Leverage points for sustainability transformation in the Water-Energy-Food Nexus

– Institutional perspectives –

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Mutual interdependences and conflicts in the WEF-Nexus

Olsson (2013)
Path dependency, mutual reinforcement, and lock-in stabilizing unsustainable management regimes

Where to initiate change?

Regime transformation or systemic change required – rather than just change!

Leverage points for sustainability transformation (following Meadows 1999)

1. The power to transcend paradigms
2. The mindset /paradigm out of which the system arises
3. The goals of the system
4. The power to add, change or self-organize system structure
5. The rules of the system (such as incentives & constraints)
6. The structure of information flows (access to information)
7. The gain around driving positive feedback loops
8. The strength of negative feedback loops
9. The length of delays, relative to the rate of system change
10. The structure of material stocks and flows
11. The size of buffers stocks, relative to their flows
12. Parameters (such as subsidies, taxes, standards)

→ Crucial role of institutions as deep leverage points
Example of unsustainable pathways in agricultural Lower Saxony

- Intensive agriculture impacts on water quality (nitrate)
- Energy crops for biogas (Maize) compete with field crops
- Maize increases nitrate leakage into groundwater

Examples of institutions:

- Food/agriculture: GülleVO – Germany; Consumption patterns
- Energy: Feed-in tariff for electricity from biogas - Germany
- Water: Water Framework Directive, but ineffective
What leverage points in institutional systems of the WEF nexus?

- Ensure institutional / spatial ‘fit’: not without problems for one single sector; yet more complex for dealing with multiple sectors (Young 2010, etc.)

- On what level to intervene how? multi-scale and multi-level systems

- Avoid institutional fragmentation, ensure polycentricity

- Ensure institutional coherence and consistency across and within water, food and energy regimes → panel “policy coherence”

- Make use of institutional dynamics: purposeful decline; learning from failure (Newig 2013; Abson et al. 2016)

- Institutionalising governance learning (Newig et al. 2016)
Institutional dynamics: Purposeful destabilization of unsustainable structures

- Unlocking ‘lock-ins’
- Opening windows of opportunity
Institutional dynamics: systematic learning from failure and break-down

► Avoid biased “best practice” examples
Leverage Points for Sustainability Transformation

4-year project at Leuphana Universität Lüneburg
Cited literature


▶ http://sustainability-governance.net
▶ http://leveragepoints.org