



Inserting end-users behaviour into forward looking energy efficiency modelling



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Abstract

Energy Efficiency (EE) consists one of the main pillars of efforts to mitigate climate change. Although there is plethora of relevant policy instruments, different types of barriers affect negatively the achievement of targets set under scenarios. Among these types of barriers, those related to end-users behaviour play a significant role and need to be incorporated in forward looking energy efficiency modelling after being identified and analysed (McCollum L. David et al., 2016; EC, 2015; EEA, 2013).

This paper concerns the development of a methodology for inserting end-users behaviour into forward looking EE modelling. With the use of the Analytical Hierarchical Process (AHP), comparative analysis is conducted among barriers created by the end users' behavior towards EE targets. Based on qualitative information for the barriers, the user compares, reveals and quantifies the negative impact of each barrier on the set of the assumed targets, in EE modeling. Mathematical expressions using the calculated impact of barriers provide numerical inputs needed to energy modelling for reflecting the end-user behavior towards the assumed EE targets. Once the procedure is completed, the policy maker can modify accordingly the available inputs so as to achieve the set targets.

Conclusions about the use of the methodology in energy modelling, its outcomes, advantages and disadvantages are discussed.

References

McCollum L. David, Wilson Charlie, Pettifor Hazel, Ramea Kalai, Krey Volker, Riahi Keywan, Bertram Christoph, Lin Zhenhong, Edelenbosch Y. Oreane, Fujisawa Sei, 2016. Improving the behavioral realism of global integrated assessment models: An application to consumers' vehicle choices. Transportation Research Part D xxx (2016) xxx-xxx – Article in Press.

European Environment Agency (EEA), 2013. EEA Technical report No. 5/2013, "Achieving energy efficiency through behavior change: what does it take?". Available at: <http://www.eea.europa.eu/publications/achieving-energy-efficiency-through-behaviour>

European Commission, 2015. Communication from the Commission to the European Parliament and the Council. Assessment of the progress made by Member States towards the national energy efficiency targets for 2020 and towards the implementation of the Energy Efficiency Directive 2012/27/EU as required by Article 24 (3) of Energy Efficiency Directive 2012/27/EU, {SWD(2015) 245 final}. Brussels, 18.11.2015 COM(2015) 574 final. Available at: https://ec.europa.eu/energy/sites/ener/files/documents/1_EEprogress_report.pdf