



CACTUS

STRENGTHENING CENTRAL AND EASTERN
EUROPEAN CLIMATE TARGETS THROUGH
ENERGY SUFFICIENCY



BERLIN
ENERGY
TRANSITION
DIALOGUE.22

ENERGY SUFFICIENCY : THE MISSING DRIVER ON THE WAY TO CARBON NEUTRALITY IN "CATCHING UP ECONOMIES"

Webinar - Friday, April 1st - 10:00 to 11:30



Supported by:



Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety



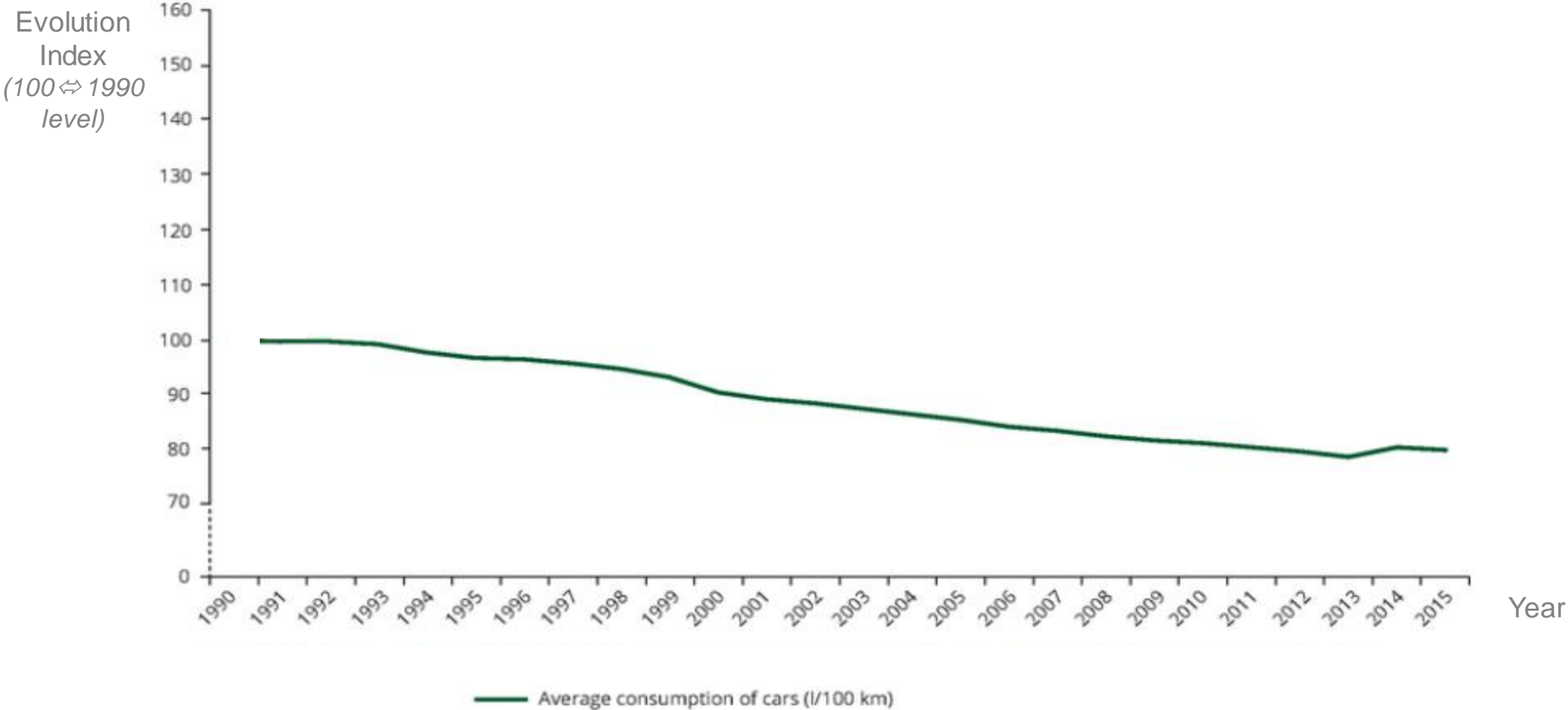
European
Climate Initiative
EUKI

based on a decision of the German Bundestag

Welcome and agenda

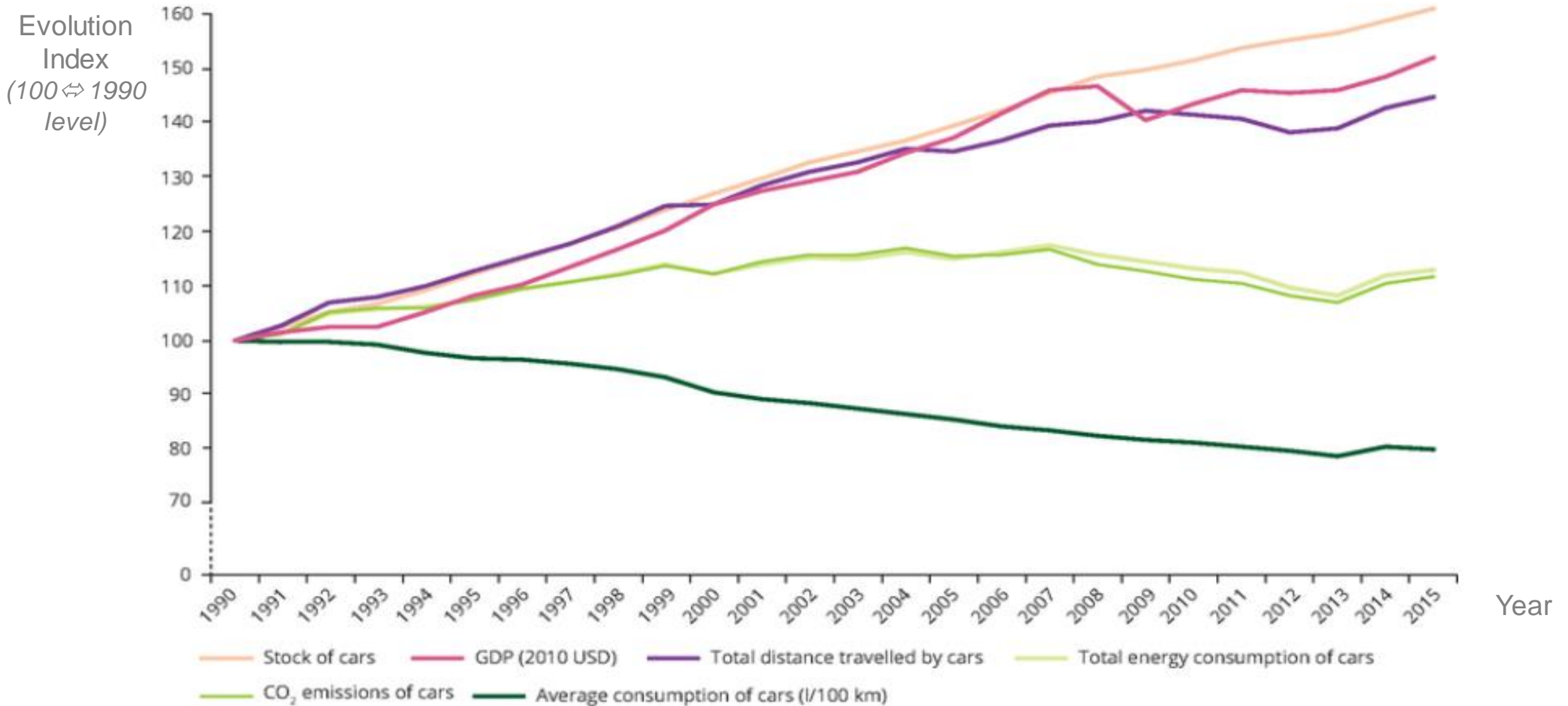
Stéphane Bourgeois, négaWatt

EU mobility trends 1990-2015



Source: EU 1990-2015 European Environmental Agency 2019

EU mobility trends 1990-2015



Source: EU 1990-2015 European Environmental Agency 2019

The **lack of sufficiency policies** in the EU transport ⇔ **neutralises** the success of **energy efficiency policies**

Agenda

10:00

Welcome and agenda

Stéphane Bourgeois, European relations and policies manager, Association négaWatt, France

10:05

Introducing energy sufficiency and the need for sufficiency modelling

Yves Marignac, Head of analysis, Association négaWatt, France

10:15

The potential for sufficiency in catching-up economies – examples from the buildings and transport sectors in Hungary and Lithuania

Mária Bartek-Lesi, Senior research associate, REKK Foundation, Hungary

Inga Konstantinaviciute, Chief research associate, Lithuanian Energy Institute, Lithuania

10:35

An insight into sufficiency policies and good practice examples and instruments from Germany

Mahsa Bagheri, Research associate, Fraunhofer ISI, Germany

10:45

The need for sufficiency policies in the international context – comments and viewpoint from an IPCC lead author perspective

Yamina Saheb, Lead Author UN IPCC WGIII report on climate mitigation

11:05

Open Q&A session

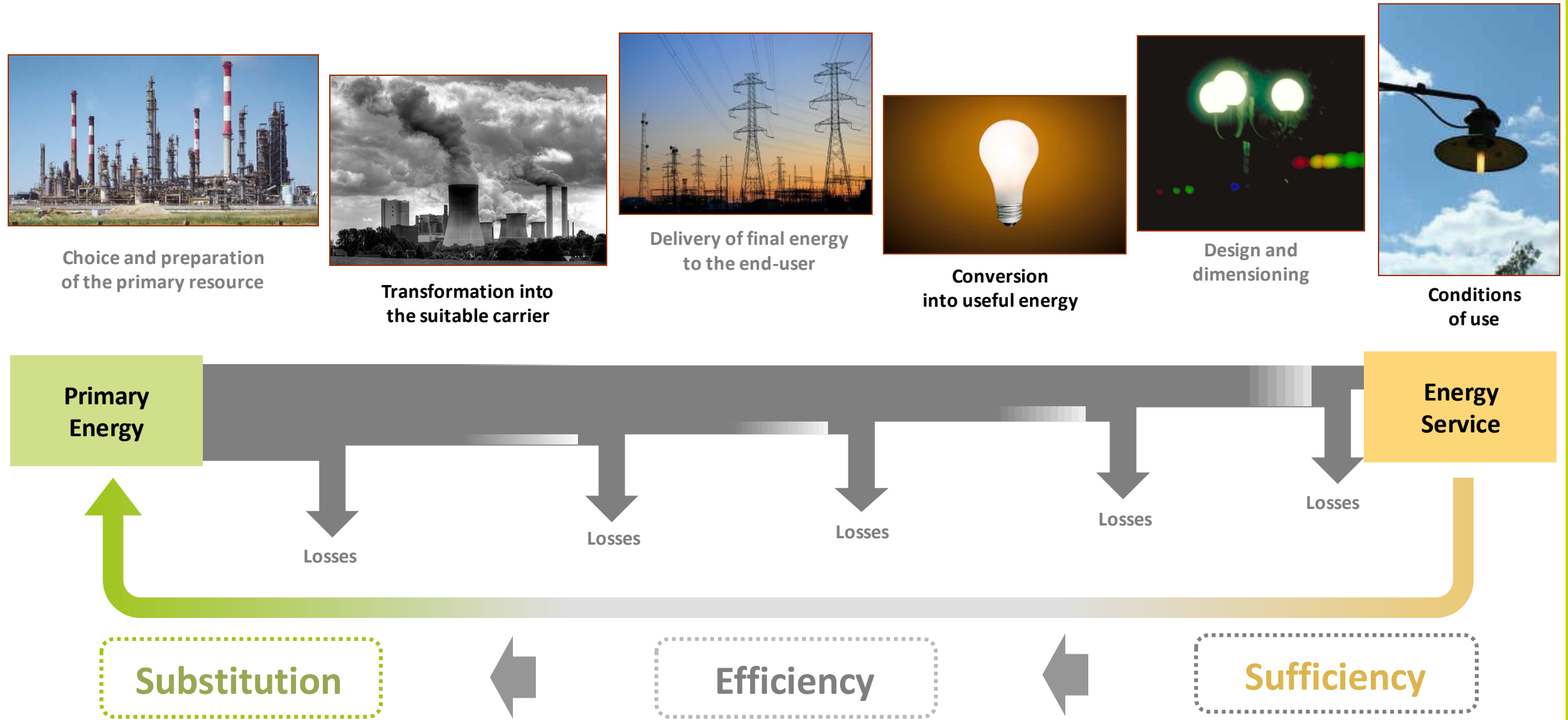
11:25

Conclusion: what prospects for sufficiency in Europe and beyond?

1. Introducing energy sufficiency and the need for sufficiency modelling

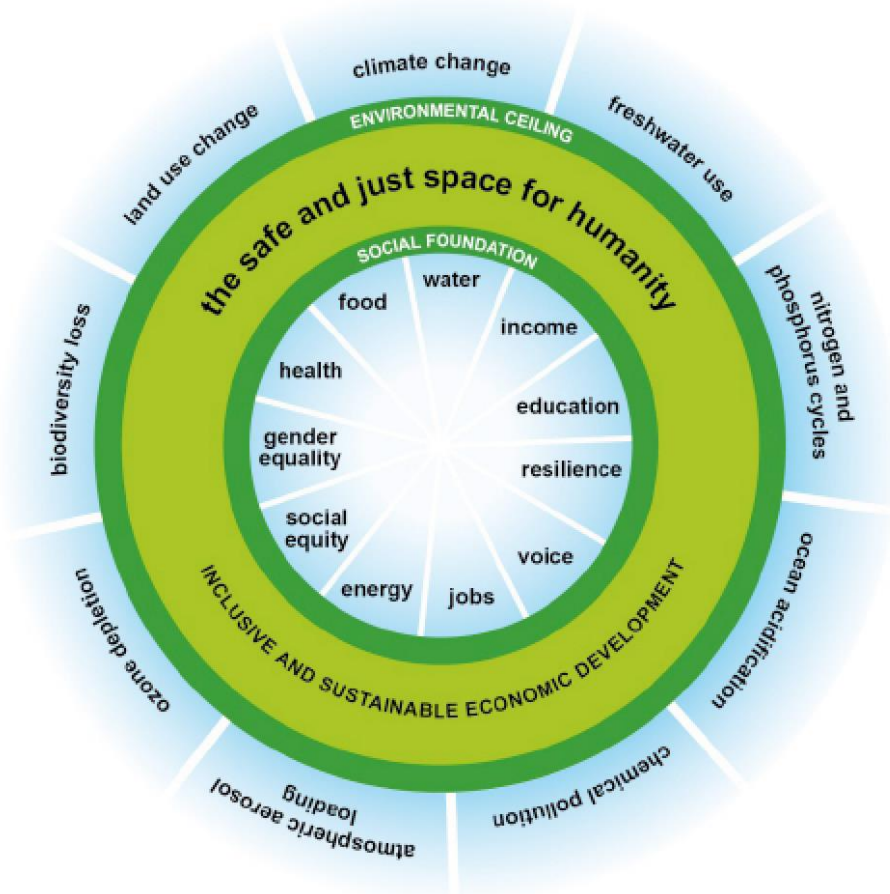
Yves Marignac, negaWatt

Sufficiency at the start of a systemic approach



Sufficiency as part of an equity and sustainability framework

The “doughnut economy” concept
(Raworth et al.)



Bringing **individual services**
between two boundaries:

► A **ceiling** of sound collective levels:
the ecological limits beyond which living
conditions are threatened

► A **foundation** of decent live levels:
the social minimums below which life in
society is degraded

■ Moderate global consumption
while reinforcing solidarity and redistribution

Energy sufficiency

Energy sufficiency aims at fulfilling everyone's need for energy services while adjusting their nature and amount in order to keep energy demand at a level which does not endanger the carrying capacity of the earth.



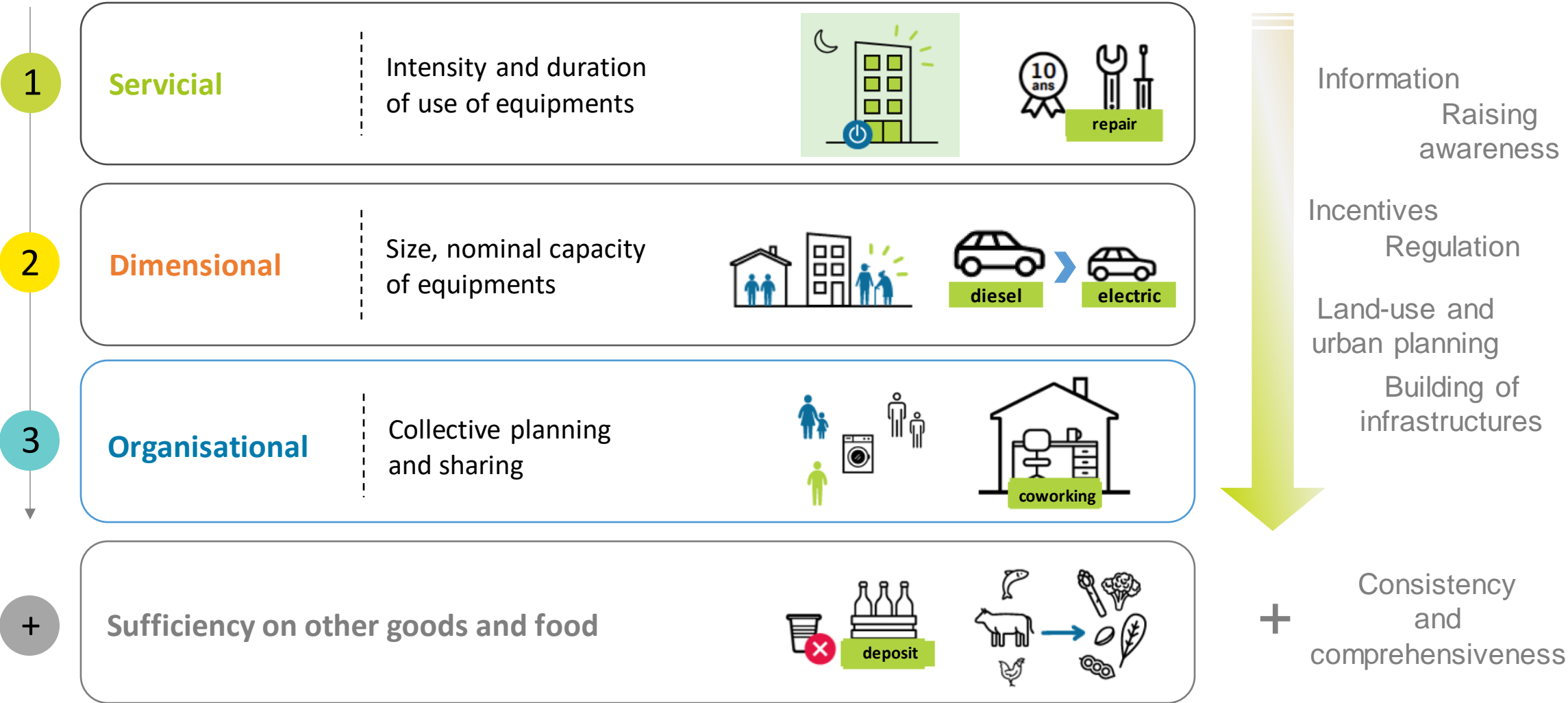
Credit: wfeiden

Energy services – individual and collective choices

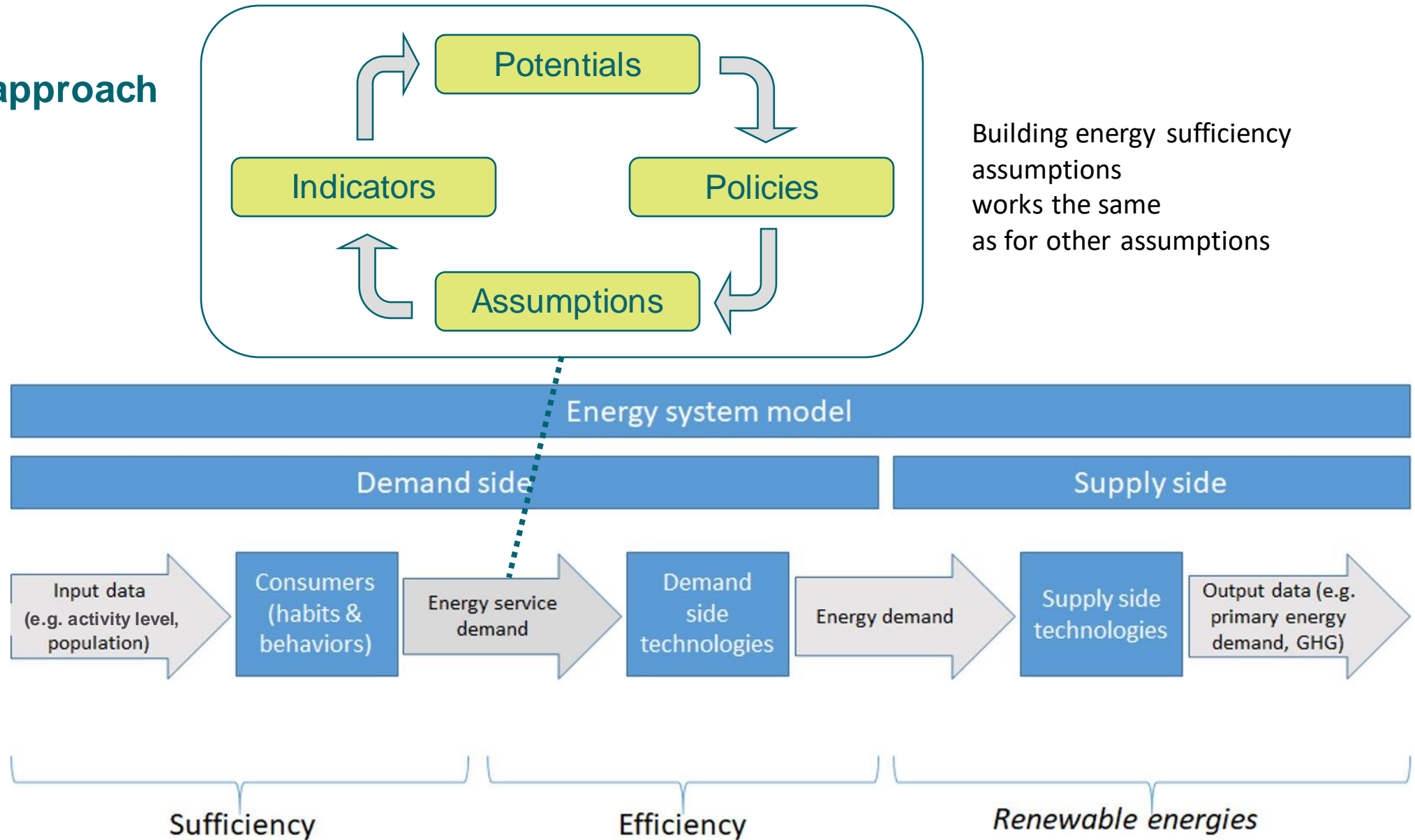
Energy services can be characterised and discussed ... policies and measures could regulate their level



Sufficiency leverages



Modelling approach



The impact of sufficiency in the négaWatt scenario 2022 for France

2022-2050

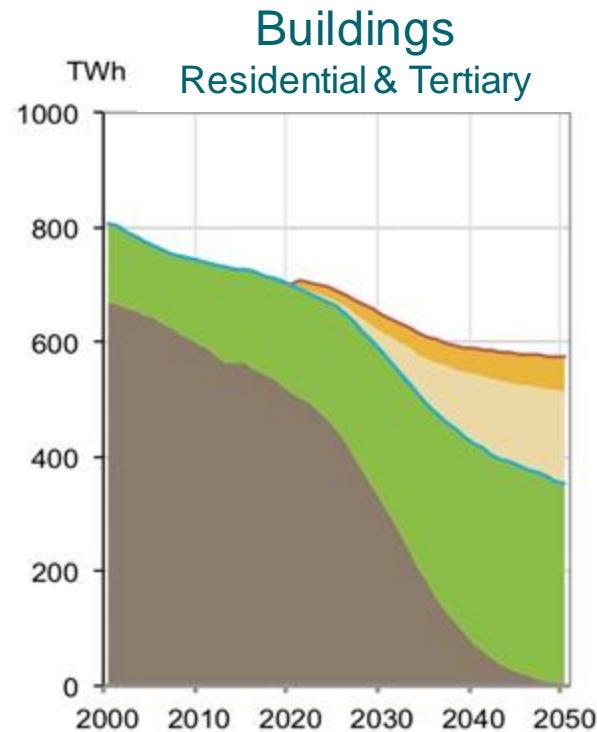
Sufficiency

- accounts for
~ 20%
drop in **demand**
(final energy)

out of 53% in total

- contributes to meeting
net-zero carbon footprint

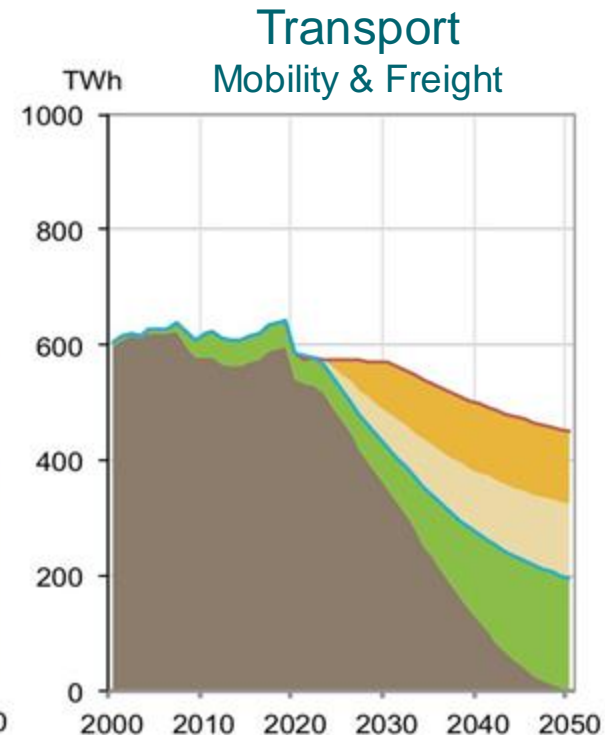
- also contributes to
strongly reducing
**net primary materials
footprint**



Final energy:

— Trend

— nW scenario 2022



Demand reduction:

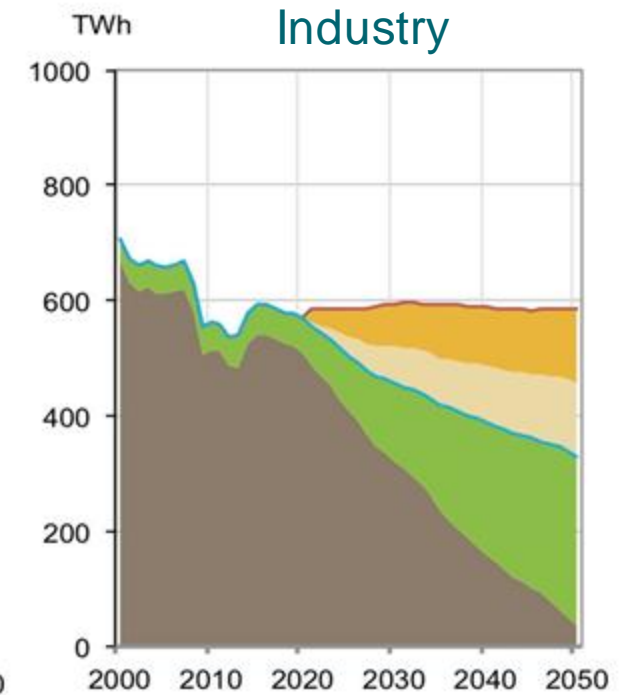
■ Sufficiency

■ Efficiency

Energy supply:

■ Renewables

■ Fossil fuels + Nuclear



Sufficiency as a key enabler

Reduced
amount
of resources



Reduced
size / number
of equipment



Pace / range
of energy
substitution

Positive co-benefits



Raw
materials



Land-use



Water
resources



Health

...



Environmental
and health
impacts

POSSIBLE SHOCKS



Occurrence
and size
of shocks

CHAINS OF CONSEQUENCES



Vulnerability
of the system
to shocks

MULTIPLE IMPACTS



Sensitivity
of residual
effects



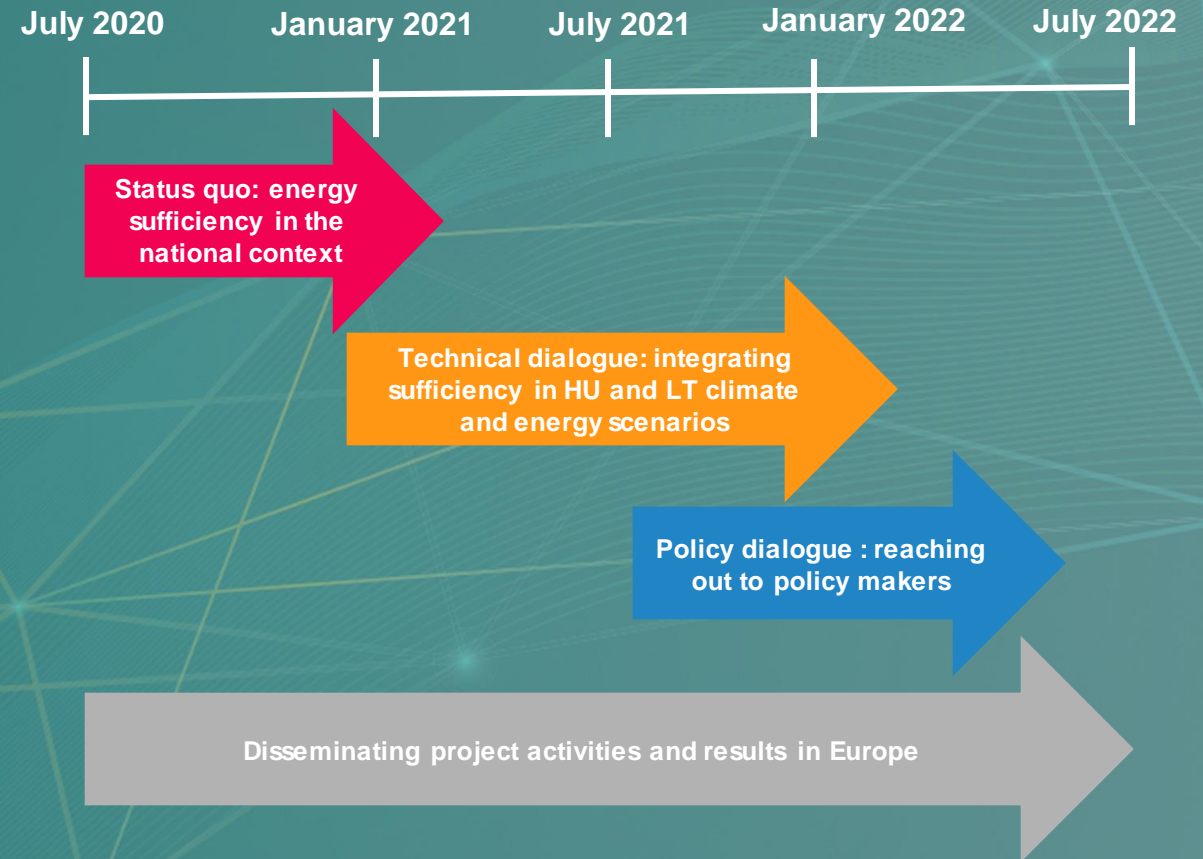
Socio-economic
resilience

CACTUS : **energy sufficiency** and its integration into climate and energy strategies in the Central and Eastern European (CEE) context

- Relatively higher energy poverty, lower level of energy services, but **economies and lifestyles are catching-up fast**
- Need to develop **sufficiency measures tailored to the local context**

→ *Exploratory work in Lithuania and Hungary*
Focus on transport and buildings

Timeline and outcomes



2. The potential for sufficiency in catching-up economies

Mária Bartek-Lesi, REKK
Inga Konstantinavičiūtė, LEI

The questions investigated and outline

- Are there sufficiency potentials related to energy services in Hungary and Lithuania that could contribute to net-zero climate targets? Finding such potentials could be used to apply them in existing scenario models supporting national strategy formulation and policy making.

Outline

- Basic information about the countries in focus
- Process of indicator selection and setting sufficiency targets

2 chapters : residential buildings and transport:

- General trends of energy use
- Overview of the selected sufficiency indicators
- Examples for setting 2050 targets
- Policy options

The countries in focus



Basic data on Lithuania, 2020

Area	65,300 km2
Average population	2.79 million
GDP per capita	17,710 EUR*

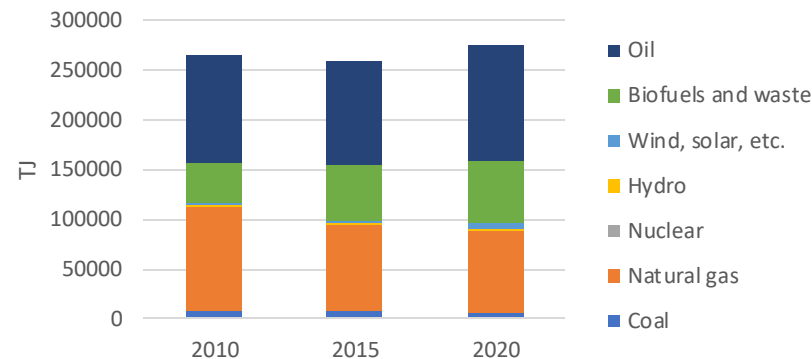


Basic data on Hungary, 2020

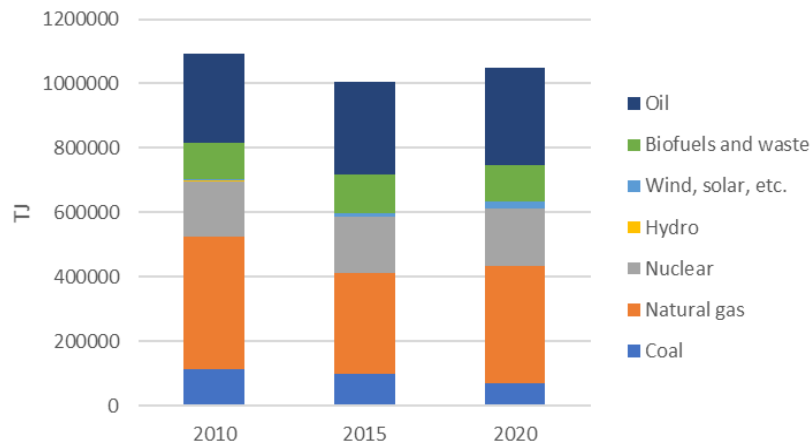
Area	93,000 km2
Average population	9.75 million
GDP per capita	14,010 EUR*

Source of data: Eurostat, *at current prices

Total primary energy supply, Lithuania



Total primary energy supply, Hungary



Source of data: IEA country profiles

Sufficiency assumptions building in the CACTUS project

RESEARCH AND TECHNICAL DIALOGUE

1.
Selection and
priorisation of
key indicators

2.
Theoretical
2050 sufficiency
potential in
literature

3.
Assumptions
drivers,
justifications
and key policy
measures

4.
Local economic and
socio-cultural context
and trends

5.
2050 sufficiency
potential target levels
tailored to the national
context – *to be
integrated into
scenario models*

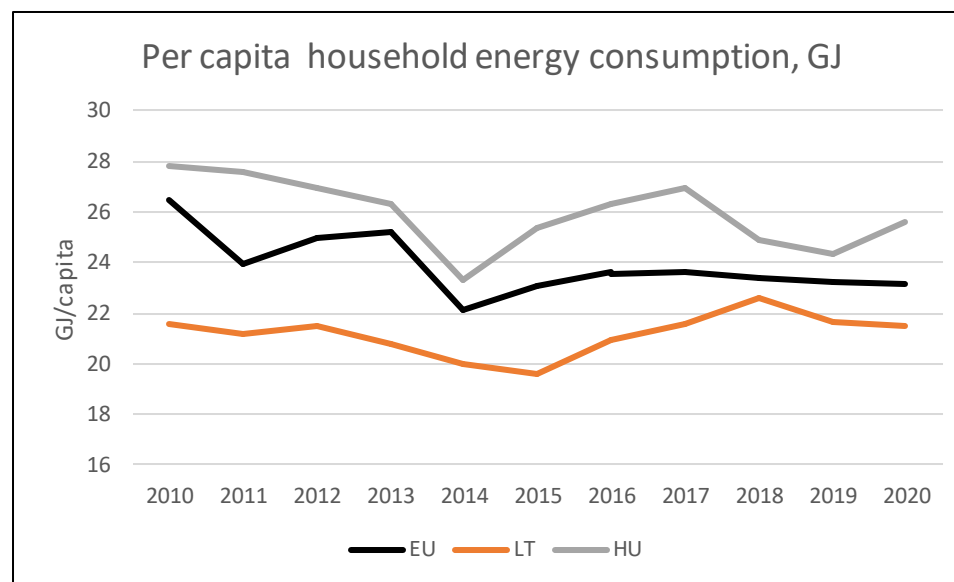
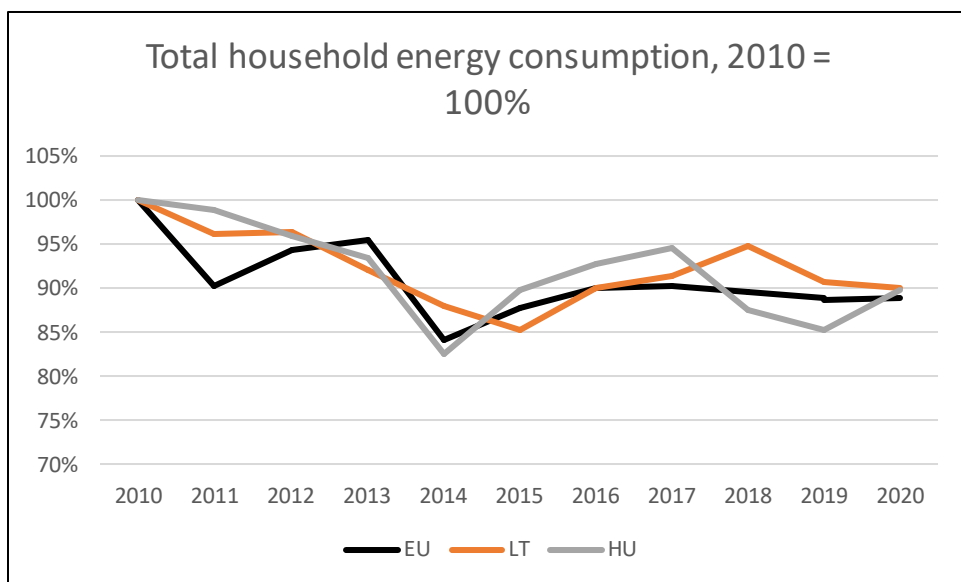
Main sources:

- négaWatt, France, 2016 and 2021
- UmweltBundesAmt, Rescue 2019 and flächensparend wohnen, 2021
- Millward-Hopkins et al. 2020 "Providing decent living with minimum energy: A global scenario",
- Grubler et al 2018 "A Low Energy Demand scenario for meeting the 1.5°C target"
- Kuhnenn et al 2020 "A Societal Transformation Scenario for Staying Below 1.5°C"



Buildings

Residential energy consumption



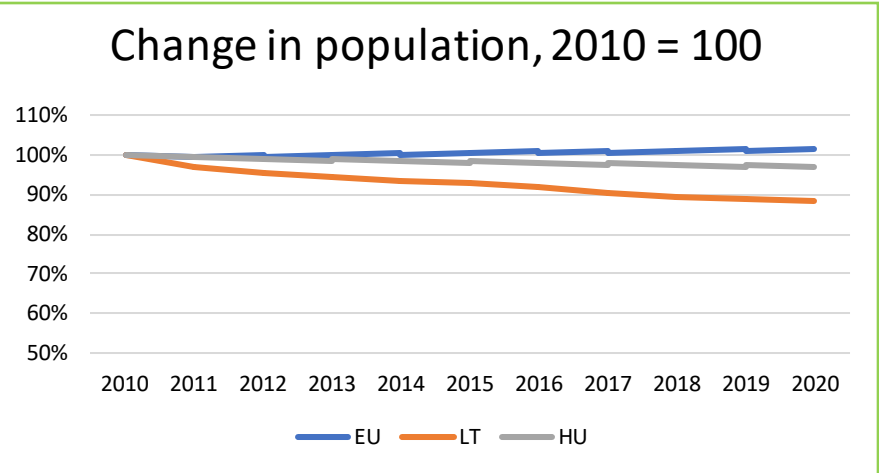
- Residential energy consumption is responsible for 34% of final energy use in LT and 27% in HU (28% EU). Within this, heating is responsible for 70%.
- Total consumption decreased by about 10%, due to energy efficiency improvements
- Per capita energy consumption exceeds the EU average in Hungary, but decreased, and it is below the EU average in Lithuania, despite its geographical location.

Overview of assumptions for the buildings sector

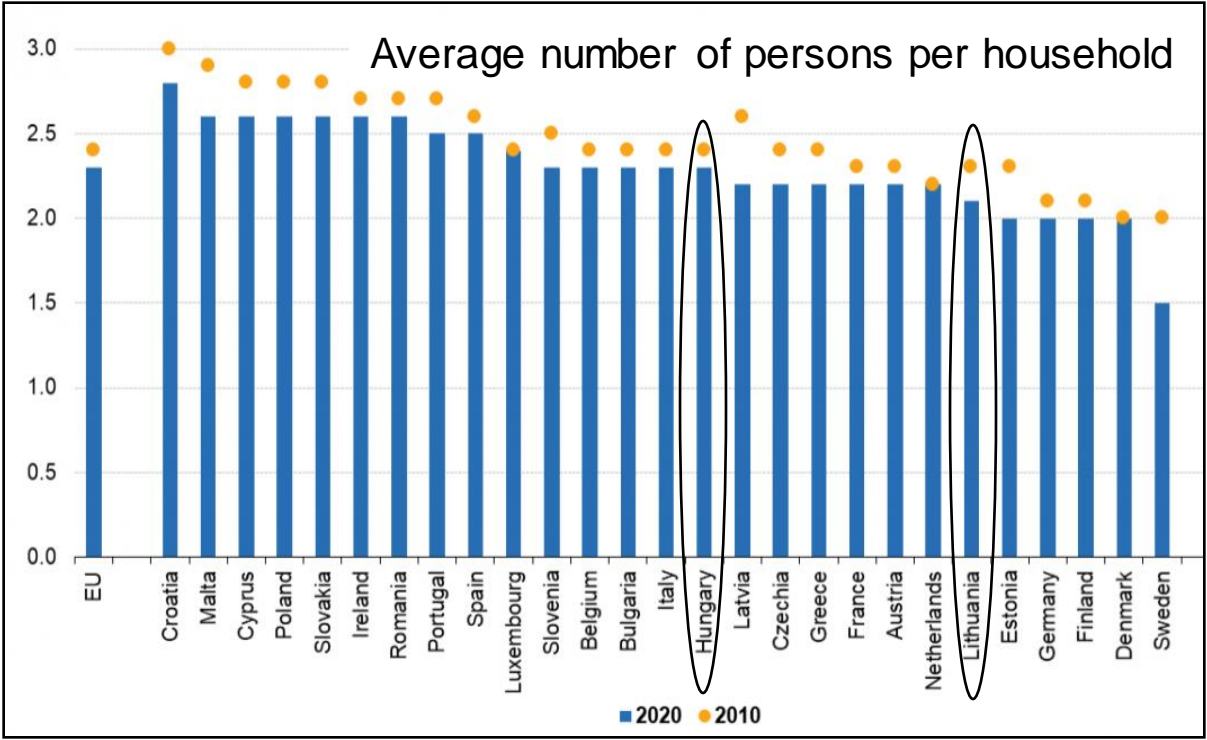
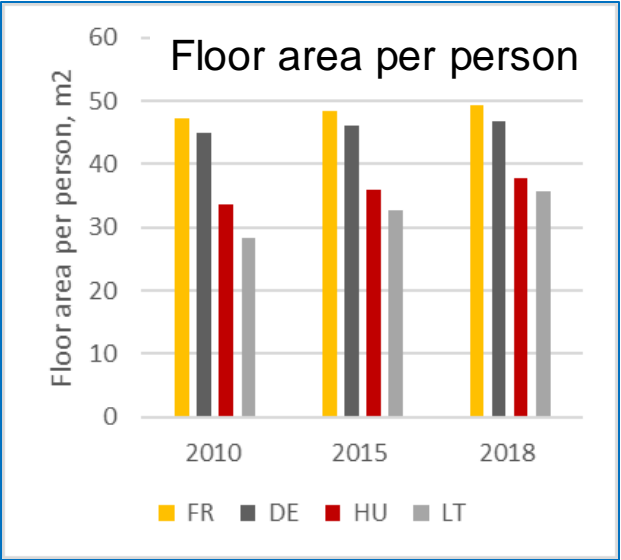
Indicator	Theoretical sufficient target level ranges for 2050 from literature	Lithuania		Hungary	
		Base year data (2017)	Assumed level for 2050	Base year data (2017)	Assumed level for 2050
No of households (thousand)	-	1357	972	4134	4031
Average household size	2 - 4 ^a	2.2	2.2	2.37	2.3
Number of dwellings (thousand)	-	1459	1345	4651	4632
Average floor area per capita (m2/capita)	30 ^b -35 ^c	35	32	37	35
Average size of new dwellings (m2)	N/A	113.2	100 (house) 54 (flat)	100.08	80.5
Average needs for hot water (kWh/person)	294-371 ^d	1047	698	893	520
Average needs for cooking (kWh/person)	N/A	814	349	337	220

^aMillward-Hopkins et al. 2020, ^bGrubler et al. (2018) ^cBierwirth and Thomas et al. (2019), ^dnégaWatt (2018)

Trends - household size and per capita floor area

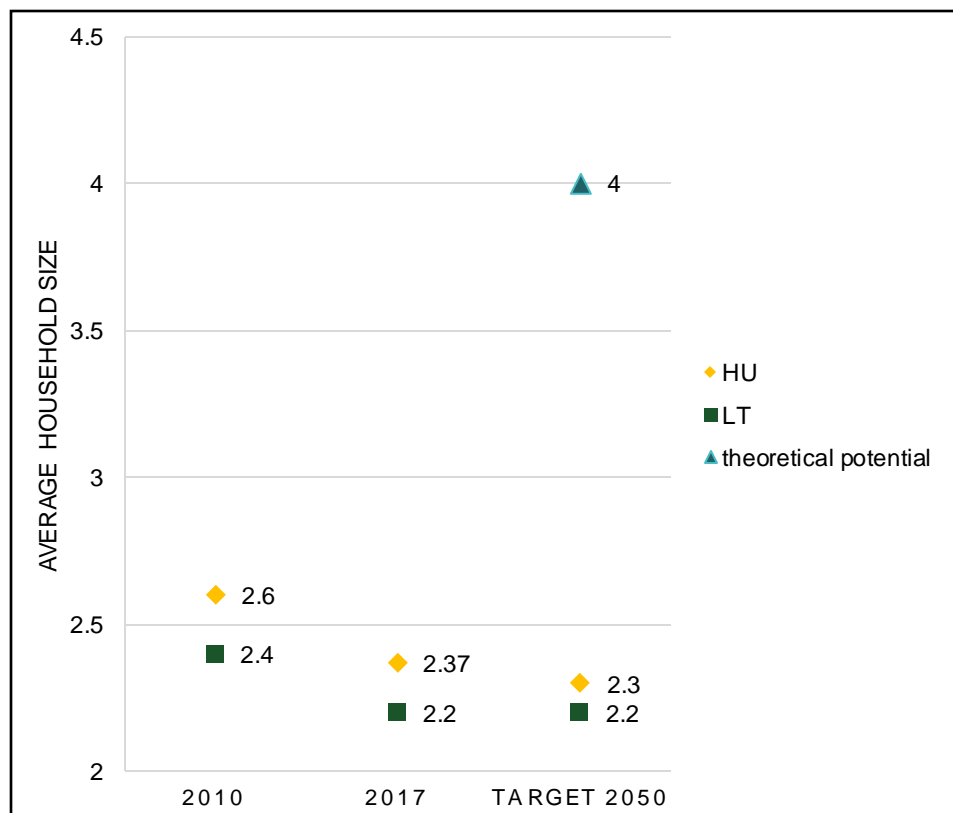


Source of data: Eurostat



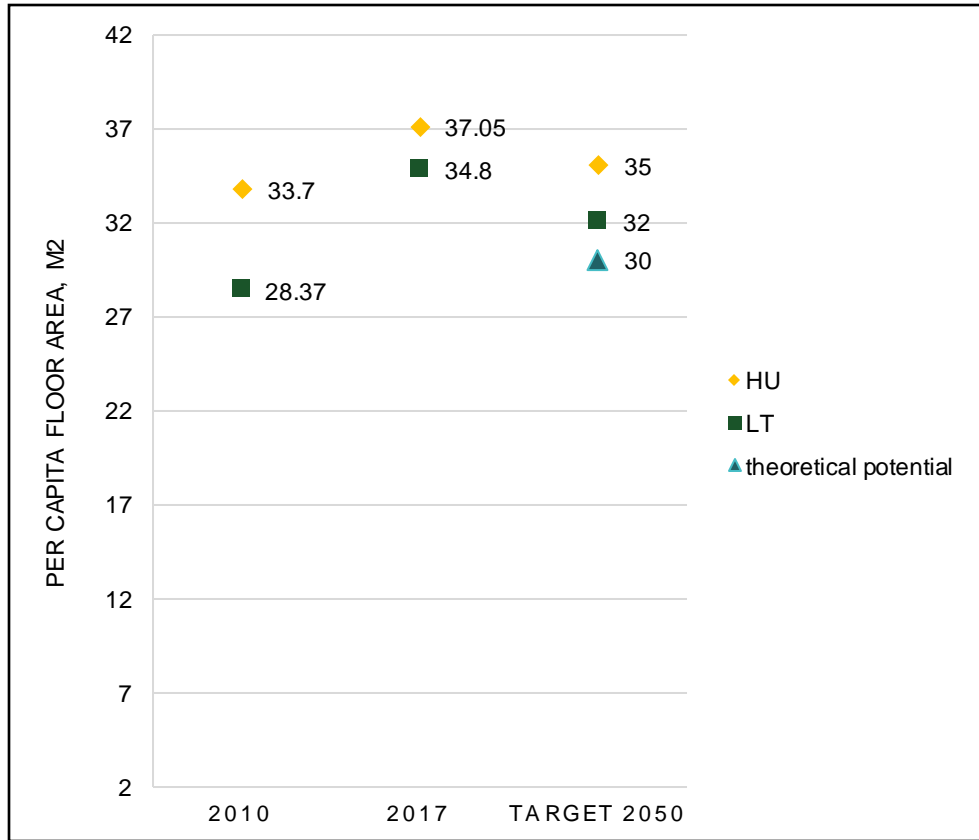
Source of graph: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Average_number_of_persons_per_household_by_country,_in_2010_and_in_2020.png

What 2050 sufficiency target levels for average household size?



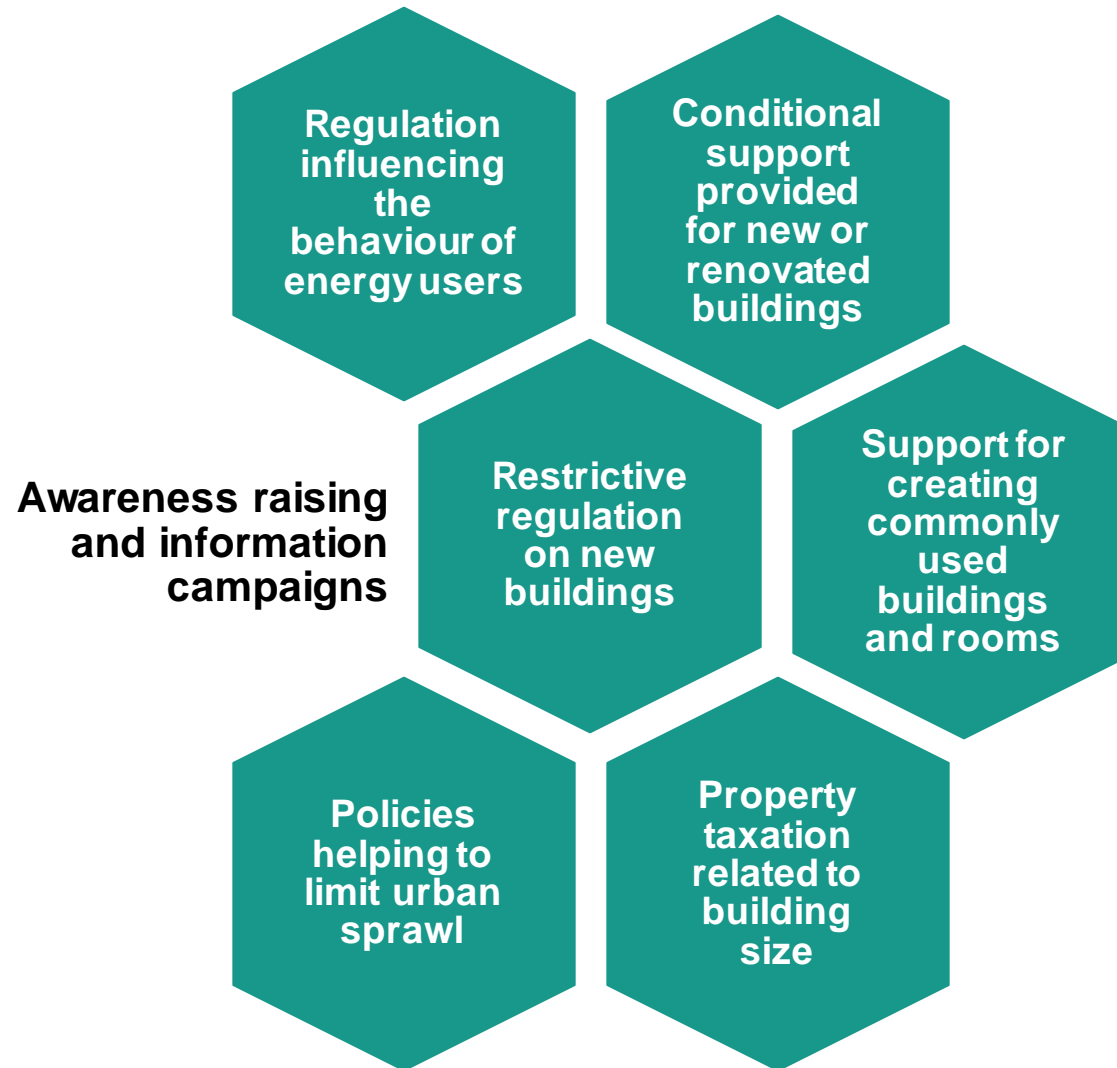
- Average household size decreased in HU and LT similarly to other countries in the EU, and the number of households increased.
- The trend is assumed to continue, due to demographic and social changes.
- Policies might halt the decrease, stabilising its value at around the present EU average (2.3) despite lower official projections.
- The indicator has an effect on the number of dwellings in use and total heated floor area, which impacts overall residential energy use.

Target level for floor area per capita



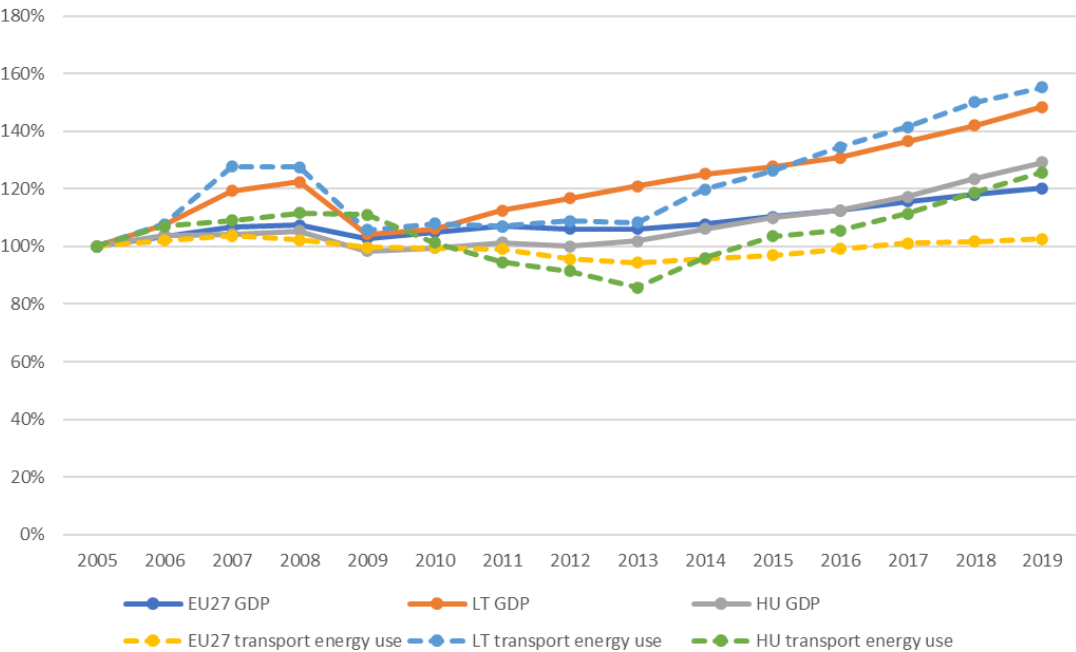
- The average size of new dwellings decreased in the last years in both countries
- However, demographic changes contribute to the larger per capita floor area
- Providing incentives to move from unnecessarily large to smaller dwellings can decrease the value.
- The impact of this indicator on total residential energy consumption also depends on population size and the vacancy rate of buildings.

Sufficiency policy options for the building sector

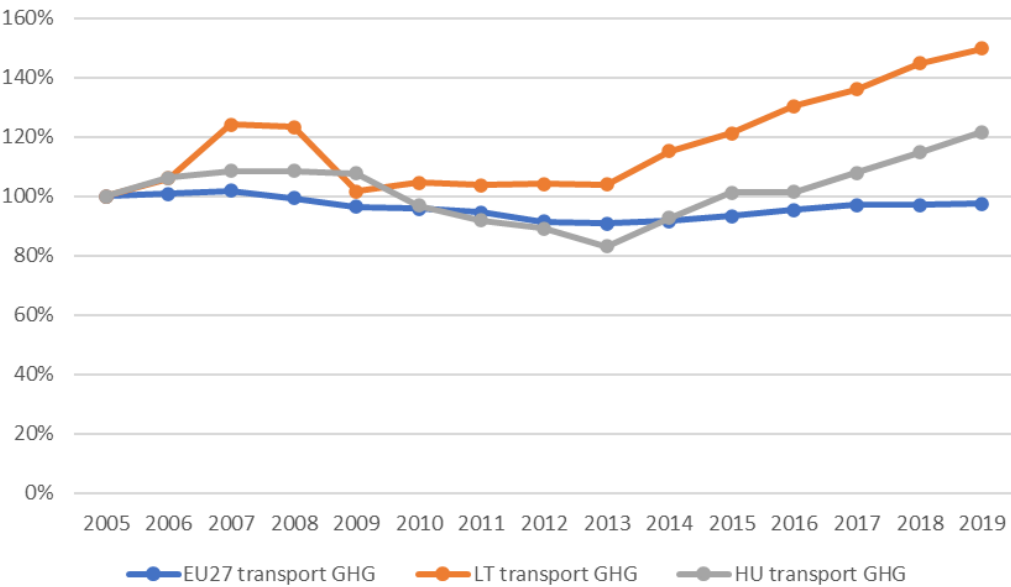


Transport

Energy consumption, GDP and GHG trends in the transport sector



Source: EUROSTAT



Source: UNFCCC

	GDP	Energy consumption	GHG emissions
EU-27	20%	3%	-3%
HU	29%	26%	22%
LT	48%	55%	50%

Selected energy sufficiency indicators for transport

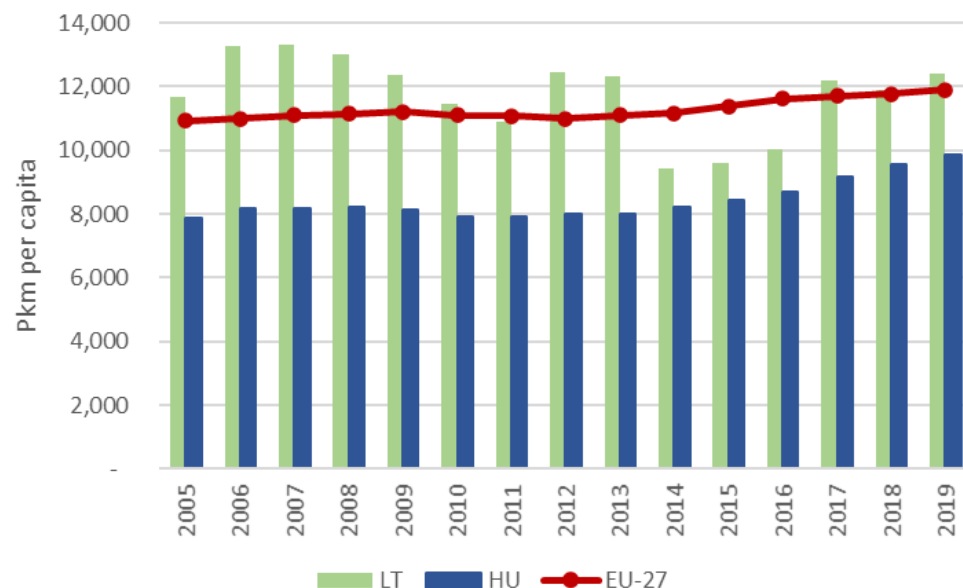
Indicator	Sufficient target levels for 2050	Lithuania		Hungary	
		Base year (2017)	Assumed target level for 2050	Base year (2017)	Assumed target level for 2050
Number of persons/car	2 – 3 ^{a, b, d}	1.35	1.6	1.5	1.7
Number of cars/capita	0.34 ^b	0.48	0.5	0.22	0.3
Pkm/capita	LT: 16,218 ^b , HU: 17,935 ^a	12,208	15,000	9,341	14,499
Pkm by car/capita	LT: 8,674 ^b HU: 1,077 ^{5, b} – 7,526 ^{5, c} , 1,710 ^{6, b} – 23,878 ^{6, c}	11,088	11,500	1,415 ¹ 4,774 ²	988 ¹ 5,181 ²
Pkm by bus/capita	LT: 1,968 ^b HU: 2,154 ^{5, a} , 3,420 ^{6, a}	602 ¹ 367 ²	1,500	477 ¹ 1,392 ²	706 ¹ 2,897 ²
Pkm by rail/capita	LT: 1,366 ^b HU: 2,154 ^{5, a} , 3,420 ^{6, a}	150	700	311 ³ 789 ⁴	951 ³ 2,521 ⁴
Pkm by air/capita	581 ^c – 1,841 ^b	628	1,000	N.A.	1,000
Pkm/capita for soft mobility	N.A.	N.A.	200	N.A.	564

Note: 1 Local, 2 Long-distance, 3 Tram/Metro, 4 Rail, 5 Urban, 6 Rural

Sources: a) Millward-Hopkins et al. 2020, b) Grubler et al. 2018, c) Kuhnhehn et al. 2020, d) Association négaWatt 2017

Sufficiency relevant passenger transport trends since 2005

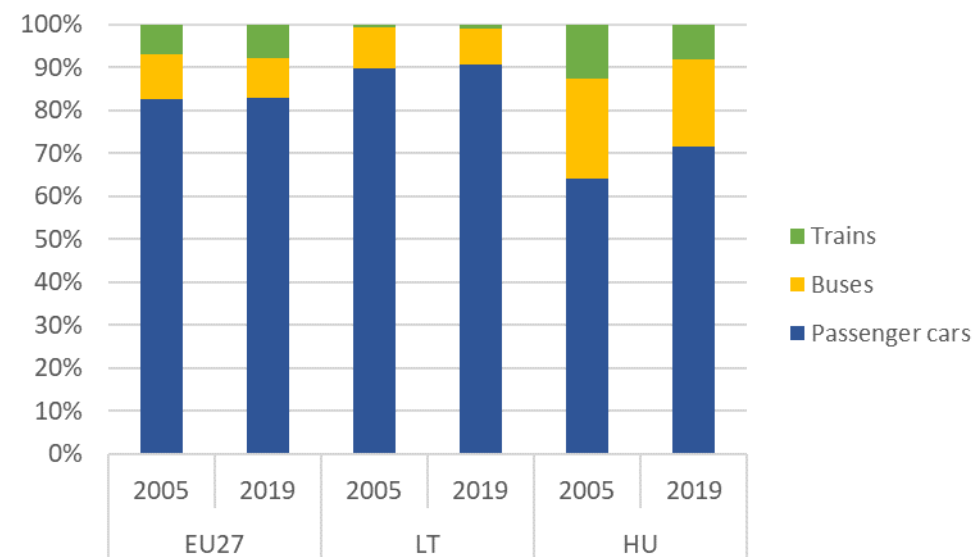
Total pkm per capita



The improving living standards is the main driver of the increased travelling in pkm per capita.

During 2014-2019 travelling distances started to **increase by 5% a year in LT, by 3% in HU and by 1% in EU-27.**

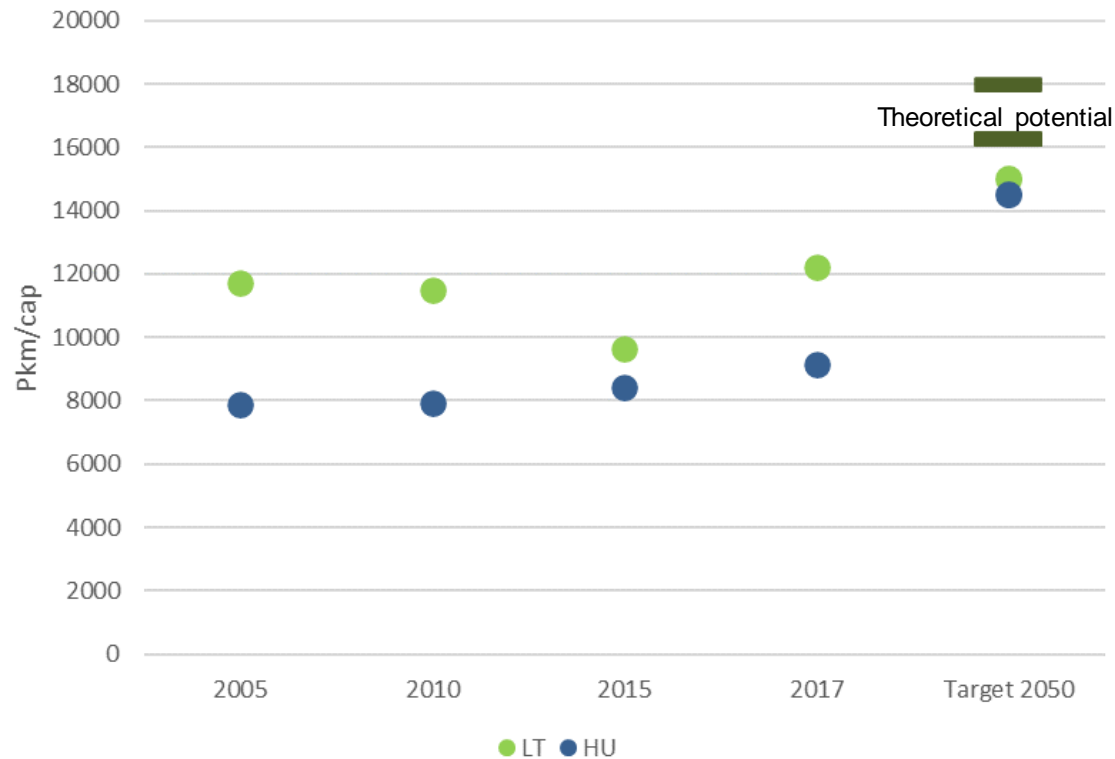
Modal split



The share of cars in total passenger transport was the highest in LT (91% in 2019), but it increased the most in HU (from 64% 2005 to 72% in 2019).

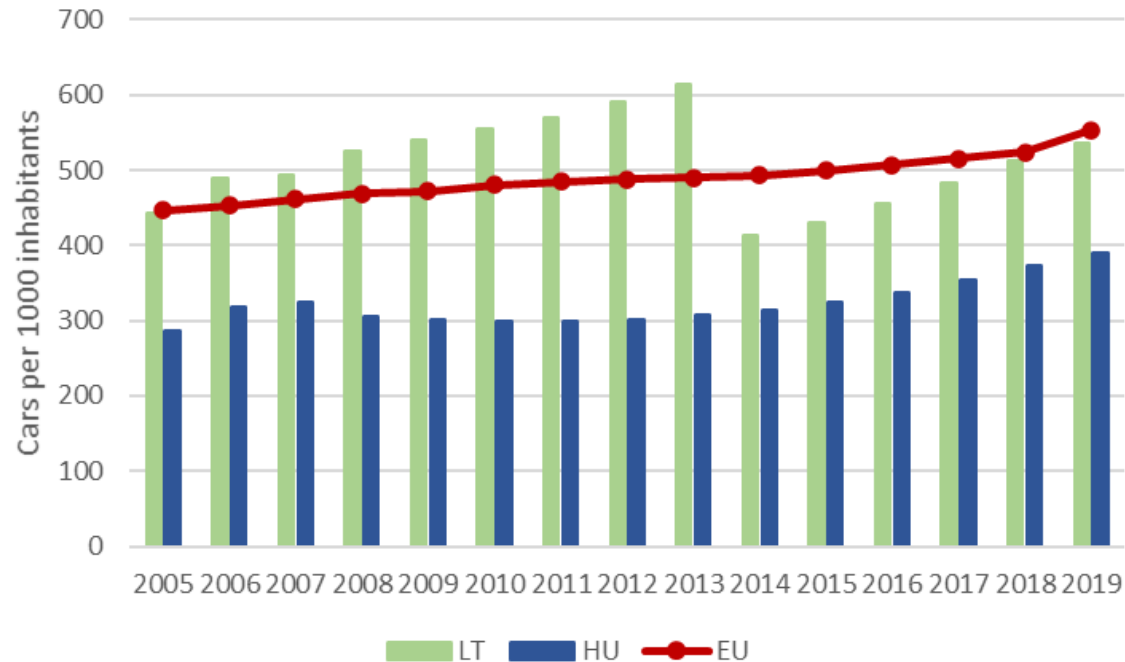
In 2019, the relevant modal share of **buses** in LT (8%) was almost at the level of EU-27 (9%) and less than half of the share in HU (20%).

What 2050 sufficient target levels for total pkm per capita ?



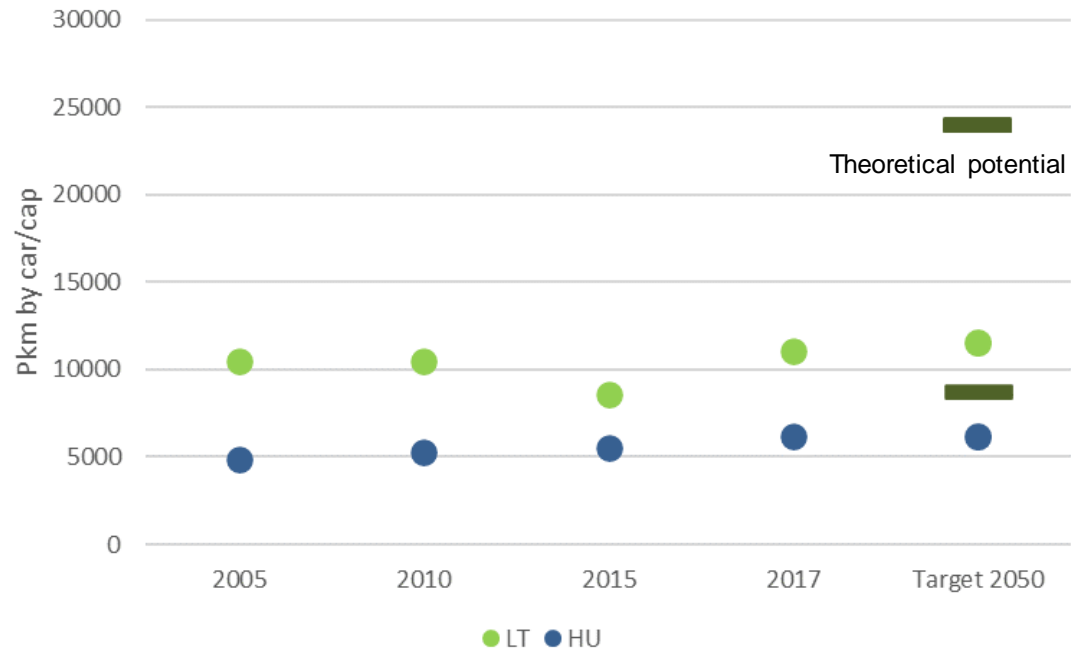
- It is assumed that by 2050, **the total transport demand** could increase in both countries compared to 2017, reaching about 15000 pkm per capita.
- Assumed level for 2050 is based on the sum of estimations for **the different transport modes**: cars, buses, navigation, air, soft mobility (bicycles).
- Sufficiency in transport sector can be reached via inducing modal shift, mitigating traffic and reducing demand for transportation.

Catching up trends for passenger cars



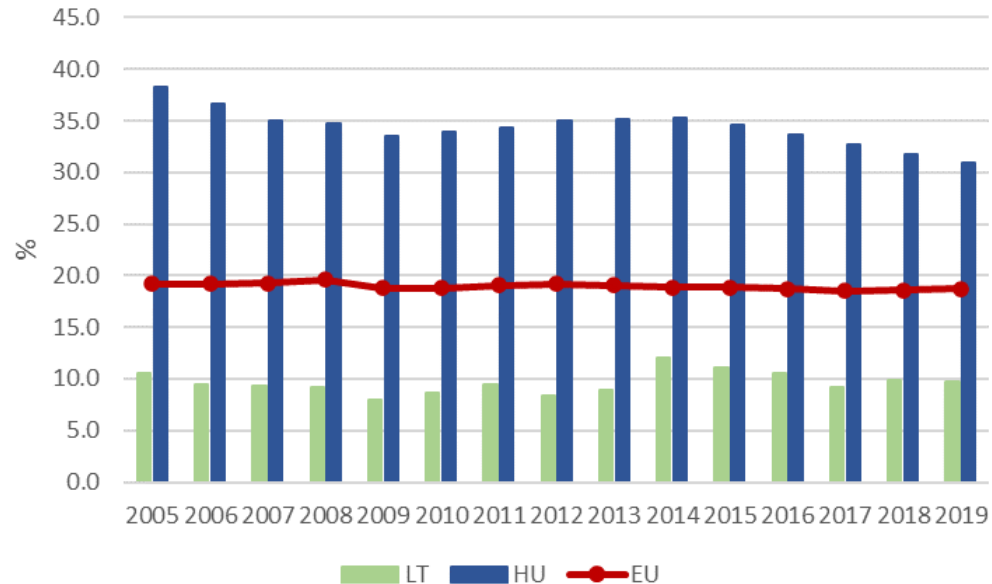
- In 2019, 536 passenger cars per 1000 inhabitants were registered in LT, compared to 390 in HU.
- In 2014, old and not used passenger cars which owners could not provide evidence that cars were technically in order, had been automatically registered out; therefore, the official number of passenger cars significantly reduced in LT.
- Although both countries have their own characteristics, a common feature is that number of cars per inhabitant **in LT and HU is growing faster** than in the EU-27.

What 2050 sufficient target levels for traveled distances by car per capita?

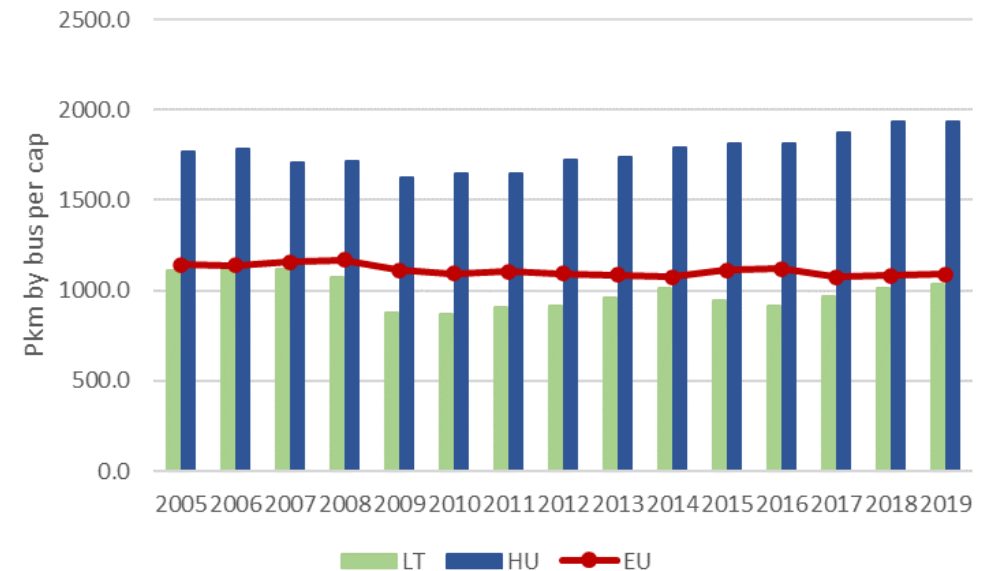


- Cars will **remain the main transport mode** and distances travelled by cars will increase mainly due to **improvement of living standards** (increasing number of passenger cars per person).
- Pkm per capita in long-distance journeys increase further, but car traffic in cities can be mitigated through policies promoting **public transport, soft mobility, car sharing, on-line shopping, home offices.**

Trends with traveled distances by bus per capita

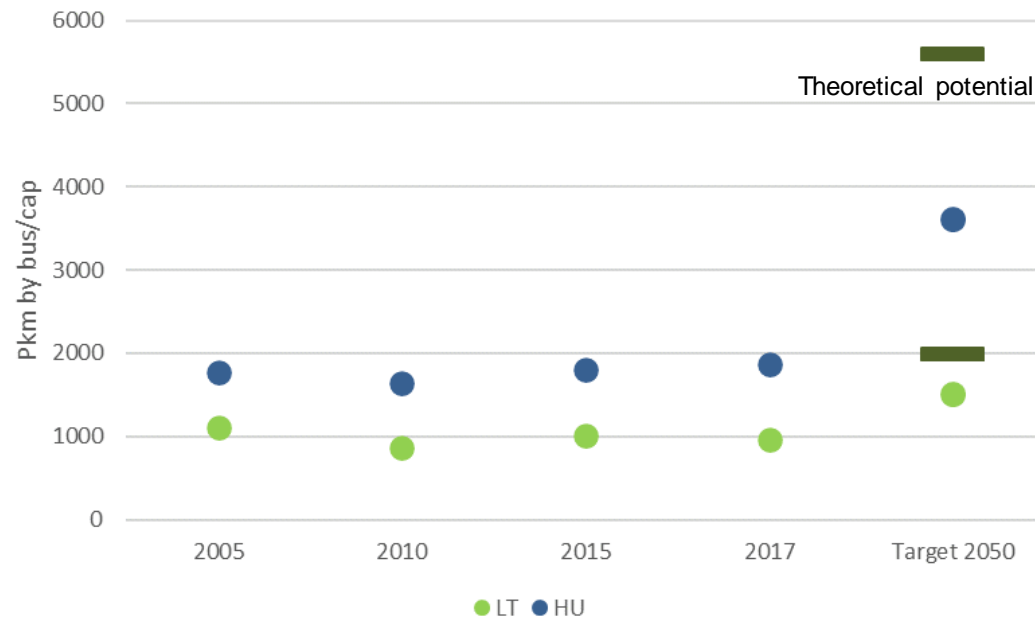


The attractiveness of **public transport** is considerably lower in LT than in the EU as public transport accounted only to 9.5% of passenger transport in the country. The situation in HU is different, however, there is shift towards less sustainable travel modes.



Since 2010 pkm by bus/cap are increasing by **1.8% a year in both countries.**

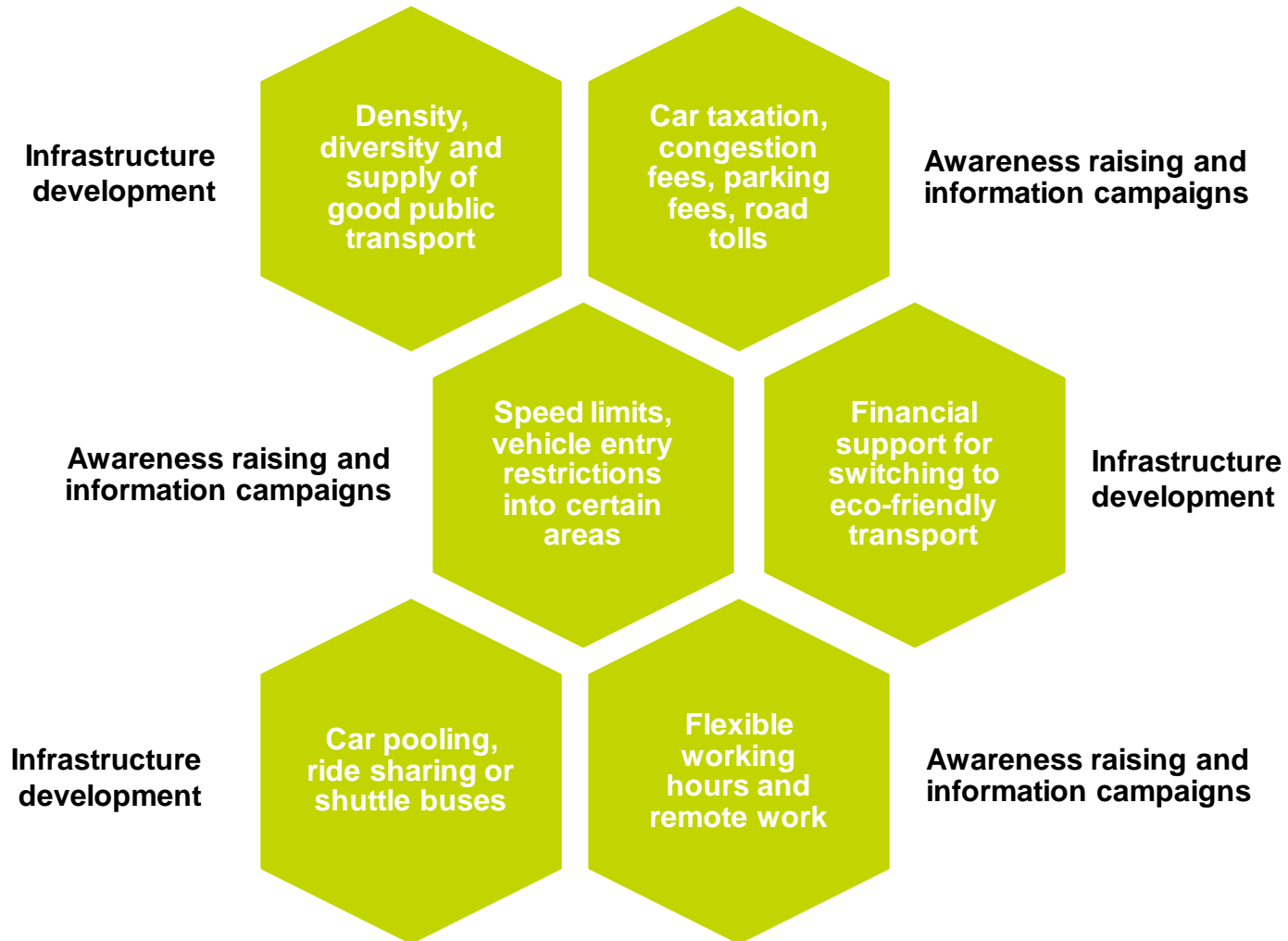
What 2050 sufficient target levels for traveled distances by bus per capita?



Drivers for the use of public transport:

- **Awareness raising and information campaigns.**
- **Improvements in service quality** (availability, accessibility, reliability, comfort).
- **Priority lines** for buses in larger cities.
- **Adequate price level** to keep it competitive.
- Urban **electronic tickets or smart tickets**.
- **Advanced integrated ticket system** for different transport modes (urban and inter-city distances).
- **No need to search for parking**, which becomes a problem with an increasing number of cars.
- **A ban** on entering to the city center by car.

Policy options for energy sufficiency in transport



3. An insight into sufficiency policies and good practice examples and instruments from Germany

Mahsa Bagheri, Fraunhofer Institute for Systems and Innovation Research ISI

Sufficiency-oriented practices

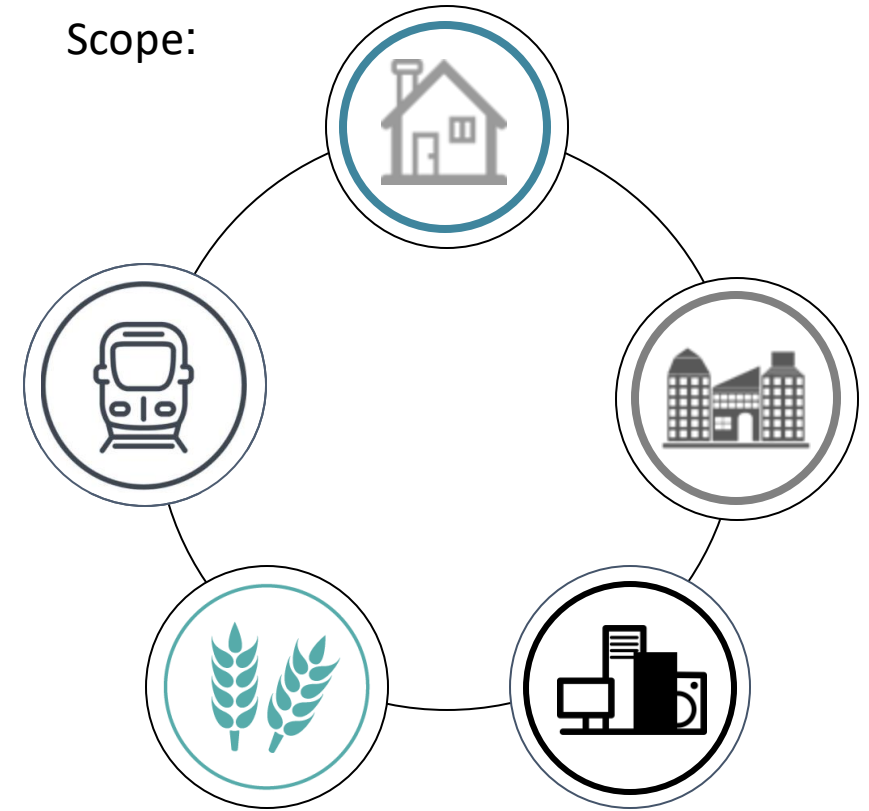
In principle, different levels of action are possible:

- EU or Member State (MS)
- region
- local (e.g. municipality)
- community / citizen

In practice, most of the actions have been implemented at the local level (or even below). The actions are initiated or supported by institutions* or entirely initiated and implemented by citizens.

* municipalities or funds as the NKI (Nationale Klimaschutzinitiative funded by BMUB; similar to EUKI program)

Scope:





Adjustment of space to the need: landlords

Project:

Municipalities innovative living spaces

Aim:

Promoting the usage of underutilized living space, matching the demand and offer

Highlights:

- Consulting offers for (older) landlords
- Information on different options (selling, division, renting, etc.)

www.oeko.de/lebensraeume





Sharing the space

Project:

Housing For Help

Aim:

Bringing student looking for a room and people looking for a tenant together.

Highlights:

Reduction in rent in return for chores done by the student.

<https://www.swfr.de/wohnen/wohnen-fuer-hilfe/wohnen-fuer-hilfe>



<https://www.paritaet-ka.de/>



Adjustment of space to the need: tenants

Project:

Platform for exchanging houses/flats

Aim:

Facilitating the move to the more suitable flats

Highlights:

Support from the city for finding the suitable place and also for moving

<https://www.wohnungstauschduesseldorf.de/>

<https://inberlinwohnen.de/wohnungstausch/>

duesseldorf Tauschwohnung Q SUCHEN REGISTRIEREN ANMELDEN

Wo möchten Sie leben?

Felder mit einem Stern* sind Pflichtfelder.

Ort* Radius

Art ☒ Wohnung ☐ Haus Suchen

Max. Kaltmiete €
Nur ganze Zahlen

Min. Zimmer
Halbe Zimmer möglich (z.B. 2,5)

Min. Größe m²
Nur ganze Zahlen

Etage

Ausstattung (innen) ☐ Aufzug ☐ Badewanne ☐ Dusche ☐ Einbauküche
☐ Gäste-WC ☐ Keller / Abstellraum



Setting the limit

Project:

Variowohnung Funding scheme

Aim:

Supporting model projects for sustainable and affordable apartments

Highlights:

- Sets the upper limit for the living area of the single apartments (30m²)
- Evaluating the construction and use of so-called vario-apartments

<https://www.zukunftbau.de/programme/variowohnungen>

Project:

Regional funding program

Aim:

Supporting the construction and modification measures to create new rental housing

Highlights:

Regulated apartment size: 1-room apartment < 45m², 2-room apartment < 60m², ... every extra room adds 15m²

<https://wm.baden-wuerttemberg.de/>



Reducing share of private cars

Project:

Stadtmobil

Aim:

Promoting the use of shared cars

Highlights:

Easy to use app, contactless process of renting, large pallet of vehicles, station and free-floating

<https://www.stadtmobil.de/>



Project:

“Environmentally friendly mobile”
(Heidelberg)

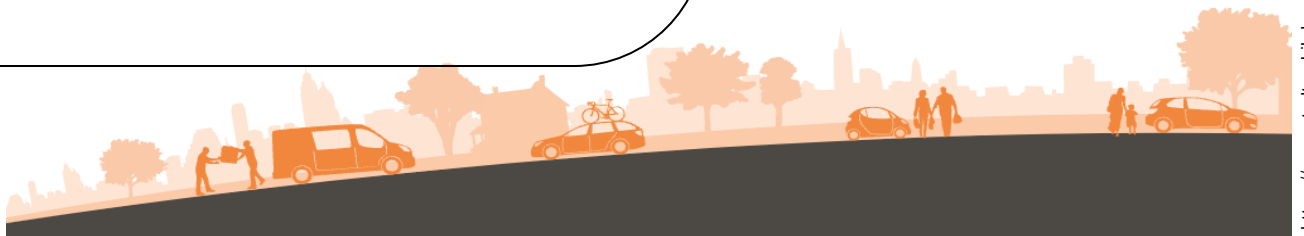
Aim:

Promoting of using public transport instead of private car

Highlights:

Free annual public transport subscription for people deregistering a car

<https://www.heidelberg.de/892729.html>





Promotion of cargo bikes

Project:

fLotte: lending of cargo bikes

Aim:

A city for people - without parked streets, without bad air and without climate pollution

<https://flotte-berlin.de/>



<https://flotte-berlin.de/>

Project:

“Environmentally friendly mobile” (Heidelberg)

Aim:

Promoting environment-friendly transport

Highlights:

Support the purchase of a cargo bike or trailer for people deregistering a car

<https://www.heidelberg.de/hd/HD/Leben/Umwelt+Foerderprogramme.html>



Promotion of bikes

Project:

Next bike (nation-wide)

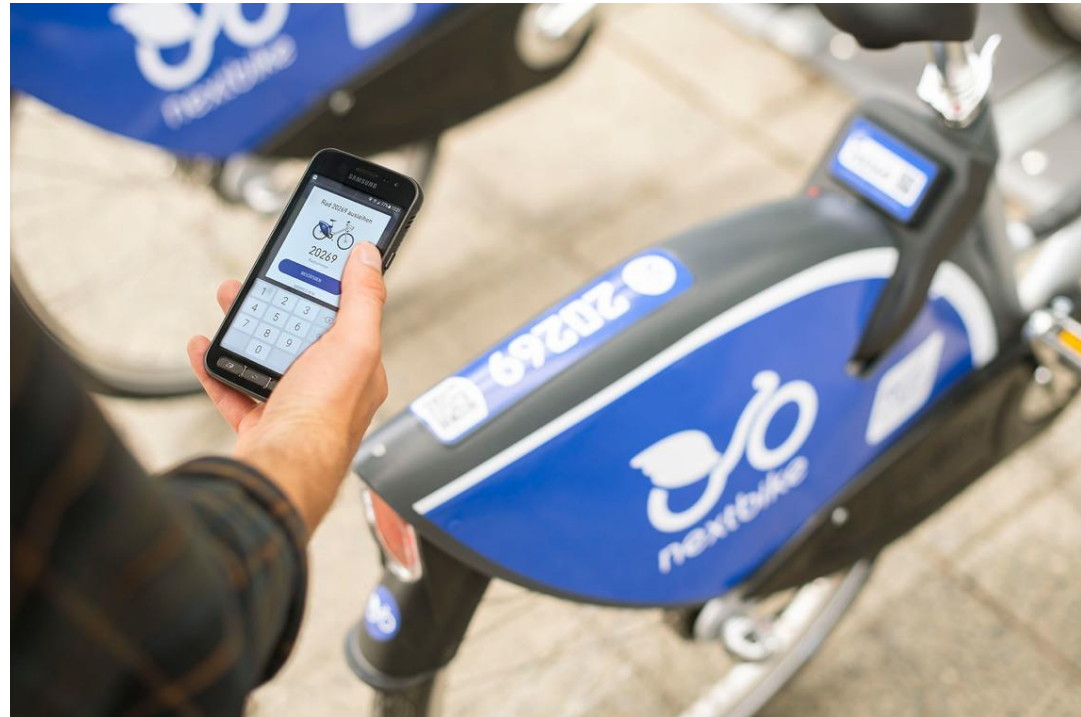
Aim:

Offering easily accessible transport

Highlights:

- Free-floating
- Possibility to report the issues on the bikes

<https://www.nextbike.de/de/>

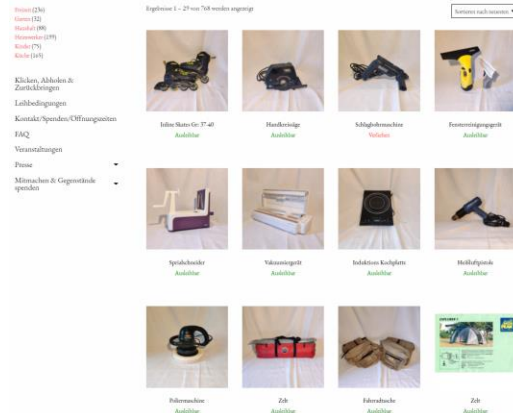


<https://www.nextbike.de/de/>

Re-use of household products

Aim: Reuse of the used clothes, furniture...

Project: Re-Use Berlin (supported by the city of Berlin)



<https://www.buergerstiftung-karlsruhe.de/leihlokal/sortiment/>

Repair café

Aim: Repair / extend lifetime instead of replace / buy a new one

Projects: concept of „repair cafe“, 2200 worldwide



<https://repaircafe.org/en/>

Sharing, lending and giving

Aim: Avoiding the purchase of rarely used equipment

Projects: Leih.lokal in Karlsruhe (Community Foundation), CONSUM in Berlin (part of Re-Use Berlin)



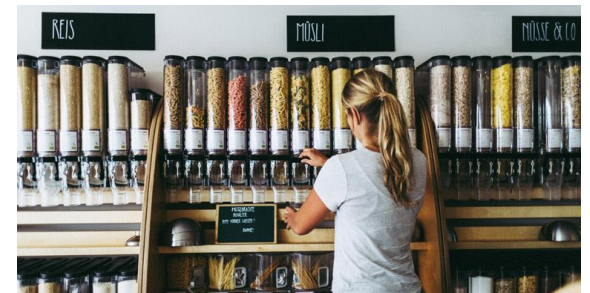
Weitere spezifische Re-Use-Einrichtungen finden Sie in der ReMap www.remap-berlin.de

<https://www.berlin.de/sen/uvk/umwelt/kreislaufwirtschaft>

Reduce packaging/ Zero waste

Aim: Prevention of rubbish and waste

Projects: „unpacked“ shops, in almost any city (many are members of *Unverpackt e.V.*)



<https://www.gls.de/privatkunden/>

Conclusion and outlook

- Many examples in Germany. This is also the case in other Member States
- Great diversity of initiatives
- Many ideas and large potential, but...
 - ... still a niche market (except for some examples like the Car-Sharing concept)
 - ... lack of framework to support the actions (supporting policies)
- Comprehensive and ambitious strategies are missing:
 - Need to recognize sufficiency as an important lever for sustainable lifestyle
 - Lack of policies on the national agenda: from project approach to large initiatives / national programs
 - Need to include sufficiency policies in the policy framework

4. The need for sufficiency policies in the international context.

*Comments and viewpoint from
an IPCC lead author perspective*

*Yamina Saheb, Lead Author UN IPCC WGIII report
on climate mitigation*

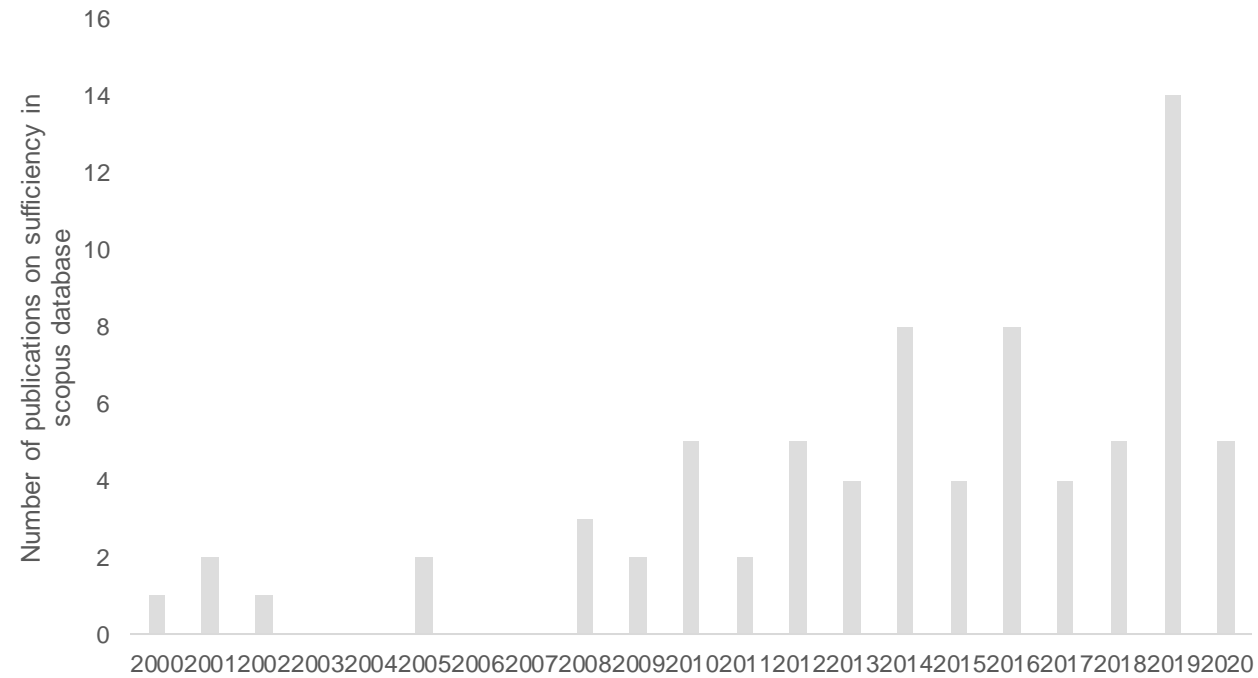
Sufficiency

**The overlooked mitigation strategy in
science, scenarios and policies**

Sufficiency goes beyond energy sufficiency to include the conservation of all natural resources

Sufficiency policies are a set of measures and daily practices that avoid the demand for energy, materials, land, water and other natural resources while delivering wellbeing for all within the planetary boundaries.

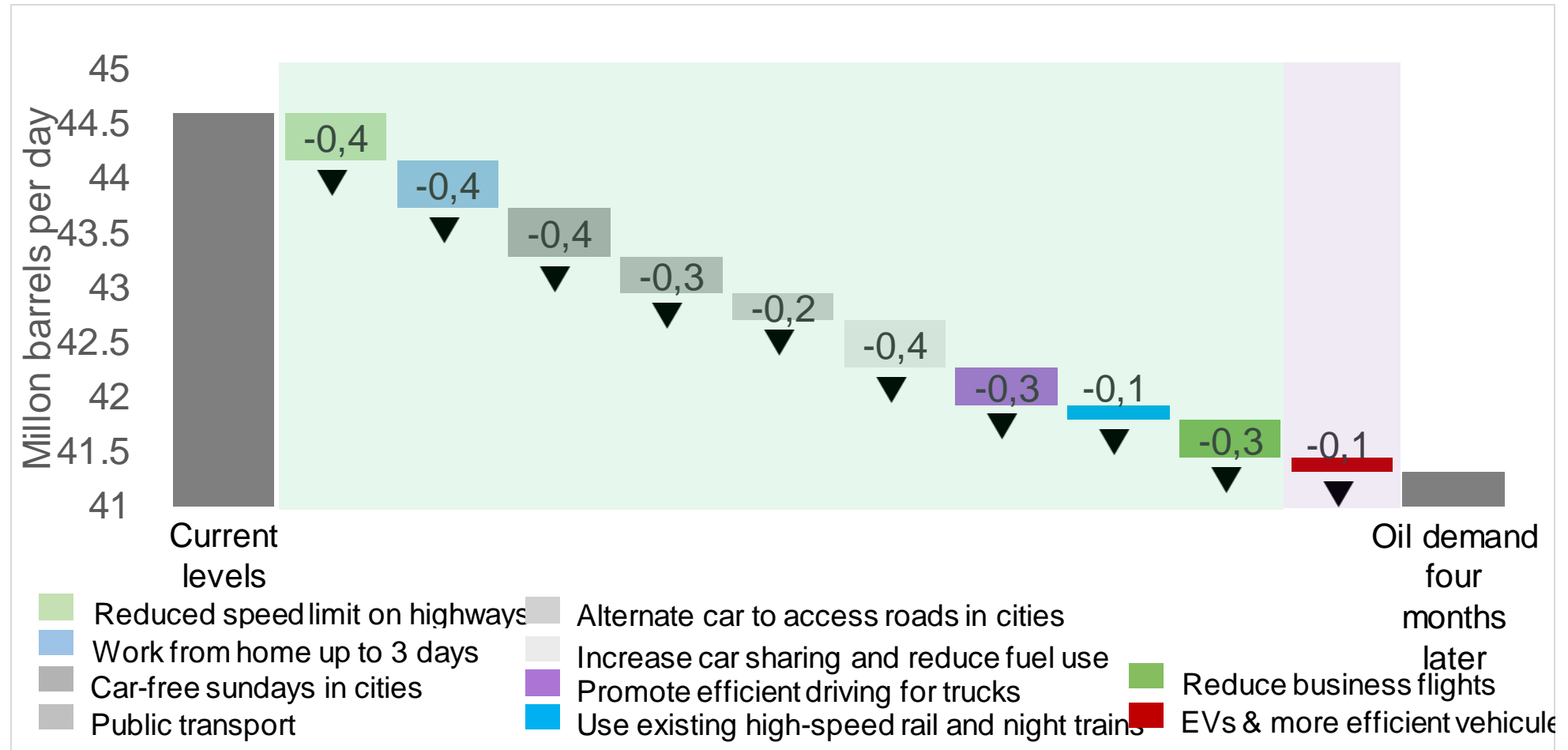
Sufficiency has been ignored for a while by scientists



Sufficiency has been ignored for a while by modellers

- 700 global scenarios Paris compatible 1.5°C < Global warming by the end of the century < 2°C
- 4 scenarios include sufficiency related assumptions
- 2 scenarios explicitly label sufficiency related assumptions as sufficiency

Sufficiency is still not named in policy recommendations



Open Q&A session

**Conclusion: what prospects for
sufficiency in Europe and beyond?**

SUFFICIENCY FINALLY COMING ON THE EU AGENDA



BIODIVERSITY

CLIMATE

OCEAN

GOVERNANCE

> Publications and Events

POLICY BRIEF March 2022

Phasing out dependence on Russian natural gas: what strategies for the EU and France?

News > Russia's war in Ukraine: Why doubling down on the Green Deal is the best strategy

THURSDAY, 10 MARCH 2022, 12:00

Russia's war in Ukraine: Why doubling down on the Green Deal is the best strategy

The end of energy resource imports from Russia?

Discussed by several think tanks....

And institutions !



A 10-Point Plan to Cut Oil Use

iea.org

RePowerEU and cut our dependence on Russian gas



#EUGreenDeal

NEXT STEPS



- Technical report on sufficiency modelling and impacts – *April*
- National HU and LT policy briefs – *May*
- Paper on sufficiency in the transport sector at eceee Summer Study - *June*
- <https://cactus-energy-sufficiency.eu/>

EUROPEAN SCENARIO



- A collaborative low energy scenario for Europe to bridge the climate and sustainability gap through energy sufficiency, efficiency and renewables
- <https://www.negawatt.org/An-ambitious-energy-and-climate-scenario-for-Europe>

FULFILL

- An H2020 project aiming at better accounting of lifestyle changes and sufficiency in energy and climate scenarios and policies
- <http://fulfill-sufficiency.eu/>



NOW AT 11:30 !!!

<https://meet.google.com/ijy-pquy-zsw>

#betd22 Side Event: Policy Database on Energy Sufficiency

THANK YOU!

<https://cactus-energy-sufficiency.eu>
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