

With the support of the  
Erasmus+ Programme  
of the European Union



# Sustainability indicators



[www.emu.ee](http://www.emu.ee)

**Anton Shkaruba**  
anton.shkaruba@emu.ee



**START!**  
SusTAINability tRansiTion  
of borderlands  
Summer School | Pskov | 2021

## Lecturer's scope:

- Indicators – what and why?
- What makes them good?
- What is the challenge?
- What and how we measure?
- Development of indicators through participatory processes

# Indicators

*...are concise information systems that provide quantitative and qualitative information about the condition and trajectory of a system and why certain trends occur in specified context*

*Bell, S., Morse, S. (2008). [Sustainability Indicators: Measuring the Immeasurable?](#) London, UK: Earthscan*

- Policy-related purposes:
  - Clarifying goals
  - Describing trends
  - Analyzing conditions
  - Projecting developments
  - Inventing, evaluating, and selecting alternatives, so long as they are concise and easy to interpret

*Clark, T. (2002). [The policy process: a practical guide for natural resources professionals.](#) Yale University Press.*

## Good indicators are:

- **Simple**
  - Easy to communicate and capturing key trends
- **Measurable**
  - Capable of being quantified
- **Feasible**
  - Able to be collected
- **Flexible**
  - To allow replacing with new available data
- **Dynamic**
  - Capturing changes in stocks and flows over time
- **User-inspired**
  - Aligning with the goals of its users and co-produced by these users when possible

# Are there several, many or too many systems of indicators?

- Thousands (and proliferating) of relevant initiatives worldwide, massive literature base, many dedicated science-policy platforms etc
- *...We continue moving toward an ‘indicator zoo’, characterized by a multitude of approaches but still limited impact on policy and outcomes that are priorities for sustainable development*

Pintér, L., Hardi, P., Bartelmus, P., 2005. *Sustainable Development Indicators: Proposals for a Way Forward*. UN Division for Sustainable Development, New York, NY.

# The key challenge:

- What is sustainable?
  - the concept lacks consensus

*... not 'compromising the ability of future generations to meet their own needs'*

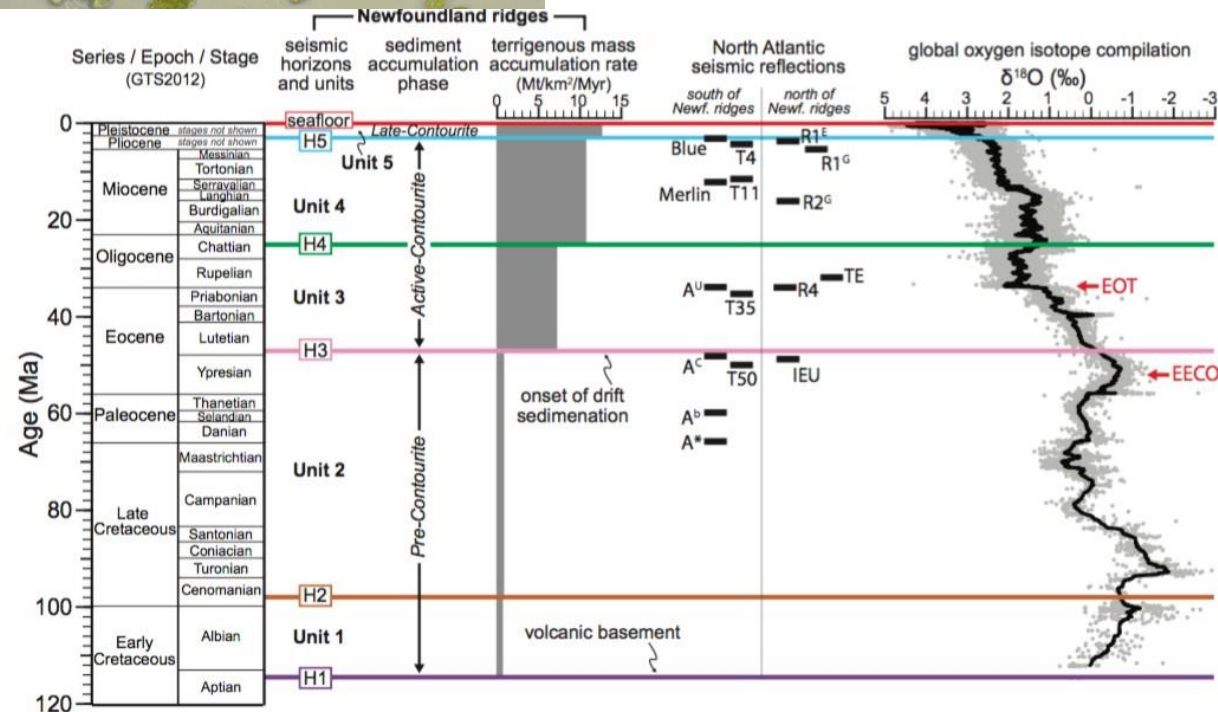
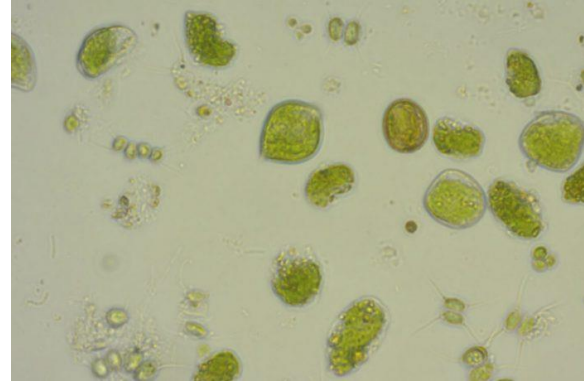
World Commission on Environment and Development (1987). *Our Common Future*. Oxford: Oxford University Press.

*'In 2050, we live well, within the planet's ecological limits ...Our prosperity and healthy environment stem from an **innovative, circular economy** where nothing is wasted and where natural resources are managed sustainably, and biodiversity is protected, valued and restored in ways that enhance our society's resilience*

*The 7<sup>th</sup> EU Environment Action Programme*

# ...the planet's ecological limits (1):

- Count organisms, species, habitats, biomes (plankton to pixels)
- Measure concentrations and fluxes – and estimate stocks
- Quantify dynamic behaviour – models + observation + theory
- Use proxies – indirect measures based on known relationships

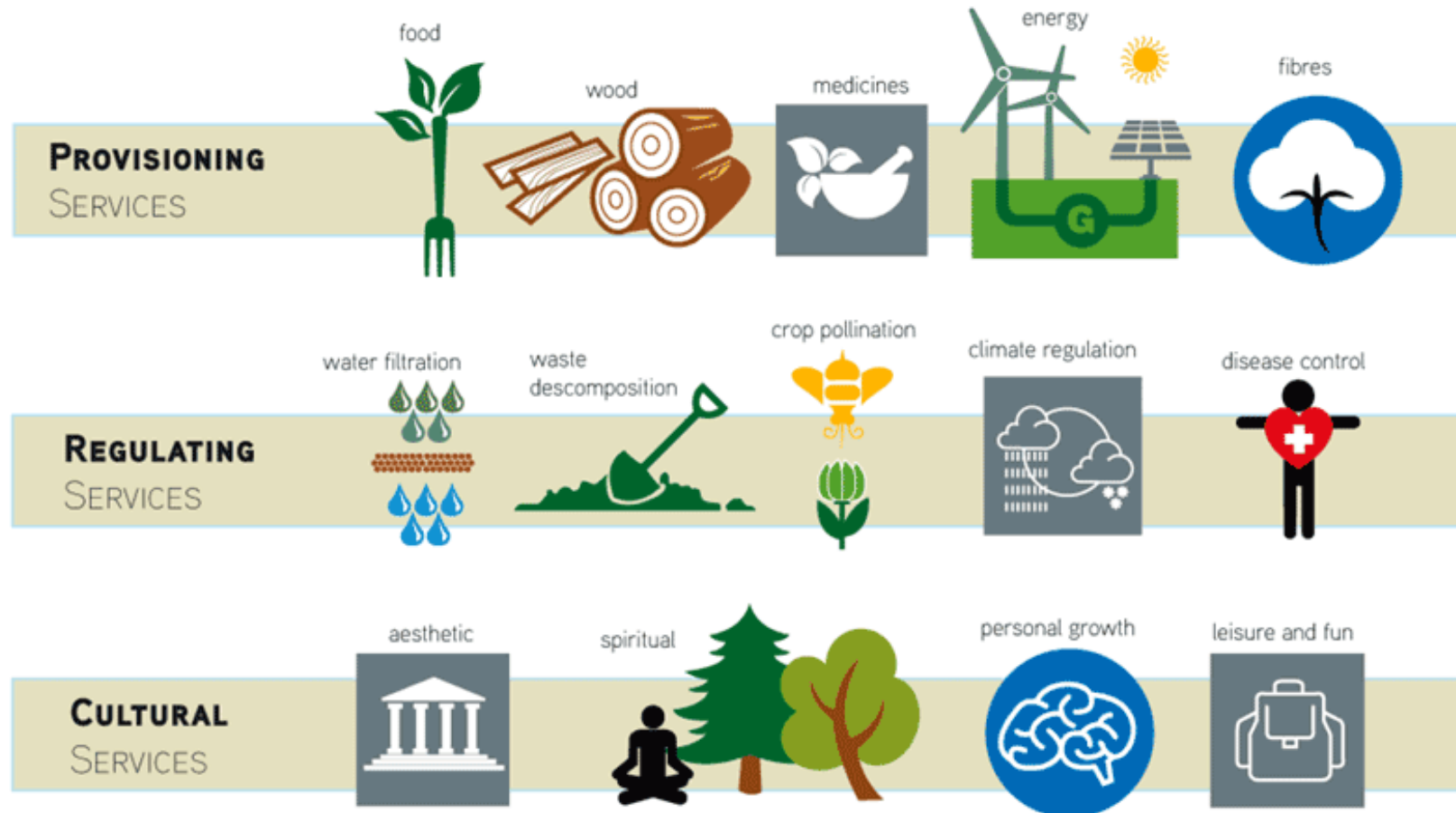


Boyle, P., et al, 2017. *Cenozoic North Atlantic deep circulation history recorded in contourite drifts, offshore Newfoundland, Canada* . Marine Geology, vol. 385, pp. 185-203

## ...the planet's ecological limits (2):

- value-laden perspectives, e.g. assessment of 'ecosystem services'

WHAT DO WE GET FROM **ECOSYSTEMS**?





## To live well... (1):

- The concept of wellbeing encompasses individuals' capacity to achieve happiness, harmony, identity, fulfillment, self-respect, self-realization, community, transcendence, and enlightenment (Meadows, 1998)
- Wellbeing involves access to security, health, material needs, good social relations, and freedom of choice (Millennium Ecosystem Assessment, 2005)
- ... ..
- Well-being as a measure of justice => living lives that are considered to have value (Sen, 1993)



## To live well... (2):

- Per capita income...
- GDP...
- Gini coefficient...
- Availability of public services, amenities, sanitation...
- ... ..
- Human Development Index
- Gross National Happiness



### Human Development Index (HDI)

DIMENSIONS

INDICATORS

DIMENSION INDEX

#### Long and healthy life

Life expectancy at birth

Life expectancy index

#### Knowledge

Expected years of schooling  
Mean years of schooling

Education index

#### A decent standard of living

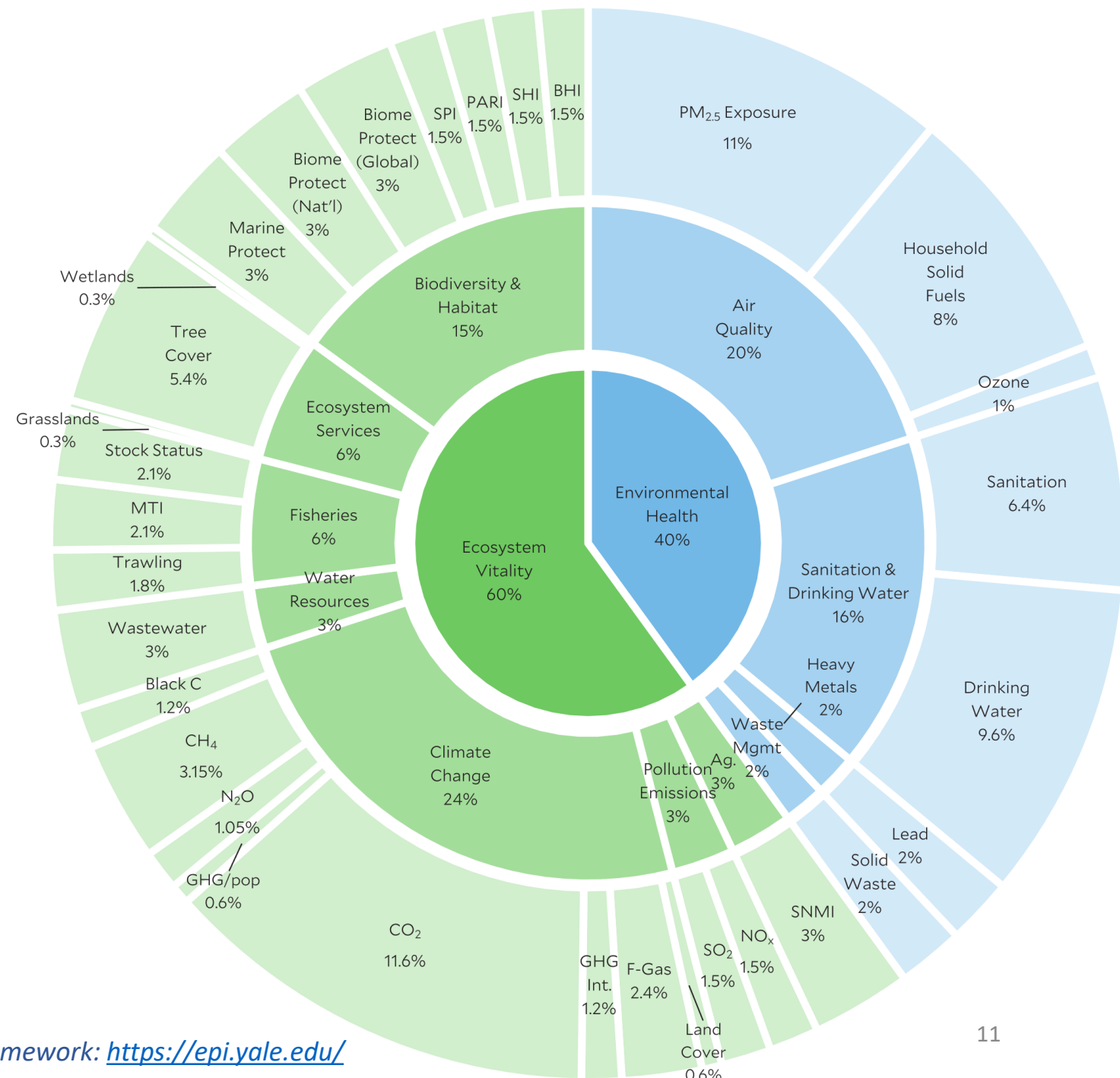
GNI per capita (PPP \$)

GNI index

**Human Development Index (HDI)**

# Integration:

- Experts interpreting data, e.g. Environmental Performance Index (EPI) by Yale Center for Environmental Law and Policy

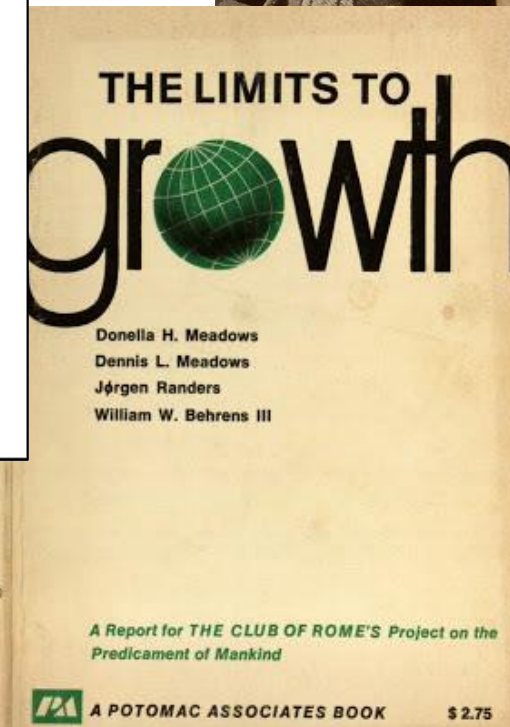
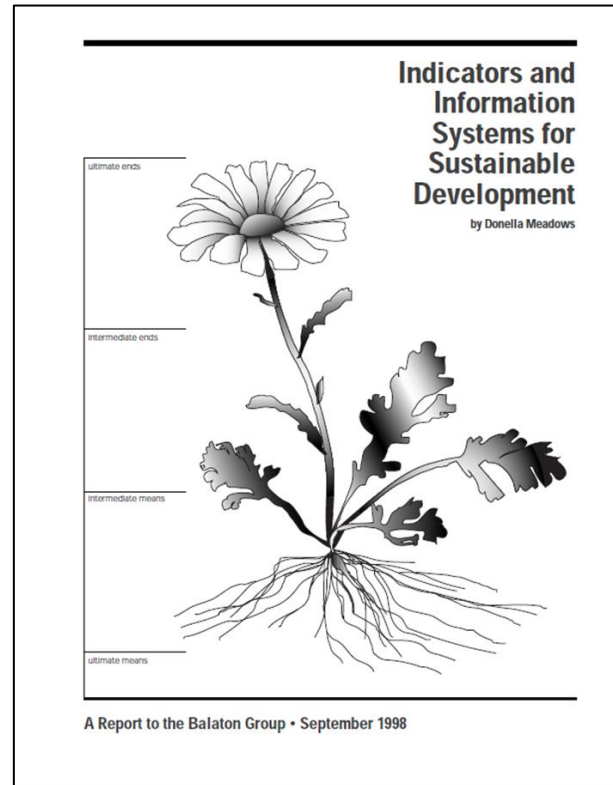


2020 EPI Framework: <https://epi.yale.edu/>

# Indicators through participatory process:

*...The indicators a society chooses to report to itself about itself are surprisingly powerful. They reflect collective values and inform collective decisions. A nation that keeps a watchful eye on its salmon runs or the safety of its streets makes different choices than does a nation that is only paying attention to its GNP. The idea of citizens choosing their own indicators is something new under the sun something intensely democratic.*

Meadows, D.H. (1998). *Indicators and information systems for sustainable development*. Sustainability Institute Hartland.

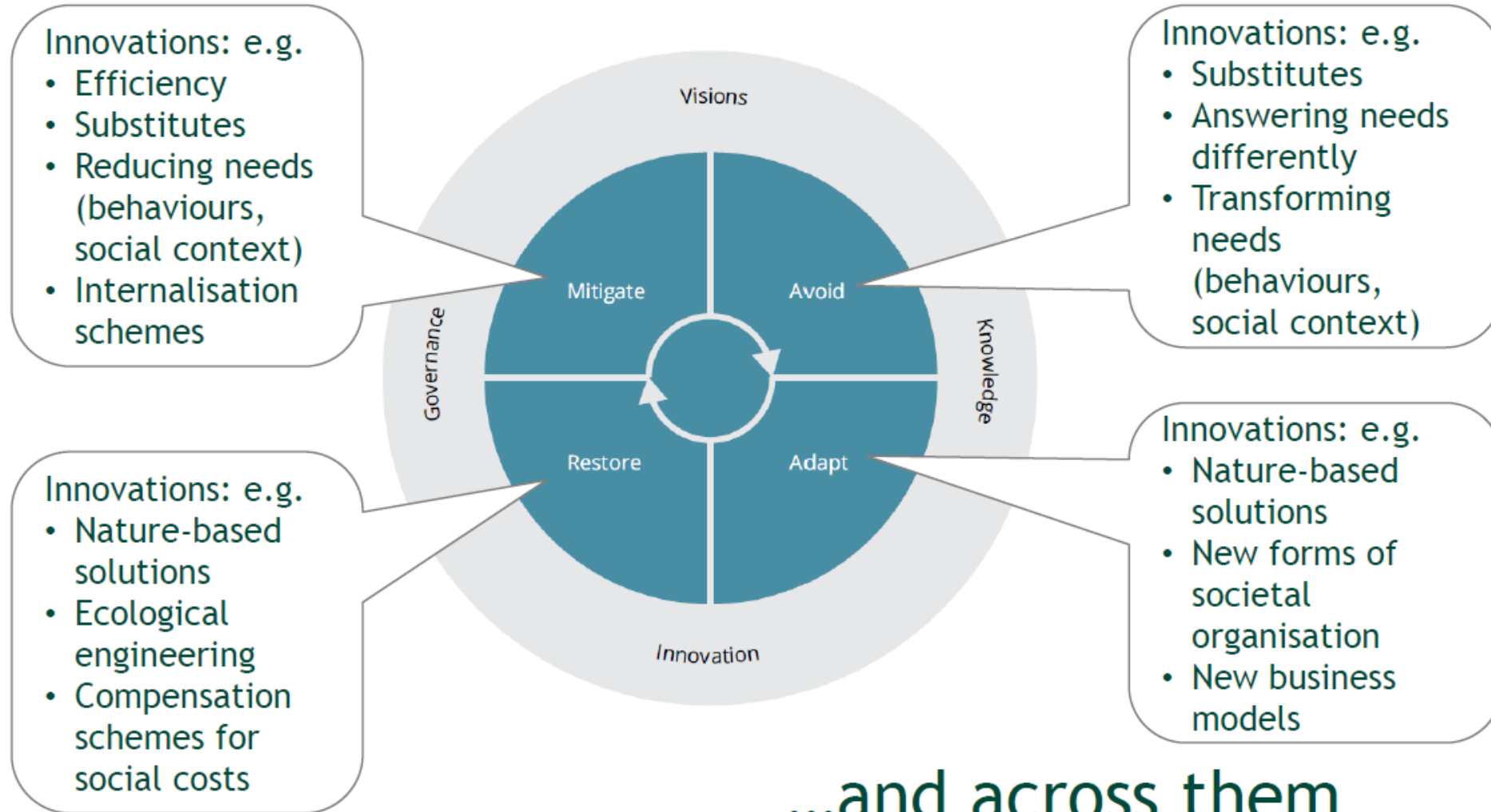


<https://www.facebook.com/DonellaMeadowsProject>

# Belagio stamp

- Data...

# Action: Innovating in the four approaches...



With the support of the  
Erasmus+ Programme  
of the European Union



# Thank you!



**Eesti Maaülikool**  
Estonian University of Life Sciences

[www.emu.ee](http://www.emu.ee)

**Anton Shkaruba**  
[anton.shkaruba@emu.ee](mailto:anton.shkaruba@emu.ee)



**START!**  
SusTAINability tRansiTiOn  
of borderlands  
Summer School | Pskov | 2021