



CONFEDERATION OF INDUSTRY
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ENERGY SAVINGS BY 2030 ACCORDING TO EU TARGETS : POTENTIAL, COSTS AND IMPACTS ON ECONOMY, EMPLOYMENT AND PUBLIC SPENDING

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ABSTRACT

The study on Energy Savings by 2030 according to EU Targets : Potential, Costs and Impacts on Economy, Employment and Public Spending quantifies the technical and economic potential for final energy consumption savings in 37 energy efficiency measures for which their technical and economic parameters have been identified. The technical potential calculation is based on the official balance of final energy consumption in the Eurostat methodology. The technical potential for final energy consumption is estimated at 240 PJ. The economic potential for final energy consumption savings is estimated at 153 PJ. That compares with the 2015 Czech final energy consumption of 1009 PJ. The study quantifies investment expenditures that the Czech households, businesses and the government would have to spend to achieve the energy savings target for 2020 - 2030 as proposed by the revision of the Directive 2012/27/EU of the European Parliament and of the Council on Energy Efficiency. In the most likely scenario (continuation of unchanged Article 7 obligations until 2030) investment expenditures at the amount of CZK 510-1025 billion (EUR 20-40 billion) will be required to achieve the expected target of 73.5 PJ of final energy consumption savings between 2020 and 2030. Of that amount CZK 190-660 billion (EUR 7.5-25.5 billion) of public funds will be required as subsidies or other incentives. The target for 2025 amounts to 36.75 PJ (half of the 2030 target) of final energy consumption savings. To achieve this, investment expenditures at the amount of CZK 121-260 billion (EUR 4.7-10.2 billion) will be required. Of that amount CZK 58-92 billion (EUR 2.3-3.6 billion) of public funds will be required as subsidies. Investment expenditures in 2020 - 2025 are significantly lower than in 2025 - 2030 as in the first half of the period less costly measures will be implemented preferentially, based on the designed cost curve.

EXECUTIVE SUMMARY

The study on Energy Savings by 2030 according to EU Targets : Potential, Costs and Impacts on Economy, Employment and Public Budgets aims to quantifying investment expenditures which companies, households and public sector in the Czech Republic will have to spend to achieve the energy efficiency target for 2020 – 2030 arising from the revision of the Directive 2012/27EU of the European Parliament and of the Council on Energy Efficiency. This was introduced by the European Commission in the so called „winter package“ in November 2016 and is now being discussed by EU institutions.

The study quantifies the technical potential for energy savings (energy that can be saved under existing technical possibilities) and the economical potential for final energy savings (the amount of energy saved by the respective measure for the benefit of the implementing entity) for 2020 – 2030 for 37 energy efficiency measures covering all sectors of the national economy – agriculture, industry, services, public sector, households and transport. Technical and economic parameters of energy efficiency measures were obtained from projects implemented in operational programmes and in particular from own projects and experience of the author with 500 measures designed in 110 energy audits and assessments prepared by ENVIROS during 2015 – 2017.

The calculation of the potential for energy savings is based on the official final energy balance in the Eurostat methodology to the last available year 2015 when the final energy consumption in the Czech Republic was 1009 PJ. The study deals with several assumptions and expert estimates the most important of which constitutes the distribution of final energy consumption by the purpose of use that is not publicly available, however it is necessary for quantifying the potential for energy savings. To monitor meeting the energy efficiency target will in the future place greater demands on the quality of statistical surveys and details of the publication of both final and primary energy balance than those publicly available so far.

Using the constructed cost curve of 37 energy efficiency measures analysed, the technical potential for final energy savings was quantified to 240 PJ. The economic potential, i.e. the set of cost-effective measures, is counted to 153 PJ. Of this, however, implementing only less than a quarter (36 PJ) should be financed from own resources as their payback will be sufficiently attractive for households or companies. According to the model used, the implementation of other measures (amounting to 117 PJ) will require a financial incentive from the state. Currently, the most frequent form of such an incentive constitutes the financial participation in the form of a subsidy.

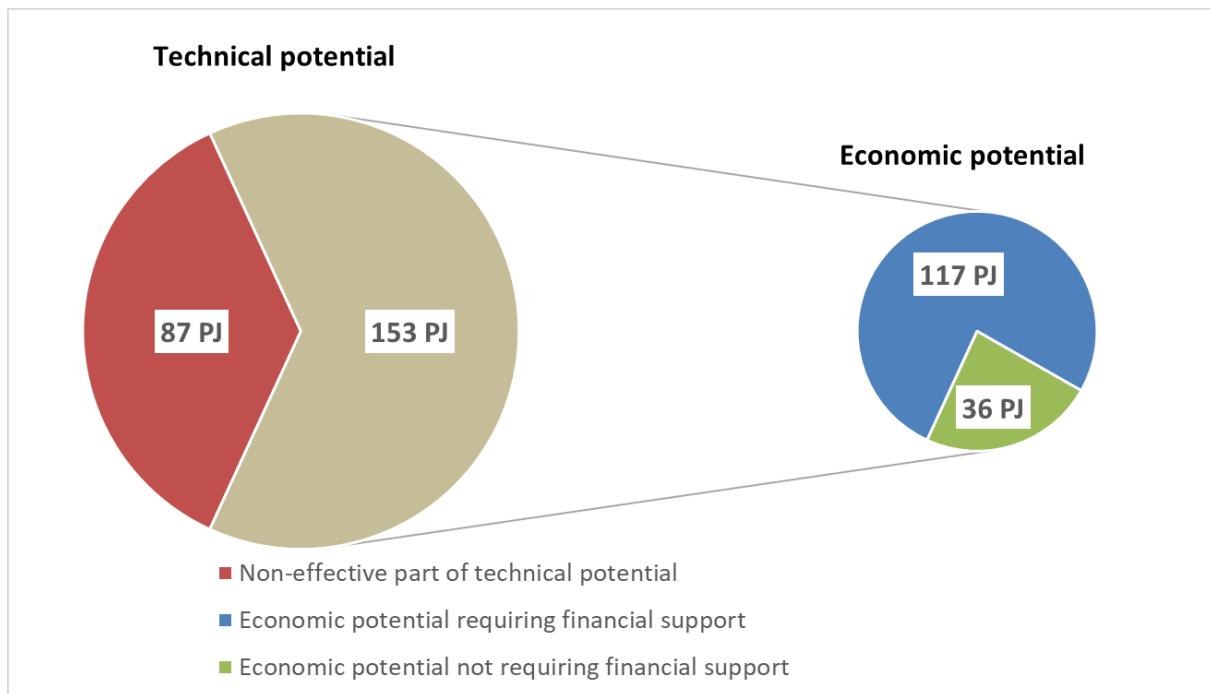


Illustration 1: Technical and economic potential for final energy savings in the Czech economy

In terms of individual sectors of the economy, there is a space for energy efficiency measures financed from own resources especially in households (19.9 PJ, i.e. more than a half of the potential) and public administration institutions (7.5 PJ). In both cases, the study identifies thermal insulation and efficient LED lighting installation as very efficient measures with high potential for savings. In the industry that was placed in the third position with 5.7 PJ of measures financed from own resources, the study identifies a high potential for waste heat recovery and boiler economizer installation. In the area of measures dependent on the public support, the potential for industry (39.3 PJ), transport (32.6 PJ) and households (24.7 PJ) stands out. Services with 10.6 PJ of potential savings and public sector with 8.7 PJ are also worth mentioning. The measures with the highest potential in this study involve thermal insulation, PV system installations and energy consumption reduction of appliances. Industry has a considerable potential for thermal insulation technologies, more efficient compressor installations and heat pump installations.

Another significant outcome of the study constitutes investment expenditures needed for meeting the energy efficiency target by 2030. Since the final wording of the revised EU 2012/27/EU Directive is not known at the end of September 2017 and the energy savings target is thus not known, four possible options of 2030 energy efficiency target have been created with quantifying investment expenditures to achieve them. The most likely 1st scenario which foresees the continuation of obligations arising from Article 7 of the Directive by 2030 as it stands, the 2030 energy efficiency target will represent for Czech industry, services, households, public sector and transport achieving 73.5 PJ of final energy savings in the 2020 – 2030 period using new measures effective or implemented as of 1 January 2020. The constructed cost curve shows that in this scenario it will be necessary to spend CZK 510 – 1025 bn (EUR 20-40.2 bn) of investment expenditures depending on the motivation of entities to implement energy efficiency measures. If industrial enterprises, households, public and transport sectors respectively are extremely effectively motivated (eg. through an active state policy) to implement efficient measures, according to the cost curve of energy

efficient measures priority will be given to cheaper measures and the total expenditures for 2020 – 2030 will reach in aggregate CZK 510 bn (EUR 20 bn).

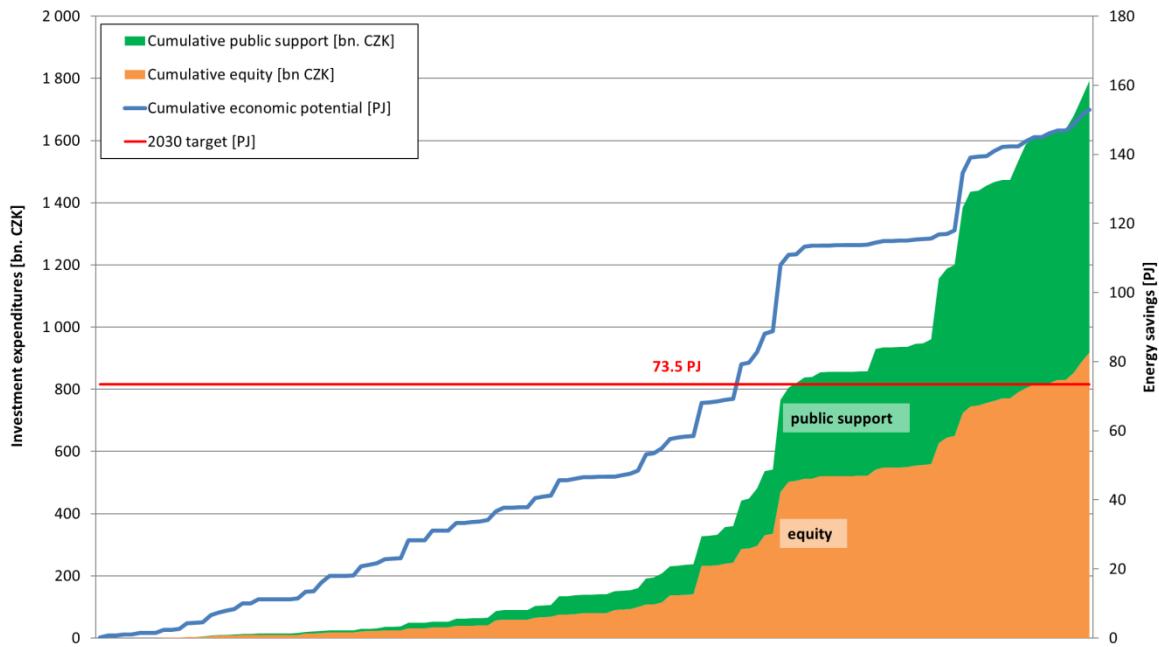


Illustration 2: The cost curve of energy efficient measures

As part of investments does not reach a sufficiently attractive rate of return for private investors or households without public support, it will be necessary to spend CZK 190 bn (EUR 7.5 bn) from this amount for investment subsidies or some other form of public support. All of this assuming that during the period analyzed there will be optimum macroeconomic conditions for savings, the state will fully address removing non-financial barriers and promoting awareness and investors will realize all available investments with corresponding return on investment. In the most likely case that these idealised assumptions will not be fully met, part of the investors postpone their investments despite the economic attractiveness of savings and it will be necessary to stimulate financially the implementation of more expensive energy efficiency measures to meet the 2030 target. In the least favourable constellation of the aforementioned circumstances, the investment expenditures may reach up to CZK 1025 bn (EUR 40.2 bn) of which CZK 660 bn (EUR 26 bn) would have to be the support from public funds. In the context of public support and its perspectives it is worth mentioning the comparison with the existing situation when the state plans to support achieving the target of final consumption of 51 PJ during the period 2014 – 2020 by subsidies from EU structural funds in the amount of less than CZK 100 bn (EUR 3.9 bn). However, after 2020 the use of a similar model will most likely not be possible for several reasons.

British exit from the EU will have a significant adverse impact on the common EU budget, and the contemplated earmarking of a special budget for the euro area could have the same effect. Moreover, the economic convergence of the Czech Republic with the EU average could limit our eligibility to use EU funds. When discussing further EU funds utilization, the Commission also clearly indicates the necessity to change the current grant model and replace it with financial instruments. The state thus will have to look for tools to support savings from own resources after 2020.

For comparison, we present the outcomes of all 4 scenarios of the required energy efficiency target that are mentioned in detail in Chapter 4 including the description on how to calculate individual targets.

1st scenario – continuation of Article 7 of the Directive as it stands, as proposed by the Commission

- ◆ Energy efficiency target 73.5 PJ of final energy
- ◆ Investment expenditures of CZK 510-1025 bn (EUR 20-40 bn), of which CZK 190-660 bn (EUR 7.6-26 bn) from public funds

2nd scenario – a mitigated version of Article 7 of the Directive, as proposed by the Council

- ◆ Energy efficiency target 53.1 PJ of final energy
- ◆ Investment expenditures of CZK 275-435 bn (EUR 10.8-17 bn), of which CZK 90-180 bn (EUR 3.5-7 bn) from public funds

3rd scenario – Article 3 of the Directive prescribes the 30% target

- ◆ Energy efficiency target 50.1 PJ of final energy
- ◆ Investment expenditures of CZK 252-400 bn (EUR 10-15.7 bn), of which the public support CZK 79-157 bn (EUR 3.1-6.2 bn)

4th scenario – Article 3 of the Directive prescribes the 40% target

- ◆ Energy efficiency target 192 PJ of final energy
- ◆ Investment expenditures at least CZK 2,450 bn (EUR 96 bn), of which the public support at least CZK 1,650 bn (EUR 64.7 bn)

However, investment expenditures may be even higher than calculated assuming all measures considered are not taken into account in the 2030 energy efficiency target (eg. measures to replace fossile fuels with RES, primary energy savings measures). Investment expenditures can also be higher if all expected savings opportunities in the National Energy Efficiency Action Plan for 2017 – 2020 amounting to 33.7 PJ are not implemented and the Czech Republic will have to „catch up“ this failure. However, the study assumes that the expected savings will be met. The study does not conservatively contemplates discounting cash flows of energy efficiency measures which would result in prolongation of paybacks of the energy efficiency measures increasing thereby the expenditures for achieving energy efficiency targets.

Employment impacts were quantified for the final energy savings target amounting to 73.5 PJ according to the 1st scenario. The introduction of energy efficiency will result in job losses and creation of new ones in more sectors of the national economy. However, given the size of the labour market and risks associated with the need to secure resources from the state budget (the effect of displacement of investments), the availability of skilled workers and the savings opportunities at the expense of imports, the resulting balance of this process will not be unilaterally biased. The impact of the implementation of energy efficiency measures to the labour market, the number of jobs and wages thus cannot be expected to be statistically significant.