

Taking a Systems Approach to Climate Change Adaptation: Case Study - the Water Energy Food Nexus

LEG regional training workshop on national adaptation plans (NAPs) for eastern and southern Africa, in collaboration with the NAP GSP for the LDCs

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Systems approach

Systems thinking focuses on how the things being studied **interact** with the other constituents of the system. Open systems interact with its environment via inputs, throughputs, and outputs.

- Human systems
- Natural systems
- Ecosystems
- Food systems → farming systems → cropping systems
- Energy systems
- Water systems
- Legal system
- Political system
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System boundaries need to be clearly stated.



The Nexus approach

- Recognises the interconnectedness and interdependencies of systems
- Example:
 - a) water, energy and food systems
 - b) Population – environment – development nexus
 - c) Poverty – population – environment nexus
 - d) Health – development nexus
 - e) Water – food – climate – energy nexus
 - f) Energy policy – land use nexus
 - g) Water – energy nexus
 - h)



How to make decisions when dealing with a nexus issue?

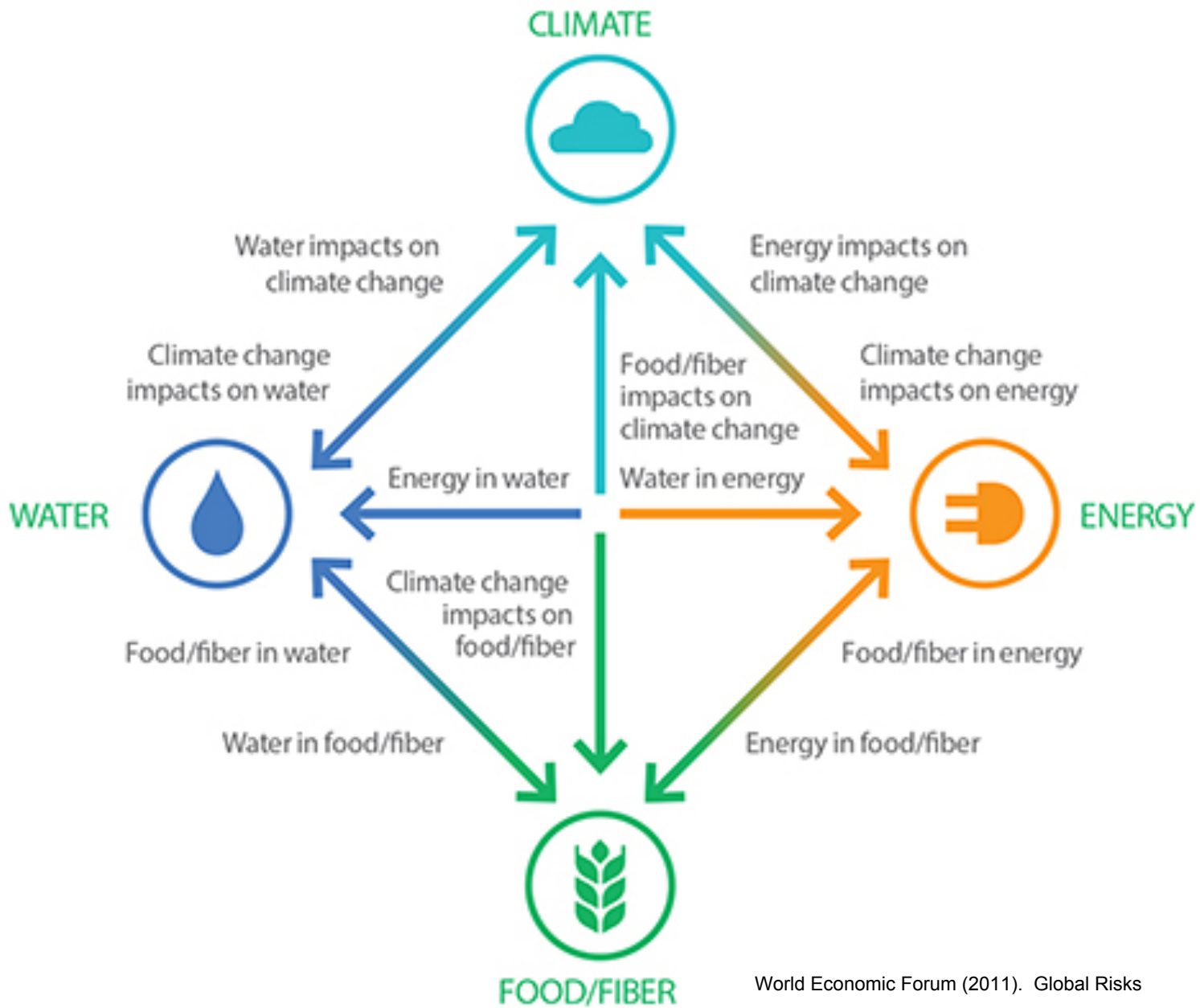
- Draw causal loop diagrams / relationship map - a useful way to represent dynamic interrelationships.
 - Provides a visual representation with which to communicate that understanding
 - Make explicit one's understanding of a system structure - captures the mental model
 - Use indicators for support to substantiate the analysis and to quantify specific issues
 - Pay particular focus to interlinkages



How to make decisions when dealing with a nexus issue?

- Develop scenarios, strategic visions and response options
 - Preferably carried out through a stakeholder dialogue.
 - Ideally, the dialogue process helps to make explicit the different goals, interests and uses of stakeholders
 - Offers a process to reconcile these differences.
- Identify and manage trade-offs and synergies.
- Build synergies through responses, allowing for more integrated and cost-effective planning, decision-making, implementation, monitoring and evaluation.





World Economic Forum (2011). Global Risks



Water energy food nexus

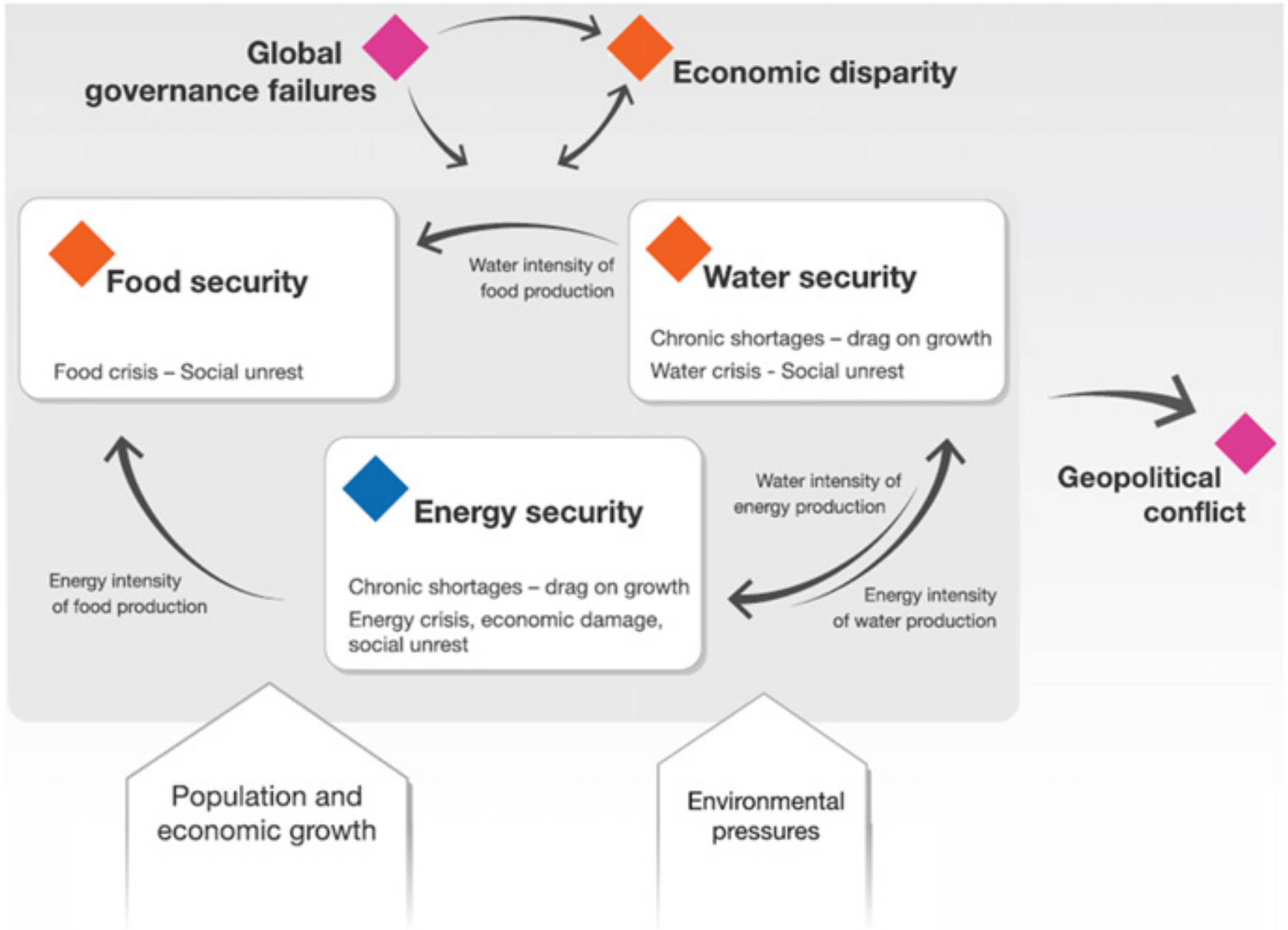
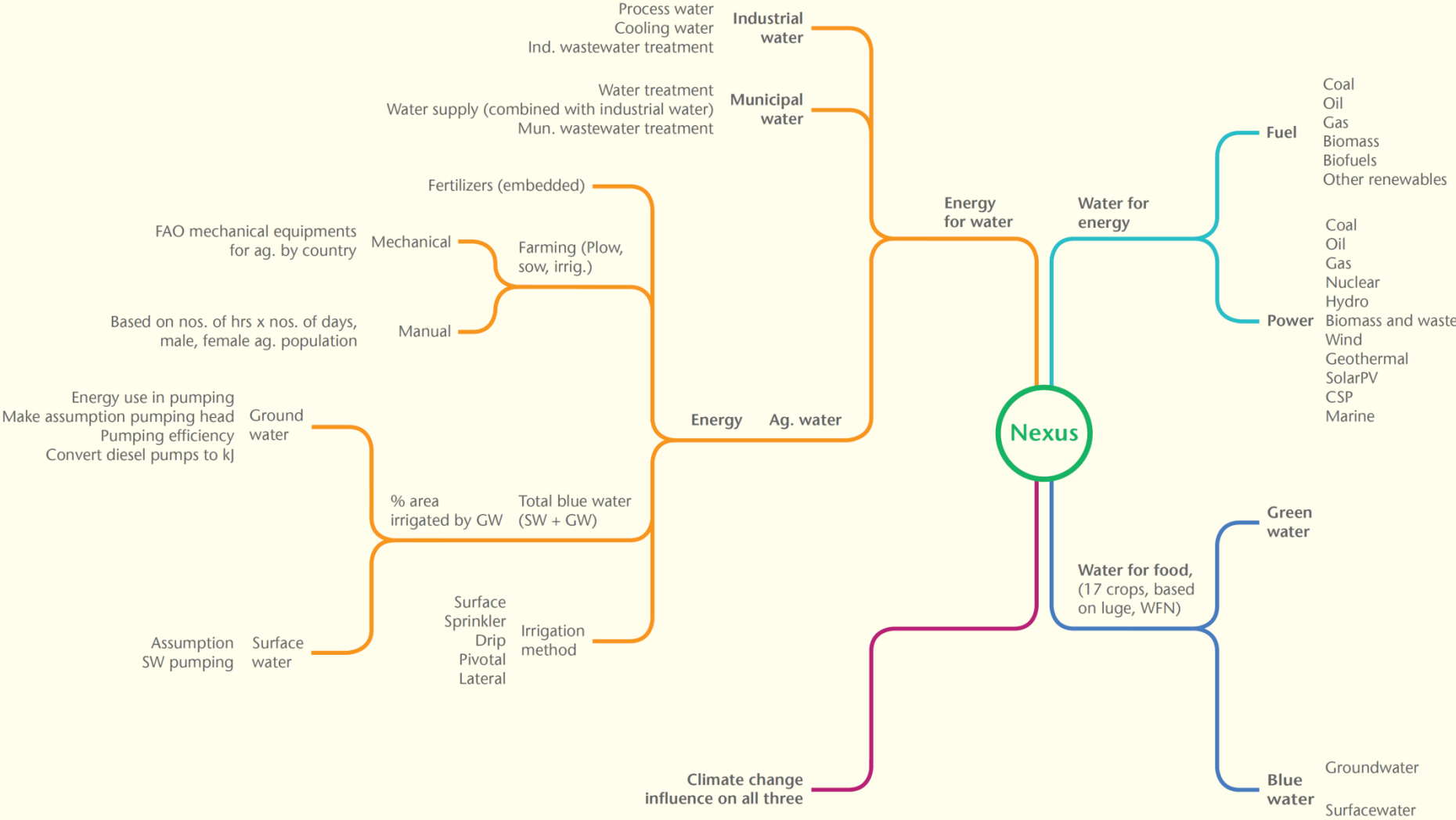
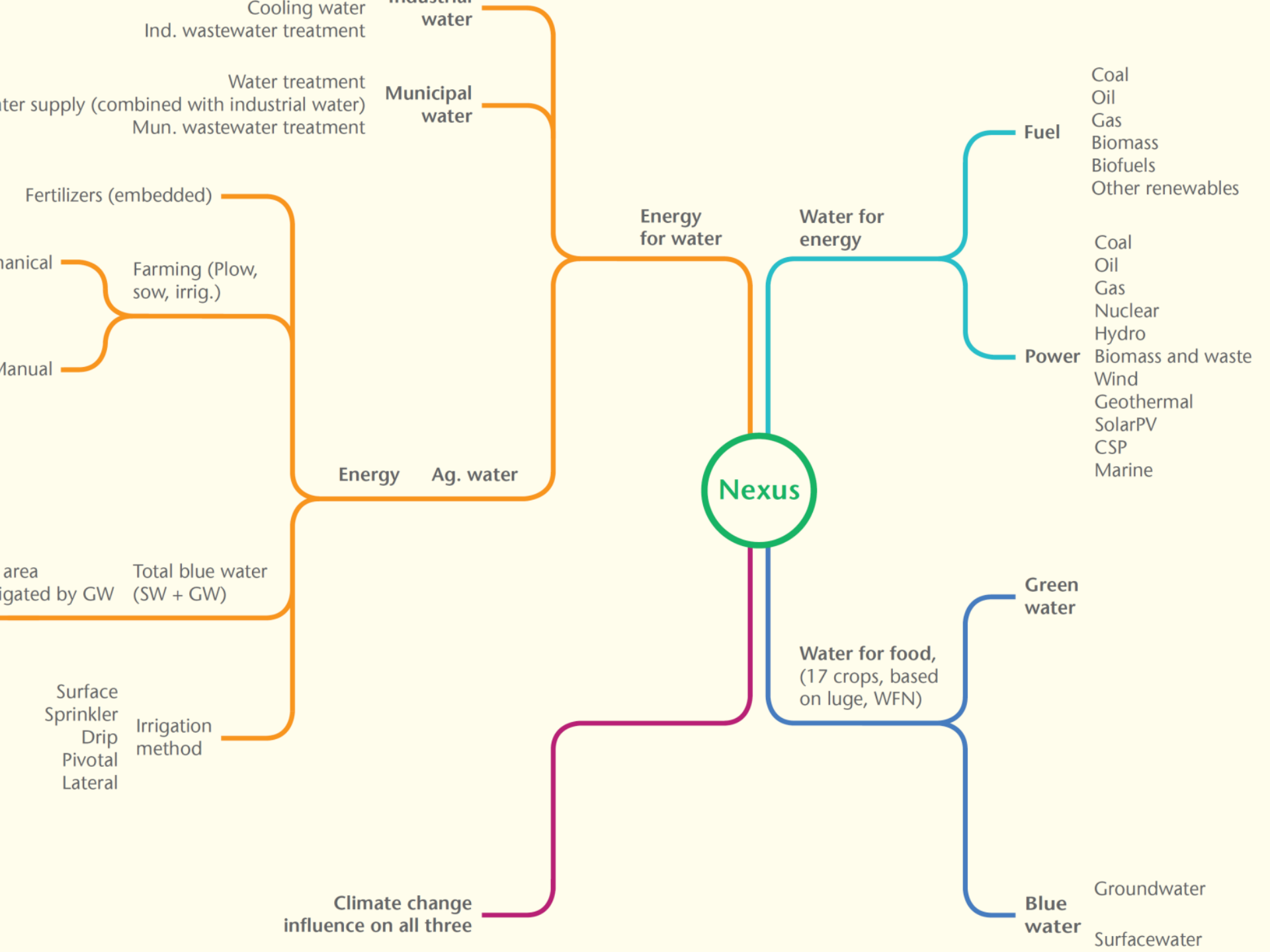


Figure 2
Conceptual framework for nexus modeling





United Nations Framework Convention on Climate Change

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