Impacts of GHG targets

- Socioeconomic
  - Are jobs lost, created?
  - Effects on GDP?
  - Technological/industrial development

- Distributional

- Environmental
Socioeconomic impacts of INDC implementation in Macedonia

Social aspects (green jobs)

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>2000</td>
</tr>
<tr>
<td>2025</td>
<td>3000</td>
</tr>
<tr>
<td>2030</td>
<td>6000</td>
</tr>
</tbody>
</table>

- Retrofit
- Passive house
- New house
- Lighting residential
- Lighting commercial
- Geothermal
- Biomass
- Biogas
- Natural-Gas
- Small-Hydro
- Wind
- Solar PV
Serbia- Environmental impacts

Emissions 2006 - 2030 from electricity production in TPP

Source: Joanneum Research
EU target setting

- Separate target setting for ETS, non ETS sectors
- EU wide target for ETS sectors (industry, energy production)
  - Non applicable for the CPs
- National targets for non-ETS sectors based on GDP fairness (including transport, residential, agriculture, waste)
2020/2030 non-ETS target setting
Target setting for the CPs

- Completely analogous method to EU not applicable
  - no ETS in the CPs
  - high ambition level
  - effort sharing of an overall target part of a common economic area

- Current target setting (e.g., INDCs) often disconnected from the EU approach

- Which elements of EU target setting can we apply?
Non-ETS target setting for the CPs

<table>
<thead>
<tr>
<th>Country</th>
<th>2030 GHG targets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Emission increases compared to 2005 [%]</td>
</tr>
<tr>
<td></td>
<td>Targets calculated (2013 GDP)</td>
</tr>
<tr>
<td>Montenegro</td>
<td>0.00</td>
</tr>
<tr>
<td>Serbia</td>
<td>7.67</td>
</tr>
<tr>
<td>FYROM</td>
<td>12.98</td>
</tr>
<tr>
<td>BIH</td>
<td>14.50</td>
</tr>
<tr>
<td>Albania</td>
<td>15.78</td>
</tr>
<tr>
<td>Kosovo*</td>
<td>20.00</td>
</tr>
<tr>
<td>Moldova</td>
<td>20.00</td>
</tr>
<tr>
<td>Georgia</td>
<td>20.00</td>
</tr>
<tr>
<td>Ukraine</td>
<td>20.00</td>
</tr>
</tbody>
</table>
Croatia’s EU accession as example?

- Croatia joined the European Union in 2013
  - Non-ETS: Croatia can increase its emissions not covered by the EU ETS by 11% compared to 2005 by 2020.
  - ETS sectors: Community-wide quantity of allowances will be increased by the quantity of allowances that Croatia shall auction.

Croatias experience:
- High share of gas in the power mix
- Low CO2 prices (3-4 Euro/ton CO2)
Our approach for the CPs

- Ideally split ETS and non ETS sectors
  - For the non ETS sectors application of our method (GDP related target)
  - For the ETS sectors national projections as basis, but reduction of carbon intensity important feature to make them ETS ready (convergence to ETS benchmarks)

Also: Small countries have little flexibility, as their GHG emissions may strongly depend on a few individual plants
Albania (2)

- Non-ETS target of 6,056 Mt CO2 by 2030.
- Adding the projected industry/electricity emissions in the INDC background document would result in a target of about 8 Mt in 2030.

-> **Assumptions on industrial emission projections unclear**
Bosnia and Herzegovonia (1)
Bosnia and Herzegovonia (2)

- Non-ETS: about 7.75 Mt GHG emissions in 2030.
- National emission projection for the energy producing sector is 9.32 Mt of GHG under scenario S2. Industry sector we assume a value of about 3 Mt GHG emissions.
- Overall, our proposal would lead to a GHG target of 20 Mt by 2030.

-> No projections for industry available
Georgia

Georgia (Total emissions excl. LULUCF)

INDC as basis
Kosovo (2)

- Lack of data!
- There is no (reliable) data for industry or the non-ETS sectors.
Emission mitigation scenarios: none of them include new coal. Possible gas plant. Coal phase out by 2030.

INDC covers only CO2

Applying our method would lead to about 14Mt in 2030, higher than the mitigation scenarios in SBUR, far lower than BAU

-> We would need a better understanding of industry emission projections
Montenegro (Electricity production)

- Historical
- Own assessment

Emissions (Mt CO2e)

Montenegro (2)

- KAP has reduced its synthetic GHG (PFC) significantly, starting from 2008. Steel Mill Niksic, low emitting technology.

- The INDC assumes BAT emissions for the aluminium plant, which would make the country ready for EU-ETS entry, and also assumes that no new coal based generation plant will be built by 2030.

- Non-ETS emissions in 2030: 1.29 Mt CO2. Adding the emission projections for the ETS sectors we arrive at about 3.7 Mt.
Serbia (2)

- Non-ETS: 22.64 Mt GHG emissions in 2030.
- The 2030 emissions in the WEM scenario for ETS sectors are 47.5 Mt,
- Overall of 70 Mt GHG emissions in 2030.
In order to have sufficient balancing energy for renewables, approximately 250 MW gas turbines will be put into operation in the next years.

The WEM scenario results in 16.2 Mt of GHG emissions, while the WAM scenario would result in about 15.2 Mt CO2e emissions. INDC estimation is in-between these values.

Our first top-down estimate of the 2030 targets was 15.3 Mt of GHG emissions by 2030.
Ukraine (1)

Ukraine (Energy + Industrial Processes)

- Historical
- Projection BAU
- Projection Max. Mitigation

Emissions (Mt CO2e)

In Ukraine the INDC is in the same magnitude of our proposed top-down estimate (20% increase of emission compared to 2005).

The proposed target will be adjusted based on the proposed 2030 RES and EE targets.
Next steps?

- for most CPs no clear pathways to reduce energy and carbon intensities towards EU benchmarks.
- A first screening of the INDCs and as far as available related background calculations showed limited ambition to increase PV.
  - As NDCs are a few years old
  - Work done by IRENA in 2017 on cost-effective RES potential in SEE could be of valuable help.