



Calculating and Operationalising
the Multiple Benefits of
Energy Efficiency in Europe

Comparison of COMBI vs. EED scenarios



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Copenhagen, May 4, 2017



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 649724.
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Comparison of COMBI and EED IA scenarios

Difference in scenarios

- EED IA scenarios have multiple targets, namely
 - 1) GHG reduction (e.g. 40% in EU2027 & EU2030 compared to 1990) with a split ETS/non-ETS in 2030 compared to 2005 (e.g. 43/30%);
 - 2) a target share of renewables (RES) (e.g. 27%); and
 - 3) an energy efficiency (EE) target (27% in EU2027 and 30% in EU2030).COMBI scenarios in principle only look at energy efficiency (EE).
- EED IA modelling is based on cost-effective achievements of targets, using the PRIMES model (E3MLab/ICCS).
- COMBI models are stock analysis models, currently without a global cost optimization module. To ensure cost-effectiveness, COMBI scenarios have to rely on 'cost-effective' market shares of EE technologies as determined by existing scenarios. As detailed results of PRIMES were not made available, other (older and in principle less ambitious), non-compatible scenarios were used, e.g. ENTRANZE for buildings and SULTAN for transport.
- EED IA scenarios cover all activities & technologies for the complete energy system (supply & demand).
- COMBI focuses on a limited number of 'demand actions', albeit representing a major part of energy savings in final energy demand sectors. In principle, non-covered items in COMBI equal trend extrapolations without energy savings, **thus underestimating total potential savings**.
- The great advantage of COMBI scenarios is the bottom-up funding of scenarios and disaggregation into separate EEI actions

Comparison of COMBI and EED IA scenarios

Final Energy Demand (TWh) - Residential sector

	2015	2030	Δ In 2030 with PRIMES 2007
PRIMES 2007 BAS	3 835	3 993	n.r.
PRIMES 2016 BAS	3 486	3 350	-16,1%
EUCO27	3 486	3 110	-22,1%
EUCO30	3 486	2 824	-29,3%
EUCO+33	3 486	2 476	-38,0%
EUCO+35	3 486	2 316	-42,0%
EUCO+40	3 486	1 961	-50,9%
COMBI REF	3 511	3 245	-18,7%
COMBI EE	3 511	2 912	-27.1%

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Final Energy Demand (TWh) – Services + Agriculture

	2015	2030	Δ In 2030 with PRIMES 2007
PRIMES 2007 BAS	2 311	2 476	n.r.
PRIMES 2016 BAS	2 190	2 083	-15,9%
EUCO27	2 190	1 933	-21,9%
EUCO30	2 190	1 767	-28,6%
EUCO+33	2 190	1 575	-36,4%
EUCO+35	2 190	1 472	-40,5%
EUCO+40	2 190	1 257	-49,2%
COMBI REF	1 991	2 034	-17,8%
COMBI EE	1 991	1 878	-24,20%

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Final Energy Demand (TWh) – Transport (including aviation and inland navigation)

	2015	2030	Δ In 2030 with PRIMES 2007
PRIMES 2007 BAS	4 865	5 386	n.r.
PRIMES 2016 BAS	4 197	4 006	-25,6%
EUCO27	4 197	3 821	-29,1%
EUCO30	4 197	3 774	-29,9%
EUCO+33	4 197	3 744	-30,5%
EUCO+35	4 197	3 673	-31,8%
EUCO+40	4 197	3 628	-32,6%
COMBI REF	4 101	4 011	-25,5%
COMBI EE	4 101	3 670	-31,9%

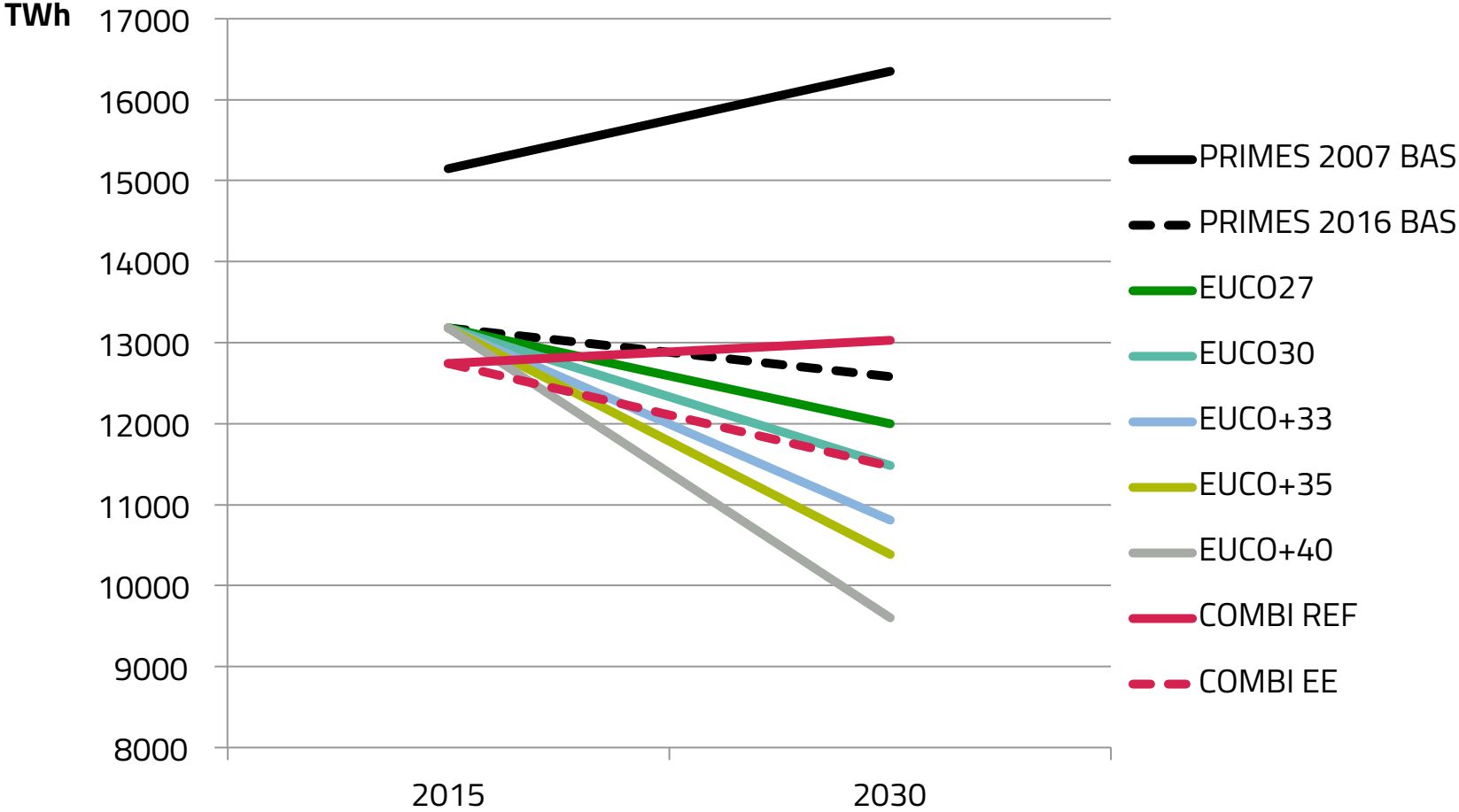
Comparison of COMBI and EED IA scenarios

Final Energy Demand (TWh) – Industry

	2015	2030	Δ In 2030 with PRIMES 2007
PRIMES 2007 BAS	4 133	4 494	n.r.
PRIMES 2016 BAS	3 309	3 137	-30,2%
EUCO27	3 309	3 131	-30,3%
EUCO30	3 309	3 116	-30,7%
EUCO+33	3 309	3 013	-32,9%
EUCO+35	3 309	2 923	-35,0%
EUCO+40	3 309	2 755	-38,7%
COMBI REF	3 137	3 742	-16,7%
COMBI EE	3 137	3 009	-33,0%

Comparison of COMBI and EED IA scenarios

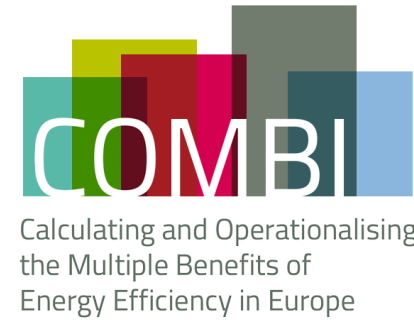
Graphical analysis



COMBI scenario as EUCO#

- COMBI 2015 is lower than EUCO 2015, mostly due to the fact that more recent statistics were used.
- COMBI REFERENCE has a positive slope, compared to PRIMES 2016 BAS, indicating a probable undervaluation of current energy efficiency policies (in particular industry, see following).
- COMBI Residential is close to EUCO30, given that not all savings (in particular cooking and other appliances) are modelled in COMBI
- COMBI Non-residential is very difficult to compare with EUCO. Agricultural sector is not modelled in COMBI, and the published PRIMES results do not allow to separate this sector from 'services'. Also not modelled in COMBI are 'process heating' and 'other energy services', comprising a relatively large share of energy consumption in tertiary. COMBI therefore falls between EUCO27 and EUCO30.
- COMBI transport would be comparable to EUCO+35, keeping in mind that for transport the differences in between the different EUCO scenarios appear to be minimal.
- COMBI industry is difficult to compare, due to the fact that "other industry" is not modelled in COMBI and the published PRIMES results do not allow to separate this category from the other sectors. More importantly, the COMBI REFERENCE scenario is – due to the way industry is modelled in COMBI – not a real reference scenario comparable to PRIMES/EUCO, but an "autonomous progress" scenario. COMBI EE comes close to EUCO+33.
- Overall, COMBI EE coincides with EUCO30, but if other energy services and/or subsectors had also been modelled in COMBI, the results would more likely be between EUCO30 and EUCO33 or better. In general, COMBI scenarios for buildings appear to lack sufficient 'ambition', as they are mostly based on older ENTRANZE scenarios. Undervaluation of current policies may be due to the use of older scenarios also.

Thank you very much for your attention!



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