

SURVEY OF POTENTIAL ENERGY SAVINGS IN THE BUILDING SECTOR IN SERBIA AND NEEDED INVESTMENTS

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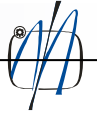


TEMPUS ENERESE – Workshop, Aristotle University Thessaloniki, 7th December 2015.



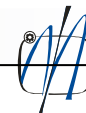
INTRODUCTION

- Energy consumption in buildings in Serbia has been growing steadily
- The Total Final Energy Consumption reached 8.5 Mtoe.
- Energy consumption in buildings is 38 % while in industry and traffic is 34 % and 28 % respectively.
- In this context, the buildings sector provides significant opportunities for energy savings.
- Heating accounts for 61% of energy consumption in buildings.
- The average heat consumption is of about 160 kWh/m² compared to 70-130 kWh/m² in countries in Western Europe.

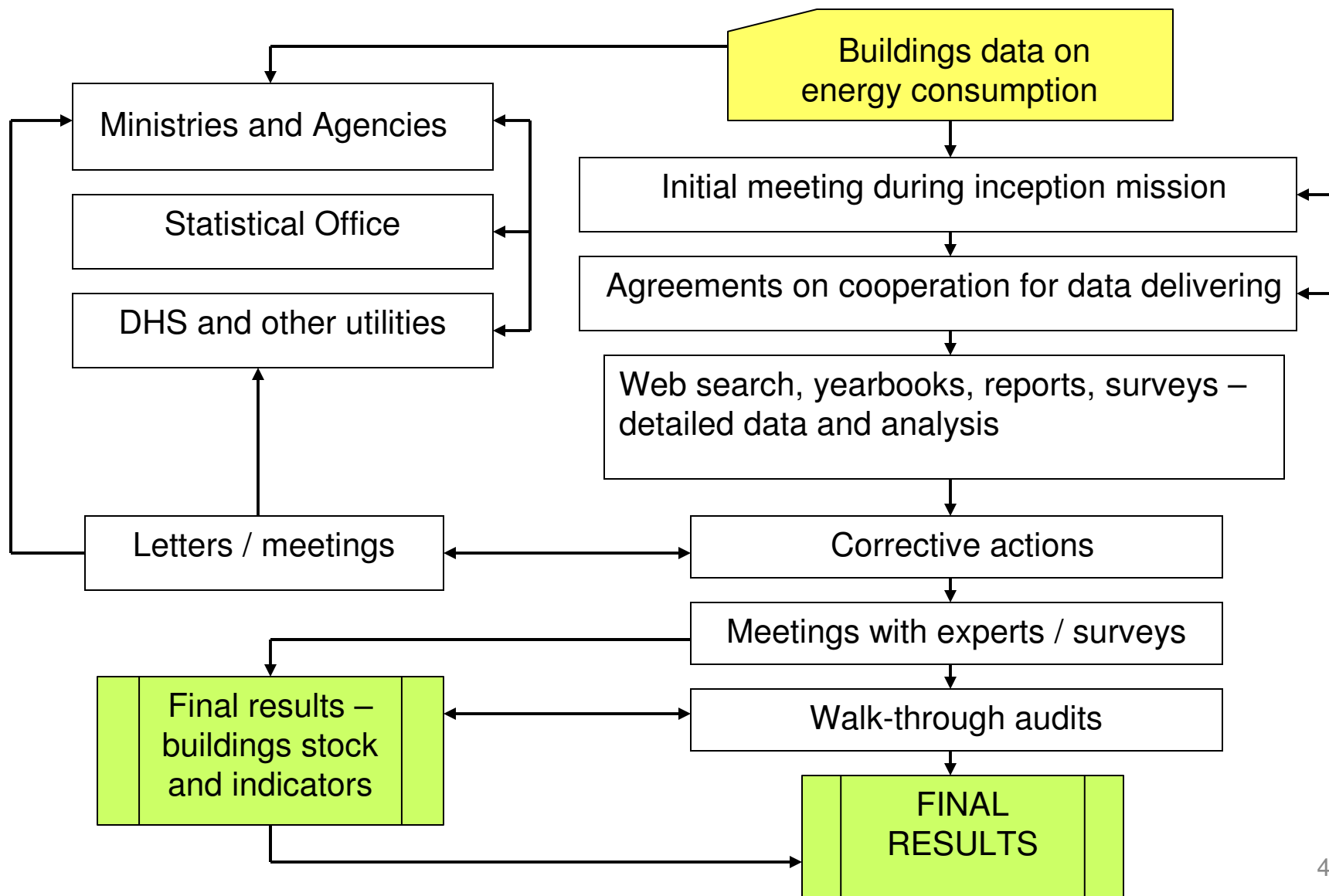


BUILDING STOCK IN SERBIA

- Data gathering is focused on buildings in subject, namely Public office buildings, Hospitals, Schools, Commercial buildings, and Residential buildings.
- The methodology for data collection is based on information gathered from:
 - the line Ministries,
 - the biggest cities' local government,
 - Utility companies (district heating and electrical power supplier)
 - information from different Energy efficiency Projects done in Serbia
 - Statistical office of Serbia and
 - conducted Walk-through audits (32 existing buildings in Serbia)

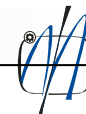


METHODOLOGY FOR THE ASSESSMENT

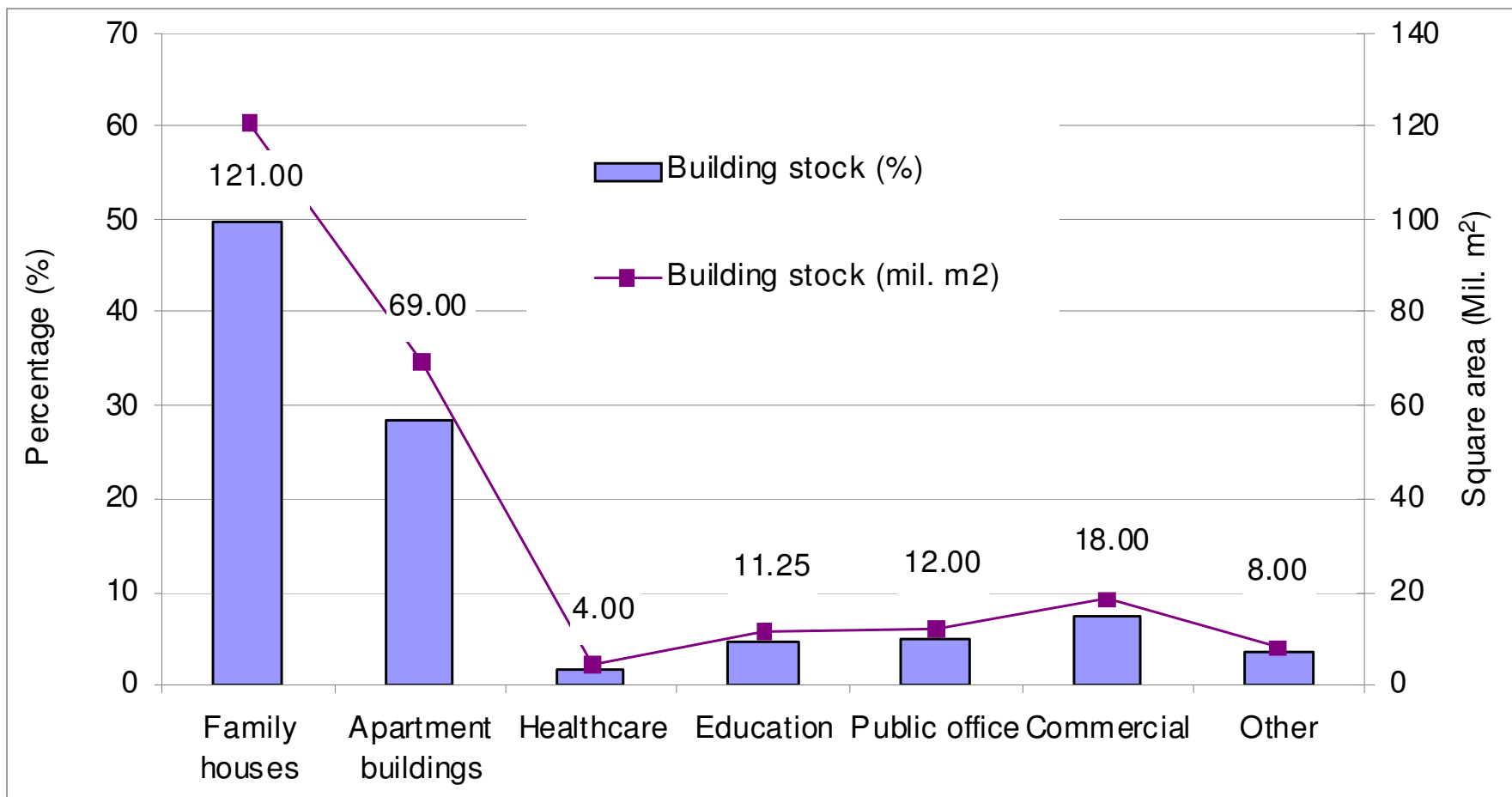


WALK-THROUGH AUDITS

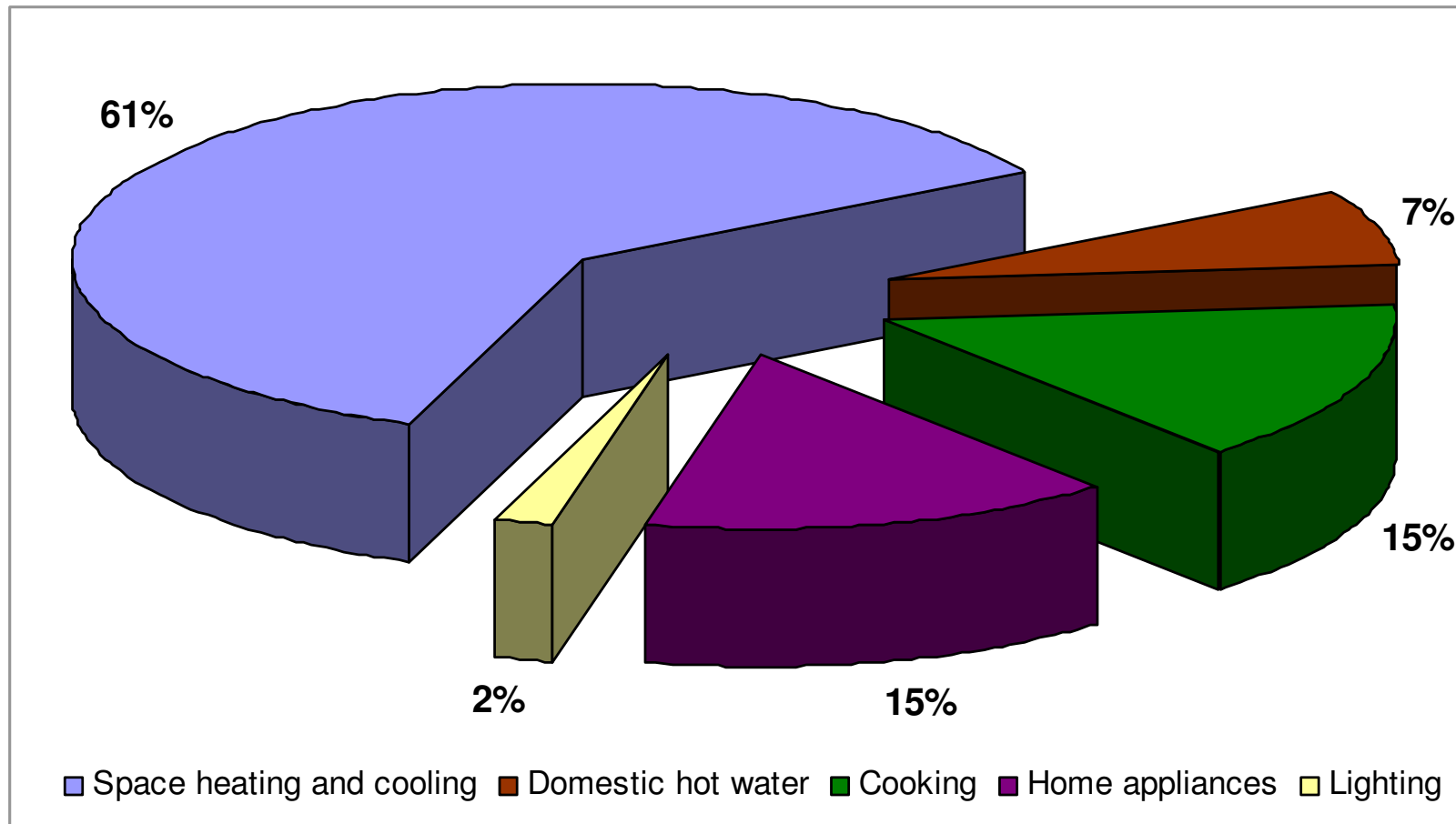
- Walk through audits (WTA) serve as a tool for assessment of potential energy savings in buildings regardless type.
- Structure of WTA is defined as follows:
 - Five buildings were selected in each of six typical periods of construction, in total 32 buildings are covered;
 - These five buildings types include: one school, one hospital, one administrative building, one commercial building, one multi-apartment building and/or one family house.
 - Approximately 2/3 of planned WTA were conducted in a circle with diameter of 50 km (Belgrade, New Belgrade, Pančevo, Stara Pazova, Smederevska Palanka) from Belgrade while rest 1/3 in towns at longer distances (Šid, Pećinci, Valjevo, Niš and Leskovac).

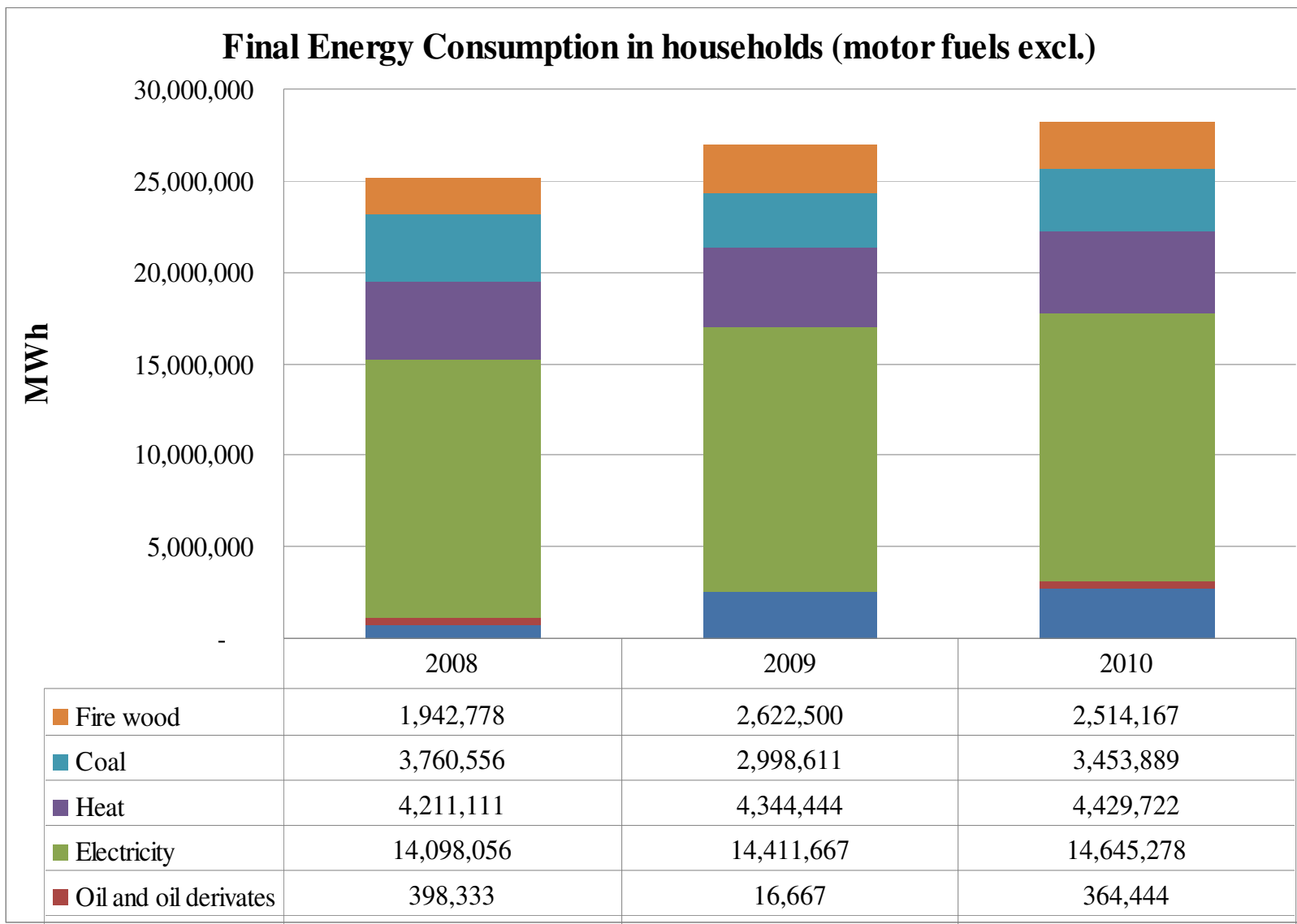
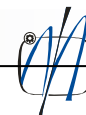


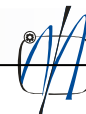
BUILDING STOCK IN SERBIA



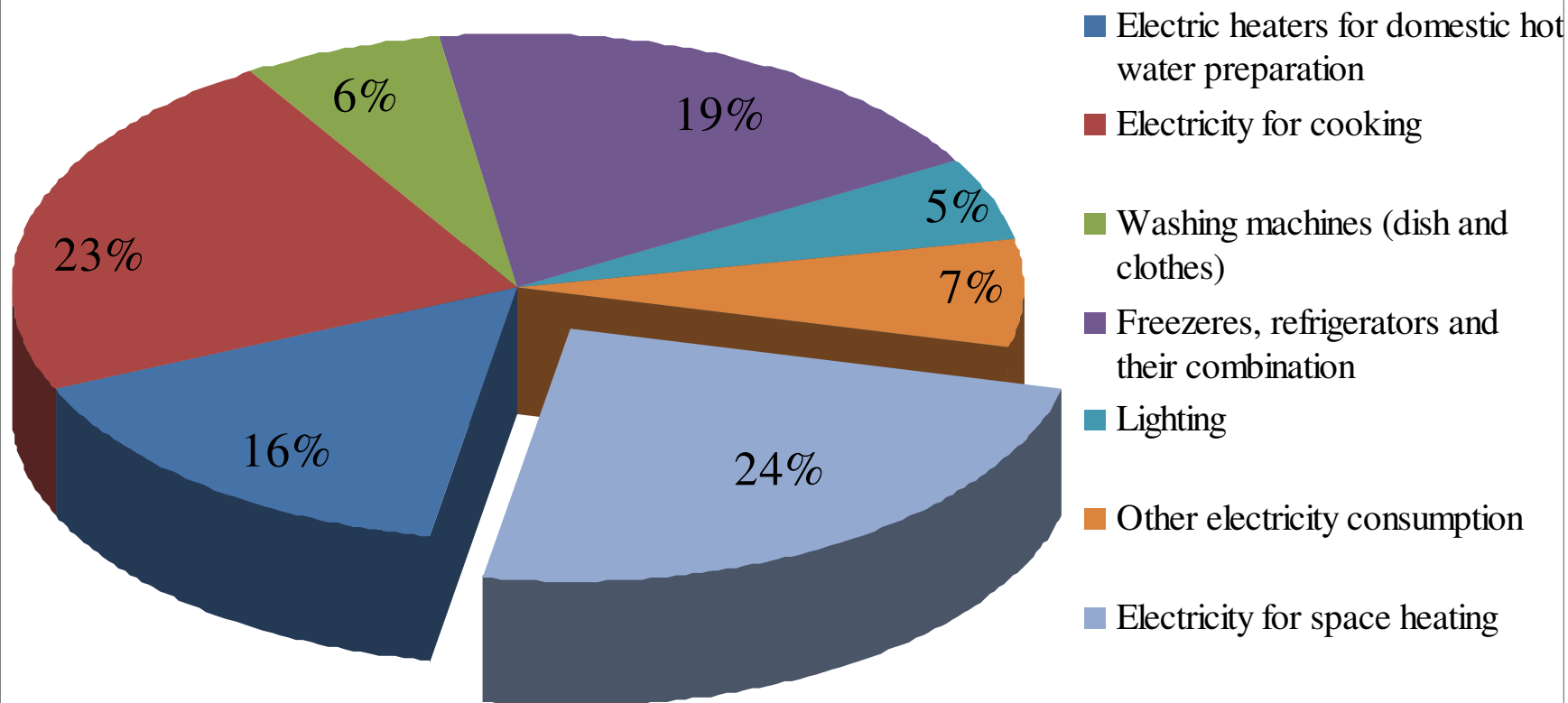
STRUCTURE OF FINAL ENERGY CONSUMPTION



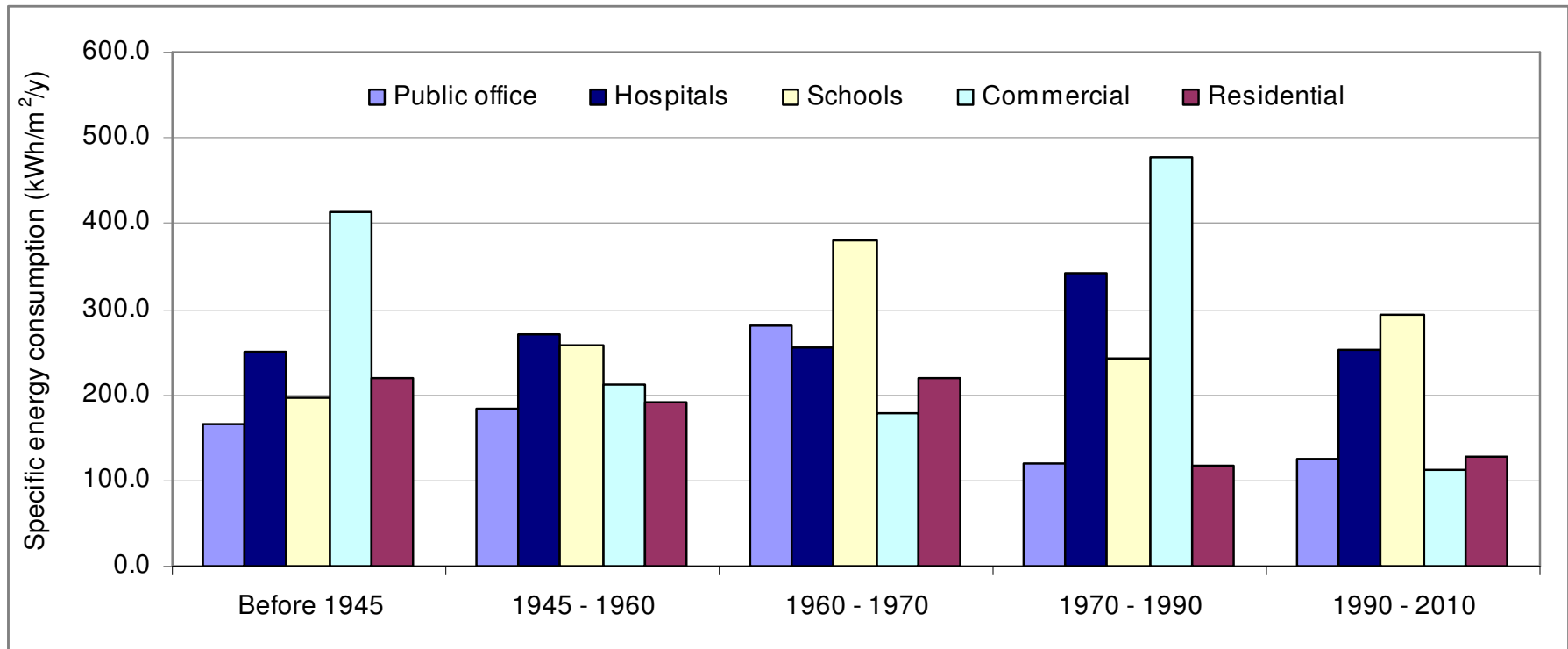




Annual electricity consumption of households



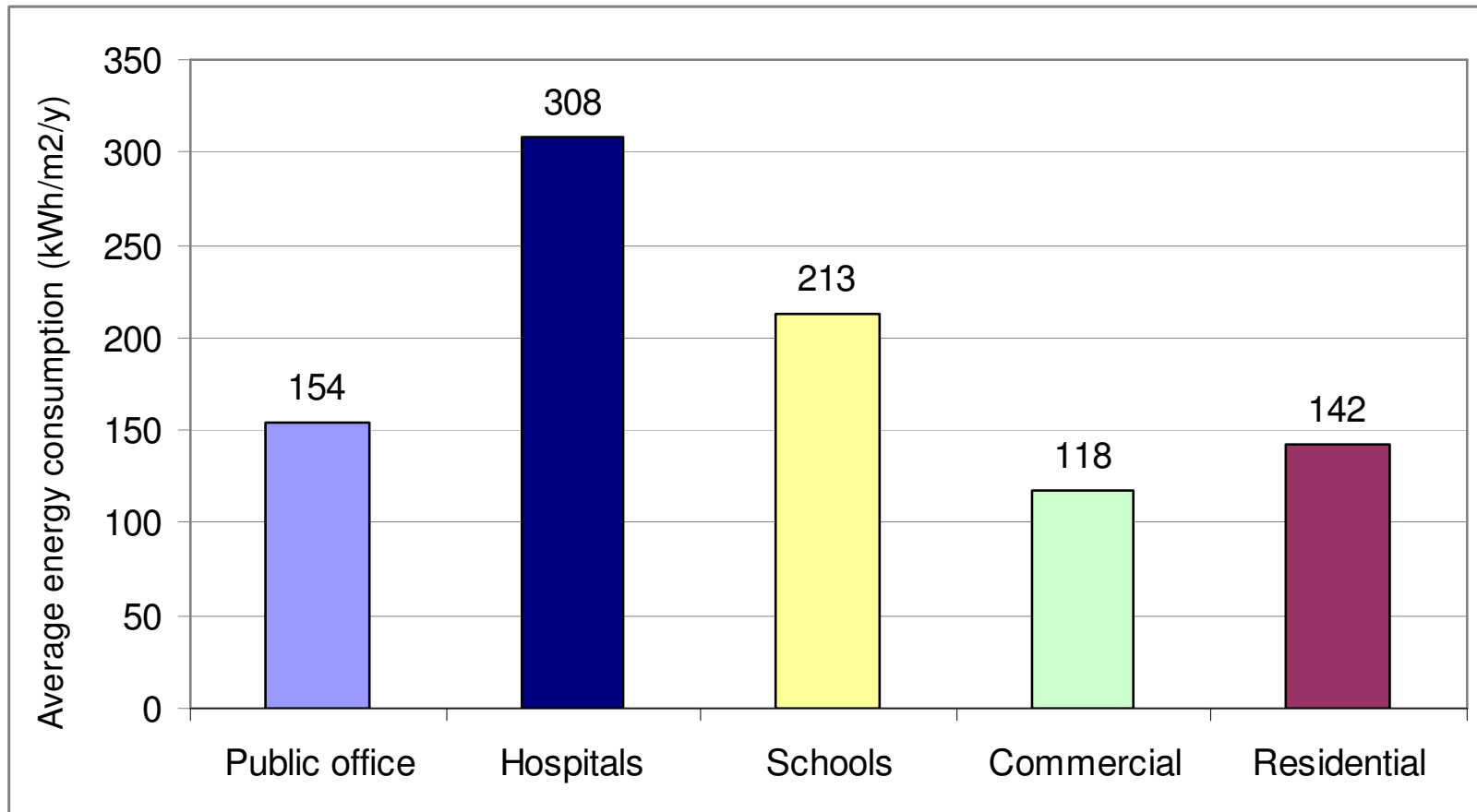
SPECIFIC HEAT CONSUMPTION - WTA



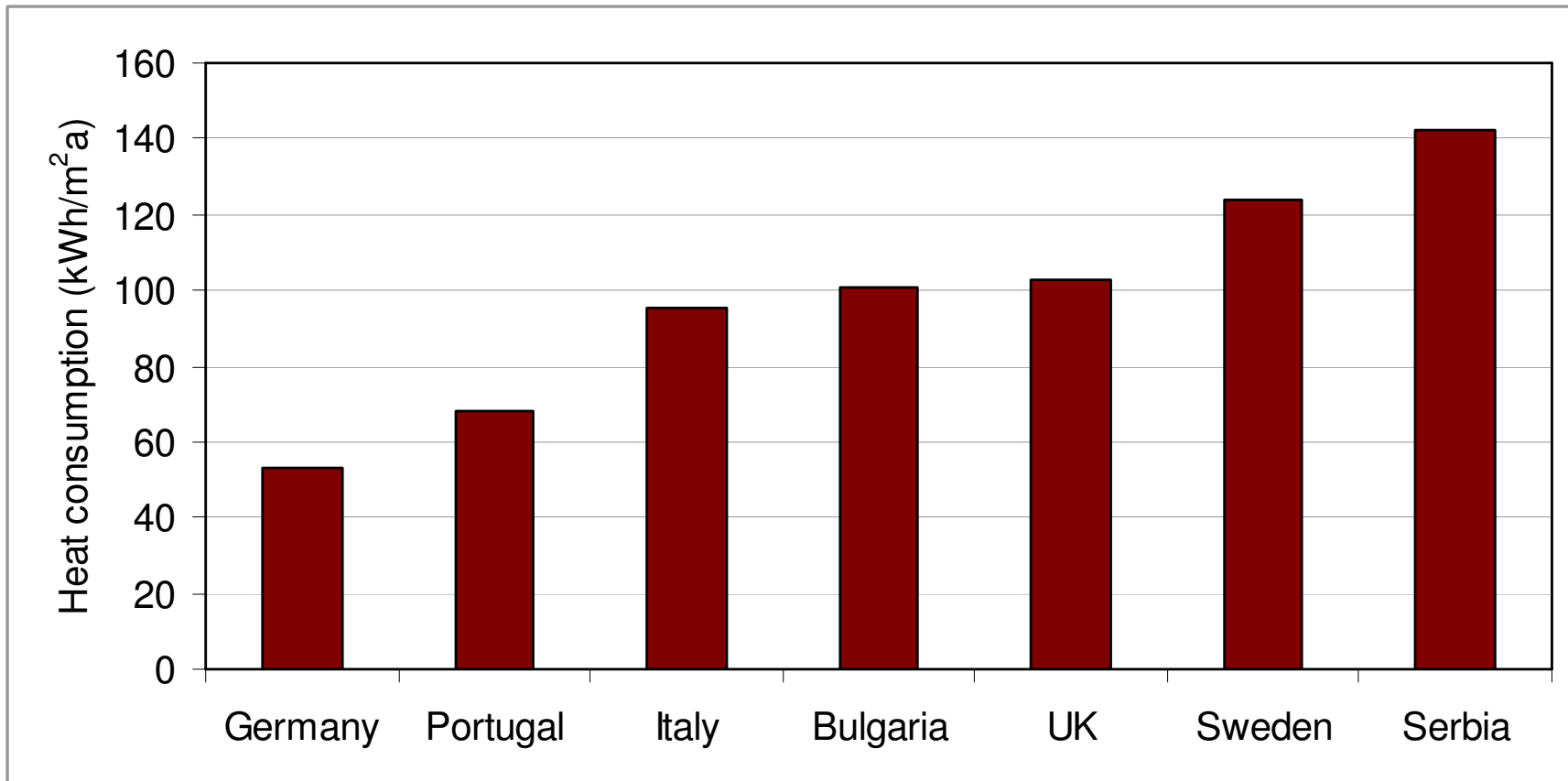
Results on specific energy consumption derived by WTA are given for each building sector and period of construction.



SPECIFIC HEAT CONSUMPTION - summarized

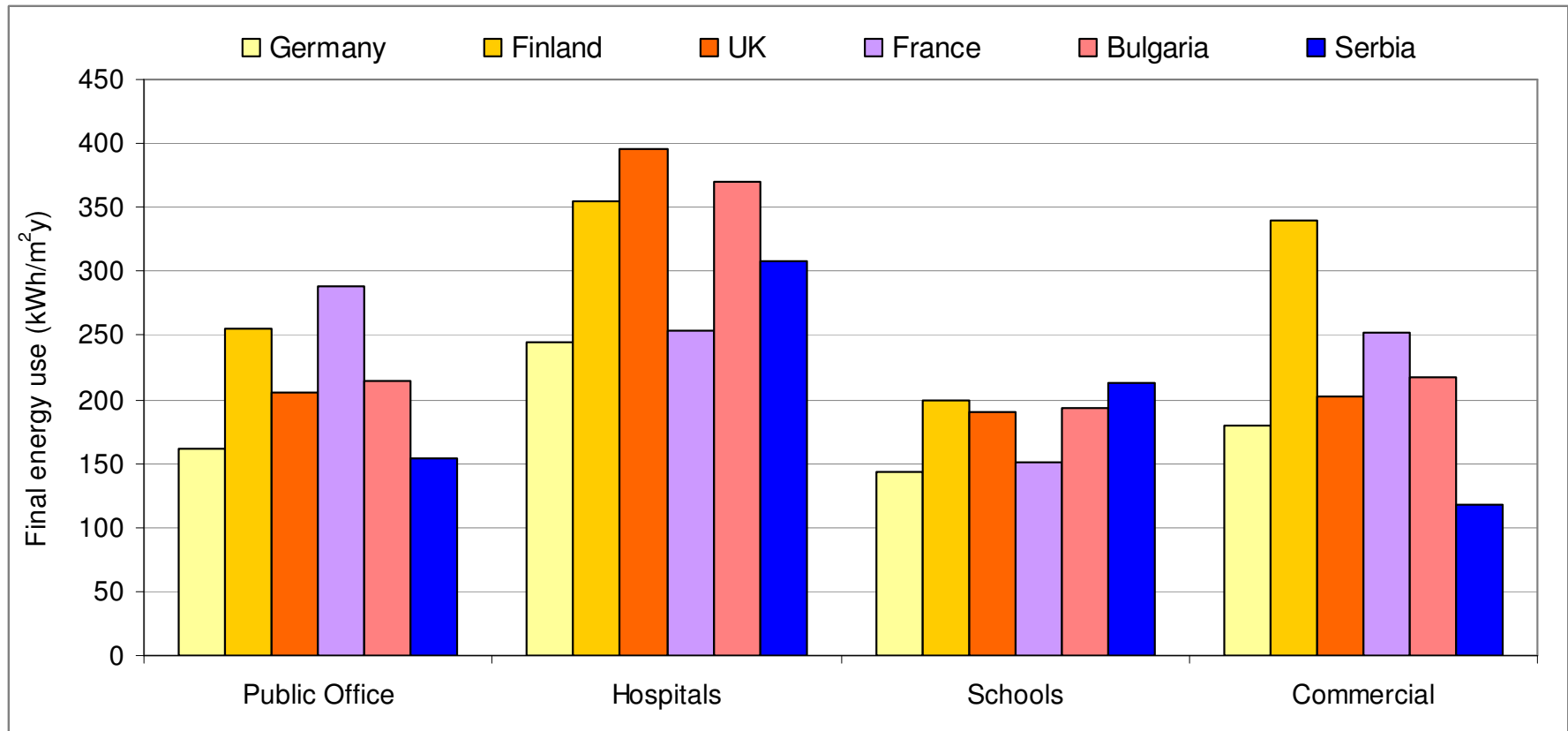


SPECIFIC HEAT CONSUMPTION – comparison with European countries (residential)





SPECIFIC HEAT CONSUMPTION – comparison with EU countries (non-residential)

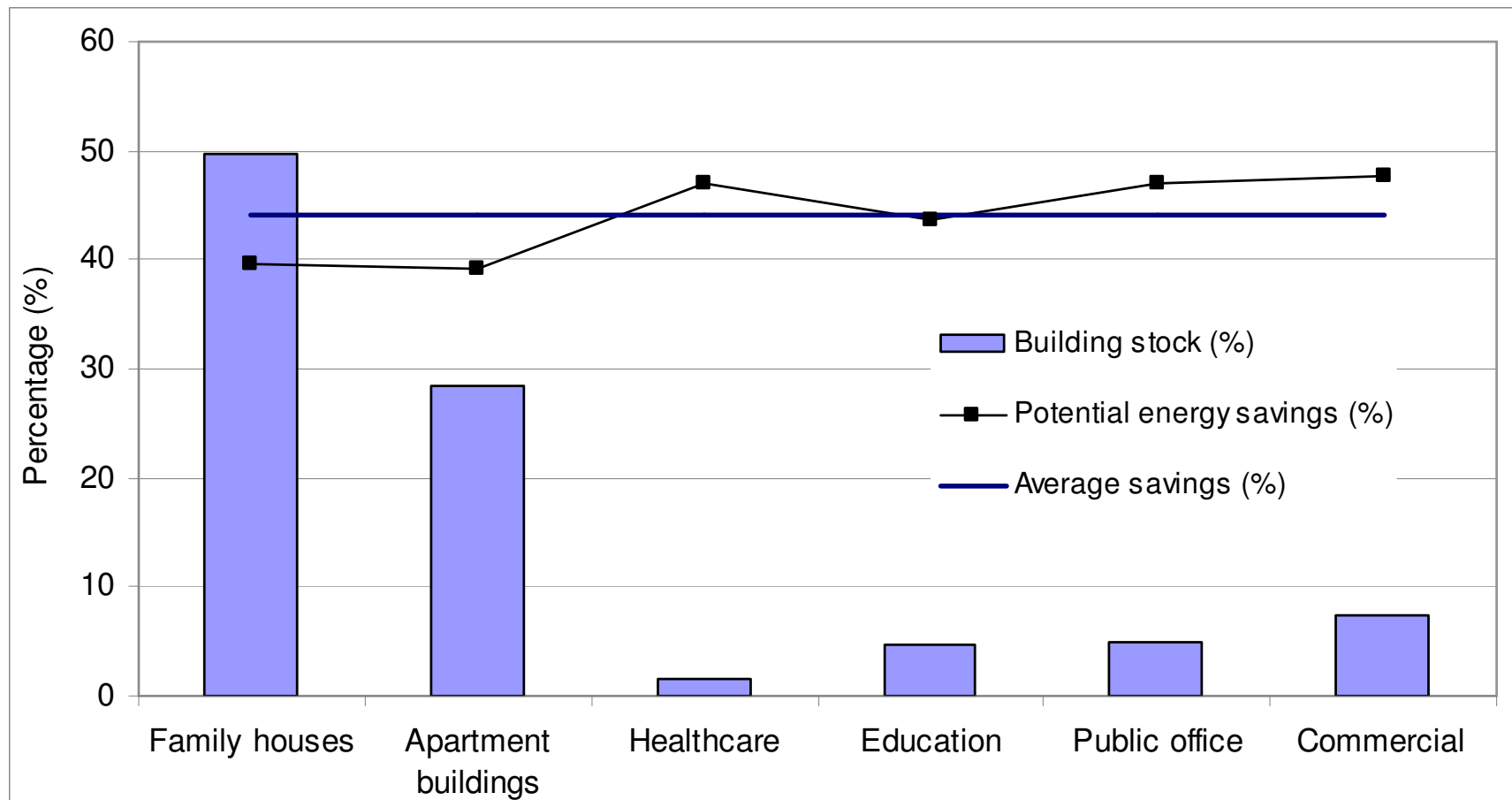


IDENTIFICATION OF COST EFFECTIVE ENERGY RETROFIT MEASURES

Building type	Energy efficient lighting	Roof insulation	External walls insulation	New windows	New boiler	Balancing + TRV	Solar DHW heaters	Heat recovery
Public office	√				√	√		√
Hospitals	√	√		√	√	√	√	√
Schools	√	√	√	√	√	√		
Commercial	√		√	√	√	√		√
Residential	√	√	√	√			√	

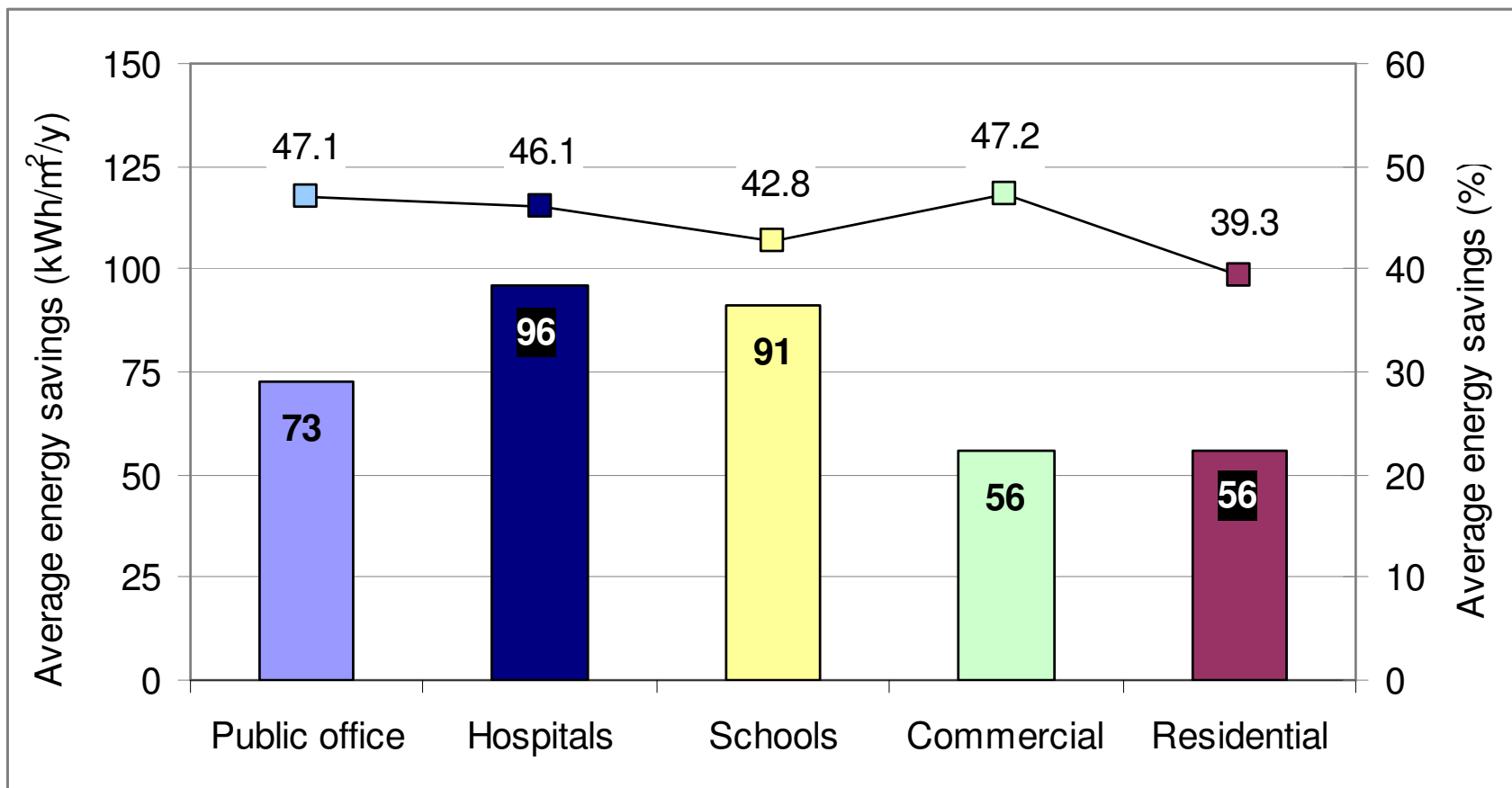


ENERGY SAVINGS PER BUILDING SECTOR

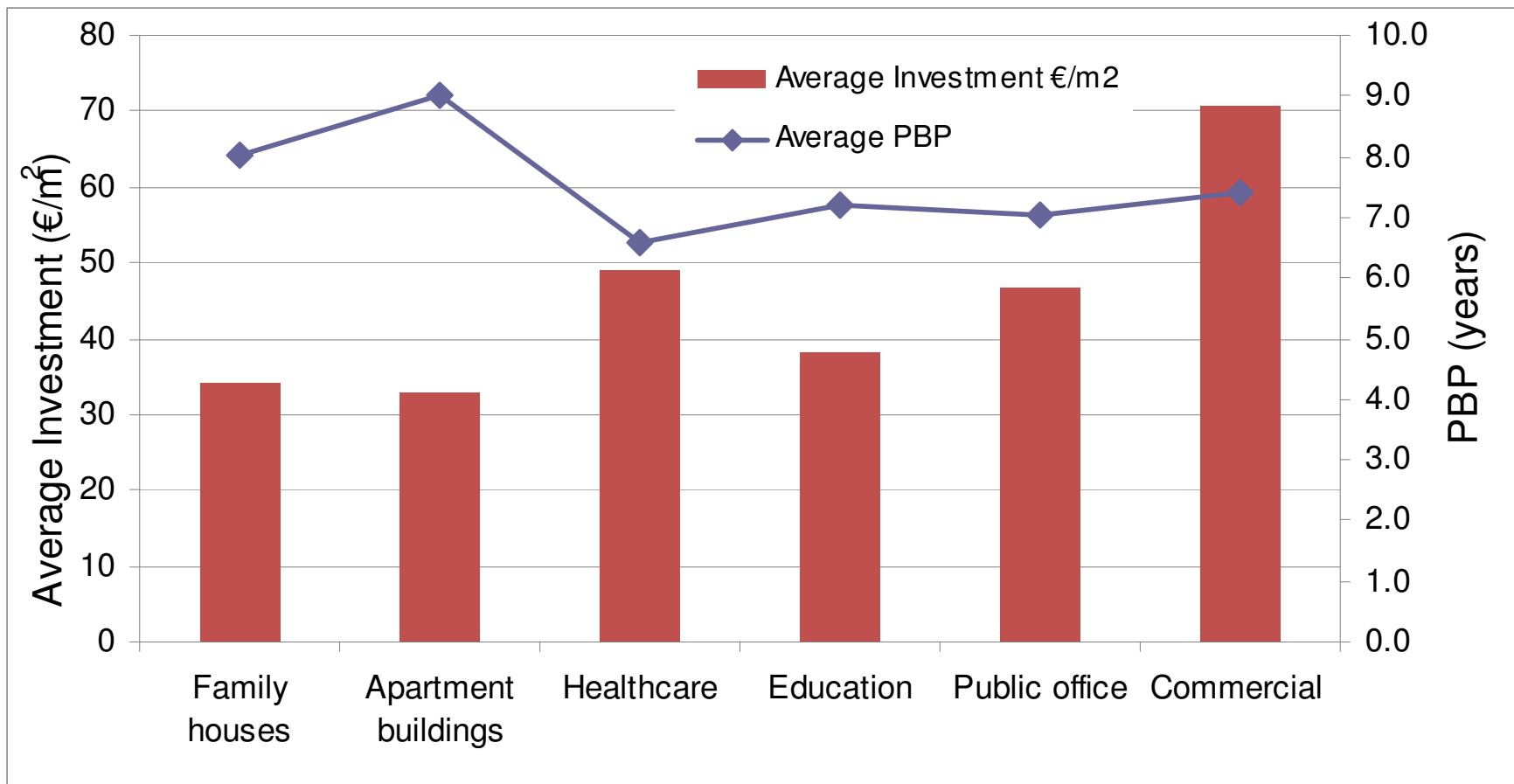




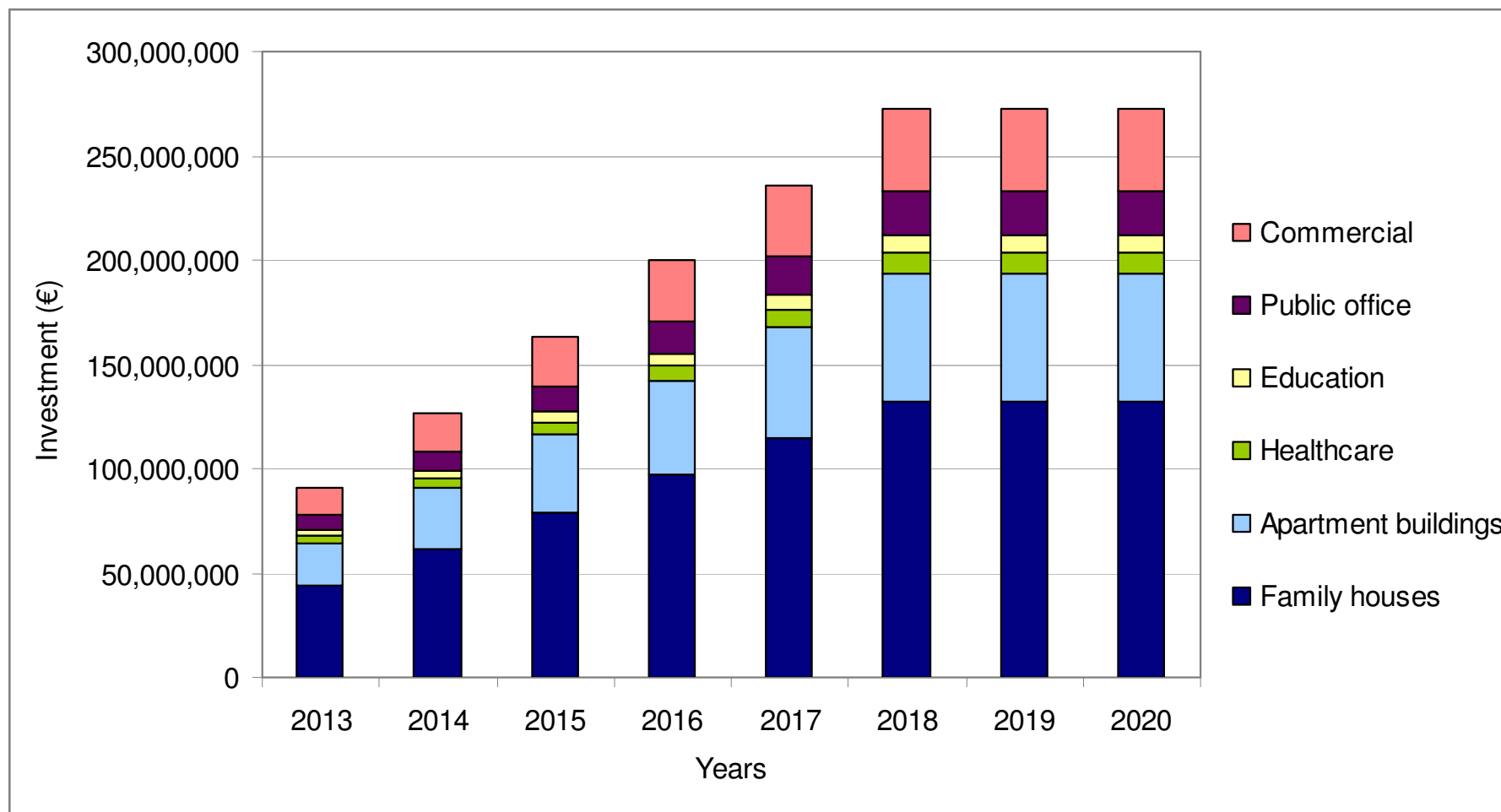
AVERAGE ENERGY SAVINGS PER BUILDING SECTOR



AVERAGE INVESTMENT AND AVERAGE PAYBACK PERIOD



ASSESSMENT OF NEEDED INVESTMENTS





CONCLUSIONS

- Energy consumption in building sector in Serbia is ***very high***, especially regarding heat and electricity consumption in all sectors.
- Energy saving potential is substantial - around 45%
- Cost effective ERM's are mainly focused on:
 - improving thermal performance of a building's envelope;
 - lighting system;
 - heating system and automatic control.



CONCLUSIONS

- In order to achieve goals set by NEEAP, it is necessary to overcome the policy, legal, regulatory and financing barriers.
- The biggest problem is inadequate tariff system of paying the energy cost.
- The disparity in energy and fuel prices, especially electricity, is also present in the market.
- Lack of equal financial incentives for different consumers groups also may be identified as a barrier.
- Dedicated EE financing mechanisms, adapted to the local market conditions may be the key to successful implementation and scaling up of EE investments in Serbia.



THANK YOU FOR ATTENTION!

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