Energy Community-project update

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in cooperation with:

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

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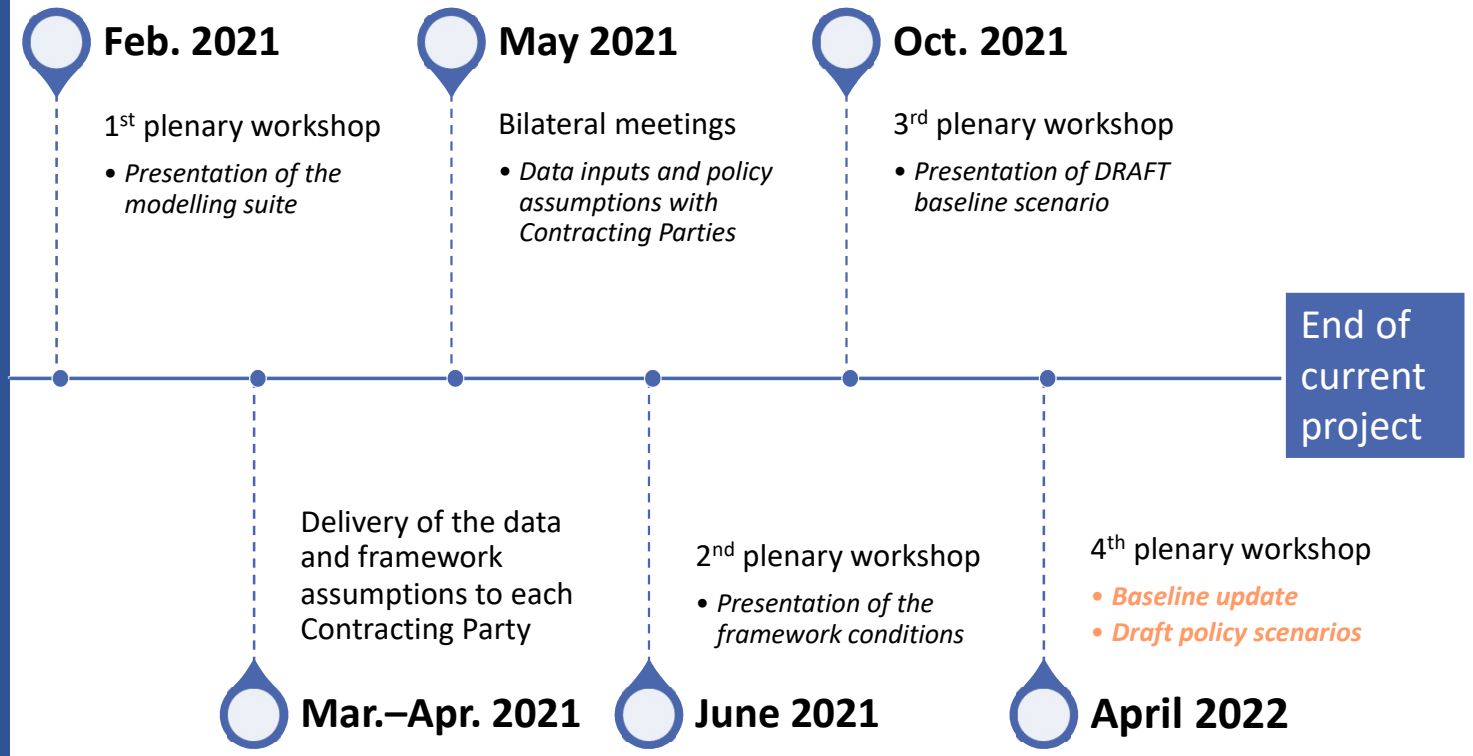
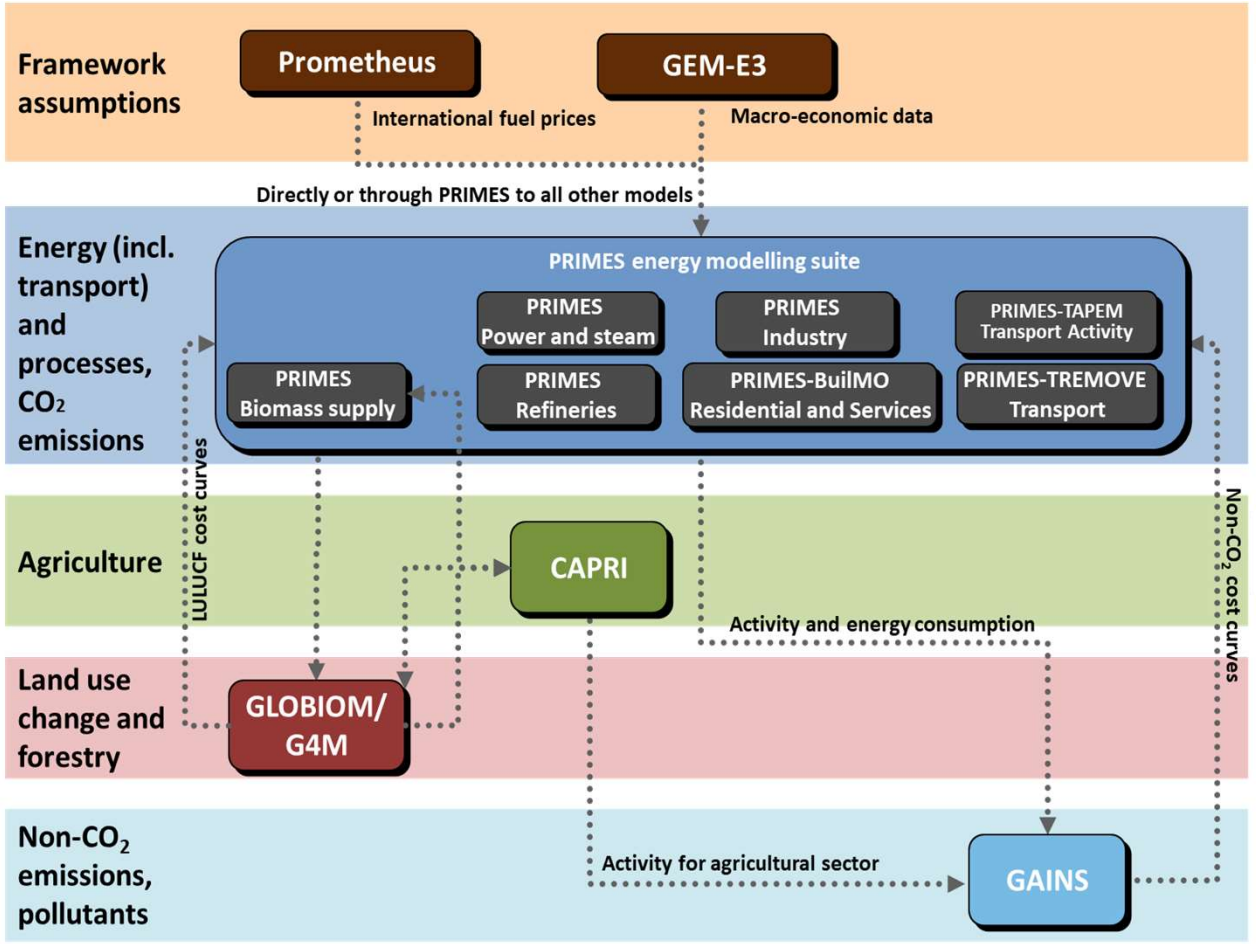
Project status



Modelling suite – Outputs

- ✓PRIMES output
  - Final energy by sector
  - Power sector developments
  - Primary energy
  - CO_2 emissions
  - Costs
- ✓CAPRI output
  - Agricultural projections
- ✓GAINS output
  - Non-CO_2 emissions by sector
- ✓GLOBIOM output
  - LULUCF sector developments & emissions



Baseline scenario: reminder

Aim:

- Provide a reference projection to allow for comparison in policy scenarios
- Provide a scenario comparable across the EnC-CPs and with the EU projections, while taking into account CP specificities
- Provide a consistent projection for all GHGs incl. LULUCF

Key Policy assumptions

- No green-field investments in coal or nuclear
- Decreasing FiT support for the current decade
- RES enabling policies (licensing, grid development, subsidies) remain modest despite the economic attractiveness of RES technologies
- Endogenous lifetime extension decisions for coal power plants
- Assumed lifetime extension of existing nuclear power stations (Ukraine)
- Gradual penetration of natural gas supported by new gas infrastructure (Kosovo, Montenegro, Albania); gas use limited to power generation and industry.

What the baseline does not do

- Informed by draft NECPs and national plans **but not a reproduction of national plans**

Baseline updates

Comments received

Who provided comments?

- Contracting Party Experts
- Energy Community Secretariat
- European Commission

What kind of comments were provided?

- Framework conditions
- Data sources/data for 2020
- Draft Projections

How did we address comments?

FRAMEWORK CONDITIONS

- Demographics:
  - no changes. Common assumptions across CPs maintained
- Economic/industrial activity:
  - small changes applied where relevant to industrial activity
- Transport activity:
  - updates to 2020 activity to reflect comments of lower COVID impact
- Fuel prices:
  - no changes → to be in line with EU assessments
- Emissions and emission factors
  - Standard emission factors are used for all CPs (in line with IPCC guidelines)
  - Emissions are based on energy balances not directly on UNFCCC for energy related emissions

DRAFT PROJECTIONS

- 2018/2019 energy balances are used to determine 2020 and beyond trends, even though results are shown in 5-year time steps
- Adjusted 2020 where data available or information was provided: transport, industry, buildings
- Power generation: updated exogenous investments based on information provided in comments
- Correction of reporting bugs!

Key changes

- Lower ambition of baseline scenario
- Reduction of energy efficiency improvement in buildings and industry
- Adjustment of the power generation assumptions
  - Higher solids consumption in 2030
  - Downwards revision of RES capacity
- Transport in 2020 has been revised upwards in most CPs: reduction of COVID impact

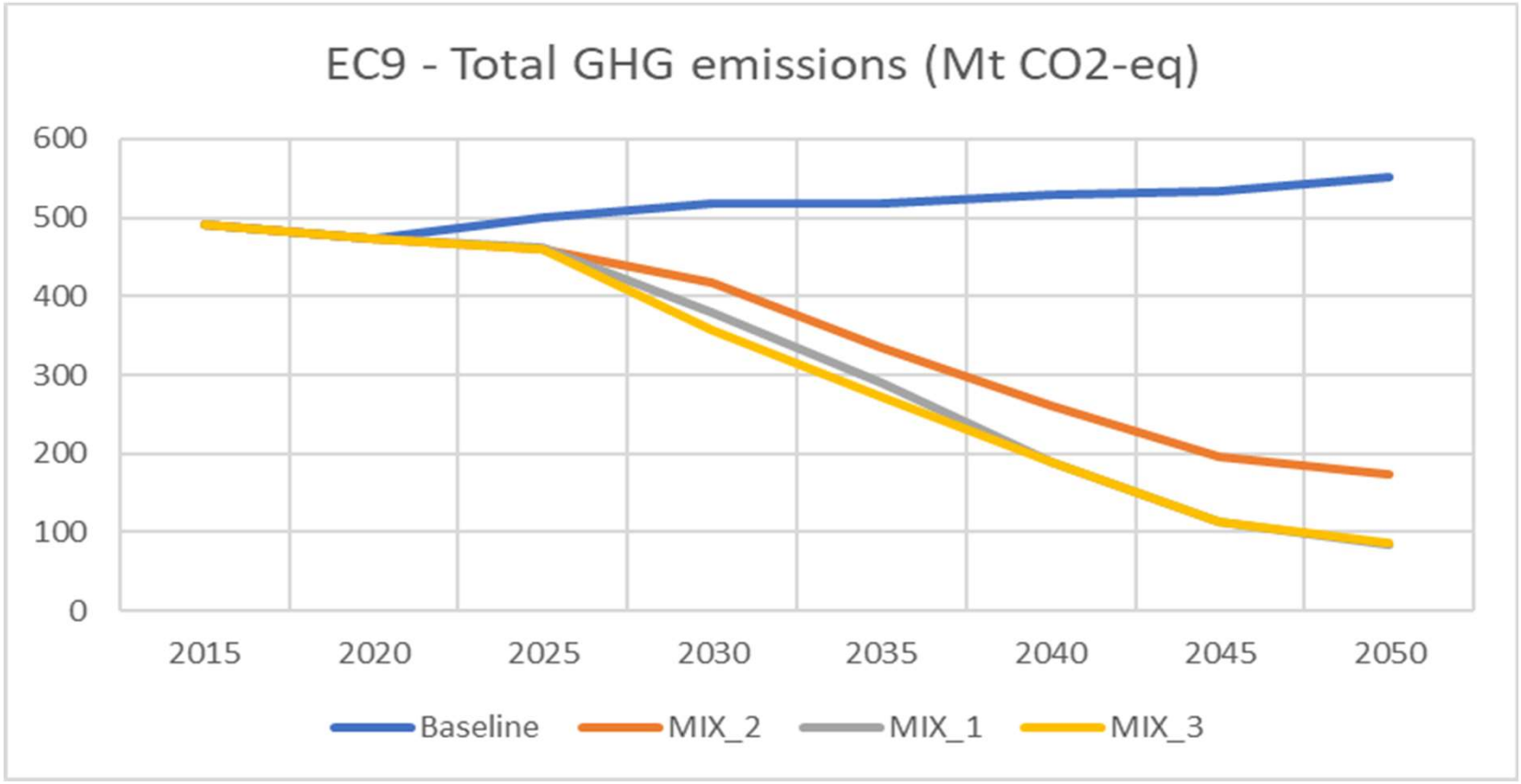
Policy scenarios

Preliminary results

Policy scenarios

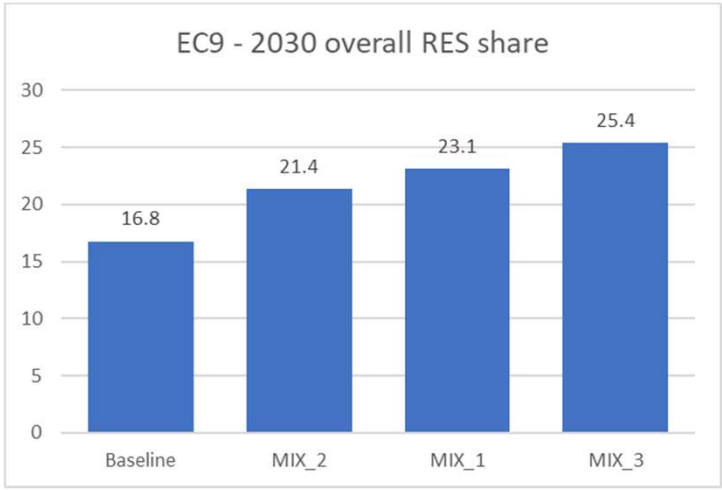
- MIX1: central policy scenario
  - Carbon value as driver for emission reduction: increase to MIX carbon values beyond 2030
  - EU transport acquis: CO2 standards in LDVs and HDVs, ReFuelEU aviation, FuelEU maritime and AFIR should be based on the MIX included with 5-year delay
  - Inclusion of most important announced CP national policies relating to coal phase out and gas infrastructure
  - Non-CO2 emissions with 4EUR/tCO2 carbon value in 2030
  - Merging to trajectory to achieve carbon neutrality after 2050 and approx. 90% GHG emission reduction in 2050
- MIX2: lower GHG emission reduction ambition
- MIX3: higher GHG emission reduction ambition

GHG Emission reductions EnC



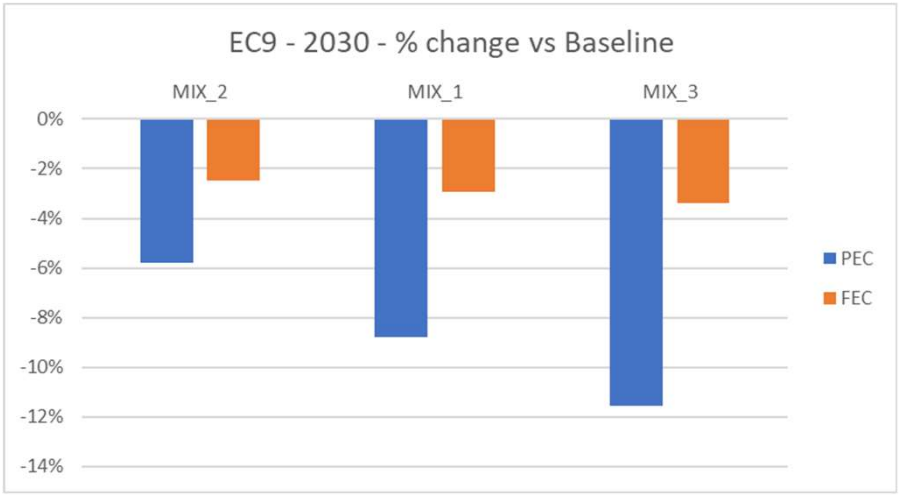
RES shares

Increase in RES shares is primarily driven by the phase out of solid power plants and their substation through RES capacity

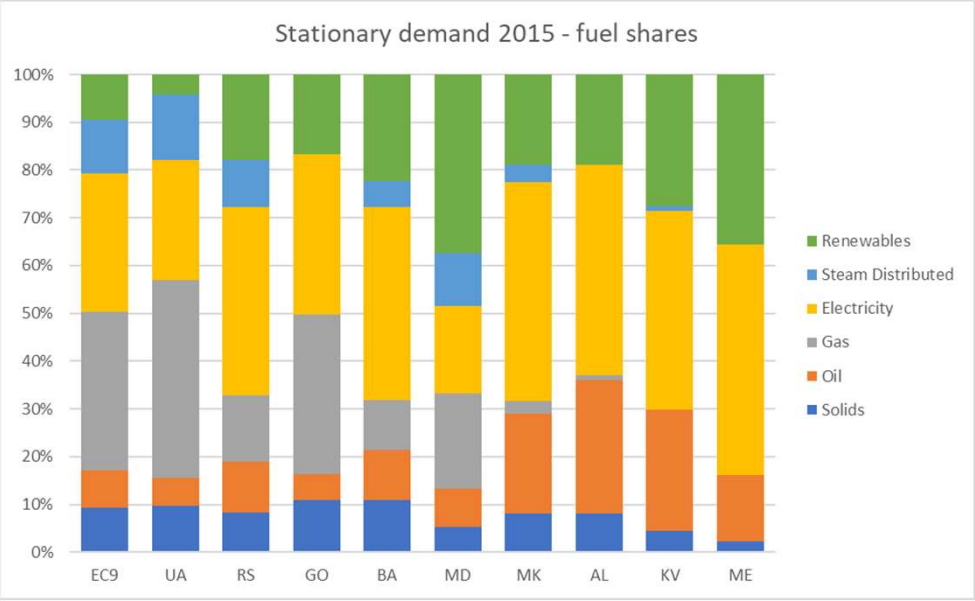


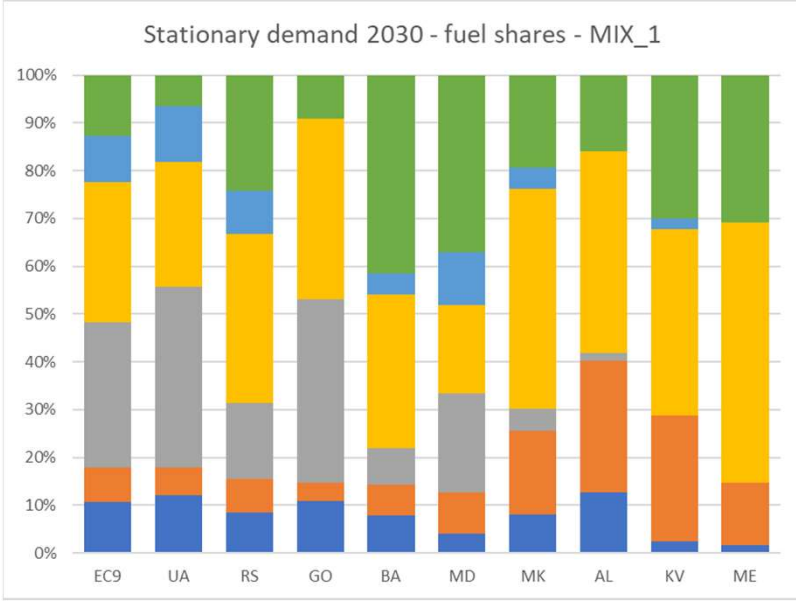
Energy consumption

The changes are driven by changes in the power generation, supplemented by additional efficiency in the demand side sectors.

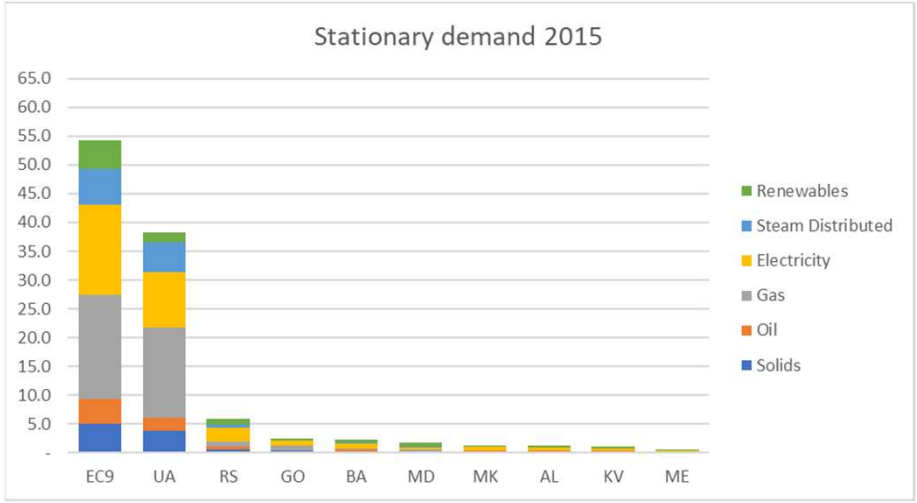


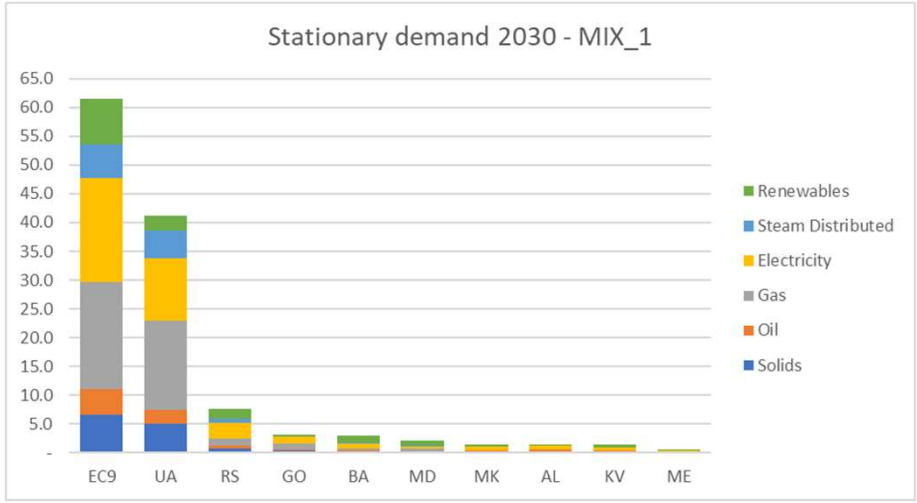
Stationary demand: by fuel



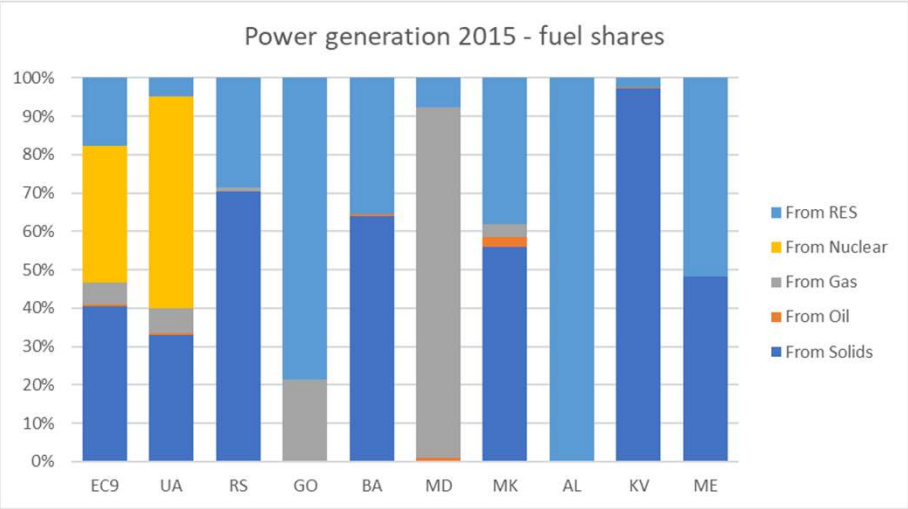


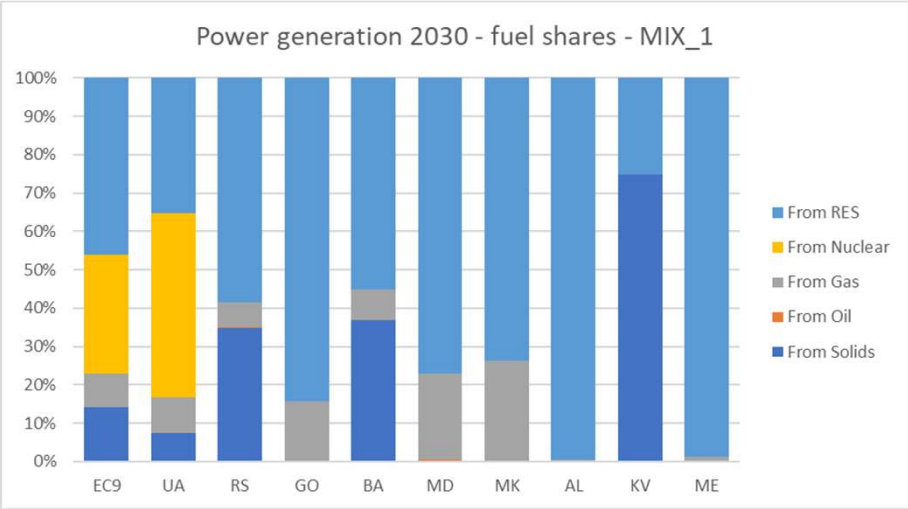
Stationary demand by country and fuel



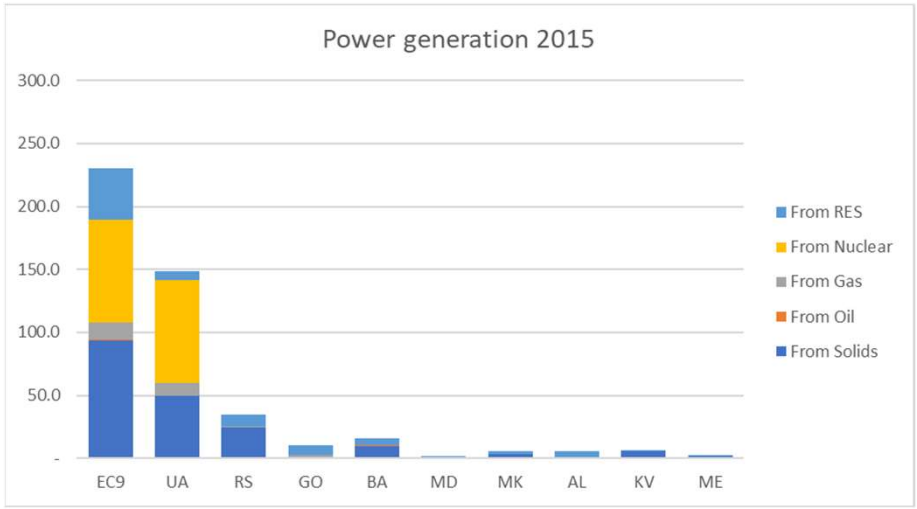


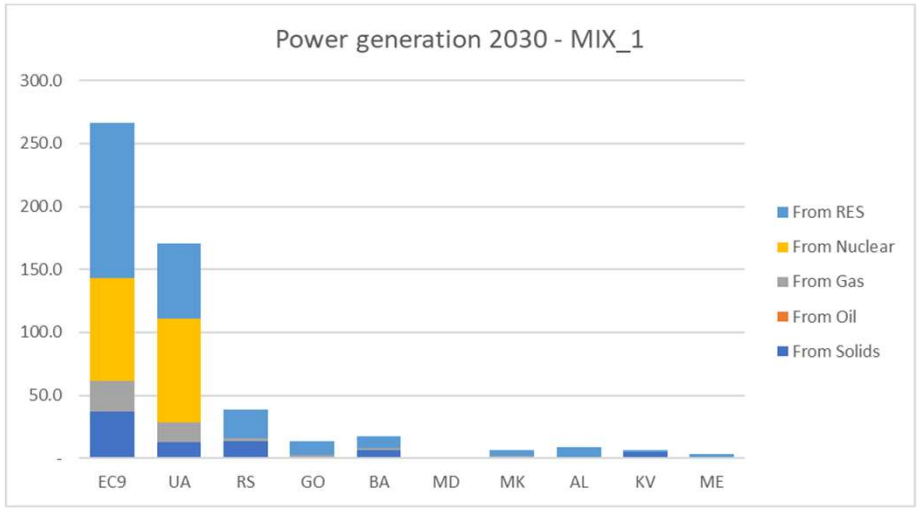
Power generation – fuel shares



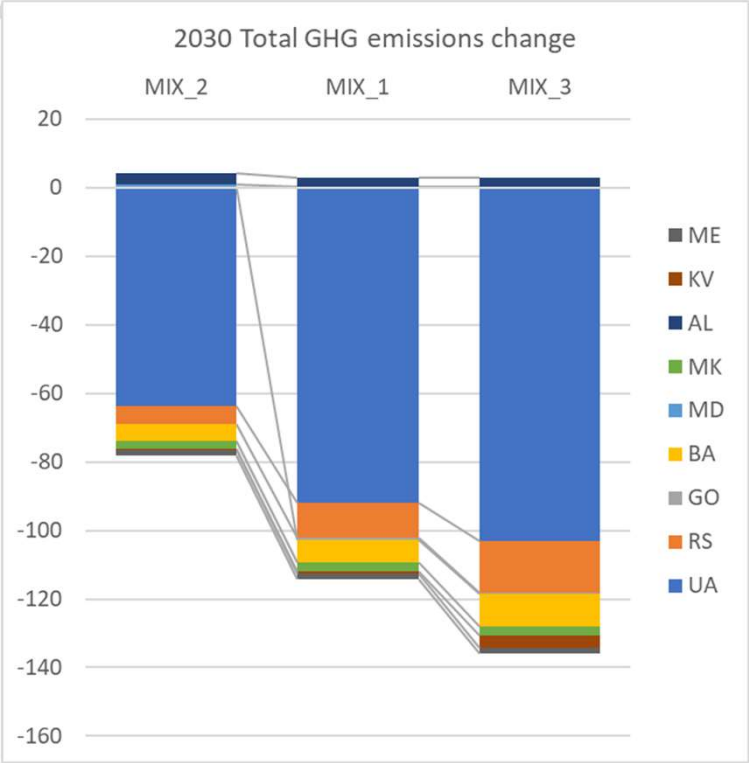


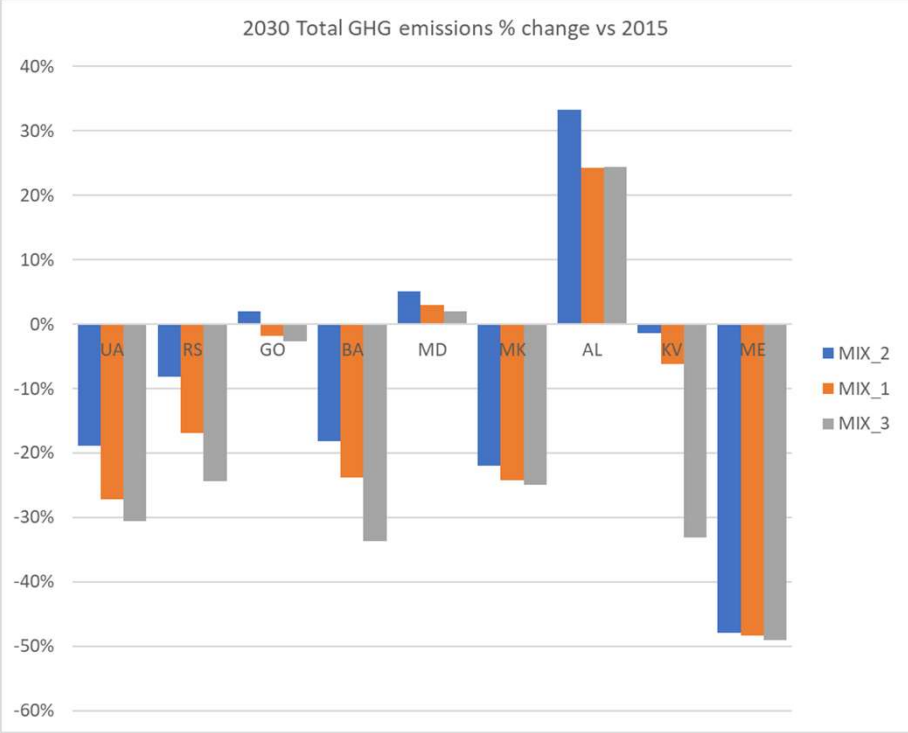
Power generation – fuels (TWh net)





Changes in emissions



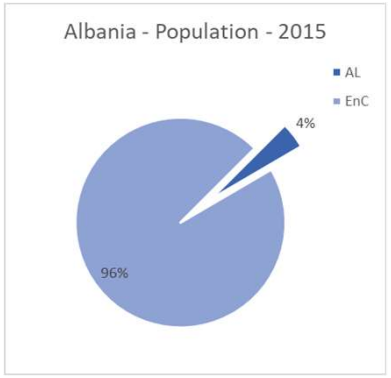


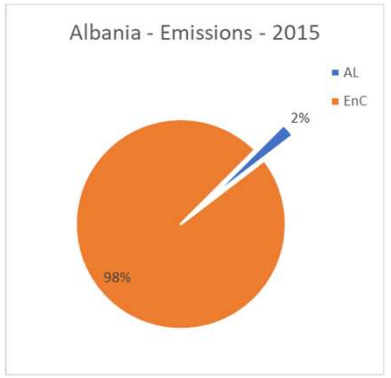
GHG Emission reductions EnC-Albania

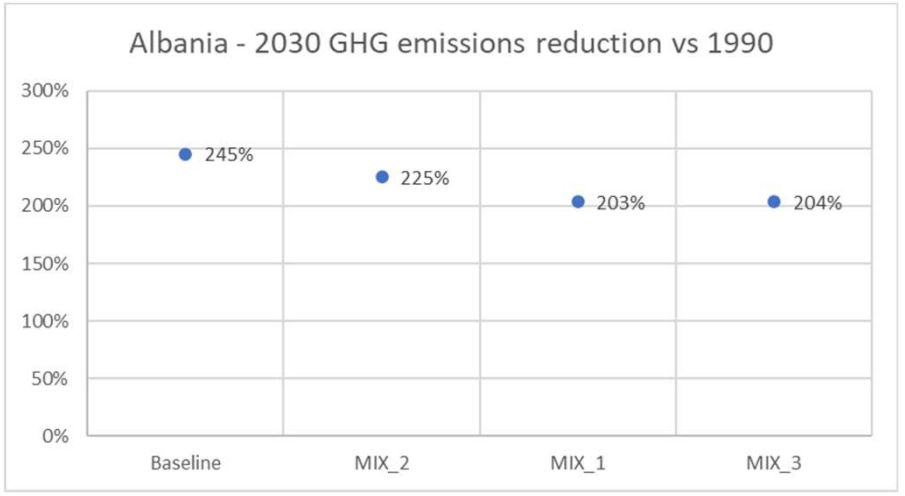
Emissions increase substantially compared to 1990 levels in Albania

Emissions in Albania are due to demand side CO2 emissions and non-CO2 emissions from agriculture

For Albania the MIX scenario variants show almost identical results as the drivers do not lead to significant changes





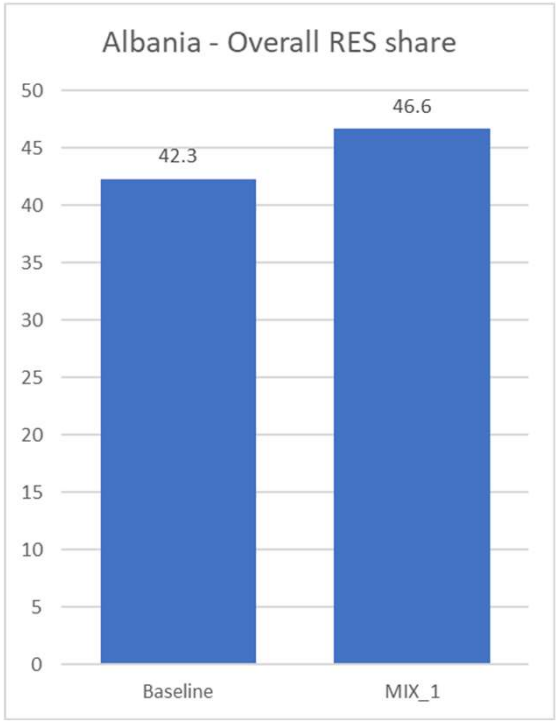


RES shares - Albania

RES-share increases in the policy scenarios

Power generation is almost entirely based on renewables (hydro-electric)

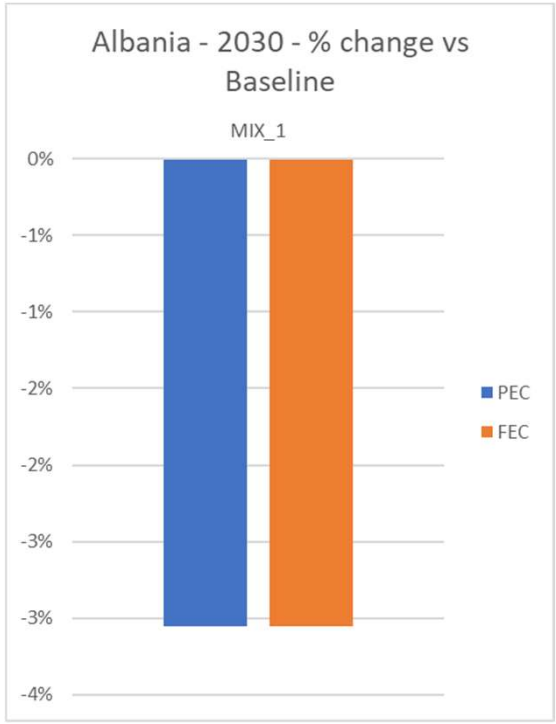
Demand side has some consumption of biomass which increases



Energy consumption - Albania

The reduction is driven by changes in final energy demand

For this reason reductions in FEC are mimicked by similar reductions in PEC

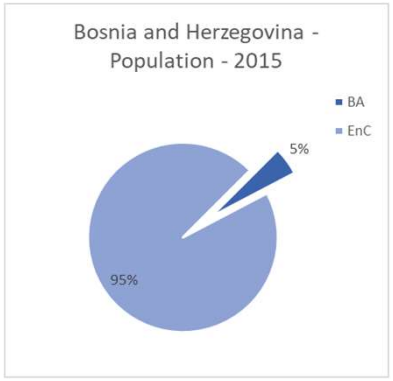


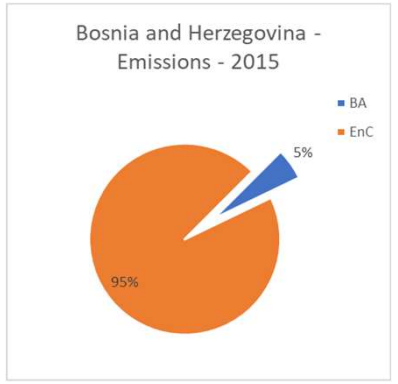
GHG Emission reductions EnC-Bosnia-Herzegovina

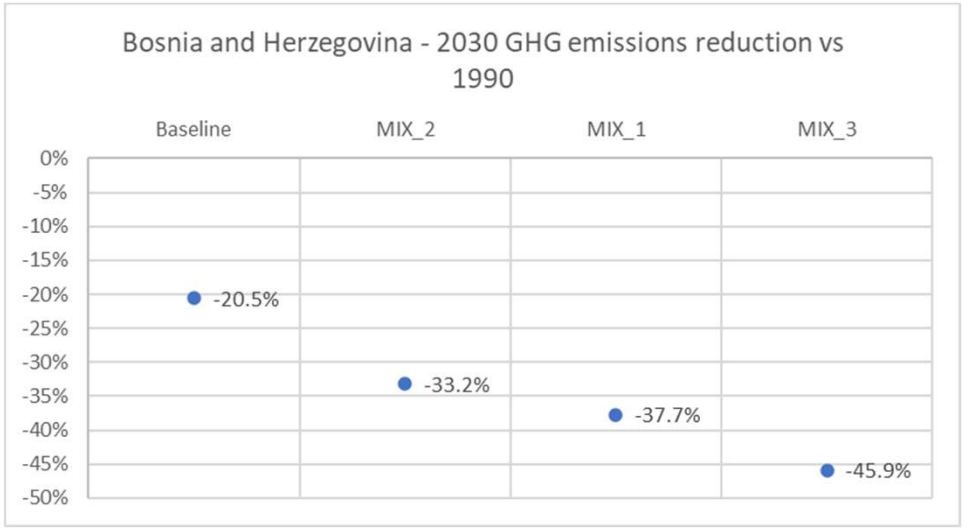
Emissions decrease compared to 1990 levels

Emissions reductions are driven by the changes in the supply side, due to the decommissioning of Tuzla 3-4 and Kakanj 5

The carbon value causes further emission reductions particularly the increase of the carbon value causes further reductions



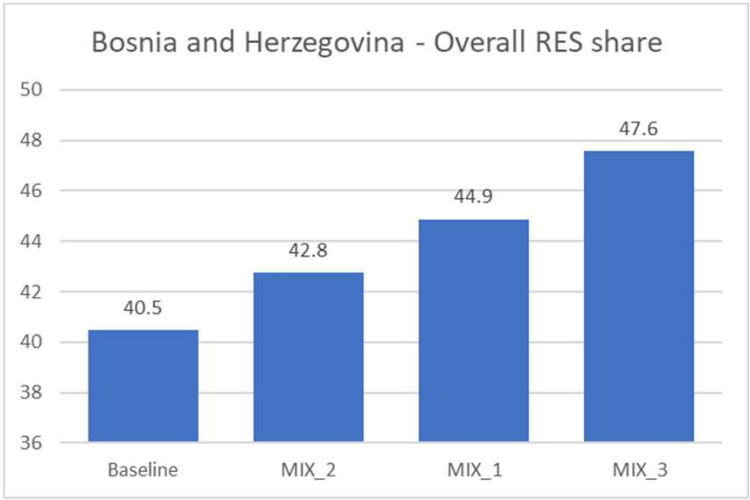




RES shares – Bosnia-Herzegovina

RES-share increases in the policy scenarios

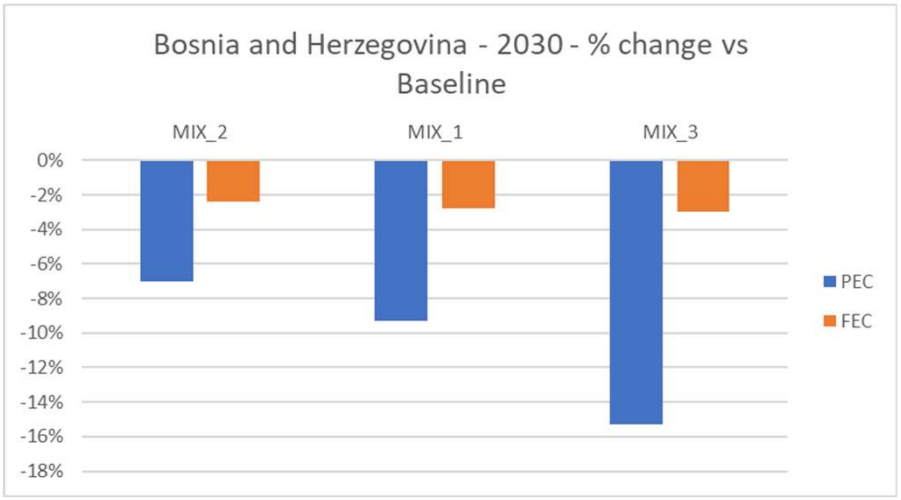
Power generation substitution is carried out through RES and imports



Energy consumption - Bosnia-Herzegovina

The reduction is driven by changes in power generation

For this reason reductions in PEC far exceed changes in FEC

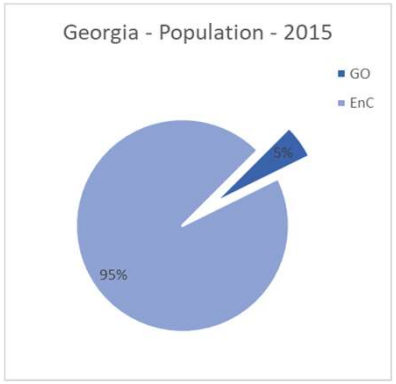


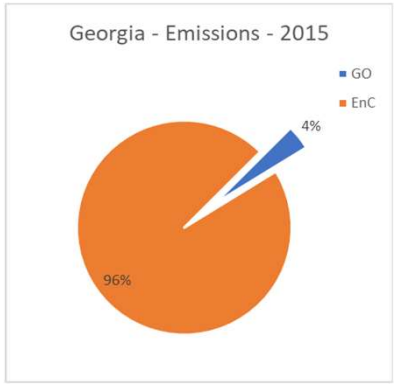
GHG Emission reductions EnC-Georgia

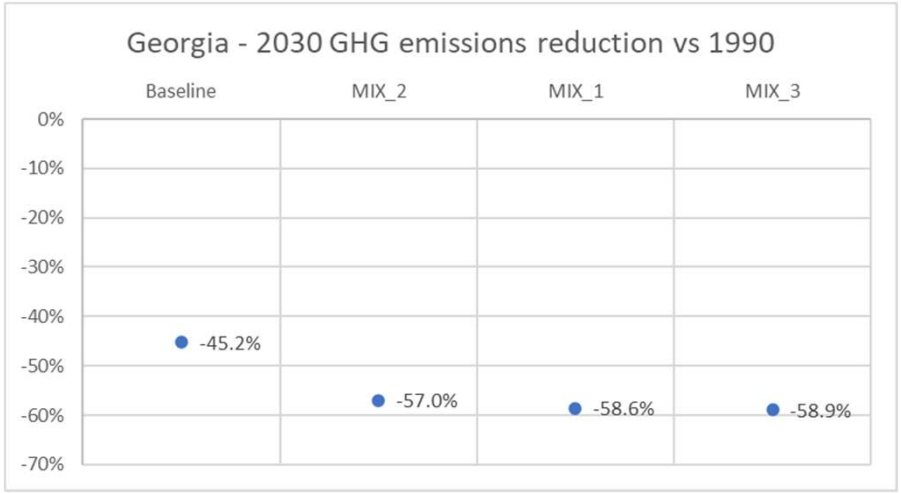
Emissions decrease compared to 1990 levels

Emissions reductions are driven by changes in non-Co2 emissions and industry, as well as other demand side sectors

The changes between the scenario drivers only cause minimal differences in scenario results





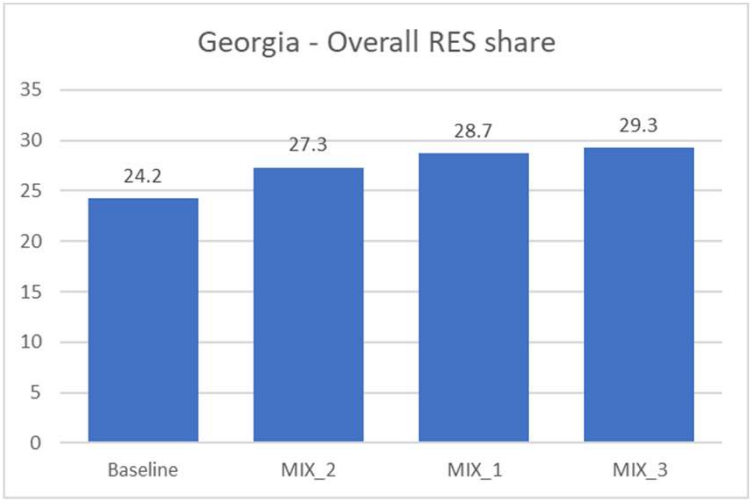


RES shares - Georgia

RES-share increases slightly in the policy scenarios

Power generation is almost entirely based on renewables (hydro-electric) and gas

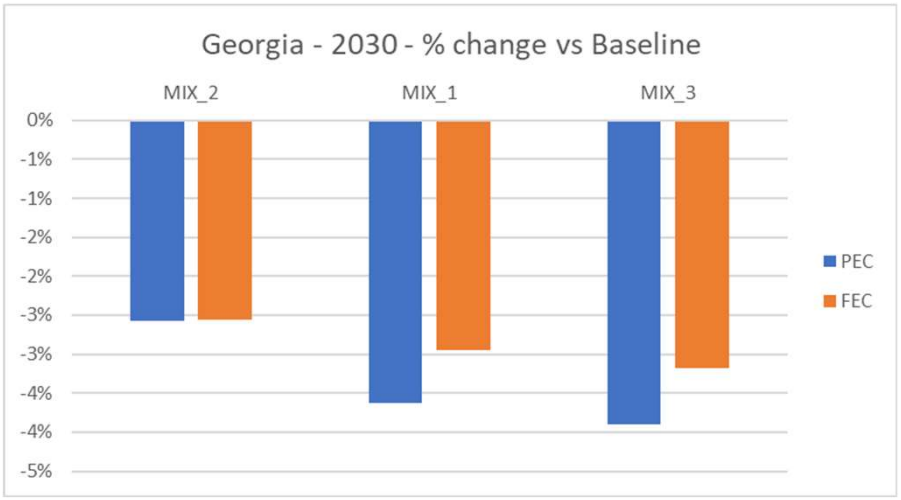
Demand side has some consumption of biomass which increases



Energy consumption - Georgia

The reduction is driven by changes in power generation

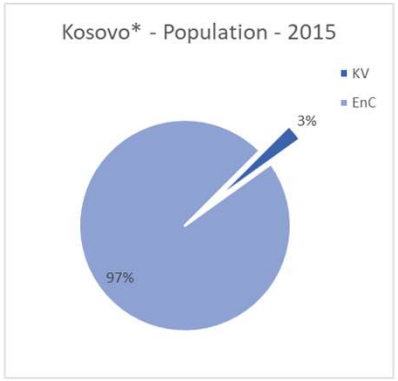
For this reason reductions in PEC far exceed changes in FEC

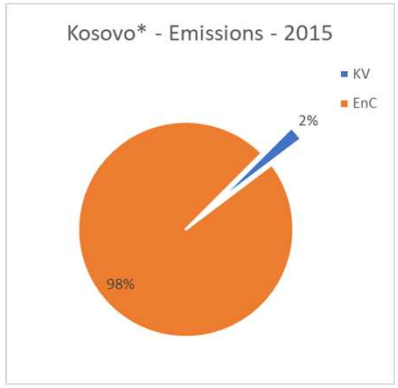


GHG Emission reductions EnC-Kosovo*

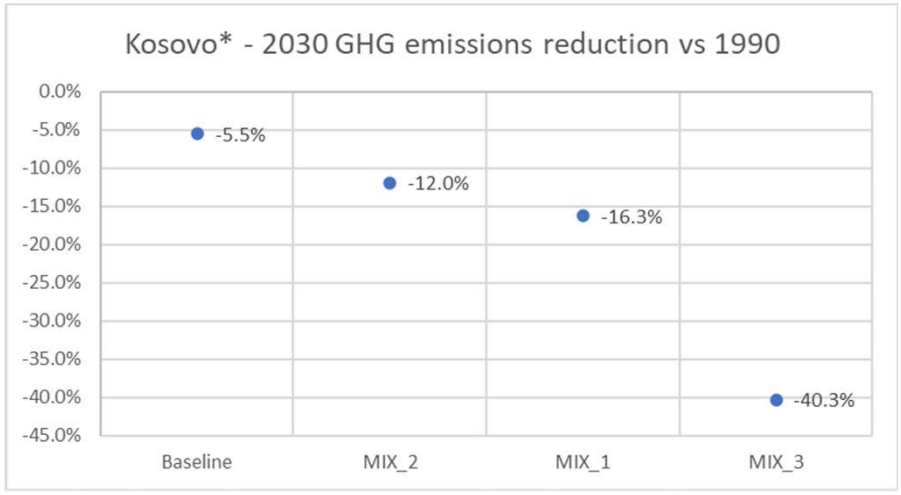
Emissions decrease compared to 1990 levels

The higher carbon driver in MIX3 causes the lignite plant to be decommissioned earlier





** Under United Nations Security Council Resolution 1244/99*

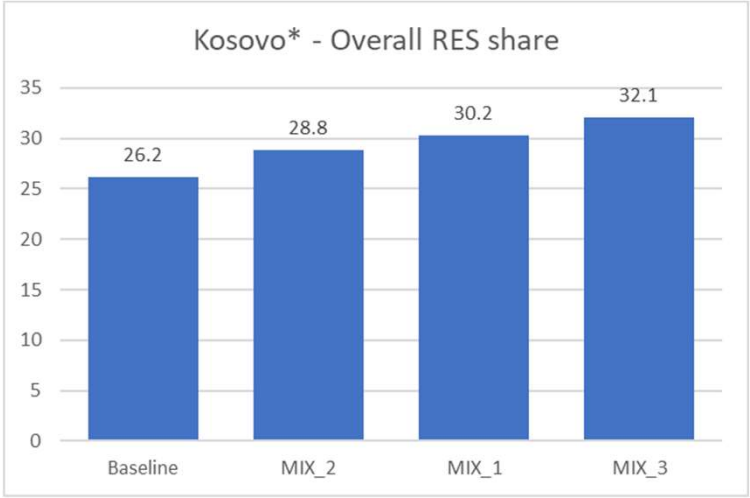


** Under United Nations Security Council Resolution 1244/99*

RES shares – Kosovo*

RES-share increases slightly in the policy scenarios

The changes in power generation in MIX3 lead to an increase in RES-E and higher imports

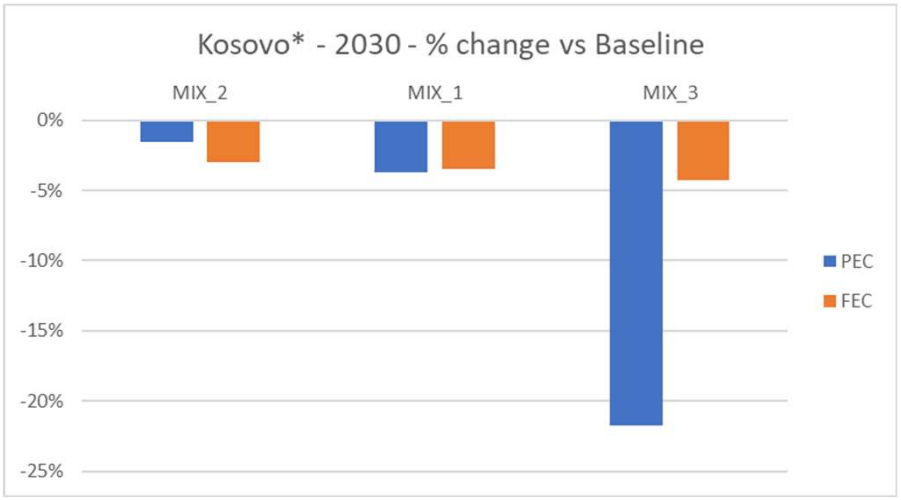


Energy consumption – Kosovo*

In MIX1 and MIX2 changes are driven by demand side changes

In MIX3 the reduction is driven by changes in power generation

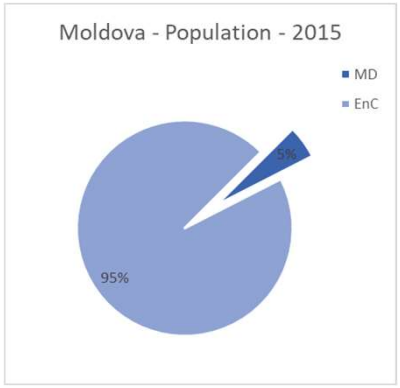
For this reason reductions in PEC far exceed changes in FEC

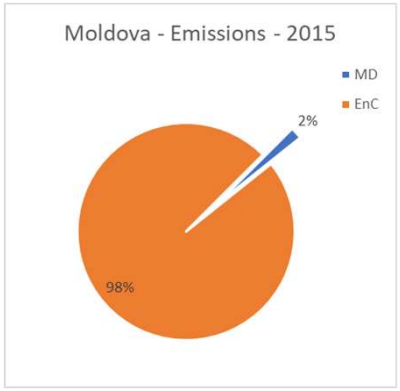


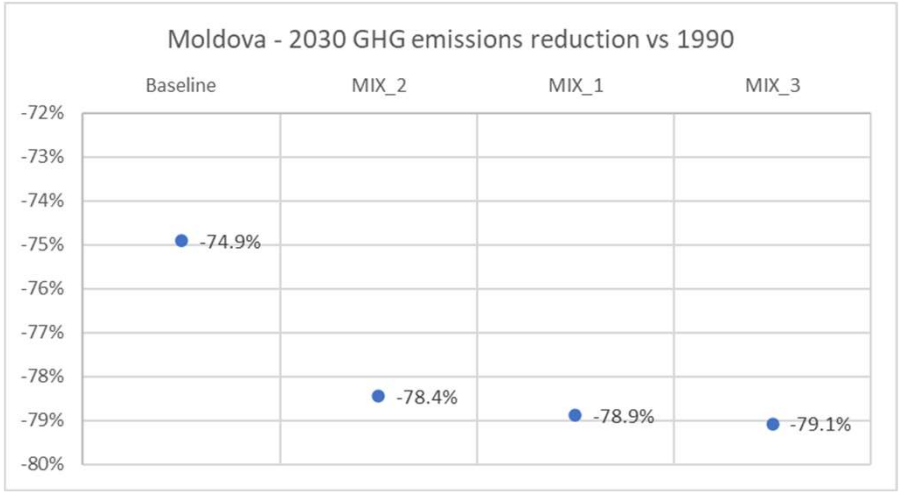
GHG Emission reductions EnC-Moldova

Emissions decrease compared to 1990 levels

Changes between scenarios cause only minimal effect on Moldova projection

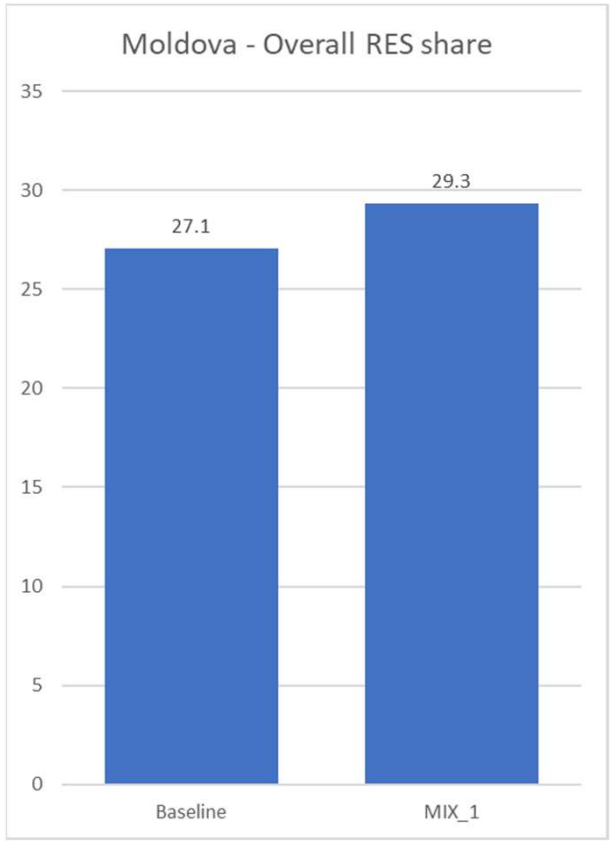






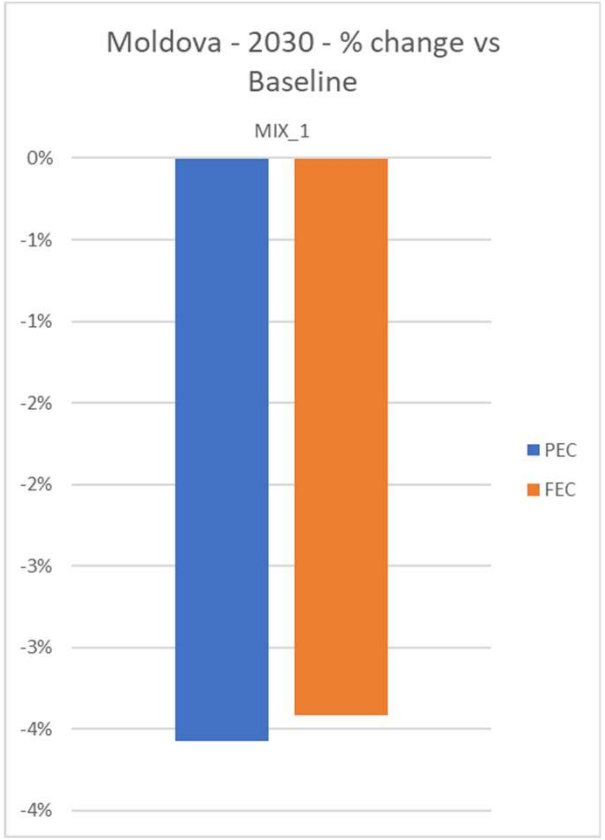
RES shares – Moldova

Small increase in use of RES



Energy consumption – Moldova

Changes in MIX are driven by changes in the demand side

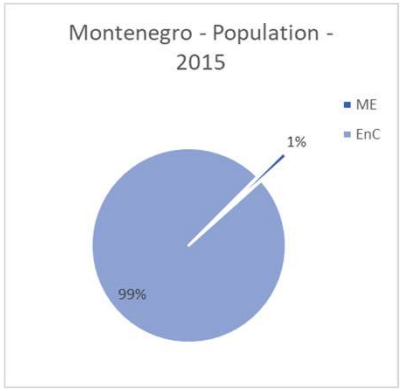


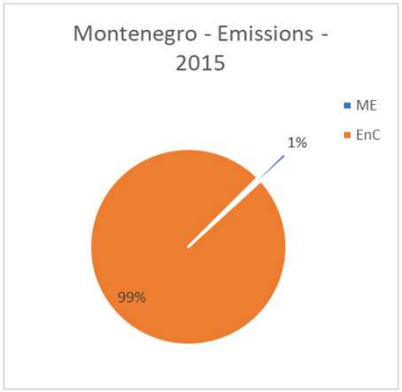
GHG Emission reductions EnC-Montenegro

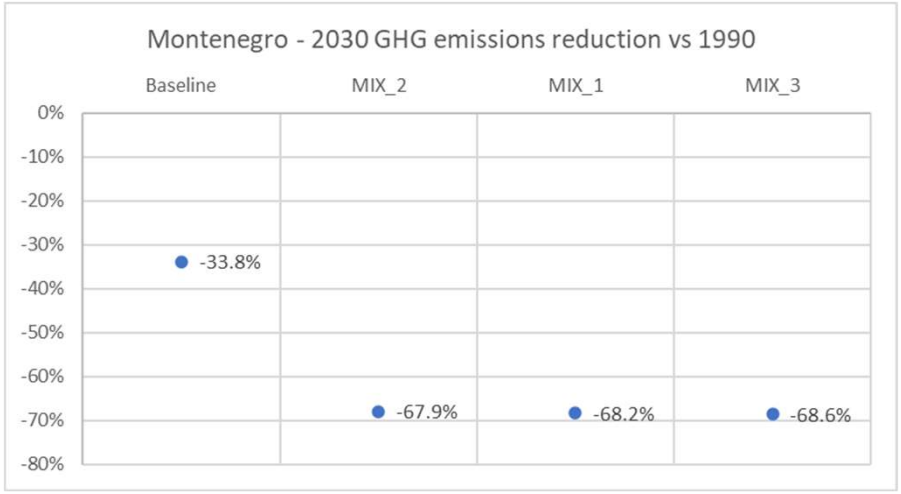
Emissions decrease compared to 1990 levels

The assumed carbon value leads to the decommissioning of power plants

Changes between scenarios cause only minimal effect on Montenegro projection

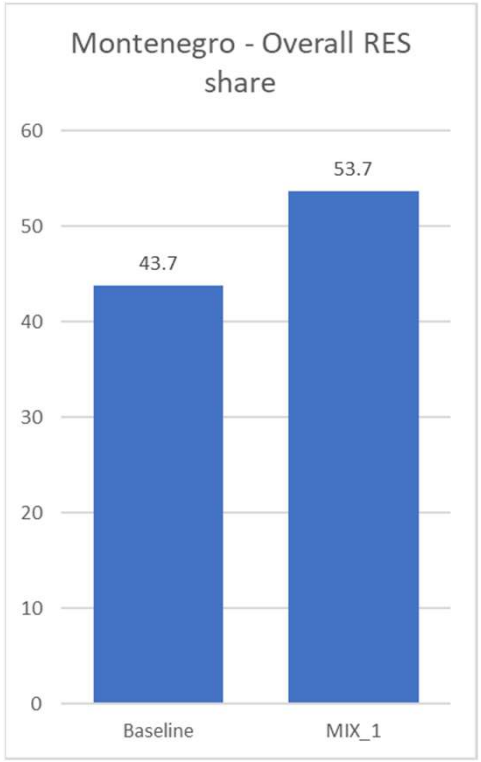






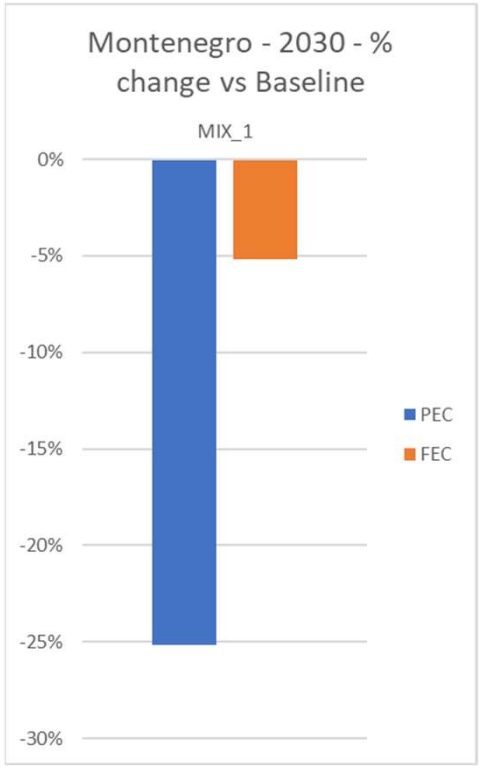
RES shares – Montenegro

The increase in RES is due to the changes in power generation, where solid consumption is substituted through RES and imports



Energy consumption – Montenegro

Changes in MIX are driven by changes in the supply side, for this reason reductions in PEC far out way the FEC reductions

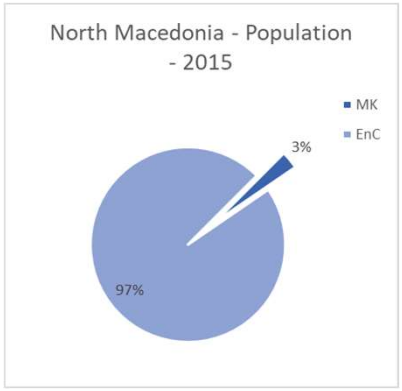


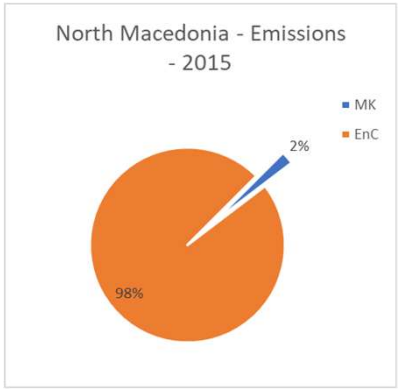
GHG Emission reductions EnC-North Macedonia

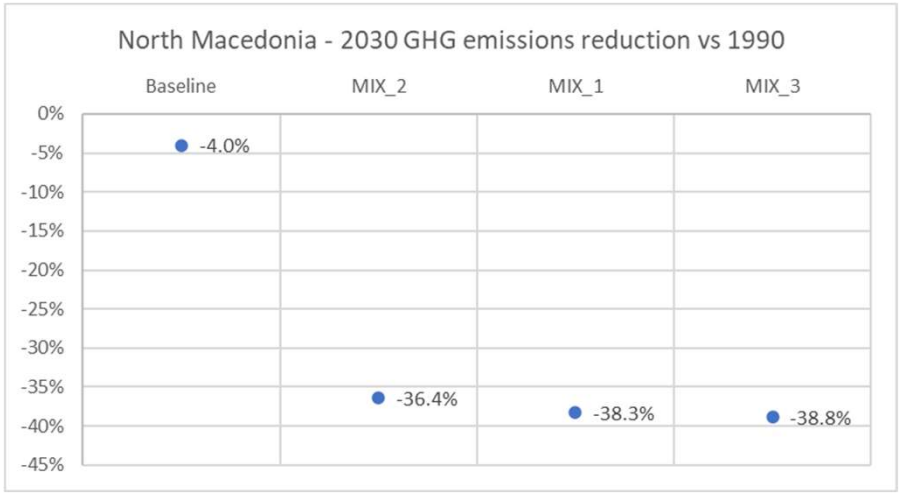
Emissions decrease compared to 1990 levels, only minimally in baseline but significantly in the MIX scenarios

For the MIX scenarios coal phase out in 2030 and closure of Oslomej in 2022-23 have been assumed (in line with NECP)

Changes between scenarios cause only minimal effect on North Macedonia projection

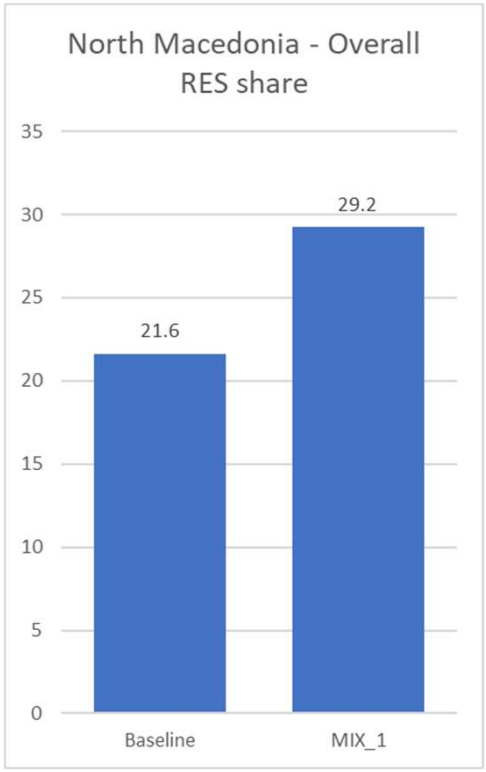






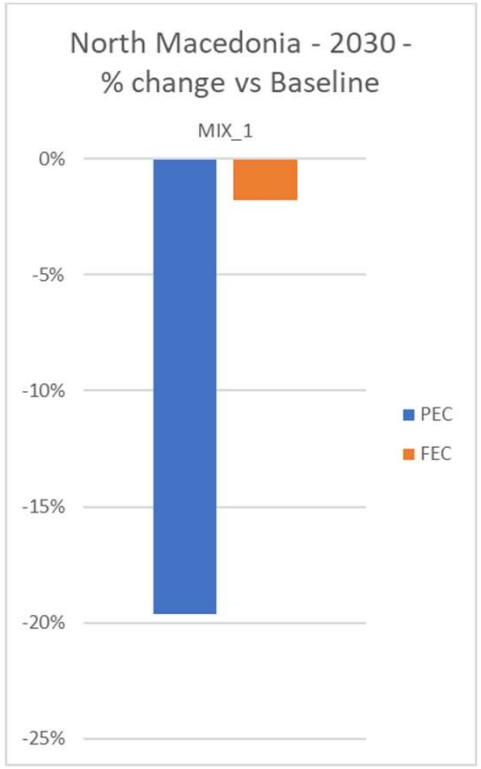
RES shares – North Macedonia

The increase in RES is due to the changes in power generation, where solid consumption is substituted through RES and imports



Energy consumption – North Macedonia

Changes in MIX are driven by changes in the supply side, i.e. the decommission of solid fired generation

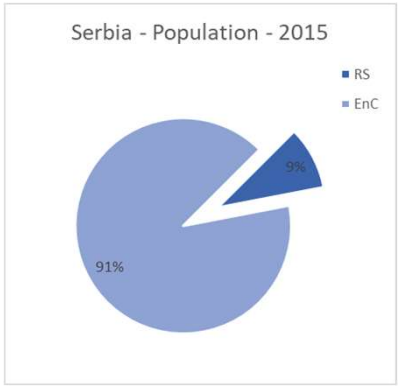


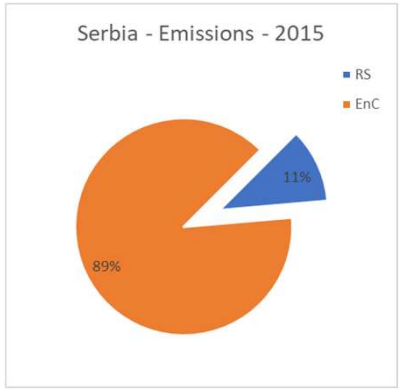
GHG Emission reductions EnC-Serbia

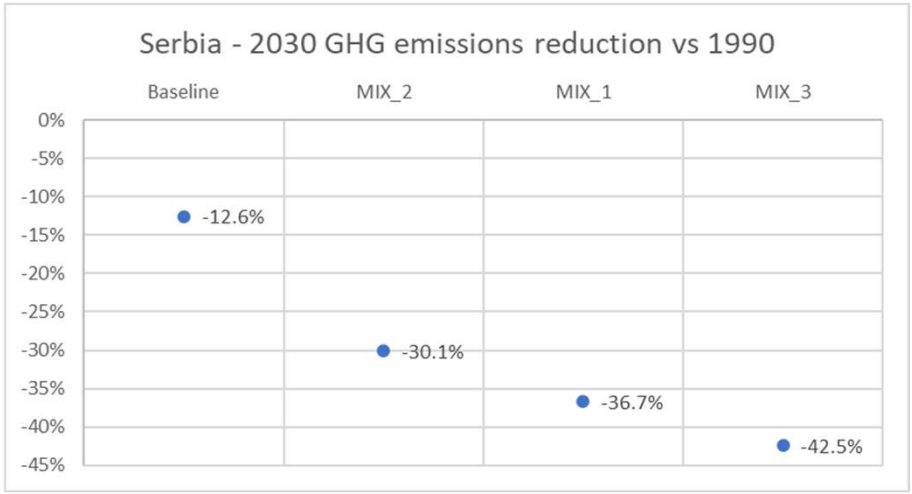
Emissions decrease compared to 1990 levels,

For the MIX scenarios Decommissioning of TE Morava (125 MW) and TE Kolubara A1, A2, A3, A5 (total 239 MW) by 2023 have been assumed

Further endogenous reductions both in demand and supply driven by the carbon value further reduce emissions

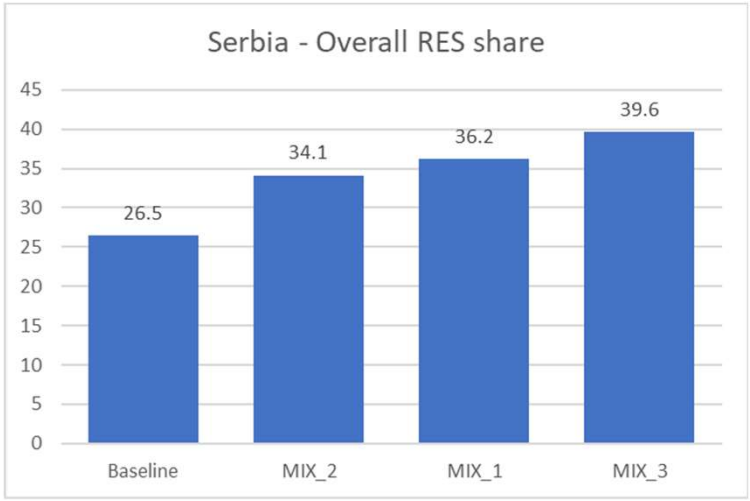






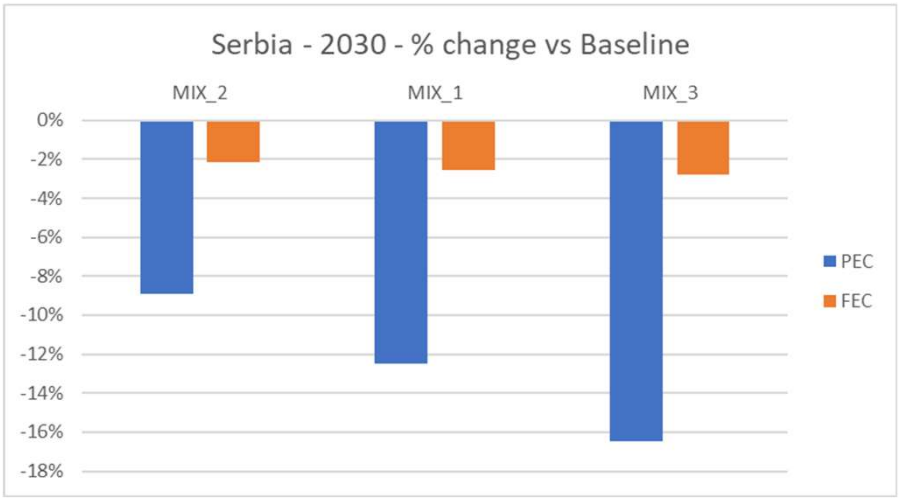
RES shares – Serbia

The increase in RES is due to the changes in power generation, where solid consumption is substituted through RES and imports



Energy consumption – Serbia

Changes in MIX are driven by changes in the supply side



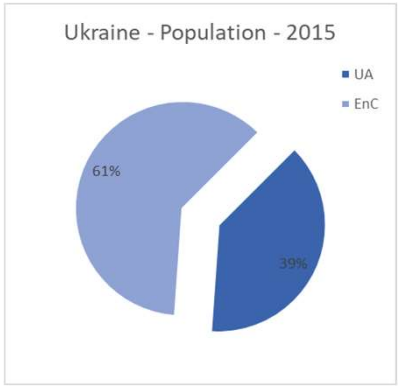
GHG Emission reductions EnC-Ukraine

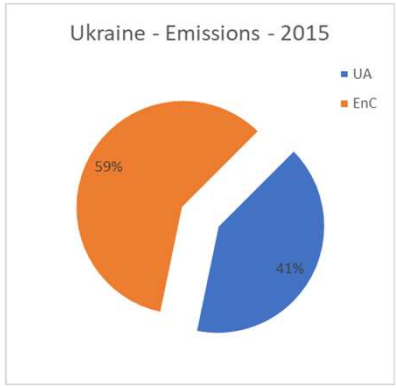
Emissions in Ukraine have been reducing compared to 1990

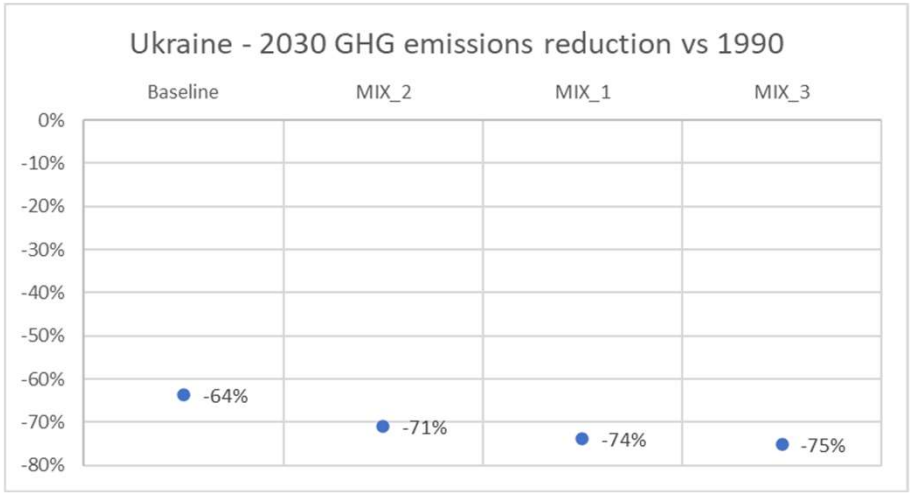
The further effort driven in the MIX scenarios further increases the trend.

The carbon value promotes changes in the supply side and an earlier decommissioning of solid power plants

N.B. Projections for Ukraine were finalised before February 24th

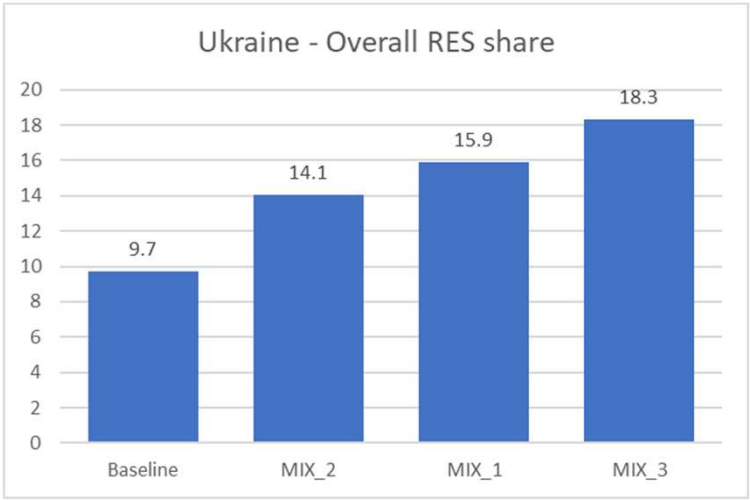






RES shares – Ukraine

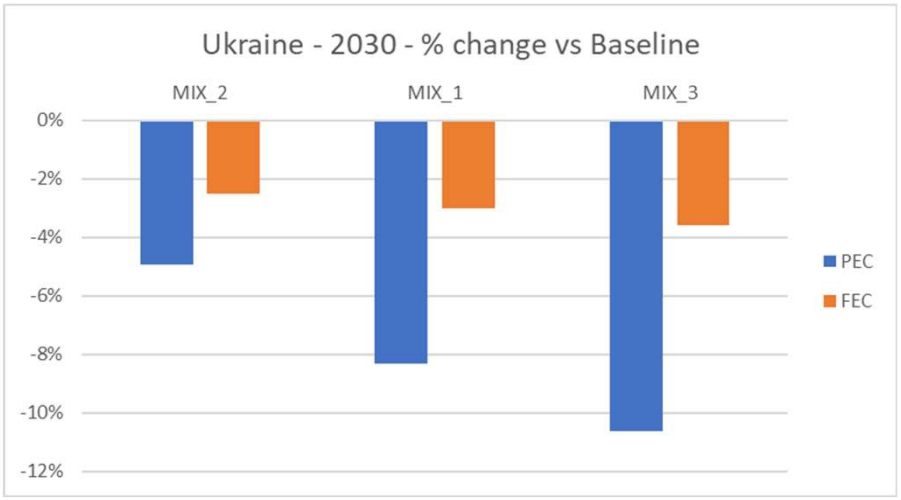
The increase in RES is due to the changes in power generation, where solid consumption is substituted through RES



Energy consumption – Ukraine

Changes in MIX are driven by changes in the supply side

Energy efficiency in the demand side sectors also leads to a reduction in FEC



Total System costs

Cumulative additional effort compared to baseline for the decade 2021-2030 is below 0.5% in all cases relative to GDP

The scenarios where (exogenous assumption of) the decommissioning of solid PPs drives the emission reductions have the same costs across scenarios

In costs where carbon value drives changes, costs increase with increasing emission reduction effort

Additional energy system costs are within a narrow range for all CPs