Beyond the business case:
buildings for the climate – a global perspective

CENTER FOR CLIMATE CHANGE
AND SUSTAINABLE ENERGY POLICY

CENTRAL EUROPEAN UNIVERSITY

Diana Ürge-Vorsatz

director

Build Green CEE
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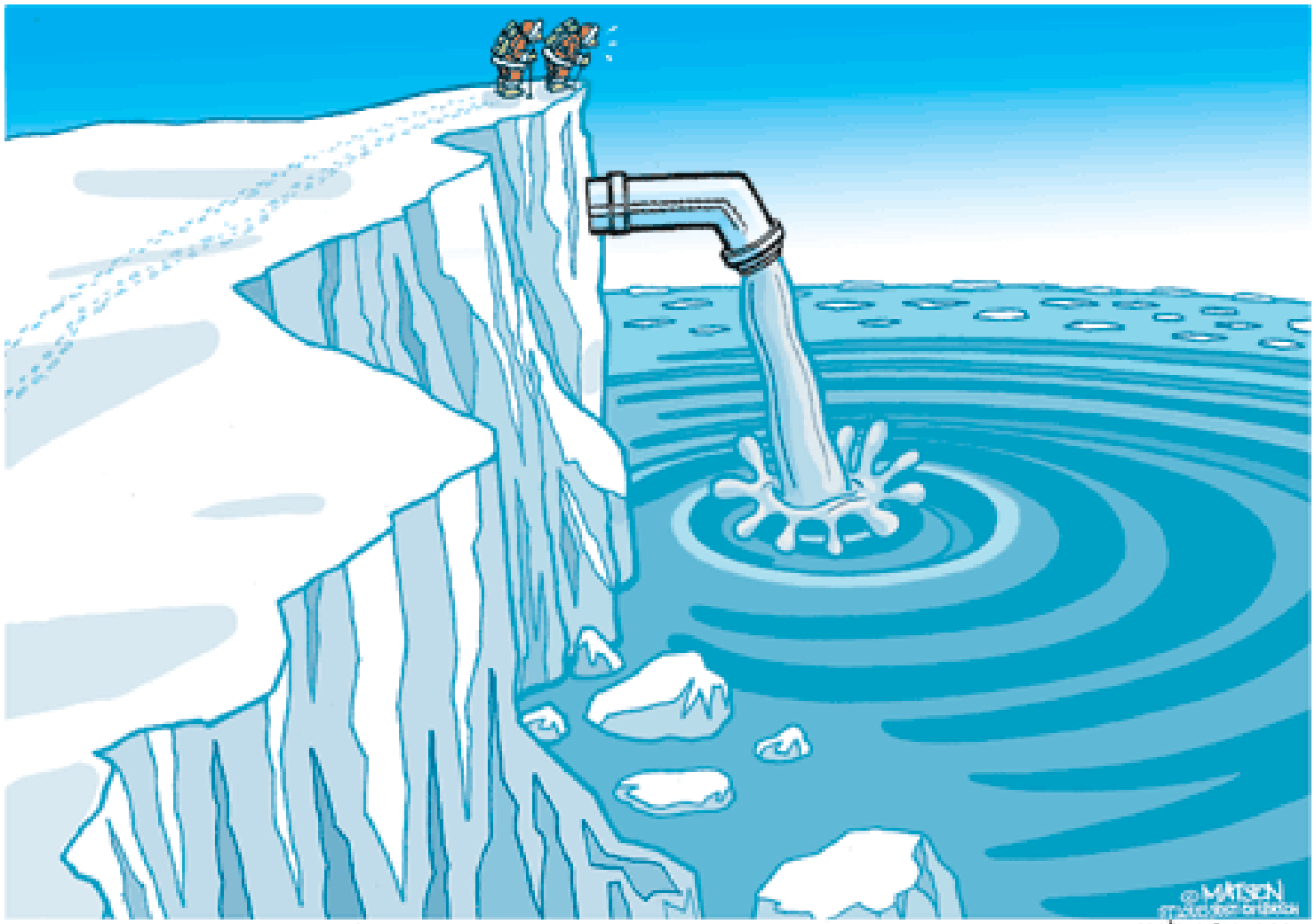
Overview

- Introduction: the CC challenge
- The global and regional importance of green buildings in tackling CC
- Co-benefits: the free lunch we are paid to eat
- But who will pay the cover charge?
- The role of GBCs in unlocking the opportunities and recommendations

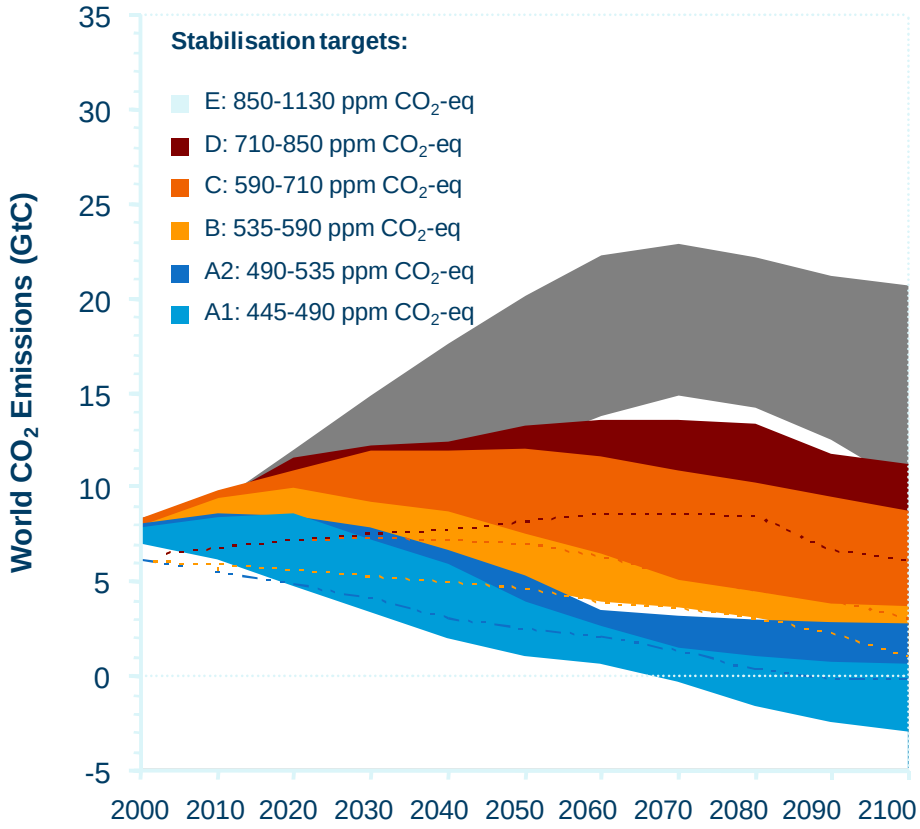
The climate change challenge



In order to limit the impacts of CC, GHG emissions have to be reduced significantly

- Stabilizing global mean temperature requires a stabilization of GHG concentrations in the atmosphere -> GHG emissions would need to peak and decline thereafter (SPM 18 WG III)
- The lower the target stabilisation level limit, the earlier global emissions have to peak.
- Limiting increase to 3.2 – 4°C requires emissions to peak within the next 55 years.
- Limiting increase to 2.8 – 3.2°C requires global emissions to peak within 25 years.
- Limiting global mean temperature increases to 2 – 2.4°C above pre-industrial levels requires global emissions to peak within 15 years and then fall to about **50 to 85%** of current levels by 2050.

Based on SPM 7, WG III. Emission pathways to mitigation scenarios



Multigas and CO_2 only studies combined

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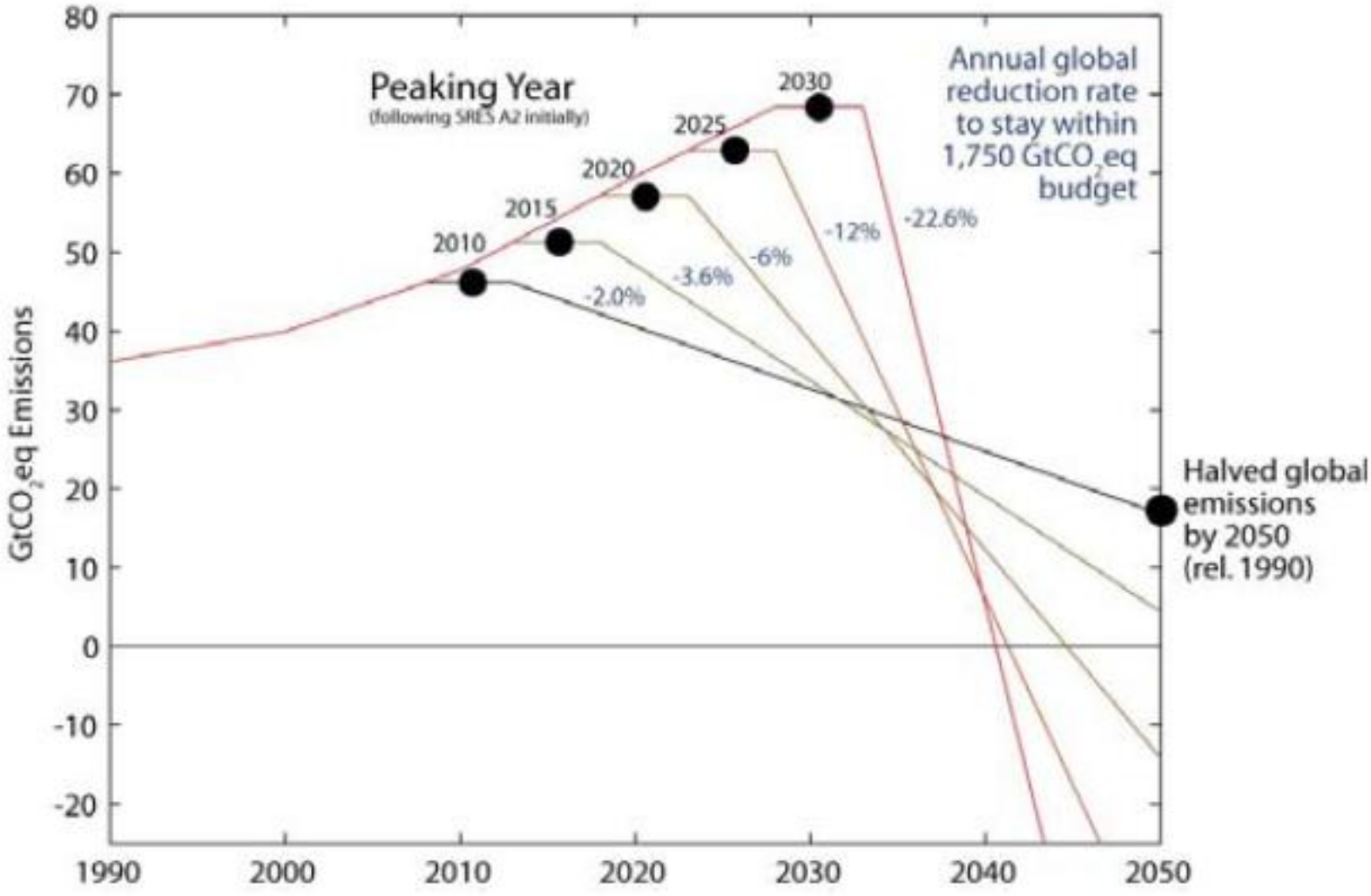
The later emissions peak, the more ambitious reductions needed



***Source**: Meinshausen et al 2009*

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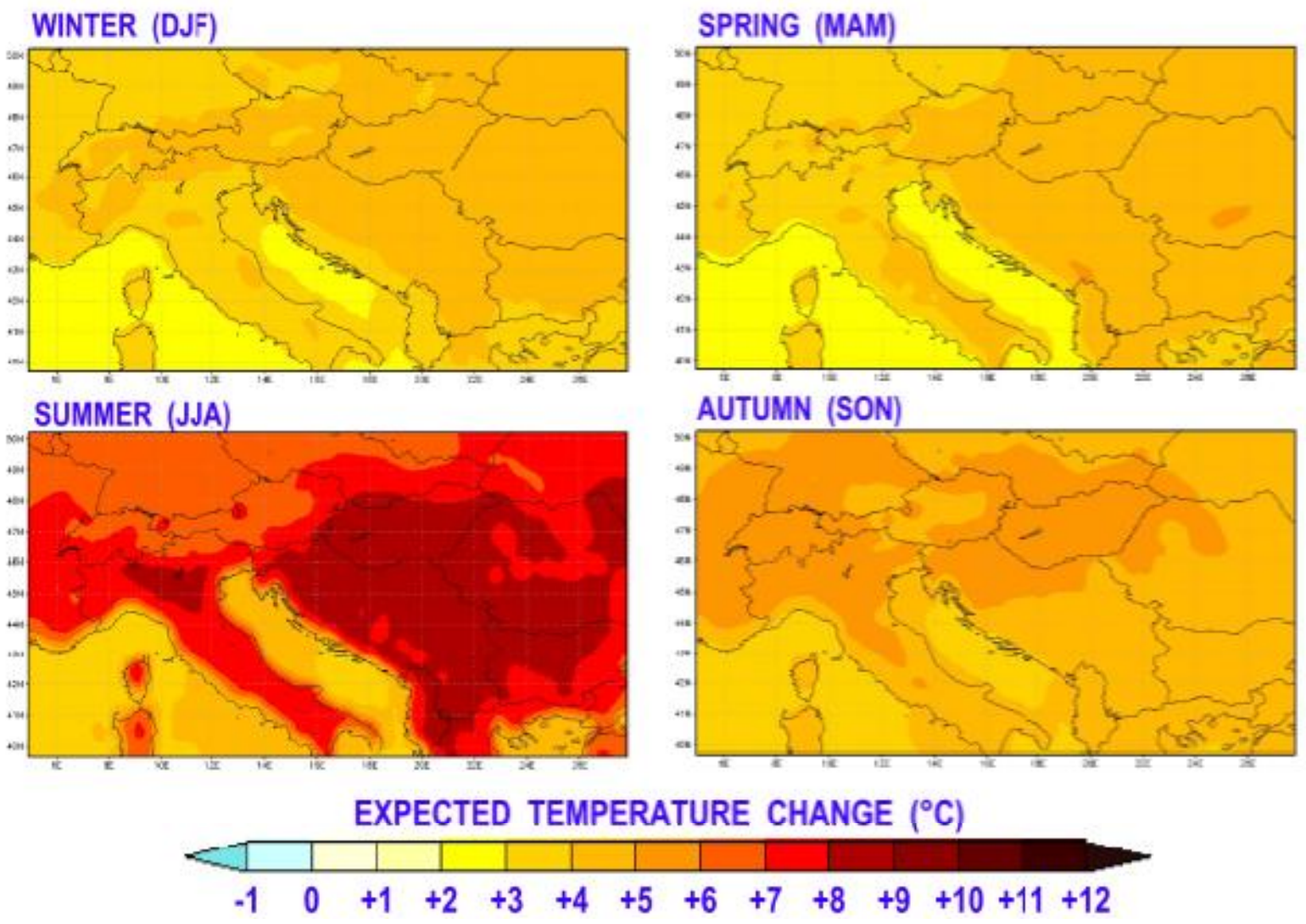
Certain models forecast alarming summer warming in region:

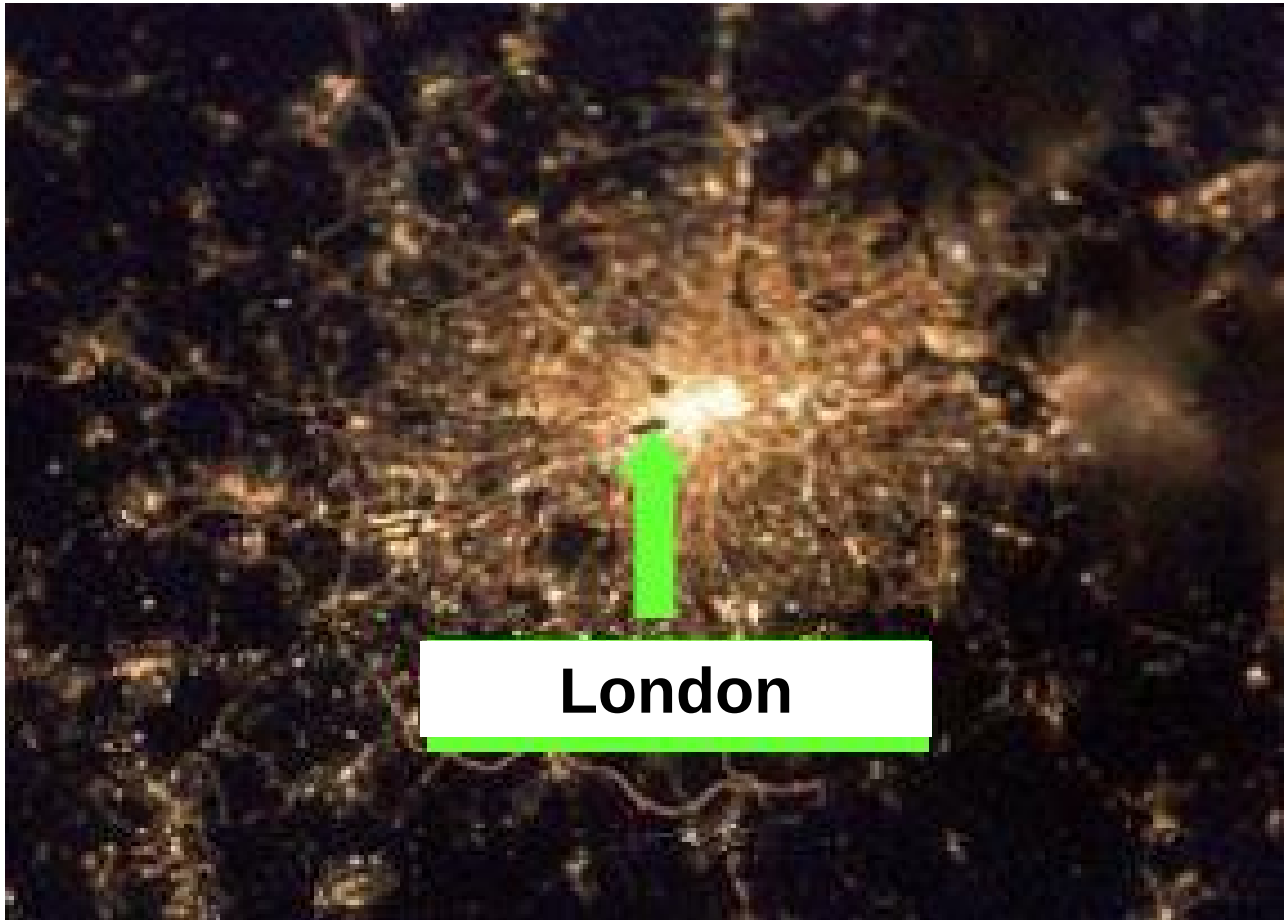
PRECIS scenario 2071–2100



Forrás: Bartholy Judit: ***bemutató az IPCC rendezvényen, CEU 2008. március***

The importance of energy performance of buildings on *local* warming:

new importance of low energy consumption buildings



The role of green buildings in CC mitigation: global and regional importance

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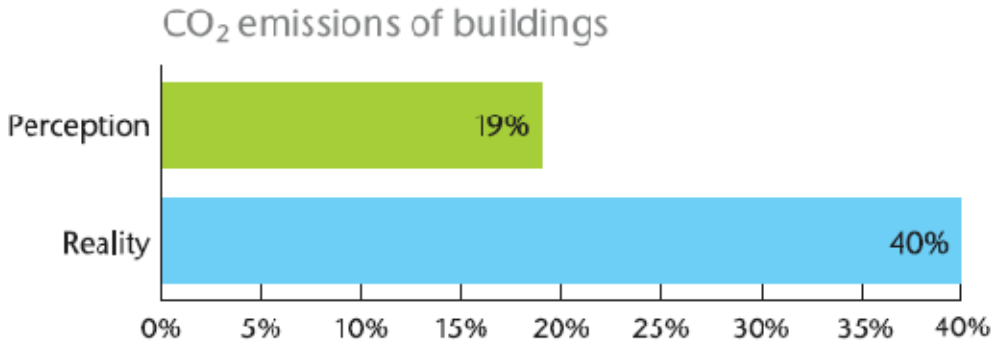
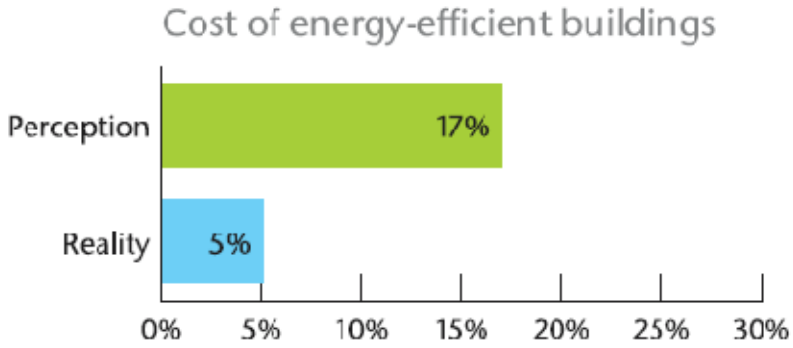
Perceptions from sector professionals

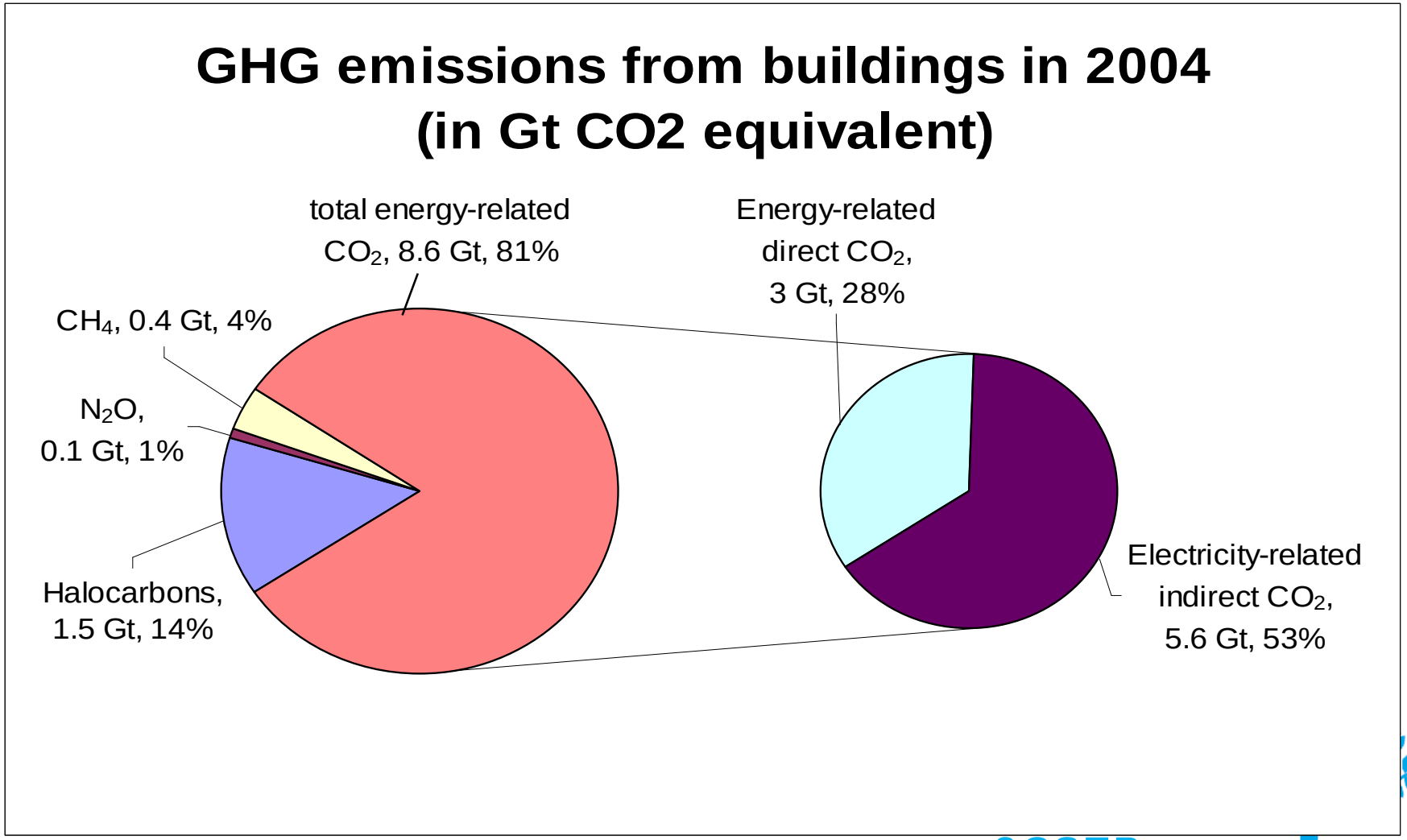




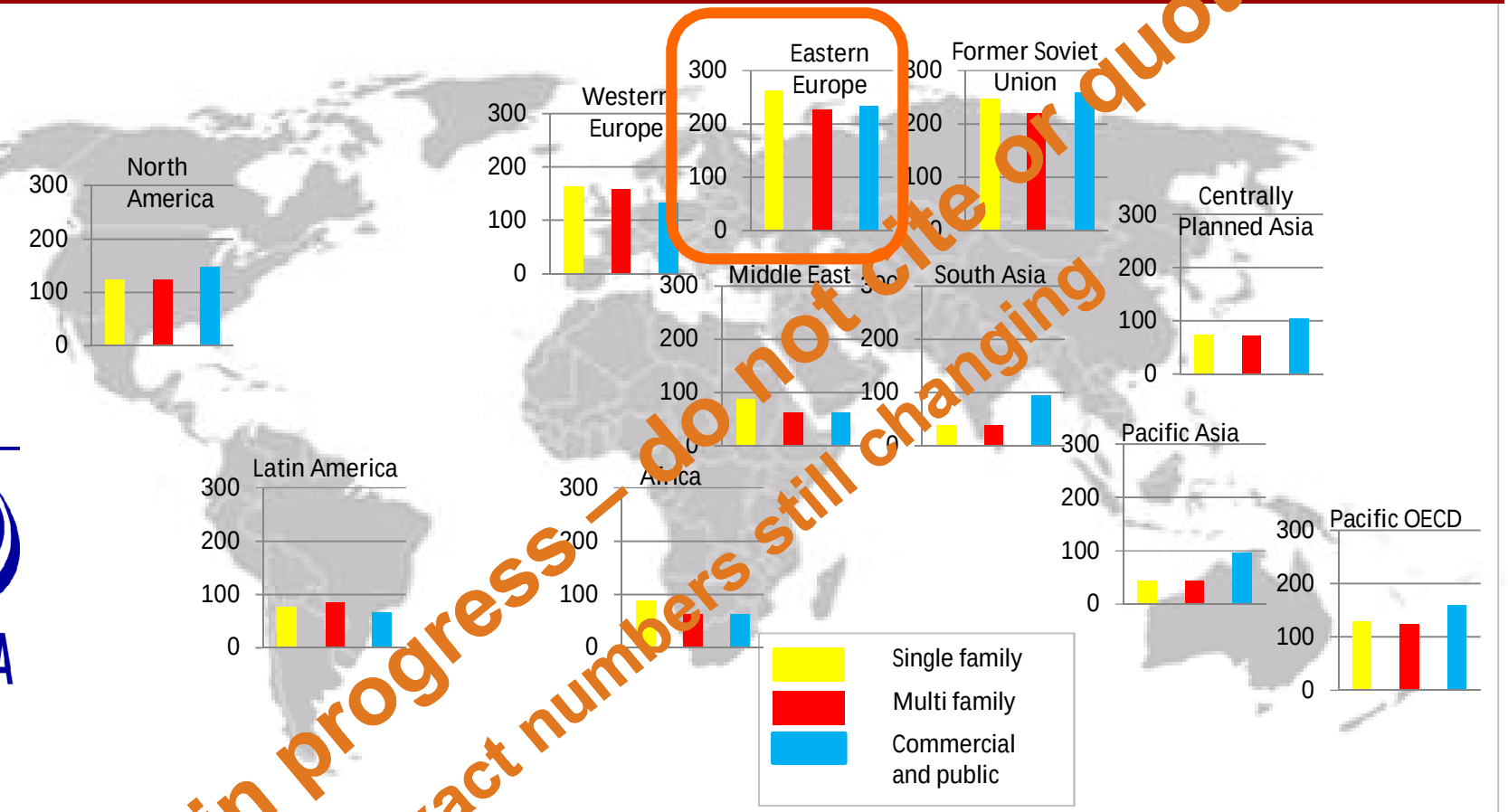
Source: WBCSD 2007: EEB Facts and Trends, 2007

Building sector: global importance

In 2004, in buildings were responsible for app. 1/3 of global energy-related CO_2 (incl. indirect) and 2/3 of halocarbon emissions



Specific energy consumption for heating and cooling in the GEA regions by building type, 2005 (kWh/(m²*year))



GEA

Source: GEA Model

UNEP SBCI Sustainable Buildings & Climate Initiative

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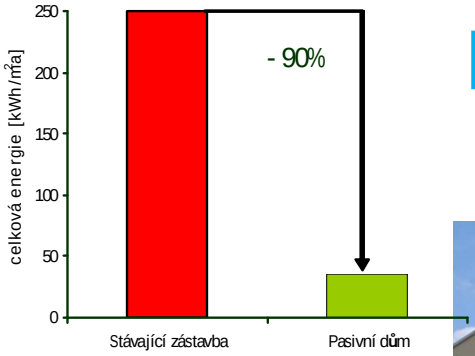
How much can green buildings help?

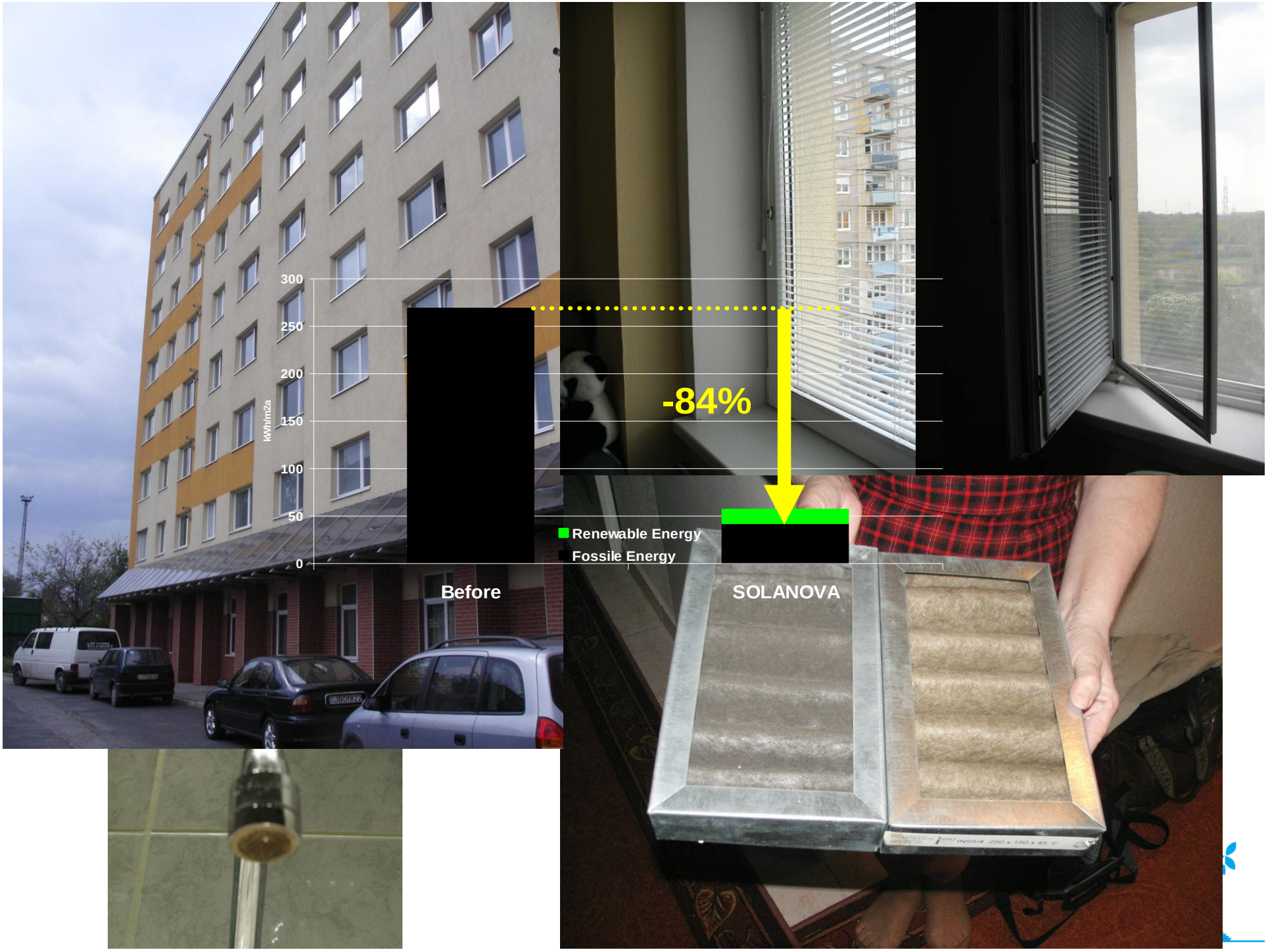
Few sectors can deliver the magnitude of emission reduction needed

- know-how has recently developed that we can build and retrofit buildings to achieve 60 – 90% savings as compared to standard practice in all climate zones (providing similar or increased service levels)

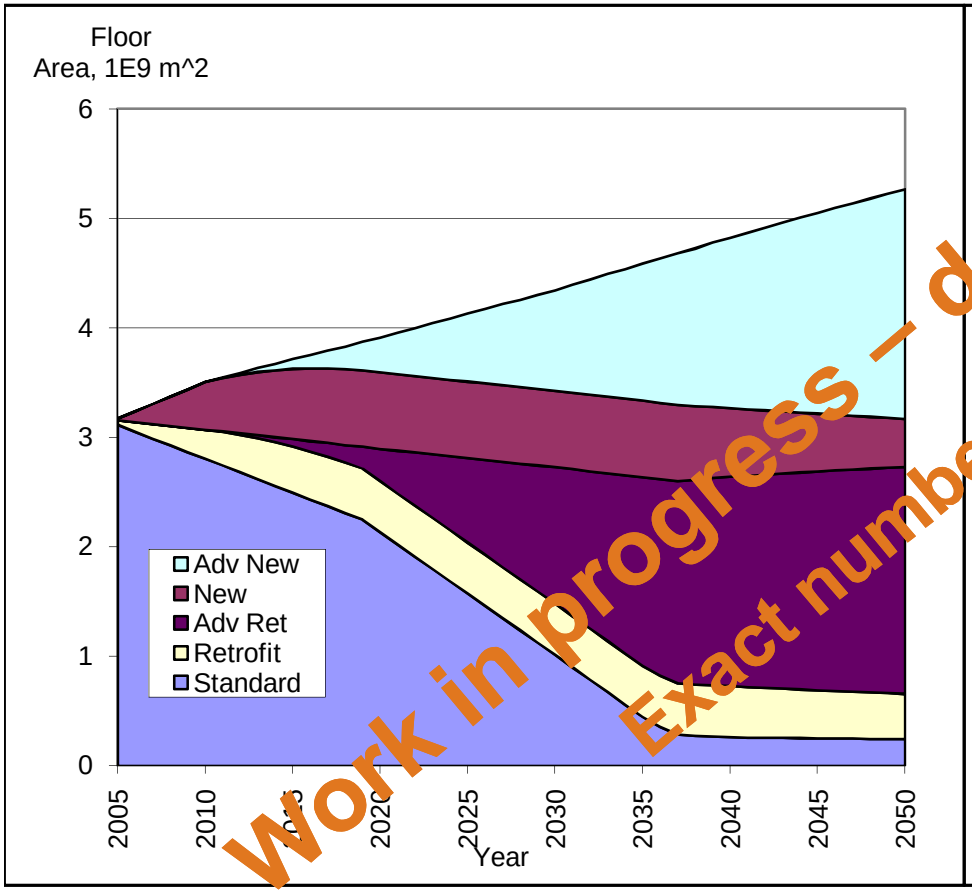
Buildings utilising passive solar construction (“PassivHaus”)

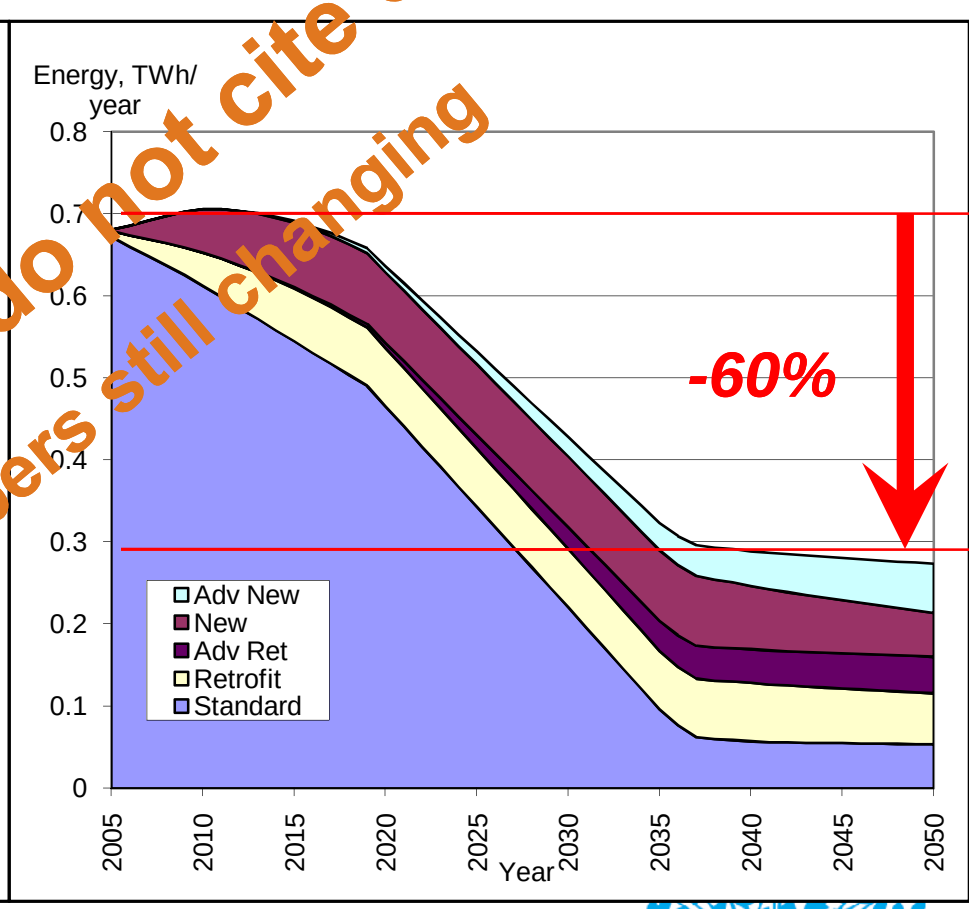


Source: Jan Barta, Center for Passive Buildings, www.pasivnidomy.cz


300
250
200
150
100
50
0
kWh/m2a
-84%
Renewable Energy
Fossile Energy
Before
SOLANOVA

East European heating&cooling final energy and floor area, 2005 - 2050 State-of-the-Art Scenario





Work in progress – do not cite or quote

Exact numbers still changing

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Opportunity or risk?

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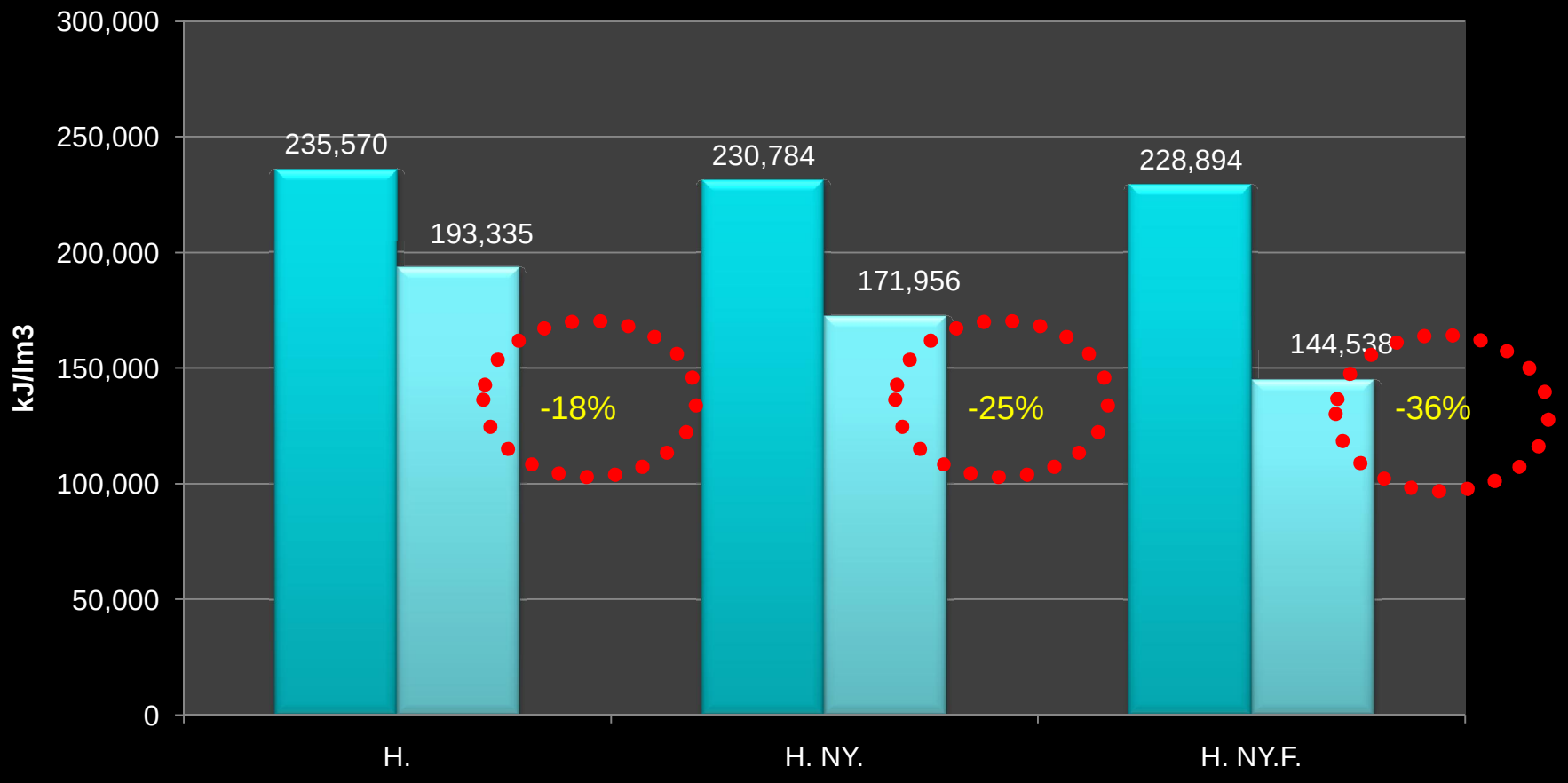
The size of the potential lock-in effect

Development of specific heating energy consumption of buildings participating in the Panel Program, Hungary (case study, City A)



H: Homlokzati hőszigetelés
H: NY. Homlokzati hőszigetelés, nyílászáró csere
H: NY. F. Homlokzati hőszigetelés, nyílászáró csere, fűtéskorszerűsítés

Source: Pájer Sándor, SZÉPHŐ Zrt., KLÍMAVÁLTOZÁS - ENERGIATUDATOSSÁG –ENERGIAHATÉKONYSÁG. V. Nemzetközi Konferencia, SZEGED, 2009. április 16-17.

Final thermal energy consumption Eastern Europe, 2005-2050

Using state-of-the-art and cost-effective construction know-how

Co-benefits - the free lunch we are paid to eat…

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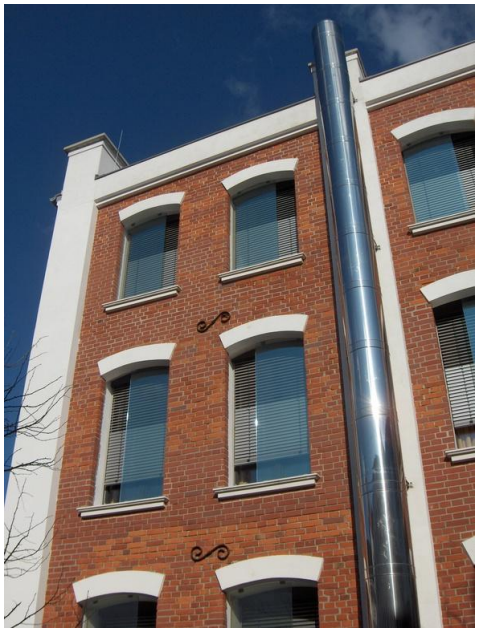

Co-benefits of energy-efficient buildings

Investment needs vs. energy cost savings, Hungarian tertiary sector

	Energy saving potential			CO_2 reduction potential			Investment vs. savings	
	Business-as-usual in year 2030	Energy saving potential in year 2030	Energy saving potential in year 2030 (% of BAU)	Business-as-usual 2030	CO_2 mitigation potential 2030	CO_2 mitigation potential 2030 (% of BAU)	Total cumulative investment (2011-2030)	Cumulative energy cost savings (2011-2030)
	GWh	GWh	GWh	kt CO_2	kt CO_2	kt CO_2	Billion Euro	Billion Euro
Suboptimal accelerated	7 633	1 667	22%	1 518	331	22%	1.82	0.97
Passive 1%	7 633	1 518	20%	1 518	302	20%	0.84	0.88
Passive accelerated	7 633	5 572	73%	1 518	1 108	73%	2.62	3.24

Source: Katarina Korytarova, dissertation draft

In most new MSs, EE is not primarily a green, but a social and economic agenda

- Fuel poverty is widespread in CEE (Europe?)
- According to a new study, app. 2500 lives are lost in Hungary alone each year
- By the UK definition, the average Hungarian household is fuel poor (has spent 10.4% of its disposable income on energy in 2007, it probably worsened since then)
- App. 1.5 million Hungarians declare that they cannot afford to keep their homes sufficiently heated
- A widespread deep (!) building energy retrofit program can eliminate fuel poverty

EE as an economic/social agenda: employment and other economic benefits

- In energy-efficient buildings:
  - labor **productivity** rises by app. 6–16%;
  - students' test scores shows ~20–26% faster learning
  - Influenza and cold rates can decrease by as much as 20%, resulting in a USD10 bln/yr savings in US alone
    - better indoor environments related with building EE save annually in the US $6 -14 bill.(reduced respiratory disease); $1 - 4 bill. (reduced allergies and asthma); $10 - 30 bill. (reduced sick building syndrome); and $20 - 160 bill. (direct improvements in worker performance unrelated to health)
- Employment: (local) job creation: Danish trade union study finds twice higher employment intensity than for other mitigation options
- a wide-scale renovation program can create app. 250,000 net jobs in Hu alone (vs. the "1 million" missing – as on political agendas)

European Climate Foundation

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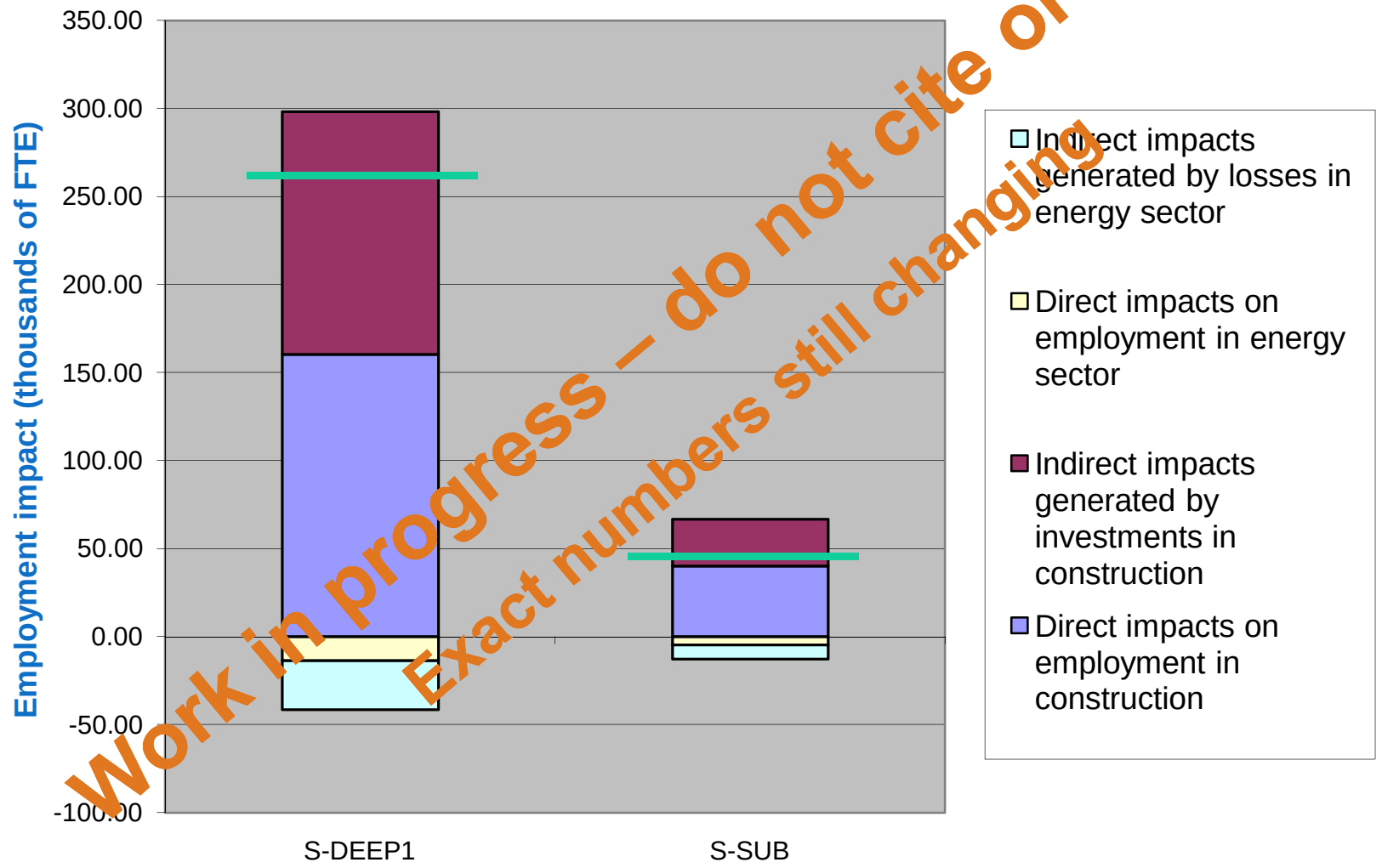
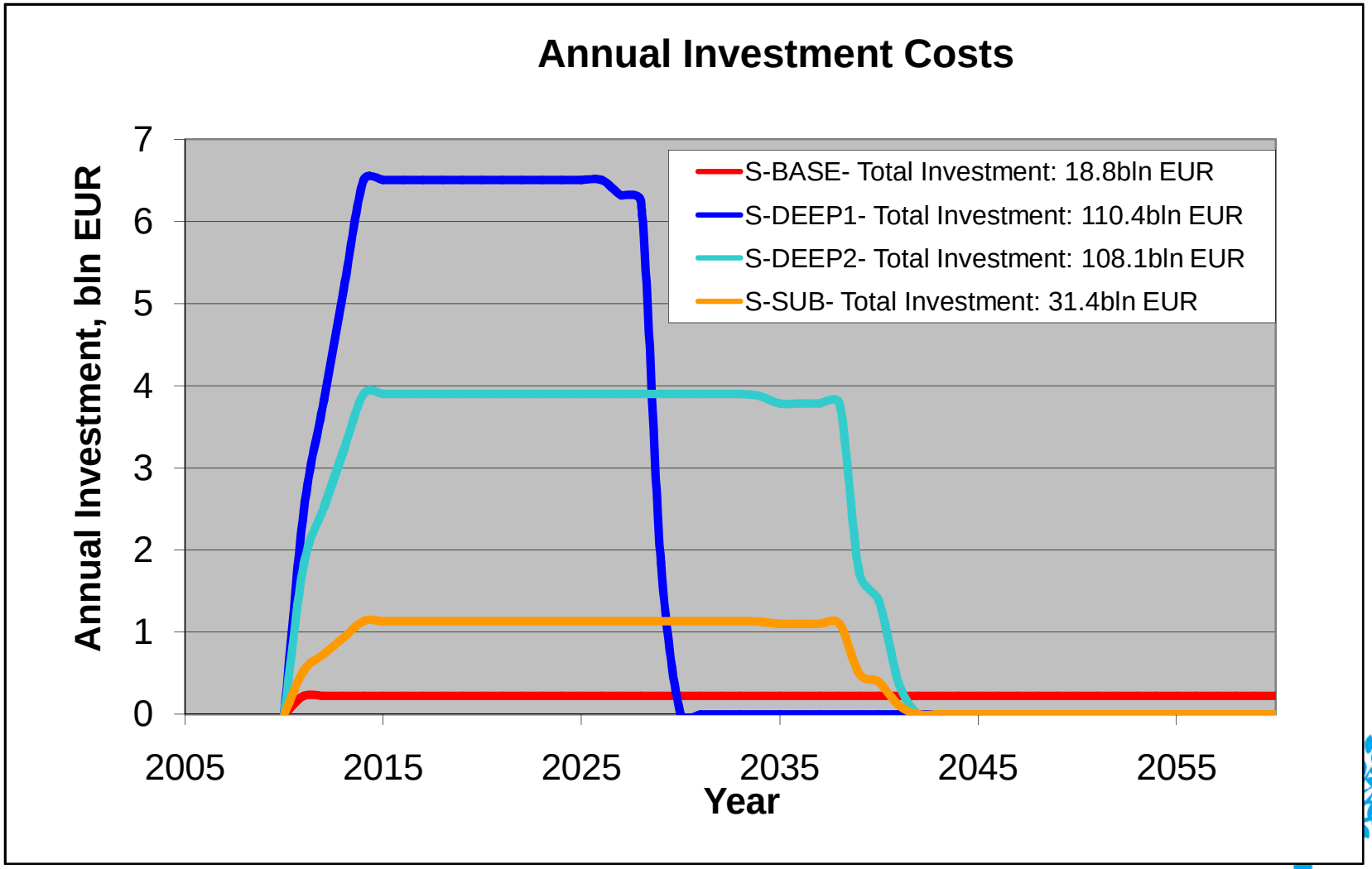
Direct and indirect employment impacts of a deep and a suboptimal renovation scenario in Hungary

(induced effects not yet included)



Summary: all arguments are ready for a massive deep green building retrofit program

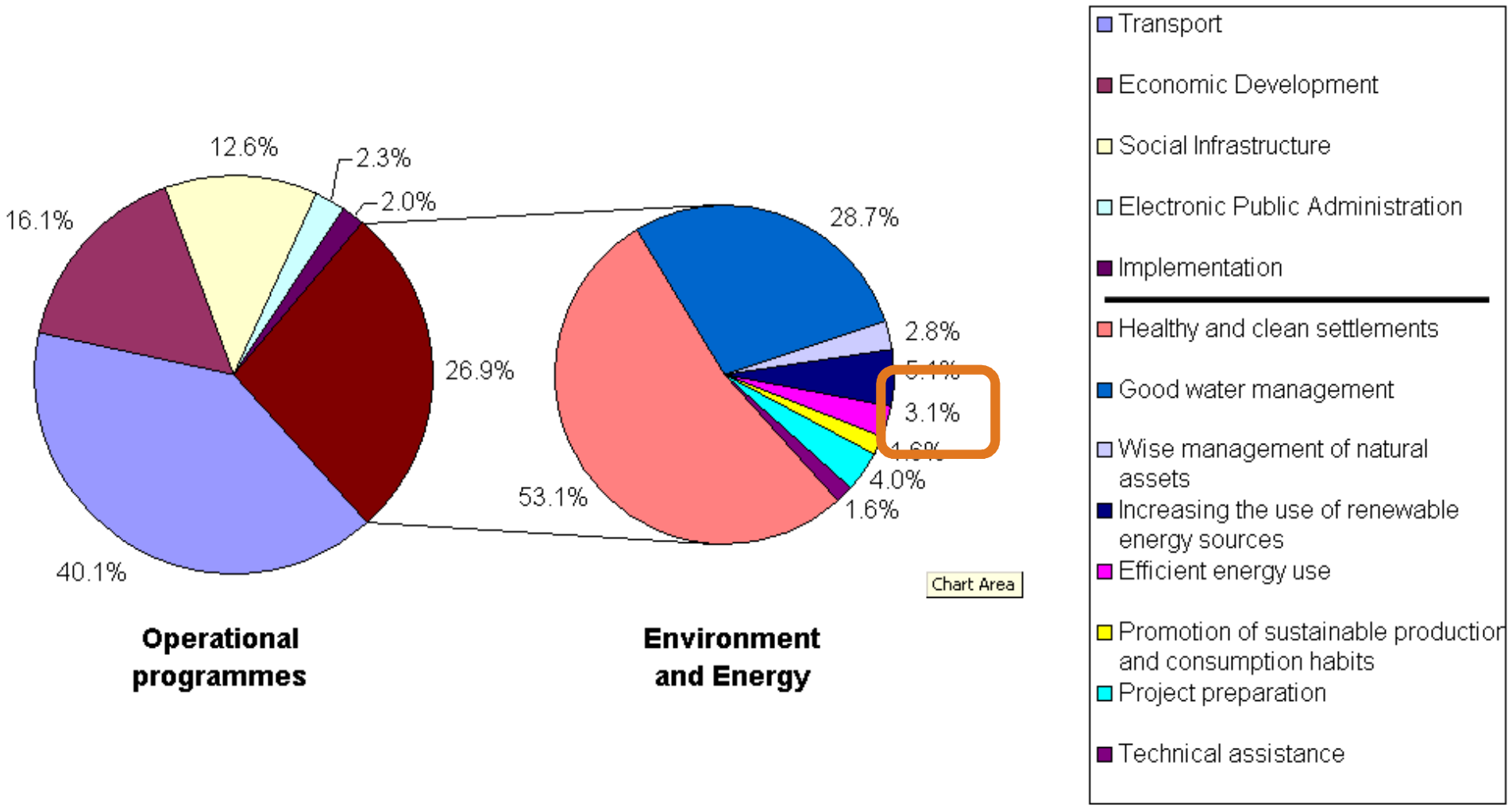
- Annual investments in building retrofits in Hungary until 2050 :



Who could foot the bill

- Significant EU funds available (**structural and cohesion funds**); up to 4% of national funds now available for buildings renovation – but short window of opportunity!
- Emission quota sales (GISs), ETS auctioning revenues, other climate revenues – buildings are one of the most effective ways to spend these
- Remaining funds: innovative financing schemes already operate in several countries (KFW model, ESCOs, etc.)

Distribution of Funding among Operational Programmes and among priorities within "Environment and Energy" Hungary



…vs. 4% of total that is available now for such purposes

conclusion:
Priorities for CEE Green buildings councils

- Many more CEE best practices needed to demonstrate that very high-performance green building is not expensive and can be cheaper than conventional – green construction should not stay as a luxury market but the mainstream
- Emphasis for next decades in CEE is on **renovation** rather than new construction from a climate and sustainable development perspective
- Due to the lock-in effect, it is essential to go for the complex, state-of-the-art renovation (close to passive std), and not compromise at suboptimal solutions
- There is lots of financing available, but GBCs need to have a much stronger voice in letting their decision-makers/govts that this is high societal/economic priority and that the money **IS** spent on this
- Adaptation/mitigation: heat-resilient buildings; preventing AC; integrating as much greenery in urban areas as possible; if not possible, apply light-colored, reflective roofs/insolated surfaces

Conclusion:

the role of GBCs to unlock these opportunities – but not like this:

- Q. How many green building consultants does it take to change a light bulb?

- None. Someone else did it. I was at a conference.

Thank you for your attention

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Trust me – they just keep promising this global warming; they just keep promising; but they won't keep this promise of theirs either…

hvg.hu hírek szünet nélkül

Diana Ürge-Vorsatz Diana

Center for Climate Change and Sustainable Energy Policy (3CSEP), CEU

http://3csep.ceu.hu www.globalenergyassessment.org

Email: vorsatzd@ceu.hu