Almost best friends: sufficiency and efficiency

Can sufficiency maximise efficiency gains in buildings?



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panel 1: Foundation of future energy policy

What is sufficiency?
Neither too much nor not enough

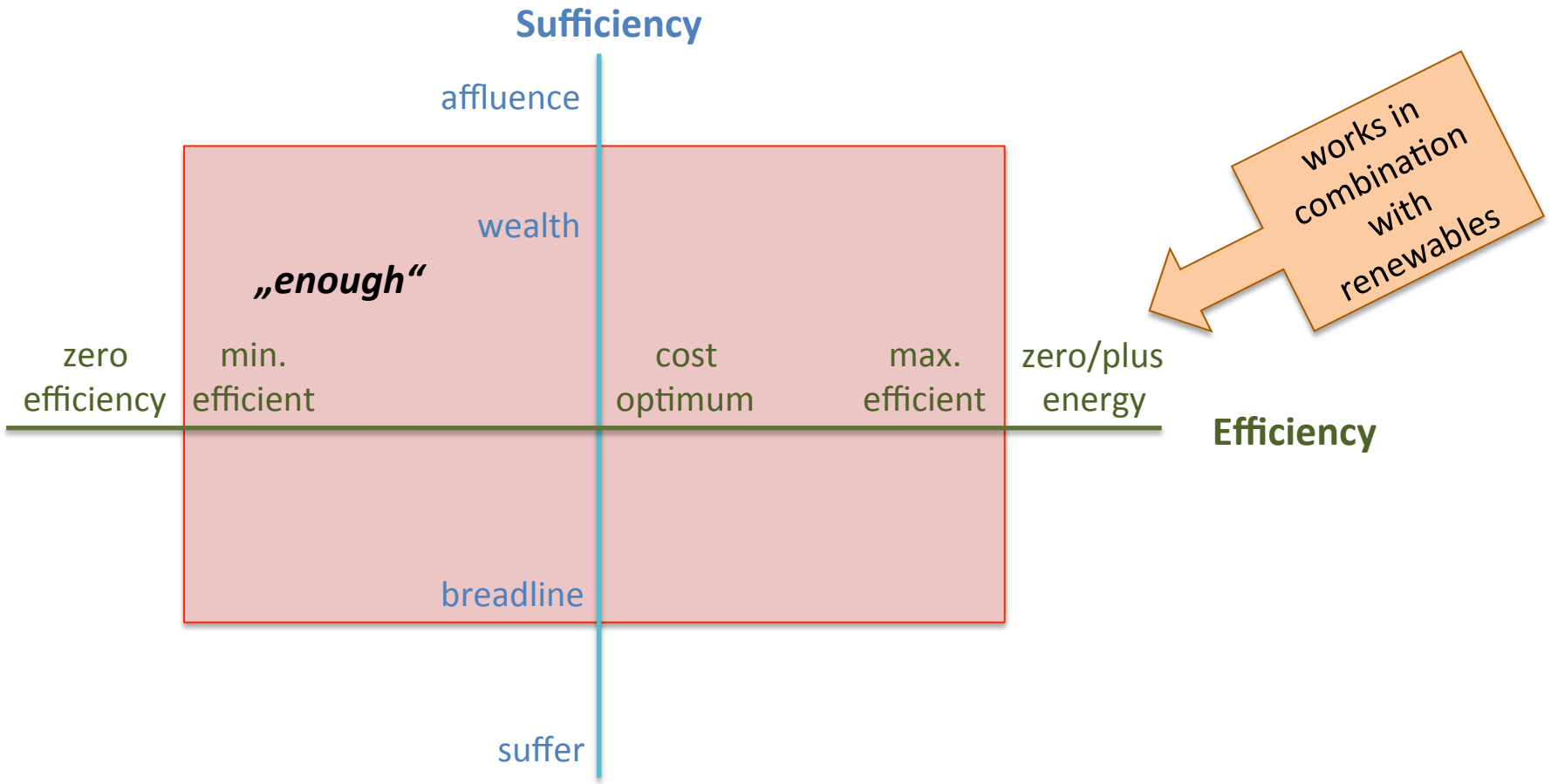
- "[Sufficiency] … is not … boiling only the amount of water needed for the cup of coffee … [but] doing without the cup of coffee …" (Alcott 2007).

- If the sum of the very distinct needs and wants of people exceeds natural capacities politics have to introduce caps and absolute limits.

- Sufficiency is not the opponent of efficiency.

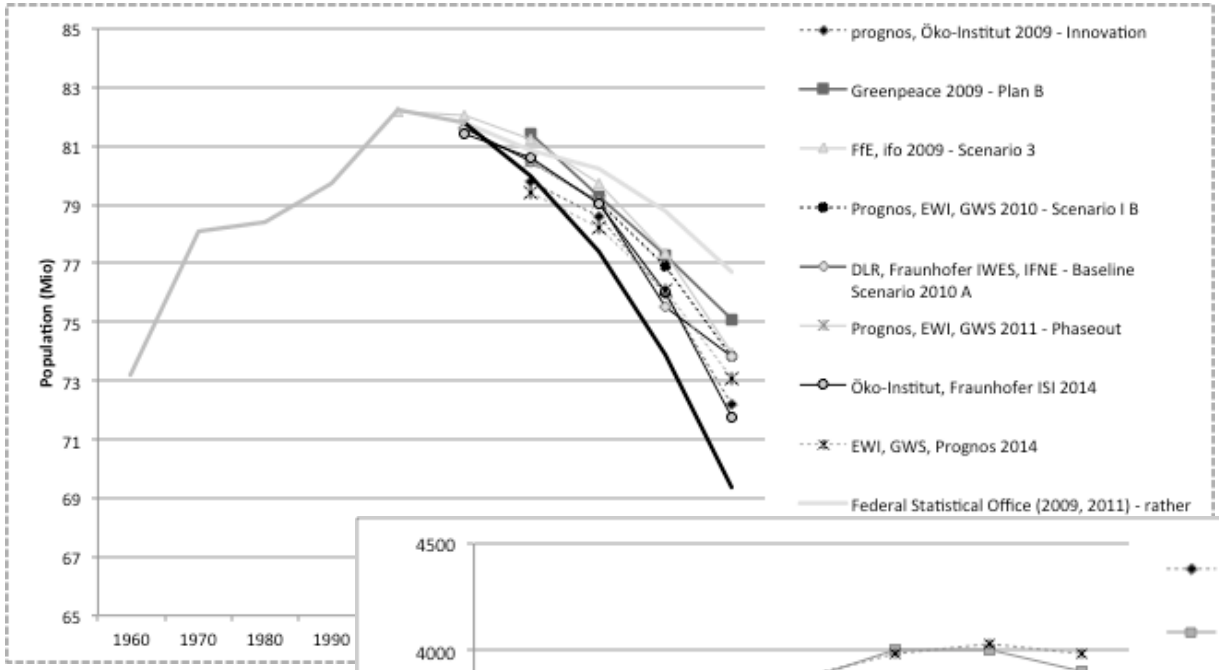
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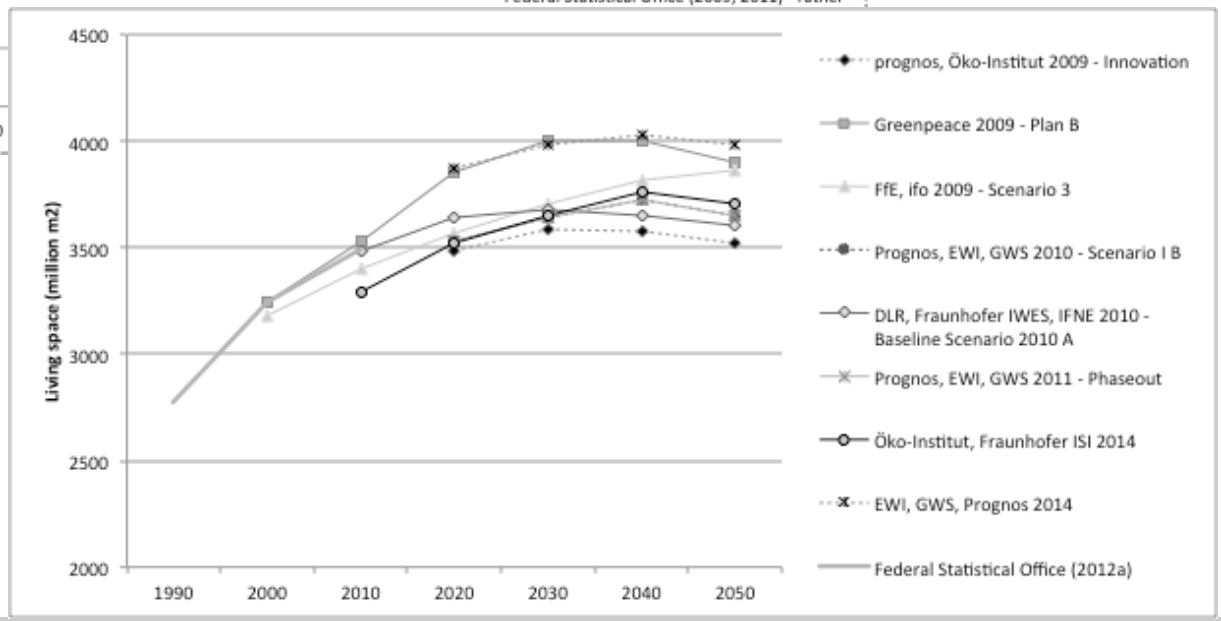
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Why sufficiency?

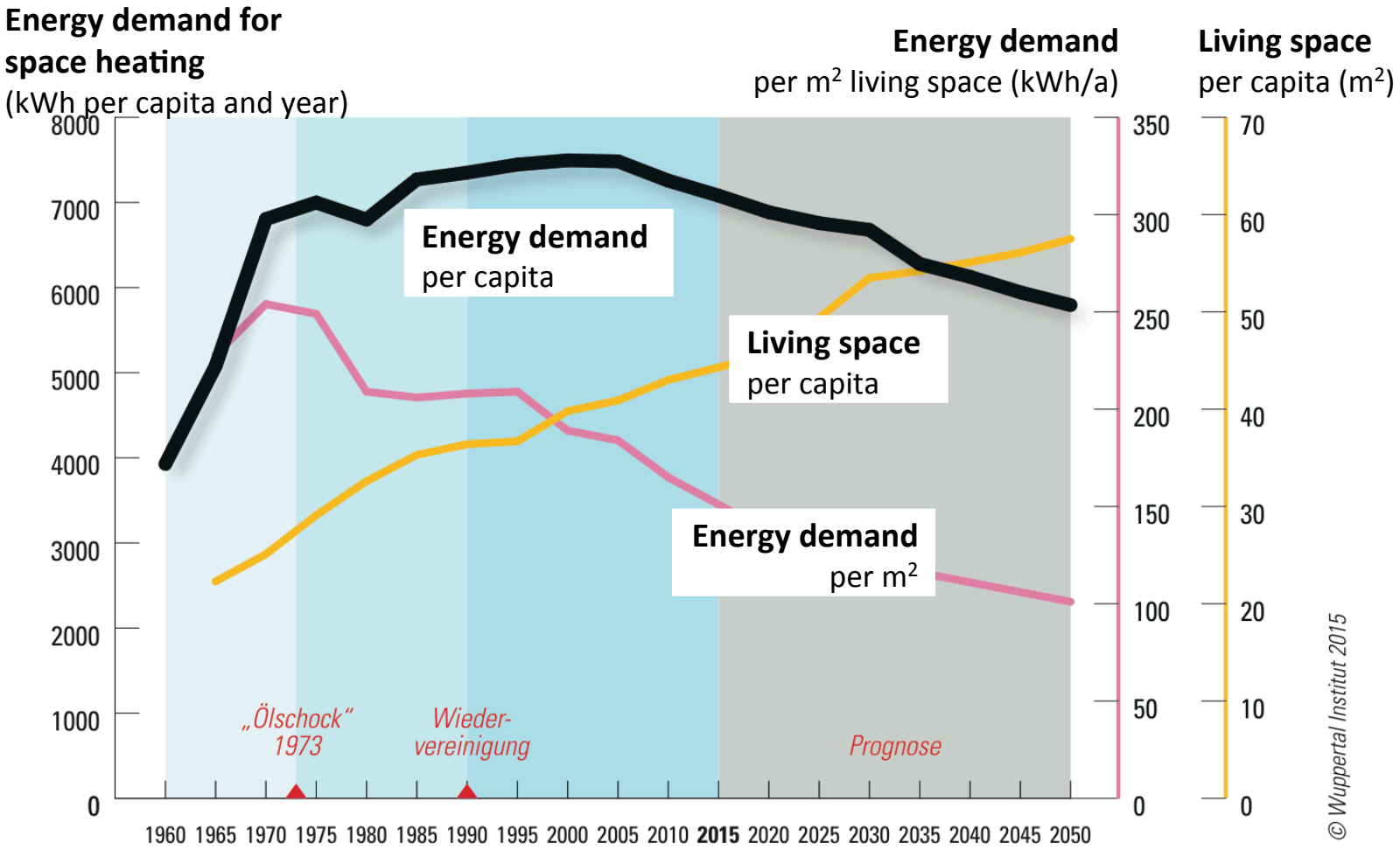
More space for fewer people





Why sufficiency?

Growing living space beats efficiency gains



Why sufficiency?
Average living space in Europe

Average useful floor area per dwelling and per person in comparison:

	Luxemburg	Denmark	Germany	Romania
living space per dwelling	133.5 m^2	114.4 m^2	86.4 m^2	38.7 m^2
rooms per dwelling	4.5	3.5	4.4	2.6
persons per household	2.5	2.2	2.0	2.9
living space per person	66.3 m^2	51.4 m^2	42.2 m^2	15.0 m^2

Source: European Topic Centre on Sustainable Consumption and Production (2013): Housing assessment. Final Report. Copenhagen.

Why sufficiency?
Drivers of growing floor space

- bigger dwellings (new buildings)
- more detached houses (are bigger than flats in apartment buildings)
- shrinking size of households (use more space per person)
- more owners (occupy more space per person than those in rented flats)
- aging effect (older households use more living space than young ones)
- cohort effect (households today)
- ‘empty nest’ (elderly people remaining after children’s move-out)

Average living space per household in Germany with regard to the age of the household’s principal earner:

	18-25	25-35	35-45	45-55	55-65	65-70	70-80	80+
living space per household (m^2)	56.5	76.1	100.3	99.8	96.5	92.1	93.4	89.7

Why sufficiency?
Implications of floor space increase

- **Land use** for living +9%, population: –2% (Germany, 2004 – 2013)

→ loss of soil

- **Urban sprawl on cities' outskirts**

→ costs for infrastructure (energy, roads, water, waste) and maintenance, rising service charges

→ loss of functions in city centres in shrinking regions

→ vacancies in city centres make renting, maintenance and energetic refurbishment difficult

- **Social effects**

→ property to rent as support for retirement is not profitable anymore

→ big flats or houses become a burden for housekeeping person with physical capacity decreasing

→ ***Rising interest in different forms of living***

→ ***Increasing number of building groups / co-operatives (private and public)***

Sufficiency in building and using
Concepts

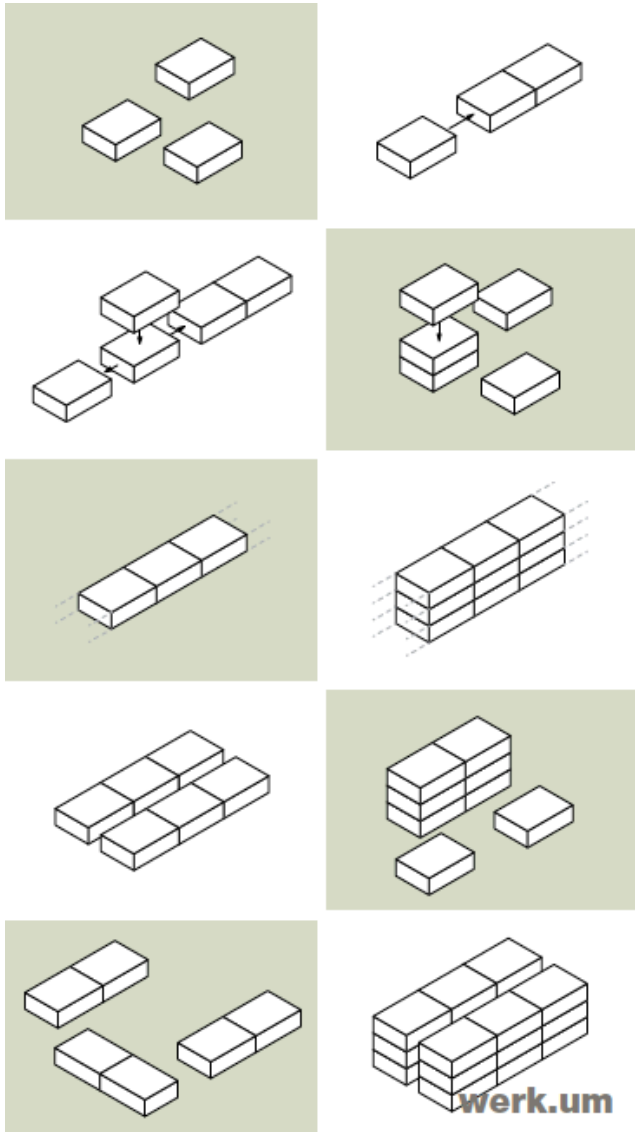
Classification for building design and user concepts that reduce floor space demand

Concept	Building design	Building use
Less	• Tiny Houses / caravan, container housing • Studio flat	• Organisation (home office) • Virtual rooms
Flexible	• Growing / shrinking floor space • Inner development • Multi-functional planning	• Multiple use • Reuse / change of use • temporary use
Shared	• Residential homes for special groups • Community areas / rooms	• Shared areas / rooms • Shared furniture

Sufficiency in building and using
Building flexibility

Beispiel: mobi.space





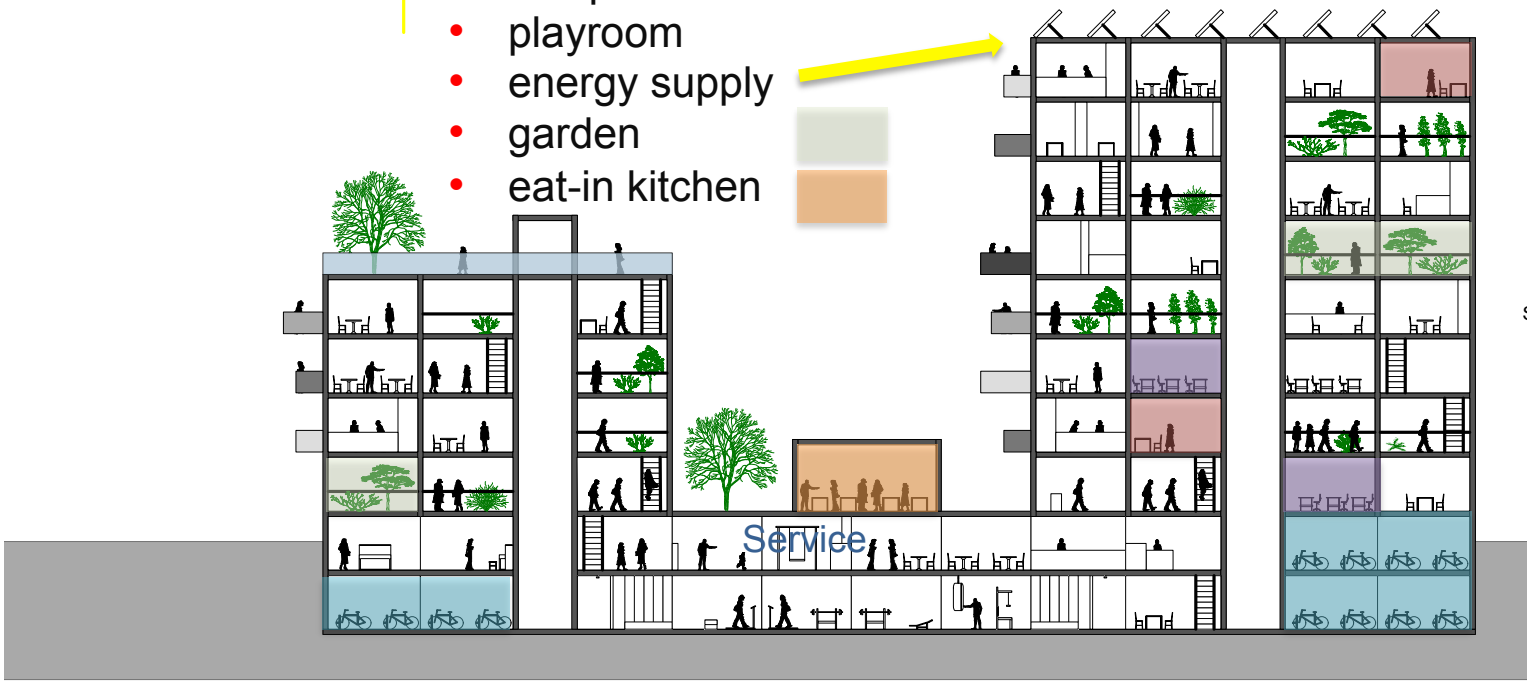
Source: Concept mobi.space, werk.um architects

Sufficiency in building and using

Building sharing

Possible shared areas and use:

- guest room
- work space
- garage
- laundry
- drying room
- party room
- computer
- playroom
- energy supply
- garden
- eat-in kitchen



Source: Concept Living Hub, werk.um architects

Sufficiency in building and using
Flexible use

Example: rooms and furniture

- eat-in kitchen
- workspace in bedroom
- guest living room
- ...



Sufficiency in building and using
Motivation for sufficiency

- **economic**
  - share costs
  - save costs
  - less space for same money
- **social and psychological**
  - isolation
  - safety
  - community
  - support
- **political, ideological, ecological, religious, ethical**
- **challenge, adventure, self-experiment**

Who are these people?
How many of them are out there?
And how can they be supported?

Sufficiency in building and using
Politics and policies for sufficiency

politics & policy
- moratorium for living space
- land use planning
- vacancy detection
- maintenance obligation
- tax policy
- pilot projects
- competition for public building

science & research
- density: under-occupied and overcrowded
- social aspects
- psychological effect of built environment

support & information
- adapt building programmes to regional population development and vacancy rates
- temporary use
- inner development
- local supply

Can sufficiency maximise efficiency gains in buildings?

YES, it can!

Wuppertal Institute
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Thank you for your attention!



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