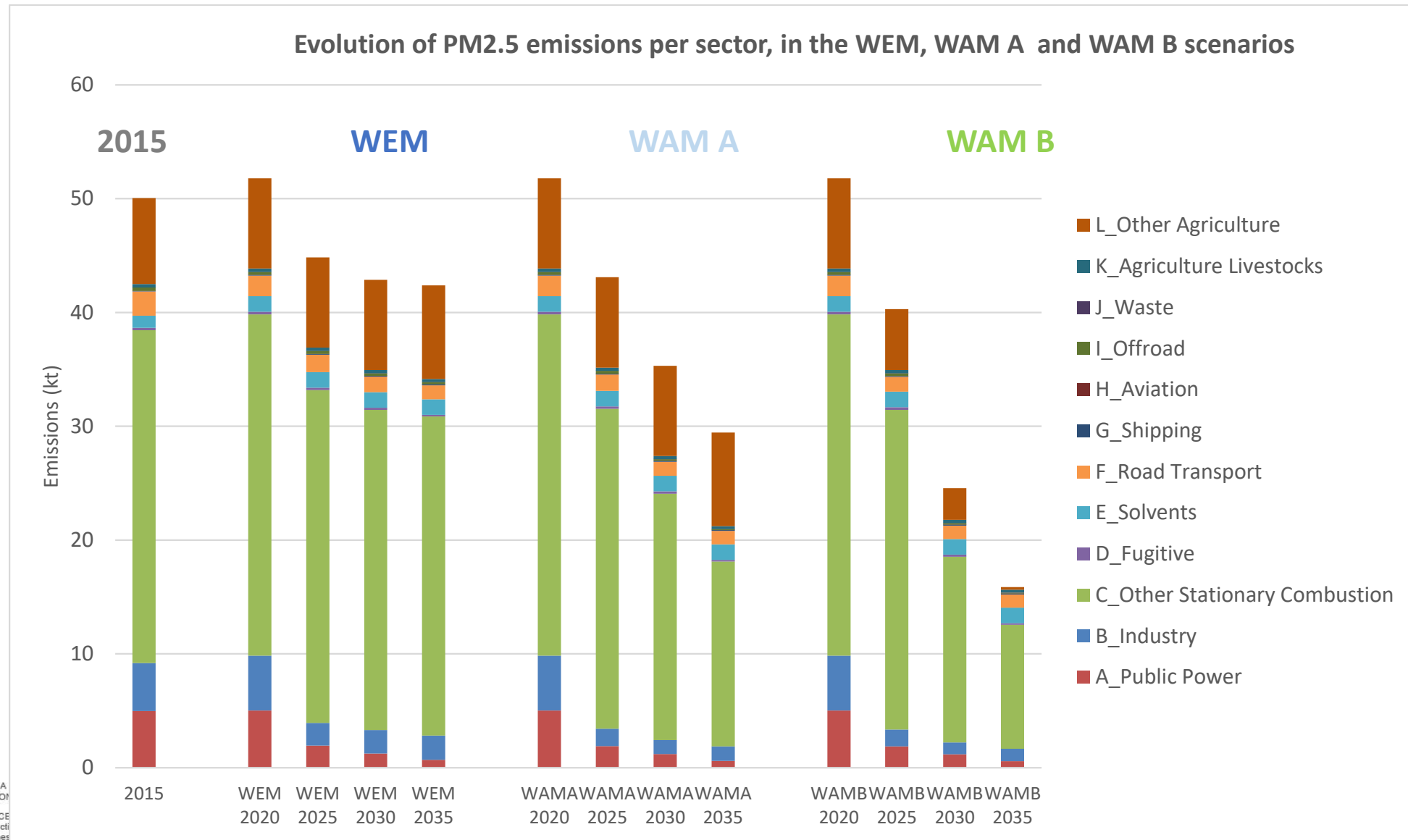
Evolution of emissions

WEM

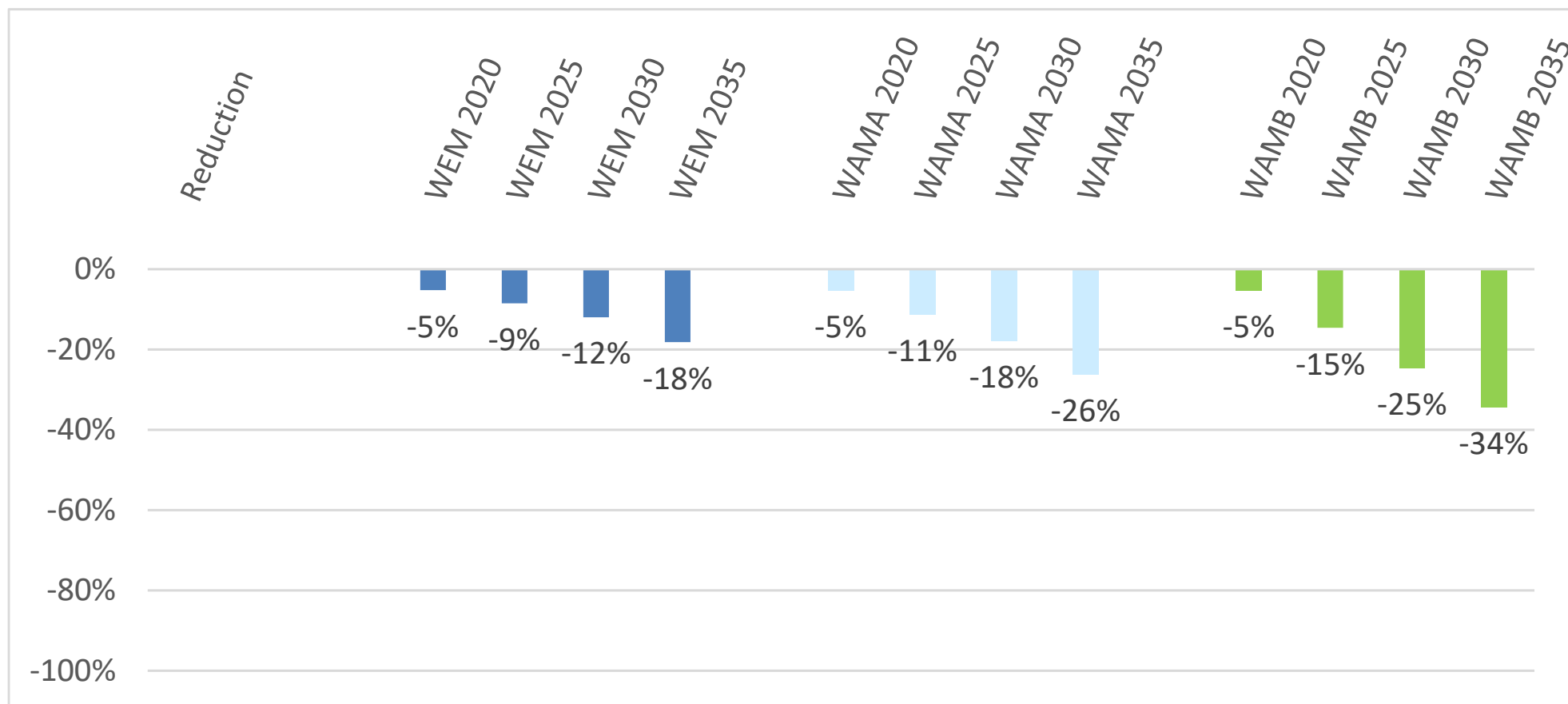
WAM A

WAM B

Trends in emissions according to scenarios: PM2.5



Evolution of emissions according to scenarios / 2015: VOC



Evolution of emissions

WEM

WAM A

WAM B



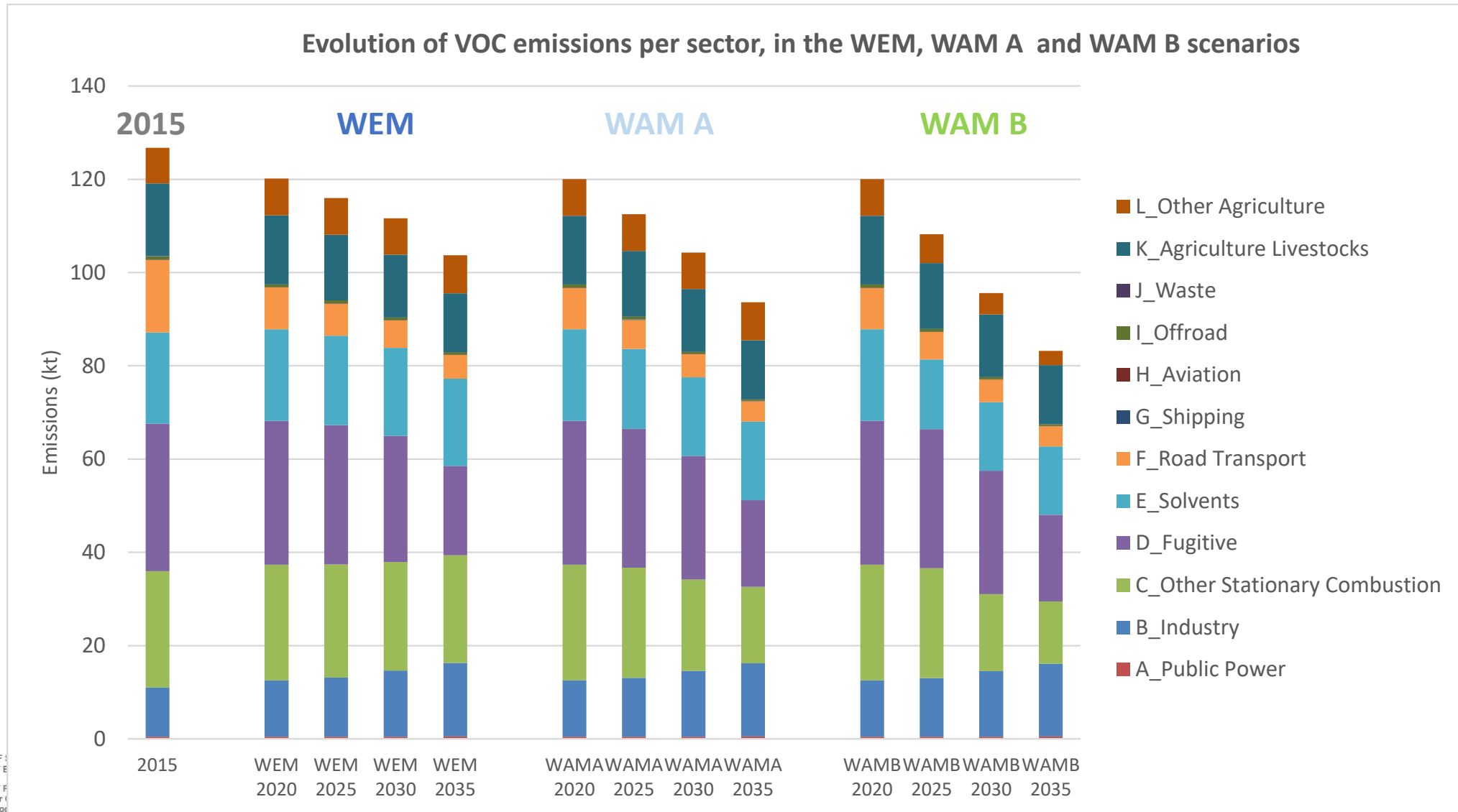
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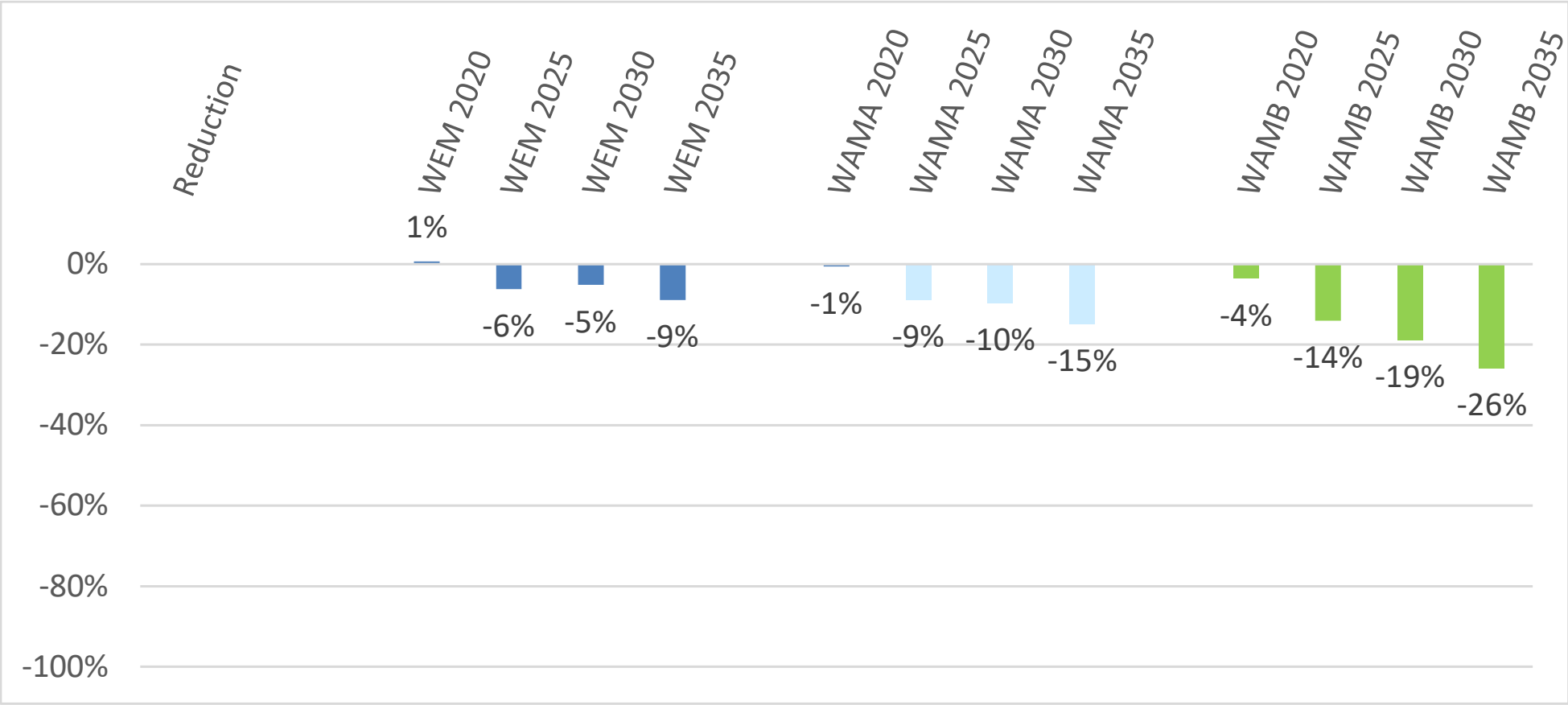
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Trends in emissions according to scenarios: VOC



Evolution of emissions according to scenarios / 2015: NH₃



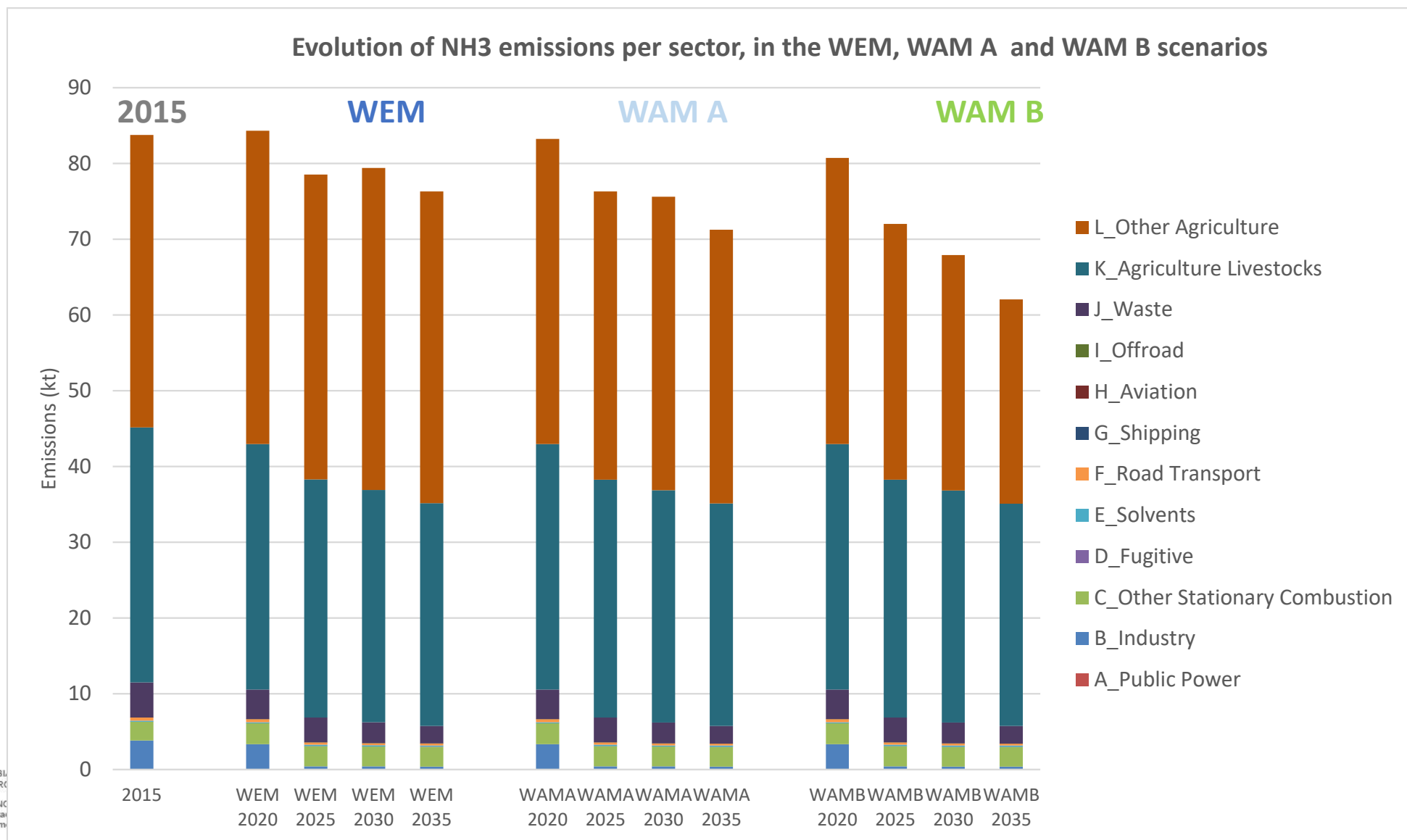
Evolution of emissions

WEM

WAM A

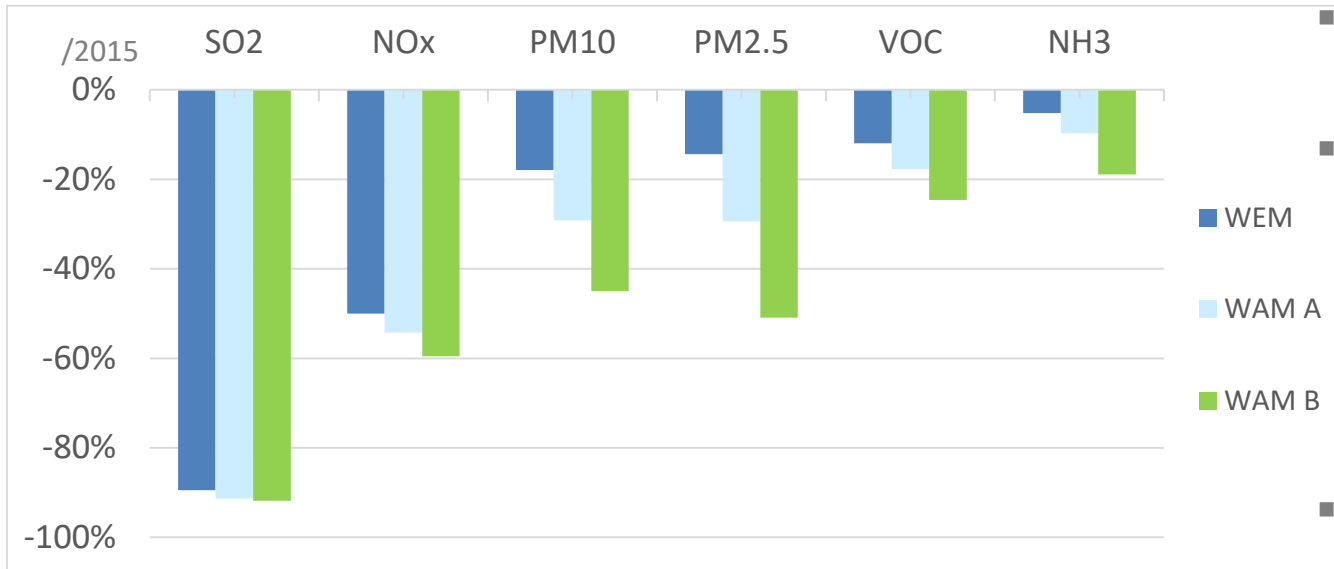
WAM B

Trends in emissions according to scenarios: NH₃



- Conclusions and next steps

Efficiency of measures tested



- Existing measures effectively applied enable significant emission reductions for SO2 and NOx (WEM),
- Full implementation of EU Directives, actions on imports of second-hand vehicles and financial measures to accelerate replacement of oldest solid fuel combustion domestic appliances and oldest vehicles have significant impacts on emission reductions of PM10, PM2.5 and VOC emissions
- For NH3, best practices for livestock and fertilizer spreading are necessary

Next steps

- Development of a WAM C scenario with additional measures (next presentation)
- Impact of scenarios on air quality
- Cost / benefit analysis

Questions ?

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EU for better Environment

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Thank you for your attention!

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