Approaching the water-food-energy-ecosystems nexus in the Niger Basin

**2nd MEETING OF TASK FORCE ON WATER-FOOD- ENERGY-ECOSYSTEM NEXUS
IN TRANSBOUNDARY BASINS UNDER WATER CONVENTION**

Frank van Weert   8 September 2014

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Approach - what

1. Identify the intersectoral linkages, impacts and trade-offs
2. Policy compatibility (cross-sectoral and cross-border)
3. conceptual picture of dynamics
4. Limited quantification using indicators, mapping of hotspots
5. Develop/test scenarios of potential trade-offs as demands, management and biophysics change
6. Institutional mapping

- Expected change and the capacity to absorb and manage the change:

- Identify jointly with sectors and countries actions that could enhance synergy and build on existing structures and avoid unintended consequencs

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Approach - how

- Desk top study
- Survey to collect additional data and prepare experts
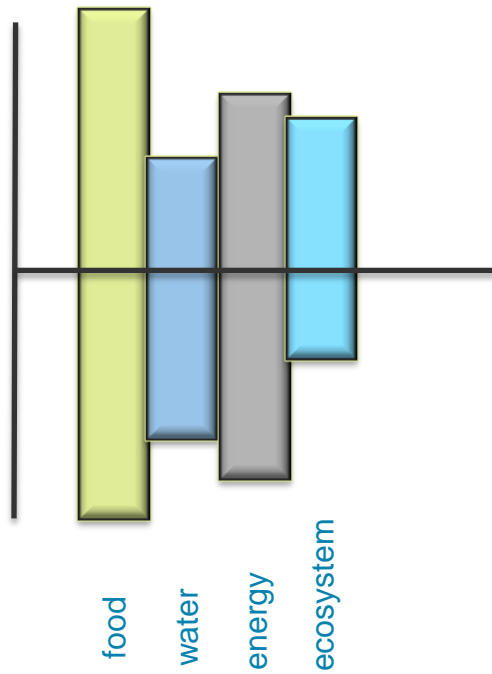- Workshop
- Analysis of results and reporting

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Approach - who

- NBA
- UNECE
- KTH and Wetlands International

- National sector experts
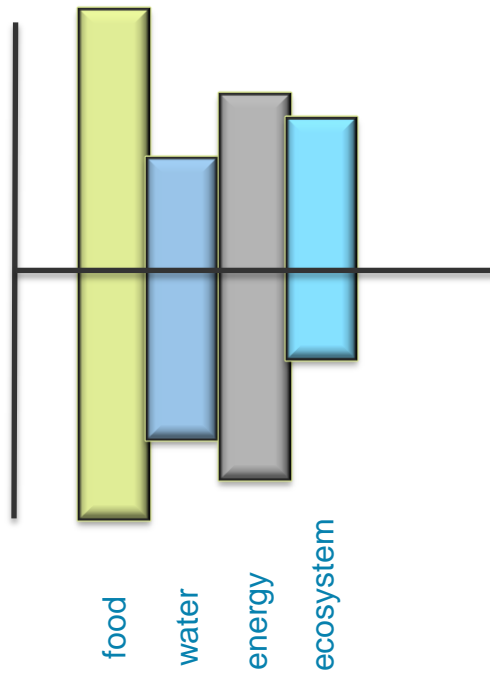- Regional sector experts
- Others

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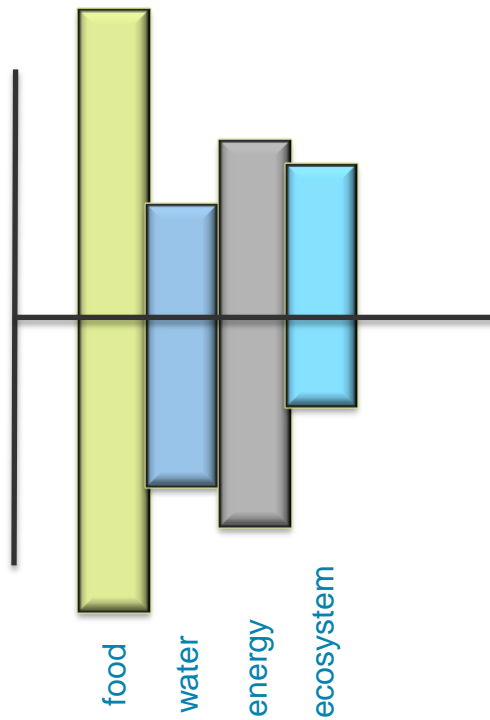# Nexus dynamics

Utility and cost

Nexus dynamics

Meet food demands with higher cost

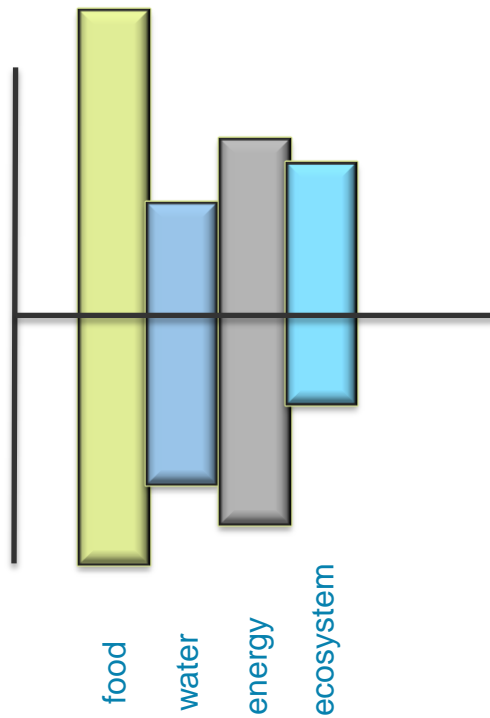# Nexus dynamics

Meet food demands with higher cost

Nexus dynamics

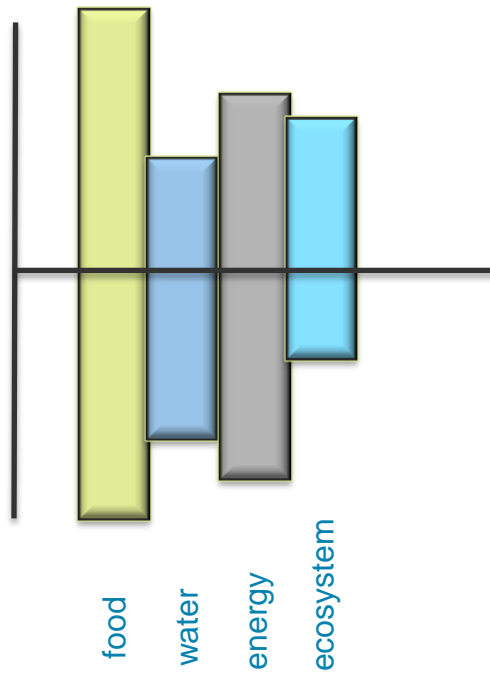Meet food demands with higher efficiency
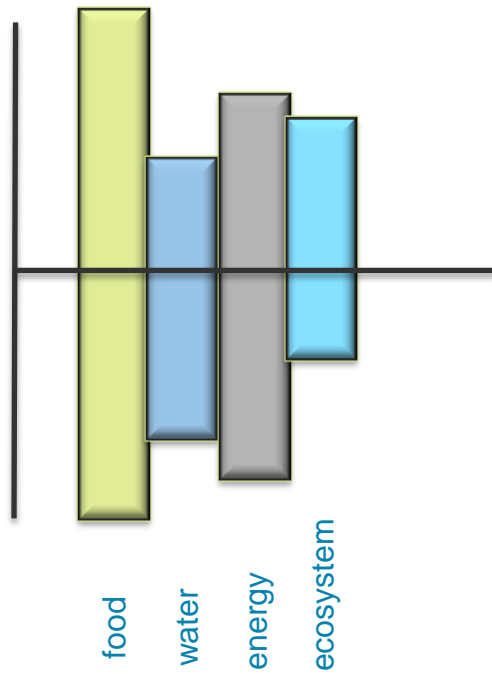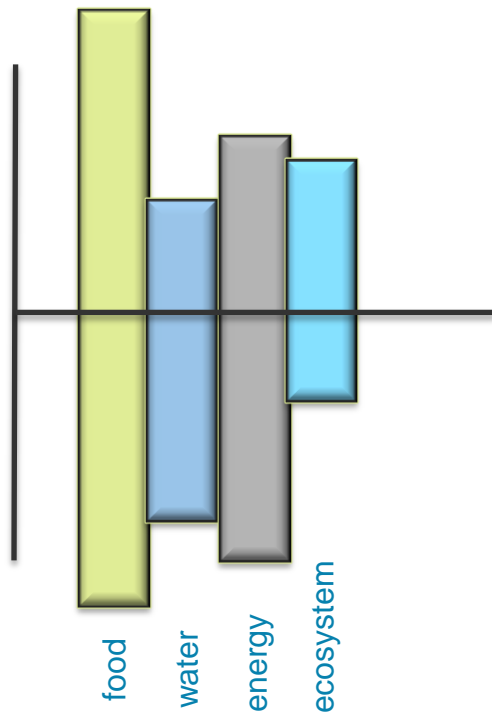
Nexus dynamics

Meet food demands with higher efficiency

Nexus dynamics

Meet food demands with higher cost in all sectors

Nexus dynamics

Meet food demands with higher cost in all sectors

food water energy ecosystem

Nexus dynamics

Environmental degradation

- **Water availability and timing -> salinisation and siltation**
- **Water quality aspects -> food chain**
- **Encroachment -> reducing natural habitats**
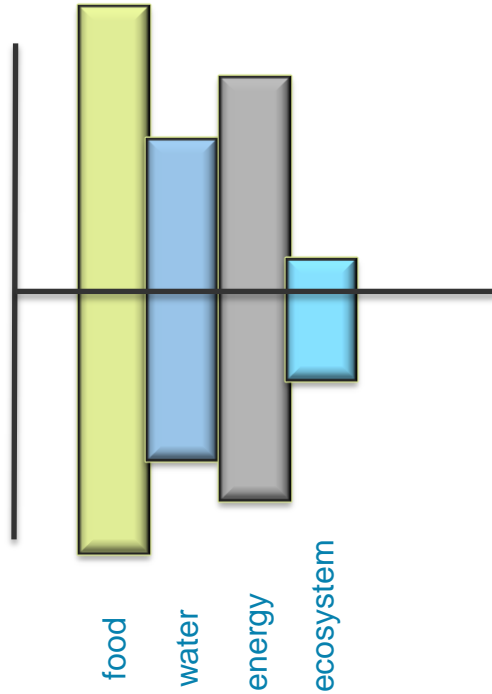- **Blocking of migratory routes**
- **Deleting migration stepping stones**

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Nexus dynamics

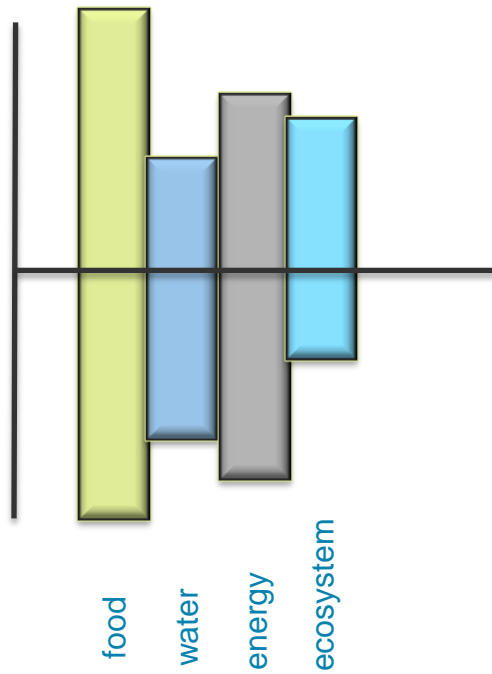Meet demands with environmental degradation

food water energy ecosystem
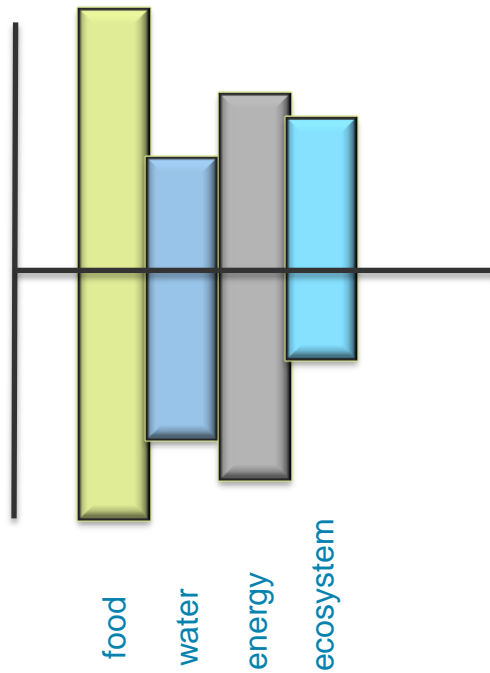
Nexus dynamics

Meet demands with environmental degradation

Nexus dynamics

Costs of environmental degradation

food   water   energy   ecosystem

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Nexus dynamics

Costs of environmental degradation?

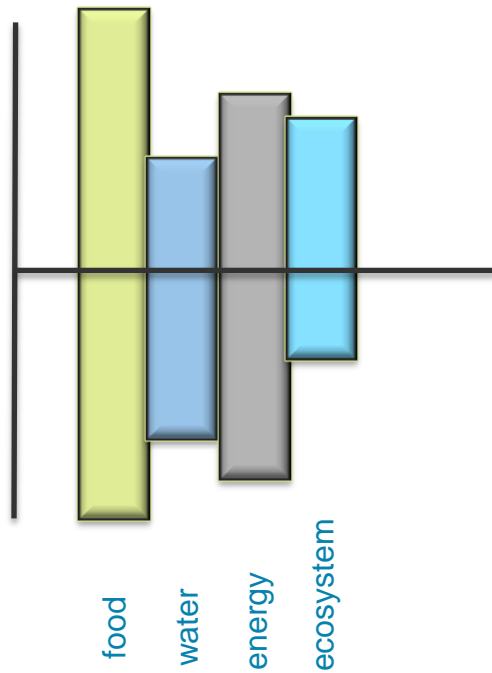food water energy ecosystem

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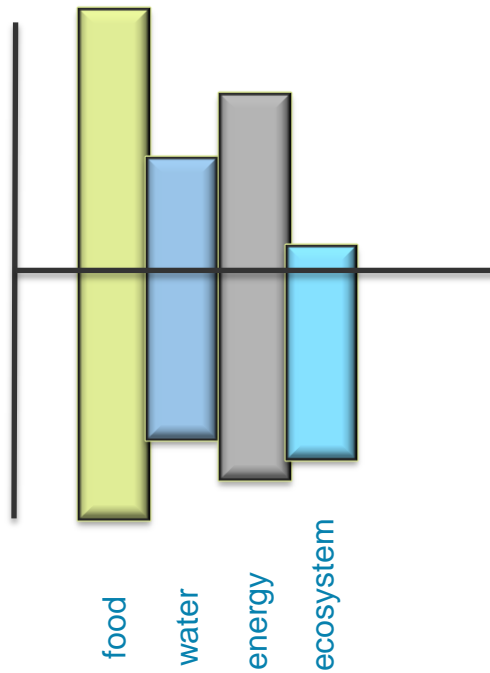
Nexus dynamics

Utility from Ecosystems by the services they provide

- **Provisonal services**
- **Regulating services**
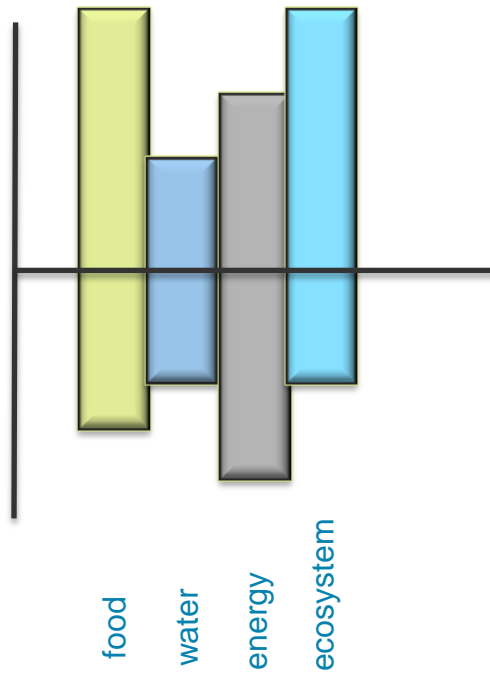- **Cultural services**
- **Supporting services**

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Nexus dynamics
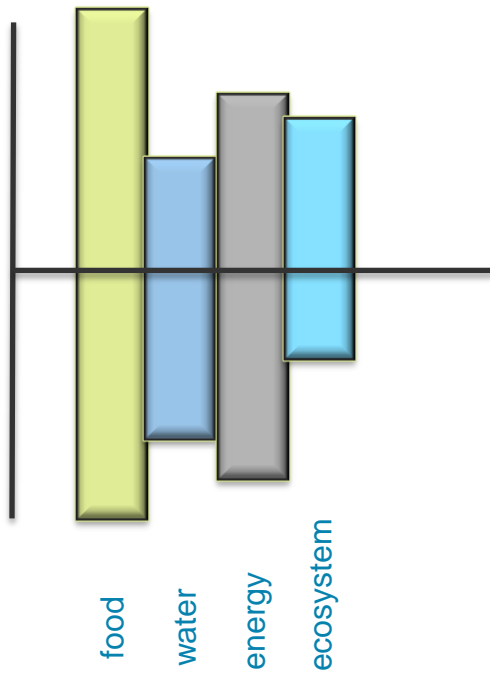
Efficient production by improved ecosystems
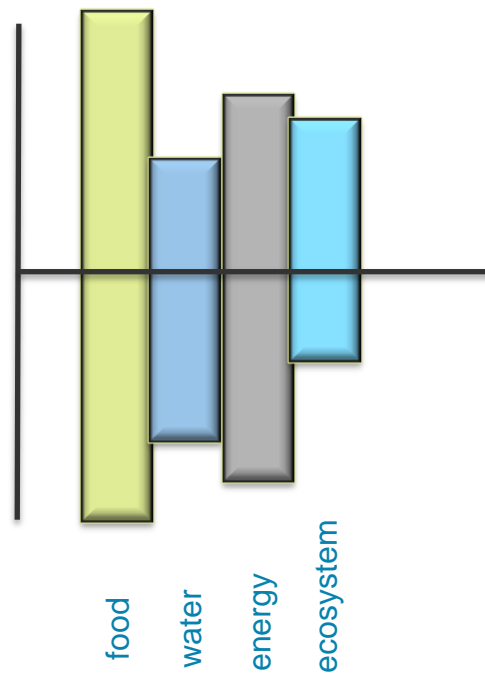
Nexus dynamics

Efficient production by improved ecosystems
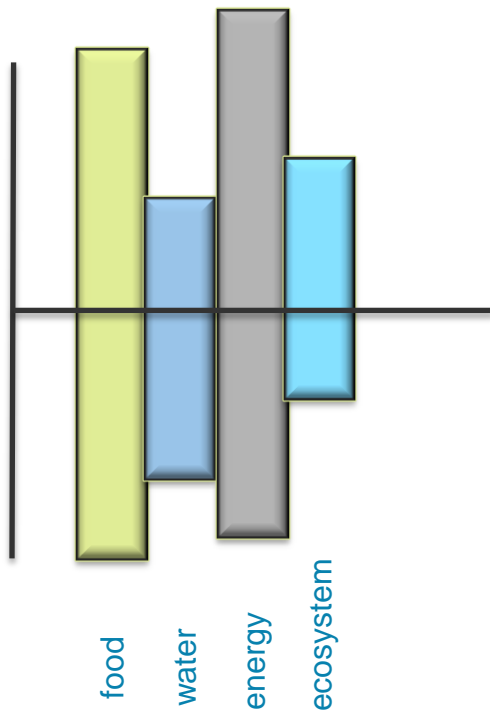
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Transboundary externalities

Nexus dynamics

Transboundary externalities

upstream

food water energy ecosystem

downstream

food water energy ecosystem

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What is the optimal mix?

upstream
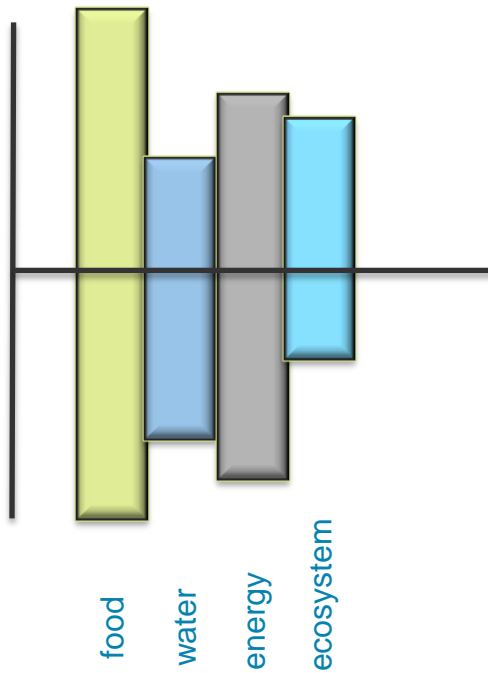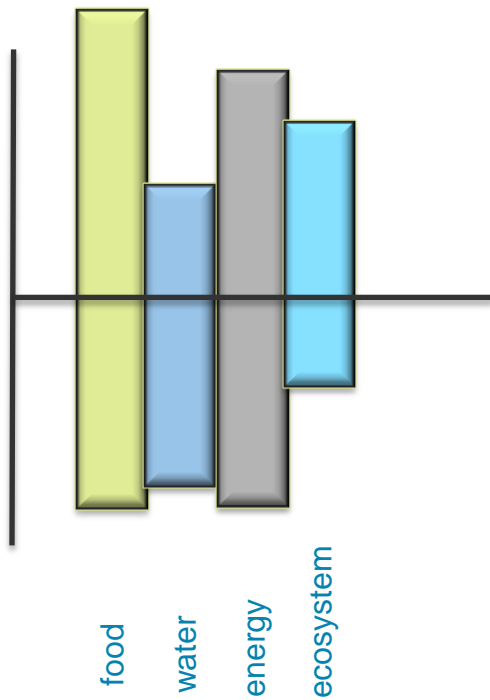
downstream

food water energy ecosystem
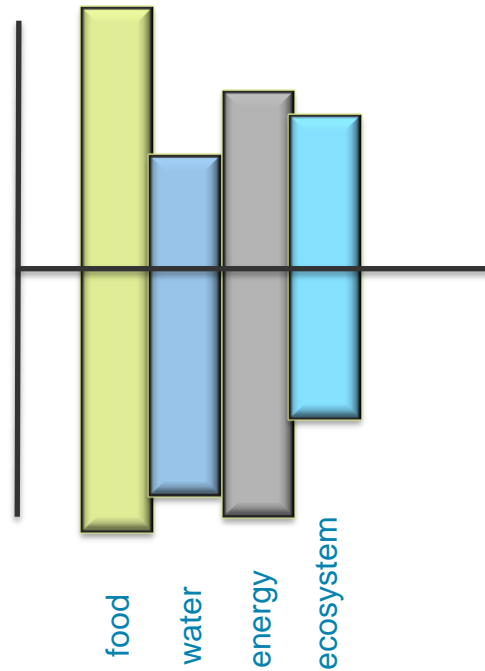
food water energy ecosystem

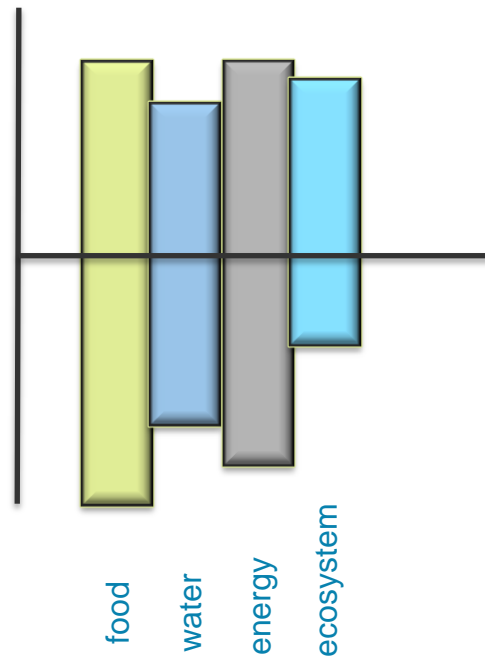# Nexus dynamics

What is the optimal mix?

upstream

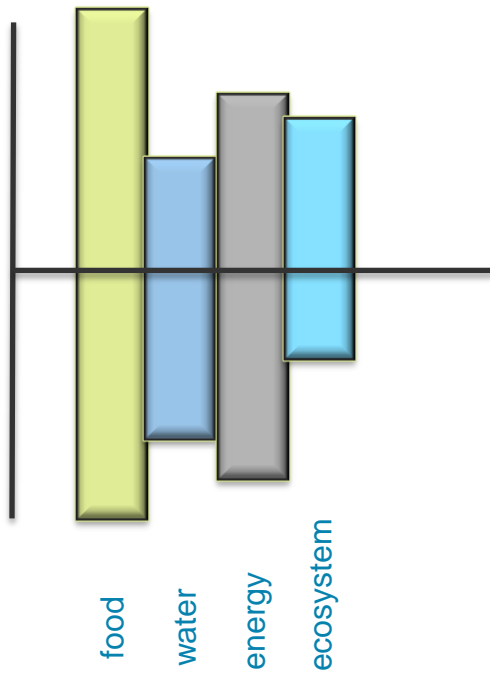downstream

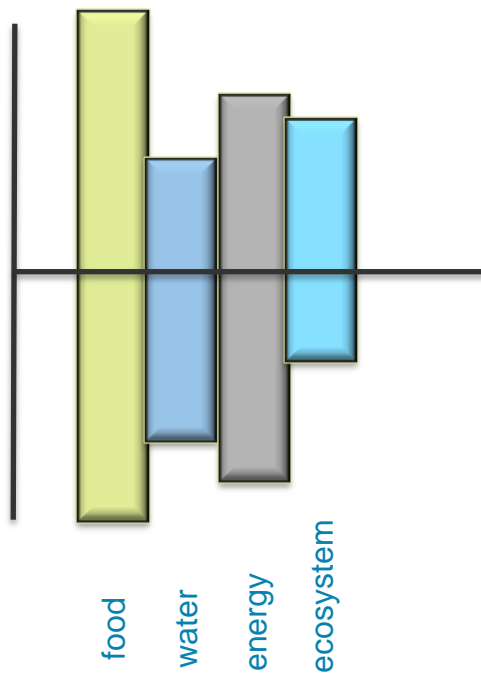food water energy ecosystem
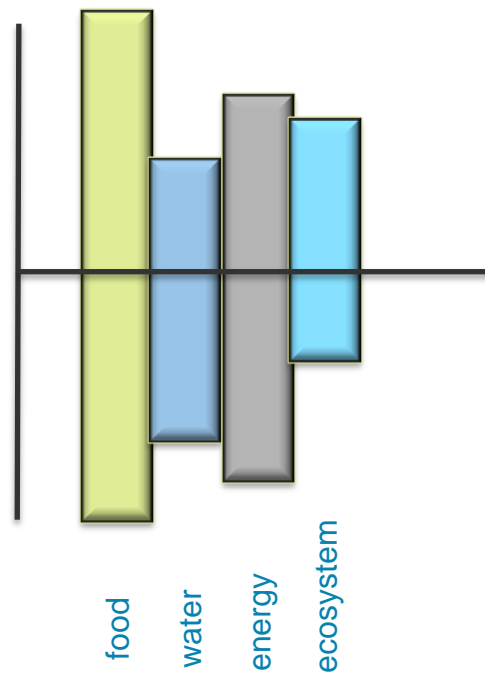
food water energy ecosystem

Nexus dynamics

Extractive Industries?

upstream

downstream

food
water
energy
ecosystem

food
water
energy
ecosystem

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Nexus dynamics

Extractive Industries?
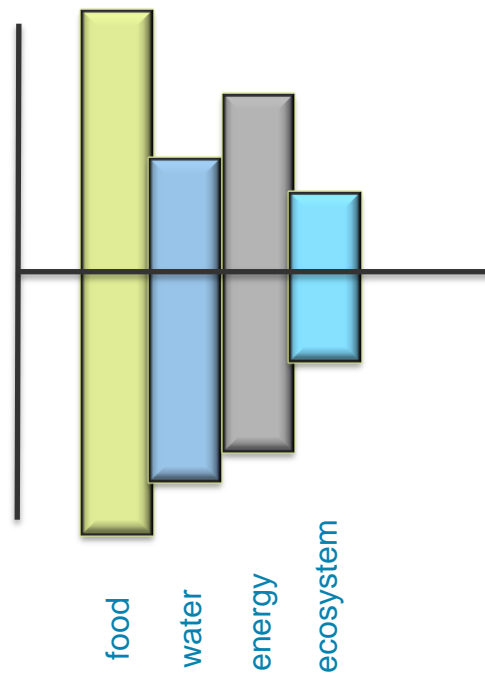

upstream

food water energy ecosystem extractive

downstream

food water energy ecosystem
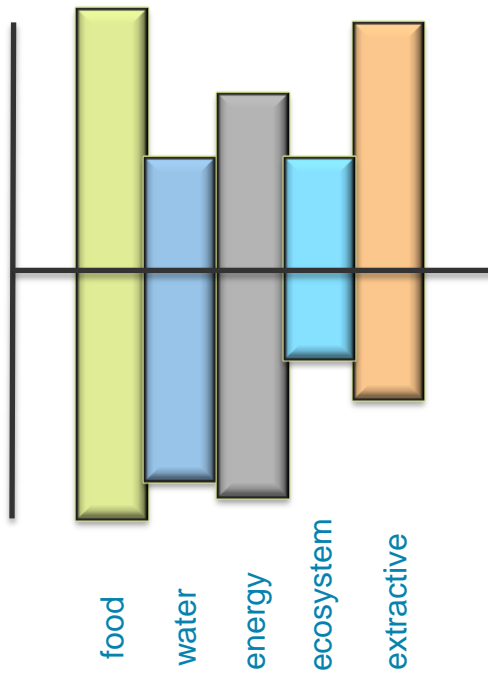
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Suggestions

- Include ecosystem services
- Focus on real issues like Fomi-dam
- Focus on Upper Niger / IND
- Make use of existing models and studies

Thank you for your attention

Questions?

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