Global Commons, Planetary Boundaries and Sustainable Development Goals

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Berlin, 14 September 2018
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A critique of the SDGs: Many goals = lack of priority?

“Moses brought ten commandments down from Mount Sinai. If only the UN’s proposed list of Sustainable Development Goals (SDGs) were as concise.”

_The Economist, Mar 28th 2015_
Unifying Principles?

• Planetary Boundaries

• Governing the Global Commons

• Socio-natural capabilities (preconditions for a good and/or dignified life)
Structure of SDGs

Source: adapted from The World in 2050, IIASA, 2017
Planetary Boundaries

Source: adapted from The World in 2050, IIASA, 2017
Beyond zone of uncertainty (high risk)
In zone of uncertainty (increasing risk)
Below boundary (safe)
Boundary not yet quantified
Governing the Global Commons

Source: adapted from The World in 2050, IIASA, 2017
Governing the Global Commons in the 21st century

1) Avoid overuse of global natural resources

2) Ensure public investment and expenditures
Natural and social global commons as the new wealth of nations

Globalization causes overarching environmental problems to exacerbate, calling for international cooperation.

A shortage of public infrastructure, human, physical and social capital exists across countries.
Socio-natural capabilities

Source: adapted from The World in 2050, IIASA, 2017
Definition of socio-natural capabilities

• Capabilities (Nussbaum, Sen) are **opportunity sets** in the space of **functioning** vectors (Fleurbaey 2016, 467-468)

• The **socio-natural capabilities** (amending Nussbaum’s and Sen’s individualistic capabilities) serve a twofold purpose:
  
  • They help us select functioning vectors that endow **individuals** and **societies** with rights, public goods and social commons sufficient for a good life.

  • They allow us to restrict **opportunity sets** according to the implications of **planetary boundaries** and **earth preconditions**.
Threats to socio-natural capabilities

Degradation

Inequality

Source: Albert Schweitzer Stiftung für unsere Mitwelt

Source: Pexels
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Transformation pathways of governing Global Commons to attain SDGs within Planetary Boundaries

Degree of Global Sustainable Development

Governance of Global Commons

Planetary Boundaries

Year

2030 2040 2050
Facts and Values

- The SDGs are **normative focal points**.
- Science is all about facts – or is it?
- Dealing only in values might be rather more palatable from an analytical perspective. Yet, the **nexus** between **facts and values** is inescapable.
- There are **no facts without values**.
Facts and Values: How to cope?

A two-pronged approach:

• Exploring *synergies and trade-offs* is a *scientific endeavor*.

• Identifying *means* which potentially *undermine goals* provides *essential information for decision makers*. 
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Shared Socio-economic Pathways (SSPs)

- **SSP 1**: (Low Challenges) Sustainability, Taking the Green Road
- **SSP 2**: (Intermediate Challenges) Middle of the Road
- **SSP 3**: (High Challenges) Regional Rivalry, A Rocky Road
- **SSP 4**: (Adapt. Challenges Dominate) Inequality, A Road Divided
- **SSP 5**: (Mit. Challenges Dominate) Fossil-fueled Development, Taking the Highway

Challenges for mitigation vs. adaptation:
- Environmental sustainability
- Multilateralism & Free trade
- Anti-establishment movement

O’Neill, Kriegler et al., Global Env. Change
Gridded population projections now available for SSPs (NCAR)

Work on spatial downscaling of GDP projections
Global Mitigation Pathways staying well below 2°C

- **Peak in 2020** Steep emissions reduction
- **Carbon neutral economy**
  - Electrification of end uses
  - Challenges:
    - Freight transport, aviation, shipping
    - Heavy industry
    - Ag emissions (CH4, N2O)
- **Compensate residual emissions**
- **Compensate budget overshoot**

Re-directing investments from fossils to low carbon and efficiency solutions

LIMITS Study: Kriegler, Tavoni et al., 2013, Clim Change Econ 04:1340008
Sustainability impacts: 2°C vs 1.5°C – Def vs Sust

- Air pollution
- Extraction
- Temperature
- Water
- Uranium
- Fertilizer
- Food Price
- Energy Price
- Energy cropland
- CCS

**Mitigation benefits**

- **SO₂ from En. Supply**
  - 2030 (% of 2015)
  - 2050 (Mt SO₂/yr)

- **Temp. rel. to 2015**
  - 2050 (K)

- **Cumulated Uranium**
  - 2015-2050 (Mt U)

- **Food Price Increase**
  - 2030 (% of 2015)

- **Short Term Cost**
  - 2015-2050 (%)

- **Long Term Cost**
  - 2050-2100 (%)

- **Av. energy cropland**
  - 2050-2100 (mio. ha)

- **Cumulated carbon stored**
  - 2015-2050 (Gt CO₂)

**Mitigation risks**

- **Fossil resource extraction**
  - 2050 (EJ/yr)

- **Water withdrawal**
  - 2030 (1000 km³/yr)

- **Fertilizer use**
  - 2030 (Mt N₂/yr)

- **Energy Price Inc.**
  - 2030 (% of 2015)

- **Cumulated Uranium**
  - 2015-2050 (Mt U)

- **Temp. rel. to 2015**
  - 2050 (K)

- **SO₂ from En. Supply**
  - 2030 (Mt SO₂/yr)

- **Food Price Increase**
  - 2030 (% of 2015)

- **Cumulated carbon stored**
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Ambitious climate policy requires leaving the majority of fossil fuel reserves untapped.
The Unfinished Business of Paris

- Increasing ambitions
- Making Green Climate Fund Work
- Coordination of Carbon Prices
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Optimal Taxation and Spending in a sustainable world

- Carbon Pricing
- Expenditure for infrastructure investments
- Property Taxation
- Inheritance Taxation
The Climate Rent

Source: Eigene Darstellung / MCC / PIK
Overview of SDG financing needs

Financing needs

- Health
- Education
- Food security
- Energy
- Water & sanitation
- Transport
- Telecommunication
- Biodiversity
- Data for the SDGs
- Emergency aid
- Privately financed

Dollar per capita
SDG agenda financed by carbon pricing

- Purely domestic carbon pricing revenues for 2°C target would cover a substantial share of the SDG financing needs in many countries.
- Even higher domestic potential if some redistribution across national borders.

Source: Franks et al. 2018, Nature Sustainability
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The share of total income earned by the top 1%
Declining share of the top 1% in some European economies and Japan
Making taxation work for the Brave New World
Optimal Taxation and Spending in a sustainable world

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Summary

• Proceeding from the methodological premise that facts and values are intertwined we have identified three unifying principles of the SDGs.

• Doing so allows us to describe viable pathways as well as the trade-offs and synergies implied by the latter.

• While governing the global commons is more often than not a problem from hell implementing sustainable finance and mitigating inequality in conjunction with instituting the guardrails of the planetary boundaries could enable us to wrest ourselves from the clutches of the devil of myopic selfishness.