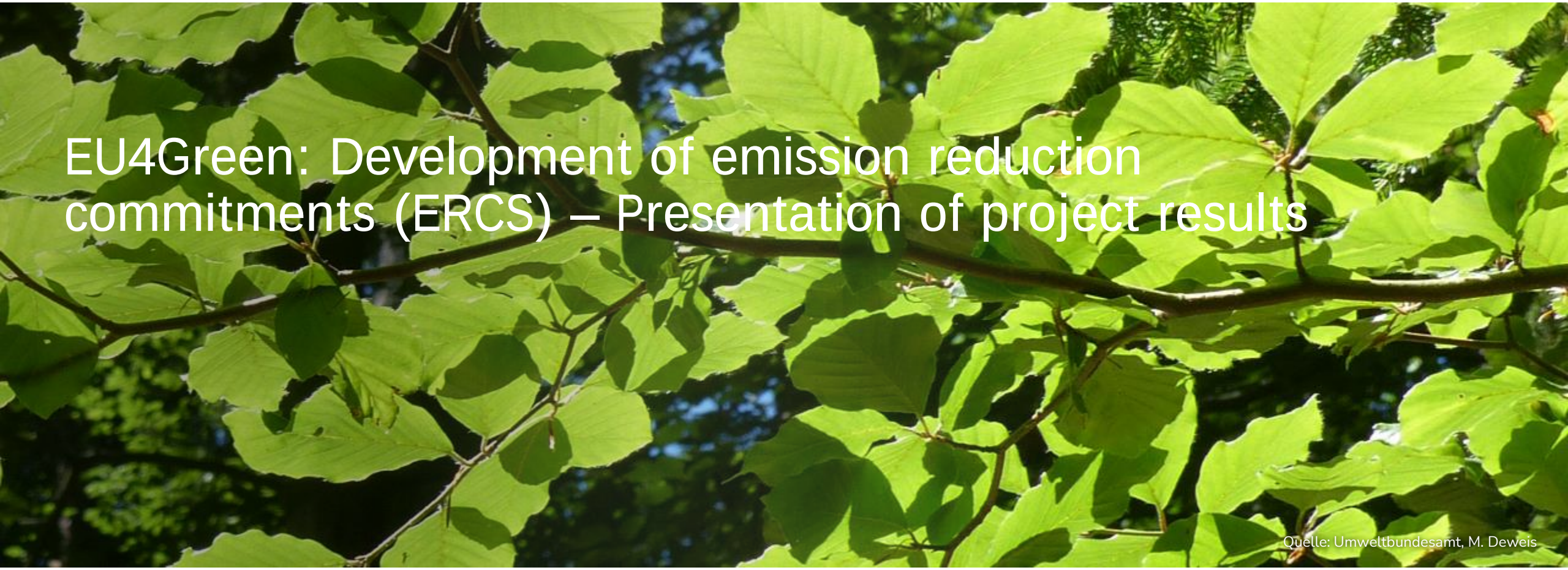
EU4GREEN

# EU4Green: Development of emission reduction commitments (ERCS) – Presentation of project results



Quelle: Umweltbundesamt, M. Deweis

Funded by the European Union

With funding from
Austrian Development Cooperation

umweltbundesamt
ENVIRONMENT AGENCY AUSTRIA

# Agenda

- Summary of the *Consultation* process
- Background on target setting
- Preliminary *Emission Reduction Commitments* (per country and pollutant)
- Questions and discussion

# Context – EU4Green

- The Project EU4Green aims to support the Western Balkan economies in implementing the Green Agenda
- The Green Agenda for the Western Balkans mirrors the initiative of the EU Green Deal

## The project will address five contextual pillars:

- Decarbonisation and resilience: climate action, clean energy, smart mobility
- Circular economy: sustainable production and consumption, waste
- **Depollution: air,** water and soil monitoring and prevention
- Sustainable agriculture and food production, rural areas
- Biodiversity: protection and restoration of ecosystems
- The main beneficiaries are Albania, Bosnia and Herzegovina, Kosovo*, Montenegro, North Macedonia, Serbia.
- More info on EU4Green at https://eu4green.eu/

*This designation is without prejudice to positions on status, and it is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo declaration of independence.

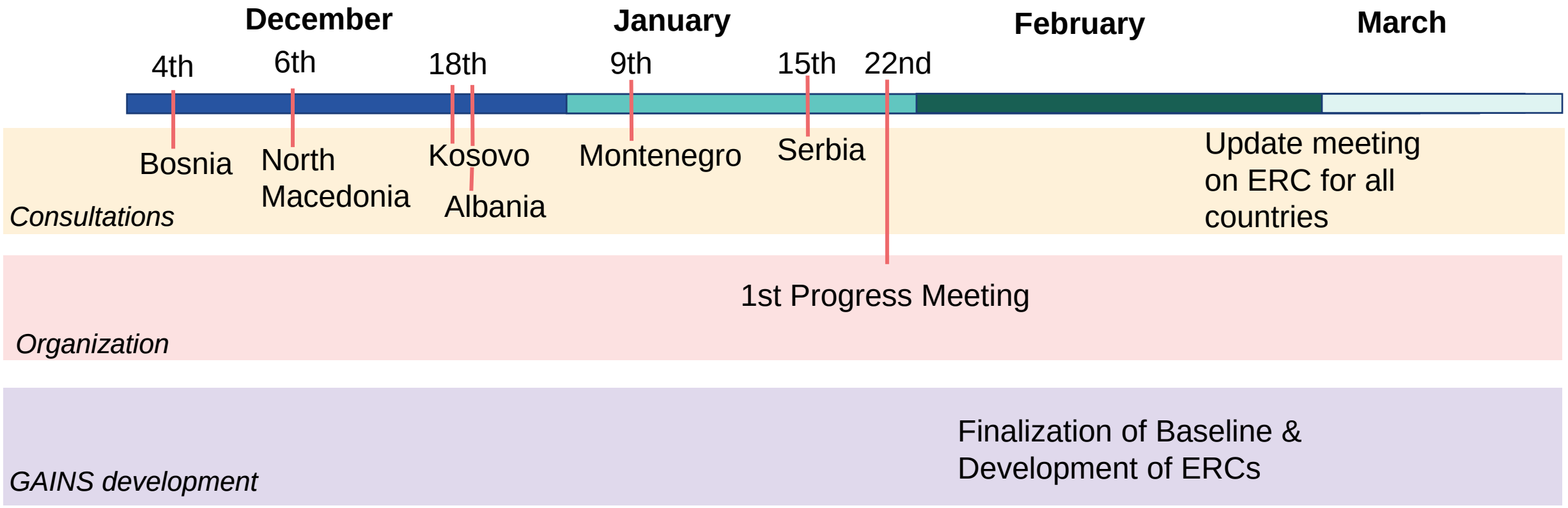
# Objectives of the project

Providing support for the development of best data sets representing past air emissions from 2005 and future projections until 2050 for $SO_2$, $NO_x$, $NH_3$, NMVOC and $PM_{2.5}$

Development of emission reduction commitments (ERCs) for the before mentioned air pollutants for 2020-2029, 2030 and beyond

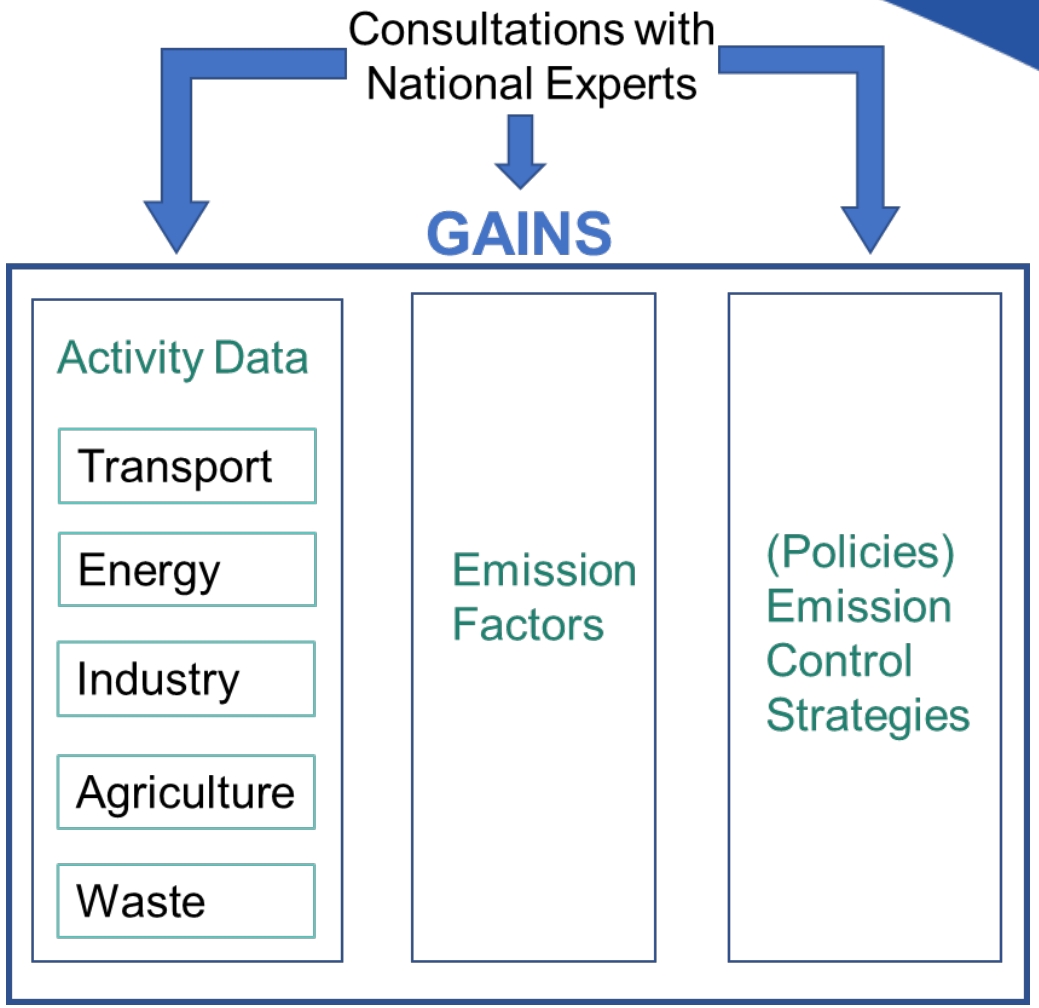
- Based on similar assumptions as NECD: reduction of 50% of premature deaths attributable to air pollution by 2030 (compared to 2005)

# Consultations - Timeline



# Consultation Process

- 6 consultations with good attendance
- Information exchange before meetings
  - Data from air quality measuring stations
  - Data on energy balance etc
  - Policy papers
- Information & data exchange after meetings
  - Minutes & presentation
  - Details and background of GAINS calculations
  - National policy papers etc
- Information used to update the GAINS baseline



# Updating the GAINS baseline

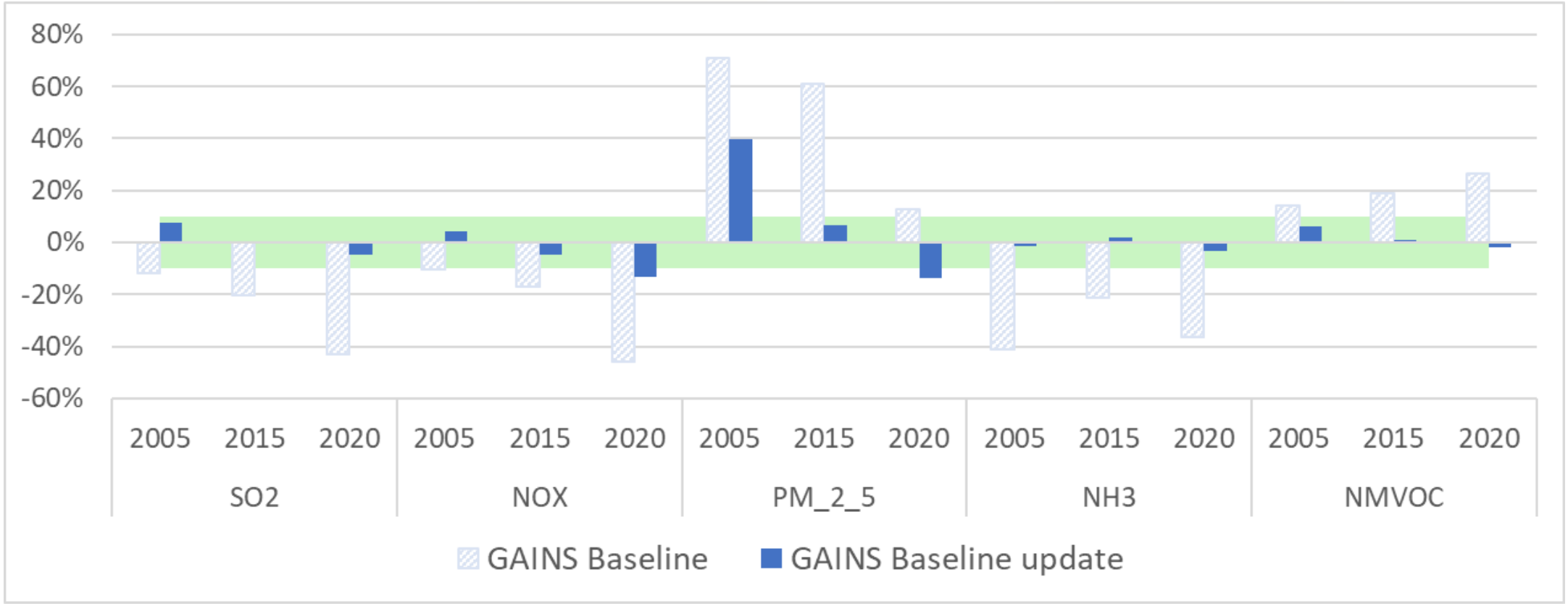
- General updates of activity data (fuel use, industrial production levels, livestock numbers and fertilizer consumption, vehicle numbers etc ) to latest (national) statistics/input from experts
- Revision of fuel characteristics (e.g. S content)
- Revision of emission factors (e.g. Tier method)
- Revision of emission controls (e.g. EURO standards, Flue-gas desulfurization, ) using information on current legislation and implementation

➡ **Revisions reduced overall discrepancies with national data**

- Remaining differences
  - Structural difference between national inventories and GAINS model (implies also different Tier approach)
  - Differences in emission factors (e.g. Tier approach used, lack of information to adjust)
  - Differences in efficiencies of technologies (lack of information to adjust)

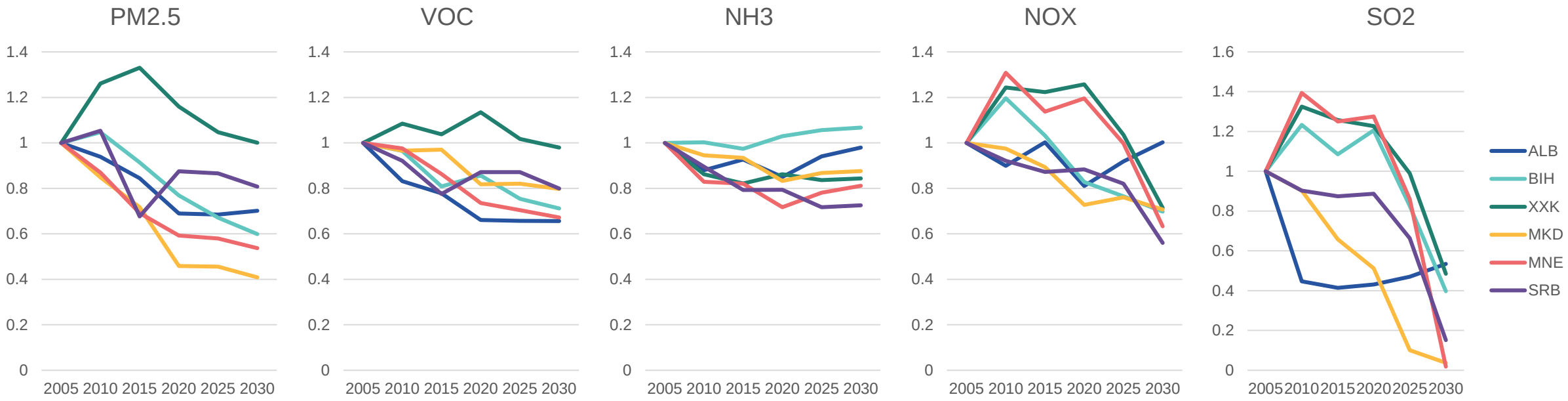
# Changes to the GAINS Baseline

*Comparison to national reporting for the West Balkan region*




Successful harmonization of estimates achieved at the level of the West Balkan region

# GAINS baseline projection



International Institute for Applied Systems Analysis
IIASA www.iiasa.ac.at

# NECD consistent preliminary emission reduction targets for the West Balkan countries and their implications

**Fabian Wagner , Katrin Kaltenegger, Zig Klimont**

Pollution Management Group

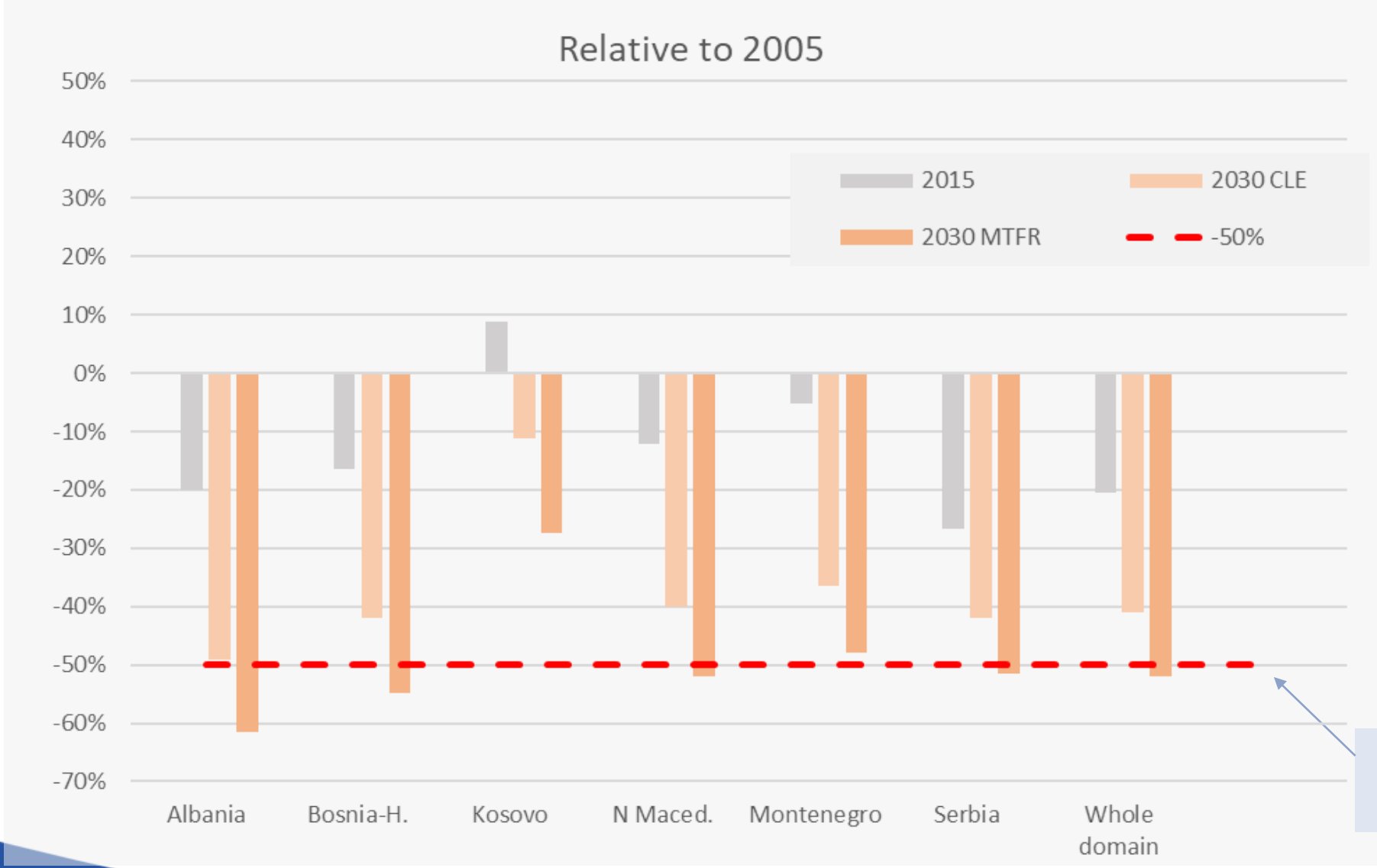
Energy, Climate and Environment Program

19 April 2024

# Content

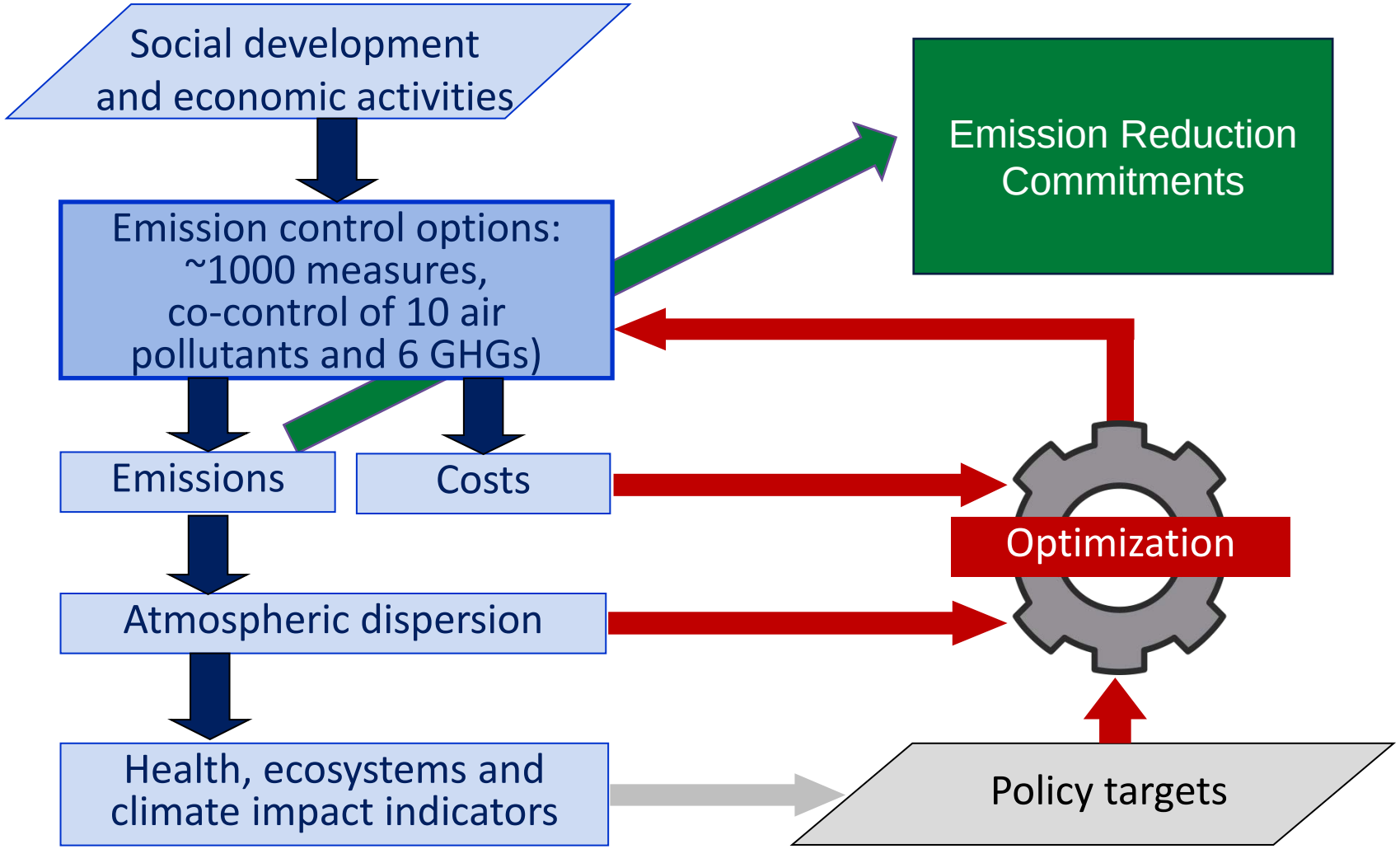
- Baseline and feasible reductions
- Cost-effective solutions
  - Benefits and costs
  - Implications for emissions
- Conclusion

# Premature deaths



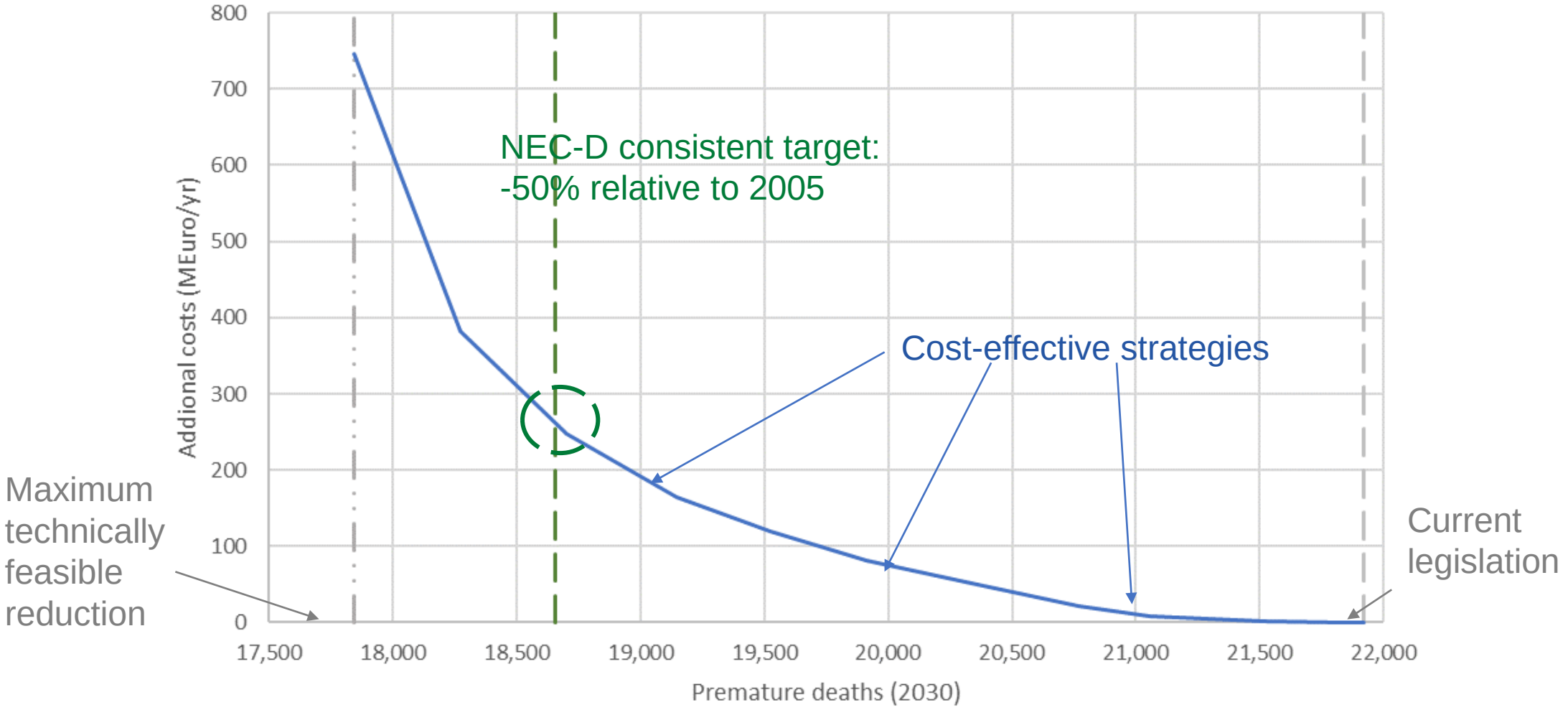

-50% relative to 2005 by 2030 is feasible!

# Method: the GAINS tool [Greenhouse gas–Air pollution Interactions and Synergies]



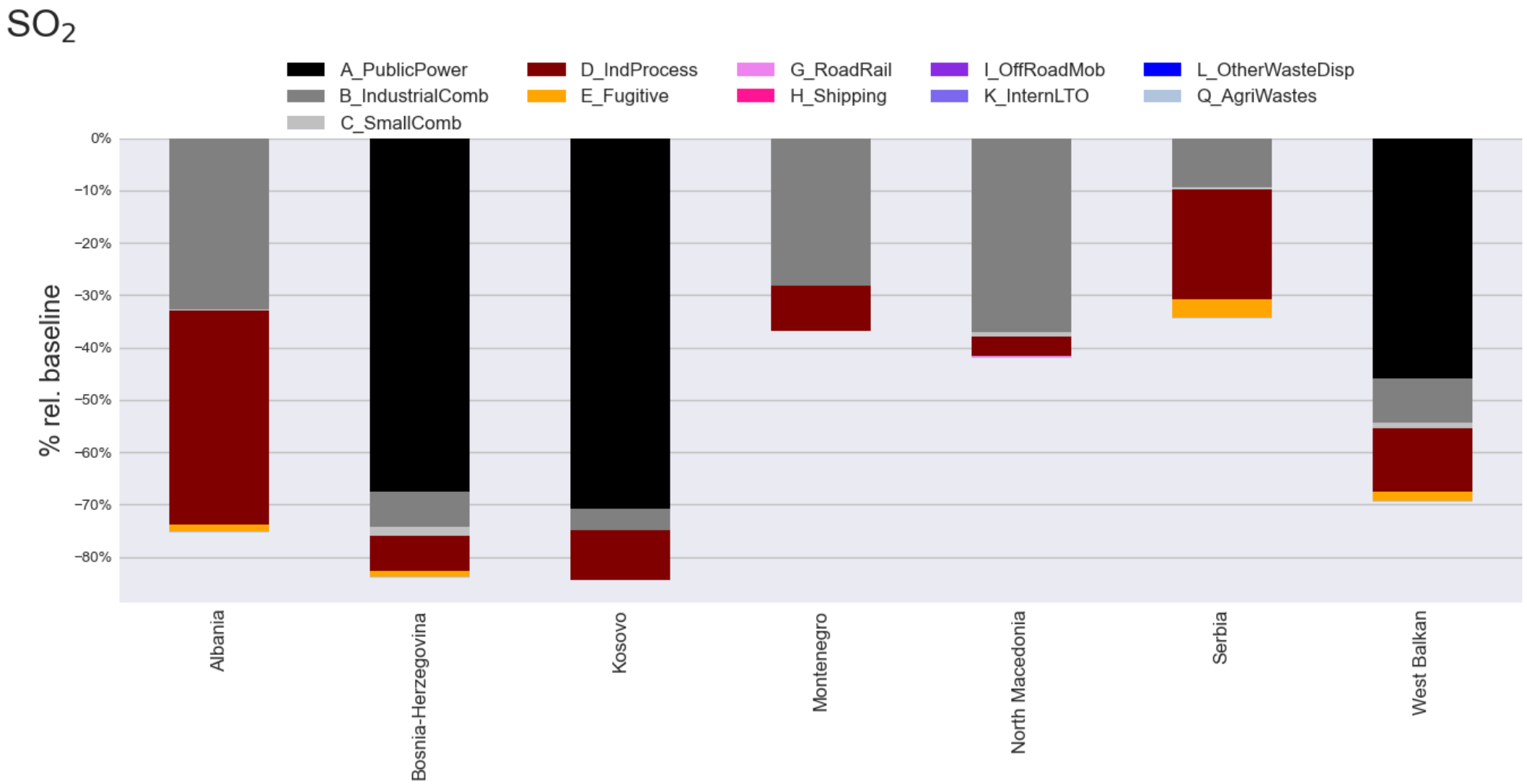

GAINS is an online tool available at https//gains.iiasa.ac.at

# Reducing premature deaths cost-effectively in West Balkan




CLE… current legislation emission
MTFR… maximum technically feasible reduction

# Sectoral emission reductions in the cost-effective solution



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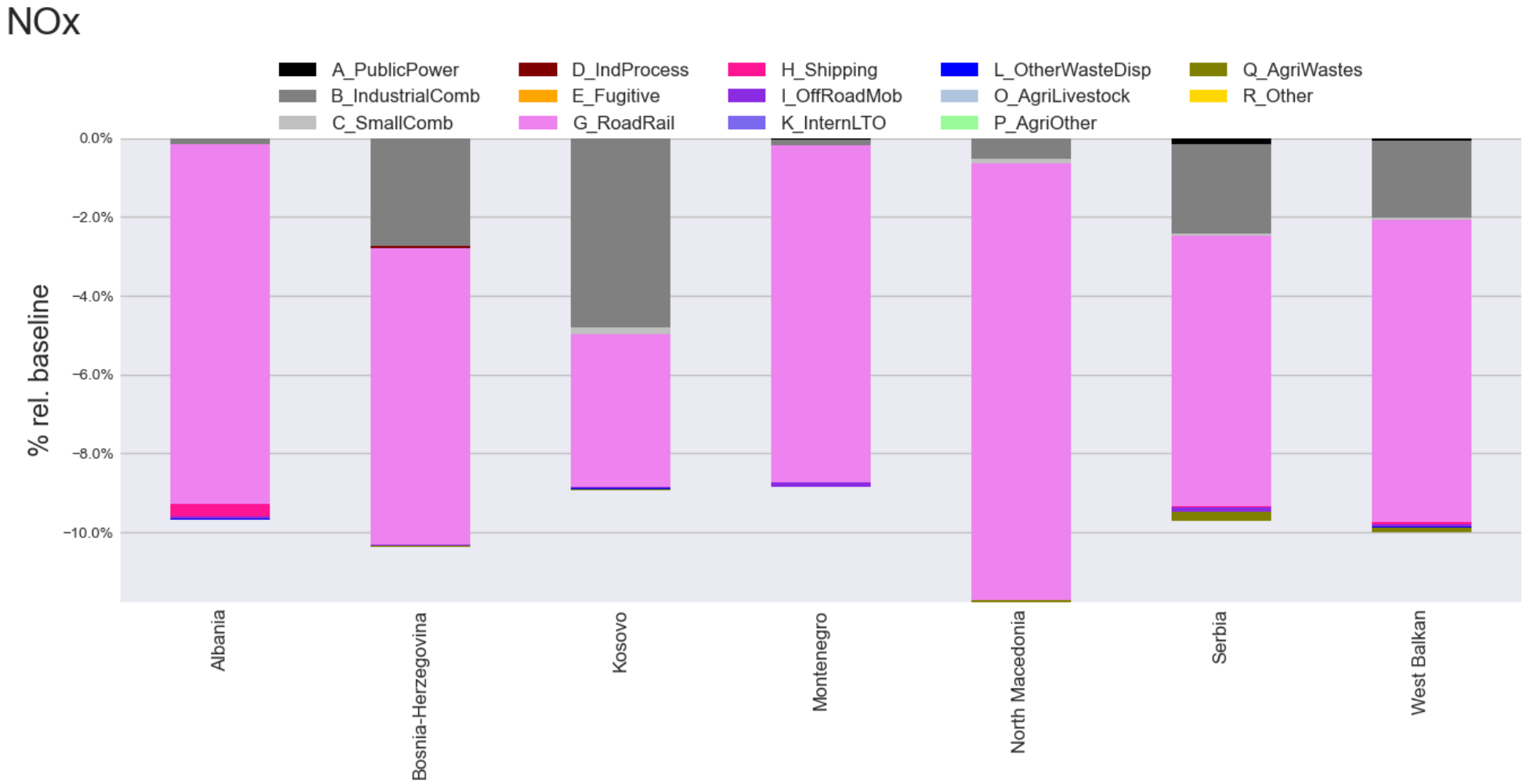

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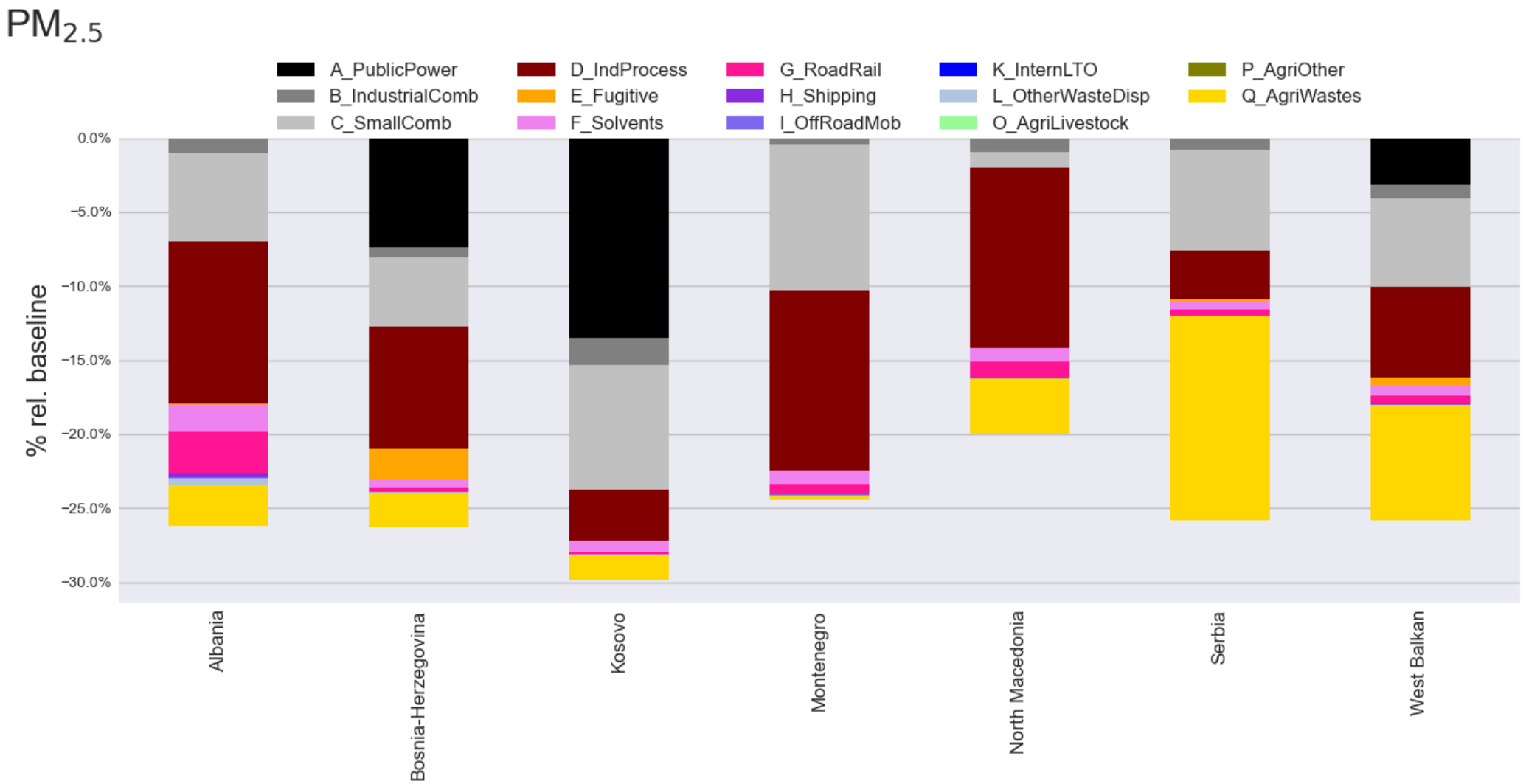

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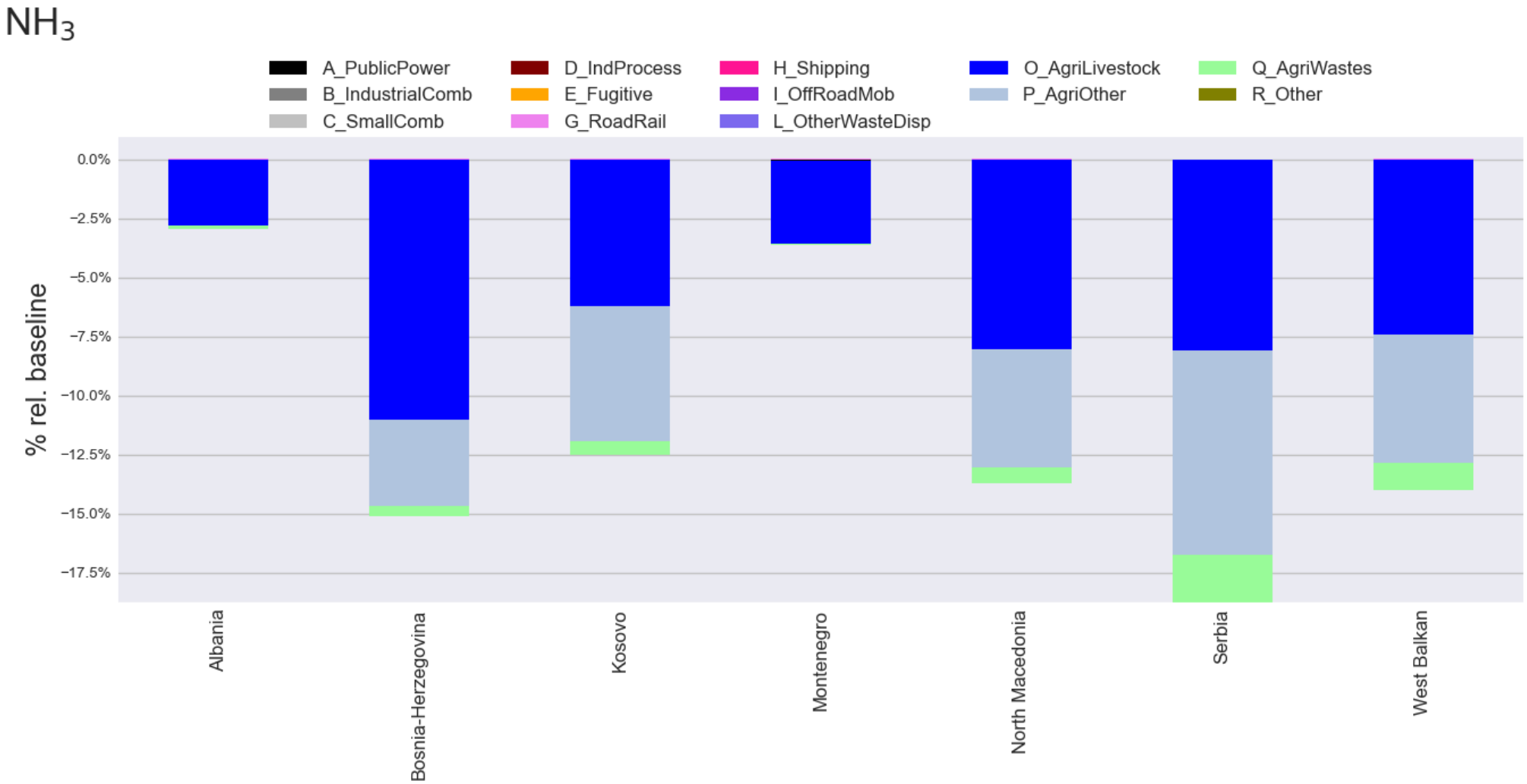
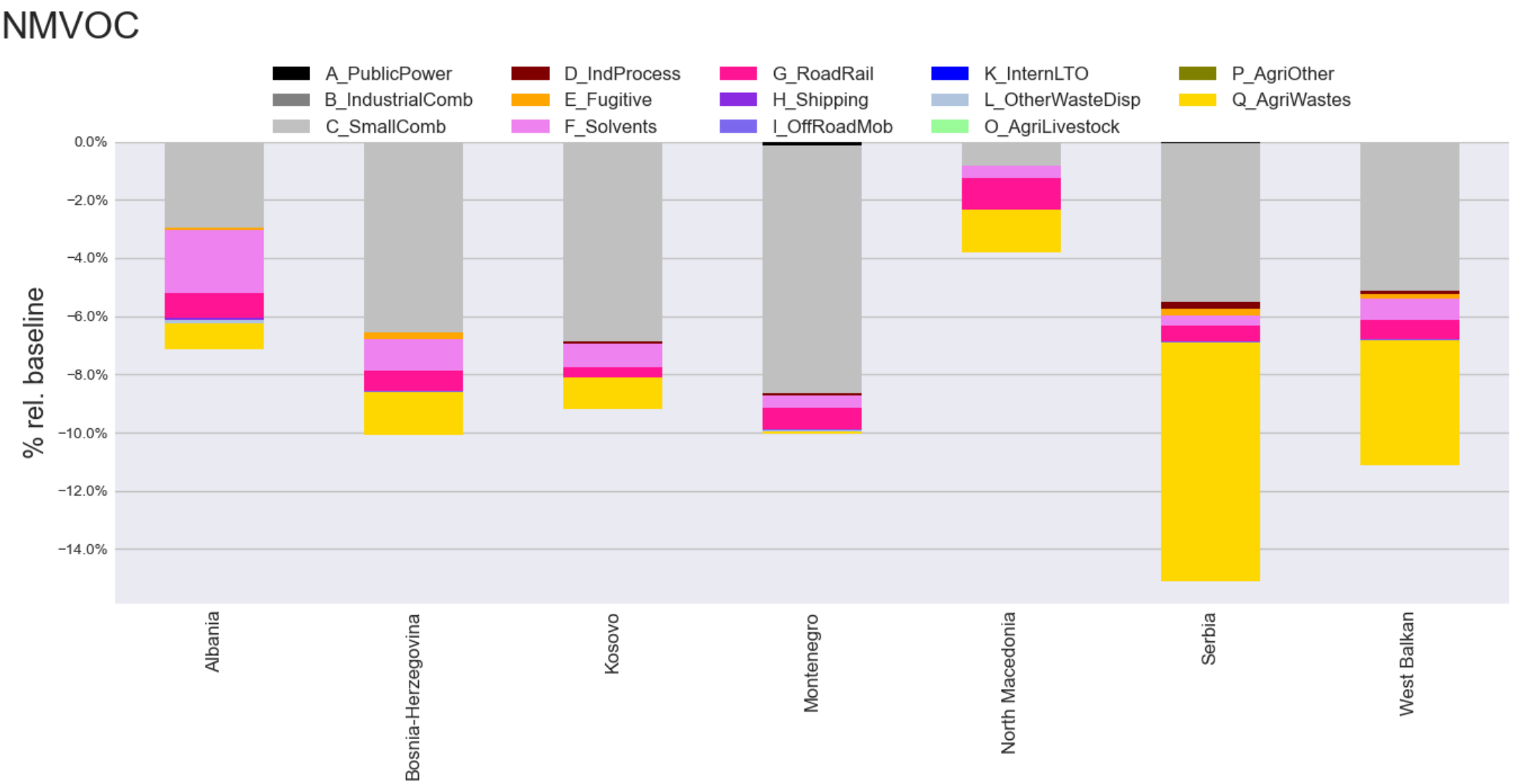
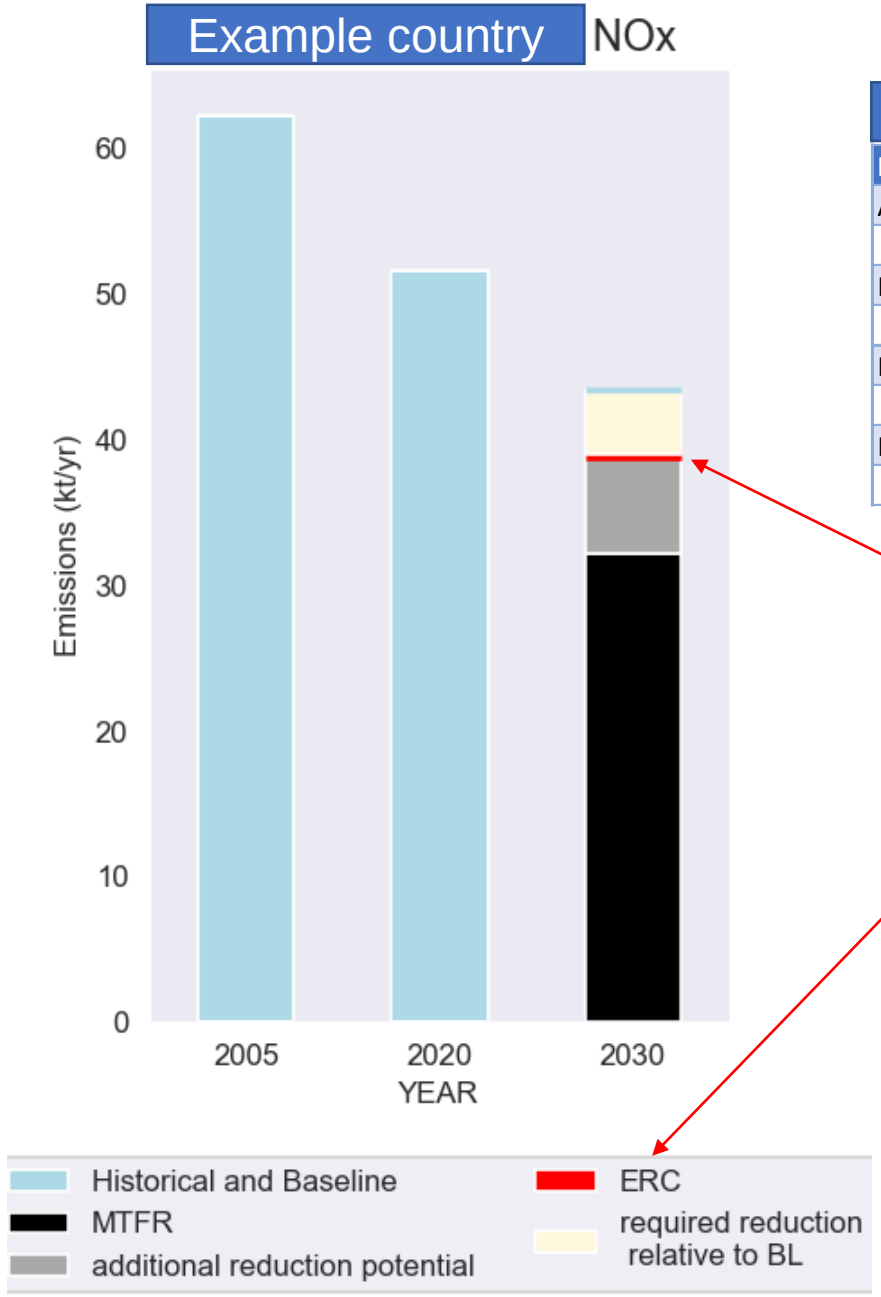


# Sectoral emission reductions in the cost-effective solution

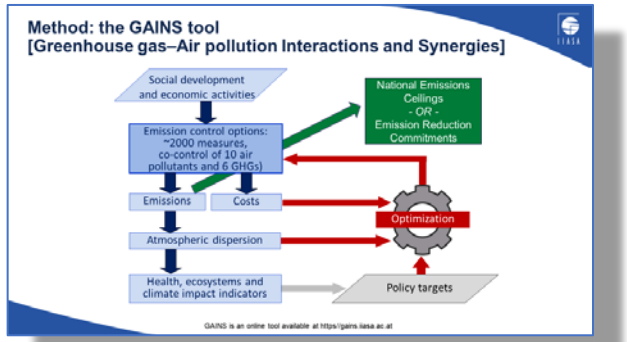


# Example:



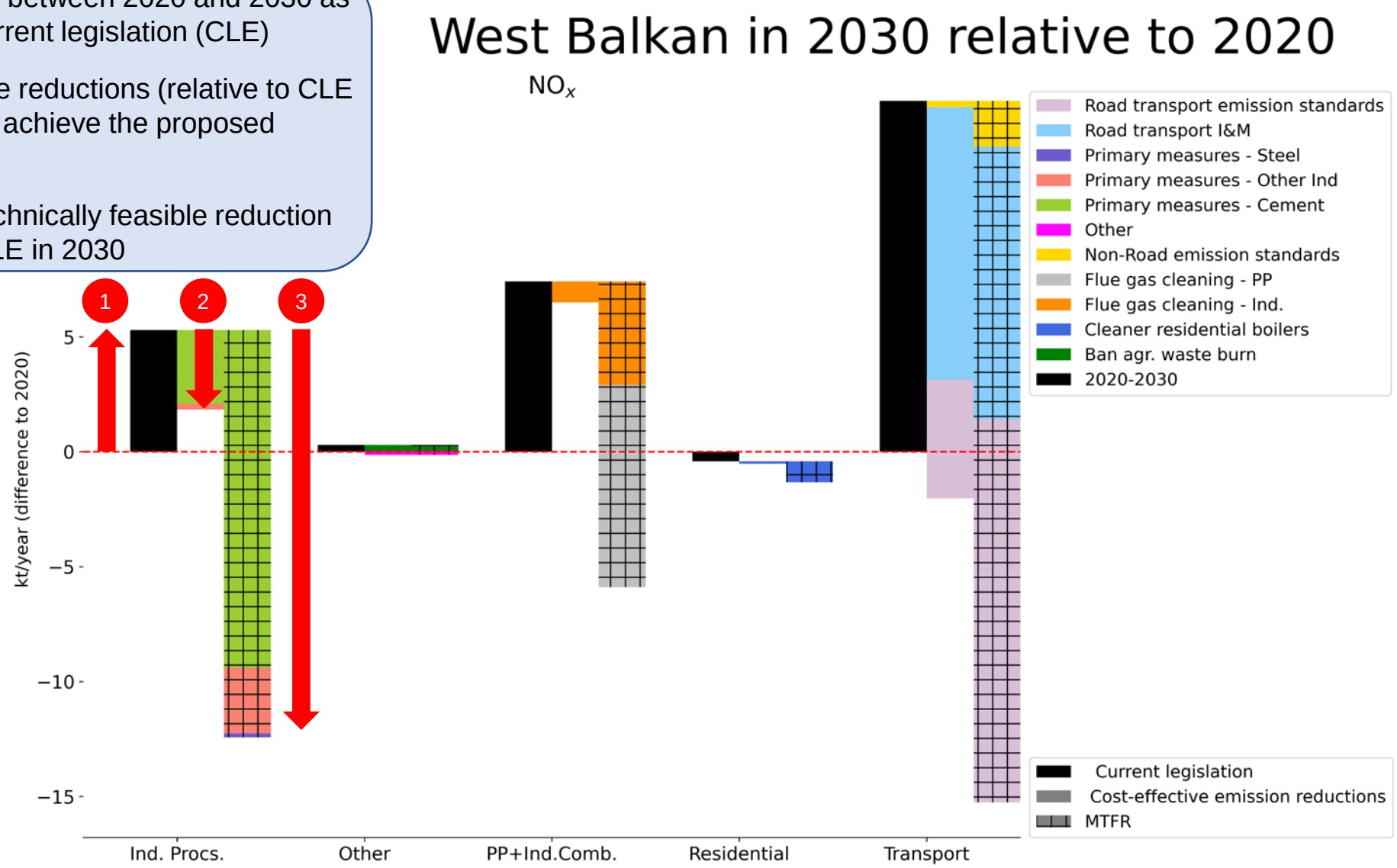

| Example country | | |
|---|---|---|
| **Item** | **unit** | **NOx** |
| Absolute target | kt | 39.00 |
| | | |
| Reduction rel. 2005 | kt | -23.30 |
| | % | -37% |
| Reduction rel. 2020 | kt | -12.60 |
| | % | -24% |
| Reduction rel. 2030 (CLE) | kt | -4.50 |
| | % | -10% |

Cost-effective ERC resulting from modeling exercise

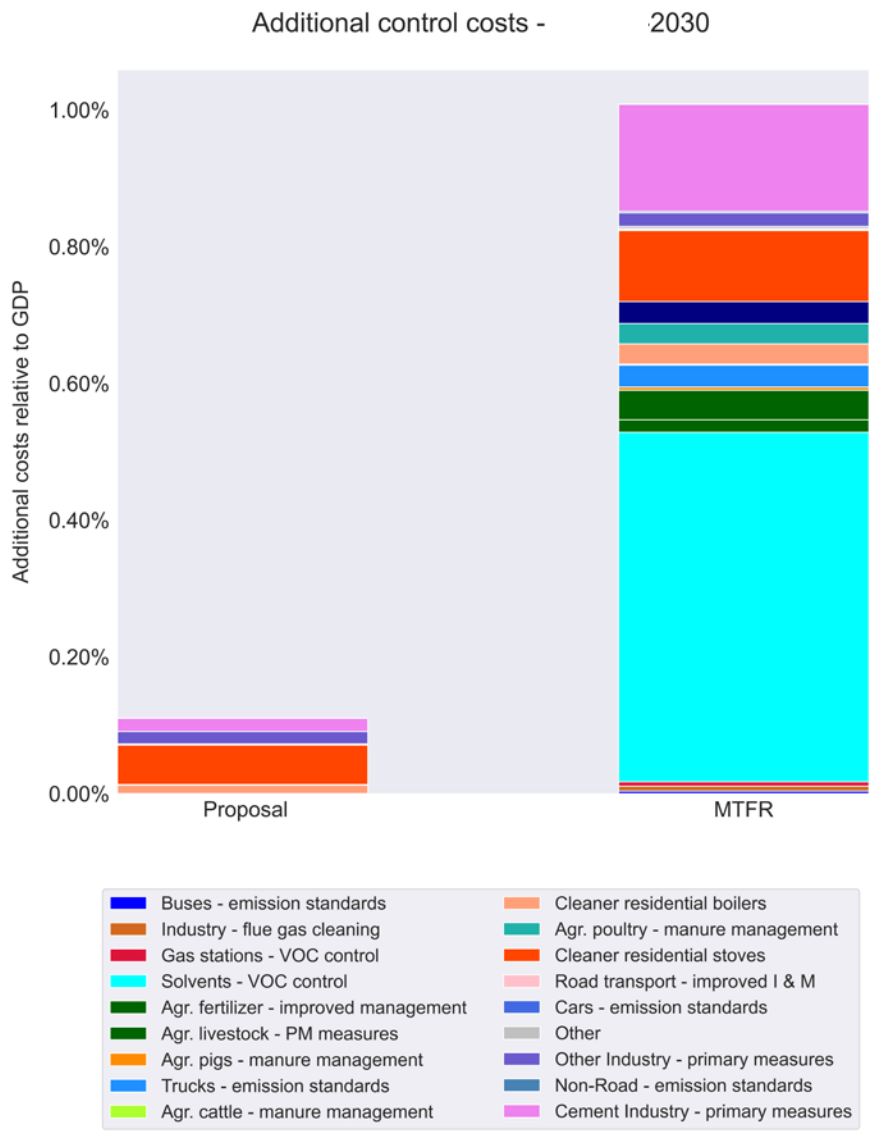


# Measures by sectors in the cost-effective solution

1. Development between 2020 and 2030 as a result of current legislation (CLE)
2. Cost-effective reductions (relative to CLE in 2030) that achieve the proposed target
3. Maximum technically feasible reduction relative to CLE in 2030



# Additional Costs relative to 2030 Current Legislation (CLE) – An example



# Conclusions

- A 50% reduction, relative to 2005, in premature deaths due to PM2.5 exposure by the year 2030 for the total domain of the six West Balkan economies is technically feasible at a cost of approximately 250 million €/yr (equivalent to approx. 0.3% of regional GDP).

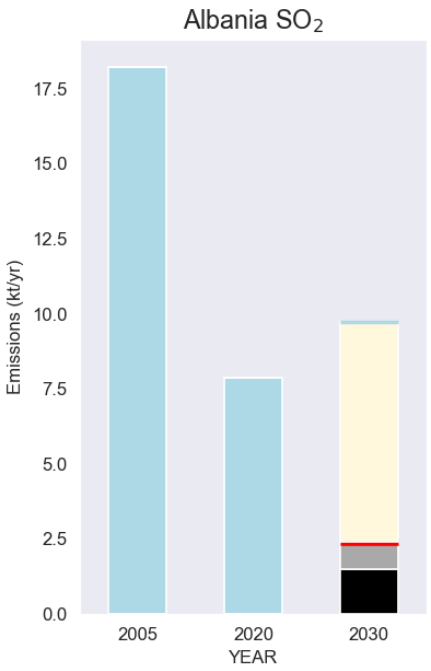
- The modeling analysis underpins the proposed cost-effective solution for each of the economies
    - -> proposal for modeled cost-effective measures and preliminary ERCs

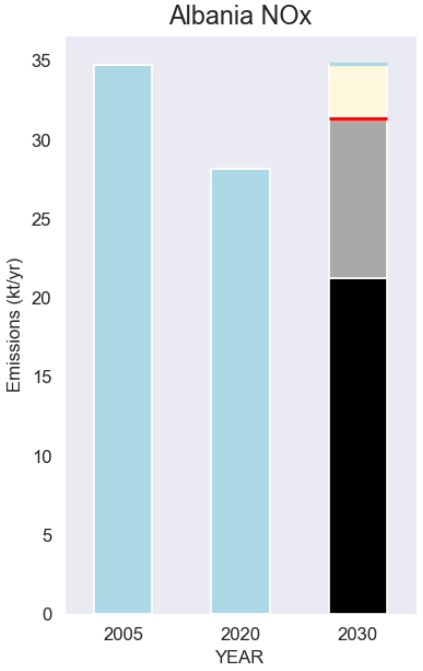
# Country-specific information

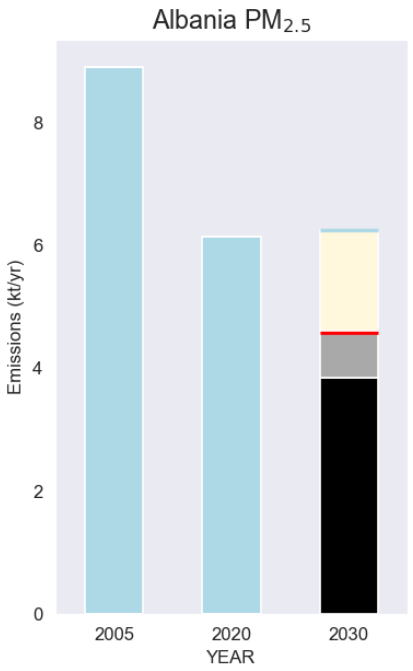
# Cost-effective ERCs resulting from the modeling exercise

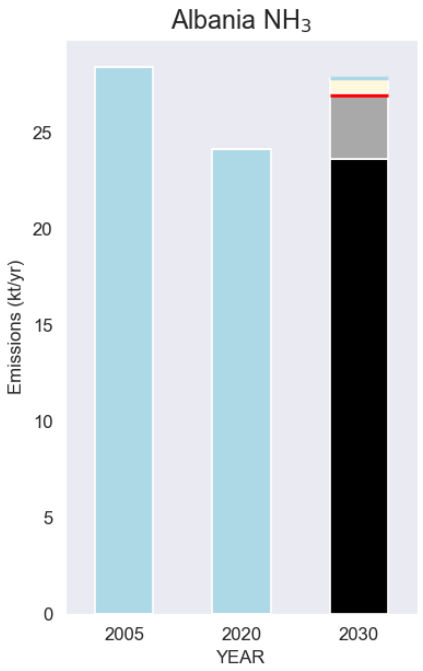
[reflecting consultations with the economies until March 2024]

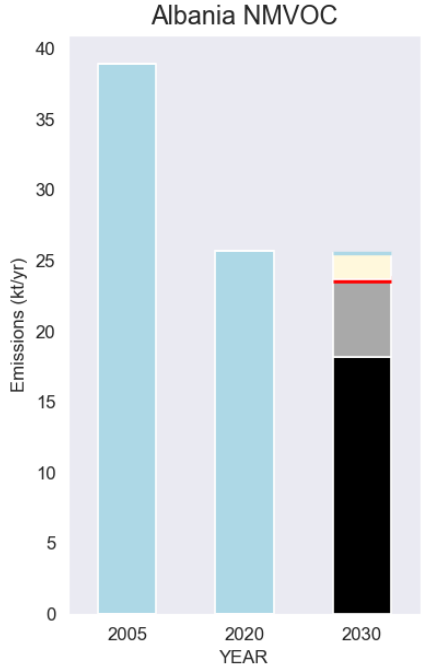
| Albania | | | | | | |
|---|---|---|---|---|---|---|
| Item | unit | SO2 | NOx | PM2.5 | NH3 | VOCs |
| Absolute target | kt | 2.41 | 31.47 | 4.62 | 27.02 | 23.72 |
| | | | | | | |
| Reduction rel. 2005 | kt | -15.82 | -3.33 | -4.28 | -1.38 | -15.24 |
| | % | -87% | -10% | -48% | -5% | -39% |
| Reduction rel. 2020 | kt | -5.46 | 3.27 | -1.48 | 2.82 | -2.00 |
| | % | -69% | 12% | -24% | 12% | -8% |
| Reduction rel. 2030 (CLE) | kt | -7.33 | -3.33 | -1.58 | -0.78 | -1.83 |
| | % | -75% | -10% | -25% | -3% | -7% |

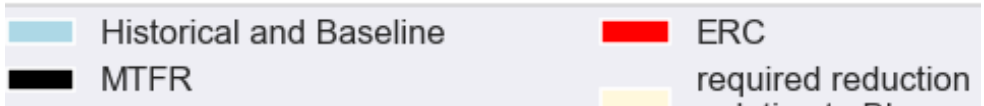


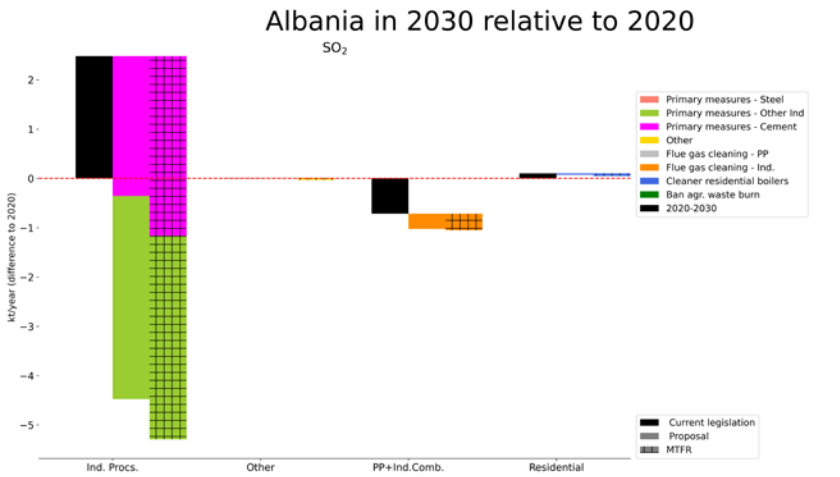



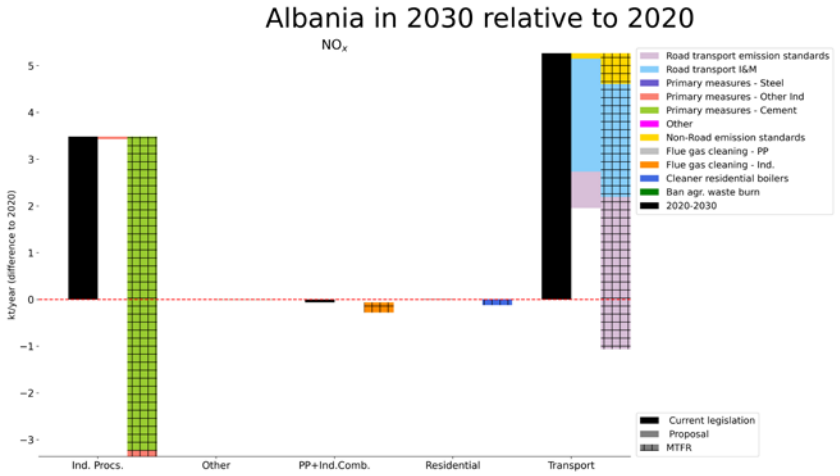



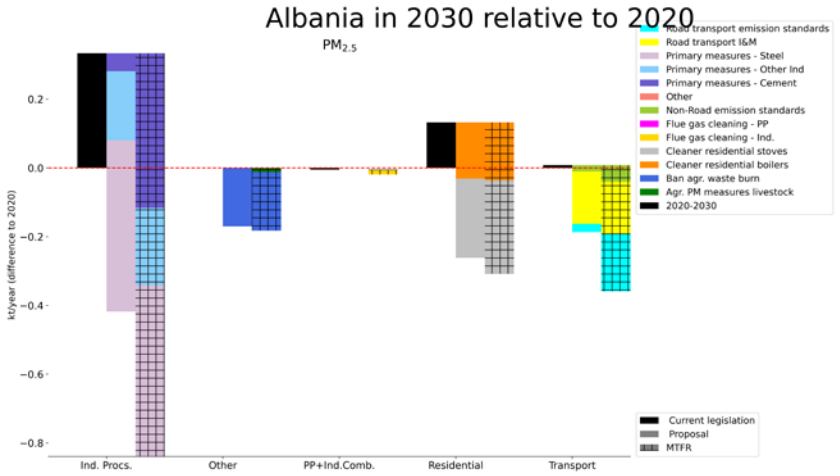
# Albania

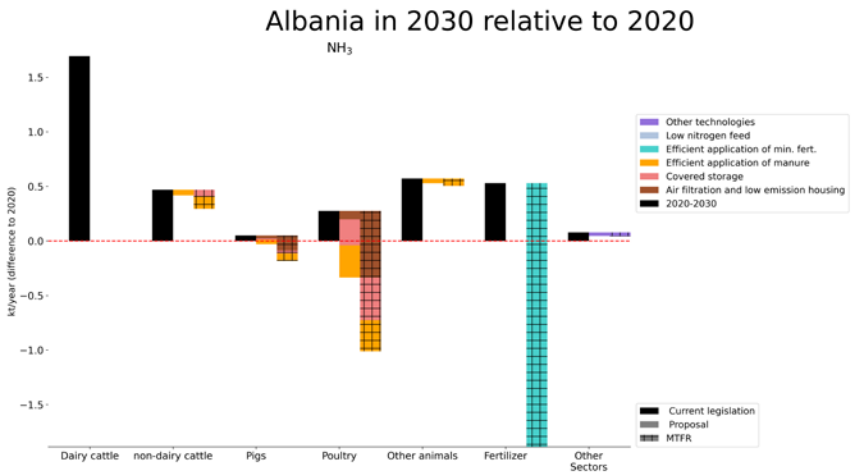
## Cost-effective ERCs and costs resulting from the modeling exercise

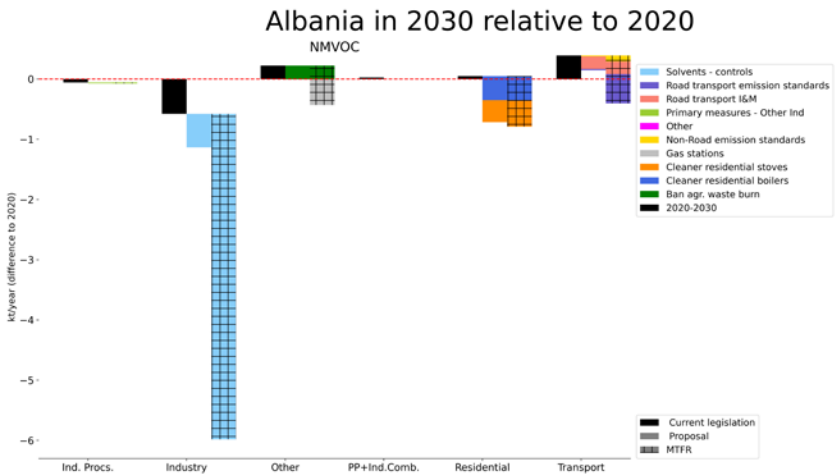
[reflecting consultations with the economies until March 2024]

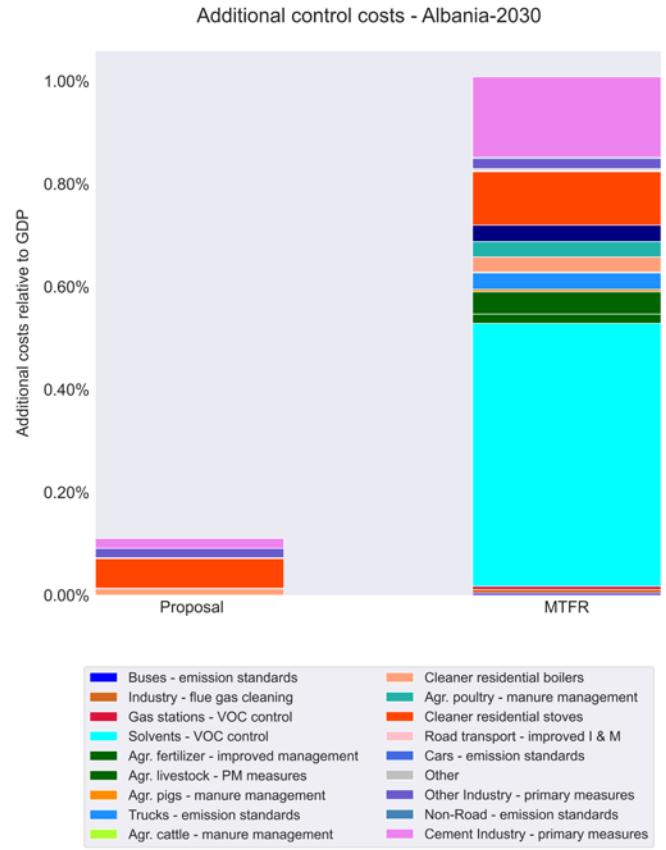


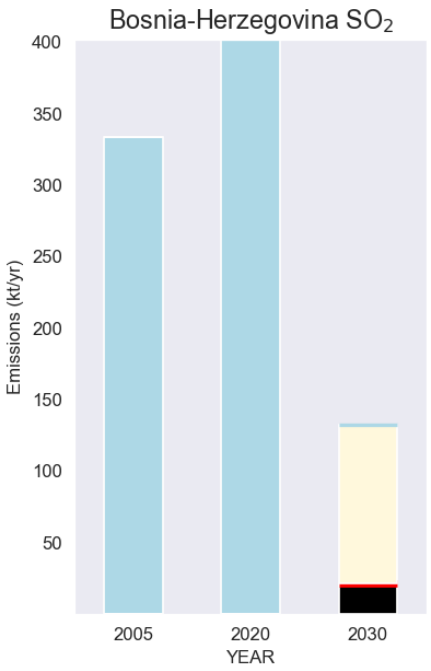



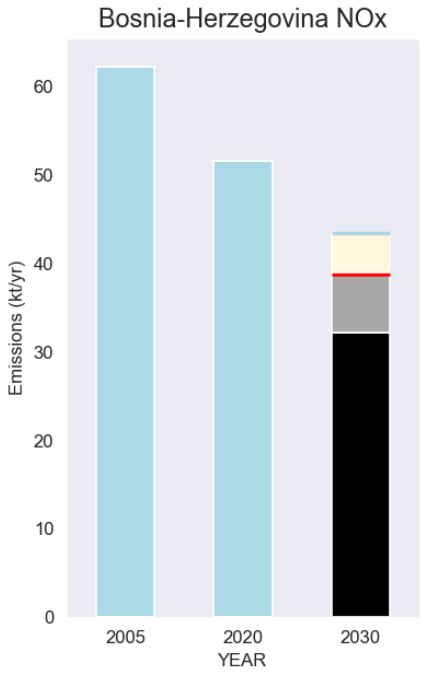

"Proposal" = cost-effective measures

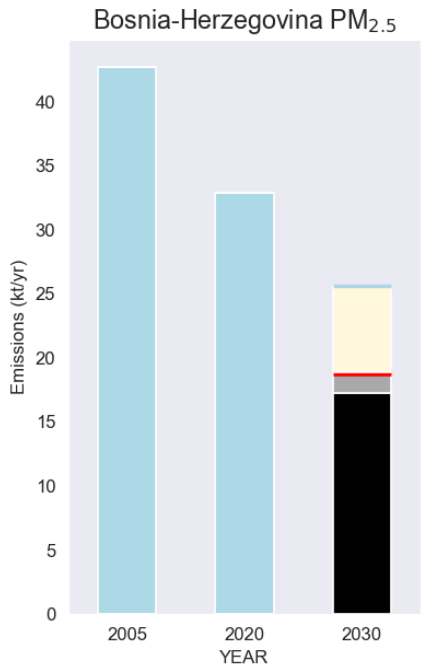
# Cost-effective ERCs resulting from the modeling exercise

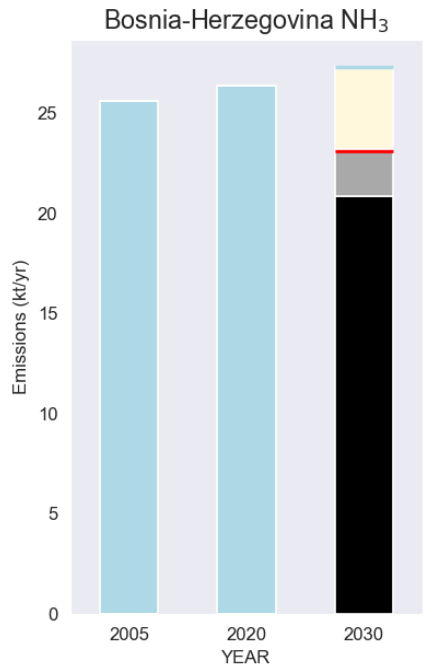
[reflecting consultations with the economies until March 2024]

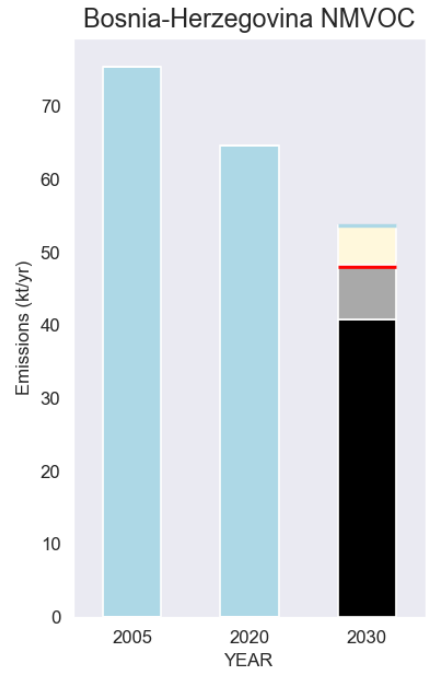
| Bosnia and Herzegovina | | | | | | |
|---|---|---|---|---|---|---|
| **Item** | **unit** | **SO2** | **NOx** | **PM2.5** | **NH3** | **VOCs** |
| Absolute target | kt | 21.31 | 39.00 | 18.86 | 23.18 | 48.33 |
| | | | | | | |
| Reduction rel. 2005 | kt | -311.98 | -23.30 | -23.84 | -2.42 | -27.21 |
| | % | -94% | -37% | -56% | -9% | -36% |
| Reduction rel. 2020 | kt | -380.65 | -12.60 | -14.04 | -3.12 | -16.34 |
| | % | -95% | -24% | -43% | -12% | -25% |
| Reduction rel. 2030 (CLE) | kt | -110.98 | -4.50 | -6.74 | -4.12 | -5.42 |
| | % | -84% | -10% | -26% | -15% | -10% |

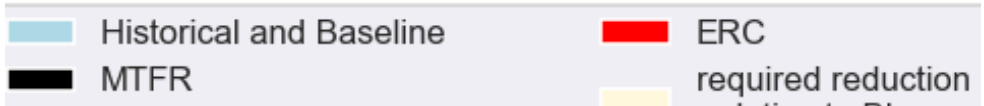


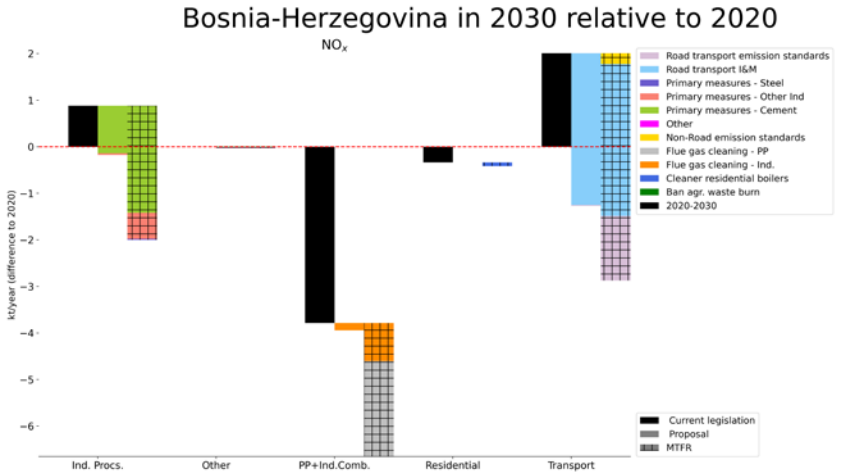



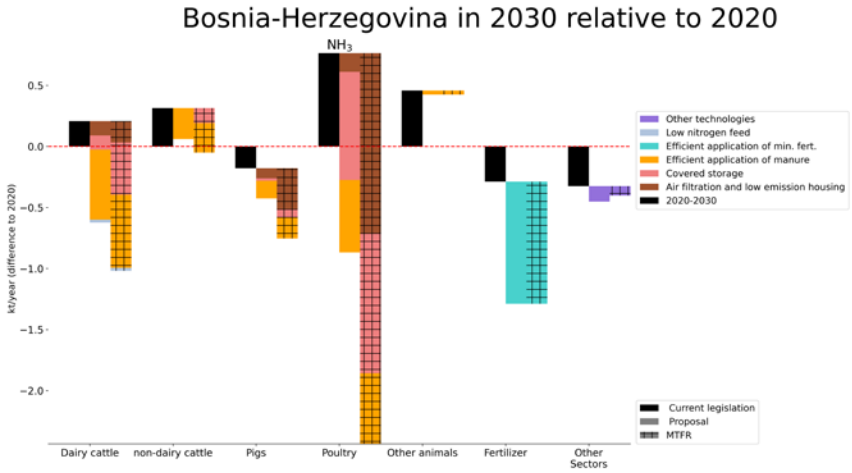



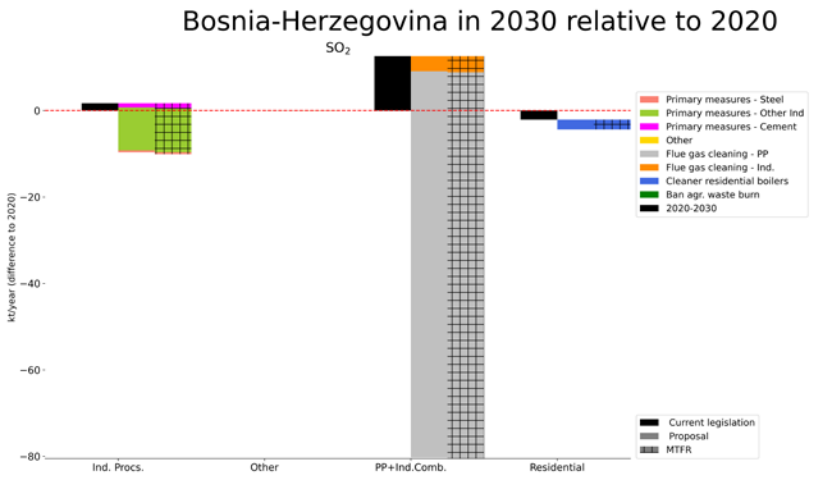
# Bosnia-Herzogovina

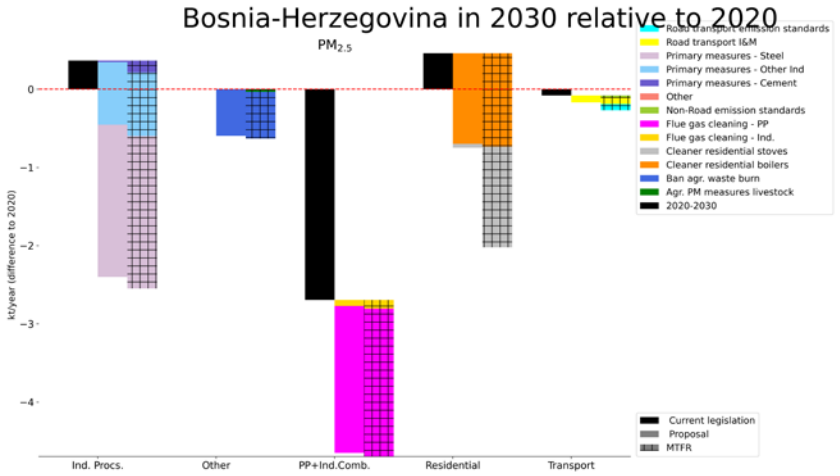
## Cost-effective ERCs and costs resulting from the modeling exercise

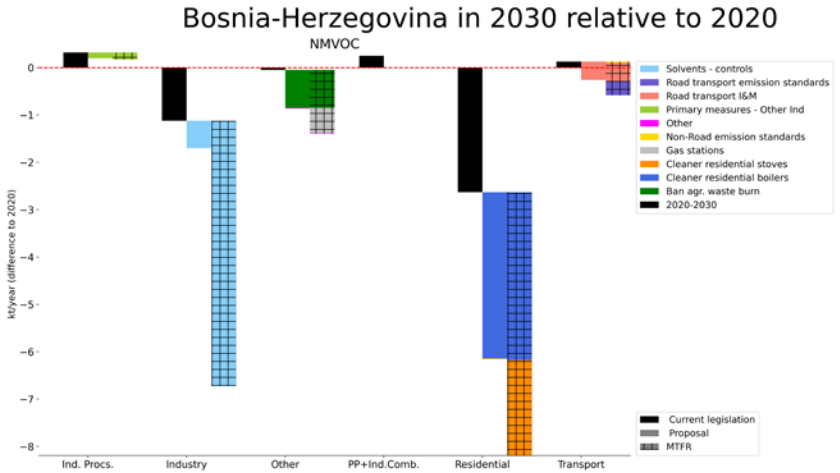
[reflecting consultations with the economies until March 2024]

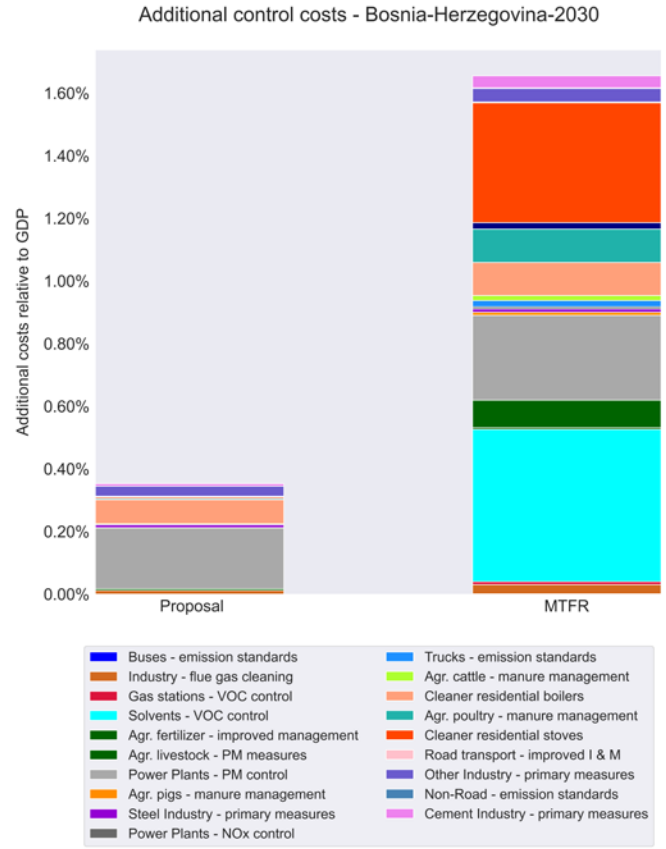


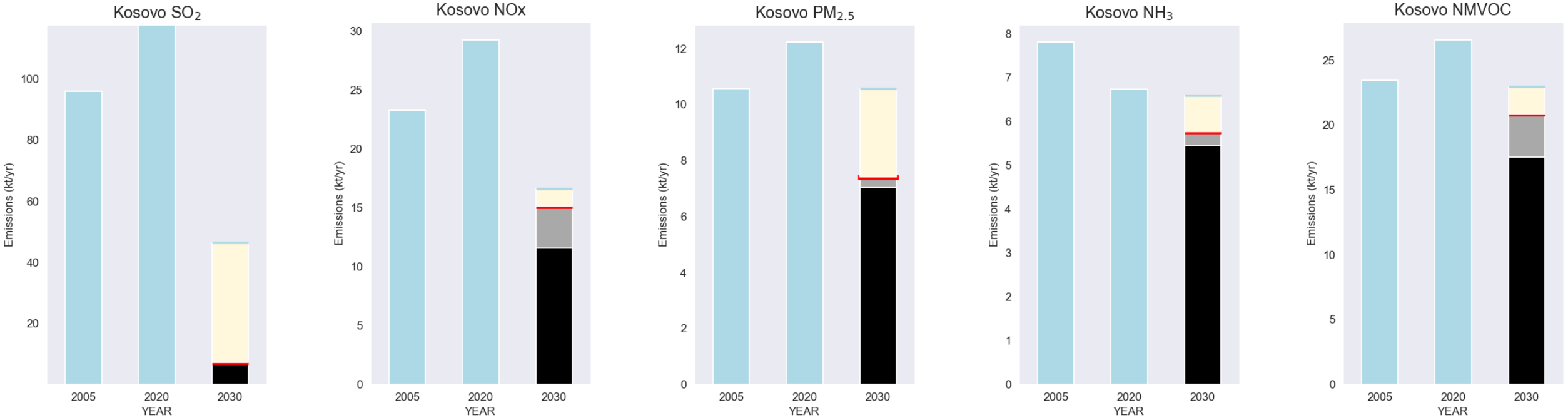




"Proposal" = cost-effective measures

# Cost-effective ERCs resulting from the modeling exercise

[reflecting consultations with the economies until March 2024]

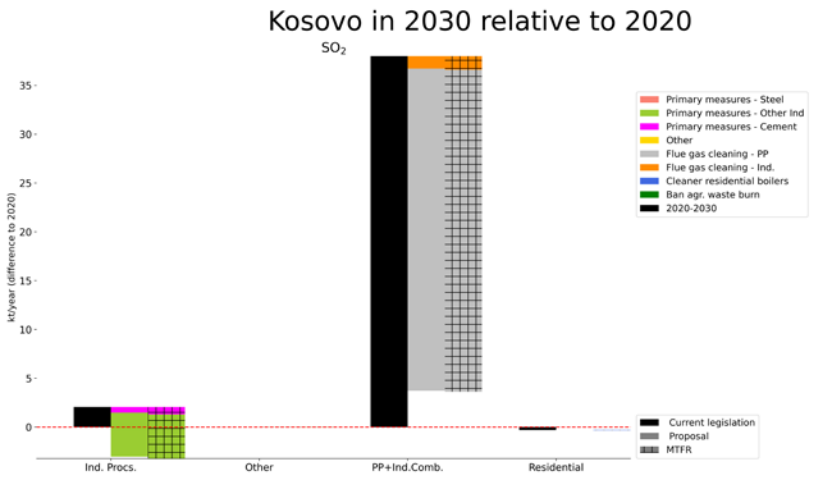
| Kosovo | | | | | | |
|---|---|---|---|---|---|---|
| Item | unit | SO2 | NOx | PM2.5 | NH3 | VOCs |
| Absolute target | kt | 7.20 | 15.15 | 7.40 | 5.76 | 20.85 |
| | | | | | | |
| Reduction rel. 2005 | kt | -88.85 | -8.15 | -3.20 | -2.04 | -2.60 |
| | % | -93% | -35% | -30% | -26% | -11% |
| Reduction rel. 2020 | kt | -110.66 | -14.15 | -4.80 | -0.94 | -5.74 |
| | % | -94% | -48% | -39% | -14% | -22% |
| Reduction rel. 2030 (CLE) | kt | -39.37 | -1.45 | -3.20 | -0.84 | -2.11 |
| | % | -85% | -9% | -30% | -13% | -9% |

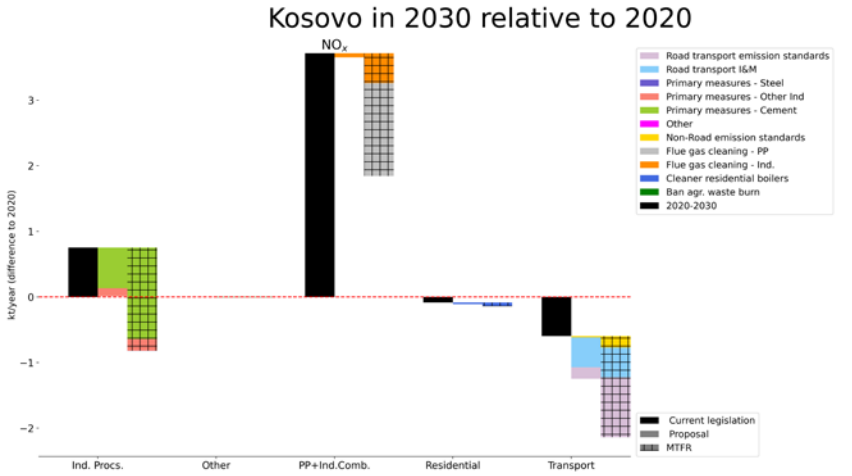


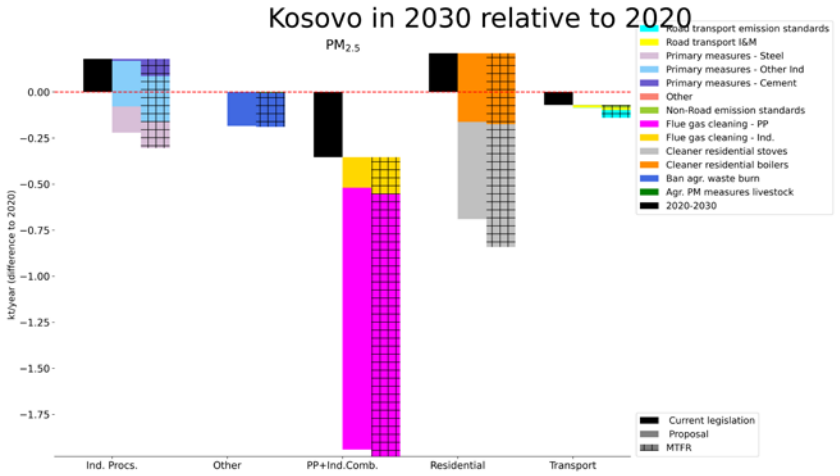
# Kosovo

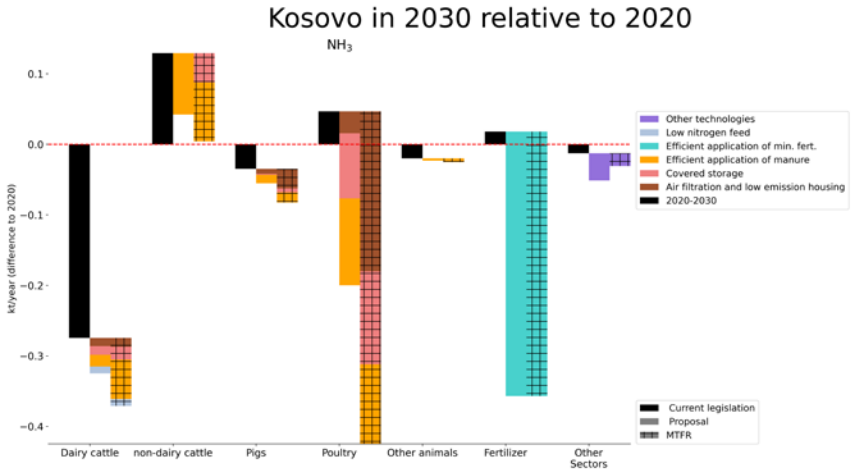
## Cost-effective ERCs and costs resulting from the modeling exercise

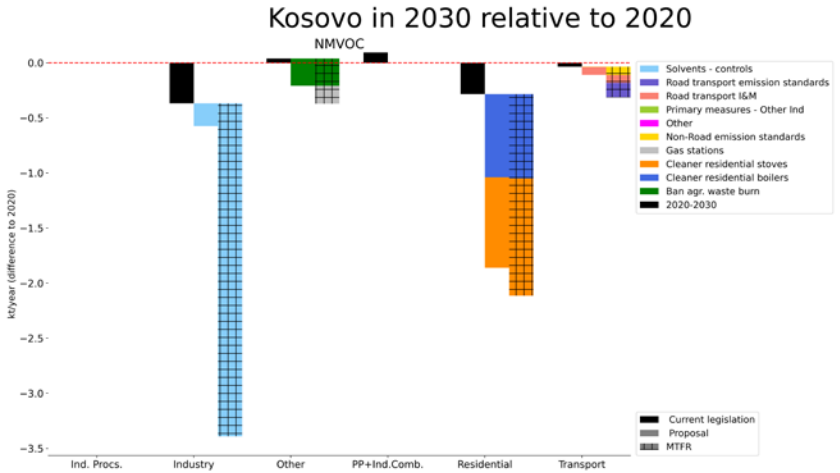
[reflecting consultations with the economies until March 2024]

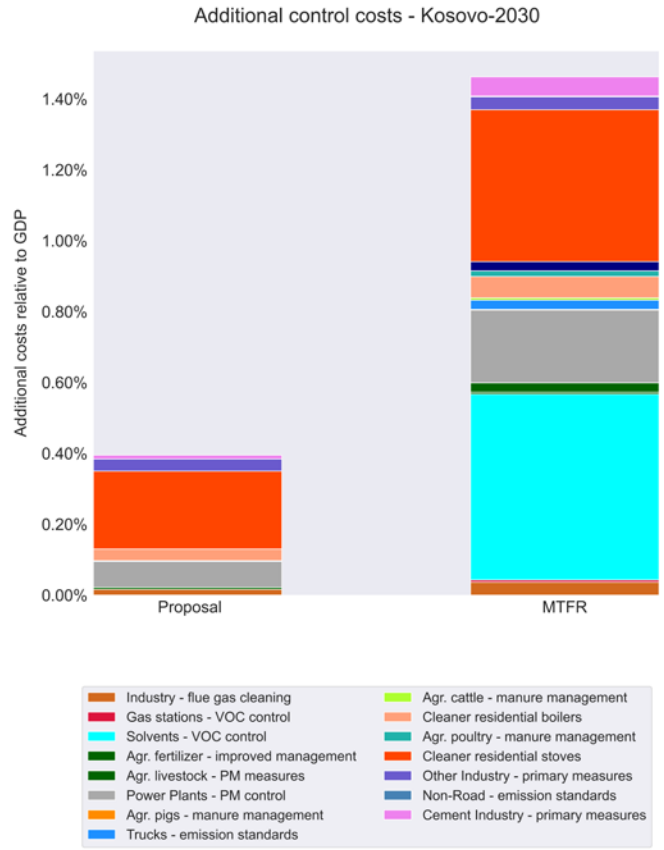


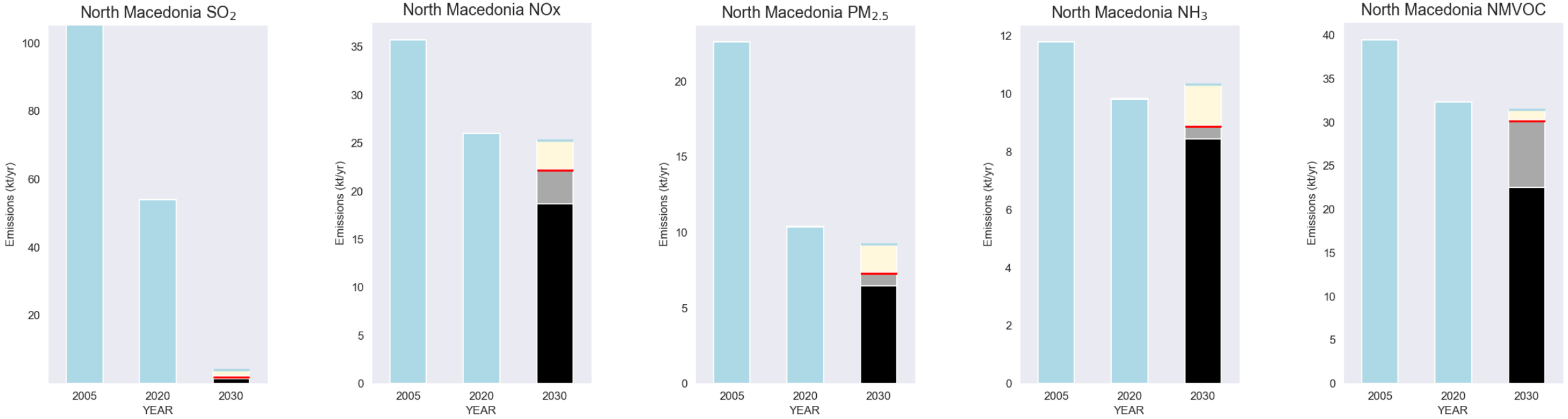




"Proposal" = cost-effective measures

# Cost-effective ERCs resulting from the modeling exercise

[reflecting consultations with the economies until March 2024]

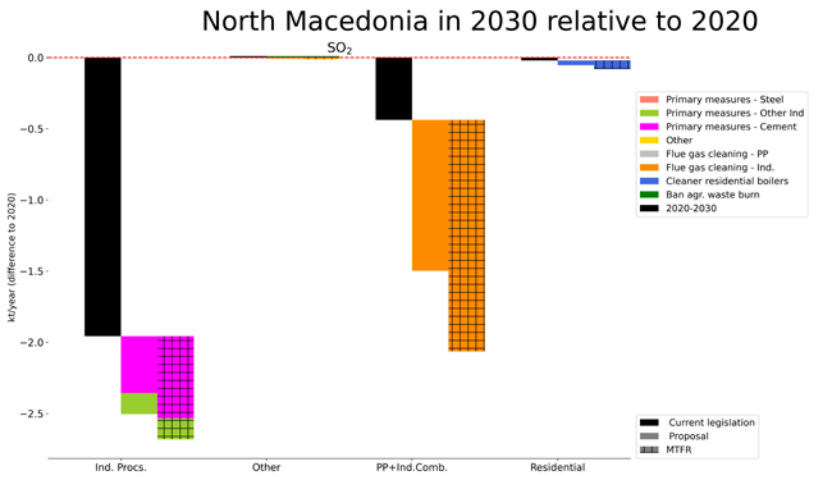
| North Macedonia | | | | | | |
|---|---|---|---|---|---|---|
| **Item** | **unit** | **SO2** | **NOx** | **PM2.5** | **NH3** | **VOCs** |
| Absolute target | kt | 2.29 | 22.29 | 7.39 | 8.93 | 30.30 |
| | | | | | | |
| Reduction rel. 2005 | kt | -103.12 | -13.51 | -15.21 | -2.87 | -9.21 |
| | % | -98% | -38% | -67% | -24% | -23% |
| Reduction rel. 2020 | kt | -51.76 | -3.71 | -3.01 | -0.87 | -2.00 |
| | % | -96% | -14% | -29% | -9% | -6% |
| Reduction rel. 2030 (CLE) | kt | -1.66 | -3.01 | -1.81 | -1.37 | -1.20 |
| | % | -42% | -12% | -20% | -13% | -4% |

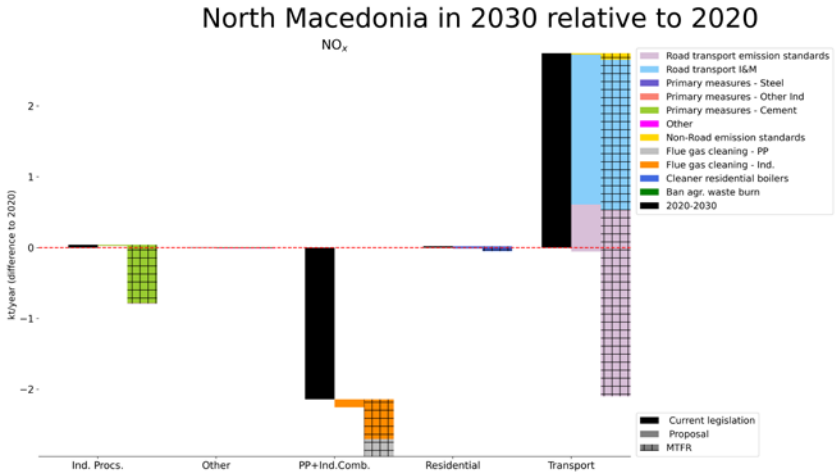


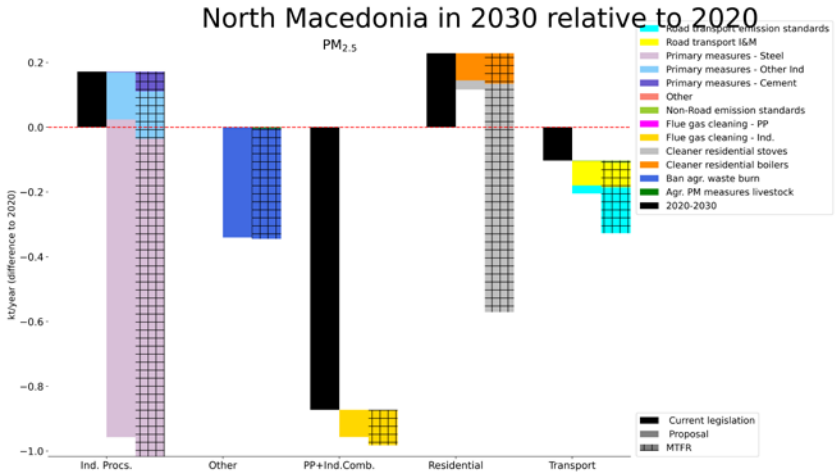
# North Macedonia

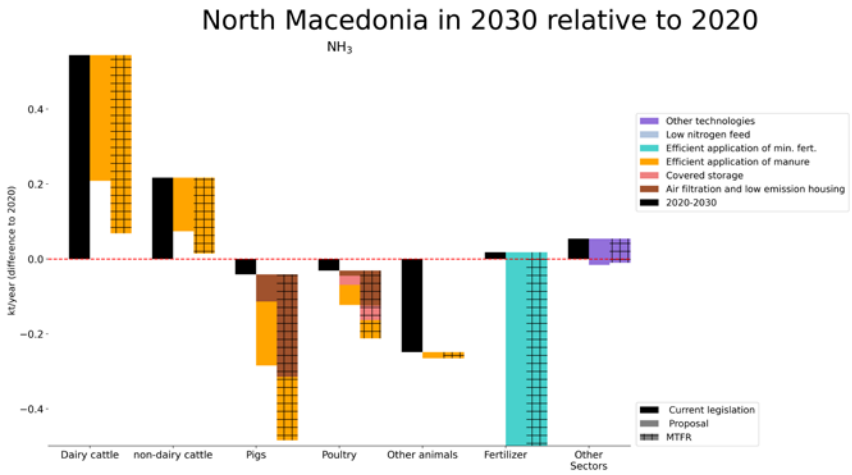
## Cost-effective ERCs and costs resulting from the modeling exercise

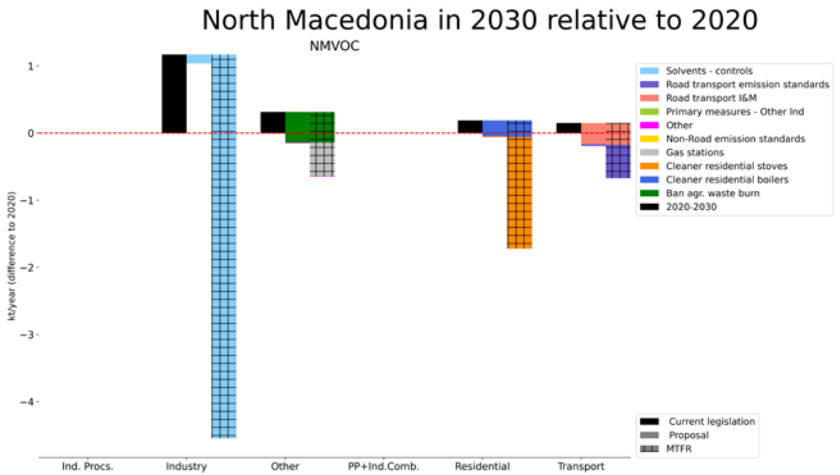
[reflecting consultations with the economies until March 2024]

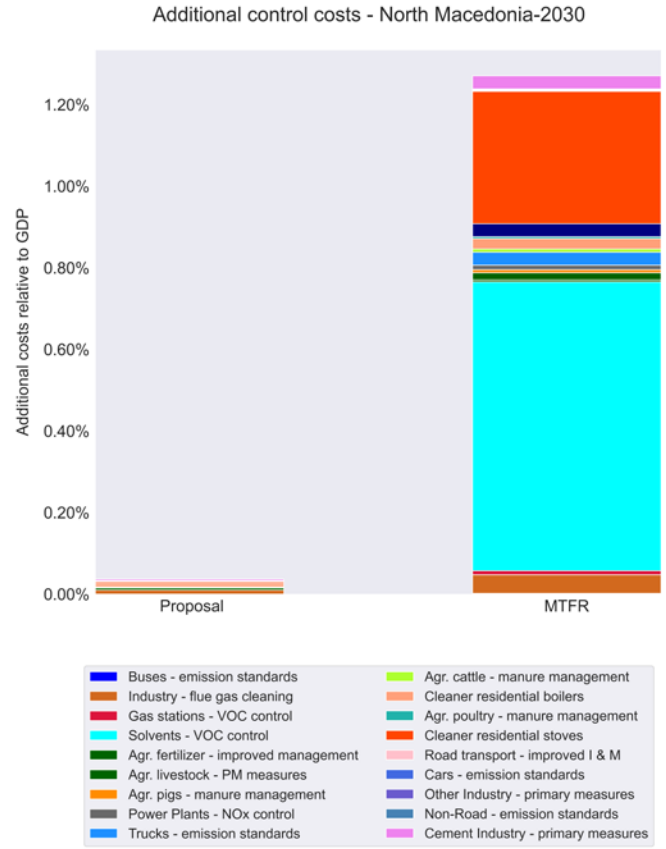


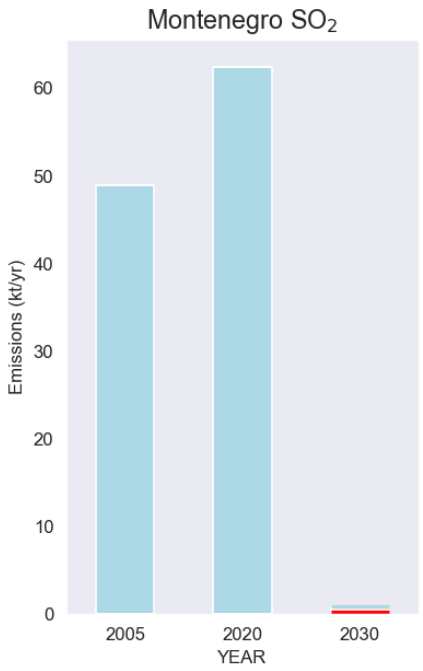



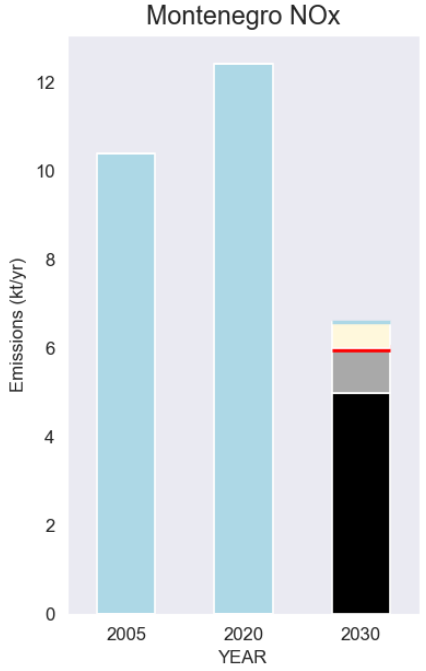

"Proposal" = cost-effective measures

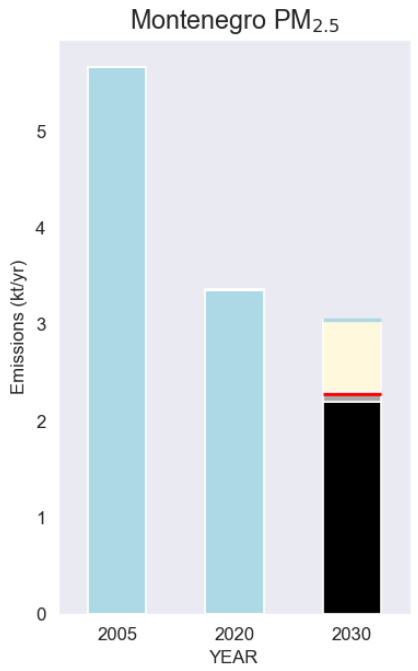
# Cost-effective ERCs resulting from the modeling exercise

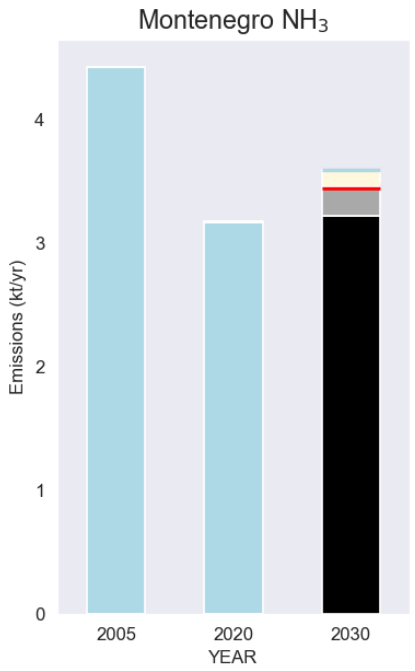
[reflecting consultations with the economies until March 2024]

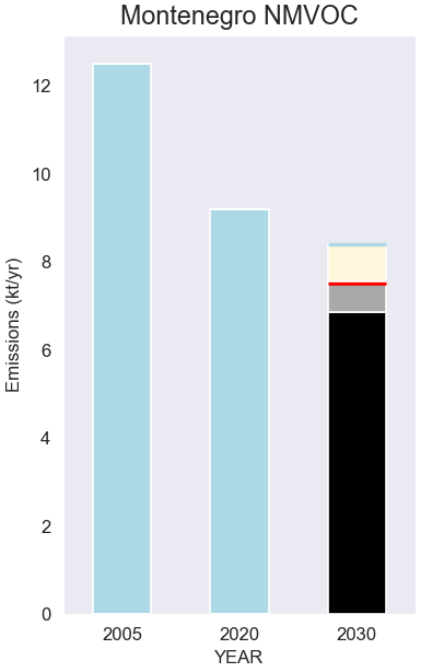
| Montenegro | | | | | | |
|---|---|---|---|---|---|---|
| Item | unit | SO2 | NOx | PM2.5 | NH3 | VOCs |
| Absolute target | kt | 0.56 | 6.00 | 2.30 | 3.46 | 7.56 |
| | | | | | | |
| Reduction rel. 2005 | kt | -48.43 | -4.40 | -3.40 | -0.94 | -4.95 |
| | % | -99% | -42% | -60% | -21% | -40% |
| Reduction rel. 2020 | kt | -61.91 | -6.40 | -1.10 | 0.26 | -1.64 |
| | % | -99% | -52% | -32% | 8% | -18% |
| Reduction rel. 2030 (CLE) | kt | -0.33 | -0.60 | -0.70 | -0.14 | -0.84 |
| | % | -37% | -9% | -23% | -4% | -10% |

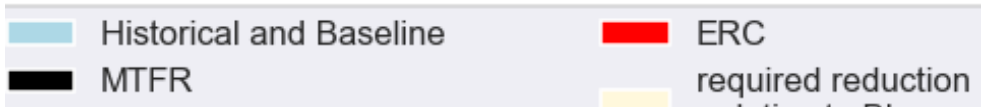


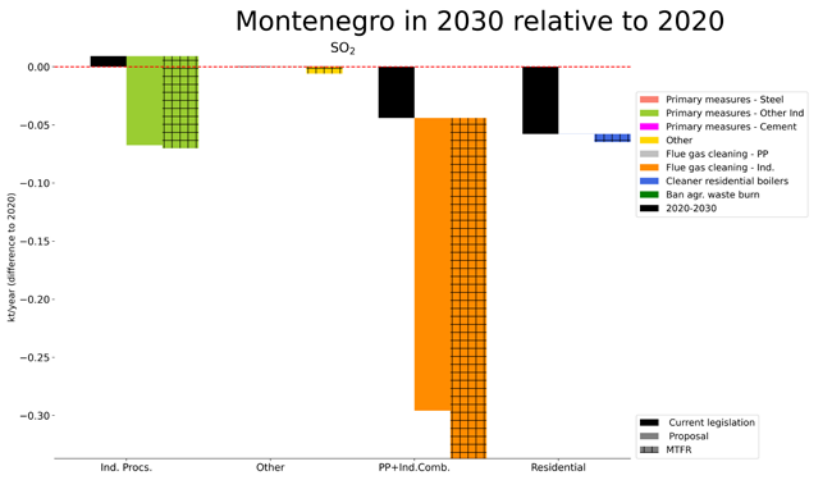



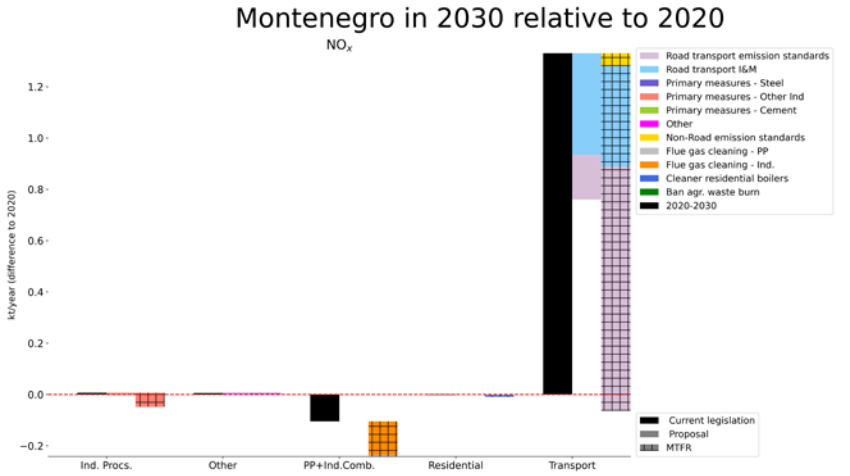



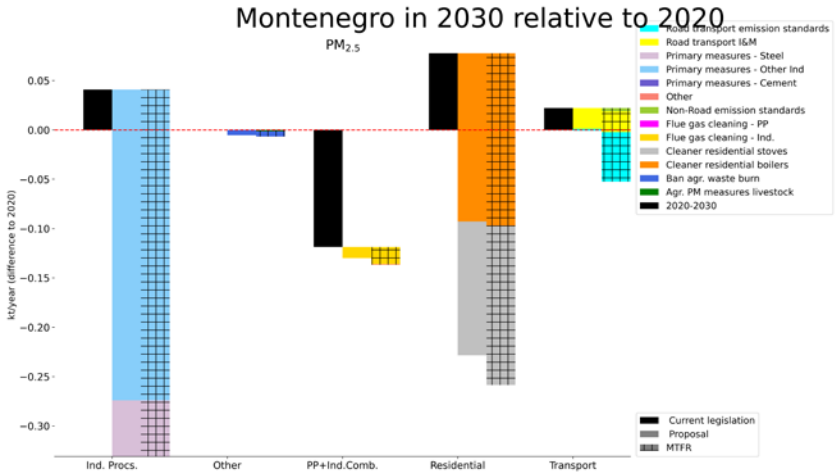
# Montenegro

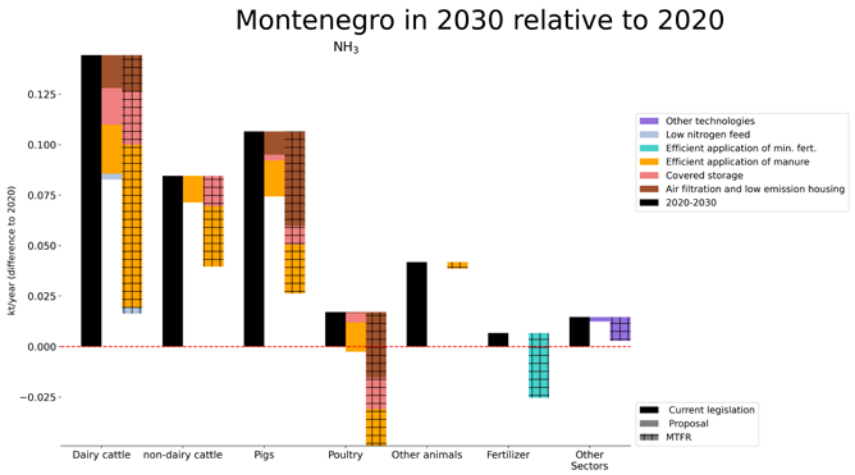
## Cost-effective ERCs and costs resulting from the modeling exercise

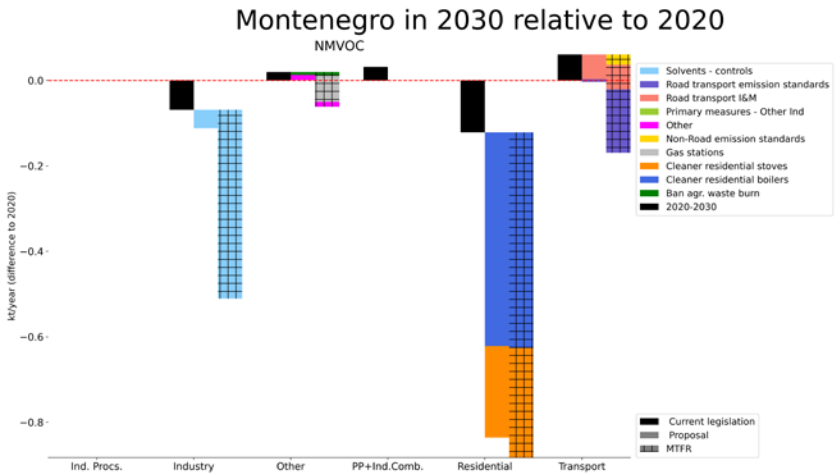
[reflecting consultations with the economies until March 2024]

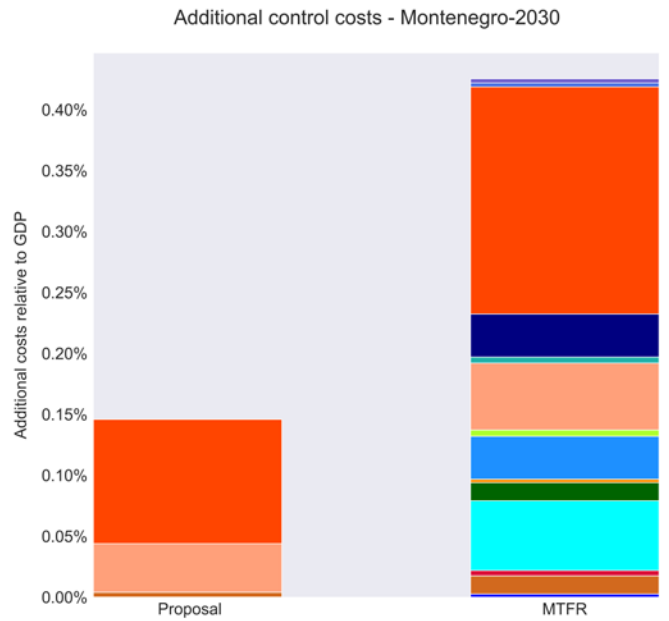


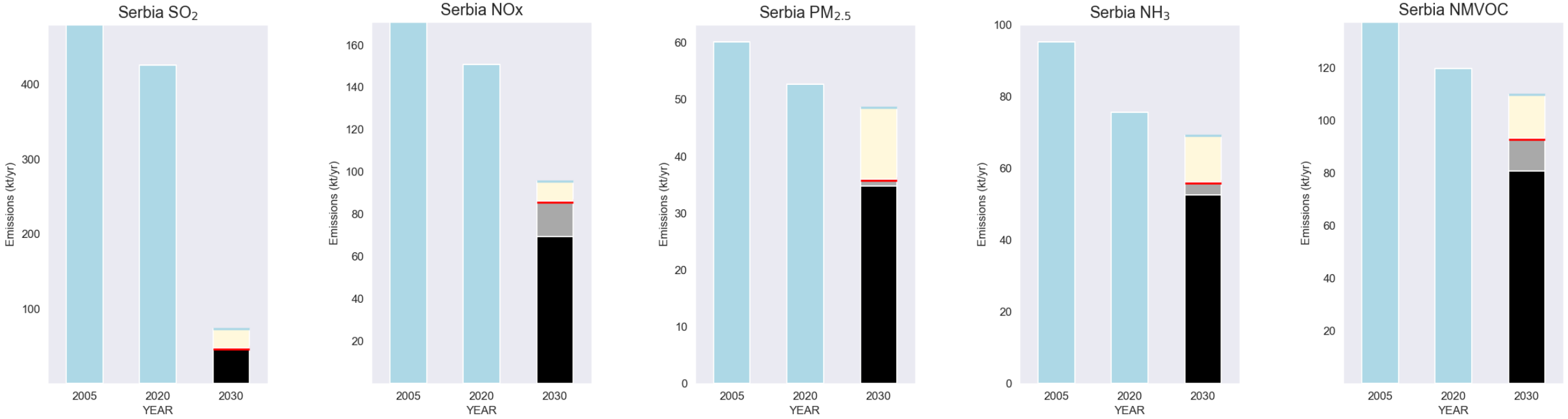


"Proposal" = cost-effective measures

# Cost-effective ERCs resulting from the modeling exercise

[reflecting consultations with the economies until March 2024]

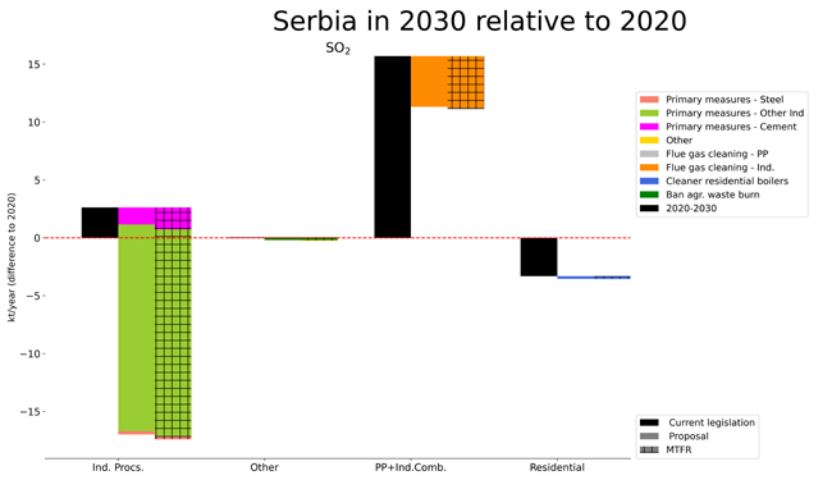
| Serbia | | | | | | |
|---|---|---|---|---|---|---|
| **Item** | **unit** | **SO2** | **NOx** | **PM2.5** | **NH3** | **VOCs** |
| Absolute target | kt | 47.68 | 86.33 | 36.03 | 56.21 | 93.12 |
| | | | | | | |
| Reduction rel. 2005 | kt | -432.17 | -84.37 | -24.17 | -39.19 | -44.14 |
| | % | -90% | -49% | -40% | -41% | -32% |
| Reduction rel. 2020 | kt | -377.82 | -64.37 | -16.67 | -19.49 | -26.46 |
| | % | -89% | -43% | -32% | -26% | -22% |
| Reduction rel. 2030 (CLE) | kt | -25.19 | -9.27 | -12.57 | -12.99 | -16.60 |
| | % | -35% | -10% | -26% | -19% | -15% |

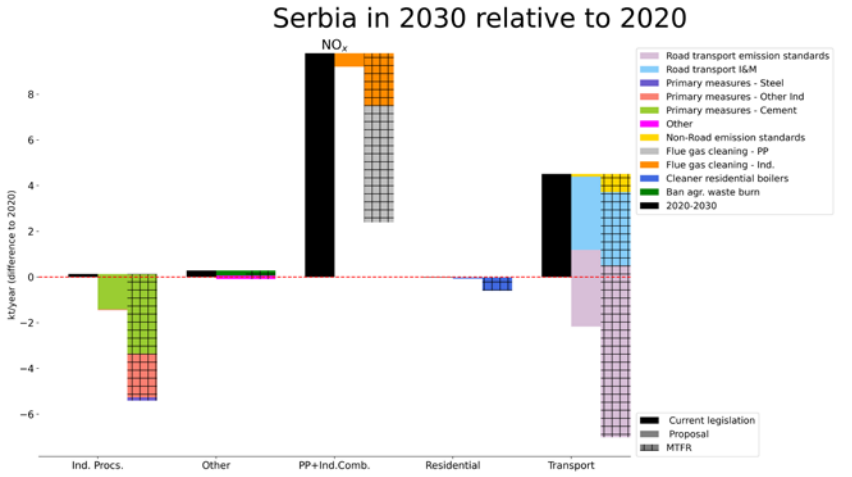


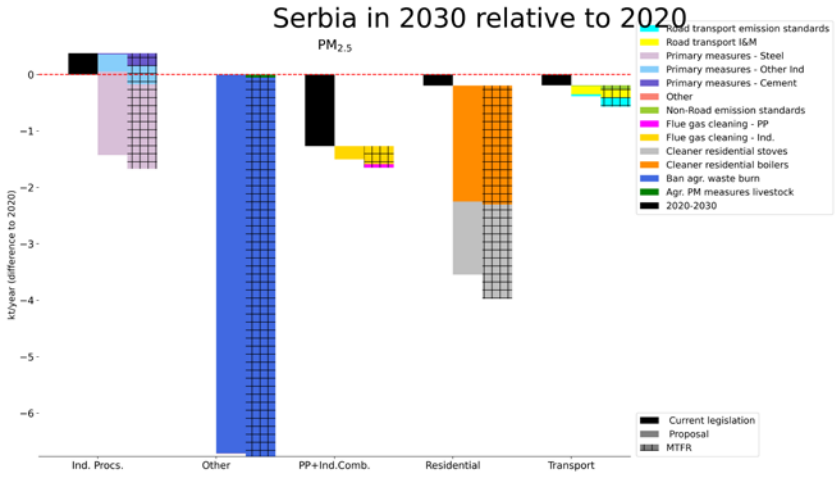
# Serbia

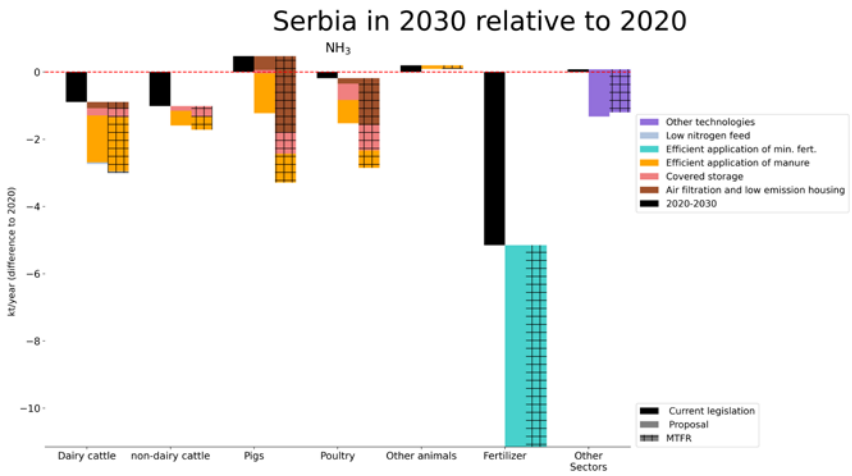
## Cost-effective ERCs and costs resulting from the modeling exercise

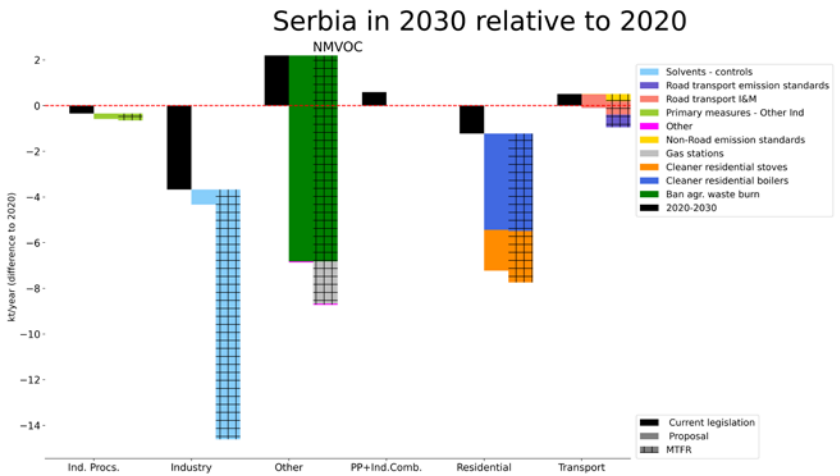
[reflecting consultations with the economies until March 2024]

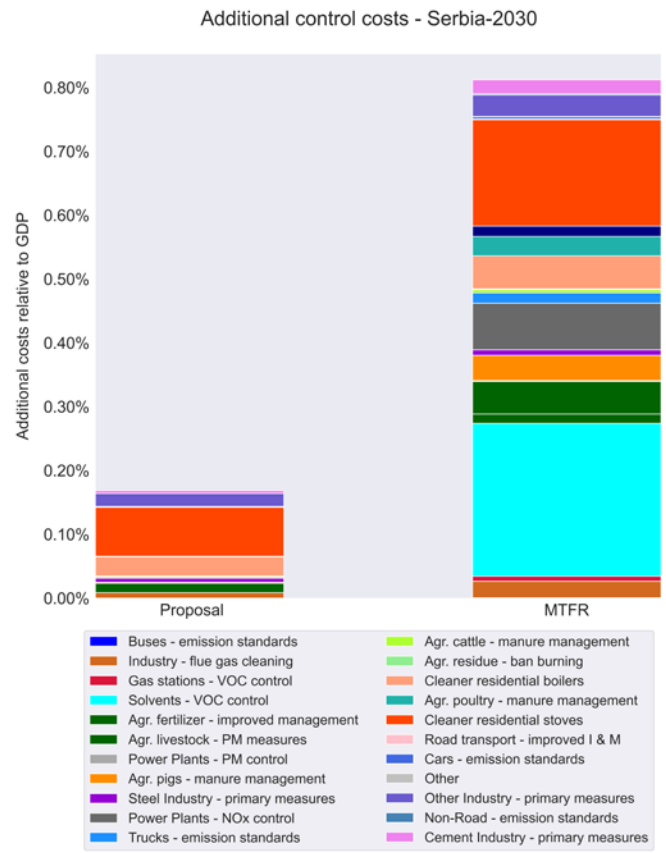



"Proposal" = cost-effective measures

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