

1990

SO, THIS CLIMATE
CHANGE THING
COULD BE A PROBLEM...



1995

CLIMATE CHANGE:
DEFINITELY A
PROBLEM.



2001

YEP, WE SHOULD
REALLY BE GETTING
ON WITH SORTING THIS
OUT PRETTY SOON...



2007

LOOK, SORRY TO SOUND
LIKE A BROKEN RECORD
HERE...



2013

WE REALLY HAVE
CHECKED AND WE'RE
NOT MAKING THIS UP.



2019

IS THIS
THING ON?



1.5°C Climate Change: *What are the Implications for the Built Environment?*



Diana Ürge-Vorsatz

Central European University

Vice Chair, WGIII, Intergovernmental Panel on Climate Change

Sustainable Built Environment, Graz, Sept 12, 2019

“Egyre több gyermek és kamasz érkezik hozzám depressziósan, életcél nélkül, motiválatlanul, tervezék nélkül a klimakatasztrófa szorongásában vergődve. Egyre több anorexiás betegem azért érkezik csontsoványan, nem eszik vagy minimálisat, kegyetlen vegán étrendet folytat vagy megszorítja a bevitt ételt, hogy megmentse a Földet. Átalakult az anorexia betegség, a betegeim 50 % meg akarja menteni a Földet és nem eszik húst, feldolgozott élelmiszert. Átalakult a depresszió és szorongás tünetegyüttese. A klímaváltozás új mentális körképeket hozott, amivel foglalkoznunk kell nekünk szakembereknek.”



“More and more children and adolescents are coming to me depressed, without a purpose in life, unmotivated, and without plans suffering from anxiety about the climate disaster. More and more of my anorexic patients arrive bony, eating no or minimal, cruel vegan diets, or squeezing food intake, in order to save the Earth. Anorexia Disease Has Been Transformed, 50% of my patients want to save the Earth and don't eat meat, processed foods.

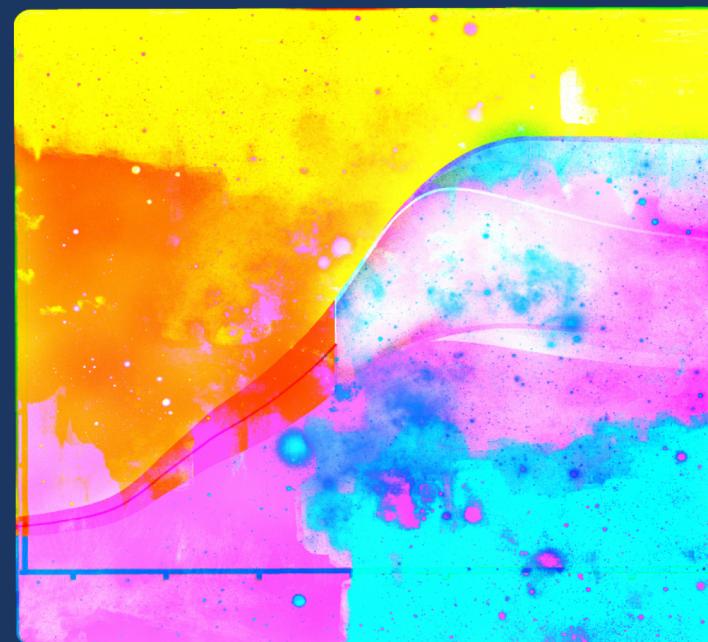
The syndrome of depression and anxiety has changed. Climate change has brought new mental illnesses that we as professionals need to address.”

*Prof. Dr. Bea Paszto
Leader, Child Psychiatry, Budapest
Medical University*



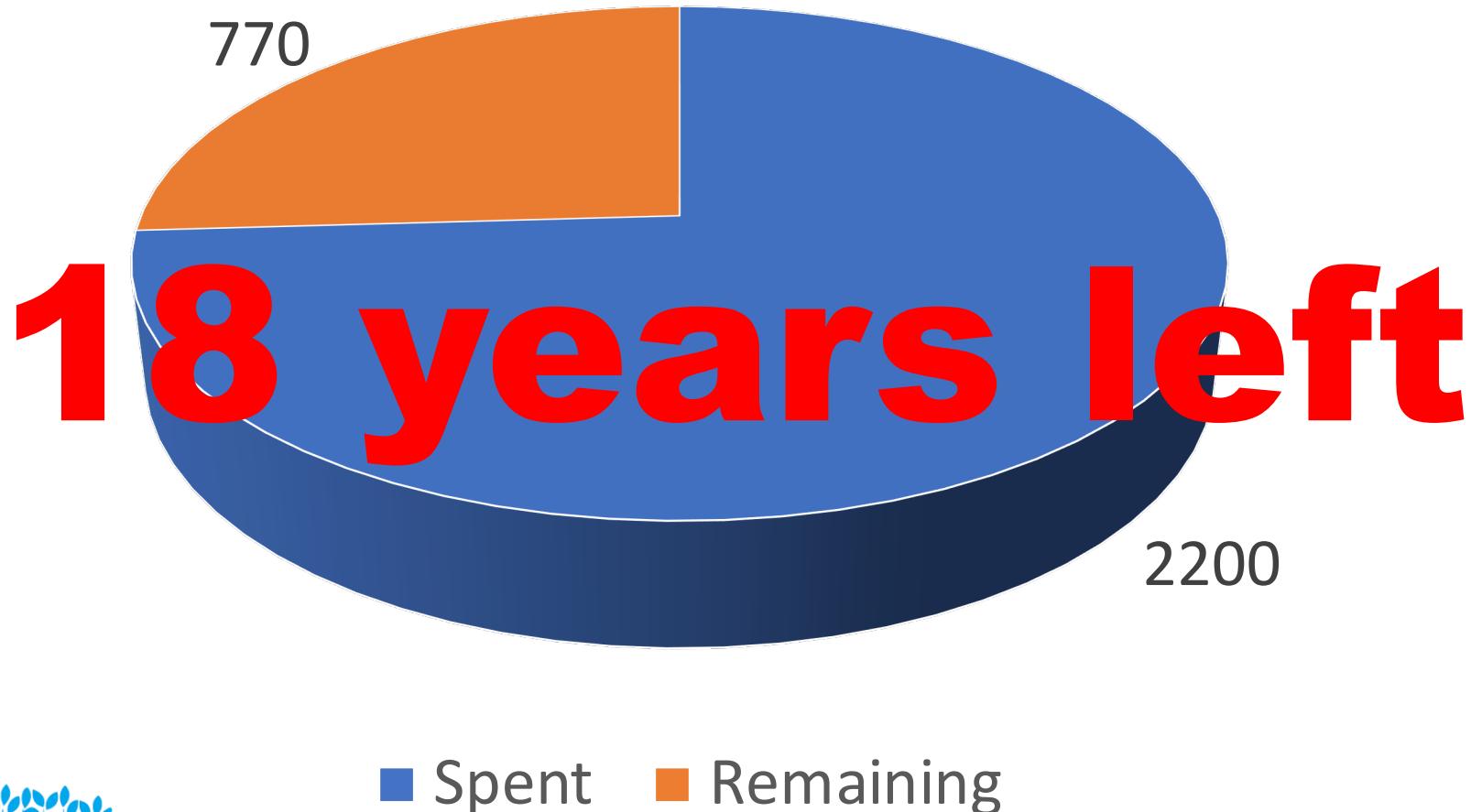
Global Warming of 1.5°C

An IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.



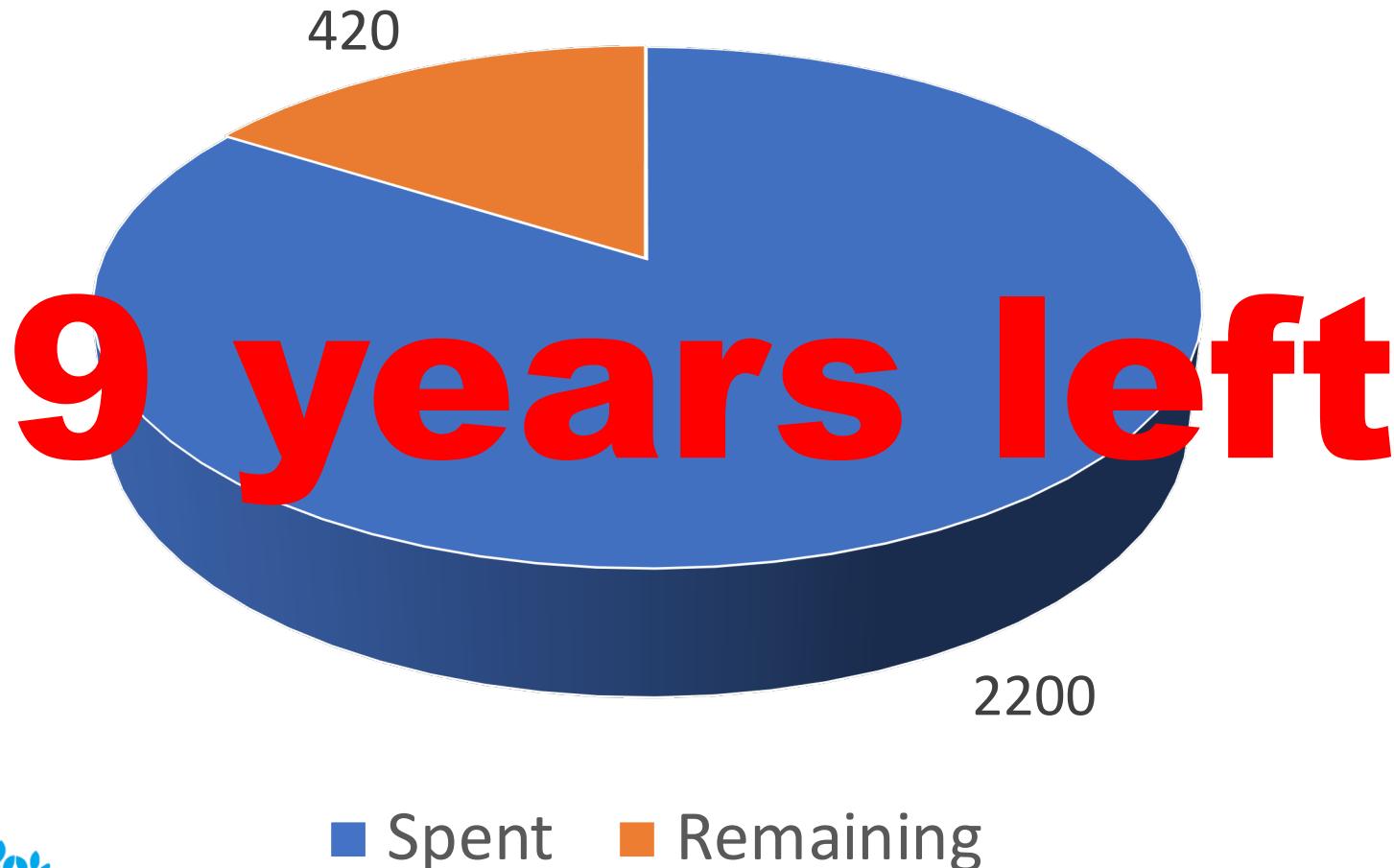
Spent and remaining carbon budget to 1.5C in 2018, GtCO₂

measured in GMST, 50% probability to 1.5°C

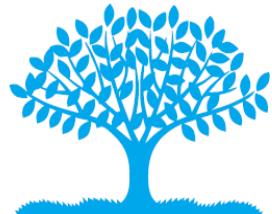


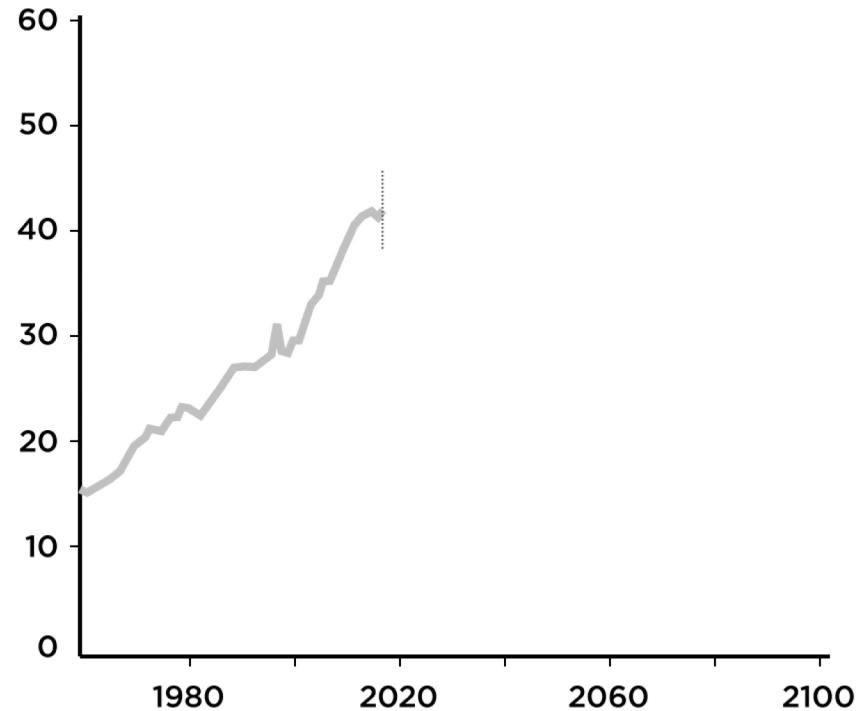
Spent and remaining carbon budget to 1.5C in 2018, GtCO₂

measured in surface air T, 66% probability to 1.5°C



■ Spent ■ Remaining





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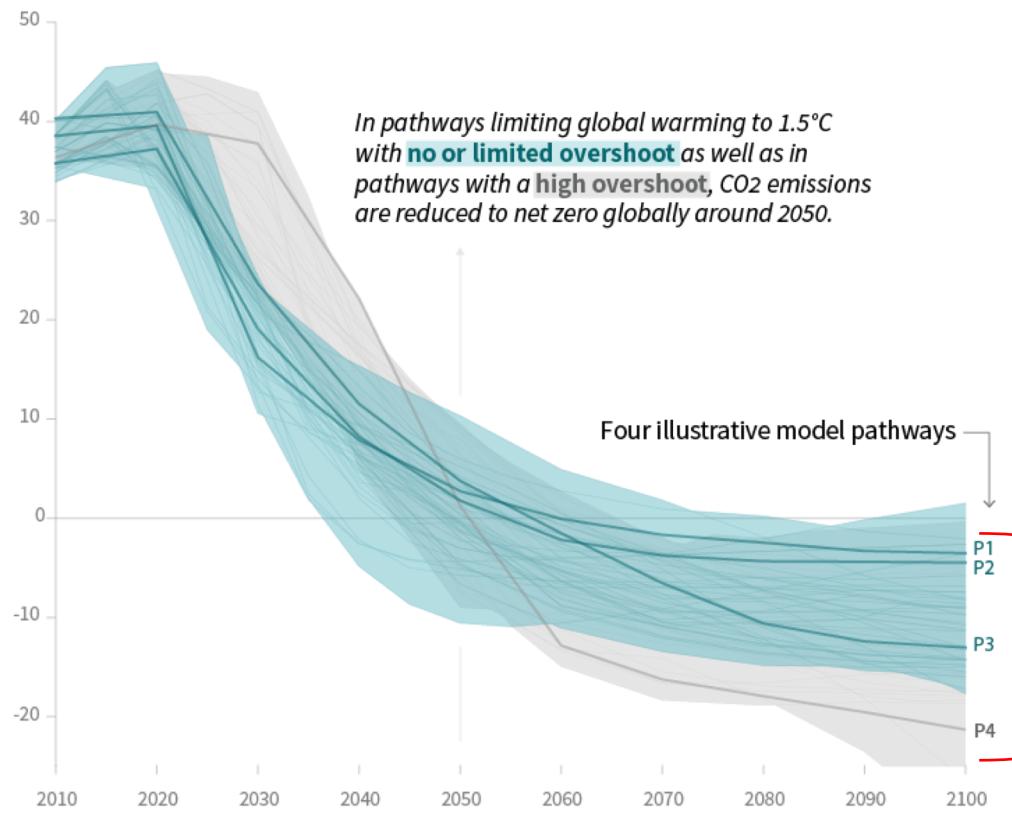
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Global emissions pathway characteristics

Global total net CO₂ emissions

Billion tonnes of CO₂/yr



Timing of net zero CO₂
Line widths depict the 5-95th percentile and the 25-75th percentile of scenarios

Pathways limiting global warming to 1.5°C with no or low overshoot
Pathways with high overshoot

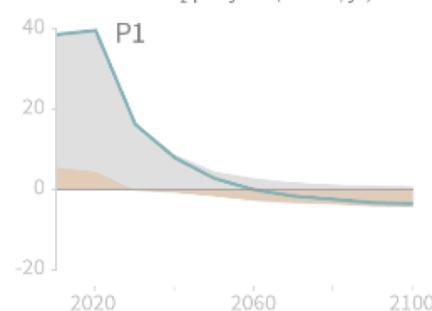
Pathways limiting global warming below 2°C
(Not shown above)

Characteristics of four illustrative model pathways

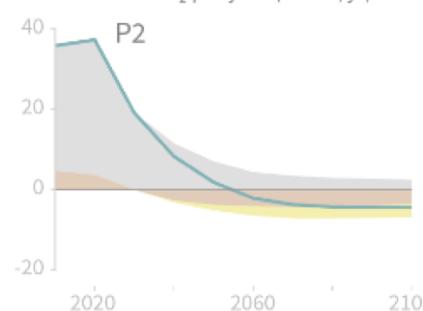
Breakdown of contributions to global net CO₂ emissions in four illustrative model pathways

● Fossil fuel and industry ● AFOLU ● BECCS

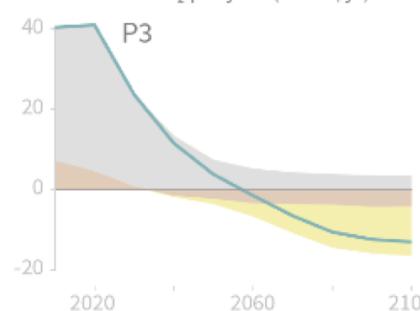
Billion tonnes CO₂ per year (GtCO₂/yr)



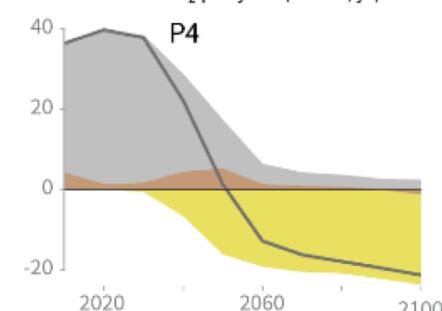
Billion tonnes CO₂ per year (GtCO₂/yr)



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Billion tonnes CO₂ per year (GtCO₂/yr)

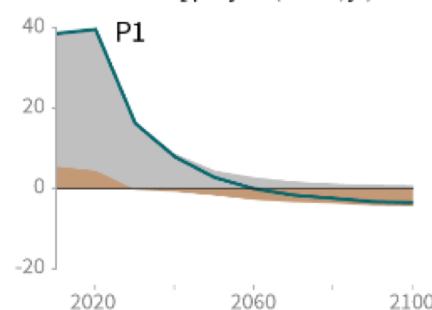


Characteristics of four illustrative model pathways

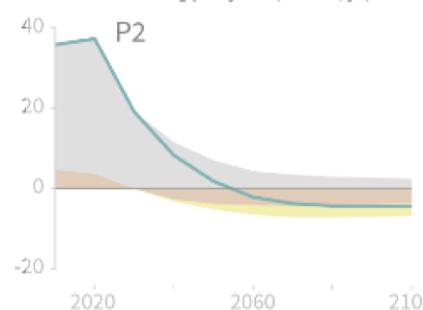
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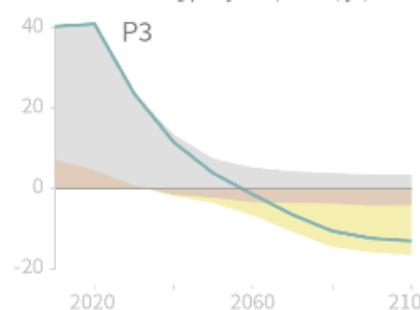
Billion tonnes CO₂ per year (GtCO₂/yr)



P2:

A scenario with a broad focus on sustainability including energy intensity, human development, economic convergence and international cooperation, as well as shifts towards sustainable and healthy consumption patterns, low-carbon technology innovation, and well-managed land systems with limited societal acceptability for BECCS.

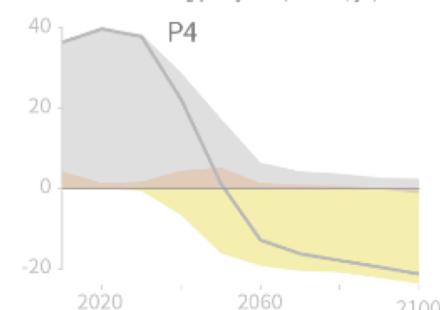
Billion tonnes CO₂ per year (GtCO₂/yr)



P3:

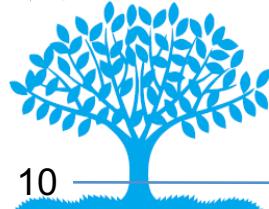
A middle-of-the-road scenario in which societal as well as technological development follows historical patterns. Emissions reductions are mainly achieved by changing the way in which energy and products are produced, and to a lesser degree by reductions in demand.

Billion tonnes CO₂ per year (GtCO₂/yr)



P4:

A resource- and energy-intensive scenario in which economic growth and globalization lead to widespread adoption of greenhouse-gas-intensive lifestyles, including high demand for transportation fuels and livestock products. Emissions reductions are mainly achieved through technological means, making strong use of CDR through the deployment of BECCS.

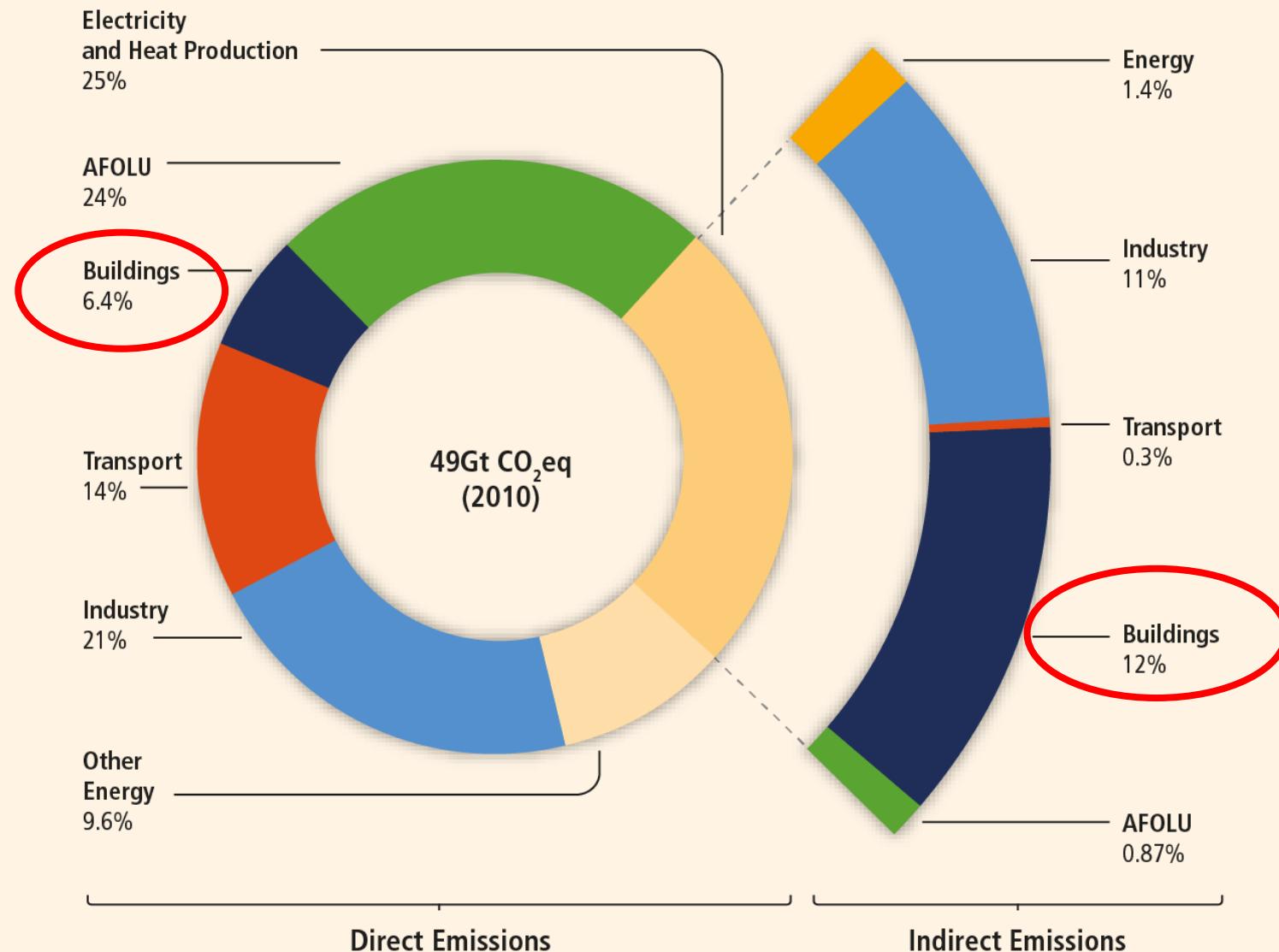


10

The role of the built environment in keeping our planet cool(er)



Accounting method has key implications on the importance of buildings!



forrás: E-On Energy Globe Award Hungary
2018

www.zeroenergia.net



Zero energy buildings are now a market reality even in low income regions

CSÜTÖRTÖK , 28 FEBRUÁR 2019

Cégünk minősítései

Akciók

Rólunk

Kapcsolat

Telefonszámunk: 06-70/368-75-28 és 06-70/368-74-39

Keresés



Híreink

Házelpítés és szolgáltatások

Modern és luxus házak

Lakberendezés

Amit mindenkiheppen tudni kell!

Tipusterv árajánlat

Egyedi árajánlat készítés

KIEMELT HÍREINK:

A lakóépület építésének egyszerű bejelentéséről szóló kormányrendeletet itt olvashatja...

Rengeteg infó az 5% ÁFA ügyében. Kattintson...

Minden infó az új CSOK-ról és a jogszabályokról. Kattintson ...

Home / Akciók / Zéro Energia ház 26 millió forintért

Zéro Energia ház 26 millió forintért

Akciók, Kiemelt cikkeink, Környezetvédelem, energiatakarékosság hozzájárulás

Tetszik a Kp.hu?



Készáz Portál

Like Page

11K likes

Tetszik a cikk?

Like

Share

2 people like this. Be the first of your friends.

Mindenni szeretne olyan házban élni, melyben nem kell rezsiköltséget fizetni.

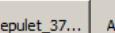
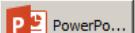
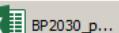
Mi egy olyan házat ajánljunk Önnek, ami 0 Ft, azaz nulla forintból üzemeltethető.

EnergyFriendHome Zéro Energy házaink valóban nem fogyasztanak csak napenergiát, hívhatjuk Fényevő házaknak is őket.

Ezek az épületek alapesetben is minimális

Budapestről új helyre költözött a bemutatótermünk és a készáz gyárunk!**Új címünk: 2316. Tököl, Vince Tanya.**
(Tököli Hév megállótól 250 m-re.)
Info: 06-20/444-44-24.

Az alábbi Google térkép segít a navigációban.

12:41 AM
3/1/2019



forrás: Klemens Schlögl, Schöber & Pöll, Austrian World Summit 2018, Vienna, May 2018



IATÁLTALAN
TUDÁS
#SeeUatCEU



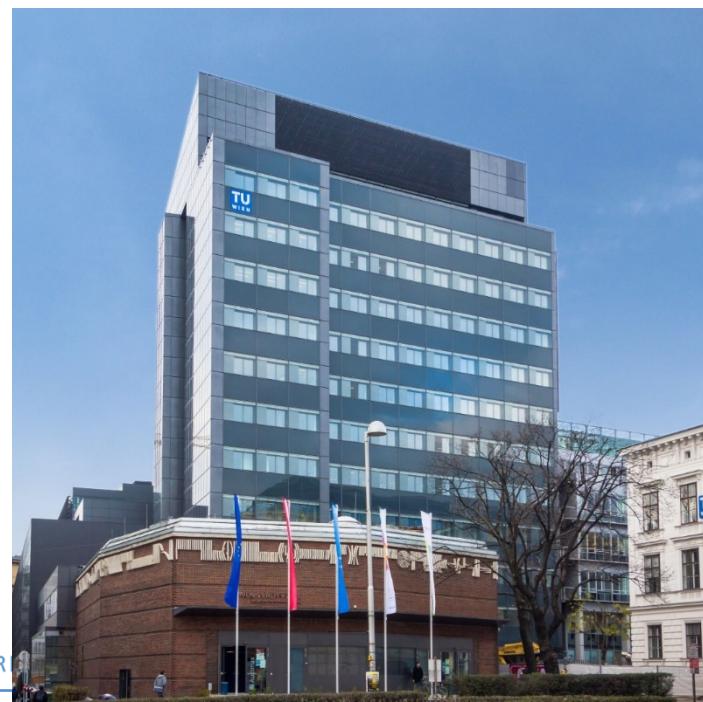
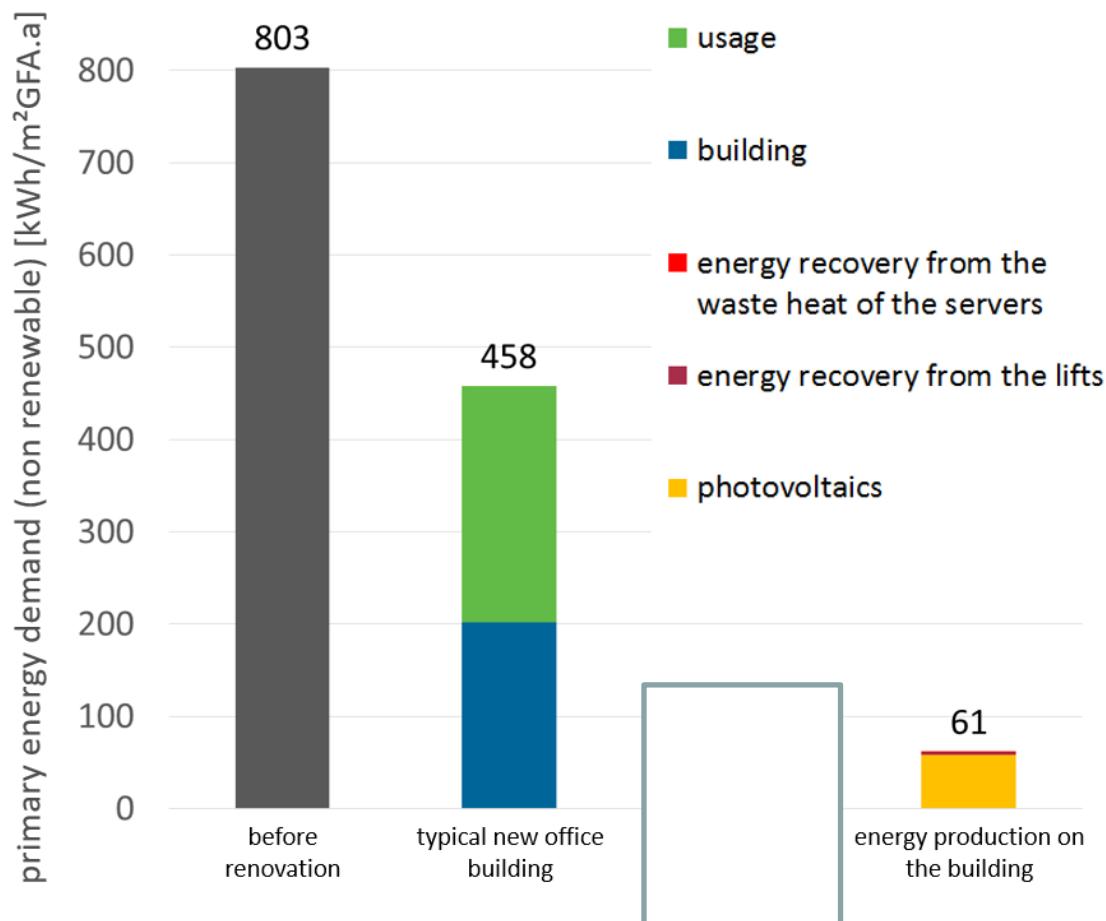
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climate change



Retrofit of Vienna Technical University building to energy plus level



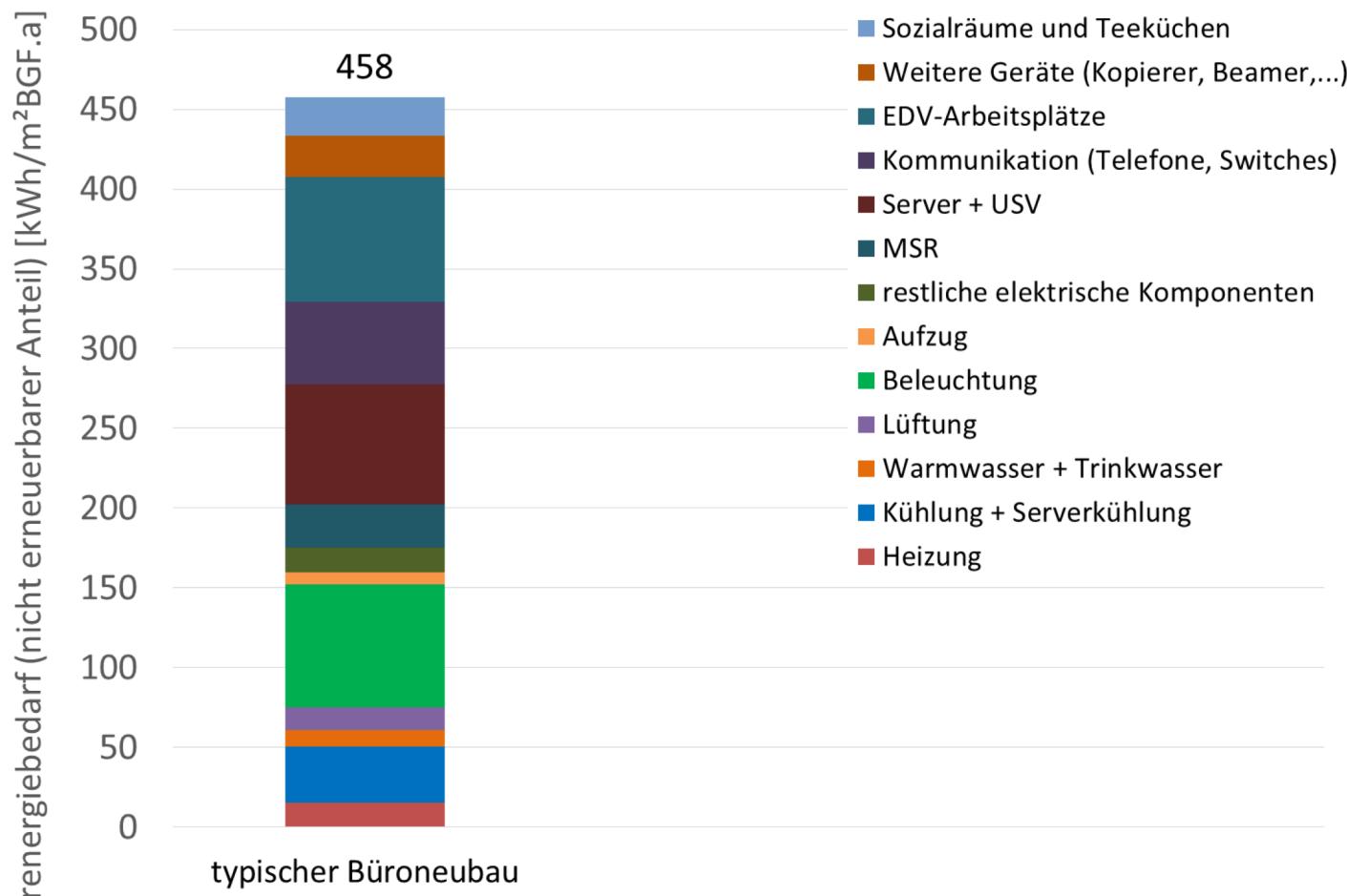
Schöberl & Pöll GmbH
BAUPHYSIK und FORSCHUNG



Source: Klemens Schlägl, Schöberl & Pöll, Austrian World Summit 2018, Vienna, May 2018

INTERGOVERNMENTAL

Disruptive electricity demand reductions arrive from innovatively optimising opportunities in systems rather than replacing individual technologies



Quelle: TU Wien, Forschungsbereich für Bauphysik und Schallschutz



2018 Vienna, May 2018

Clemens Schlögl, Schöber & Pöll, Austrian World Summit

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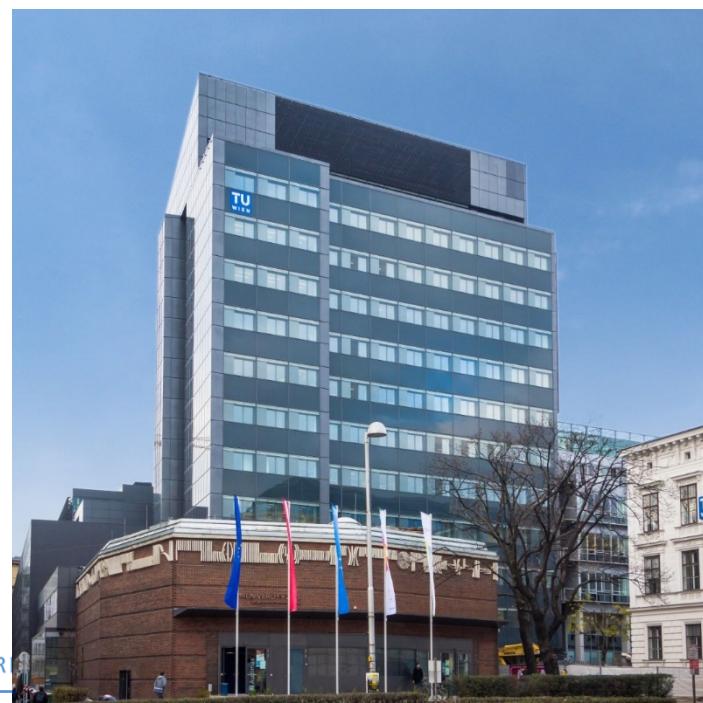
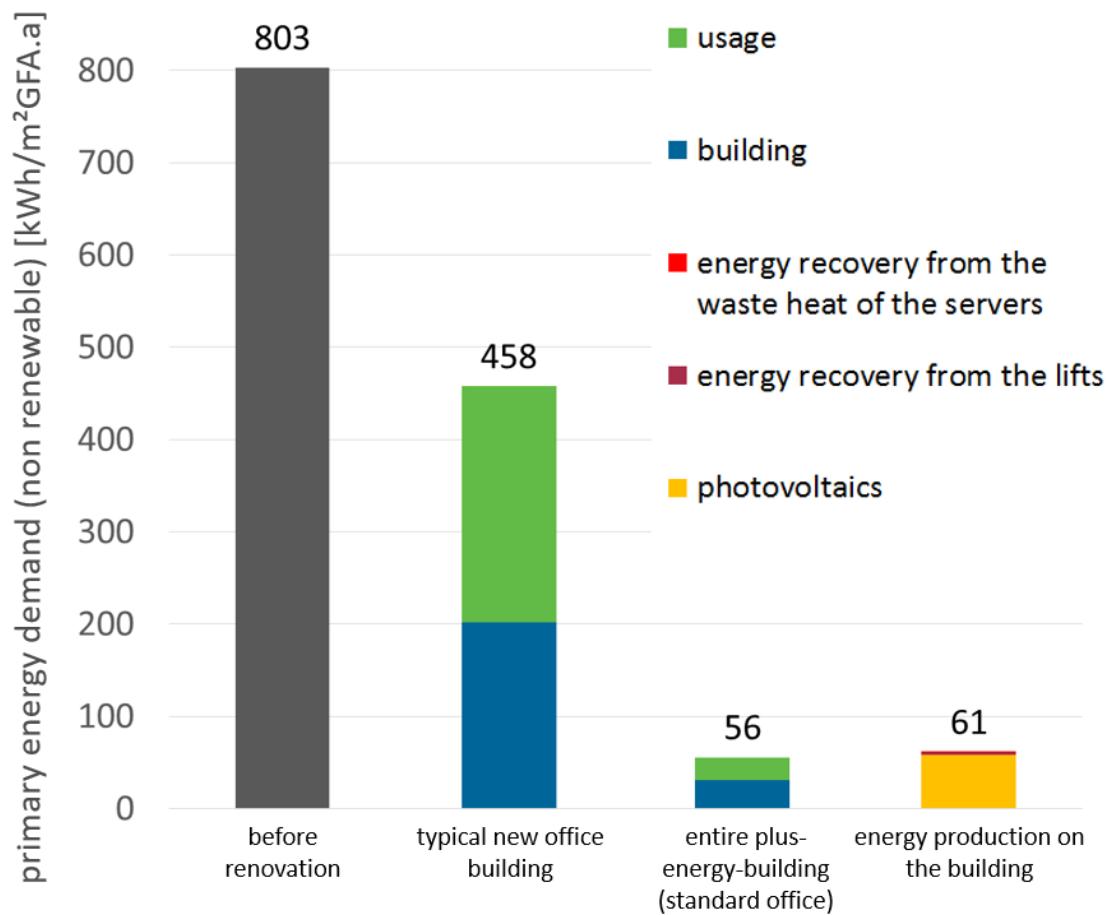
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Retrofit of Vienna Technical University building to energy plus level



Schöberl & Pöll GmbH
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Source: Klemens Schlägl, Schöberl & Pöll, Austrian World Summit 2018, Vienna, May 2018

INTERGOVERNMENTAL

Otto-Wagner-Area, Vienna

OTTO WAGNER AREAL PLUS



- Built in 1904-1907
- Designed by famous European architect Otto Wagner
- 70 buildings
- Total gross floor area > 200.000 m² (2,1 mio. sqft)

Media source: https://upload.wikimedia.org/wikipedia/commons/thumb/b/bb/Vienna_Steinhof_Church_Aerial_2aug14_-1_%28215102404601%29.jpg/1280px-Vienna_Steinhof_Church_Aerial_2aug14_-1_%28215102404601%29.jpg

Bundesministerium
Verkehr, Innovation
und Technologie



Das Projekt OttoWagner-ArealPlus wird durch Mittel des BMVIT
im Rahmen der 6. Ausschreibung „Stadt der Zukunft“ gefördert.



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LANG consulting
Forschung - Innovative Baukonzepte für alle und heute



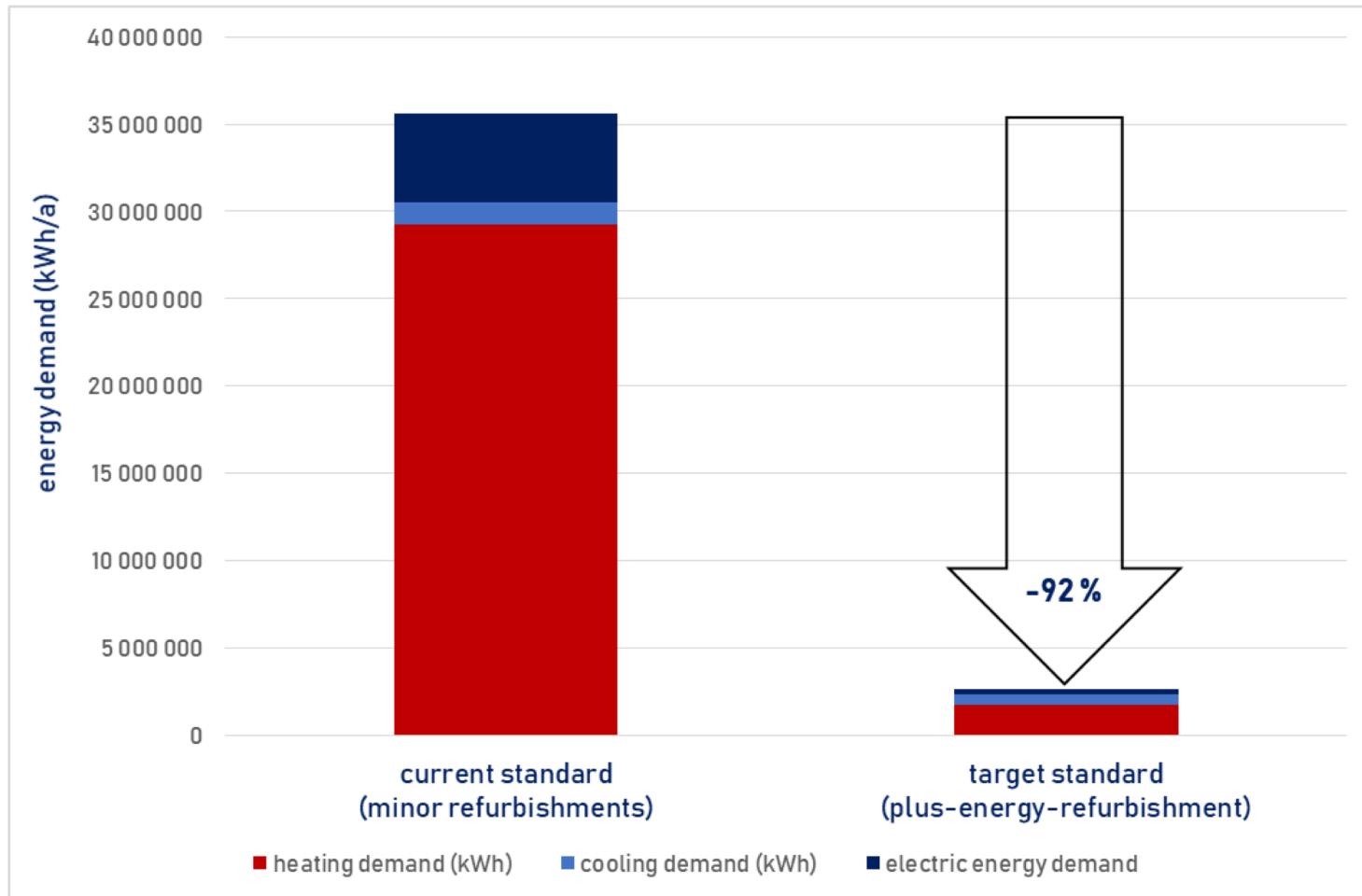
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Plus-energy-refurbishment

OTTO WAGNER AREALPLUS



Bundesministerium
Verkehr, Innovation
und Technologie

Das Projekt OttoWagner-ArealPlus wird durch Mittel des BMVIT
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TU
WIEN

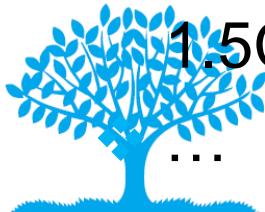
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WMO
UNEP

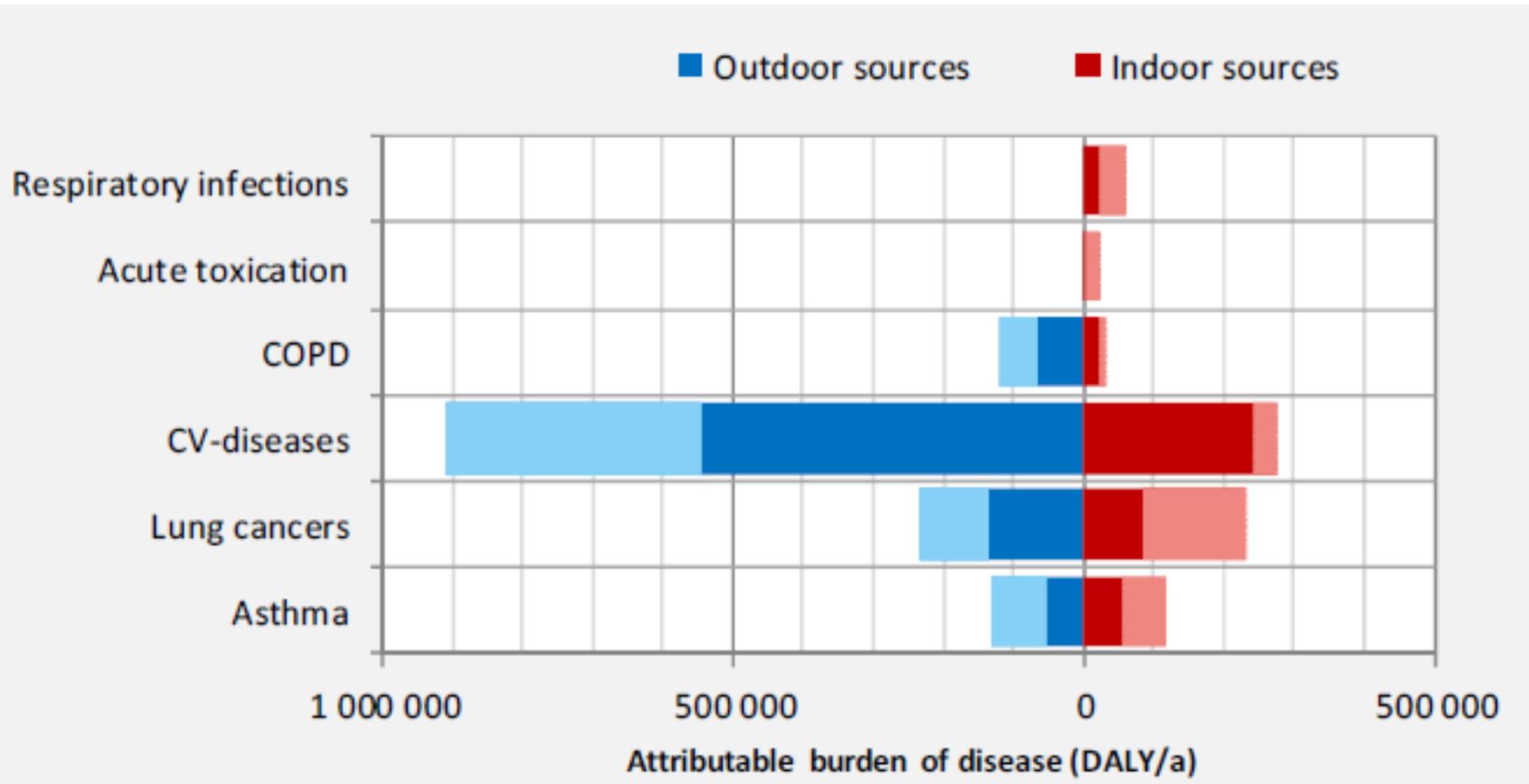
Co-benefits of very high performance (very lowE and energy plus) buildings

- ❖ Significant improvement in social welfare through disappearance of utility bills
 - Elimination of energy poverty?
- ❖ Elimination of mould
- ❖ Improved indoor air quality
- ❖ Health gains
 - Significantly reduced transmittable respiratory infections, allergies, reduced asthma, cardiovascular diseases, cancer
- ❖ Productivity gains
 - Chaterjee&Urge-Vorsatz found a 5 day annual reduction in sick leave in Germany
- ❖ Reduced need for capacity expansion for an electrified 1.5C (warmer) planet



Attributable burden of diseases due to indoor exposures in 2010 in EU26

The lighter shade represents the maximum reducible fraction through well operated ventilation systems in high-efficiency buildings

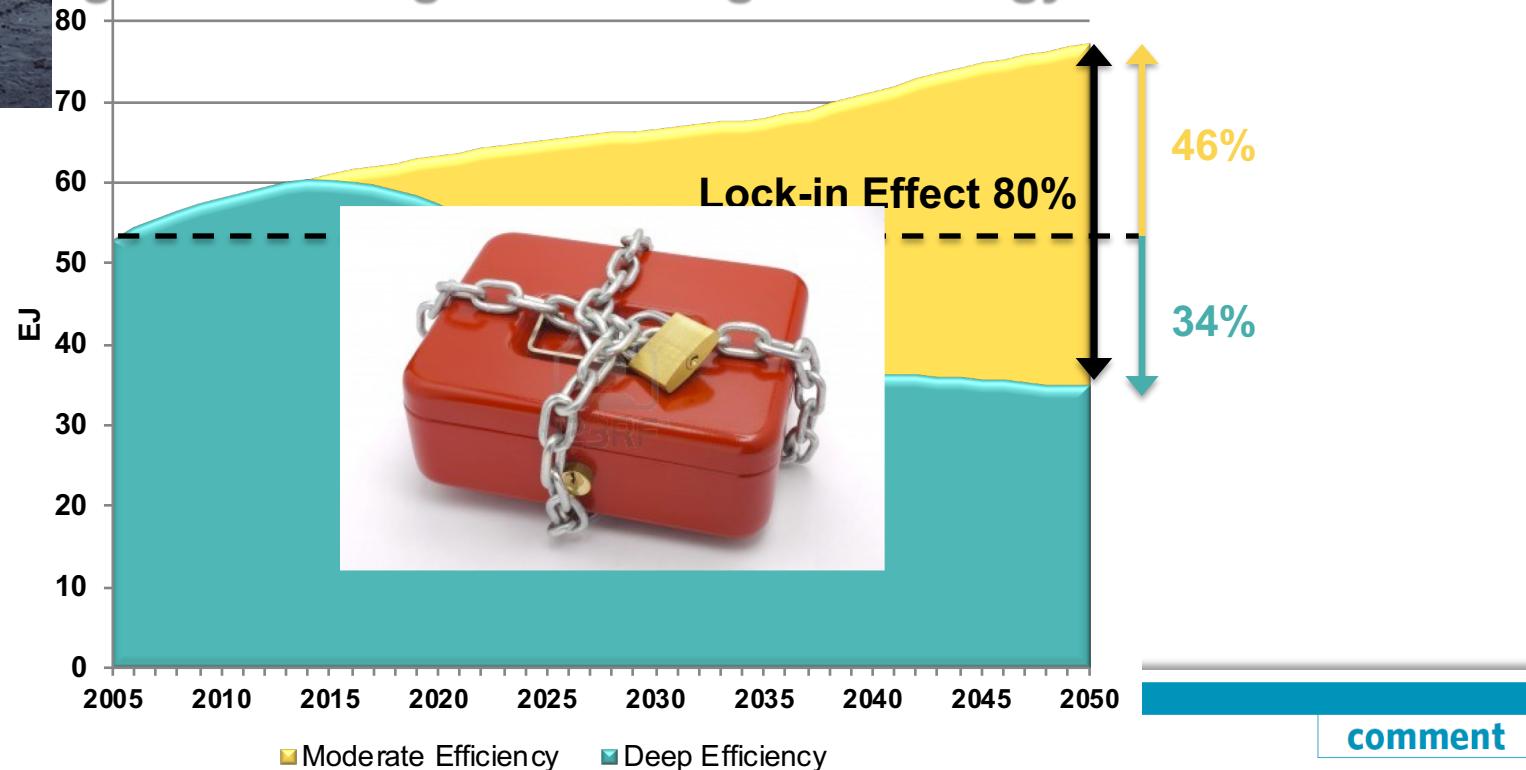


Source: Otto Hänninen and Arja Asikainen (Eds.) 2013. Efficient reduction of indoor exposures Health benefits from optimizing ventilation, filtration and indoor source controls



The Lock-in Risk: *every building we build or retrofit to less than ZEB locks us into a warmer future*

global heating and cooling final energy in two scenarios



Locking in positive climate responses in cities

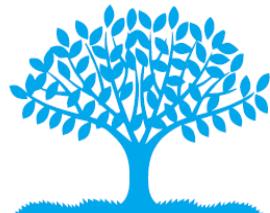
Well-intended climate actions are confounding each other. Cities must take a strategic and integrated approach to lock into a climate-resilient and low-emission future.

Diana Ürge-Vorsatz, Cynthia Rosenzweig, Richard J. Dawson, Roberto Sanchez Rodriguez, Xuemei Bai, Aliyu Salieu Barau, Karen C. Seto and Shehbazkar Dhakal



Examples of lock-in solutions in the built environment risking a 1.5C scenario

- ❖ Partial or incremental retrofits incompatible with a systemic deep (>80% reduction) retrofit
- ❖ Boiler replacements before thermal retrofit
- ❖ District heating
- ❖ ...





BRAINWAVE
MANIPULATION
WINNING PHASE
EXTREME BUILDING

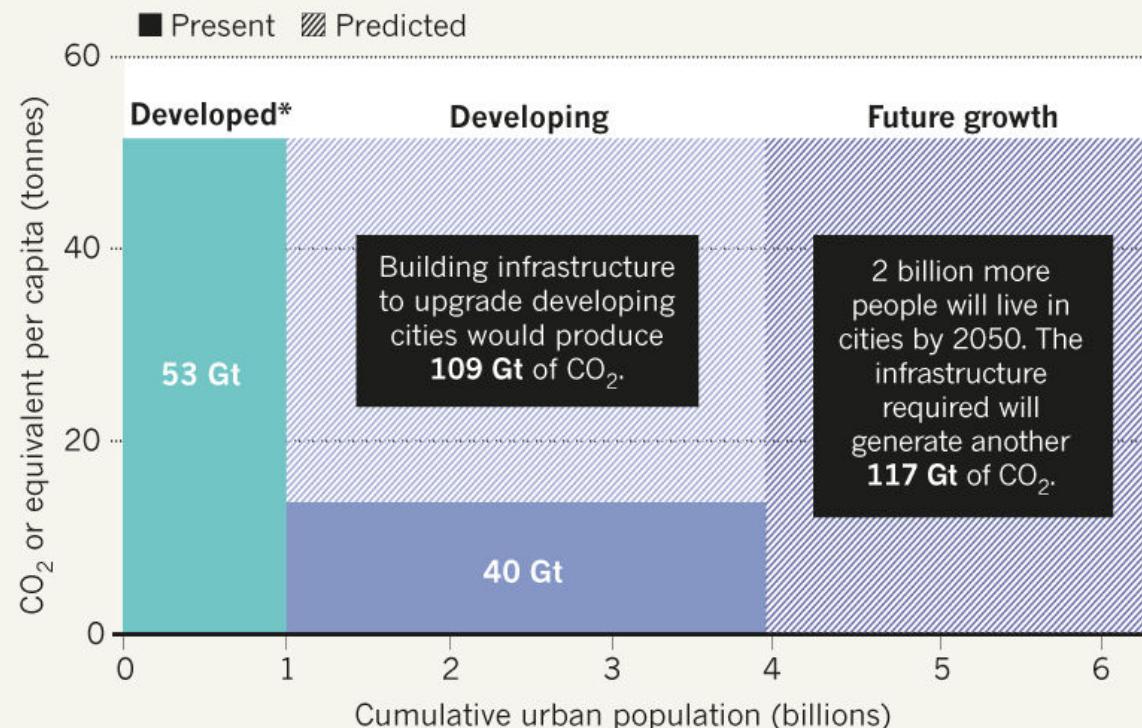


UNEVEN GROWTH
High-resolution maps
explore the inequality
in education and childhood
youth lives across Africa.
PAGE 24-44

Just developing our urban infrastructure till mid-century can consume up to a third of our remaining carbon budget to a 1.5C target

URBAN DEVELOPMENT CHALLENGE

Building infrastructure for fast-growing cities in developing countries could release 226 gigatonnes (Gt) of carbon dioxide by 2050 — more than four times the amount used to build existing developed-world infrastructure. To curb emissions, cities need low-carbon construction, alternative transport and better planning and design.



*Developed countries are as listed in Annex I to the Kyoto Protocol.
Developing countries are those not listed in Annex I.

©nature

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for change



Bai, X., Dawson, R. J., Ürge-Vorsatz, D., Delgado, G. C., Barau, A. S., Dhakal, S., ... & Roberts, D. (2018). Six research priorities for cities and climate change. *Nature*, 555(7694), 23-25..

Brock Commons Carbon Impact

**Volume of wood:**

2,233 cubic meters of CLT and Glulam

**U.S. and Canadian forests grow this much wood in:**

6 minutes

**Carbon stored in the wood:**

1,753 metric tons of CO₂

**Avoided greenhouse gas emissions:**

679 metric tons of CO₂

**TOTAL POTENTIAL CARBON BENEFIT:**

2,432 metric tons of CO₂

EQUIVALENT TO:

511 cars off the road for a year



Energy to operate a home for 222 years

Source: US EPA



Source: **IPCC**
Naturallywood

E



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Conclusions: The built environment is (THE?) key to limit global warming to 1.5C

- ❖ ...Especially considering cost-effectiveness, environmental risks and other co-benefits
- ❖ We can now build (and retrofit) ZEBs in every climate and most building types
 - The key is minimising energy demand first (vs noCO2 supply)
- ❖ However, the urgency poses a major challenge
 - From today, every building we build or retrofit to less than a passivhaus (or zero energy?) standard locks us into a higher T future
- ❖ But even building/retrofitting only ZEBs is not enough for a 1.5C future:
- ❖ We need to minimize embodied energy and carbon
 - Minimise/eliminate cement and steel in construction
 - Responsible and climate smart design
- ❖ Store carbon in construction materials
 - Bio-based materials not only store CO2, but also have taken it out of the atmosphere
 - If not possible, carbon storage in construction materials (CCUS)



Thank you for your attention



Diana Ürge-Vorsatz

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