



**IOB University of Antwerp
Debating Development
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**Addressing Climate Change Challenges
From despair to hope**

**Aviel Verbruggen
University of Antwerp
www.avielverbruggen.be**

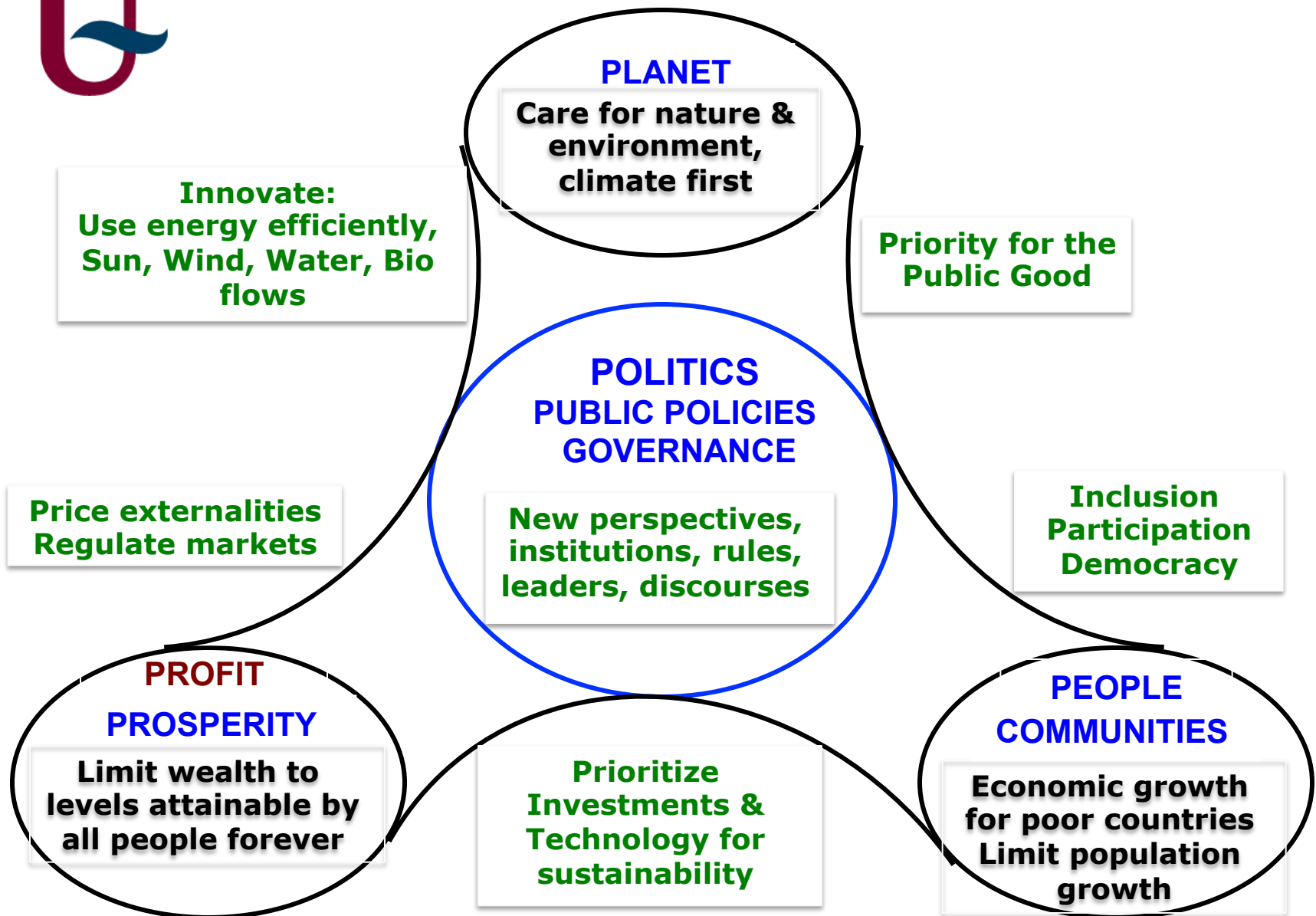
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Overview Lecture – [18] slides

- 1. Sustainable Development (SD) – [3]**
- 2. Climate Change as environmental problem – [2]**
- 3. Global climate politics – [4]**
- 4. Energy transitions: spearheads of change – [7]**
- 5. Suggestions – [2]**



Sustainable Development: only a goal mantra?



Full substance in Our Common Future [OCF]

Goal of SD

Brundtland et al. 1987 OCF Ch.2 Towards Sustainable Development:
“**Humanity has the ability to make development sustainable – to ensure that it (SD) meets the needs of the present generations without compromising the ability of future generations to meet their own needs.**” (p.8)

Growth control (limitations):

- Demographic developments in harmony with the changing productive potential of the ecosystem (p.44; p.55-57)
- Consumption standards that are within the bounds of the ecological possible and to which all can reasonably aspire (p.44)

Redistribution (needs of people):

- Economic and social justice within and amongst nations (p.49)
- Welfare growth for the alleviation of poverty
- Redistribution of natural resources in a fair way

Processes of change (p.46, 65):

- Exploitation of resources
- Direction of investments
- Orientation of technological development
- Institutional change; the real world of interlocked economic and ecological systems will not change; the **policies and institutions** concerned must. (p.9)



Sustainable Development

- **NOT vague, outworn goal mantra**
NOT a distant idol –worshipped to futility
- **YES hands-on, clear substance for:**
 - **Political-societal constructs of development pathways**
 - **Formulate explicit needs, explicit limits**

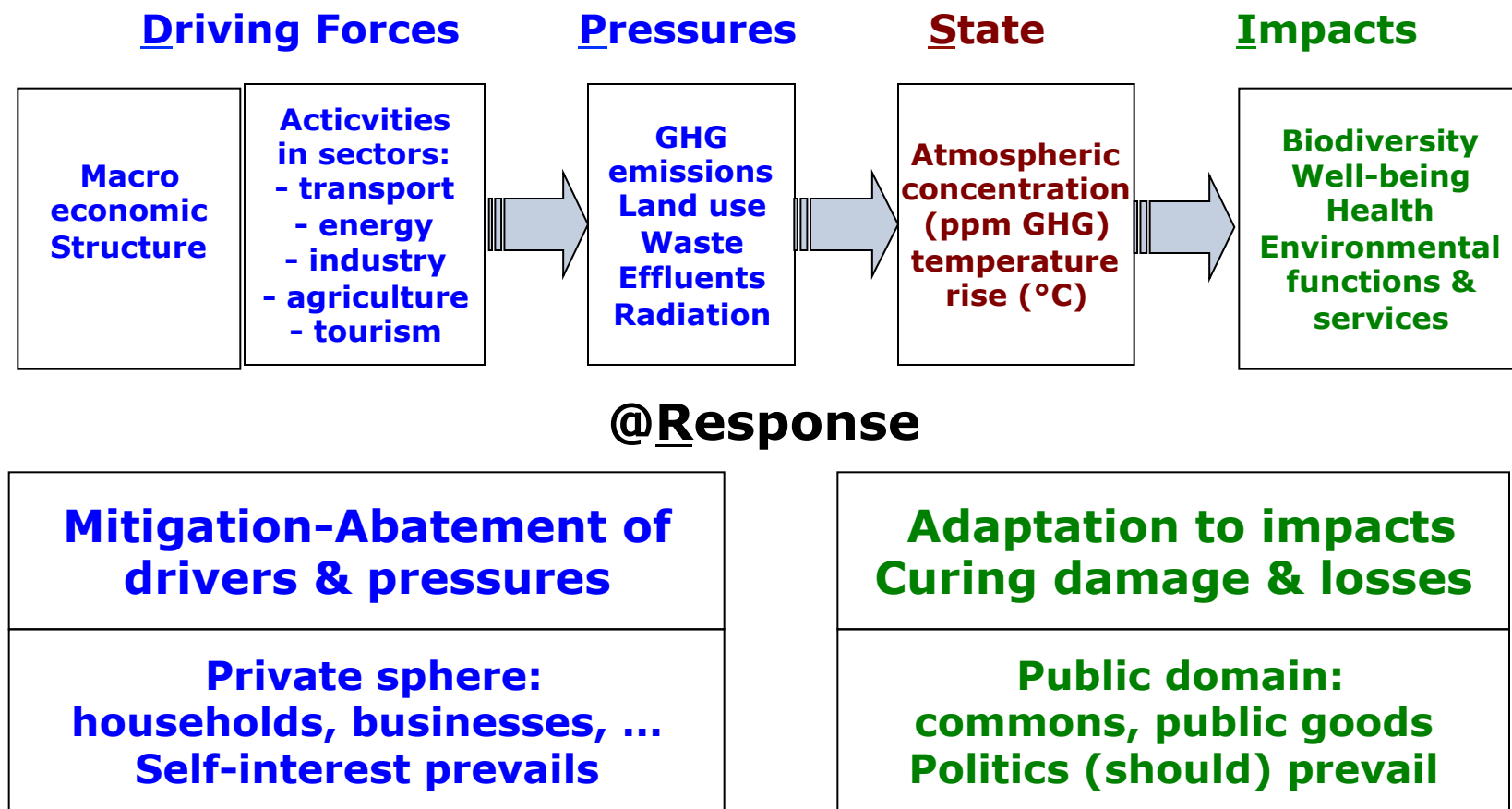
Operationalize Sustainable Development

- **NOT by glossy brochures, events, self-glorifications**
- **YES by comprehensive, deep sustainability assessments of policies, technologies, projects, programs, actions, ...**
 - **Identify criteria [= attributes to own, results to obtain]**
 - **Constructed specificity for addressing real issues, and extending the normative 4P core dimensions**

Retake, recapture Sustainable Development



Standard **D-P-S-I** @R framework



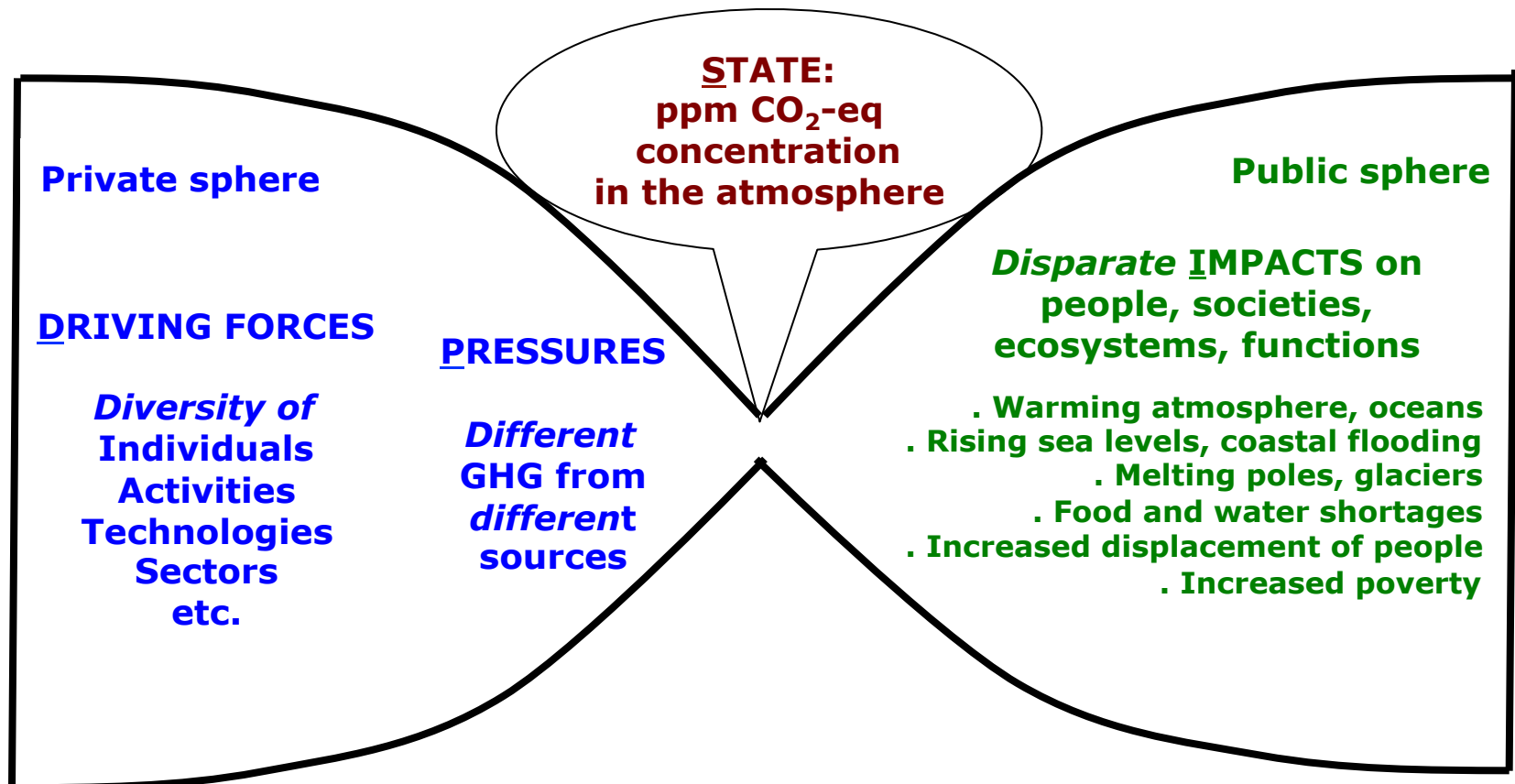


Hourglass format of DPSI-Climate Change

Every emitted ton CO₂ causing same CO₂ concentration effect lead to **uniform** treatment of *diverse* driving forces & *different* pressures.

Economists' global uniform carbon price by tax or emissions trading.

*** based on flawed logic, causing perverse policies ***



Mysterious Support for Paris Agreement

Paris Agreement

Vague, opaque text

+3°C if all intentions fullfil

Mocks

- Science (Hardin, Ostrom)
- Strategy practice (KPIs)

Policy zombies survive

- Energy tripod mantra (renewables-nuclear-CCS)
- Emissions trading
- Offsets

Private corporates
influence & discourses

Myths

- . Unanimity necessary
- . Mitigation by Voluntarism
- . Paternalism cares for \$100bn extra aid/year

Discourse
- Media



Climate global commons need global cockpit

1. **Multi-leveled (Top UNFCCC % Bottom cities & citizens)**
 - ❖ **Comprehensive, lean UNFCCC frame**
 - ❖ **Subsidiarity to nations and their constituencies**
 - ❖ **Sectoral approaches for global industrial activities, anyhow controlled by multinational corporates**
2. **Pledges with transfer incentives for donors & beneficiaries**
 - ❖ **Yearly progress measured with a few KPIs**
3. **Monitoring – Reporting – Verification (MRV)**
 - ❖ **Yearly statistics on KPIs are available at IMF, IEA, UNDP**
4. **Transfers Rich to Poor nations**
 - ❖ **Graduation 'poor-rich' countries by GDP/person metrics**
 - ❖ **Yearly transfers among countries based on GDP/person + adjusted for mitigation performances**
5. **Carbon emissions pricing**
 - ❖ **Not a uniform global carbon price**
 - ❖ **Yes domestic Budget Reforms**



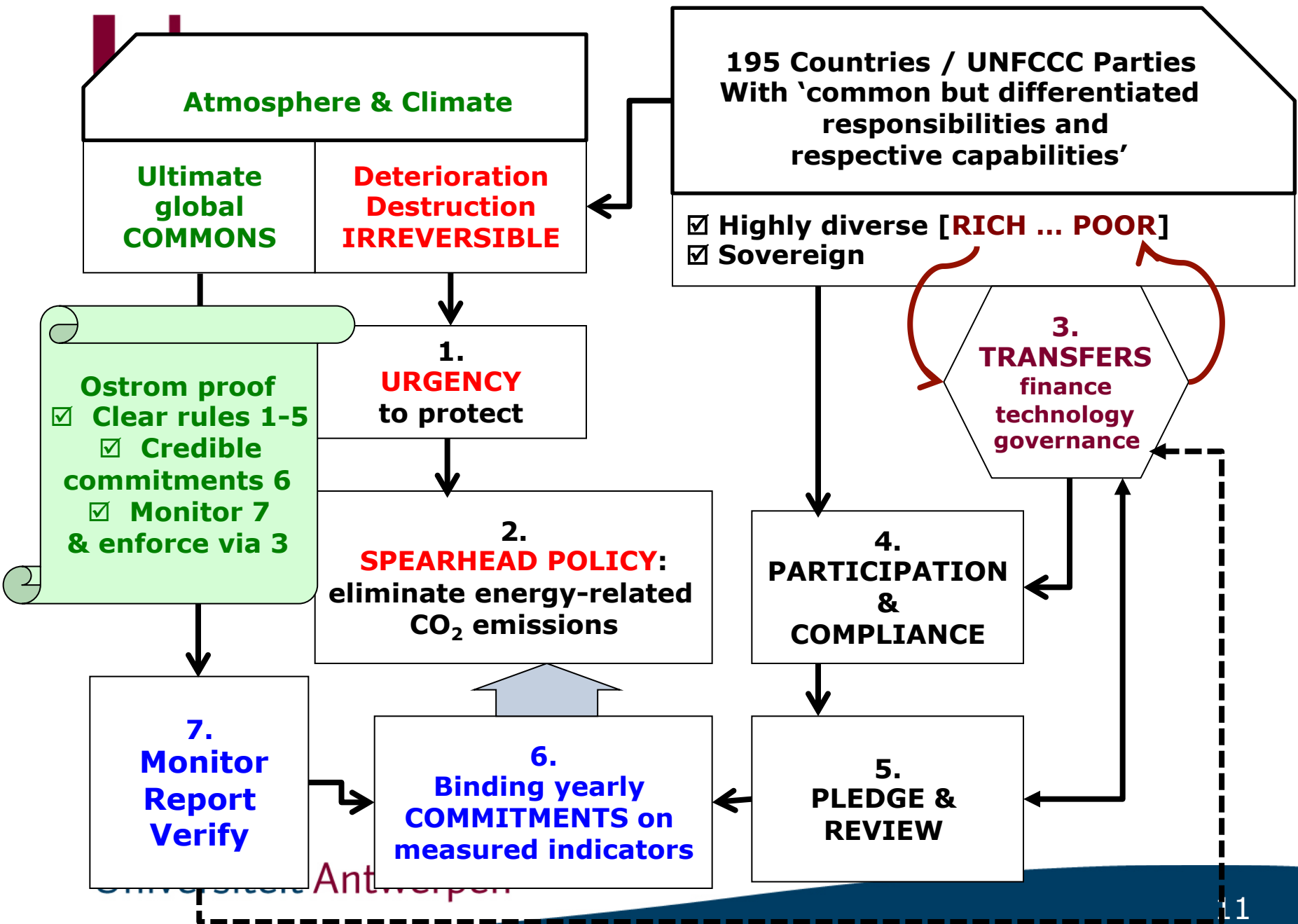
Budget reform financial metric (example of global climate policy KPI)

	MERIT goods & services, activities	HARMFUL goods & services, activities
Levies, charges, taxes	- B1	+ B2
Subsidies, support, feed-in tariffs for renewable power	+ B3	- B4

Nett balance B in \$, €, ...

$$B = (B2 + B3) - (B1 + B4)$$

Metric = B / GDP or B / PublicBudget in %





Civilization ⌘ Energy uses



Civilization

Lock-in

- Paradigms
- Discourses (myths)
- Institutions (norms, institutes)
- Interests, small to giant
- ⌘ politics, social constructs

ENERGY USES

=

TECHNOLOGY

×

ENERGY SOURCES

Substrate

Lock-in

- Infrastructures
- Habits (!mobility)
- Giant vested interests

**From: Weak Technology requiring Dense Sources
To: Strong Technology harvesting Diffuse Sources**

Present energy use causes emissions, waste, risks, ...



1. People

≈
7.6 billion (2018)

2. Welfare

≈ trillion \$US
75.64 (2016)
87.50* (2018)

3. Fossil fuels
≈ 11.5 billion toe (2017)
coal, oil, gas

Gaseous litter
≈ 36 billion tons CO₂ (2016)

4. Nuclear fuel
< 2% of final energy use

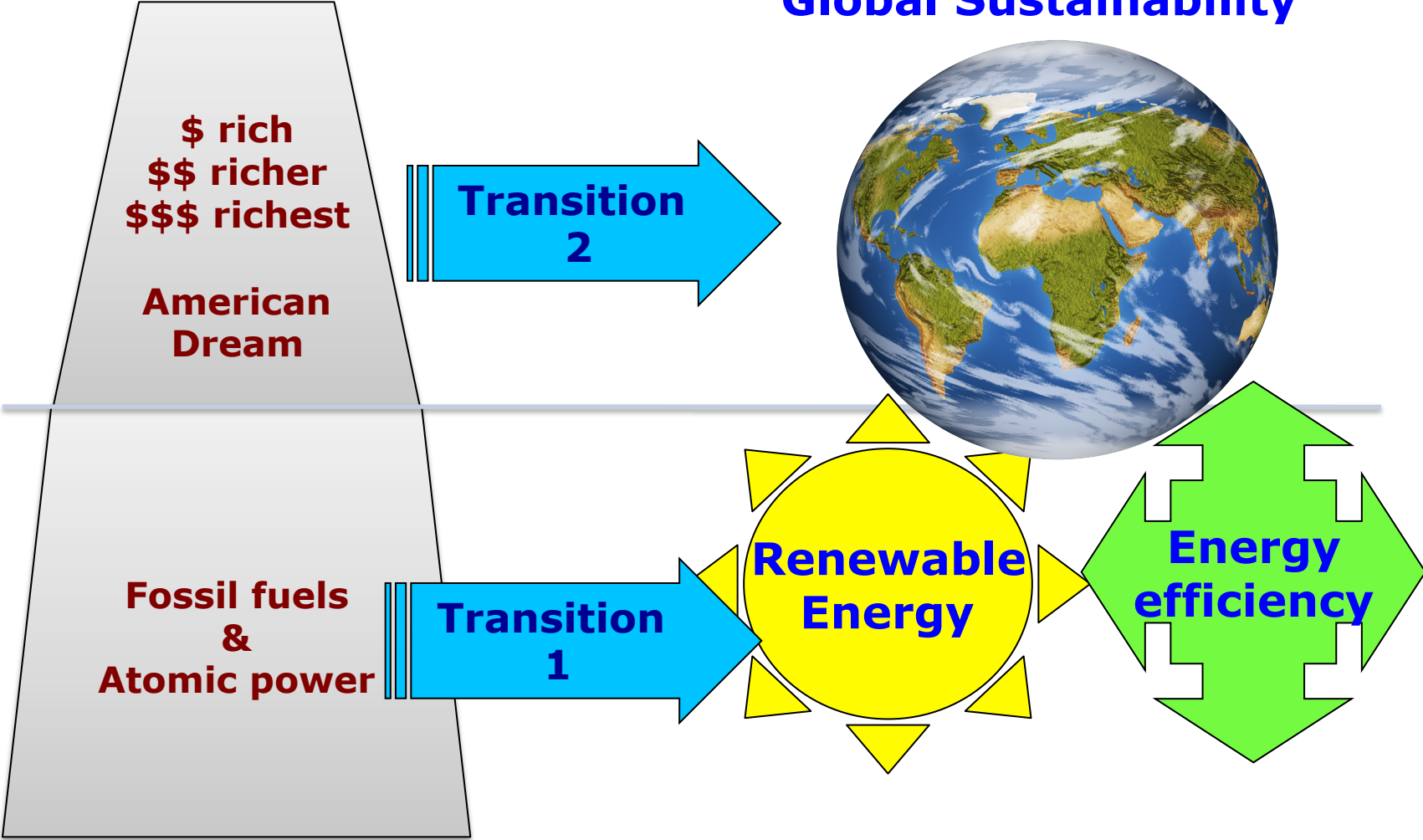
Eternal waste problem
Accidents-Catastrophes
Atomic weaponry

Energy and Societal Transitions



Present

**Future
Global Sustainability**



SOCIETY needs ENERGY SERVICES

Gross Domestic Product (wealth) = spending on numerous Activities

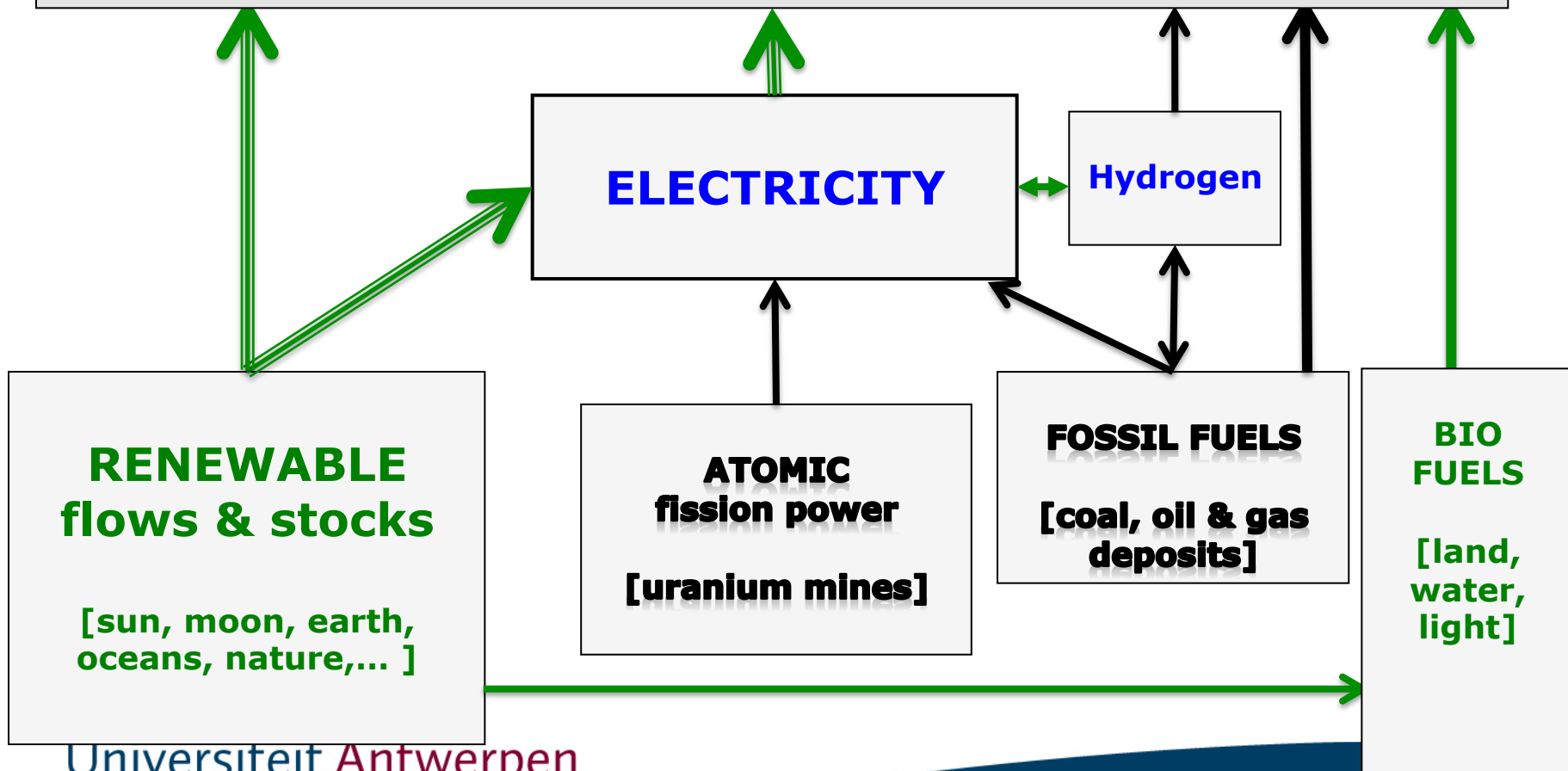
$$GDP = \sum_{i=1 \dots \Omega} P_i \times A_i$$

Activities occur in various sectors, e.g.

Agriculture + Industry + Commercial + Transport + Households

Activities require **Energy Services**

Light + HVAC + Drive Power (stationary, mobile) + Process Heat





Energy system transitions

As old as human race, voluntary because of progress:

- Intertwined with tools, technique, technology
Wheels, sails, levers, ... electronics, new materials, ICT, ...
- Revolutionizing societies

Industrial revolution: convert fuels → heat → work (steam, engines)

Now: tap electricity from ambient sources (light, air, water currents)

Today, energy transitions are necessary:

- Environmental pollution (particulates, ozon, dioxines)
- Atomic power: risks, waste, security, habitat loss by accidents
- Irreversible destruction of healthy atmosphere & benign climate

Boosted by *pursued* Sustainable Development

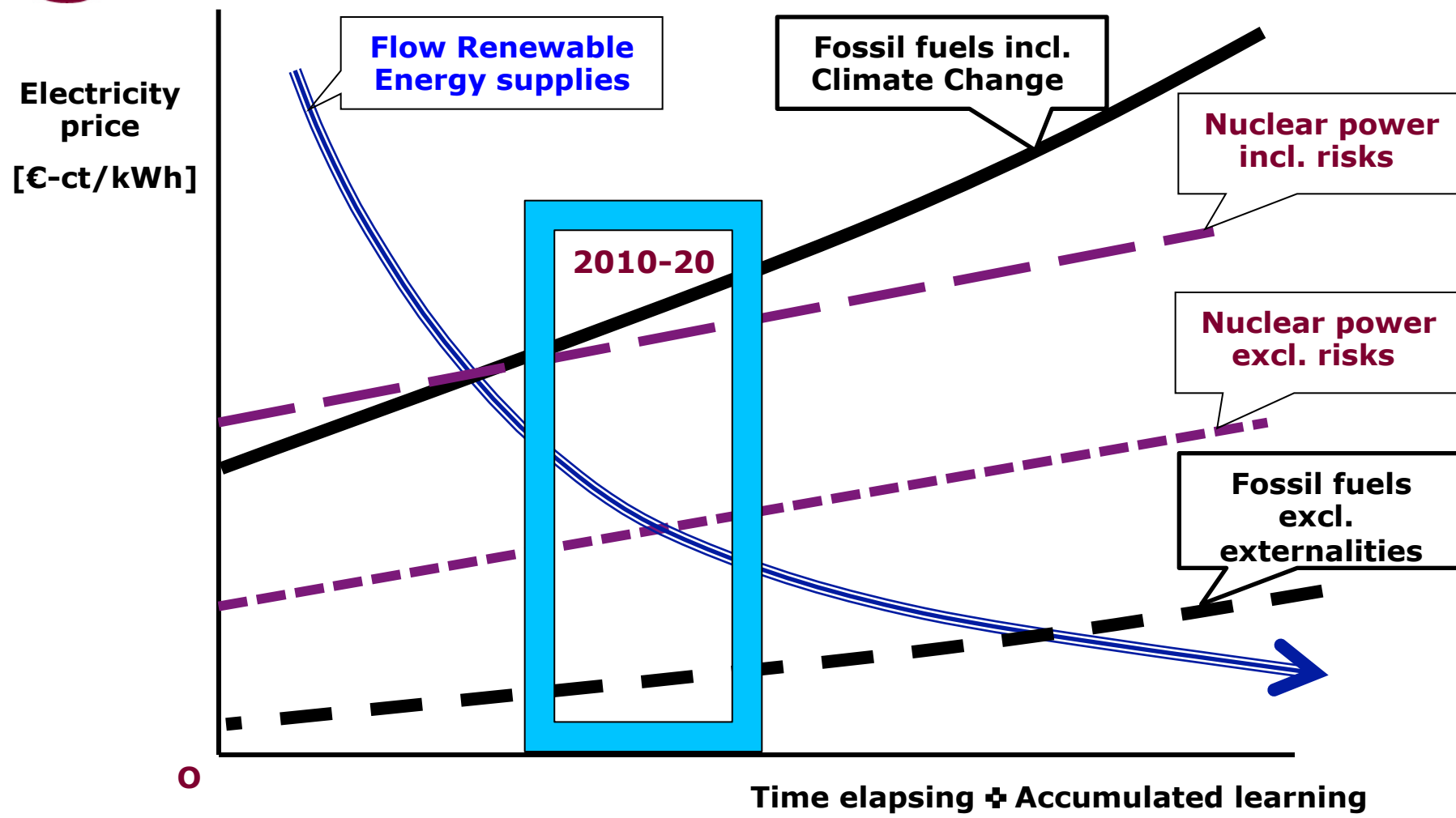
Barried by *lock-in*: infrastructures, vested interests

Layered energy transitions:

- 1) Keep oil, gas, coal underground → geopolitcis of conflicts & wars
- 2) Phase out atomic power → reform IAEA + incumbent power cy's
- 3) Commercial energy use → electricity everywhere
- 4) Efficiency & Renewable electric sources for all energy needs



Denmark, Germany, ... created a decisive, irrevocable reality by technology specific support



18th – 19th century



3rd millennium



Heat to Power

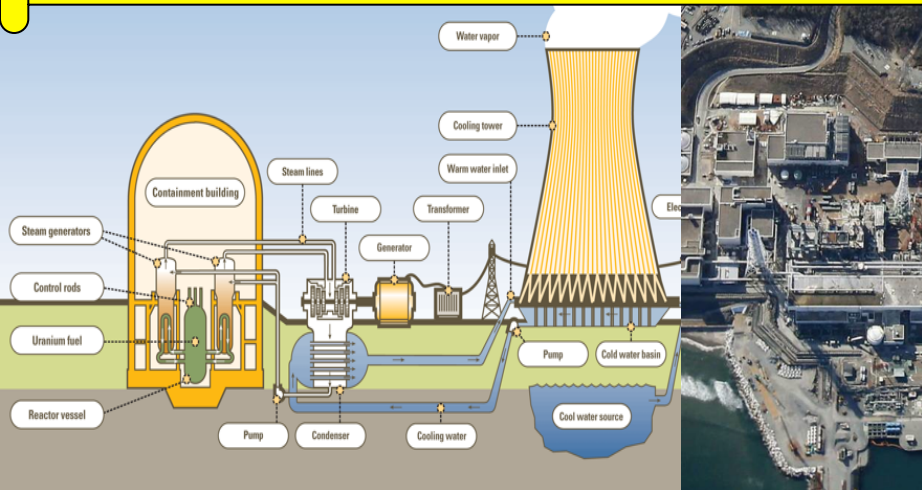


Harvest Ambient Power



**From: Weak Technology
requiring Dense Sources**

**To: Strong Technology
harvesting Diffuse Sources**





Investigate & Act

Beware of discourses, deceiving myths: *3P sustainability, uniform carbon price, Paris Agreement, Soft energy transitions*

1. Recapture Sustainable Development

°**ETHICS commission on wealth accumulation, birth control, redistribution and equity (UNDP?)**

Mandated Sustainability Assessments – robust & deliberated

2. Diverse solutions ⇔ unicorn fantasy

3. Limit UNFCCC role to Climate Issues

Self-governance regime + Board control via KPIs

Assign UNFCCC, COPs a home in Addis Ababa, Bangkok, Bonn

4. Energy Transitions

Prepare for the heavy domestic & geopolitical conflicts

Distributed energy & societal power as irresistible spearheads, revolutionizing societies TODAY – the future is made now!



From Despair to Hope

- ❖ Climate policy is a multi-levelled myriad, pyramid
- ❖ The lecture highlighted some pinnacles: UN, EU, geopolitics
- ❖ **Below the pinnacles, many more positive stories develop**
- ❖ You may be shocked by my analysis, think I am cynical, pessimistic, ... seeding Despair
- ❖ **None of this: my findings support Hope!**
- ❖ When reduced 3P sustainability, jammed uniform carbon pricing/emissions trading, a vague treatment is the best mankind can offer, we would be in deep trouble, despair
- ❖ **Real hope comes from brushing the present stalemates, and deploy the available, proper solutions**

**Thanks for your attentiveness.
The future is made now: You make the future.**