



Planbureau voor de Leefomgeving

Resource-efficient and low-carbon Europe through the lens of the nexus between water, land, energy, food and climate

Final SIM4NEXUS webinar

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Synergy and trade-offs
- Successful policy **output** through a nexus lens
Recommendations
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- Successful policy **process** through a nexus lens
Recommendations
From nexus theory to practice



European Green Deal describes a nexus approach

‘All EU actions and policies will have to contribute to the European Green Deal objectives. The challenges are complex and interlinked.’

Successful policy through a nexus lens: **impact**, output, process

IMPACT

Effective: Goals met **in all sectors**

Efficient: **for whole nexus, fair share** of benefits and burdens

Sustainable, **including trade-offs**:

People: legitimate, equal, inclusive, fair

Planet: within planetary boundaries

Profit: short-term affordable or self-financing, long-term profitable



Recommendations for policy impact: SYNERGY

‘.....the EU's energy supply needs to be secure and affordable for consumers and businesses.’
‘..smart integration of renewables, energy efficiency and other sustainable solutions across sectors will help to achieve decarbonisation at the lowest possible cost’

SW UK: TRILEMMA in water services

If cost-effectivity is leading:

1. Change behaviour > 2. Increase efficiency > 3. Increase supply capacity

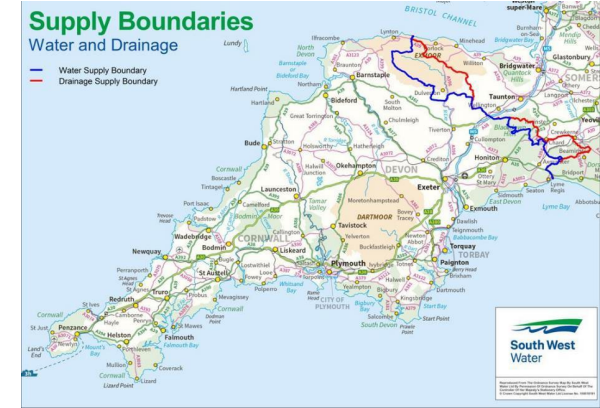
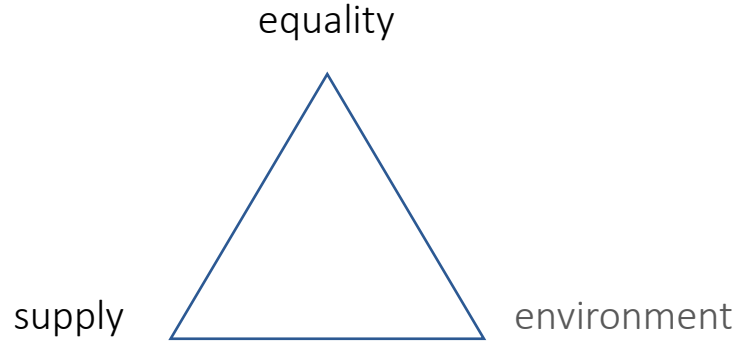
Willingness to pay for less cost-effective solutions by those who can afford it.

Who are the losers? Who/what needs to change? Support.

Main **synergy** in energy sector between reduction of greenhouse gas emission and energy supply at low cost is **energy efficiency and savings**. (EUROPE, UPPER-RHINE, SARDINIA)

Synergy with water, land, food security, biodiversity, climate

Consumers economical with energy, energy labelling > opportunities for product innovations



Recommendations for policy impact: SYNERGY

‘..... stimulate sustainable food consumption and promote affordable healthy food for all.’

Replace animal by plant-based proteins in diet & increase resource efficiency of agro-food chain:

Synergy with goals for energy, climate, natural resources, food security and health.

Livestock farmers need to change their business > opportunity in upscaling arable farming and horticulture.

‘.....improved nutrient management to improve water quality and reduce emissions.’

Increase nitrogen efficiency in agriculture

Synergy with climate mitigation, water quality, biodiversity goals.

Farmers need to change their business > opportunity in cost saving.

(GLOBAL, EUROPE, LATVIA)



What are the Nexus issues at the global scale ?



What are the impacts of a transition to a low-carbon economy in Europe on the five elements of the Nexus ?

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Recommendations for policy impact: SYNERGY

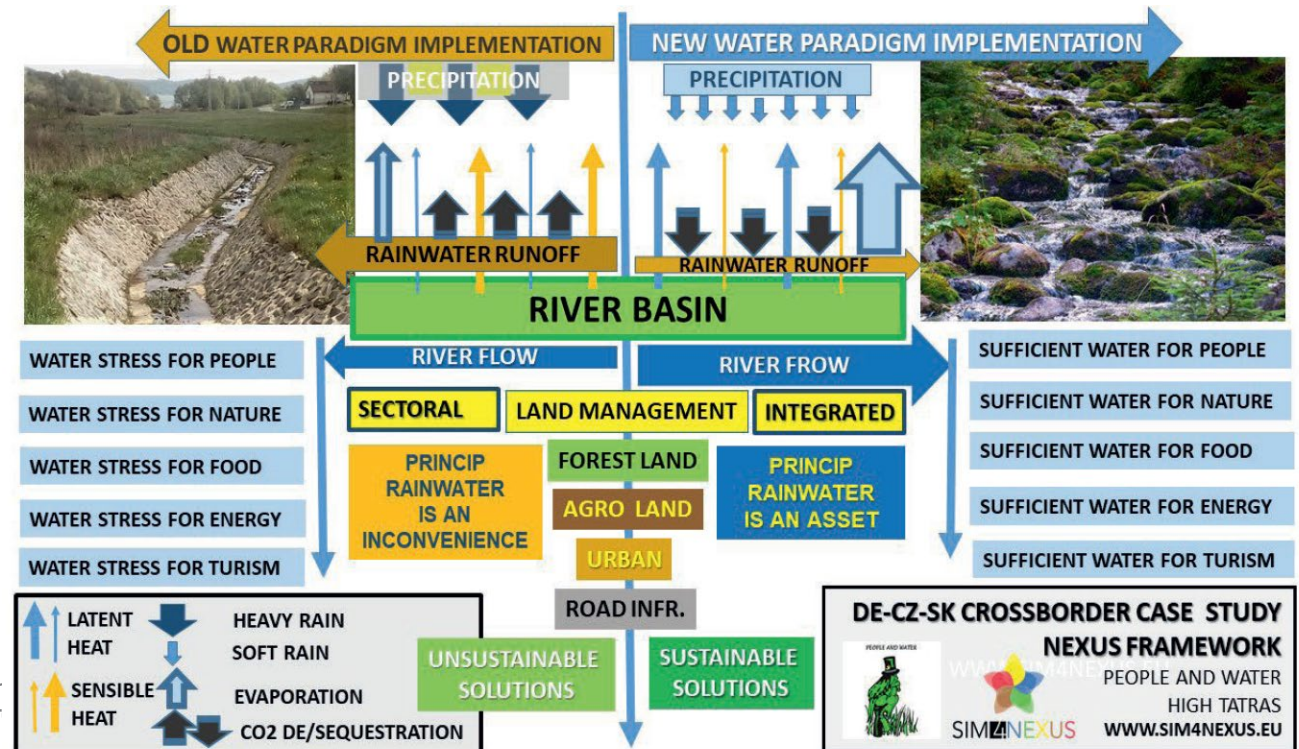
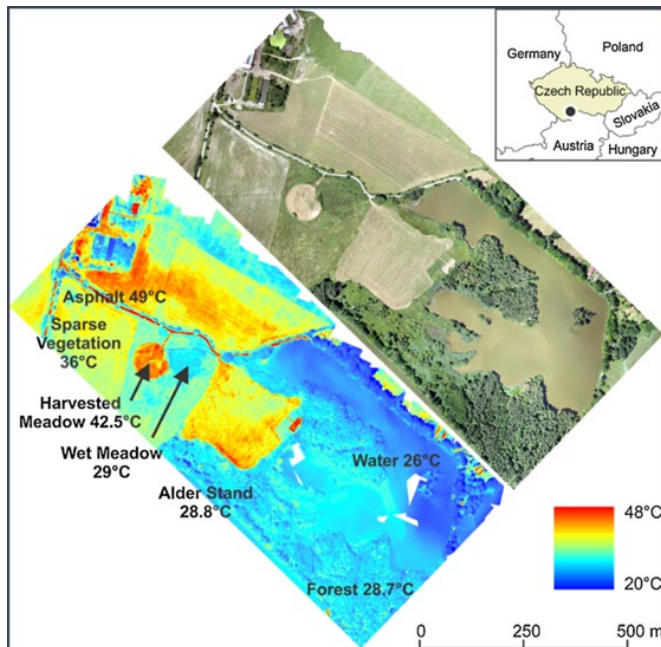
‘.....lasting solutions to climate change require greater attention to nature-based solutions...’

Landscape restoration to improve rainwater retention and abate local climate change

Synergy with climate mitigation & adaptation, water, biodiversity, health, tourism.

Landowners and farmers need to change their business > opportunity to abate heat, drought, floods.

(GERMAN-CZECH-SLOVAK, LATVIA, ANDALUSIA, UPPER RHINE, SARDINIA, SW UK, SWEDEN)



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All pictures: Author and Foto: M. Kravčík

TRADE-OFFS between low-carbon and resource efficiency

....no net emissions of greenhouse gases in 2050 and economic growth is decoupled from resource use.'

BIOENERGY (wood, crops, gas from manure & crops, residue):



Trade-offs to water, soil and land, biodiversity, food security, climate adaptation, mitigation, conflict with high added value production for other purposes.

(GLOBAL, EUROPEAN, NETHERLANDS, SWEDEN, LATVIA, SW UK, UPPER-RHINE, GERMANY-CZECH R.-SLOVAKIA)

Inconsistent with circular and bio-based economy and cascade principle (NETHERLANDS).

Sustainably produced biomass will become **scarce**; strict criteria <> availability

Competition: who/what gets priority? (NETHERLANDS).

TRADE-OFFS between low-carbon and resource efficiency

HYDROPOWER affects water quality, land use, biodiversity.
(LATVIA, SWEDEN)

WATER SCARCITY AND COMPETITION

growing worse by climate change (SWEDEN, LATVIA, SARDINIA, UPPER RHINE)

SOLAR AND WIND FARMS affect soil, land and landscape
(LATVIA, UPPER RHINE).

WATER EFFICIENT irrigation system caused increase in
energy consumption. (ANDALUSIA)



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Successful policy through a nexus lens: impact, **output**, process Coherence ≠ Synergy

OUTPUT

Cross-sectoral horizontal coherent goals, programmes and instruments:

- * **Synergies** exploited
- * **Trade-offs** recognized and avoided > mitigated > compensated
- * **Transparent choices** between conflicting interests

Vertical coherent

- * Higher level supports lower level, **also cross-sectoral**
- * Lower level implements higher level, **coherent**

‘Optimal’ state and development of WLEFC nexus is **POLITICAL CHOICE**.

‘Goals can be reached in multiple ways and all pathways entail some trade-offs between sectors, there isn’t one single optimal strategy.’ (SARDINIA)



Recommendations for policy output: RED

Put policies stimulating use of bioenergy only in place if food security and climate-neutrality are assessed and likely. (GLOBAL)

Clear and strict sustainability criteria for bioenergy (NETHERLANDS, LATVIA)

Stricter regulation for land take and environmental impacts by bio-energy crops and solar farms. (UPPER RHINE)

Stimulate innovation in bioenergy generation, sources, use, efficiency. (SW UK, LATVIA)

Strengthen and develop transboundary cooperation on energy policy (UPPER RHINE)



Recommendations for policy output: CAP <> WFD

Agriculture and food key sectors to increase sustainability WLEFC sector

Take local and regional climate change caused by landscape degradation and dehydration seriously and investigate occurrence and extent within Europe.

Stimulate landscape restoration and soil conservation agriculture. Stricter greening conditions for payments. (Ge-Cz-Sv, ANDALUSIA)

Stimulate multifunctional agriculture, organic farming, ecosystem services, nature, sustainable production, local food. (LATVIA, SWEDEN, NETHERLANDS).

Stimulate less water-demanding, climate resilient crops (GREECE, SWEDEN).

Improve efficiency of irrigation systems, stimulate sensor-based irrigation (UPPER RHINE, SARDINIA, GREECE)

Support farmers in transition from livestock to horticulture and arable farming.

Stimulate plant-based diets, retail and development of plant-based food. (GLOBAL, EUROPE)



Successful policy through a nexus lens: impact, output, **process**

'It will require intense coordination to exploit the available synergies across all policy areas.'

PROCESS

Cross-sectoral and cross-scale knowledge and relational learning

- * Interconnections between nexus components and scales
- * Diverse perspectives
- * Common language
- * Awareness of reciprocal interdependence

Uncertainty and complexity

- * Experimentation and adaptability
- * Scenarios

Multi-sectoral social dynamics and participation

- * Vision, leadership, political and social will
- * Cross-sectoral and cross-scale cooperation
- * Stakeholder involvement, equal power relations
- * Legitimacy, ownership, trust
- * Responsiveness to stakeholders of all sectors

'..meaningful collaboration will require increased time, expertise, understanding and coordination.'
(SW UK)



Successful policy through a nexus lens: impact, output, **process**

PROCESS

Resources, **also the 'in between' and 'total'**

Financial and human, fairly allocated

Long-term for policy making, implementation, monitoring and evaluation

Guidelines, responsibilities, tasks and roles

Capabilities of actors, education, communication

Monitoring and evaluation, **also synergy and trade-offs**

Agreed upon, representative and measurable nexus indicators

Well-functioning monitoring, evaluation and reporting



Political will and mindset to broaden the scope beyond the usual sectoral perspective

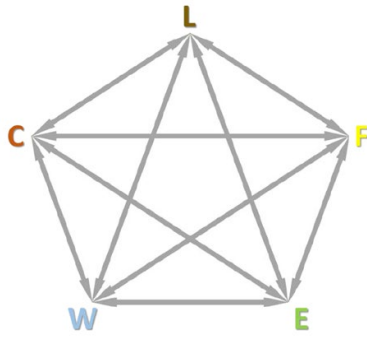
- Nobody is in charge of the WLEFC nexus.
- More powerful, driving sectors, such as energy, forestry and agriculture, tend to have less eye for nexus relations and trade-offs than less powerful and affected sectors such as water and land management and nature protection. Interlinkages are not reciprocally addressed.
- Nexus approach concerns whole policy cycle, is multi-scale, multi-sector, multi-actor



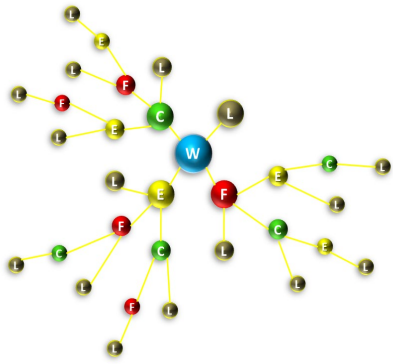
Recommendations for policy process

- Nexus approach from the very start till the very end:
Make nexus and coherence assessment part of **impact assessment** to define nexus scope of policy-making process.
Learn from nexus **monitoring and evaluation**: database of implemented and evaluated nexus projects/policy and lessons learned, synergy and trade-offs.
- New **integrating themes** stimulate a nexus approach.
Green Deal, Farm2Fork, Sustainable Cities, Circular Economy <> planetary boundaries.
Institutionalize 'nexus' between policy fields and scales, temporarily or permanent.
- Develop framework, incl. definitions, to make **data** between policy fields and scales mutually comparable, open access. Develop **database of nexus connections**.
- Try out success factors > '**good enough**' practices.
- **Public-private partnerships** to stimulate innovations.



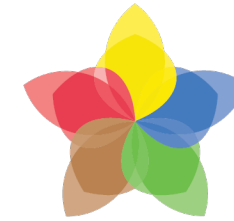


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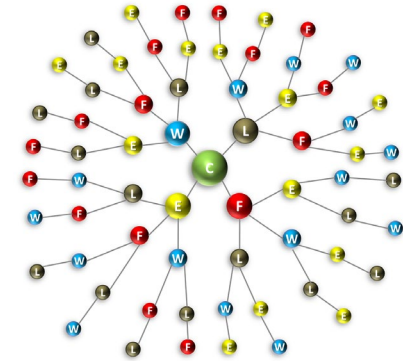


Thanks for your attention!

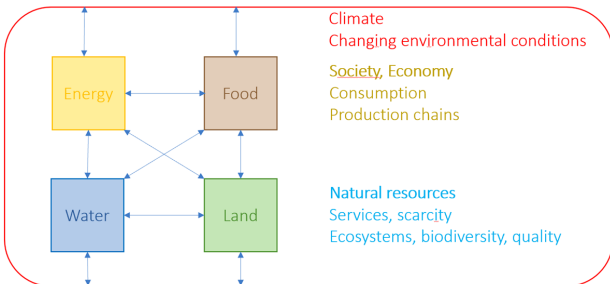
For further information please consult
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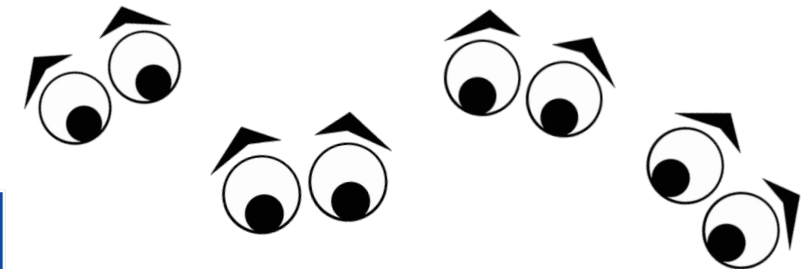
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WLEFC Policy documents: more synergy than trade-offs

European, national, regional WLEFC policy objectives: mostly synergistic.

Conflicts appear during implementation: (EU, ALL NATIONAL AND REGIONAL CASES).

SYNERGY:

Good condition of water, land, soil, forests, ecosystems;
Water, energy, agro-food efficiency

TRADE OFFS: Most conflicts arise from **RED** and **CAP**

INCOHERENCE:

Potential SYNERGIES not always addressed, e.g. nature-based solutions

Not all TRADE-OFFS (sufficiently) addressed:

RED: Water (Intern., Europe), landscape, local climate change;

Sustainability criteria for production, use, import, export (LATVIA, NL)

CAP: Water, landscape, local climate change; mainstreaming ≠ problems solved.

