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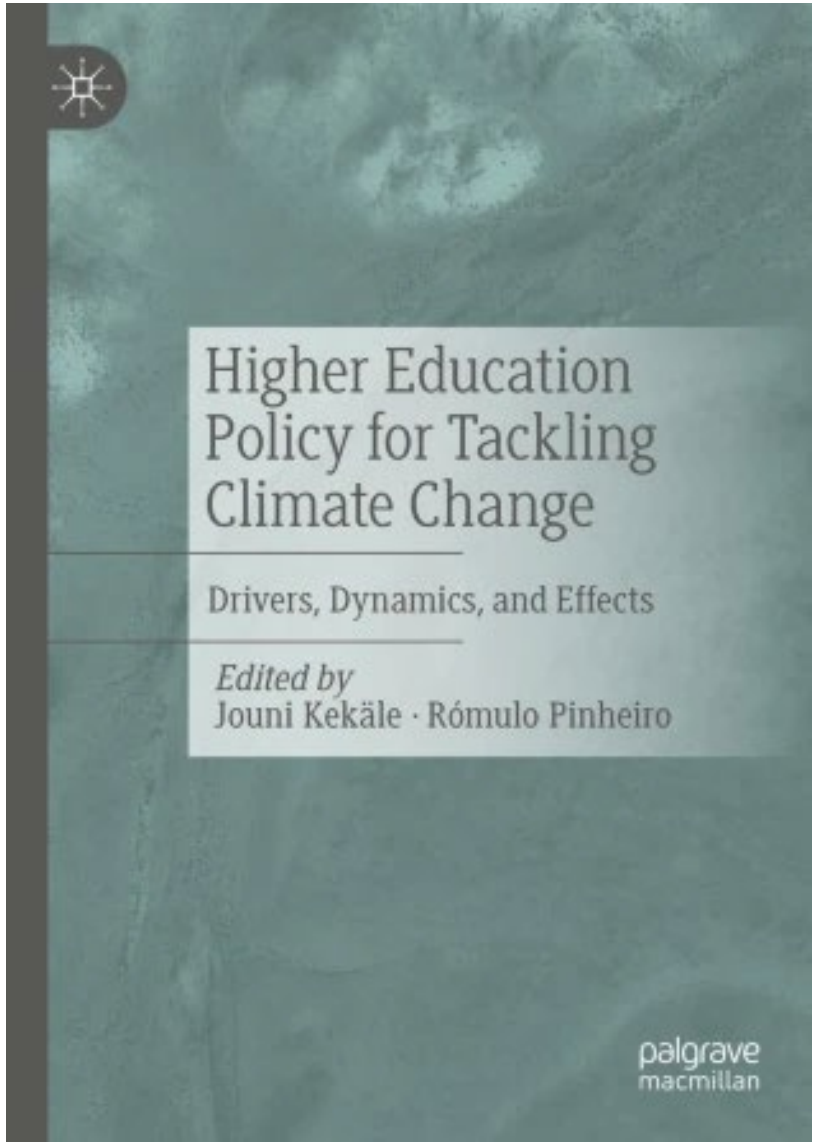
Higher Education Institutions' Roles in Climate Change Mitigation

Prof **Jouni Kekäle**, University of Eastern Finland

HEIs potential roles in CC mitigation?

- Twenty contributors with backgrounds in higher education studies.
- Nine country cases studied: Brazil, China, Czech Republic, the Netherlands, Italy, Ireland, Poland, Switzerland, and the UK.

- HEIs potential role in CC mitigation.
- HEI – Policy nexus in the country cases.
- HEIs in the context of key stakeholders




Setting the scene:
Social and physical realities

Fossil fuels…

- Are fully intertwined in our ways of living
- Have made our life easier and safer
- Have increased our standard of living tenfold (Kanniainen 2020)
- Etc.
- Are a cause for heated political debate and powerplay
- Are the main cause for harmful climate change
- Should therefore be replaced by green energy sources

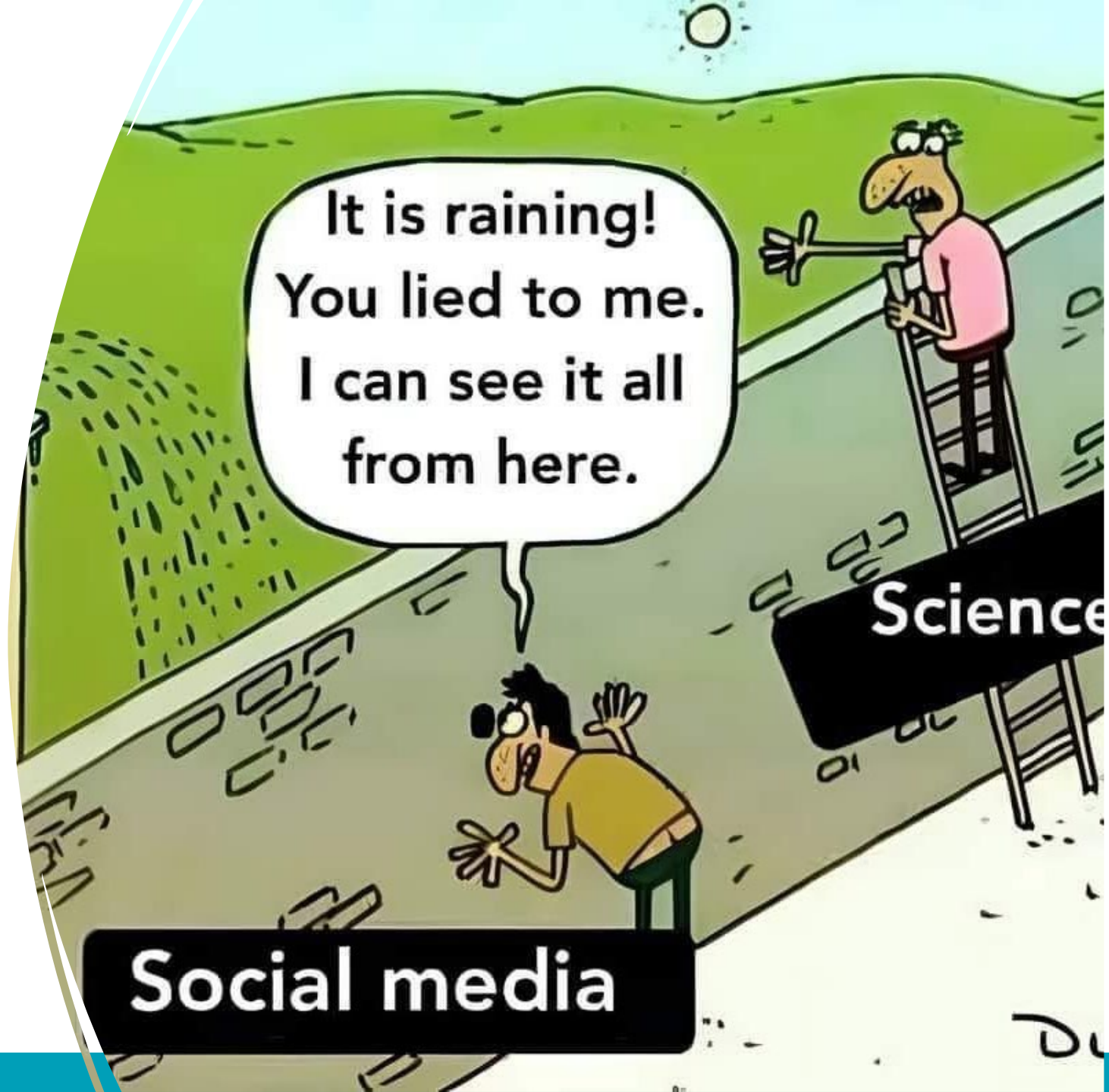
Anthropocene Divided

- Toulmin (1992): Cosmopolis, a modern (1600s->) vision of technically rational *society* akin machinery, repressing the legacy of humanism. The “iron cage” traps individuals (Weber 1909).
- Divide between two cultures: natural scientist and ”Literary intellectuals”, Snow (1959); Science Wars 1990s->, science and postmodernism, deconstruction; realism vs. relativism…
- Social media: algorithms unite similar minded, forming strong subcultures based on “free” and narrow social “truths”.
- Market forces: free consumerism, what sells is good, money as the criterion for success.
- Politics based on free-floating narratives.

Worldviews: Science as one narrative among others?

“The universe is made of stories, not of atoms.” – Muriel Rukeyser

“This belief in an external world independent of the perceiving subject is the basis of all natural science”. – Albert Einstein.



Popper’s (1972) three worlds

- **World 1** (the physical world and processes, such as rocks, trees, electricity, stars, galaxies), studied by the natural sciences.
- **World 2** (the realm of mental states and processes, such as emotions, subjective experiences, thoughts, perceptions, images, memories); and
- **World 3** (culture and society, such as language, laws, social institutions, money, religions).

More about the topic: Kekäle, J. & Puusa, A. (2020) Tiedesodat: realistinen ja konstruktionistinen maailmankäsitys. In Puusa, A., & Juuti, P. Laadullisen tutkimuksen näkökulmat ja menetelmät. Gaudeamus.

We are facing, among other things:

- *Physical consequences of socially constructed beliefs, lifestyles and societies. (*a 'realistic' approach*)*
- Social explanations of socially constructed worldviews. (a 'post-modern' / constructivist approach)

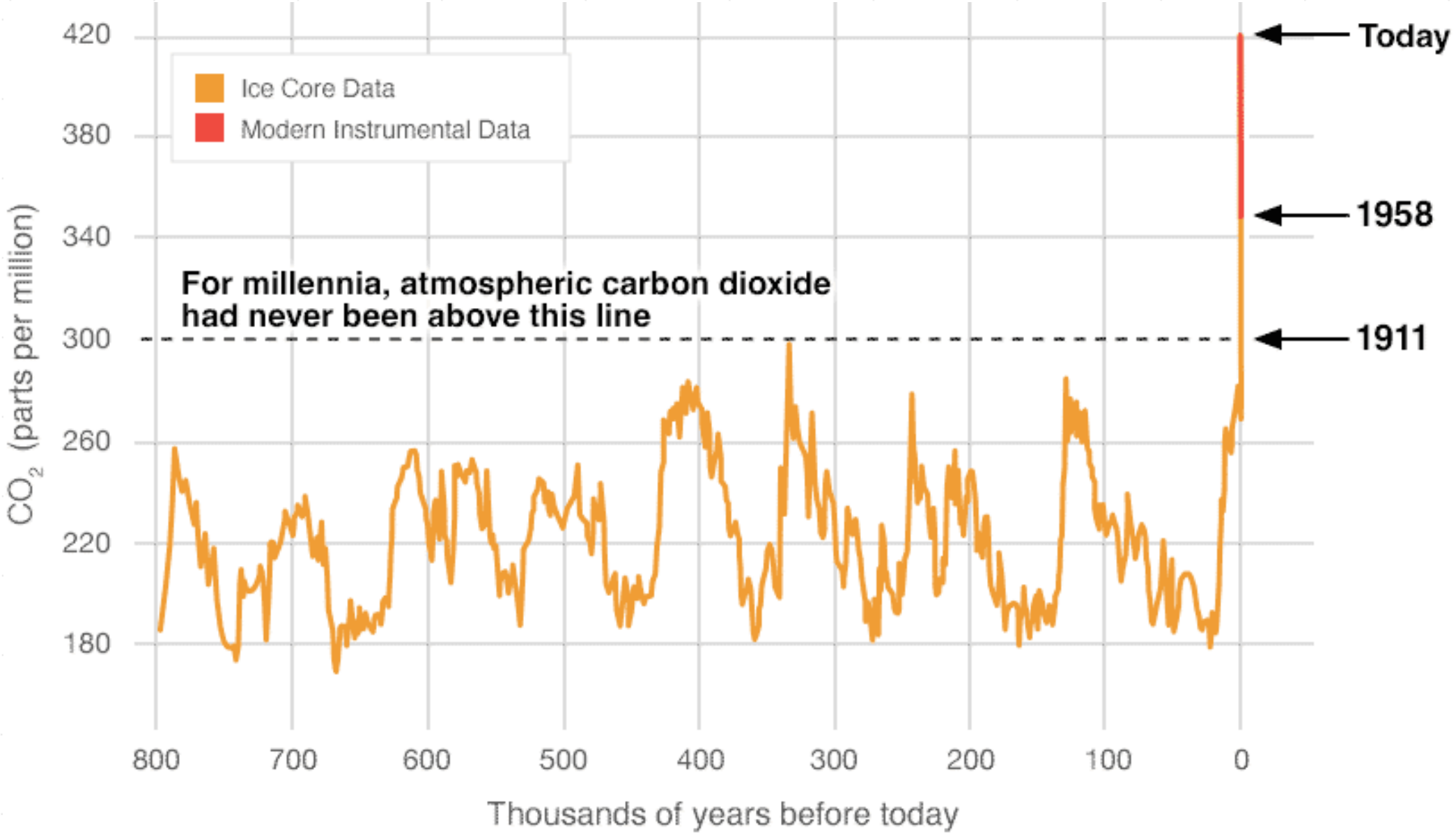
  - Both are in principle potential approaches.

➔ *I am interested in the former here, yet mainly from a social point of view*

➔ *Timeframe for binding mitigation targets.*

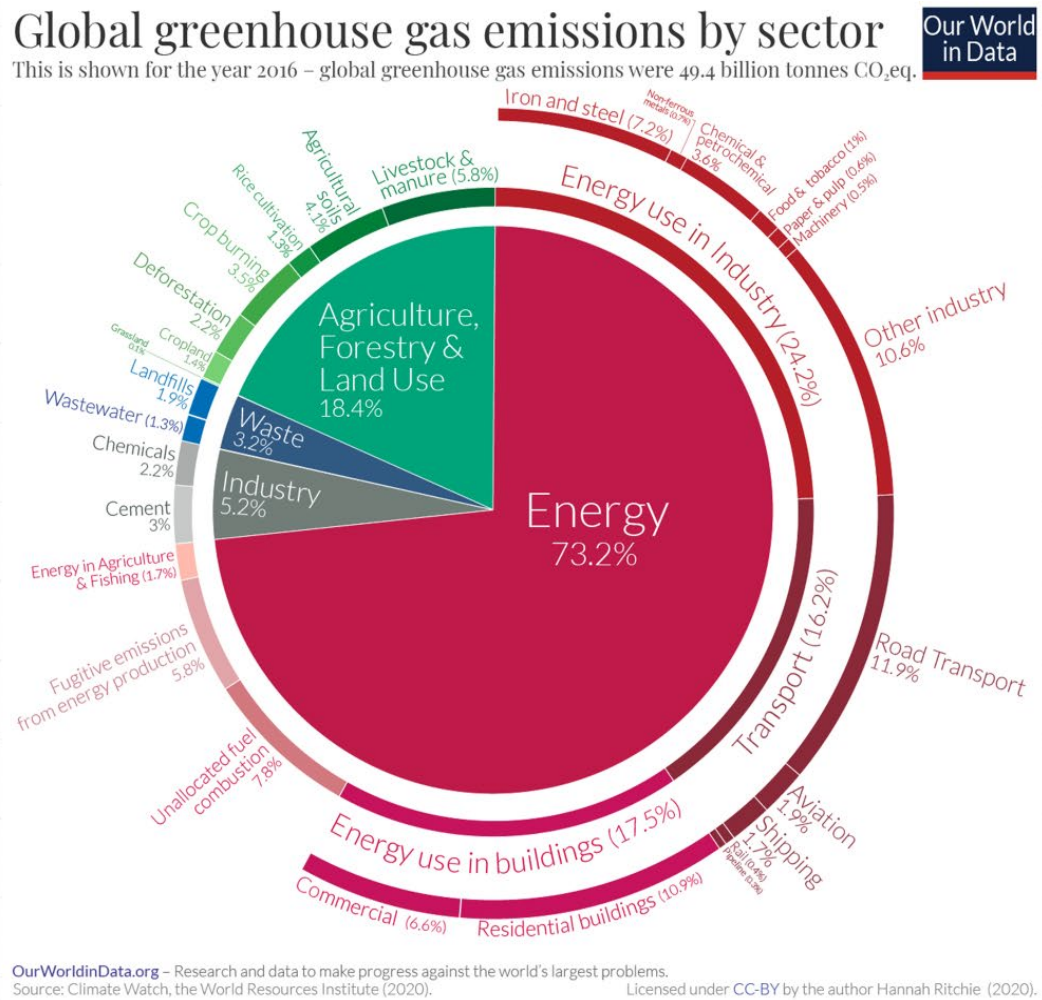
INDIRECT MEASUREMENTS

Data source: Reconstruction from ice cores. (NOAA/NASA)



Higher Education as a part of a broader social system

Where do the emissions come from?



57 companies linked to 80% of greenhouse gas emissions since 2016, according to Carbon Majors Database.

Most of the state- and investor-owned companies have *expanded* their production since the Paris Agreement.

Key Enablers –Energy Transition / CC

	State (Politicians)	HEIs (Academics)	Markets (Companies)	Community (Citizens & Consumers)
Key intention	Power and influence	Knowledge & reputation	Profits & revenue	Quality of life & Self-realisation
Time span	Short (period of rule)	Long (depending on key persons & funding)	Short (quartile -> strategy)	Generational dependent – from short to long-term
Major assets in relation to CC mitigation	*Right to make laws and to regulate*; to allocate public funds	*Possibility to study, develop and to innovate* based on research	*Possibility to invest and implement* technical solutions. R & D	Exercise democratic power & consumer freedom
Tends to avoid	Unpopular decisions, losing competitive position	Risk of losing reputation, funding, and competitive position	Risk of losing money or competitive position.	Short term (individual) sacrifices for long-term (community) benefits
Key external influences	Citizens voting behaviour	Political steering & funding	Demand from markets, competition	Widespread cultural norms & lifestyles (social media zeitgeist)

HEI –Policy nexus: Overall Global Picture

- CC mitigation and combatting SDGs written into HEI strategies.
- Lack of policy alignment: National and institutional variety in CC mitigation.
- The actual *national political steering* of HEIs in CC matters *remain rather vague*.
- Relatively *scarce national funding often included in broader funding schemes*.
- The EU has Horizon 2020 funding programme, and CC solution funds are available.
- *Very little institutional support for individual researchers*.
- Cooperation between political decisionmakers and HEIs is multifaceted, but apparently also problematic in terms of CC mitigation.
- *Main driver: interests of individual academics* often with little institutional engagement and rather passive policy measures
- In energy sector: corporates – policy link fundamental. Incremental improvements by research (e.g. UK REF).

HEIs' CC Mitigation Strategies*

- 1. First order CC mitigation actions: Loose linguistic influence, overall faith in human capacity, an emphasis on unspecified efforts. May or may not lead to positive effects on the environment. Often results in greenwashing or symbolic behaviour and/or political attempts at gaining short-term funding in the absence of an articulated long-term strategy (Karlsen & Pinheiro, 2022). Might also pave the way for later applications and actions.
- 2. Second-order mitigation actions are based on HEIs institutional net zero, resting on the institution's duties or operations' on reducing its emissions (Bookbinder et al., 2024). Other identified issues include (many of these also apply to other levels of mitigation):
  - (Lack of) transparency in the calculation of emissions.
  - Unclear and credible leadership roles and responsibilities.
  - Contradictions between societal and commercial roles,
  - Internationalisation and emissions.
- 3. Third order actions: centred on key strengths and contributions at addressing *the actual global problem* of warming and emission build-up:
  - 1) Identification of institutional strengths and building on that basis (Finding a market niche),
  - 2) Clear demand and impact on the solutions provided,
  - 3) Cooperation with other key societal actors for mutual impact, and
  - 4) Time and resources needed for long-term impacts, even if previous goals are successfully met. * Source: Kekäle, J & Pinheiro, R. (2025) Strategic Institutional Leadership for Tackling Climate Change. In book: Transcending Boundaries: For a Sustainable Future of Higher Education, Brill.

HEIs Role in CC mitigation?

- HEIs role in *CC mitigation* is strongly interconnected to political decision-making and industrial and social usage. Knowledge and innovations; research, instruction and societal outreach.
- HEIs are not necessarily doing the utmost in fostering CC mitigation, due to some cultural reasons.
- There are proven emission-free solutions available, based on science established decades ago.
  - Construction and activation of windfarms, for example, is currently mainly an act of construction, engineering, and juridic / administrative procedures, not science. Examples of potential focus areas for HEIs:
  - Utilization of cheap green energy among the most urgent strategic contributions by HEIs (Gates 2021).
  - Carbon capture, utilization and storage technology are strategic research interests (House of Commons 2022)
  - Hydrogen economy: first combustion engines over 200 years ago (IEA 2019), scientific developmental in areas like storage and leakage prevention still needed.
  - Citizens' consumption and behavior are a big part of the overall global emissions buildup -> social sciences and humanities
  - IPCC 2023 synthesis report does not explicitly mention the contributions of higher education to CC mitigation. HEIs can develop and disseminate knowledge, train future leaders, and foster technological and policy solutions to mitigate and adapt to climate change.

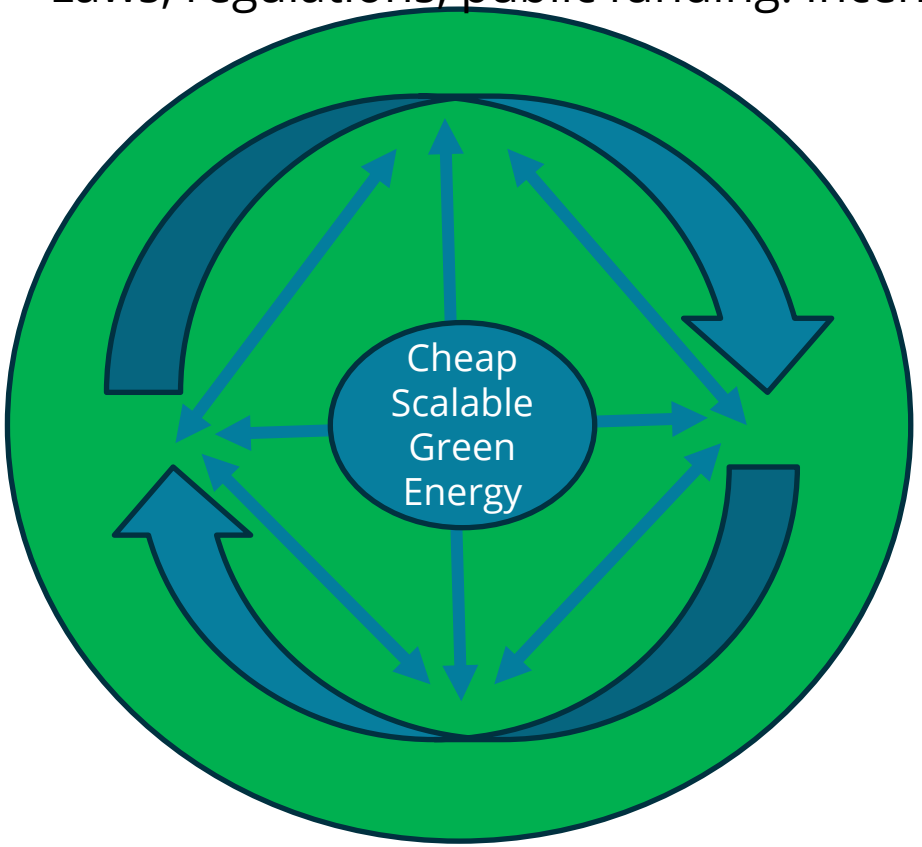
Complex (Ideal) System for the Key Players

(HEIs') Potential Roles:

- Carbon capture and removal?
- Green solutions
- Educating:
  - Civilised citizens,
  - future leaders…
- Incentive models?
- Laws: 'Emitter pays' in markets – global carbon tax
- Reducing subsidies for fossil fuels (7.1 % of the world's GDP) even more effective? (Braun 2024) https://www.dw.com/en/should-major-fossil-fuel-companies-pay-for-climate-damage/a-70646285

Policy Steering towards green solutions:
Laws, regulations, public funding. Incentives.

Responsible HEIs:
Green Impact:
Focus on innovations and improvements / CC.



Responsible Corporates:
Green production as a competitive advantage.

Responsible Citizens and consumers: Demand for green products, 'carbon aversion'.

Conclusions

- Dysfunctional (?) promises that HEIs take the *main responsibility* for the CC mitigation? Political push / institutional pull?
- Other players are crucial; without them any mitigation fails. Collaboration: green businesses, emission-free approaches.
- CCPI's country performance indexes https://ccpi.org/ indicate that policy is fundamental. UK and Netherlands rank as *medium* in Climate Policy (e.g. Sweden, Finland and Norway: Low). Incentives!
- There are, laws, declarations, national progress, increasing use of cheap sun and wind energy, but global Fossil capitalism remains.
- Universities play an important supportive or developmental role in CC mitigation. Improved green economy, for business and policy.

Thank you!

Prof Jouni Kekäle
+358503065370

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