Action Levers towards Sustainable Wellbeing: Re-Thinking Negative Emissions, Sufficiency, Deliberative Democracy

Sascha NICK

Leverage points

high

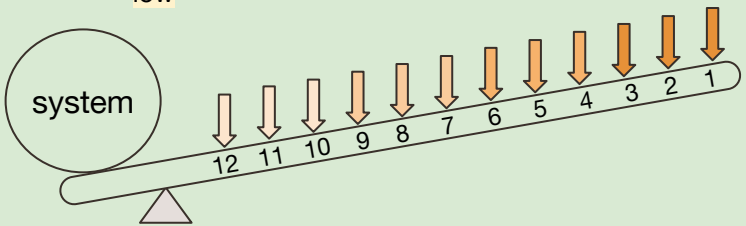
Intent
1. The power to transcend paradigms
2. Mindset, worldview, values
3. System goals

Design
4. Power to change system structure
5. System rules
6. Structure of information flow

Feed-back
7. Gain of positive feedback loops
8. Strength of negative feedback loops
9. Delays

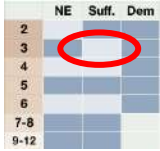
Para-meters
10. Structure of stocks and flows
11. Buffer size
12. Parameters, incentives, standards

low



Adapted from Abson et al. 2017 and Meadows 1999

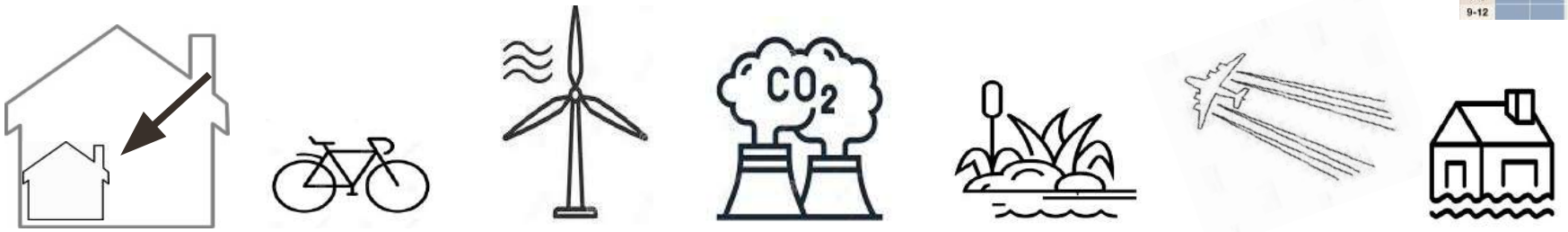
Focus of analysis



Action Levers: coordinated push on multiple high Leverage Points

Action lever → / Leverage point ↓	Negative Emissions	Sufficiency	Deliberative Democracy
2		■	■
3	■		■
4			■
5	■	■	■
6			■
7-8	■	■	
9-12	■	■	

Typology of Climate Action



1 Sufficiency | 2 Efficiency | 3 Clean Energy | 4 CCS | 5 NET | 6 SRM | 7 Adaptation

Stabilize temperature

Stabilize CO_2 concentration

Reduce emissions

Adapt to changed climate

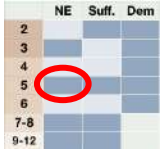
Mitigation (IPCC): reduce sources or enhance sinks

Adaptation: reduce harm

CCS: carbon capture and storage; NET: negative emissions (technologies); SRM: solar radiation management

Nick and Thalmann 2021

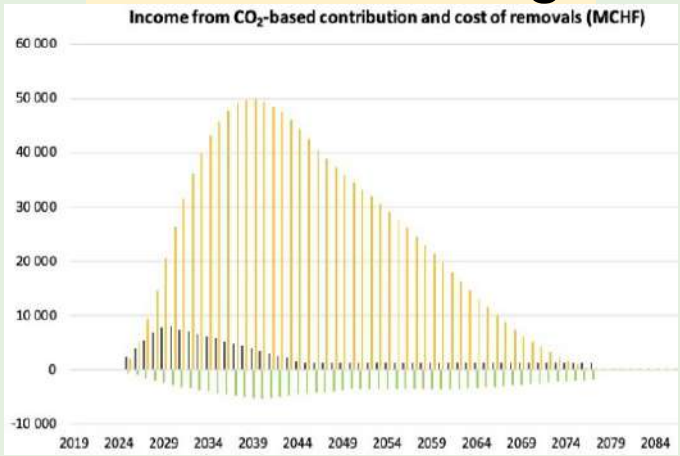
Methodology - Swiss Negative Emissions Fund (SNEF)



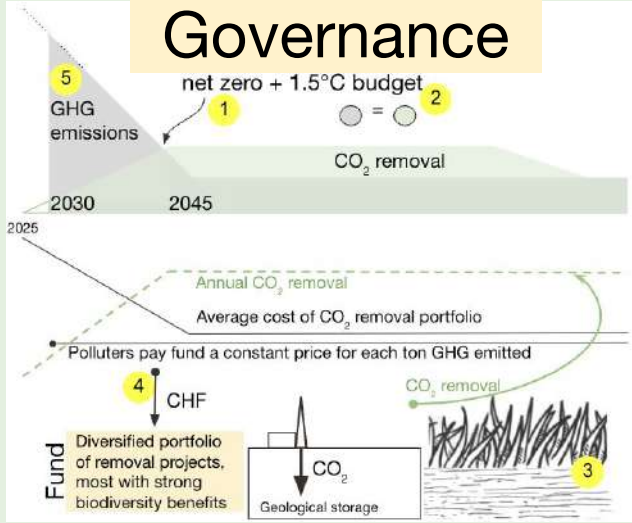
1. Potential of Swiss biological negative emissions (NE): wetlands, soil carbon, BECCS, biochar
2. Potential of Swiss technological NE: DACS, storage, pipelines, energy system
3. Costs and learning curves of NE
4. Governance models, polluter pays
5. Funding models
6. Acceptance, power balance, co-benefits

Analysis

SNEF modeling

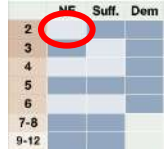


Governance



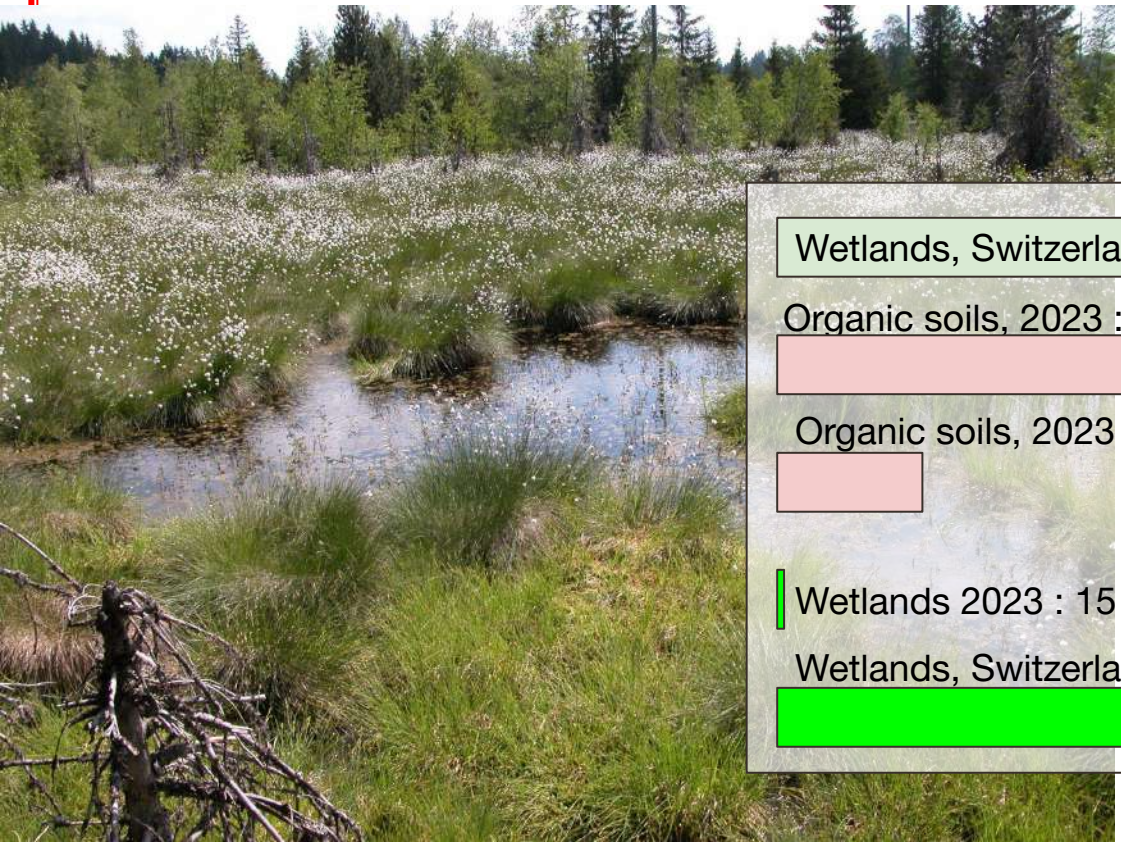
Nick and Thalmann 2021, 2022a

Climate and biodiversity: Common action is essential



Example:

Wetland renaturation restores Swiss biodiversity hotspots, stops peat oxidation and restarts carbon sequestration



Wetlands, Switzerland, 1750 : 2500 km^2 (6% of country area)

Organic soils, 2023 : 1000-1500 km^2 (non-localized, emitting ca. 4 Mt CO_2)

Organic soils, 2023 : 350 km^2 (localized, emitting ca. 1 Mt CO_2)

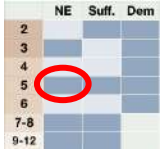
Wetlands 2023 : 15 km^2 of which 1.5 km^2 healthy

Wetlands, Switzerland, 2050-2070: 1000 km^2

Overall target: 30% reserved for biodiversity

Nick and Thalmann 2021

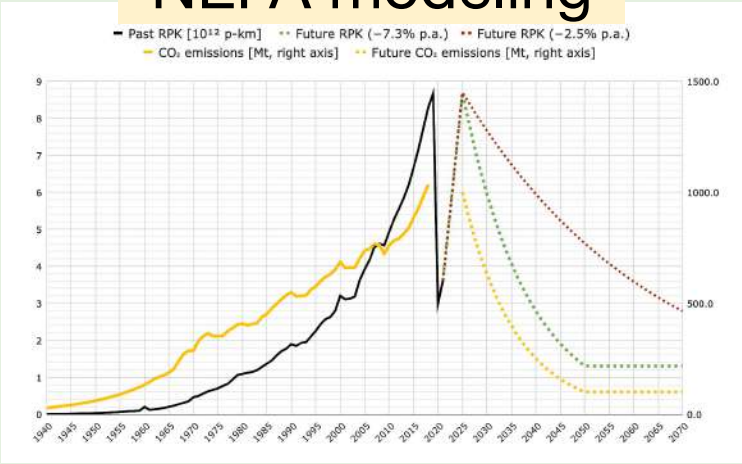
Methodology - Negative Emissions Fund for Airlines (NEFA)



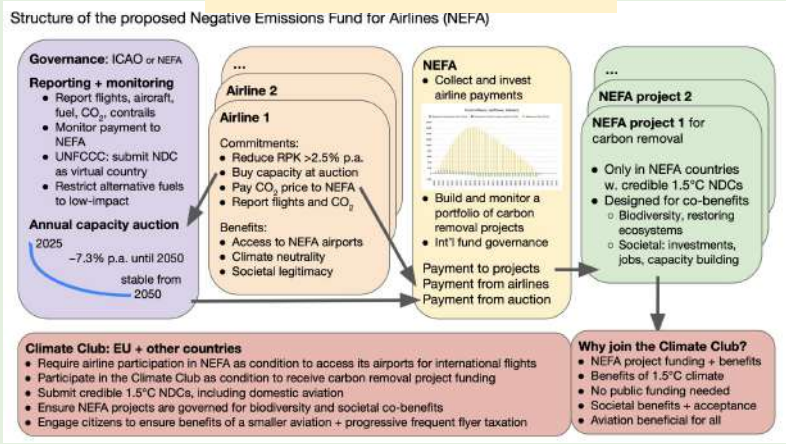
1. Goals, commitments, and actions of IATA, ICAO, airlines (ex. CORSIA)
2. Non-CO_2 dynamic climate effects of aviation (today RFI=3)
3. Lifecycle climate and biodiversity effects of alternative fuels
4. Alternative power sources and possible efficiency gains: electric, hydrogen
5. Societal resource use for aviation and fairness
6. Credibility and past announcements of aviation

Analysis

NEFA modeling

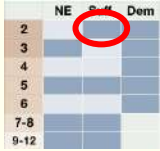


Governance



Nick and Thalmann 2022b

Sufficiency at the societal level and wellbeing



Satiability of human needs → basis for sufficiency
→ necessary condition for wellbeing for all within planetary boundaries

Sufficiency is Incompatible with neoclassical economics and most institutions, beliefs, today's practices
→ almost completely absent from national and regional policy

Key principles of sufficiency as a basis for societal action

- Using less, reducing activity level, while ensuring human wellbeing
- Ecological constraints, to ensure ecosystem integrity
- Collective or society-level goals, organizing principles, policies, actions

Examples of recent work

- Sufficiency and wellbeing in the Swiss habitat: renovation and shared spaces
- Canton Vaud climate plan: -50% GHG by 2030… Efficiency: 24% max, Sufficiency: 53%
- Sufficiency action framework: product - energy service - meaning - socio-technical provisioning system

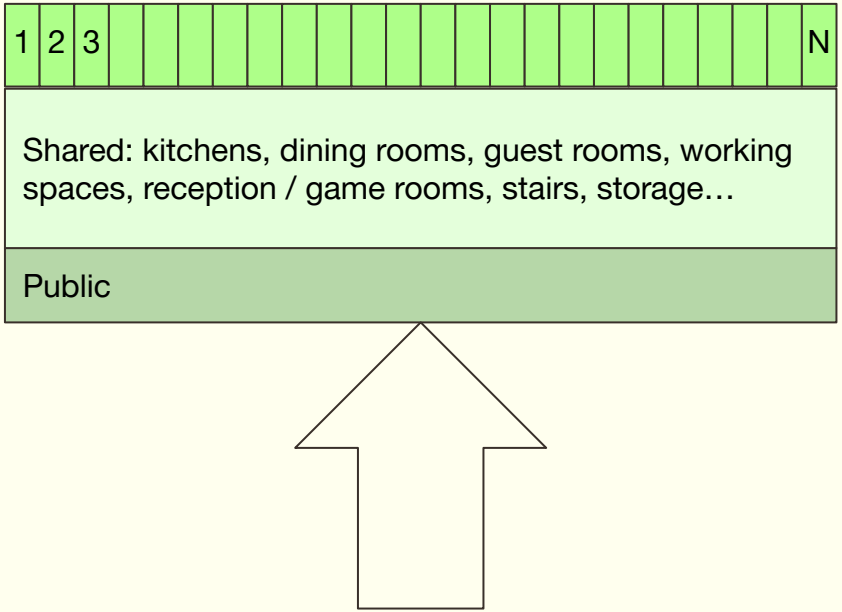
Example: spaces, human needs perspective

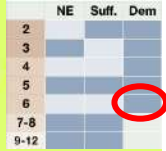
Shared spaces as synergistic satisfier for participation, creation, understanding, identity

CH 2020 habitable space per person: 46.6 m^2 (plus 9.3 m^2 shared and 3 m^2 secondary residences);
Public / non-habitable space per person: 14.6 m^2 (total 73.5 m^2)

2020 Private+Shared+Public, N people

2040 Private+Shared+Public, N people





21st century democratic decision-making for the Swiss societal transition.

Discover ACA 2022 (04-2022)

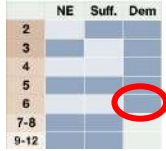
Discover ACA K3 (09-2022)

Discover ACA MBP (04-2023)

Imagined by EPFL and BSL

EPFL
Sascha NICK
LEURE

Results of the Academic Citizens' Assembly



Example: ACA K3 14.09.2022, Toni Areal Zurich, Accepted proposals >85% consensus

Focus: Transport+Urban Planning–Agriculture+Food–Buildings–Degrowth

100%
1. Modular architecture and forms of living – "breathing" apartments, with the aim of reducing m^2 per person

95%
2. CO_2 tax on fuels, make transport more expensive, abolish subsidies on fossil fuels
3. Change the use of car infrastructure for pedestrians and bicycles, give pedestrians and bicycles priority
4. Basic needs: vegan dishes as standard in public canteens at the lowest price
5. Create incentives: reverse commuter allowance for short distances, holidays nearby
6. Create incentives: differentiated taxation for communal living space

90%
7. Support multi-generational housing projects financially and politically, build/modernize energy-efficiently
8. Make parking more expensive
9. Strengthen communities, promote sharing models
10. Cap subsidies for insufficiency (e.g. single-family house) or make conditional (energy efficiency, etc.)

85%
11. Progressive taxation of living space per person above a certain size
12. Reduce working hours to increase self-sufficiency and reduce consumption