

related to the works necessary for the improvement of the overall building conditions and in that case, only additional costs of more energy efficient solution selection should be taken into account. However, as nicely said in (AID-EE 2007): *“It should however be stressed that the choice of policy instruments should not be based on government cost figures only. The society and end-user perspective are just as important to take into account.”* With the aim of market transformation and improvement of living conditions, these projects should be further supported.

The cost of saved energy as a result of solar thermal systems installation is lower than the costs of electricity. This is very important as these systems replace the existing electric water heaters, which in the summer time are, together with air-conditioning, the main contributor to the daily peak load, especially in the coastal area of the country. As this peak load causes problems in the supply, there is a clear interest not only from the government perspective but also from the utility perspective to support such installations.

And finally, projects in the transport sector show the worse cost effectiveness, especially when it comes to electric vehicles. Again, in this segment also some other implications of this measure should be taken into account, as development of new technology (which may not be cost-effective in its early stage of deployment), influence on power sector and its load profile, emission reductions, etc. Additionally, the number of projects here is far too low to be able to draw reliable conclusions on cost-effectiveness of these incentives. Replacement of vehicles with new complying with the latest norms is also among the least cost-effective measures. The main aim of this support was to reduce harmful environmental pollution coming from road vehicles, which is the main societal benefit, while energy savings are only side effect of this measure. However, the cost of diesel fuel, which is dominantly used by trucks and buses targeted by the program, is now exceeding 1 €/l or 0,10 €/kWh, which makes these kind of incentives increasingly interesting. Eco-driving project (only one implemented) included not only education of professional drivers but also installment of devices to keep track of fuel consumption in vehicle fleets. Data provided by the transport company on fuel consumption prior and after the device installment showed excellent results and should be promoted and replicated further.

Other projects with low costs per saved kWh are not further analyzed as the number of such projects is too low (individual metering, heat pumps) and results therefore might not lead to the reliable conclusions.

Conclusion

The analysis provided in this paper demonstrates the effectiveness (impact) and costs of energy saved caused by financial incentives provided by the Environmental Protection and Energy Efficiency Fund in Croatia, i.e. the costs from the government perspective. The Fund is the most important and practically the only source of state financial support for energy efficiency projects. Since its establishment the Fund has financially supported 886 energy efficiency projects and awarded for this purpose approximately 27.7 million Euro. The analysis was performed per typical EEI measures in order to demonstrate which measures provide the largest impacts in terms of energy savings and which measures provide the savings at the least costs for the government. In both cases the best results are obtained for refurbishment projects in the industry, followed by heating system refurbishment projects in the public sector. In the transport sector, eco-driving activities show the largest fuel savings at the lowest price. Based on the analysis performed, it might be recommended to focus the Fund's support to these projects. However, in the building sector, as it accounts for 40% of total energy consumption in Croatia, the focus should be on integral, deep renovations combining building envelope refurbishment and refurbishment of technical building systems (heating, cooling, ventilation and lighting) in order to deliver the largest savings and avoid existence of “missed opportunities” for energy efficiency improvements. In transport sector, which account to more than 30% of total energy consumption in Croatia, other benefits of supporting cleaner vehicles need to be

taken into account, such as reduction of pollution, technology development and impacts on electric power system. And finally, it has to be clearly emphasized that the analysis given in this paper is limited and focused only on the evaluation of government costs of saved energy. It does not take into account other benefits to the consumers and the society as a whole, such as improved living/working conditions, health, environment or productivity. The future research work of the authors will be exactly focused on evaluating benefits and costs of energy efficiency improvements from the whole society point of view.

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