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Pianificazione energetica: Rilevanza del contesto territoriale nella modellazione

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Eurac Research

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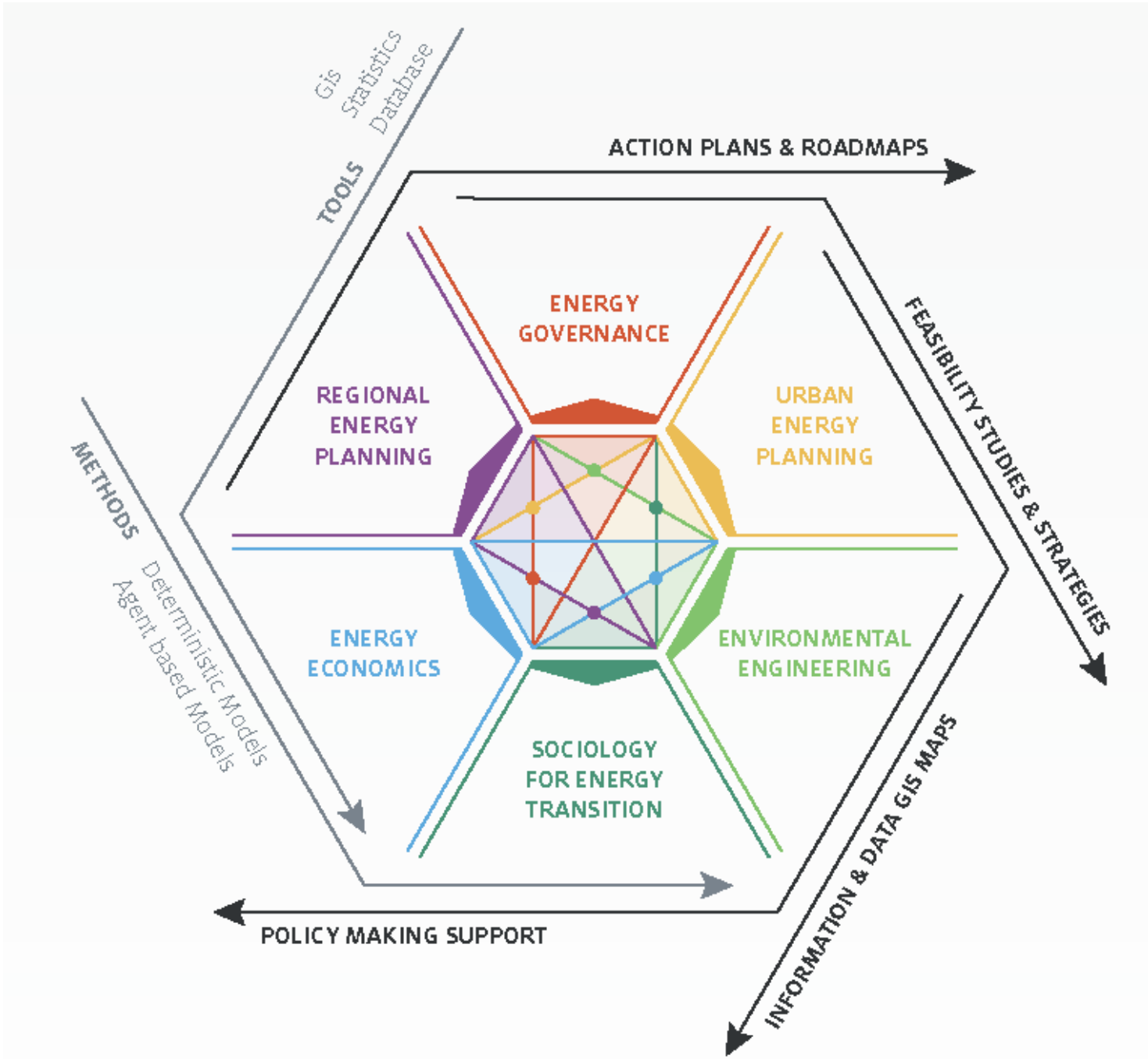

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Energy targets

Burden sharing

The national energy plan for the RES development defines **regional targets and paths** on:

- Final consumption
- RES-E consumption
- RES-H consumption

D.M. 15 Marzo 2012 – Burden Sharing, Target 2020

Energy targets

Regional energy plans

The regional energy plan defines **objectives, measures and interventions** in agreement with EU, national and regional targets.

** EUSALP Energy Survey 2017 – Target 2020*

Energy targets

How to support their achievement?

- Energy planning models based on **energy balance** and **optimization of objectives**
- Energy planning **spatial models**

Energy targets

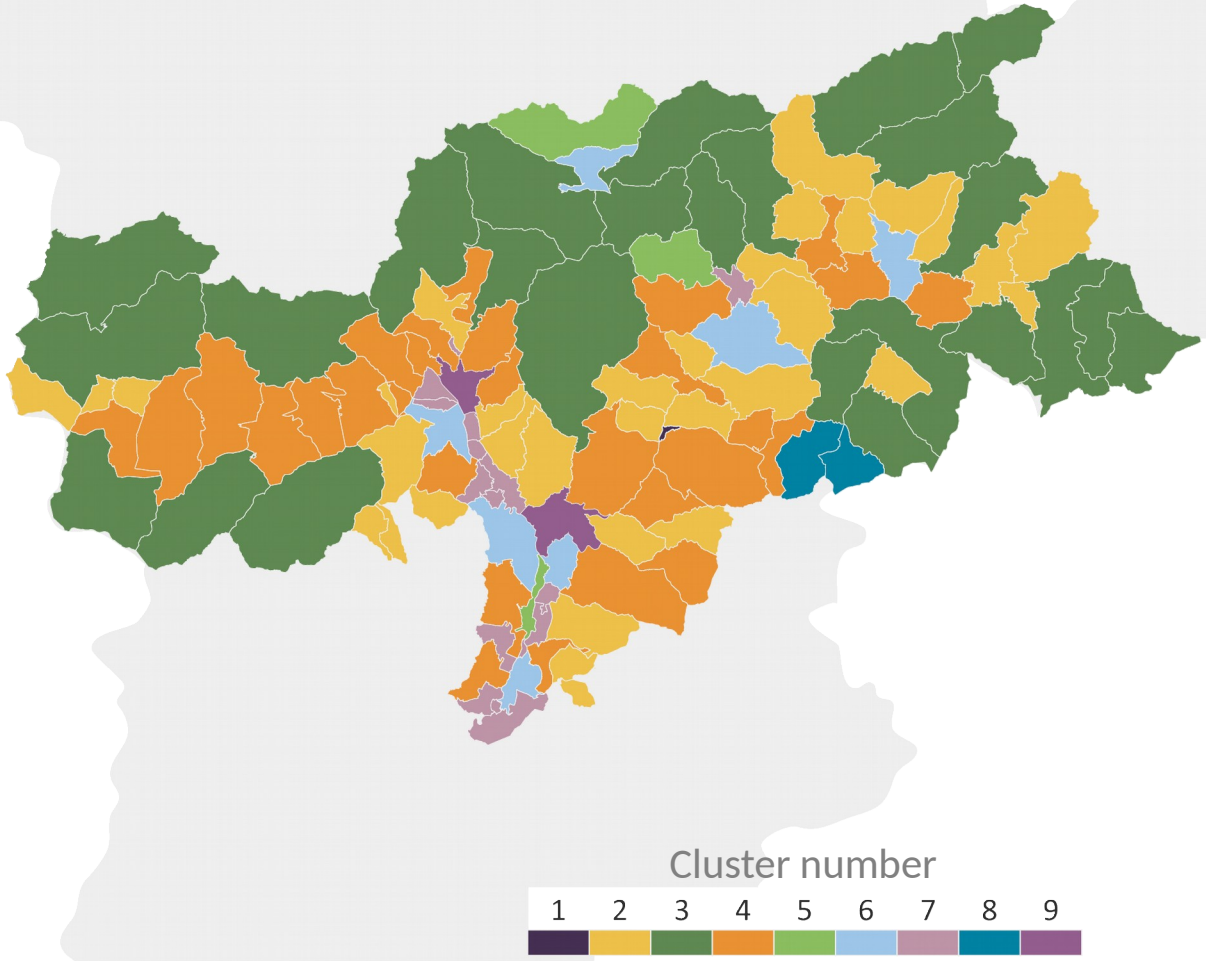
How to support their achievement?

- Energy planning models based on **energy balance** and **optimization of objectives**
- Energy planning **spatial models**

Towards a Smart Energy Region

Advantages of spatial models

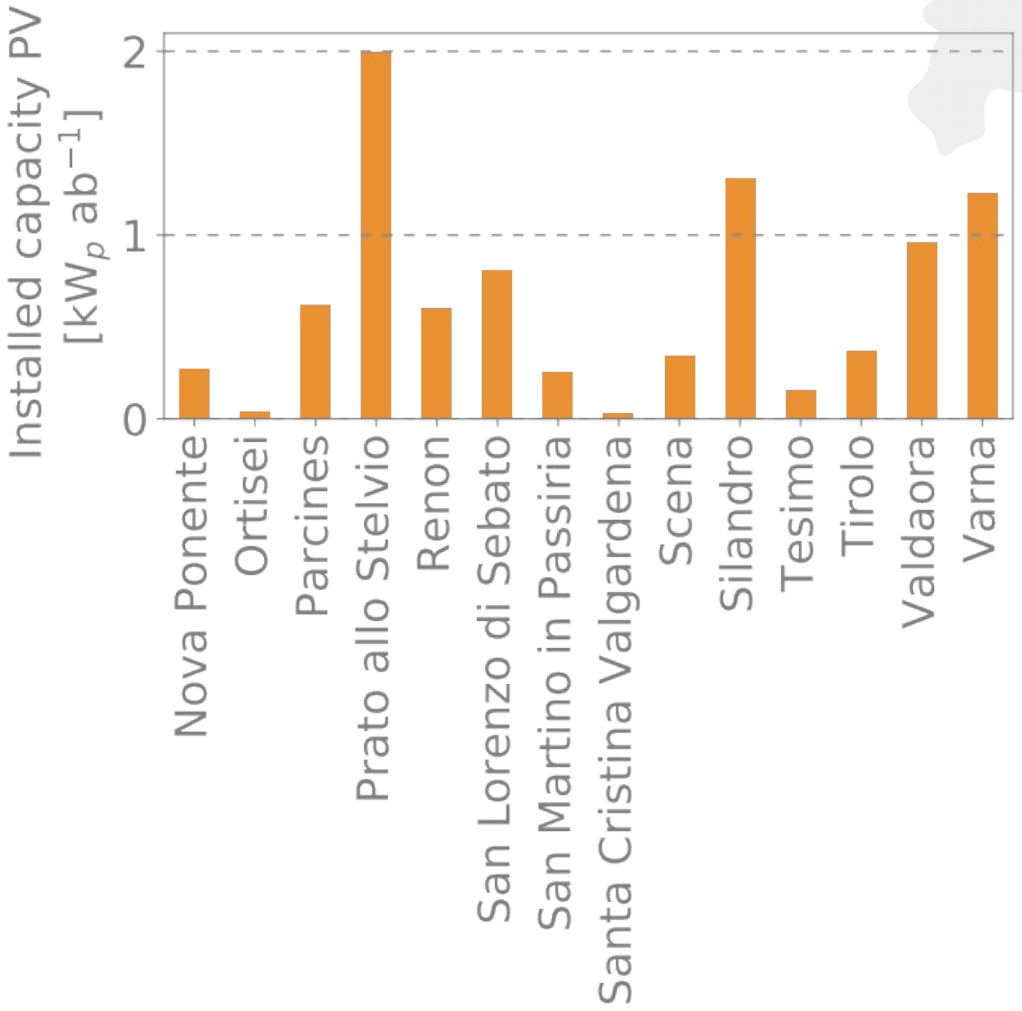
Different **clusters** of Municipalities accounting for renewable energy, socio-demographic, economic, geographical, infrastructure and policy **indicators**.

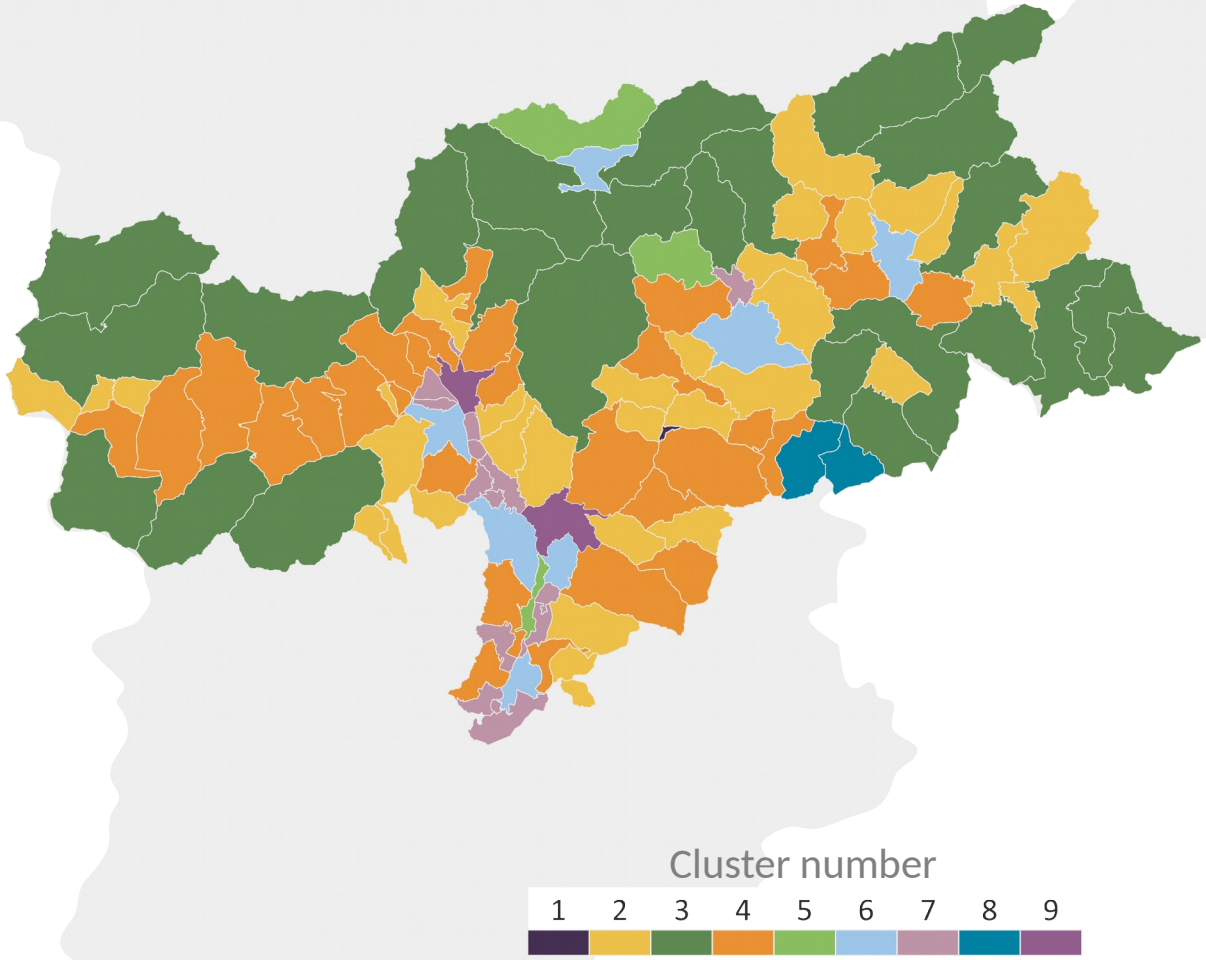


***Balest** et al., A Decision Support Tool for energy planners: Territory as socio-energy system at translocal scale, submitted to Energy Research & Social Science*

Towards a Smart Energy Region

Advantages of spatial models





Towards a Smart Energy Region

Advantages of spatial models

Energy transition relies mainly on:

1. RES availability
2. Energy efficiency measures

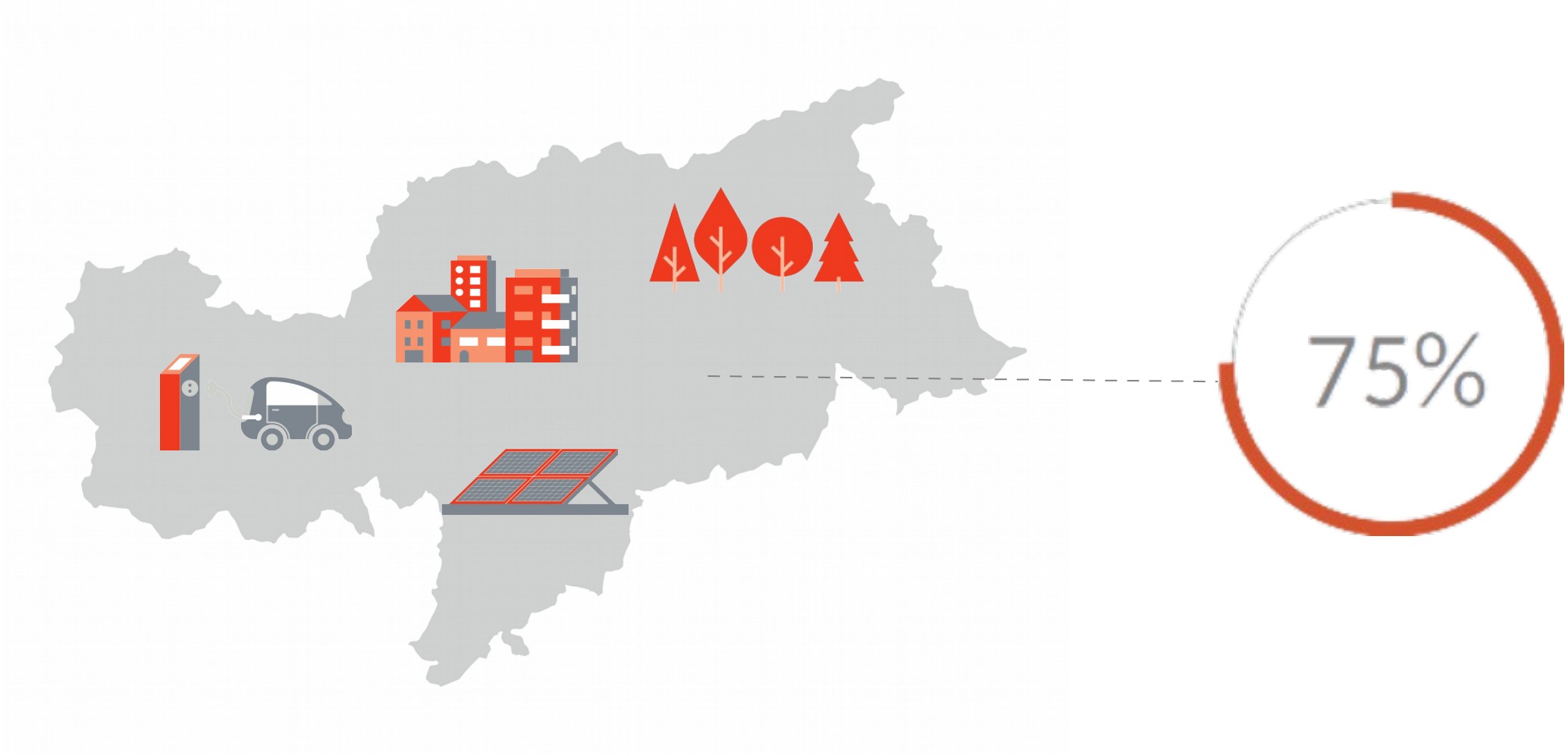
promoted through **cost and technical optimal solutions analysis**

While considering:

- **Environmental and legal constraints**
- **Local policies and conflicts**
- **Individual and collective choices**
- …

Towards a Smart Energy Region

A spatial tool for energy planning and target achievement



Towards a Smart Energy Region

A spatial tool for energy planning and target achievement

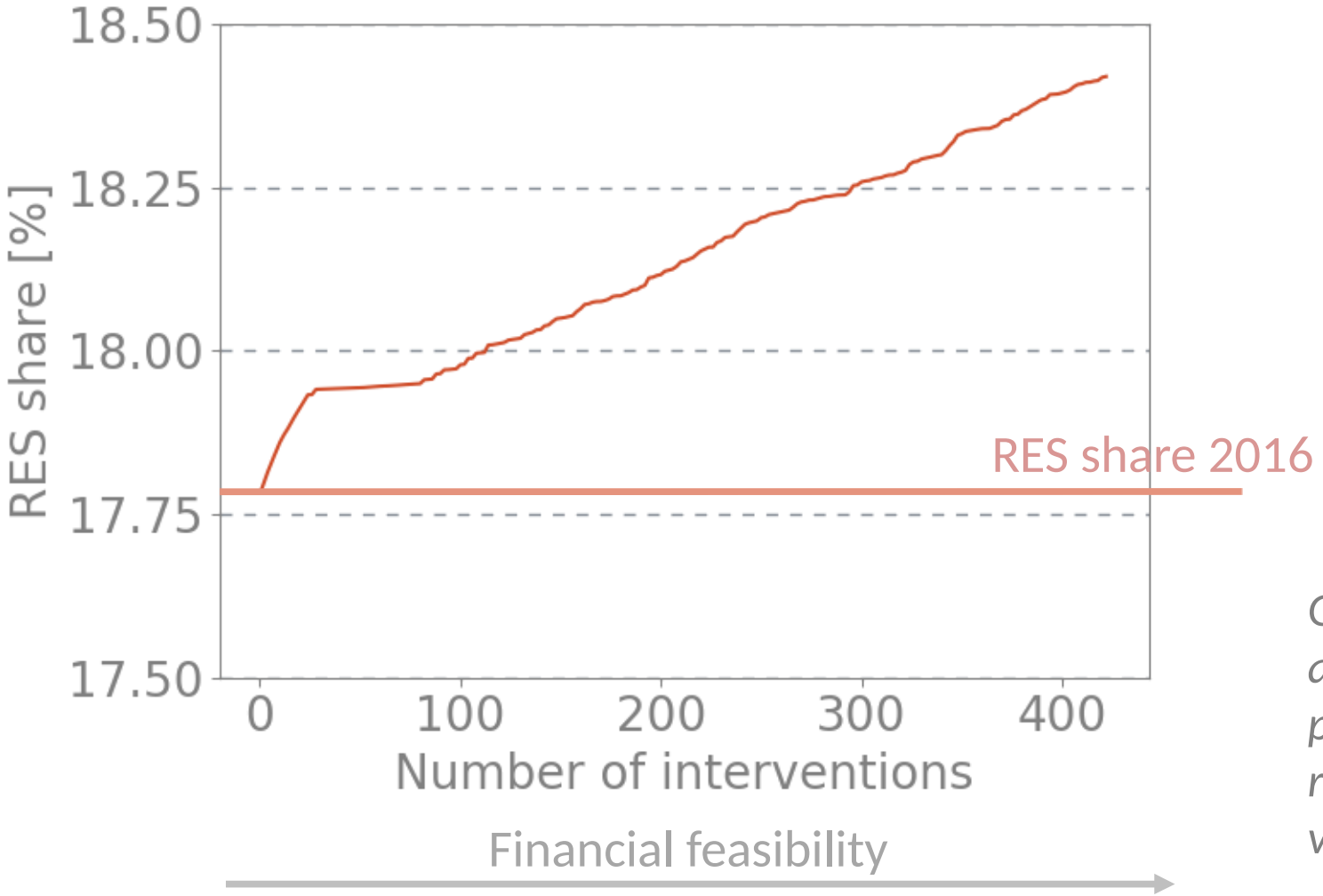
1) **Spatial evaluation** of technical, legal, financial and environmental feasibility of measures and interventions (RES plants, refurbishment of buildings, replacement of heating systems, etc.)

2) Evaluation of **priority areas** for measures and interventions by considering, for example, social aspects and conflicts

recharge green HOTMAPS Greta

Hydro-power

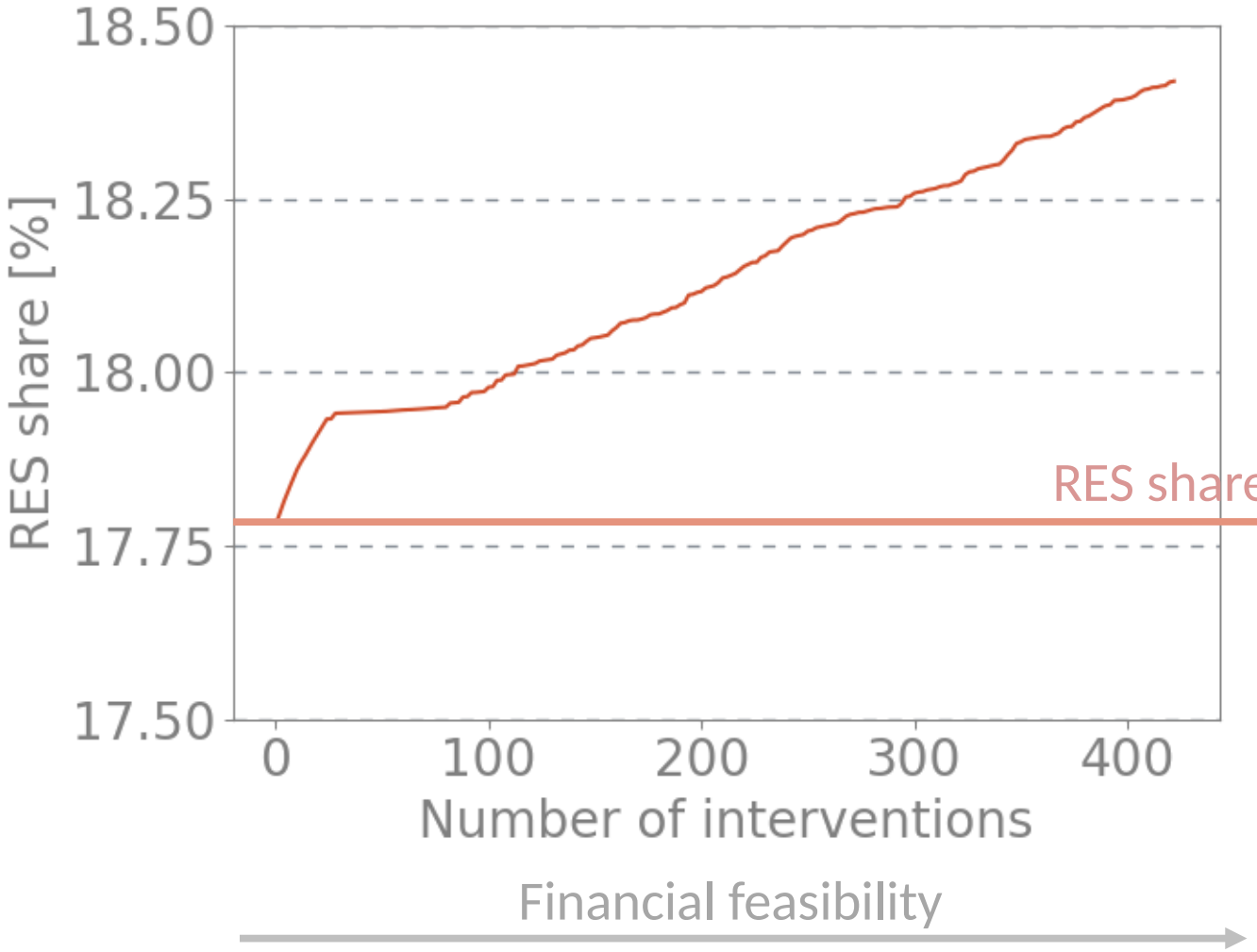
Piedmont case study



G. Garegnani et al., GIS-based approach for assessing the energy potential and the financial feasibility of run-off-river hydro-power in Alpine valleys, Applied Energy, 216, 2018

Hydro-power

Piedmont case study



P = 200 kW
Q = 1 m^3s^{-1}
ΔH = 75 m

820’000 € per intervention

70 ktep of FER-E
3’400 ton of CO2 saved

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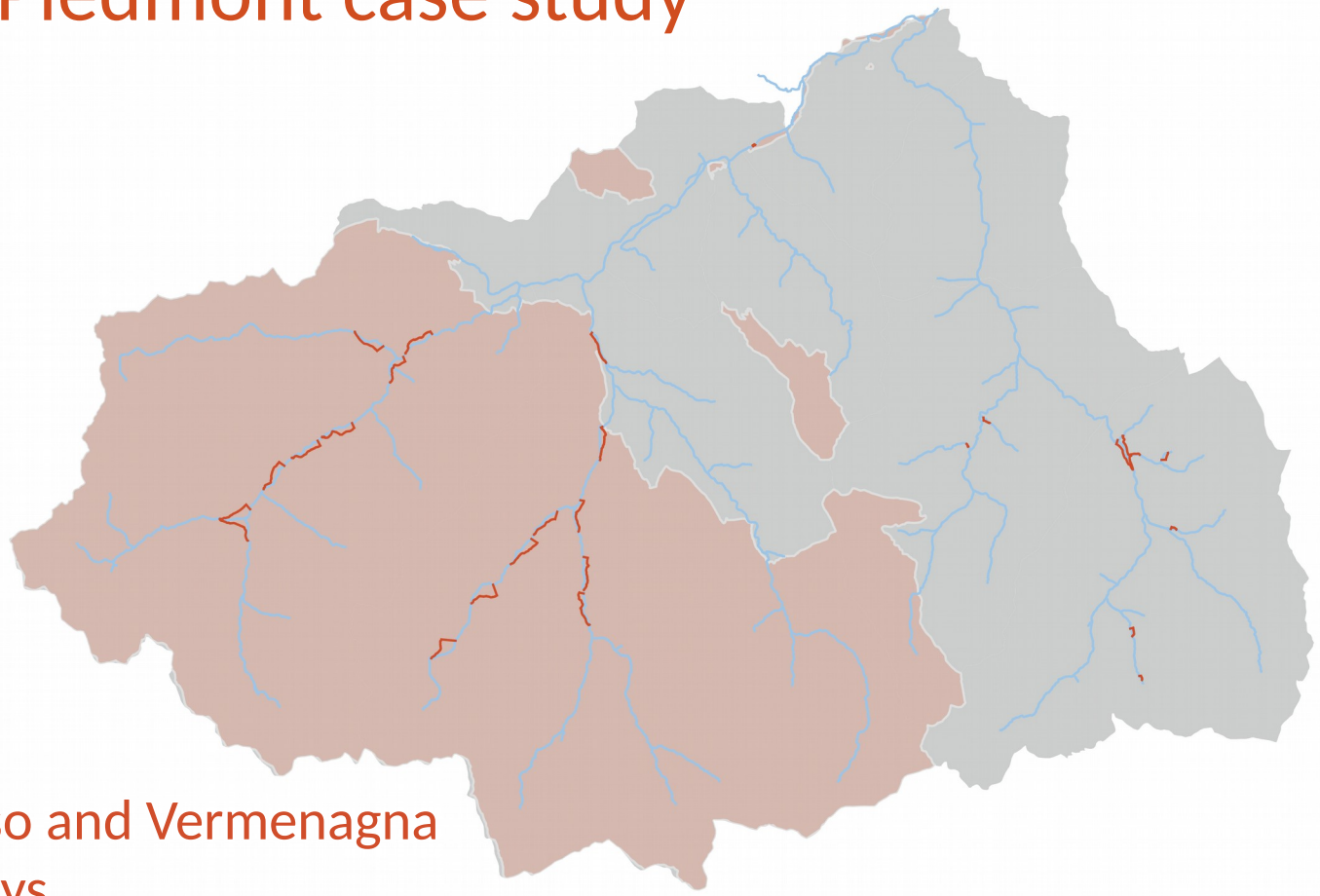

Gesso and Vermenagna valleys

- Protected area
- Selected plants

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Heat pumps (shallow geothermal energy)

Valle d'Aosta case study

***Zambelli** et al, GRETA project – D5.2.1 Report on the test of the integration of NSGE into Energy Plans for the selected Pilot Areas, 2018*

Heat pumps (shallow geothermal energy)

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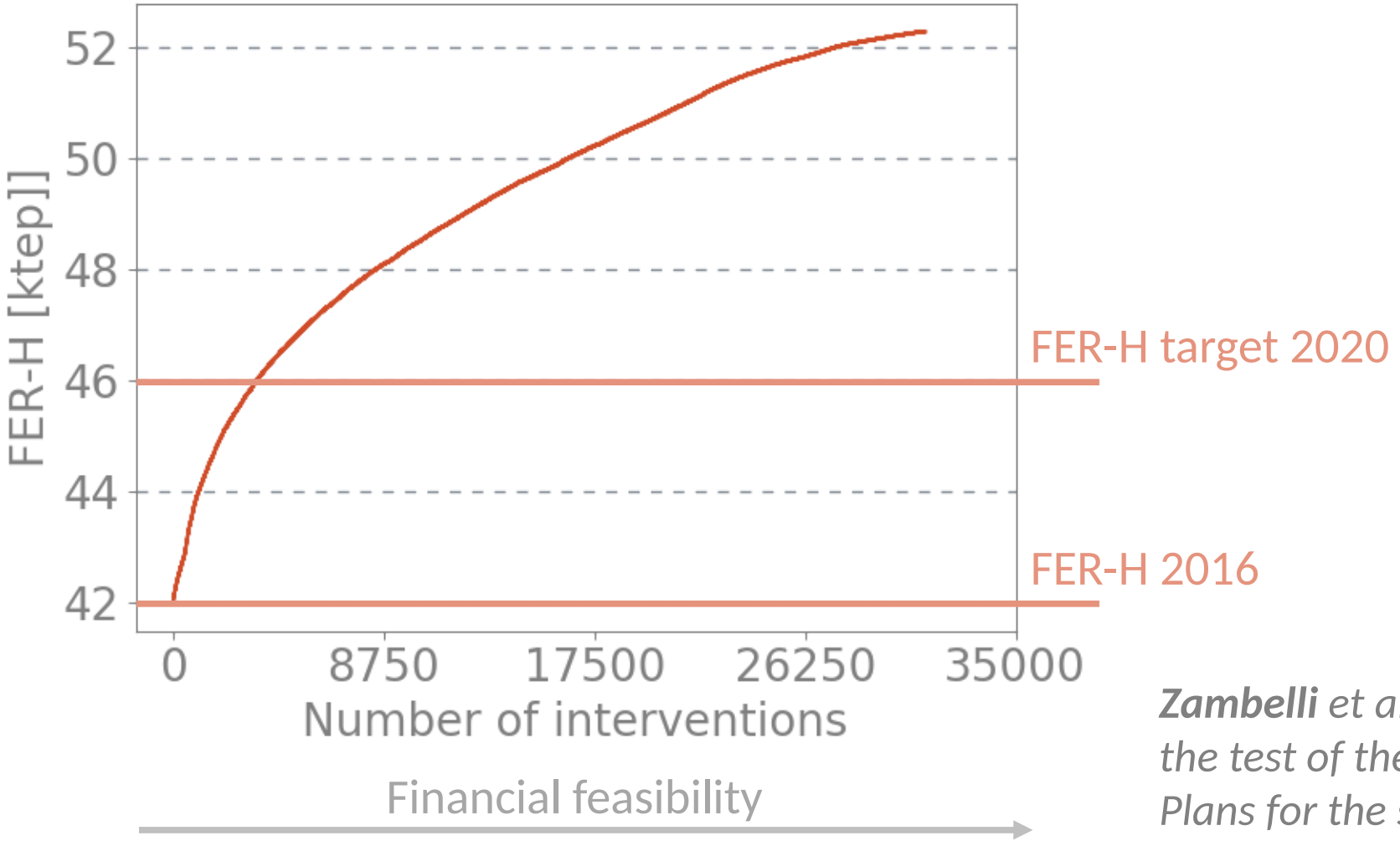

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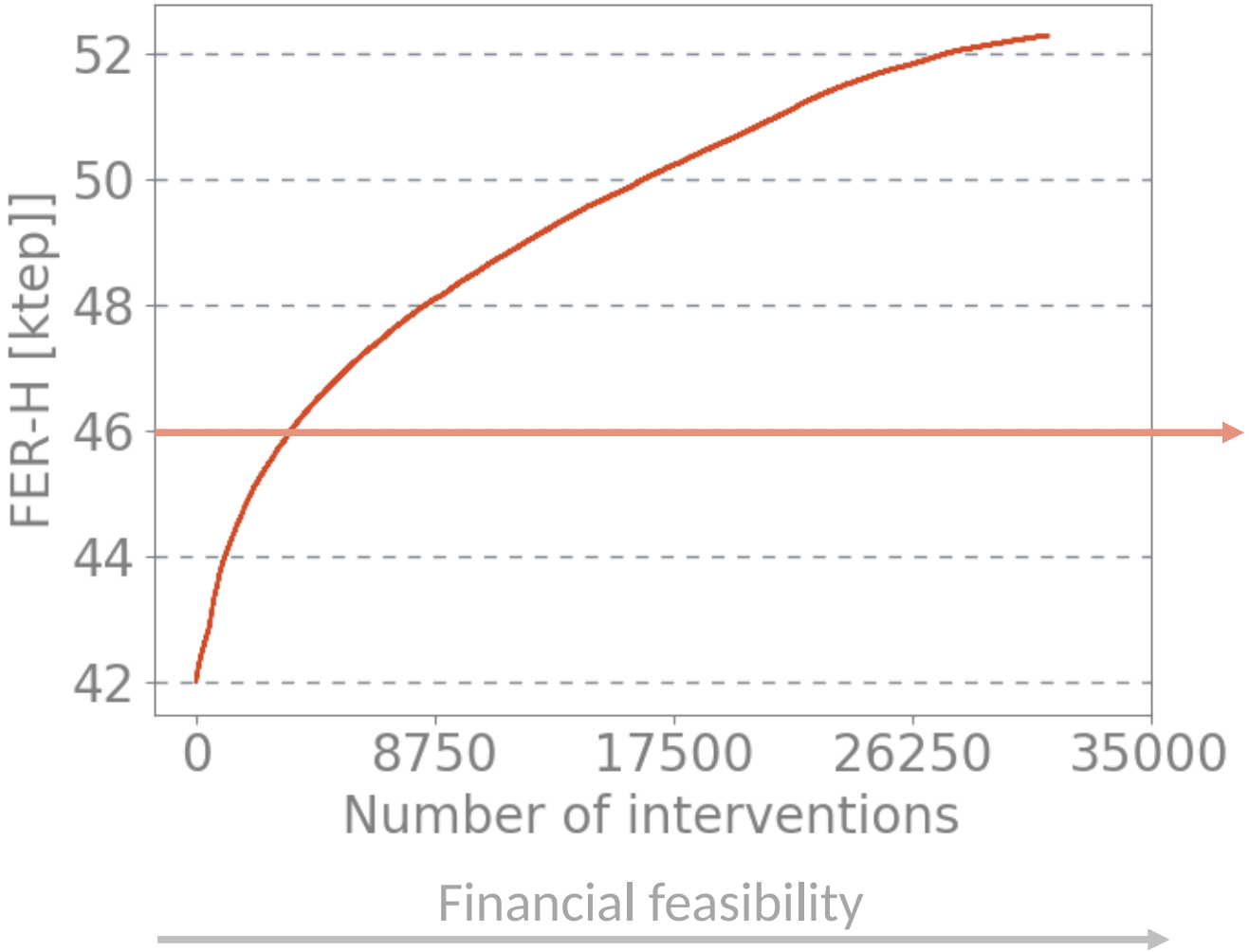

3500 interventions
(9% of total buildings)
560 m^{-2} of heated surface
Construction period 1971-1980

97’000’000 € investment cost
27’700 € per intervention
32€ m^{-2} of heated surface

97 ton of CO2 saved

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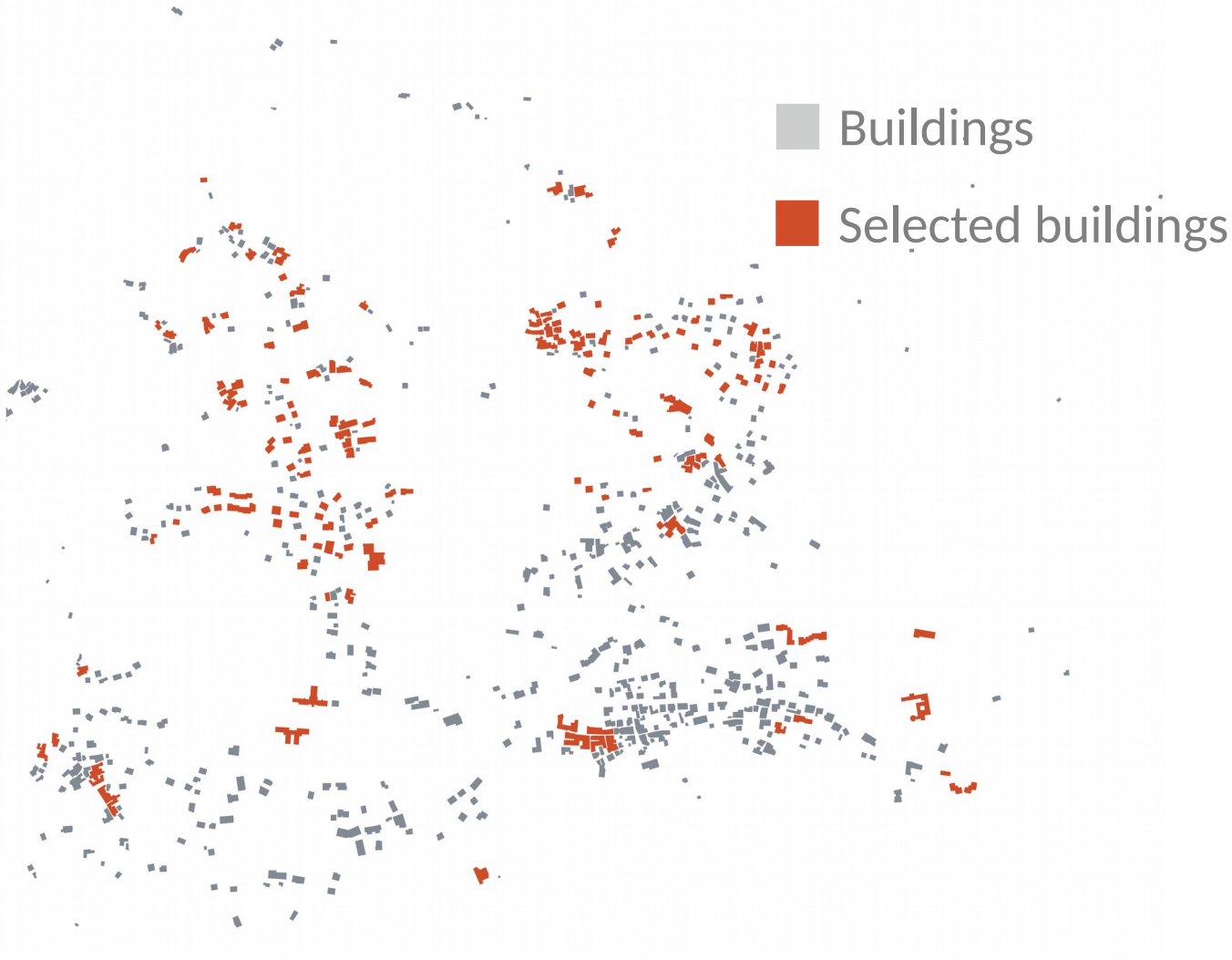

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Conclusions

A spatial explicit approach allows:

- Integration of socio-economic information to highlight **possible conflicts** and to better **address policies**
- Increase the effectiveness of energy strategies and plans for achieving targets

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- Integration of socio-economic information to highlight **possible conflicts** and to better **address policies**
- Increase the effectiveness of energy strategies and plans for achieving targets

1. Several measures and technologies (RES, heat pumps, building renovation, …)
2. Energy system analysis
3. Application to SECAP at municipal level
4. Providing spatial evidences for decision-makers

THANK YOU FOR THE ATTENTION!

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