

Study on 2030 overall targets (energy efficiency, renewable energies, GHG emissions reduction) for the Energy Community

Approach for 2030 RE target setting

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Approach for **2030 RE target setting** within the Energy Community

EnC level

- To increase the RE share at CP level according the **formula set out in Annex Ia** of the Amendments adopted by the European Parliament on 17 January 2018.
- This approach follows **an integrated concept that takes into account:**
 - ❑ **the differences in economic development,**
 - ❑ **the potential for cost-effective RE deployment, and**
 - ❑ **the interconnection level in the European Network of Transmission System Operators for Electricity (ENTSO-E) across the EU and the EnC.**
- This approach strictly follows the formula set out in Annex Ia, and **distributes the efforts across all CPs** (and EU Member States) **while maintaining the RE ambition level as presumed at EU level** (i.e. to aim for (at least) **32% RE** as share in gross final energy demand)

Approach for **2030 RE target setting** within the Energy Community

EnC level

The details of the calculation...

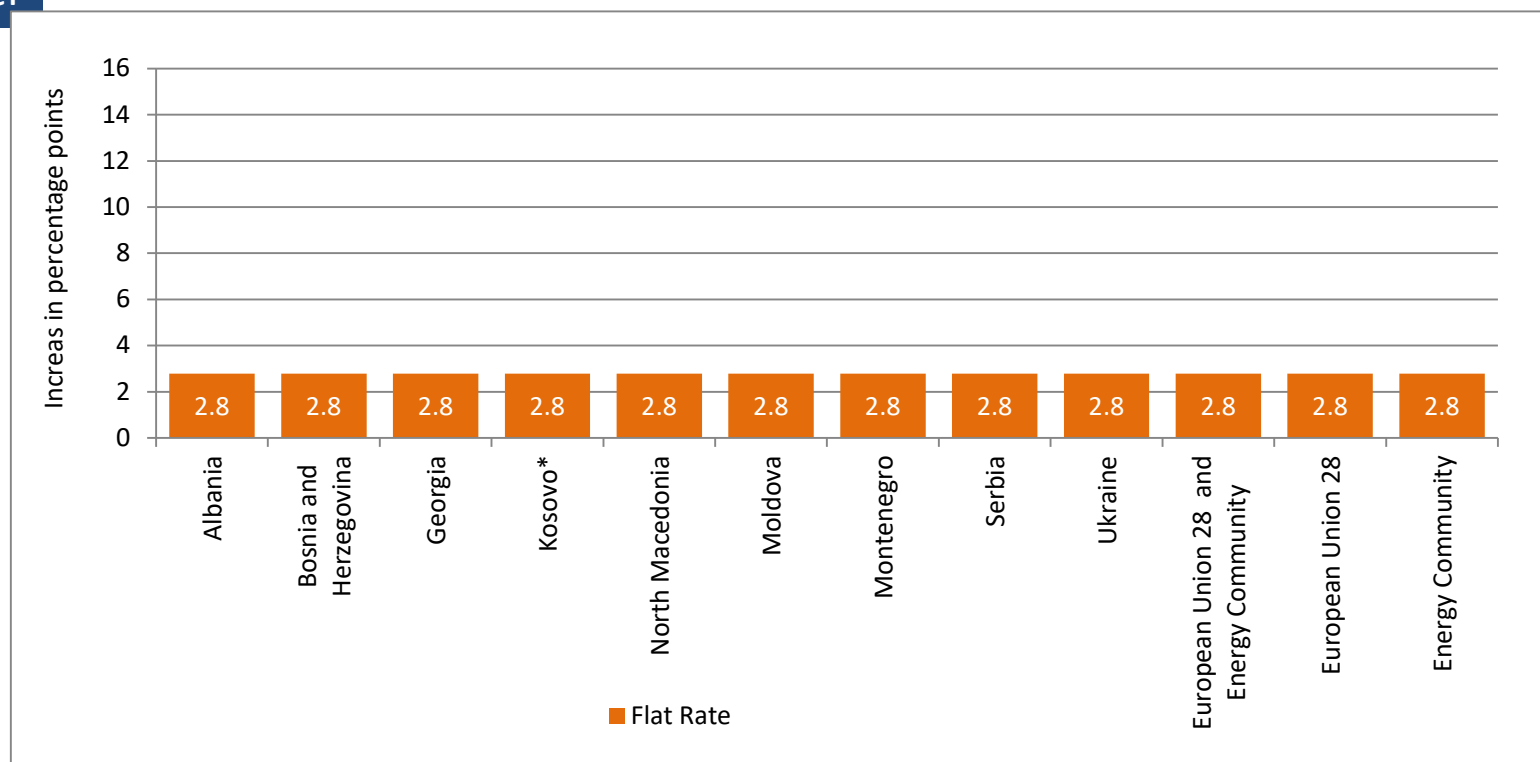
Amendment 270, Proposal for a directive Annex Ia (new) - Text proposed by the Commission

1. A Member State's targets for 2030 shall be the sum of the following components, each expressed in percentage points:

- (a) the **Member State's national binding target for 2020** as set out in Annex I of the Directive COM(2016) 767 final/2 and Decision D/2012/04/MC-EnC, Article 4 for the Energy Community.
- (b) a **flat rate contribution** ("C_{Flat}");
- (c) a **GDP-per-capita based contribution** ("C_{GDP}");
- (d) a **potential-based contribution** ("C_{Potential}");
- (e) a **contribution reflecting the interconnection level** of the Member State ("C_{Interco}").

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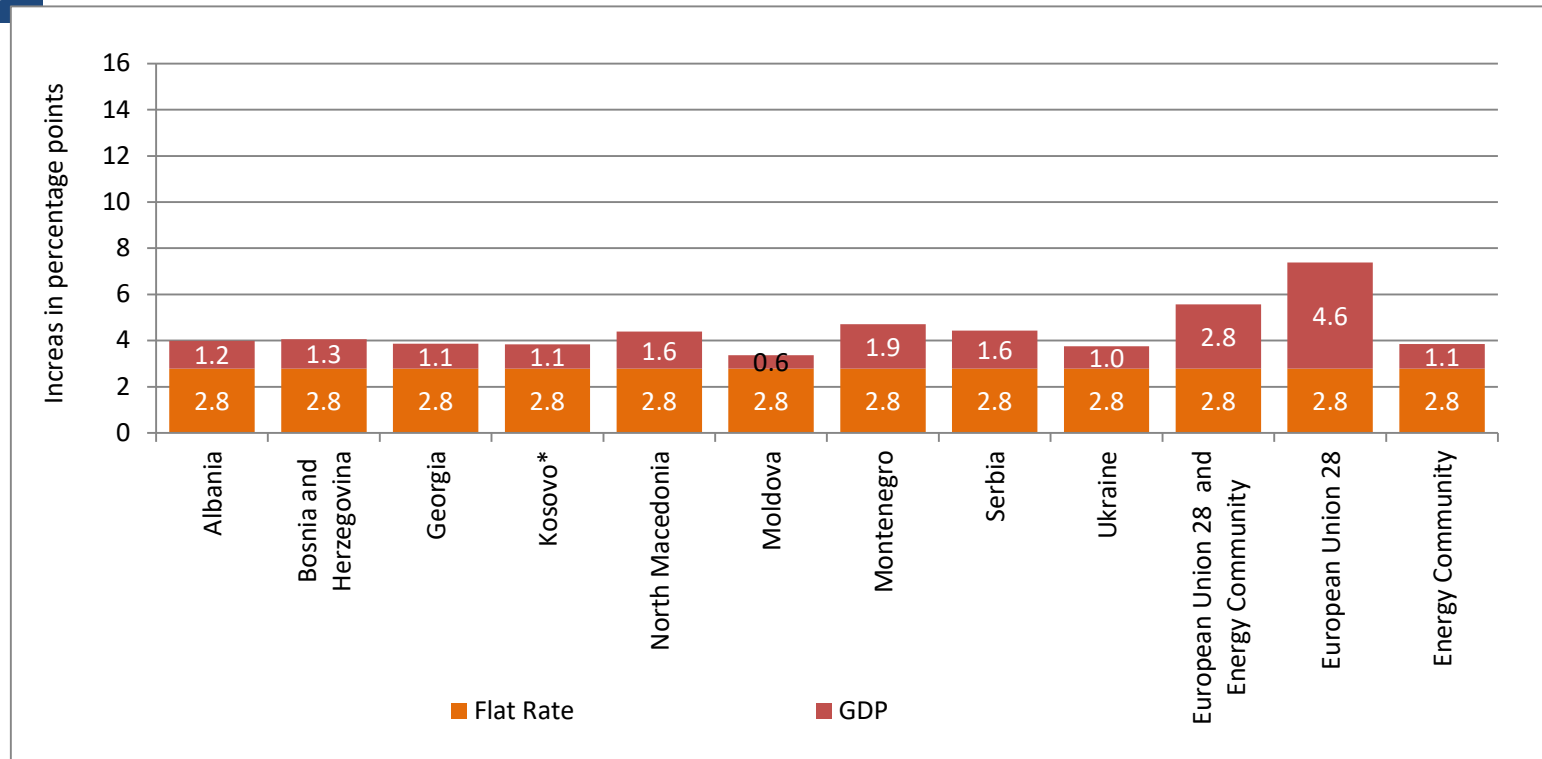
EnC level



2. C_{Flat} shall be the same for each Member State. All Member States' C_{Flat} shall together **contribute 30 %** of the difference between the Union's targets for 2030 and 2020.

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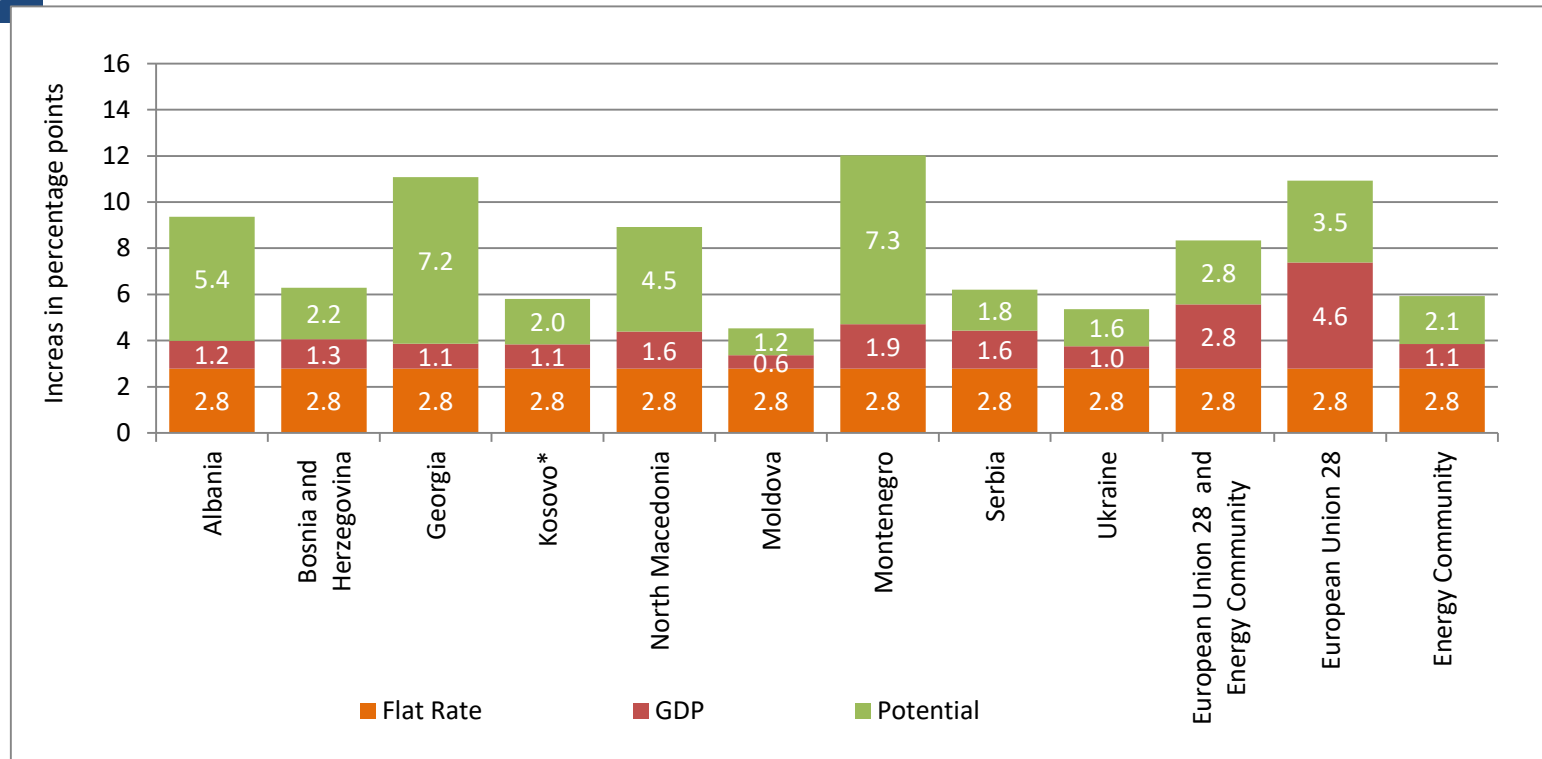
EnC level



3. C_{GDP} shall be allocated between Member States based on a GDP per capita index to the Union average, where for each Member State individually the index is **capped at 150 % of the Union average**. All Member States' C_{GDP} shall together **contribute 30 %** of the difference between the Union targets for 2030 and 2020.

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EnC level



4. $C_{\text{Potential}}$ shall be allocated between Member States based on the difference between a Member State's RES share in 2030 as shown in PRIMES EUCO.... scenario and its national binding target for 2020. All Member States' $C_{\text{Potential}}$ shall together **contribute 30 %** of the difference between the Union targets for 2030 and 2020. (→ Least cost allocation)

Approach for 2030 RE target setting within the Energy Community

EnC level

→ The component $C_{\text{Potential}}$ shall take into account the CPs cost effective potential for RE sources

The approach used within this study: **Green-X modelling (instead of PRIMES)**
for deriving a least-cost allocation of the RE potentials across the EnC

The selection of RE technologies in the period post 2020 follows a least-cost approach, meaning that all additionally required future RE technology options are ranked in a merit-order, and it is left to the economic viability which options are chosen for meeting the presumed 2030 RE target.

*In other words, a **least-cost approach** is used to determine investments in RE technologies post 2020 across the Energy Community. This allows for a full reflection of competition **across technologies and countries** (incorporating well also differences in financing conditions etc.) from a European perspective.*

Support levels and related expenditures follow then the marginal pricing concept where the marginal technology option determines the support level (like in the ETS or in a quota/certificate trading regime, or similar to the concept of liberalised electricity markets).

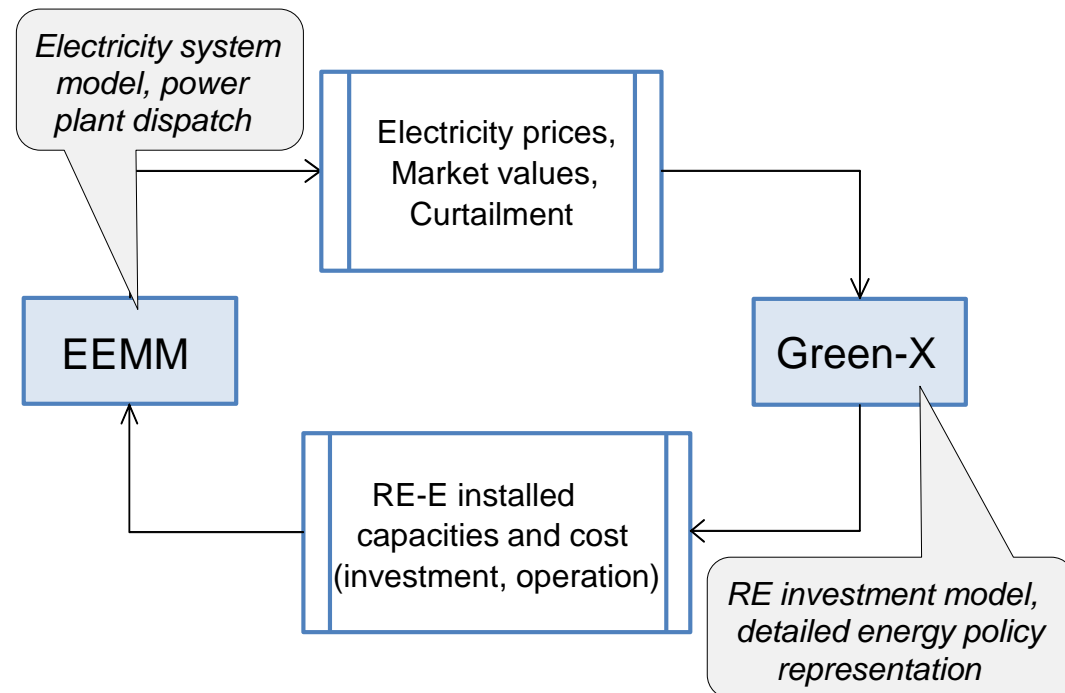
Approach for 2030 RE target setting within the Energy Community

EnC level

→ The component $C_{\text{potential}}$ shall take into account the CPs cost effective potential for RE sources

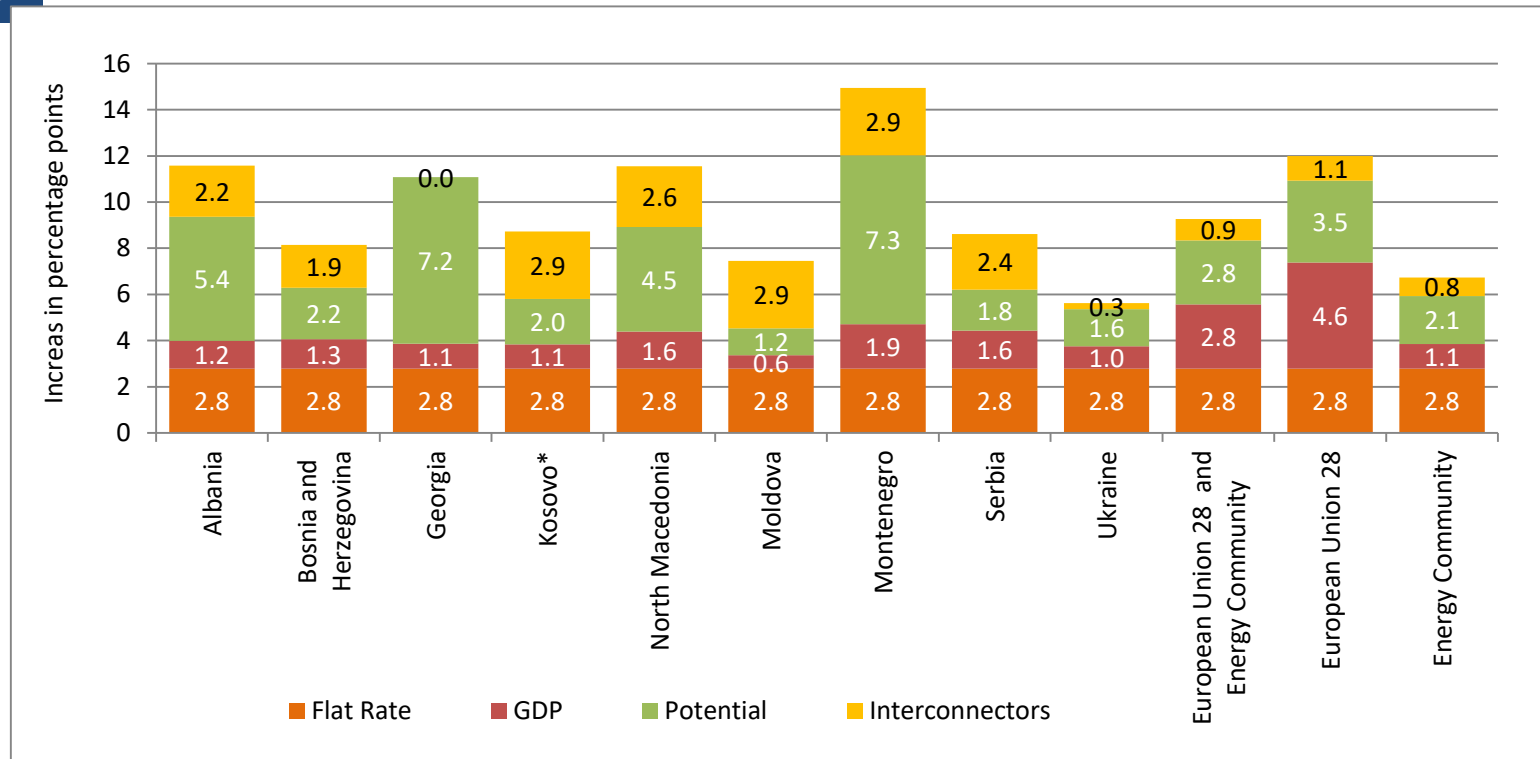
The approach used within this study: **Green-X modelling (instead of PRIMES)** for deriving a least-cost allocation of the RE potentials across the EnC

→ More precisely: TU Wien's Green-X model combined with REKK's EEMM power system model (as used e.g. in the SEERMAP study)



Approach for 2030 RE target setting within the Energy Community

EnC level



5. C_{Interco} shall be allocated between Member States based on an electricity interconnection share index to EU average, where for each Member State individually the interconnection share index is **capped at 150% of the EU average**. All Member States' C_{Interco} shall together **contribute 10%** of the difference between the EU targets for 2030 and 2020.

Approach for 2030 RE target setting within the Energy Community

EnC level

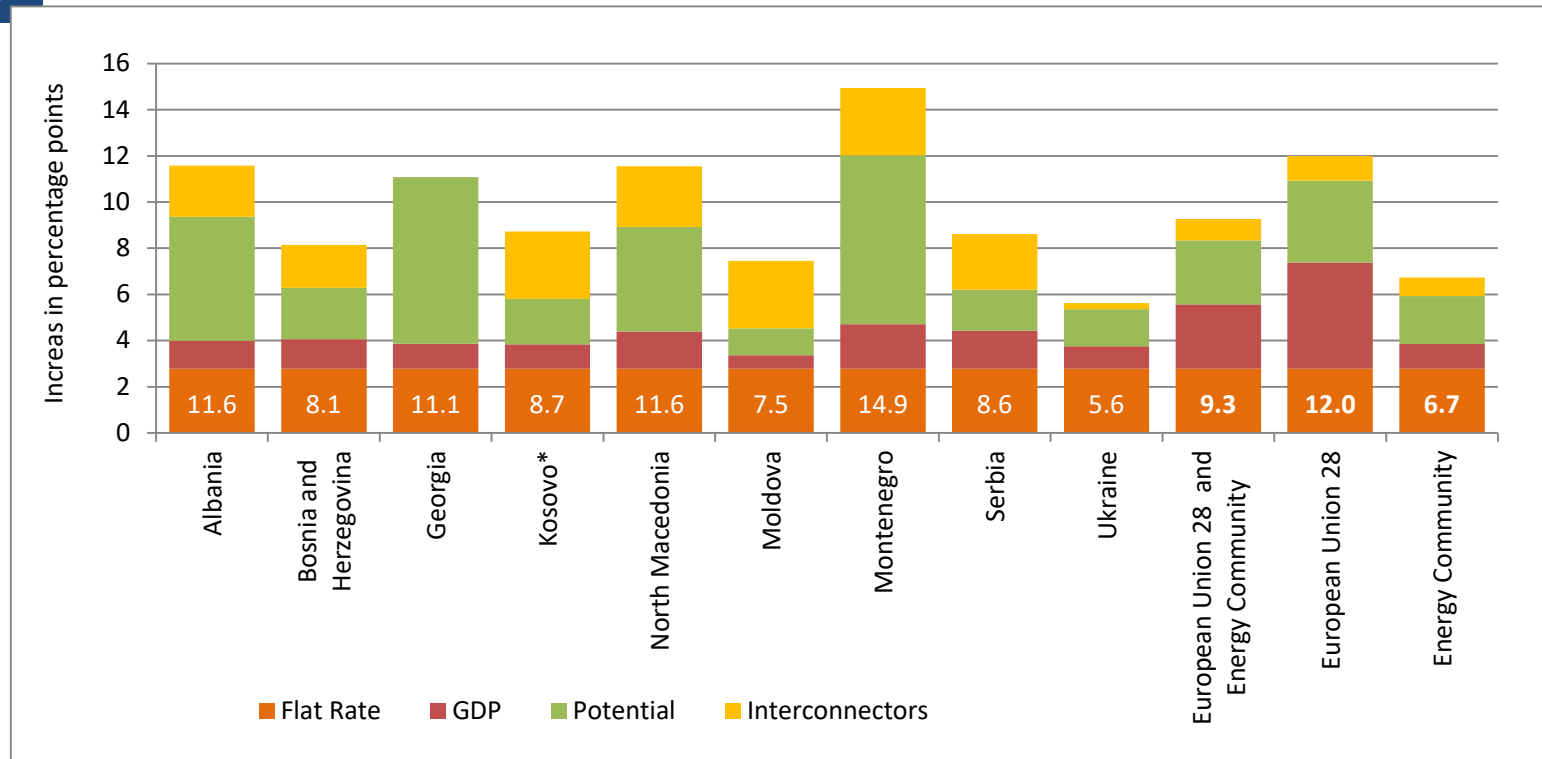


Figure: Resulting RE share net increase between 2020 and 2030 for all CPs and the EnC region according to the proposed target setting approach (i.e. a “four component” approach).

(Source: EUROSTAT, 2018; IEA, 2018; IMF, 2018; NTUA, 2012; own calculations)

Approach for 2030 RE target setting within the Energy Community

EnC level

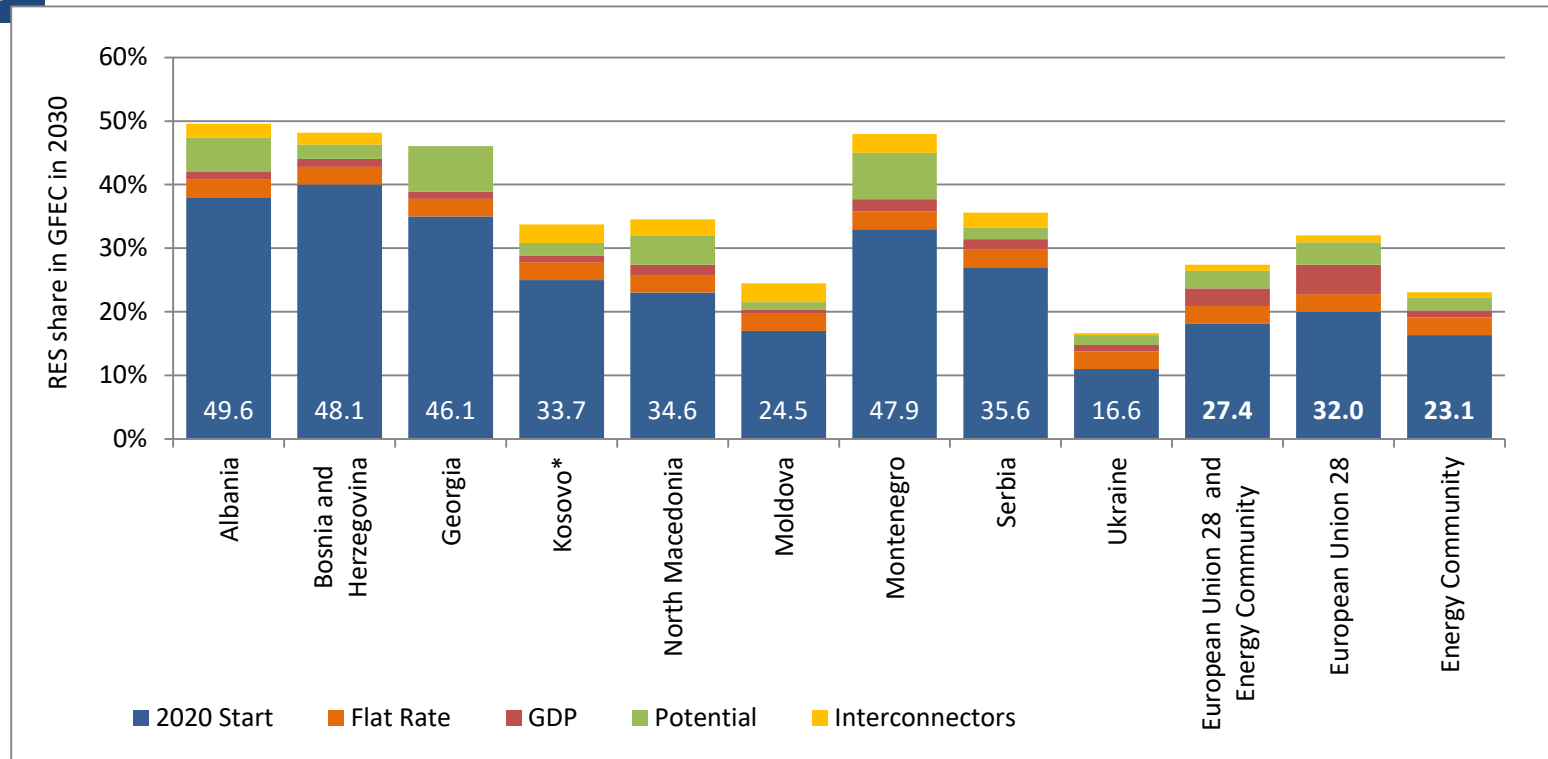


Figure: 2030 RE Targets for all CPs and the EnC region according to the proposed target setting approach (i.e. a “four component” approach).

(Source: EUROSTAT, 2018; IEA, 2018; IMF, 2018; NTUA, 2012; own calculations)

Approach for 2030 RE target setting within the Energy Community

EnC level

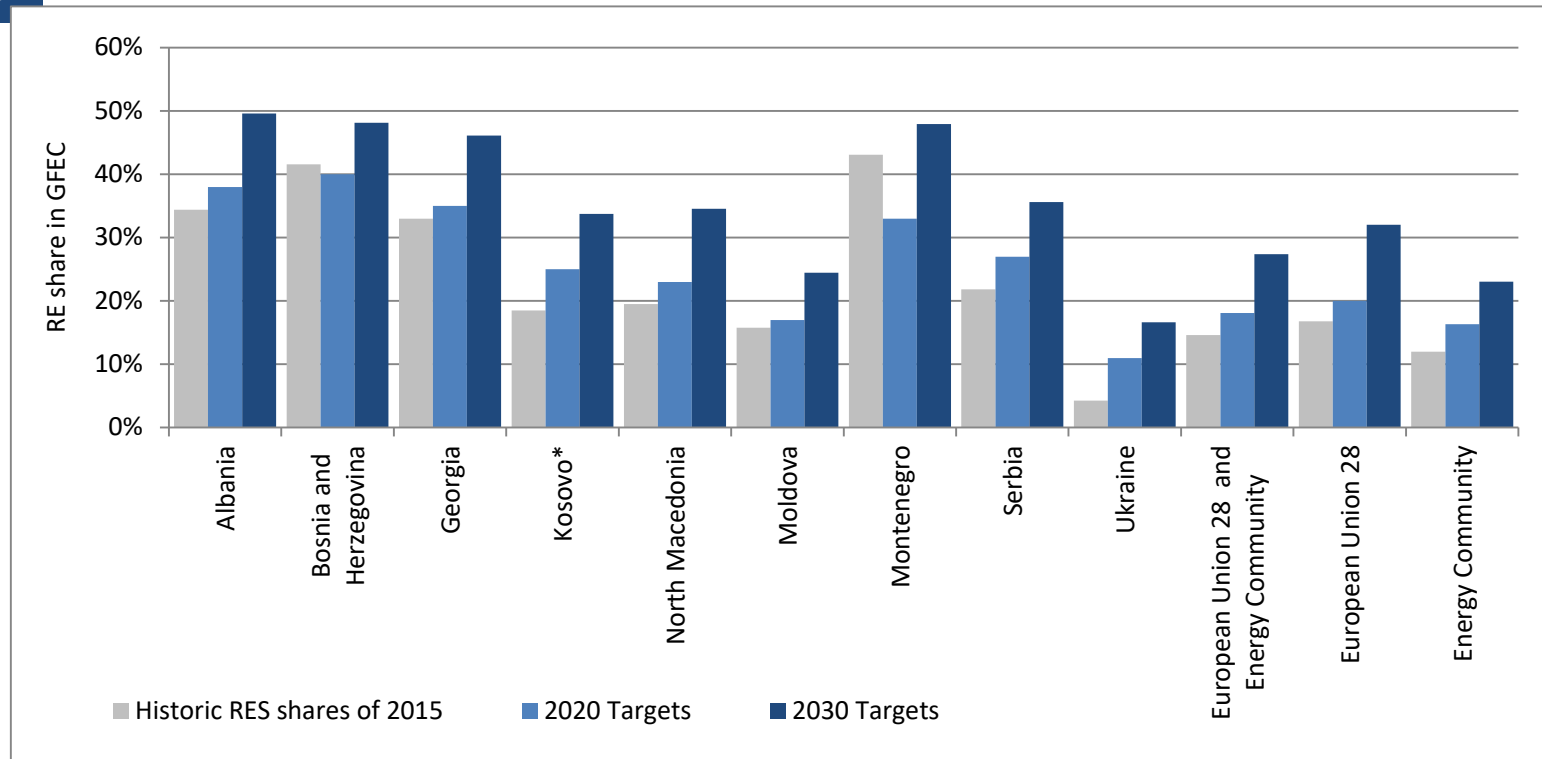


Figure: Comparison RE shares per region an Contracting Party. The historic RE share for the year 2015 (grey) in gross final energy consumption (GFEC) is compared to the 2020 target (light blue) and 2030 target (dark blue).

(Source: EUROSTAT, 2018; IEA, 2018; IMF, 2018; NTUA, 2012; own calculations)

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EnC level

RE share in gross final energy consumption	RE share as of EUROSTAT Shares tool		2020 Targets as of RED	2030 Targets according the 4 componets approach					
				Flat rate contribution	GDP per capita based contribution	Potential-based contribution	Interconnection level based contribution	Total needed increas	Overall targets for 2030
	2015	2016	2020	2020 vs. 2030	2020 vs. 2030	2020 vs. 2030	2020 vs. 2030	2020 vs. 2030	2030
Contracting Party	[%]	[%]	[%]	[pp]	[pp]	[pp]	[pp]	[pp]	[%]
Albania	34.4%	37.1%	38.0%	2.8%	1.2%	5.4%	2.2%	11.6%	49.6%
Bosnia and Herzegovina	26.7%	25.3%	40.0%	2.8%	1.3%	2.2%	1.9%	8.1%	48.1%
Georgia	33.0% ¹	33.4% ¹	35.0%	2.8%	1.1%	7.2%	0.0%	11.1%	46.1%
Kosovo*	18.5%	24.4%	23.0%	2.8%	1.1%	2.0%	2.9%	8.7%	33.7%
Moldova	26.2%	26.9%	17.0%	2.8%	0.6%	1.2%	2.9%	7.5%	24.5%
Montenegro	43.1%	41.5%	33.0%	2.8%	1.9%	7.3%	2.9%	14.9%	47.9%
North Macedonia	19.5%	18.0%	23.0%	2.8%	1.6%	4.5%	2.6%	11.6%	34.6%
Serbia	21.9%	21.0%	27.0%	2.8%	1.6%	1.8%	2.4%	8.6%	35.6%
Ukraine	4.9%	5.8%	11.0%	2.8%	1.0%	1.6%	0.3%	5.6%	16.6%
Energy Community	12.1%	11.5%	16.3%	2.8%	1.1%	2.1%	0.8%	6.7%	23.1%

Remark:

¹ The RE share for Georgia for the years 2014 and 2015 is an approximate value, as the available data is not as detailed as needed to calculate the exact RE share.

Table: RE Targets and historic shares

(Source: EUROSTAT, 2018; IEA, 2018; NTUA, 2012; own calculations)

Assessing the impacts – exemplified for **Serbia** **Part 1: Energy efficiency**

Derived options for setting 2030 Energy Efficiency Targets:

<i>EE targets for Serbia by 2030</i>	Final Energy Consumption [ktoe]	Comparison to default (Harmonised Reduction=100%) [%]
National Perspective	11,078	120.2%
Harmonised Reduction (Baseline III)	9,215	100.0%
Comparable Efforts (Historic Trend)	8,139	88.3%

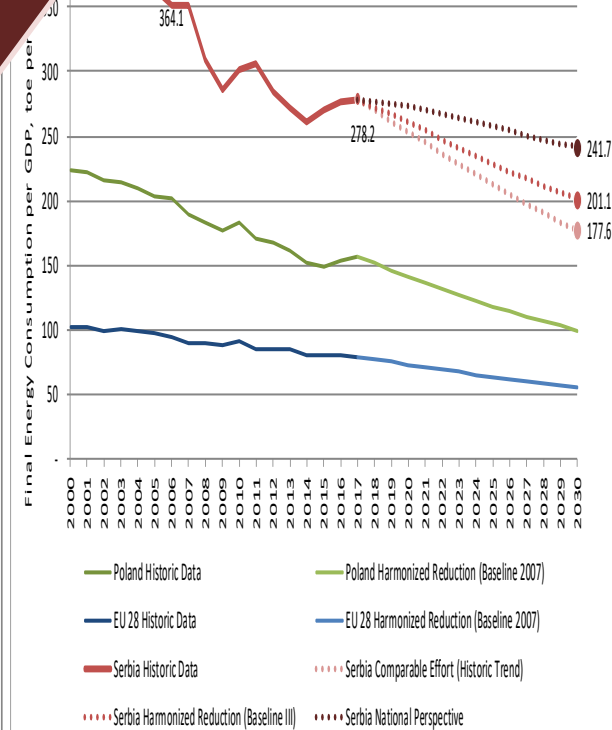
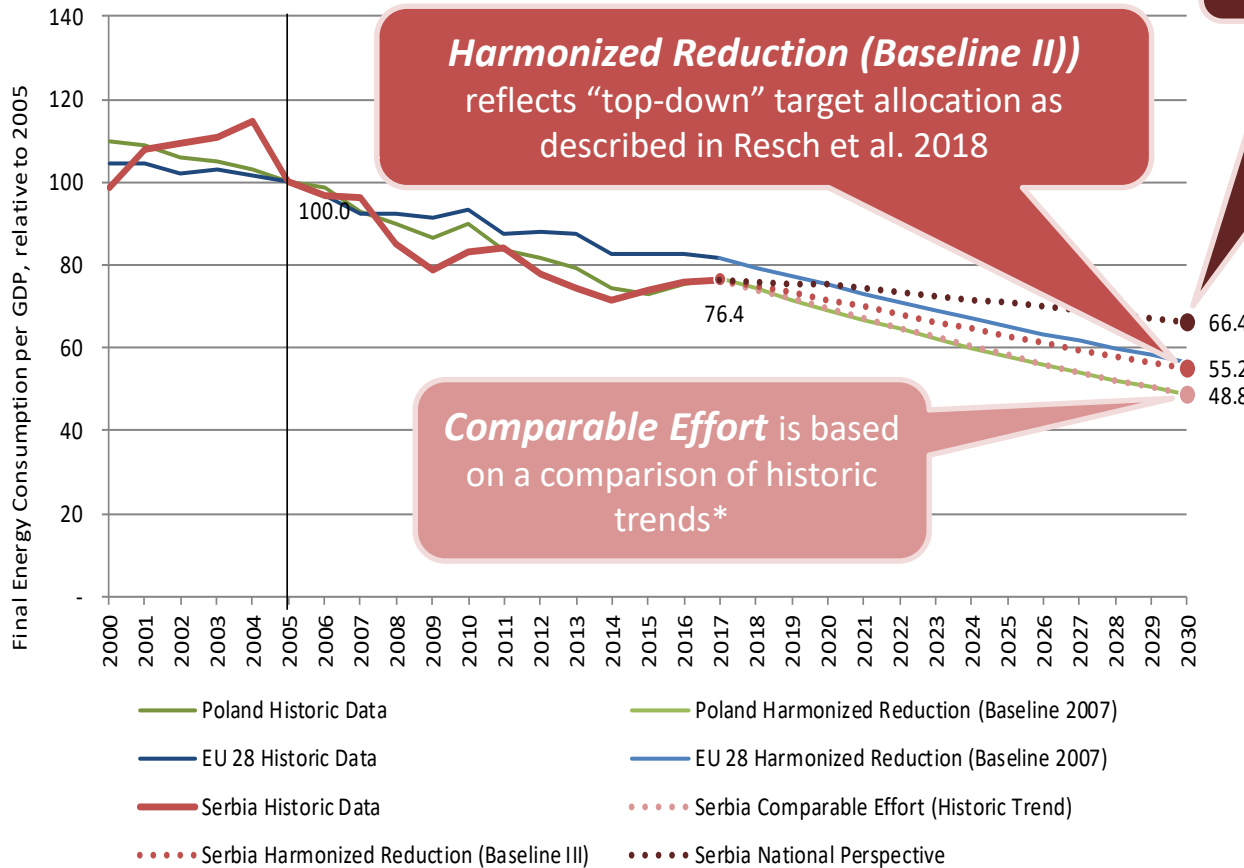
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Study on 2030 overall targets

Serbia

Assessing the impacts – exemplified for Serbia Part 1: Energy efficiency

National Perspective reflects the CPs own plans



*I.e. the fit in historic development of FEC per GDP between 2005 and 2017

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Assessing the impacts –

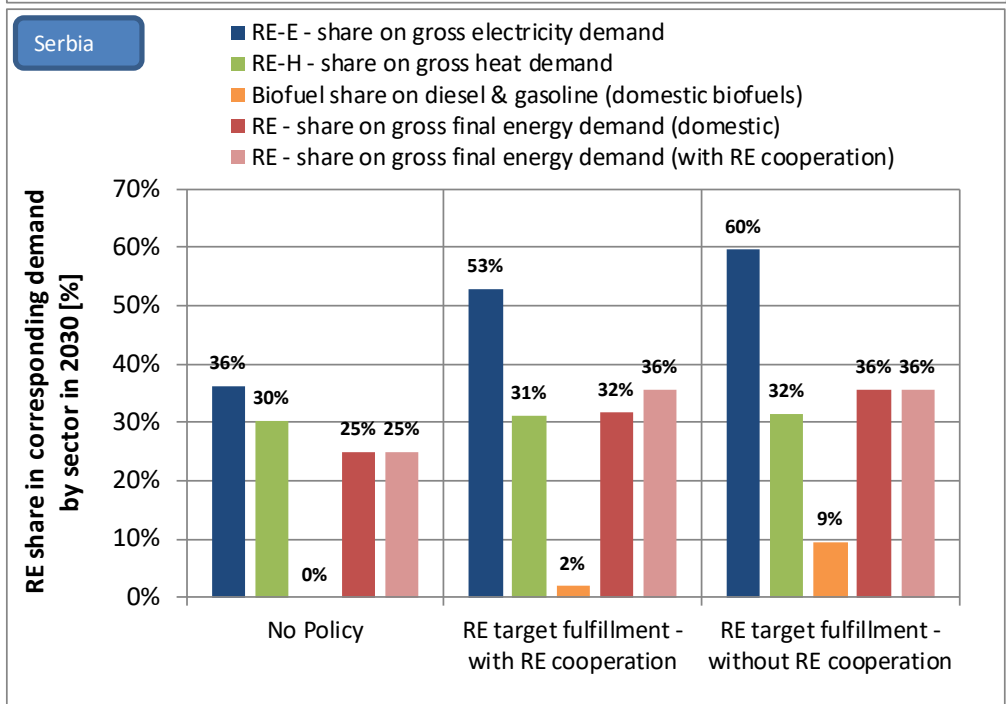
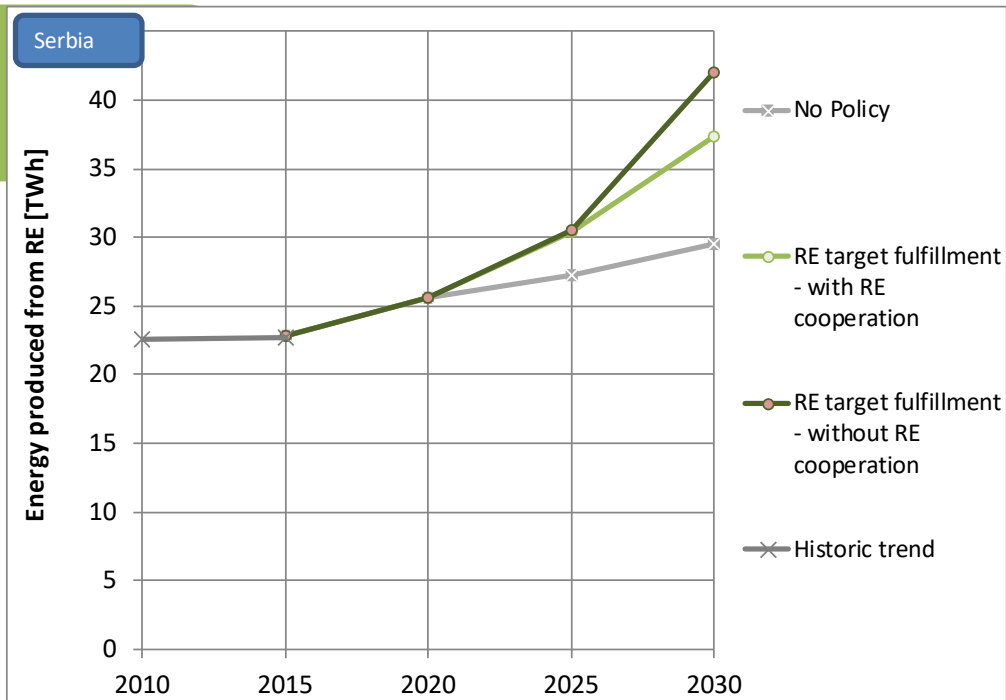
exemplified for **Serbia**

Part 2: Renewable Energies

A “No Policy” scenario to showcase no policy action.

Two “RE target” scenarios to assess the feasibility and impacts of 2030 RE target achievement:

- **“RE target fulfilment – without RE cooperation”** ... pure domestic RE target fulfilment with no (or only limited) cooperation
- **“RE target fulfilment – with RE cooperation”** ... “Community perspective” is taken with efficient and effective RE target achievement at EnC level



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Assessing the impacts –

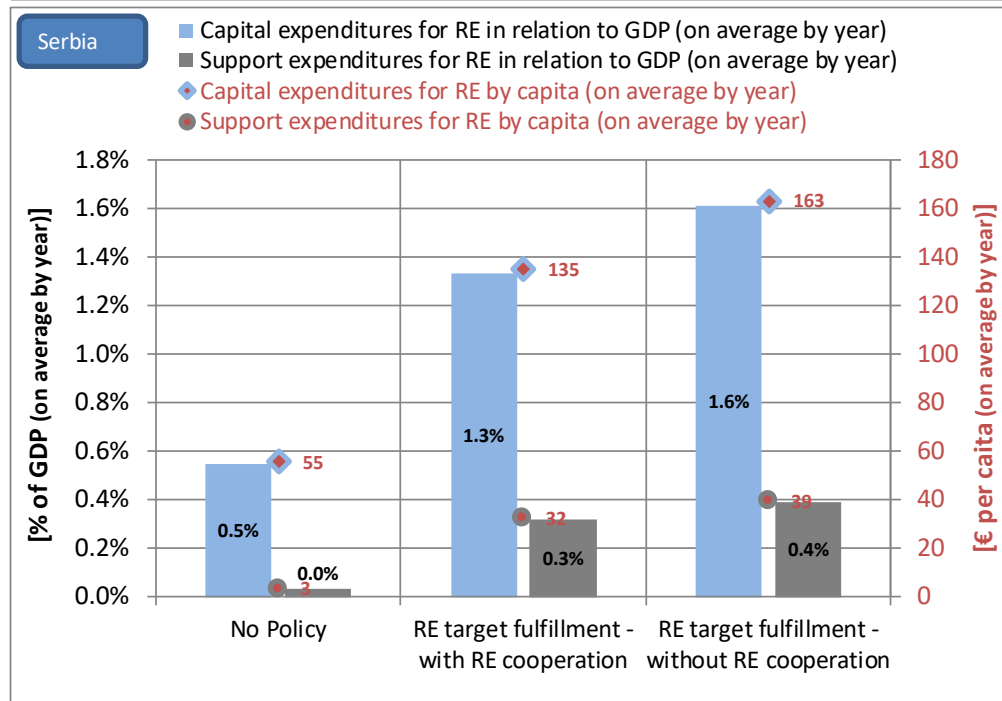
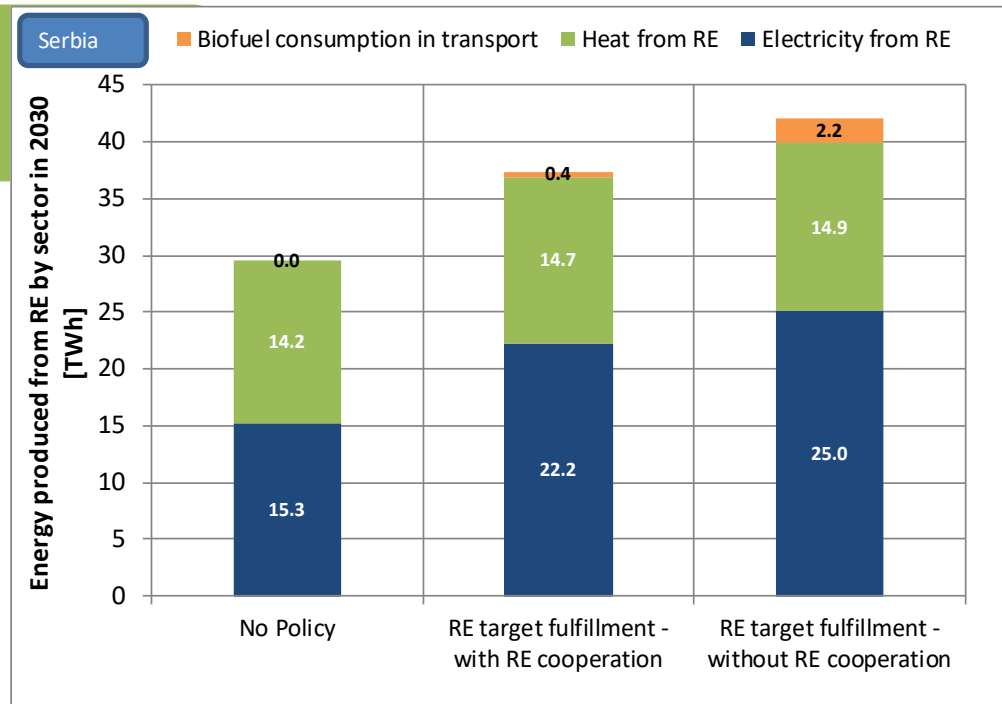
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Study on 2030 overall targets for the Energy Community

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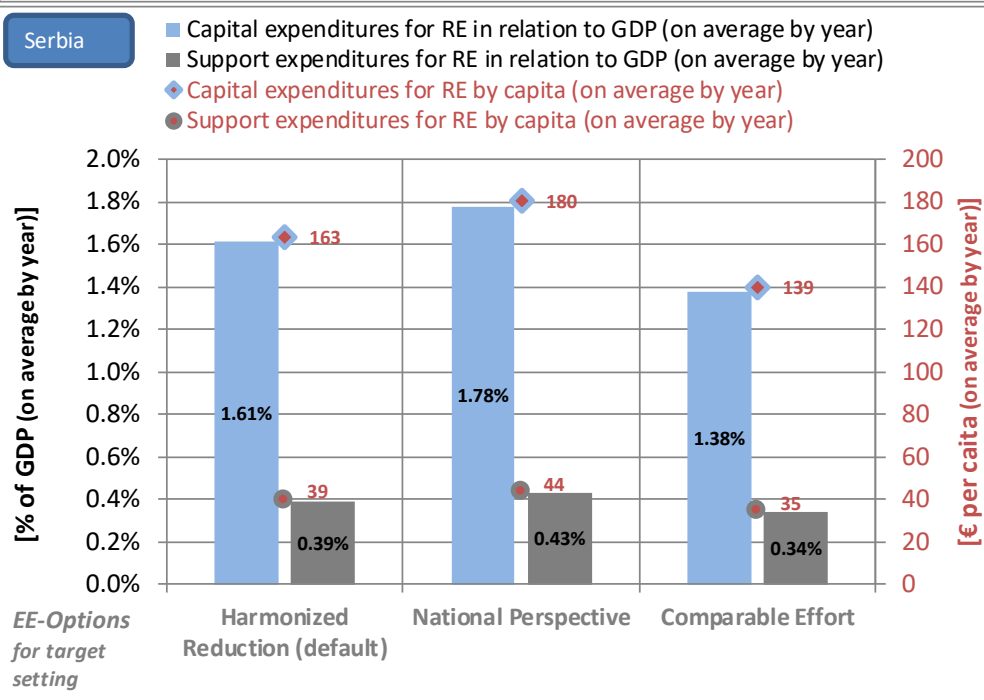
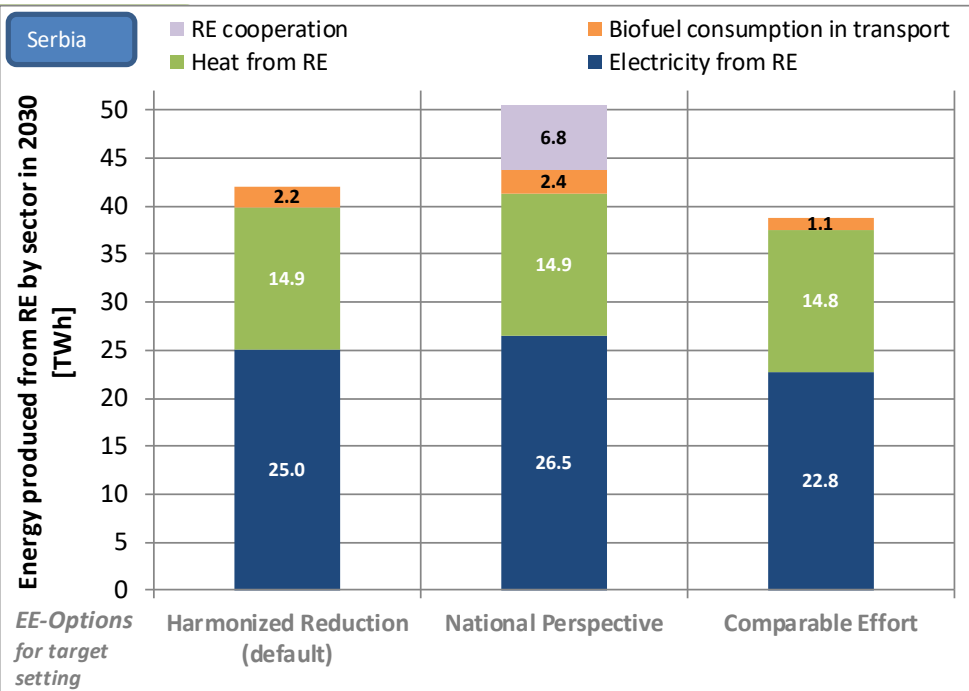
exemplified for **Serbia**

Part 2: Renewable Energies

Analysing the impact of **EE target setting options**, exemplified for the “national perspective”:

- **Harmonized Reduction** (default options ... as discussed previously)
- **National Perspective** (high demand growth)
- **Comparable Effort** (derived from historic trend analysis, low demand growth)

→ Modelling indicates that high demand in “National Perspective” requires RE cooperation for achieving the Serbian 2030 RE target (due to perceived domestic limits for a cost effective deployment)



Assessing the impacts – exemplified for Serbia

Part 3: GHG emission reduction

Illustrating the impact of changes in EE and in RE deployment on GHG emissions in Serbia (rough indication)

No Policy	RE target fulfillment - with RE cooperation	RE target fulfillment - without RE cooperation	RE target fulfillment - EE-Option: National Perspective	RE target fulfillment - EE-Option: Comparable Effort
72%	61%	56%	74%	48%

... compared to 2005 levels

Assessing the impacts – exemplified for **Serbia**

Part 3: GHG emission reduction

Illustrating the impact of changes in EE
and in RE deployment
on **GHG emissions in Serbia**
(rough indication)

		Comparison: 2030			RE target fulfillment - EE-Option: National Perspective	RE target fulfillment - EE-Option: Comparable Effort
		No Policy	RE target fulfillment - with RE cooperation	RE target fulfillment - without RE cooperation		
<u>Approximation of fossil generation</u>						
Electricity	GWh	26,748	19,783	16,957	23,982	14,285
Heat	GWh	32,899	32,426	32,286	41,809	26,863
Transport fuels (road transport)	GWh	22,882	22,458	20,714	25,124	19,056
Residual fuels (i.e. mainly other transport modes)	GWh	6,120	6,120	6,120	7,356	5,404
Total	GWh	88,650	80,787	76,077	98,271	65,608
<u>Approximation of GHG emissions (fossil fuel use)</u>						
Electricity	kt CO2	19,438	14,376	12,323	17,428	10,381
Heat	kt CO2	8,685	8,560	8,523	11,038	7,092
Transport fuels (road transport)	kt CO2	5,878	5,769	5,321	6,454	4,895
Residual fuels (i.e. mainly other transport modes)	kt CO2	1,572	1,572	1,572	1,890	1,388
Total	kt CO2	35,574	30,278	27,740	36,809	23,756
Total non-ETS (rough indication)	kt CO2	16,136	15,902	15,417	19,381	13,375

Assessing the impacts – exemplified for **Serbia**

Concluding remarks

- The proposed **approach for RE target setting within the EnC follows the principles laid out at EU level**, specifically how benchmarks are introduced that indicate a fair contribution of individual MSs to the EU target
- This approach builds on 4 components (**i.e. flat rate, GDP/capita, least-cost allocation and the interconnectivity of the electricity grid**) that sum up the required increase at country level
- The **ambition level for renewables is influenced by the target set for Energy Efficiency** – here distinct options are analysed:
 - Harmonized Reduction (default options ... as discussed previously)
 - National Perspective (high demand growth)
 - Comparable Effort (derived from historic trend analysis, low demand growth)
- The **EE target has a strong impact on the feasibility of target achievement in RE and in GHG mitigation** → an unambitious EE target challenges the achievement of RE targets and endangers the feasibility of GHG limits