

ENERGY EFFICIENCY DIRECTIVE 2012/27/EU
Impact Assessment on Energy Community

- Assess the costs and benefits of implementing key elements of the Energy Efficiency Directive (EED), 2012/27/EU, in the Contracting Parties (CPs).
- Support development of a basis for justification of proposed changes to particular articles within the Directive as it relates to the CPs.
 - ✓ Task 1 - National Targets (Article 3)
 - ✓ Task 2 - Exemplary role of public bodies' buildings (Article 5)
 - ✓ Task 3 - Energy efficiency obligation schemes (Article 7)
 - ✓ Task 4 - Promotion of efficiency in heating and cooling (Article 14)

- ✓ Use the EC-TIMES *integrated regional energy system planning* model covering each CP.
- ✓ Identify the *most cost-effective configuration* of the future CP energy systems that minimizes total energy system cost (all investment, operating and fuel costs over a planning horizon till 2030).
- ✓ Assume compliance of *ESD target, RE Target and Large Combustion Plant Directive*.
- ✓ Analyze and evaluate the implications of *adoption of the EED*.
- ✓ Use the change in total energy system cost and new investment requirements by sector as the *primary measures of economic impact*.

TASK 1: EE TARGET SCENARIOS

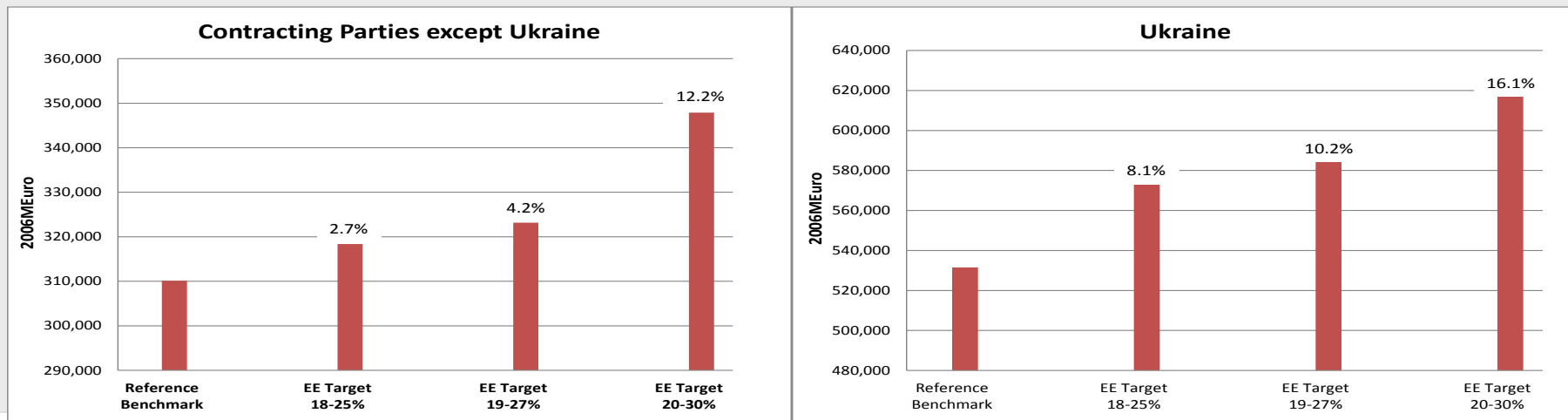
Scenario	Description
Reference Benchmark	Reference with 9% EE target (ESD) by 2018, 2020 RE Targets and large combustion plant directives assumed to be achieved
EE Target 20-30 %	National EE target proposed by the ECS for reductions of 20% FEC by 2025 and 30% by 2030
EE Target 19-27 %	National EE target for reductions of 19% FEC by 2025 and 27% by 2030
EE Target 18-25 %	National EE target for reductions of 18% FEC by 2025 and 25% by 2030

EE TARGET PROGRESSION OF AMBITION

EE Target Scenario	Time period		
	2009-2018	2018-2025	2025-2030
20-30%	1.0%	1.57%	2.00%
19-27%	1.0%	1.43%	1.60%
18-25%	1.0%	1.29%	1.40%

EE TARGET SCENARIO – SYSTEM COSTS

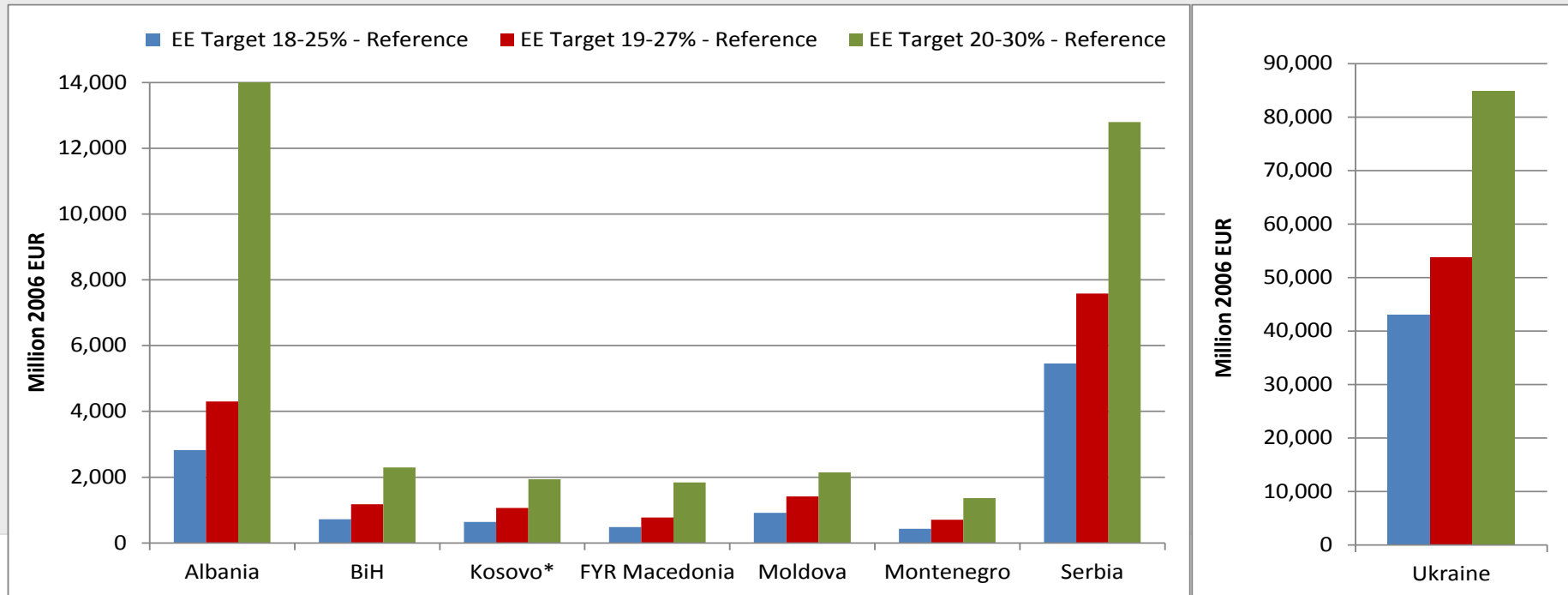
- For the CPs, without Ukraine, total discounted system cost increases (compared to the Reference Benchmark) by:
 - EUR 8.2 billion in the EE Target 18-25% case
 - EUR 13 billion in the EE Target 19-27% case
 - EUR 37.8 billion in the EE Target 20-30% case
- For Ukraine, the relative increase is considerably higher due primarily to optimistic assumptions for the adoption of energy efficiency in the Reference Baseline



RESULTS FOR EACH CONTRACTING PARTY

System cost increases:

- 25% and 65% when moving from the EE Target 18-25% case to the EE Target 19-27% case, and
- 97% to over 600% when moving from the EE Target 18-25% case to the EE Target 20-30% case.



EE TARGET 18-25% IS RECOMMENDED

- ✓ The EE Target 18-25% case is the most cost-effective policy of the three, and
- ✓ Sharp increases in the required investments, especially in 2027 and 2030, for the EE Target 19-27% and EE Target 20-30% cases do not justify the associated incremental energy savings.

Scenario	Incremental Investment Cost per Incremental Energy Saved	
	MEuro/ktoe	% change
EE Target 18-25%	0.163	0%
EE Target 19-27%	0.239	47%
EE Target 20-30%	0.631	286%

TASK 2 - EXEMPLARY ROLE OF PUBLIC BODIES' BUILDINGS – ARTICLE 5



- ✓ Analyze the impact of either a 2% or 3% annual percentage of public buildings that must be renovated to at least meet minimum energy performance requirements.
- ✓ Updated estimates were made of public building floor space owned and occupied by central government bodies, excluding exempted buildings.
- ✓ SEVEN developed regional data on retrofit costs of different levels of building efficiency improvements.

GOVERNMENT BUILDING FLOOR SPACE ESTIMATES



Contracting Party	Total Commercial* Building Floor space, m ²	Public Buildings Floor space, m ²	Central Government Public Buildings Floor space, m ²	Percent of Central Government in Total Commercial Buildings
Albania	16,348,000	8,451,260	2,139,810	13%
Bosnia-Herzegovina	15,890,000	7,456,099	3,258,843	21%
Kosovo*	11,766,300	5,601,231	1,473,593	13%
FYR Macedonia	8,483,400	2,265,944	902,854	11%
Moldova	6,544,900	6,002,005	1,975,712	30%
Montenegro	4,893,615	3,414,441	1,828,339	37%
Serbia	53,152,000	26,202,920	10,591,458	20%
Ukraine	115,725,700	108,806,459	32,353,319	28%

* Total Commercial buildings include all public and private non-residential building types.

ESTIMATED ANNUAL COST OF RETROFITTING (MILLION EUR)



Country	Annual Cost to Renovate 2% share of central government building floor space	Annual Cost to Renovate 3% share of central government building floor space	Incremental Cost
Albania	5,093	7,639	2,546
Bosnia-Herzegovina	8,603	12,905	4,302
Kosovo*	3,507	5,261	1,754
FYR Macedonia	2,149	3,223	1,074
Moldova	4,702	7,053	2,351
Montenegro	4,351	6,527	2,176
Serbia	25,208	37,812	12,604
Ukraine	77,001	115,501	38,500
Total	130,614	195,921	65,307

The *2% requirement is recommended* as the most cost-effective approach to achieving the goal of exemplary role

TASK 3 - ENERGY EFFICIENCY OBLIGATION SCHEMES – ARTICLE 7



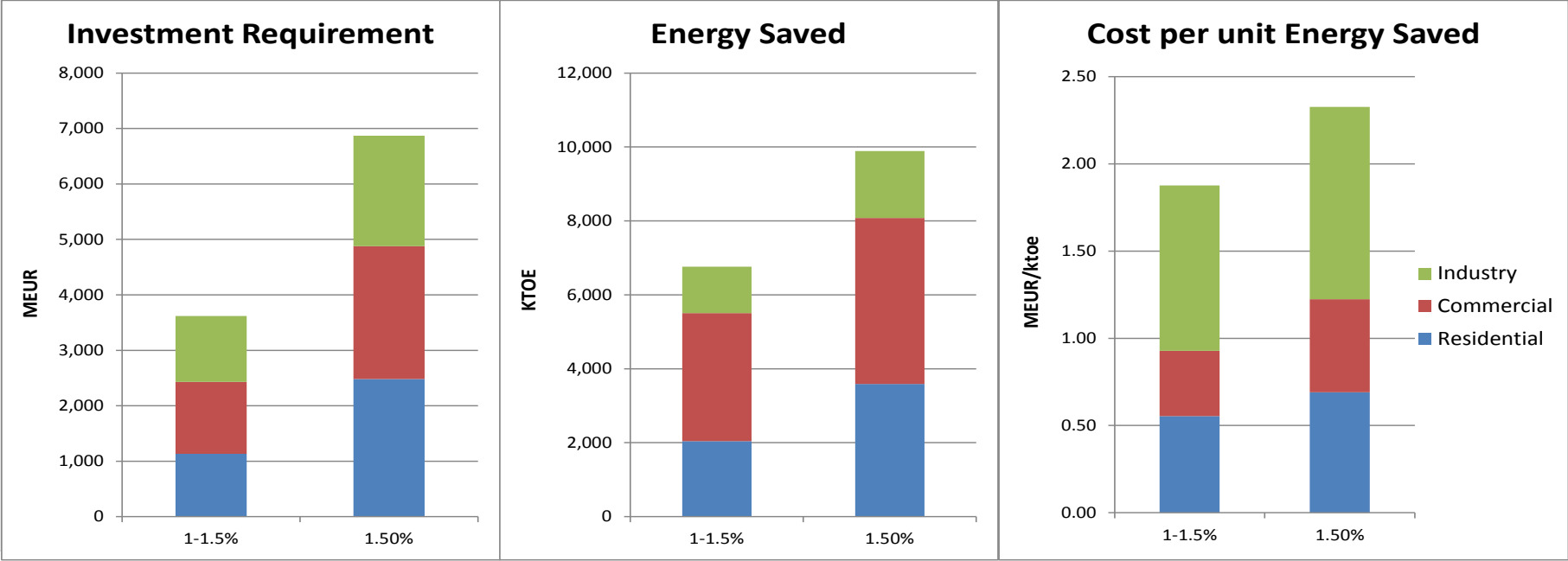
Scenario	Description
Reference Benchmark	Reference with 9% EE target (ESD) by 2018, 2020 RE Targets and large combustion plant directives assumed to be achieved
Supplier Obligation 1-1.5%	ECS proposed target of achieving 1% of new savings each year from January 2015 to December 2025, increasing to 1.5% from 2025 to 2030
Supplier Obligation 1.5%	Alternative target of achieving 1.5% of new savings each year from January 2015 to December 2030

EEO METRICS USED FOR EACH CP

(Results for Serbia)

Between the 1-1.5% and the 1.5% cases:

- ✓ Demand sector investment requirement doubles;
- ✓ Energy saved increases almost 50%, and
- ✓ Cost of savings goes up about 25% (15% to 40% range).



1.5% EEO LEVEL IS RECOMMENDED

- ✓ Incremental cost of adopting the 1.5% savings level is considered justifiable given the increased savings achieved.
- ✓ Because the EEO is a subset of the Article 3 EE target savings, there is no real incremental cost to the country of adopting the 1.5% versus 1-1.5% scenario.
- ✓ Many of these obligated savings can come from the most-cost-effective measures, whether specific suppliers/distributors are obligated, or the government takes some or all the obligation under alternative measures.
- ✓ This recommendation allows any CP to replace up to 25% of their cumulative obligated savings with supply-side or other measures.
- ✓ Incremental cost for the EEO measures in absence of the larger EE target are largely cost-effective in the early periods, with fuel savings outweighing the added investment costs through about 2024.

TASK 4 - PROMOTION OF EFFICIENCY IN HEATING AND COOLING – ARTICLE 14

- Requires a cost-benefit analysis of high-efficiency cogeneration and waste heat utilization be carried out for new and retrofit installations.
- Perform an assessment of the impact of setting a higher threshold of total thermal input (50MW compared to 20MW in the directive) for which a cost-benefit analysis must be undertaken.
- Authorization or equivalent permit criteria must be adopted that take into account the outcome of the cost-benefit analysis.
- Governments need only ensure the investor has carried out a detailed and well elaborated cost-benefit analysis and considered all the outcomes.

20 MW SIZE THRESHOLD IS RECOMMENDED

- The reduction in government expenditures between project sizes of 20 MW+ and 50 MW+ is relatively small, less than €20,000.
- The number of projects evaluated may be up to ten times higher with the 20MW threshold in comparison with the 50MW threshold.
- Incremental investor cost is very small compared to the typical cost of even a 20 MW size project (approximately 0.1% increase in overall cost).
- A single €20 million CHP investment undertaken by an investor should yield 10% (at least), i.e. €2 million during the project lifetime, which justifies the program cost.

RECOMMENDATIONS SUMMARY

- The EE Target 18-25% case is recommended for adoption because it is the most cost-effective of the three options, and higher target levels lead to sharp increases in the required investment costs, especially in 2027 and 2030.
- The 2% central government buildings retrofit goal is recommended as the most appropriate because CP central government buildings ownership is large in comparison to EU Member States.
- Supplier obligation is recommended to follow the 1.5% annual savings rate because the incremental national cost is insignificant in light of the overall EE target savings and it will allow supply side and other measures to be included.
- A 20MW threshold is recommended for preparing cost-benefit analysis of combined heat and power options because the cost of administering the program is small compared to the benefits, and a 50MW threshold would limit its applicability to only large cities, power plants and very large industries.



*Thank you
for your attention!*

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