

Reduction of living space consumption as necessity for reaching energy targets

Potentials, Barriers, Policies

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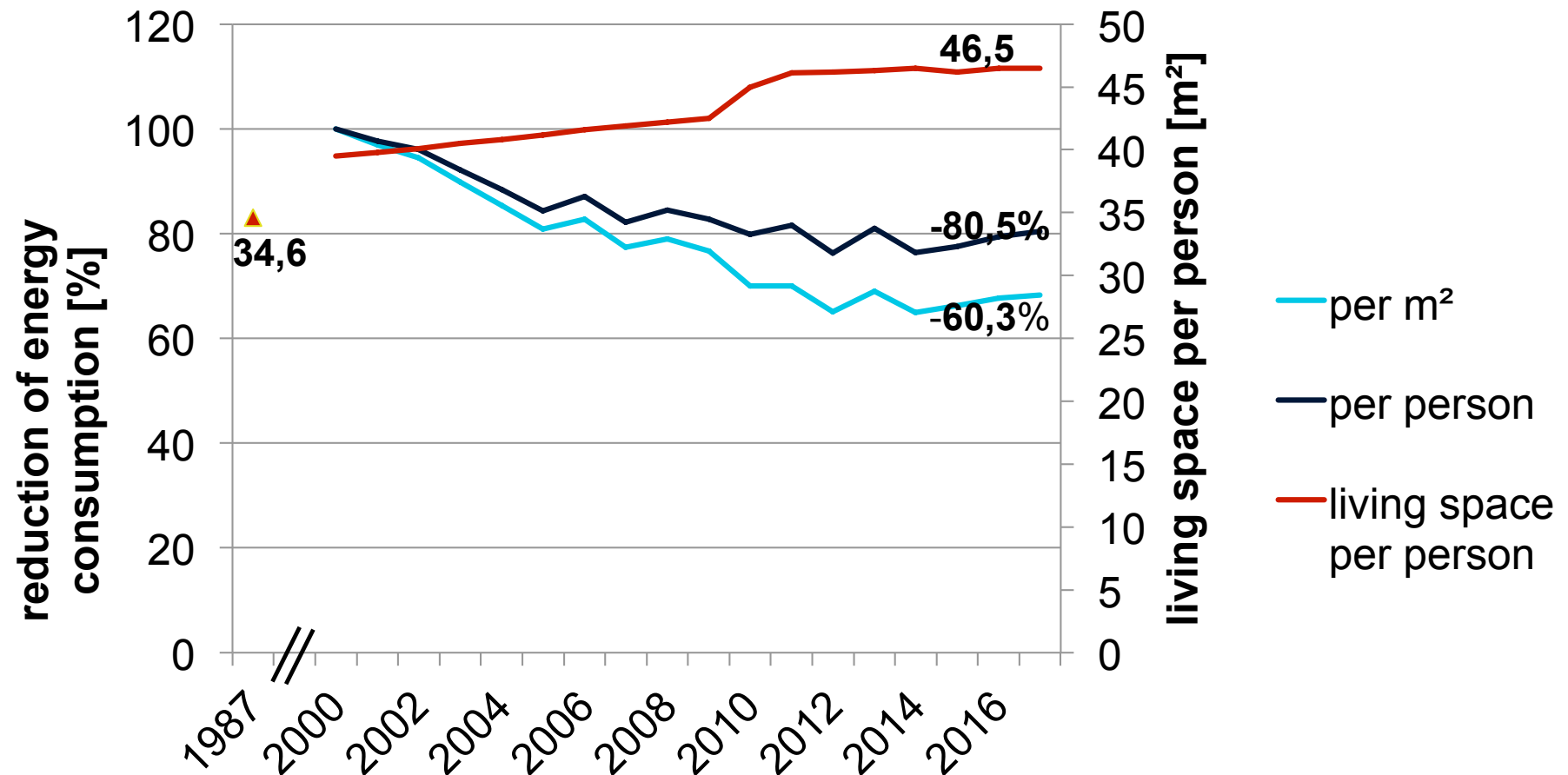


Project targets

- Creation of a knowledge base for the inclusion of sufficiency measures in energy saving policy
- Delivering numbers for the mitigation potentials of a reduced living space per person
- Raising awareness among decision-makers
- start and intensify, respectively, political process

Introduction:

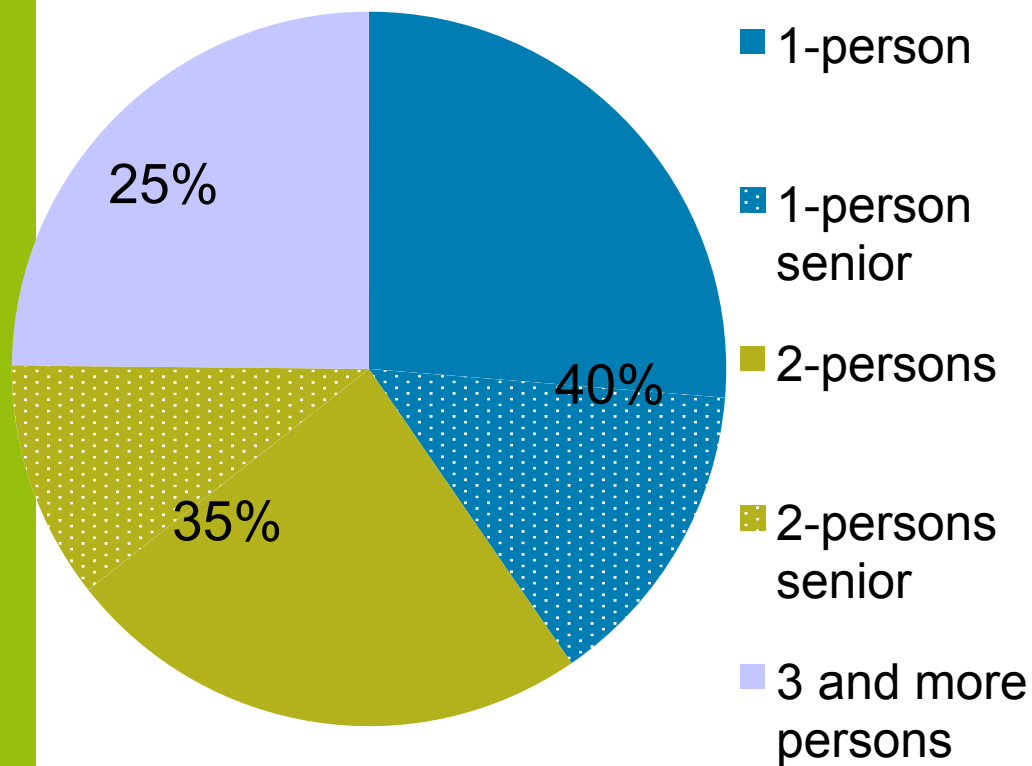
Living space per person and energy efficiency



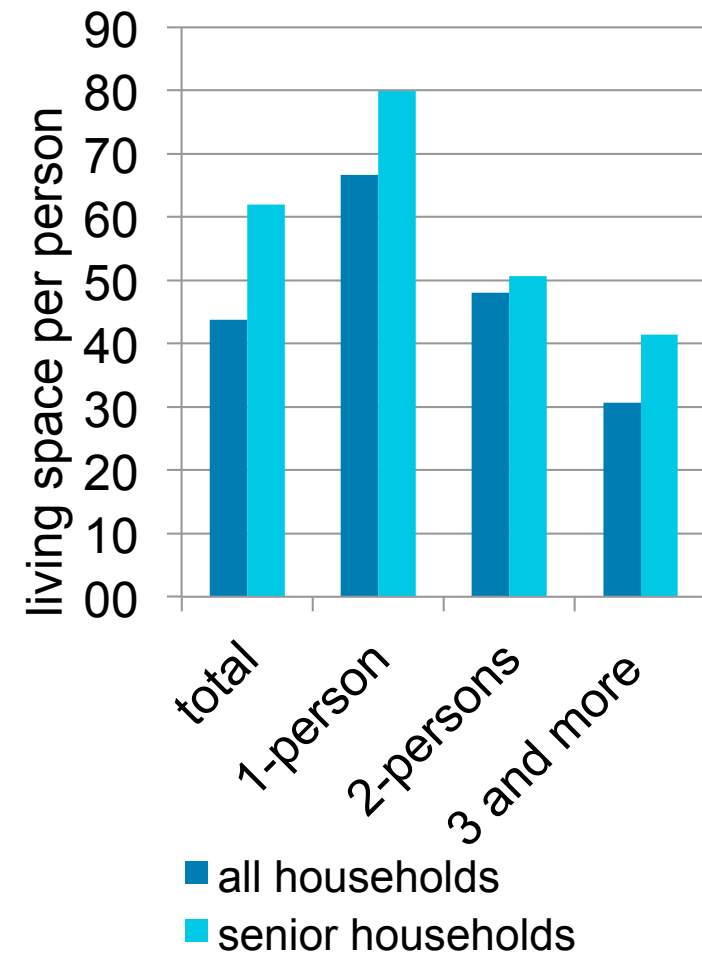
Introduction:

Living space and size of households

Number of households in Germany: 38.674 mill.



Living space per person:



Project steps

Target groups

- Target group selection according to defined criteria and characterization with IES 2013

Potentials

- Scenario calculations of the potential of the reduction of energy consumption through the reduction of living space pp, target yr. 2030

Barriers

- Literature analysis, expert interviews

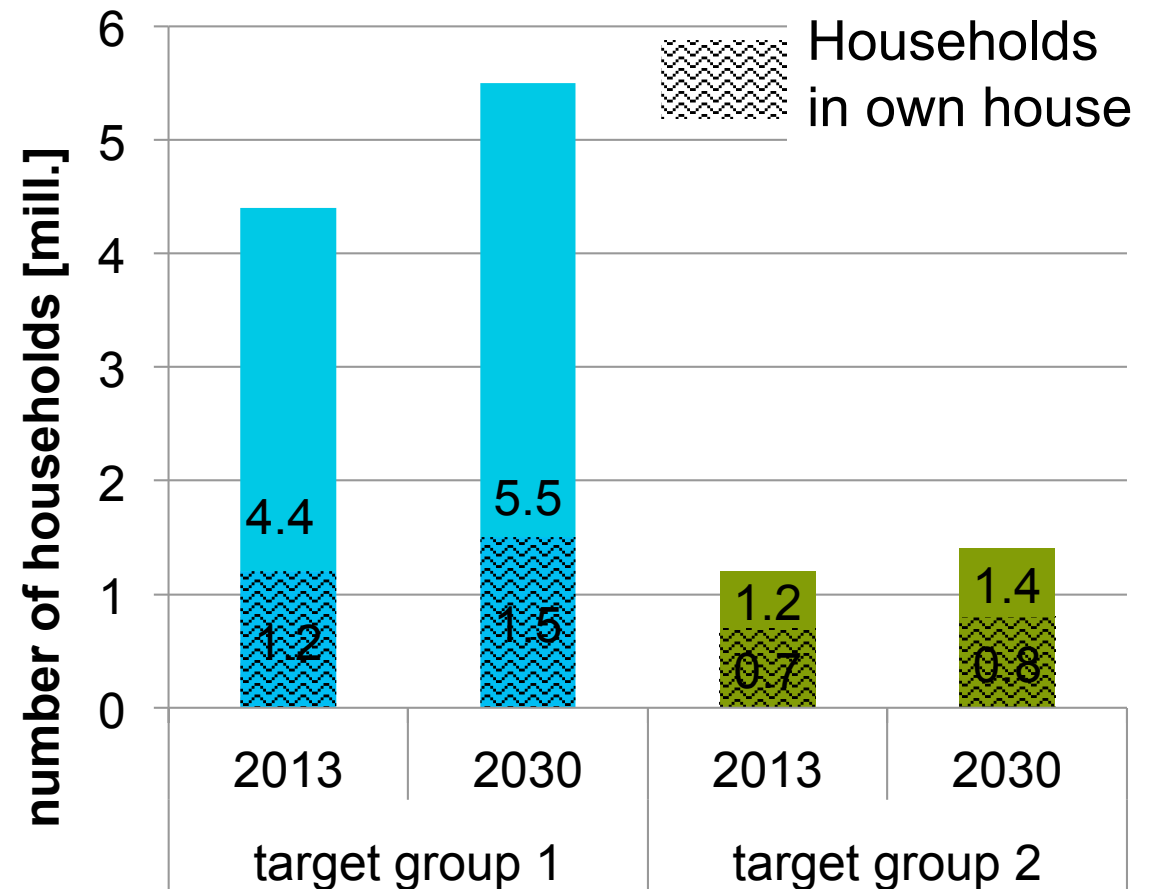
Instruments

- Selection/design of policy instruments, assessment of reduction contributions and distribution effects

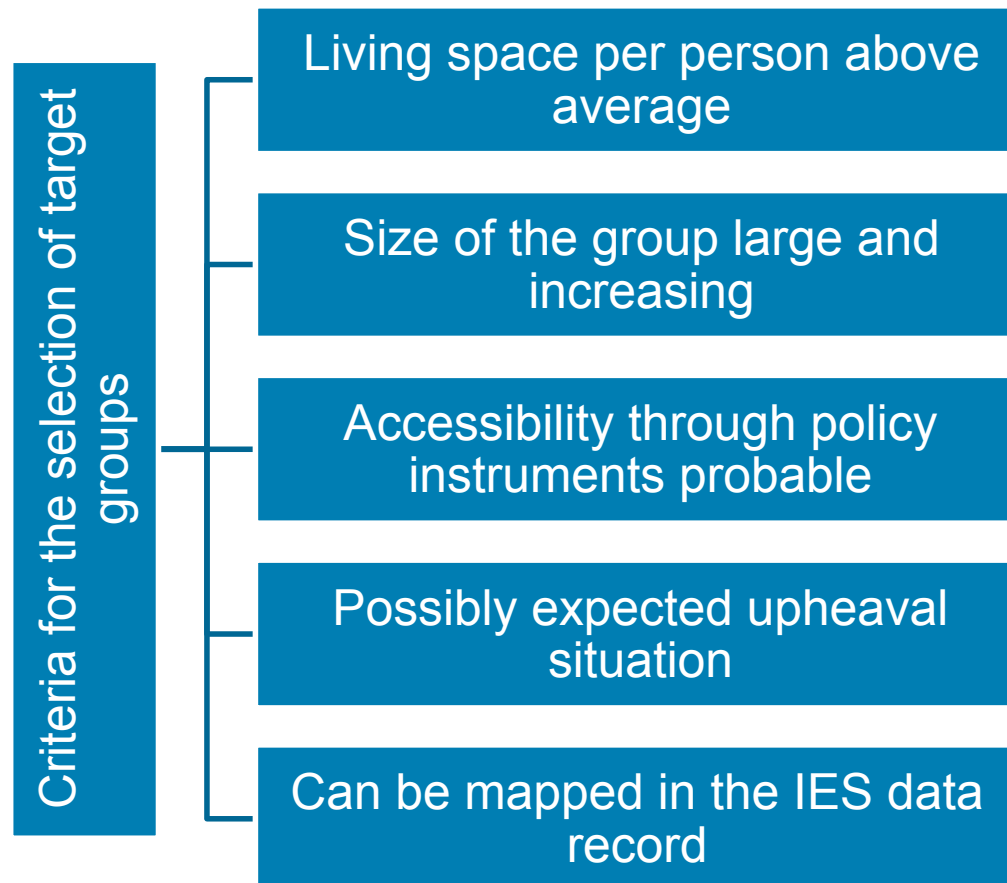
Selected target groups

- Target group 1:**
 „seniors with large living space“ per person (>65 yrs.)
- Target group 2:**
 „Soon to be retired“ with large living space per person (60-65 yrs.)
- „large living space“ is defined >80m² for single-person-households and more than 100m² for 2-person-households

Size of the target groups:



Selected target groups



- **Target group 1:**
mean living space
per person: 82 m²
- **Target group 2:**
mean living space
per person: 78 m²
- Up to 50% of senior
citizens consider
their living space to
be a little too large or
much too large*

Scenarios

- **Key question:** What influence does the development of living space per person in certain target groups have on energy consumption and emissions?
- Three scenarios have been calculated (target year 2030):

Reference: further
growth of living space
pp

Per capita living
space growth
according to the
German Projection
Report: 0.56% to
0.65% annually

Scenario 1: slight
decrease of living
space pp

Decrease in per
capita living space
by 0.5% annually

Scenario 2: significant
decline of living space
pp

Decrease in per
capita living space
by 3% annually

Scenarios - Results

	Reduction of energy consumption 2030		Reduction of emissions 2030	
	TWh/a		mill. t/a CO ₂	
	Scenario 1	Scenario 2	Scenario 1	Scenario 2
Target group 1	13,725	38,734	3.25	9.18
Target group 2	4,587	14,162	1.05	3.25
Total	18,312 (-13% compared to reference)	52,896 (-38% compared to reference)	4.30 (-13%)	12.43 (-38%)

Selected barriers and chances of the target group

Psychological barriers

- the emotional attachment to the house or apartment
- the wish to stay in the familiar environment, in the familiar quarter,
- the wish to keep guest rooms available,
- the fact that a move is a major upheaval

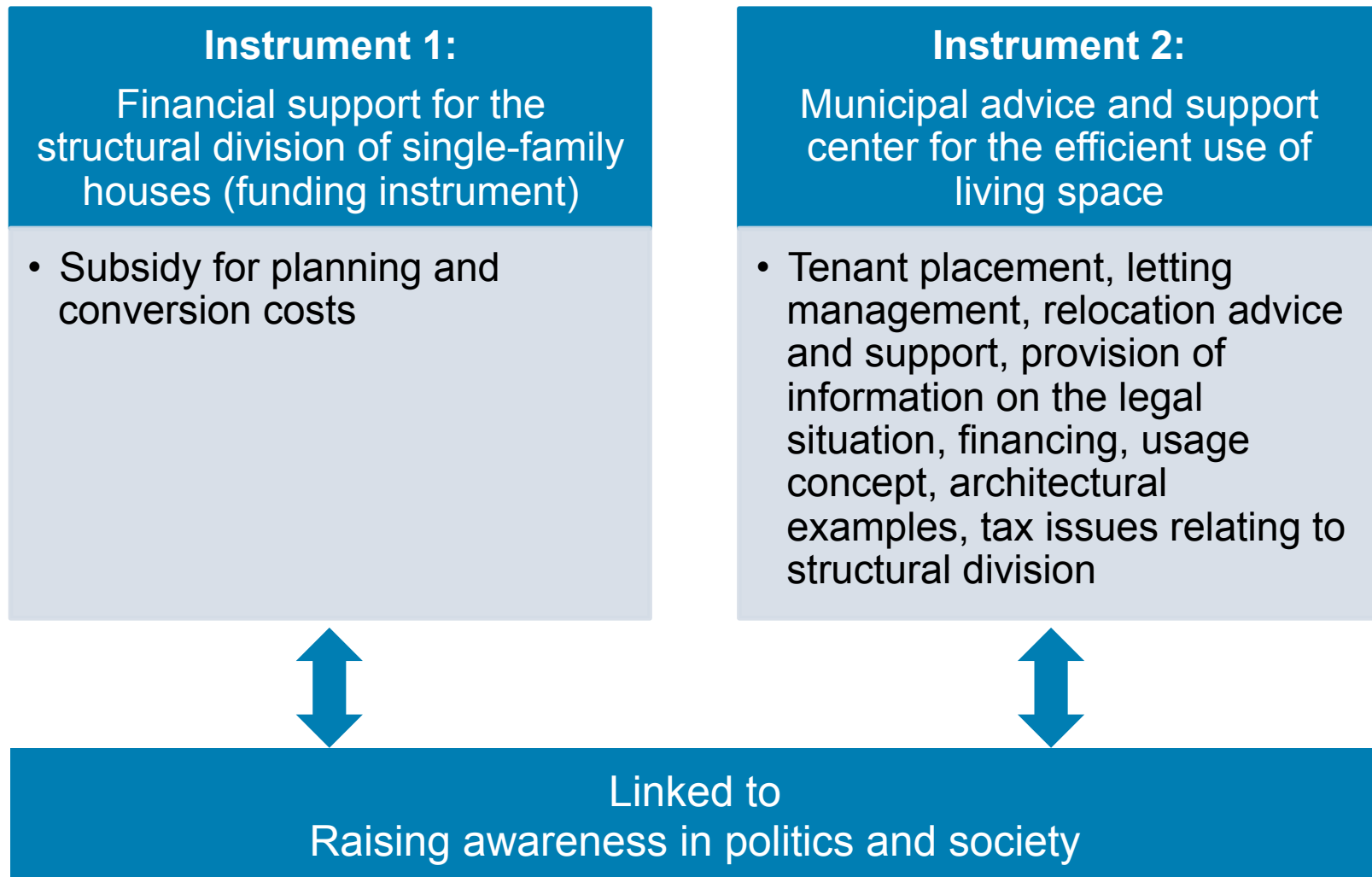
Infrastructural and monetary barriers

- the high expenses / transaction costs,
- the missing alternative for moving (**no smaller alternative apartments available**) or a smaller apartment is more expensive.

Chances

- reduced maintenance costs / lower incidental expenses,
- the generating of rental income (if applicable),
- **the move to a modern, barrier-free apartment,**
- the move to a quarter with a better infrastructure or to the town centre, and
- no longer having to live alone.

Developed policy instruments



Policy Instruments:

Mitigation effects - Results of impact assessment

Assumptions:

- 0,1 to 1 % of the target group below 80 yrs. in regions with high housing demand implement the measure yearly
- They reduce living space by 25% to 50%

	Structural division of single-family houses	Municipal advice and support center
contribution to reduction of energy consumption in 2030	1,287 to 2,772 GWh/a	1,163 to 3,261 GWh/a
contribution to emission reduction in 2030	0.33 to 0.66 mill. t CO ₂ e	0.26 to 0.73 mill t CO ₂ e

- 5% to 33% of the mitigation potential can be realised by the instruments, depending on the scenario and conversion rate

Policy Instruments:

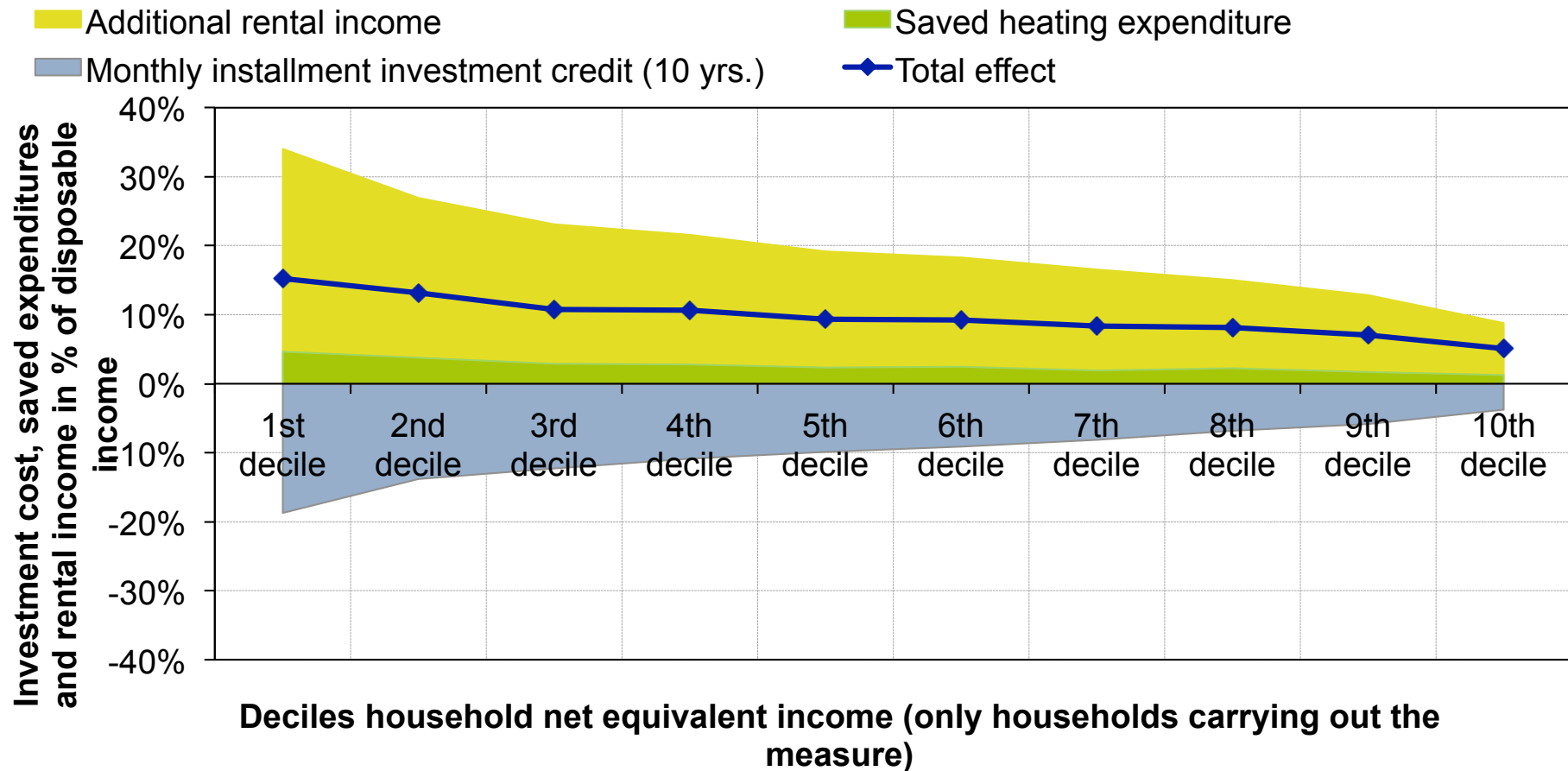
Economic and distributional effects

Instrument Set for the structural division of single family houses

- Implementing households are divided into ten equal income groups (deciles) to show the effects according to the income
- The implementing household
 - saves an average of 1,000 kWh of heating energy per month
 - generates an additional rental income (8€/m²)
 - must bear investment costs (35 k€, repayment period ten years, 0.75% interest rate)

Policy Instruments: Distribution effects

Instrument Set for the structural division of single family houses



Conclusion

- Mitigation potential of reduced living space per person is enormous
- Many obstacles and restrictions, both in the behaviour and the wishes of the target groups as well as infrastructural restrictions
- What is needed is a policy mix that supports the interested share of target groups in reducing their living space.
- Current range of instruments promotes increase in per capita living space: KfW support for construction EFH, construction child benefit, programmes for living in old age

Your contact

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Thank you very
much for your
attention!