Effectiveness of financial incentives to energy efficiency- case: Croatia

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Presentation outline

- Intro
  - EE financing
  - Role of the Funds
- Evaluation of energy savings from incentives
  - Methods & problems
- Effectiveness of incentives
  - Contribution to overall target
  - Price of kWh saved (government perspective)
- Lessons learned and future steps

Financing of energy efficiency

- Lack of access to capital one of the main reasons to EE gap
- Dedicated fund may be solution (ESD)
- Environmental Protection and Energy Efficiency Fund established in Croatia in 2003
  - Source: environmental charges
  - Allocation: grants, subventions, donations
  - Until 2010: 886 EE projects with ~ 27.7 M€

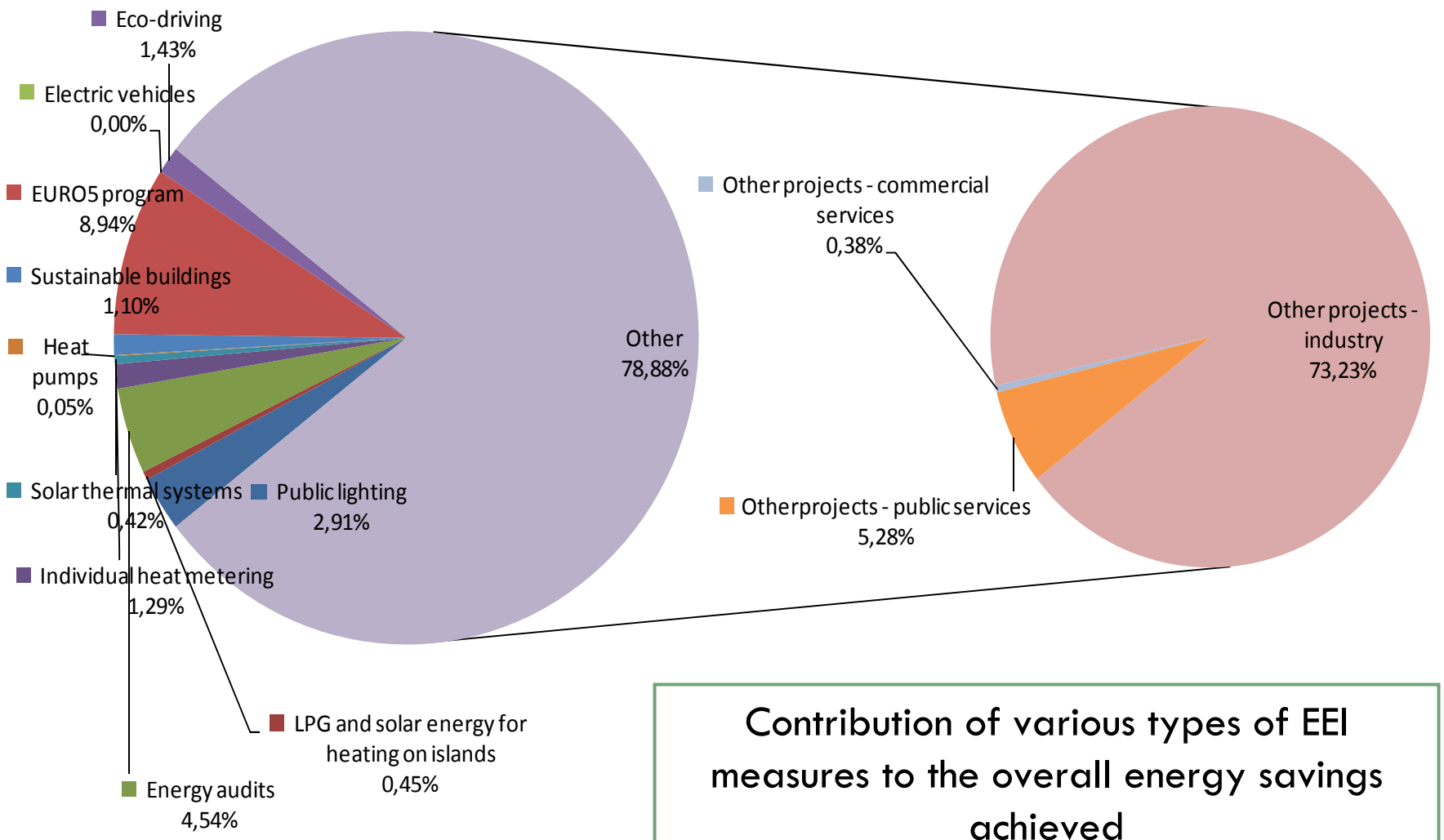
Evaluation of energy savings

- No previously established methods for evaluation of energy savings ☹
- BU methods needed to be developed for typical EEI projects:
  - EC recommendations
    - Building refurbishments; heating system refurbishments; solar water heating
  - Own methods:
    - Public lighting; energy audits; individual heat metering, other projects; heat pumps; cleaner vehicles; eco-driving

Effectiveness of incentives (1/3)

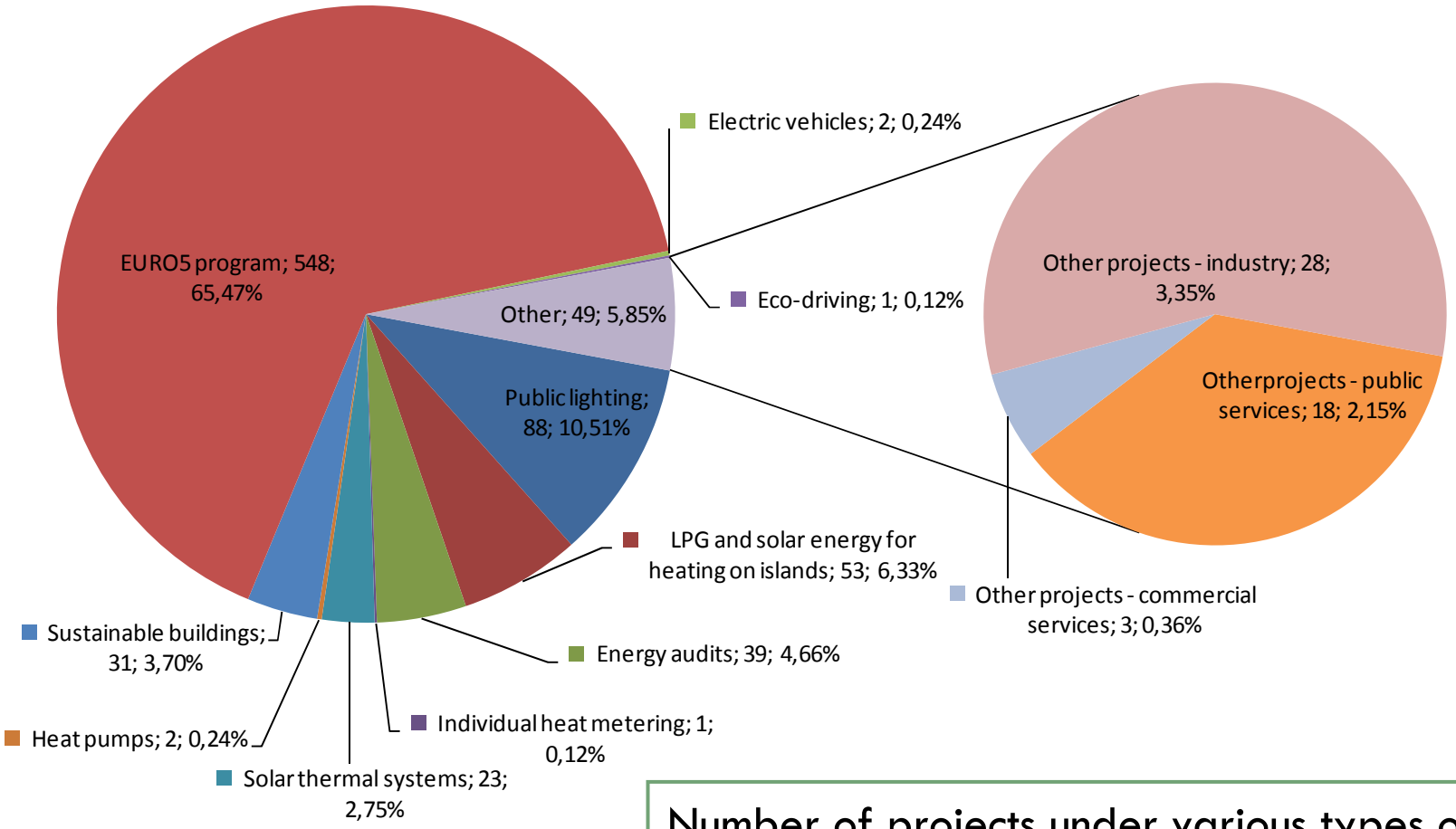
- Contribution to the overall target
  - Approx. 12% (780 TJ) of national indicative target in 2010 (6.59 PJ) delivered by the projects co-financed by the Fund
  - Approx 20% is two capacity building projects in the public sector are accounted (additional 540 TJ)
  - 57% of 'early measures'
    - 90% of them in industry (2008 economic crises effect)

Effectiveness of incentives (2/3)



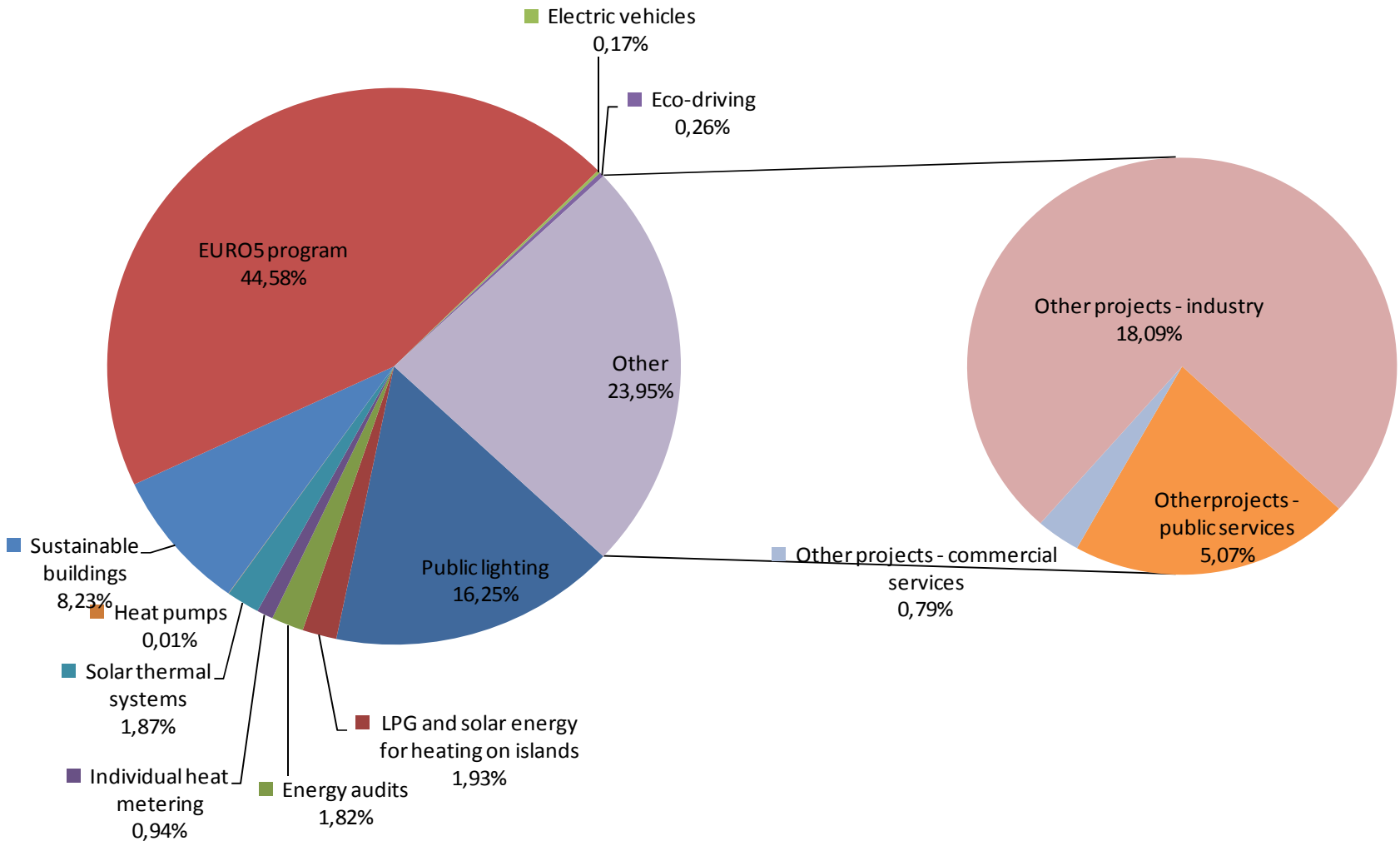
Contribution of various types of EEI measures to the overall energy savings achieved

Effectiveness of incentives (3/3)

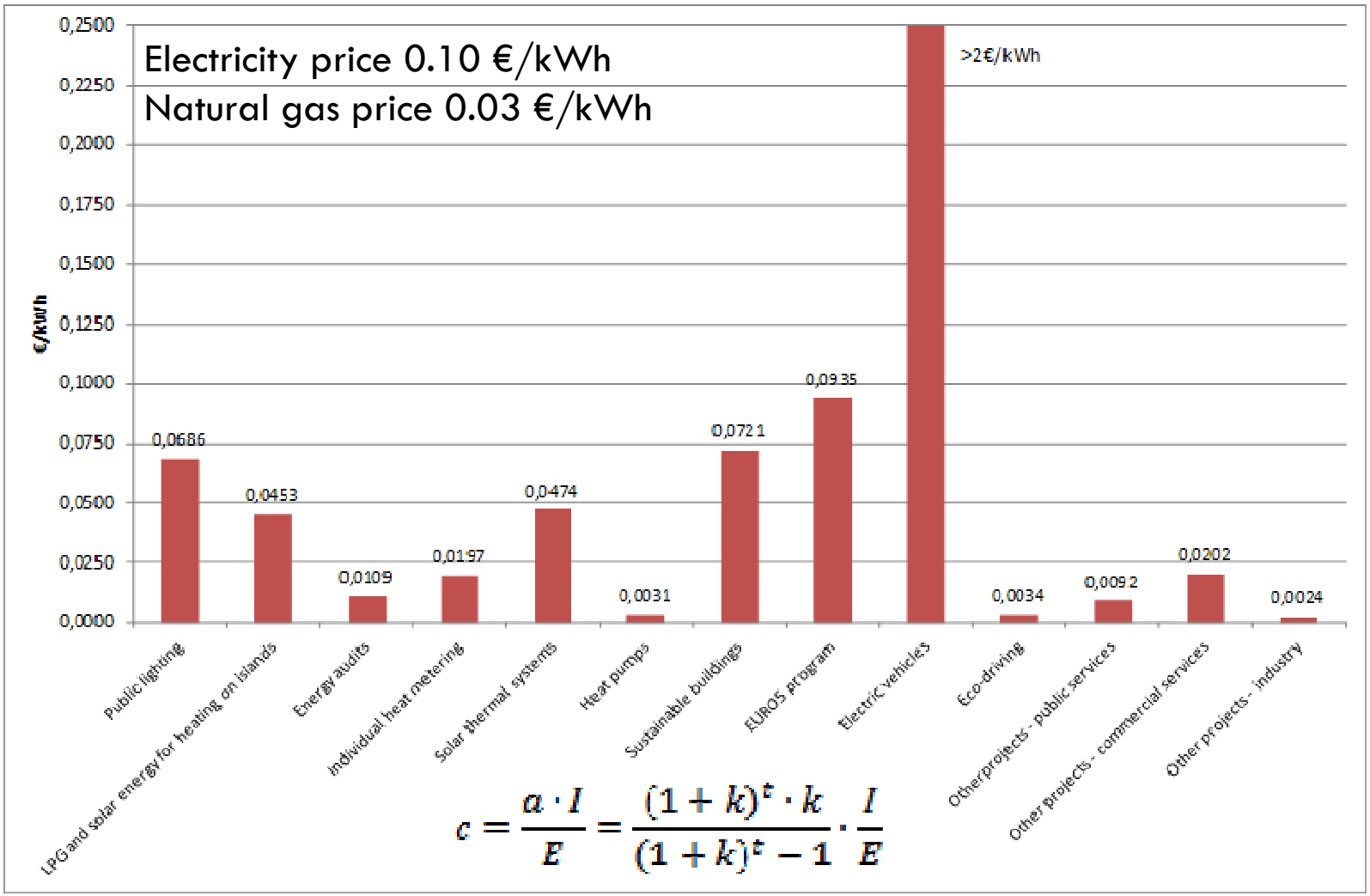


Number of projects under various types of EEI measures supported by the Fund

Allocation of incentives



Price of kWh saved (government)



$$c = \frac{a \cdot I}{E} = \frac{(1+k)^t \cdot k}{(1+k)^t - 1} \cdot \frac{I}{E}$$

Lessons learned

- Lack of previously established M&V and data gathering system hardened the evaluation process
- Results:
  - Refurbishment projects in industry delivered ¾ of all savings with less than 25% of total funds allocated
  - Building envelope increases costs significantly
  - Public lighting surprisingly high costs
    - Effects of other issues, e.g. enlargement
  - Transport
    - Electric vehicles cost-effectiveness low; eco-driving high
- Redefinition of co-financing rules and allocation of the funds?

But…

"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."

Source: AID-EE project

Thank you for your attention!

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