Energy research in urban context: some issues being investigated

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Our challenges

- How can we improve ACCESS and address issues of AFFORDABILITY and RELIABILITY?
- How can we increase ENERGY SERVICES by improving energy and resource efficiency?
- How can we address NDC targets and beyond by shifting to cleaner, less carbon intensive energy sources and technologies?

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Access to modern fuels in Brasi 1960-2010

	1960	average annual % growth rate (1960-2010)	2010
Total HH (millions)	Number HH	% per year	Number HH
total	13.5	2.8	57.3
urban	6.3	4.2	49.2
rural	7.2	0.2	8.1
Electricity access	HH with access		HH with access
total	38.5%	12.7	98.7%
urban	72.5%	12.6	99.7%
rural	8.4%	13.4	92.6%
LPG (and natural gas)	HH with access		HH with access
total	18.0%	17.0	98%
urban	35.1%	16.8	100%
rural	0.3%	19.5	94%

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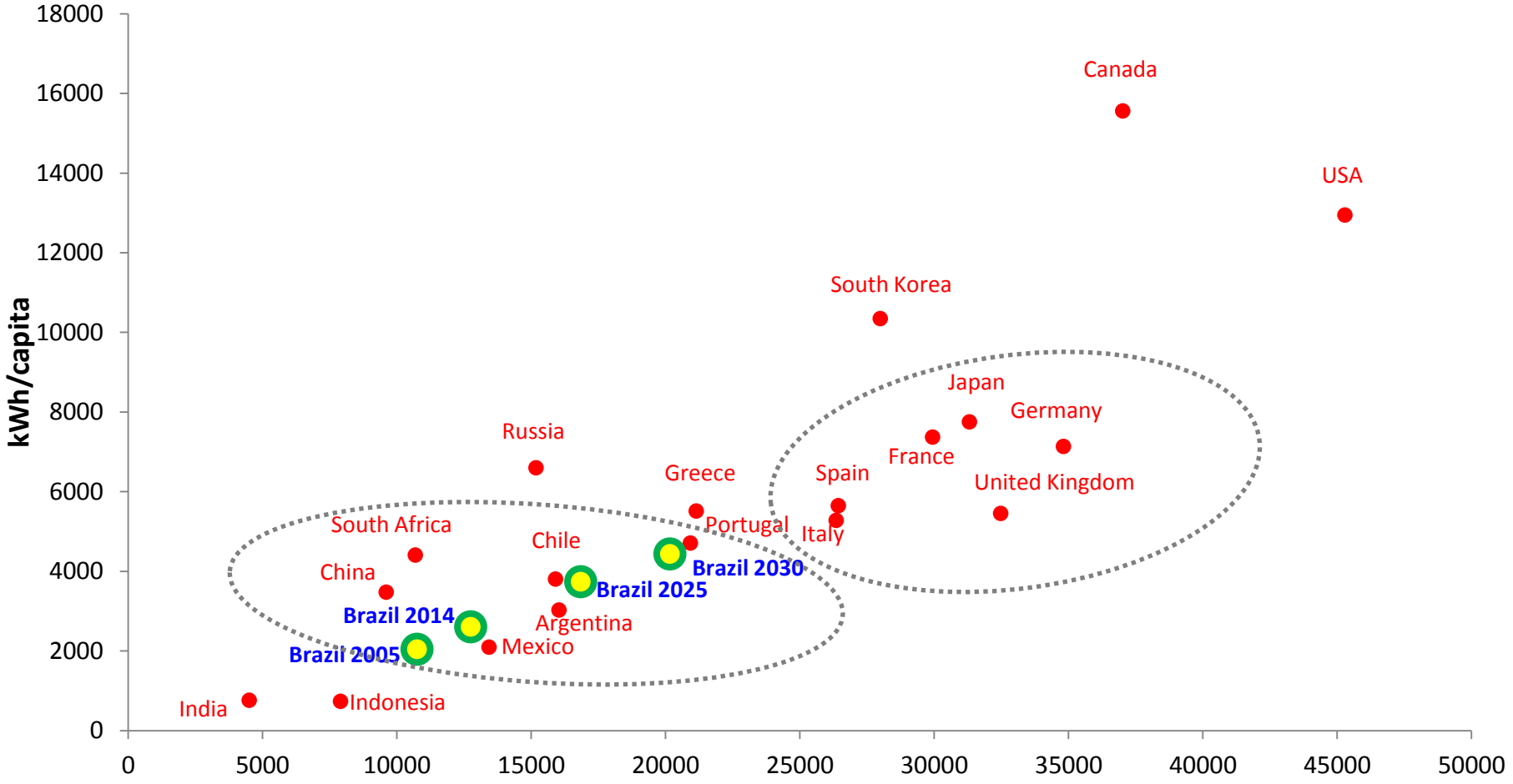
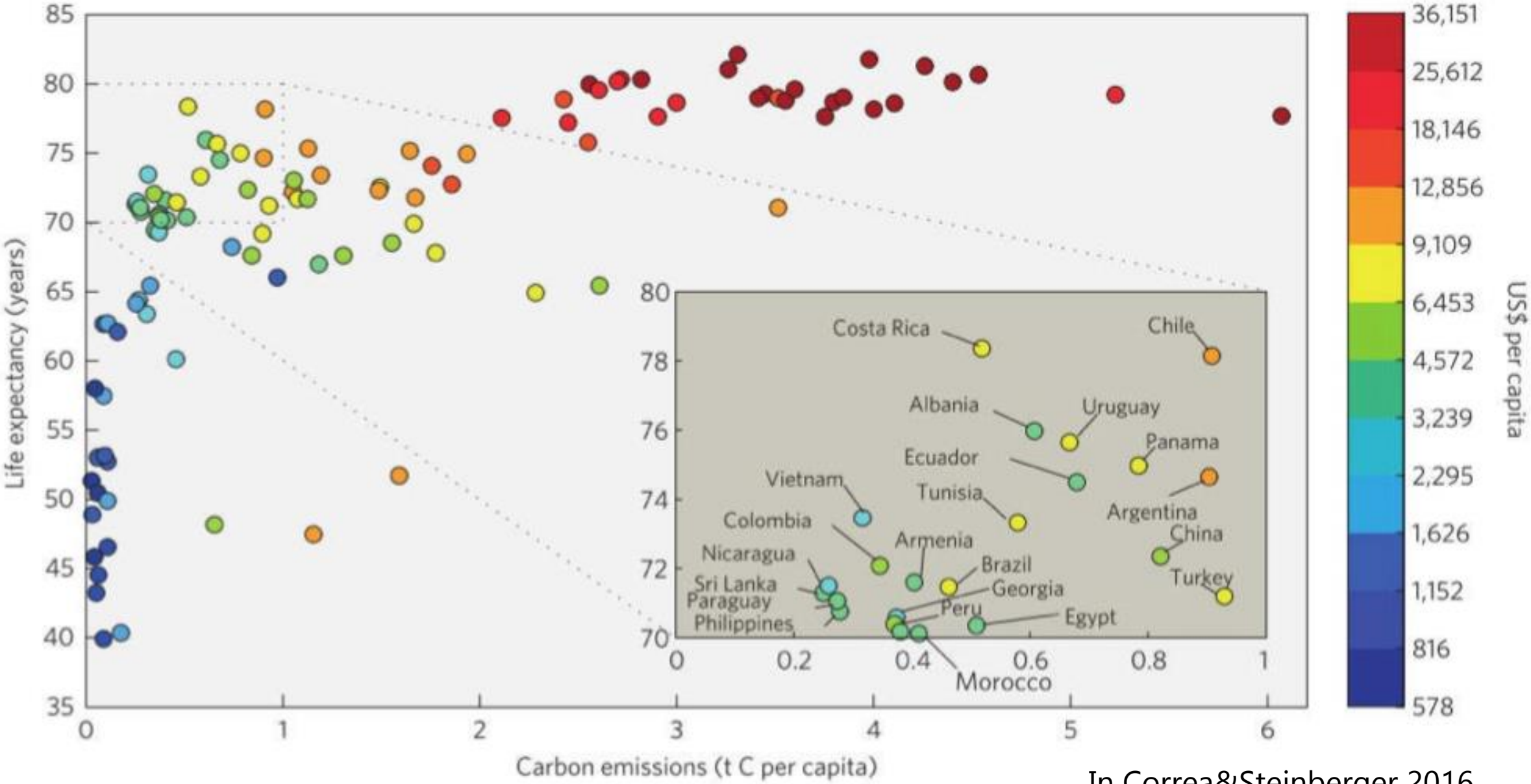
PER CAPITA CONSUMPTION OF ELECTRICITY INTERNATIONAL COMPARISION



Source: Brazil Data: EPE;
International data: IEA, 2015



In Correa&Steinberger 2016

Areas of research

- Electricity
  - Access and supply issues
  - Demand
  - Energy efficiency
- Fuels –
  - Mobility
  - Cooking
  - Thermal uses
- Water

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Cities in Brazil: energy services

- Cities in developing countries also have the very same problems (and can also have very similar solutions) as those in industrialized countries.
- However at the same time these cities have very particular and specific problems associated with
  - rapid urbanization and
  - urban poverty.

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The approach

- Solutions to energy challenges are not necessary exclusive to ”richer” parts of the cities but also to the underserved, such as energy efficiency and distributed generation.
- Solution can provide innovative ways to take into account the socio-economic differences of the urban population.

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Solution areas

1. Accelerate the shift to cleaner cooking;
2. Improvements in energy efficiency in buildings
3. Scaling up of distributed RE within cities.
4. Exploring synergies (or nexus) between energy and water distribution, sanitation, waste disposal/recycling

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Some current projects

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Project: Evaluating public policy mechanisms for climate change mitigation in Brazilian buildings sector

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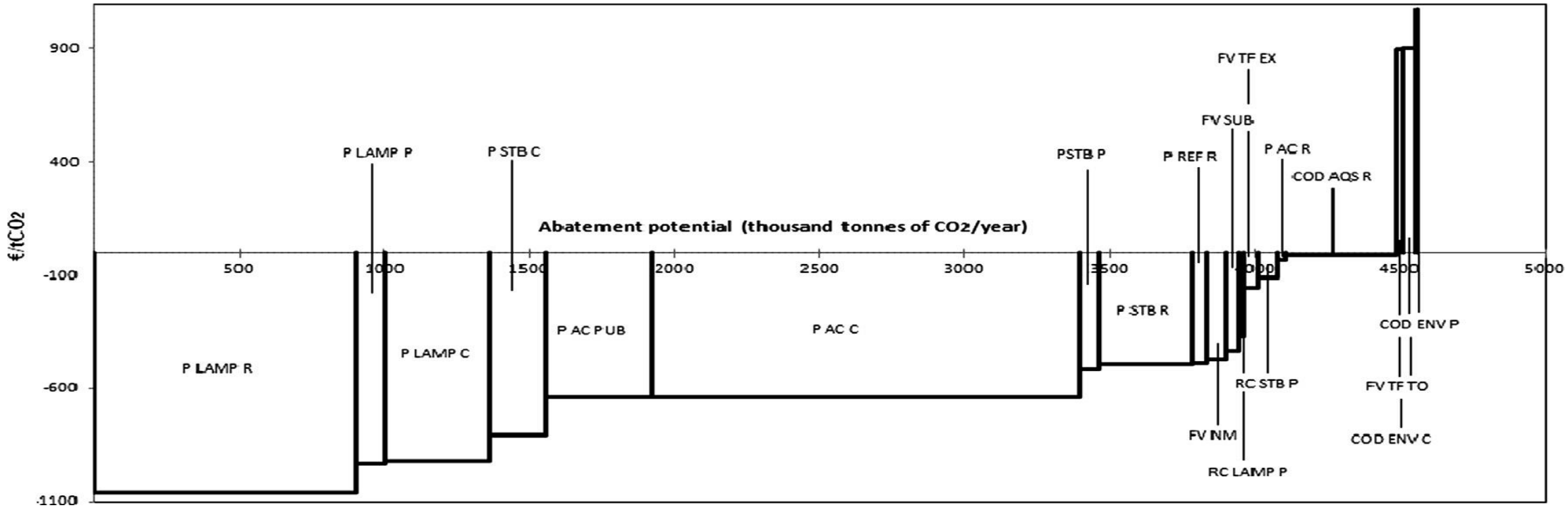
Results: Marginal Carbon Abatement Costs



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Energy services to low income households

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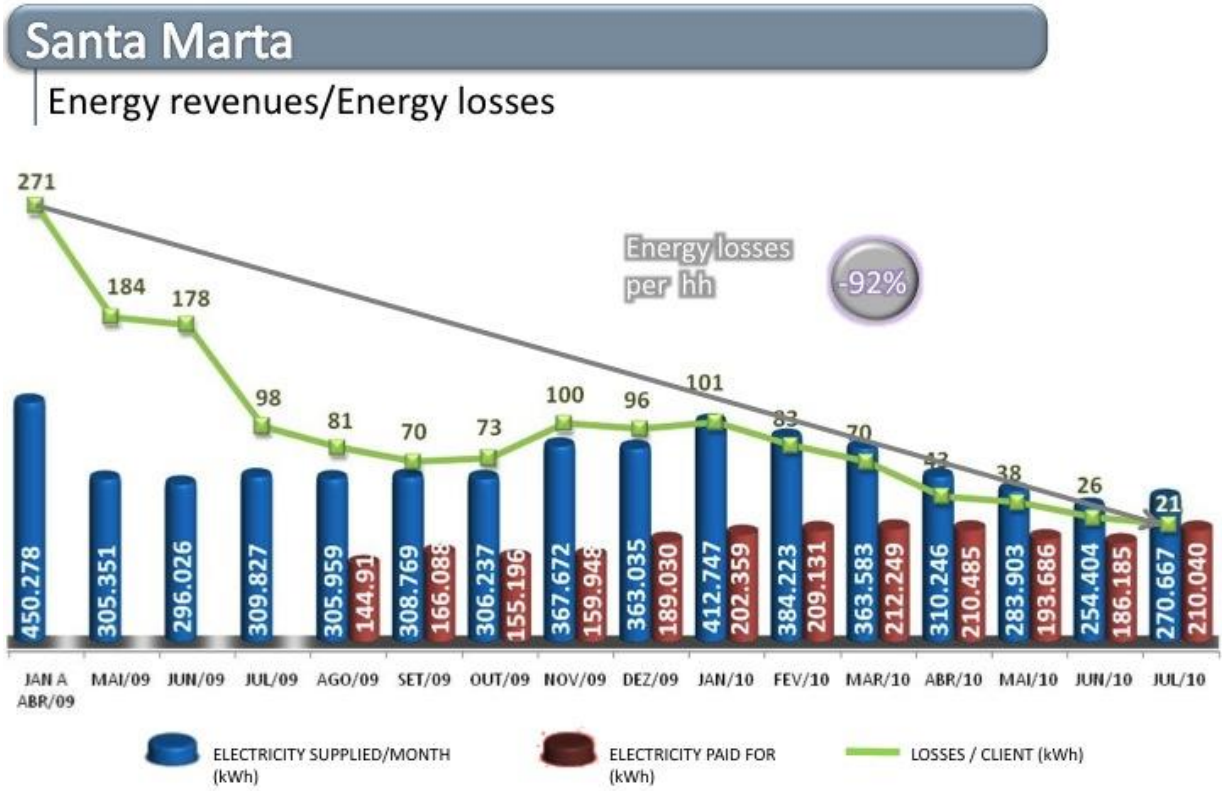
Technology and utility's commercial losses



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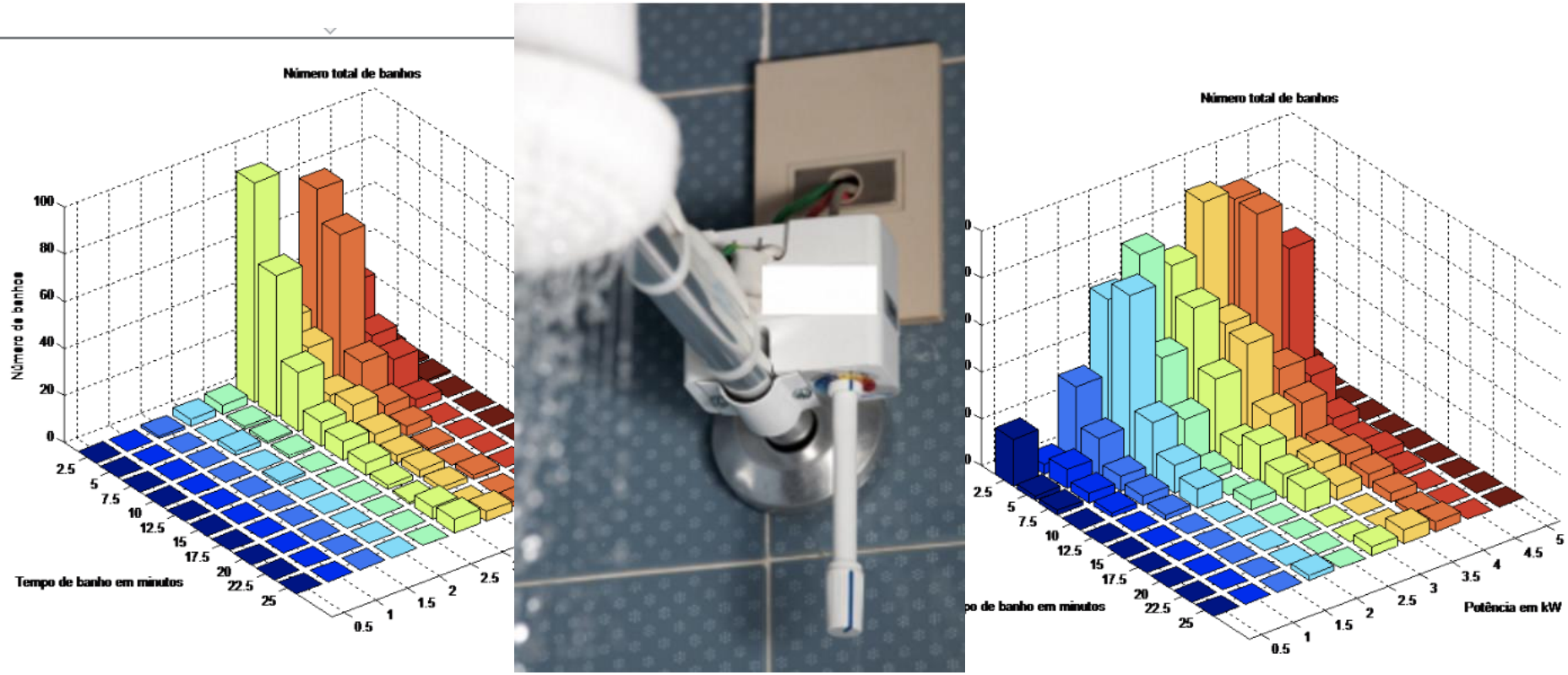
Energy efficiency programs: residential sector



Consumer behavior

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Business models to deliver "energy services" to low income households

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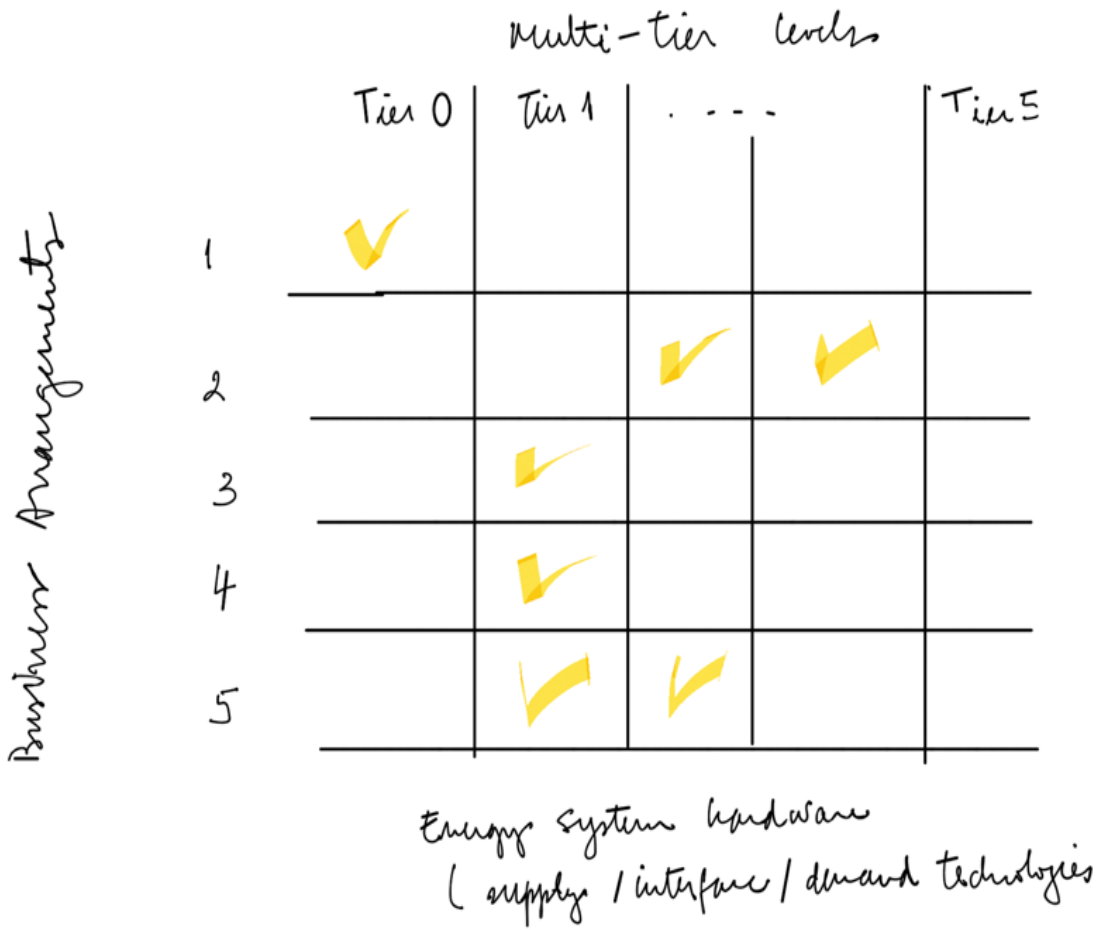
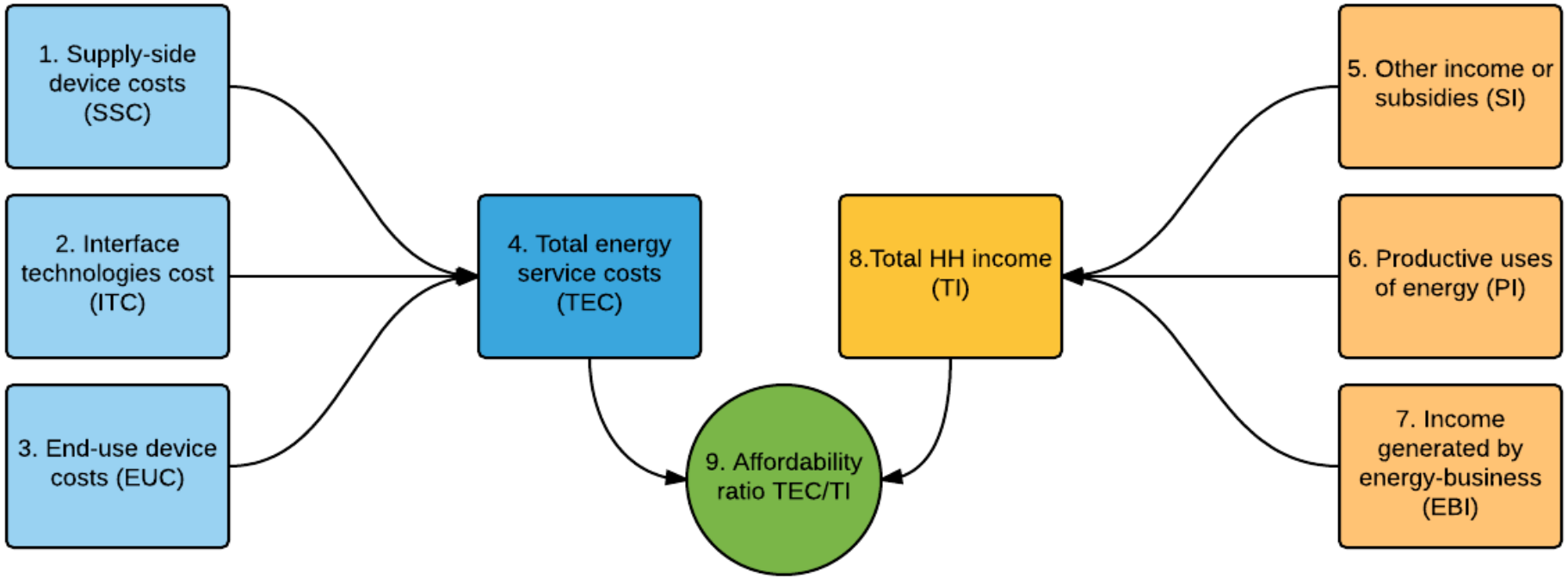
Energy services levels x Hardware set-up x business models



Energy affordability



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Urban Energy: summary of our research topics

- Policy mechanisms to disseminate best technologies and practices
- Energy access and affordability
- New business models to deliver affordable and cleaner energy services
- Evaluation of energy programs

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