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Experiment Station

# WEF Nexus Governance: Case studies from Jordan and San Antonio, TX

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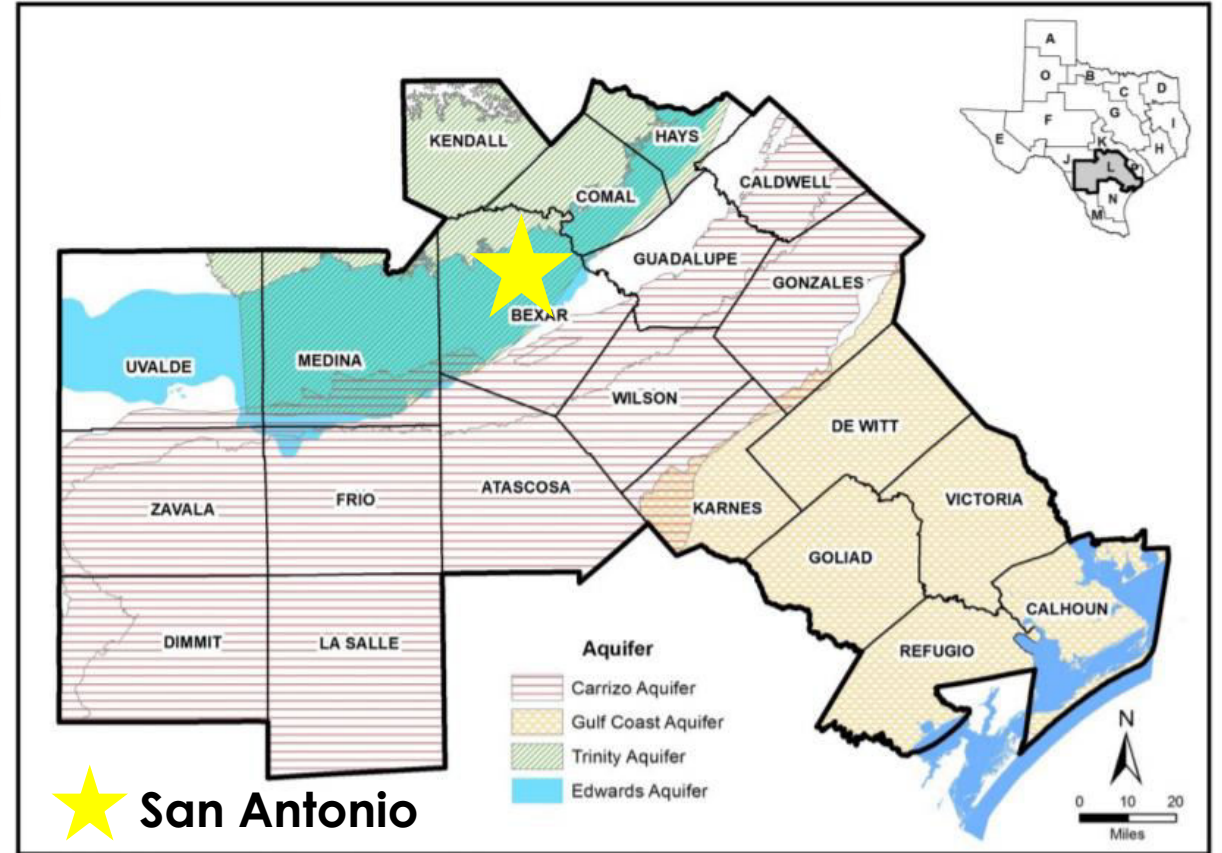
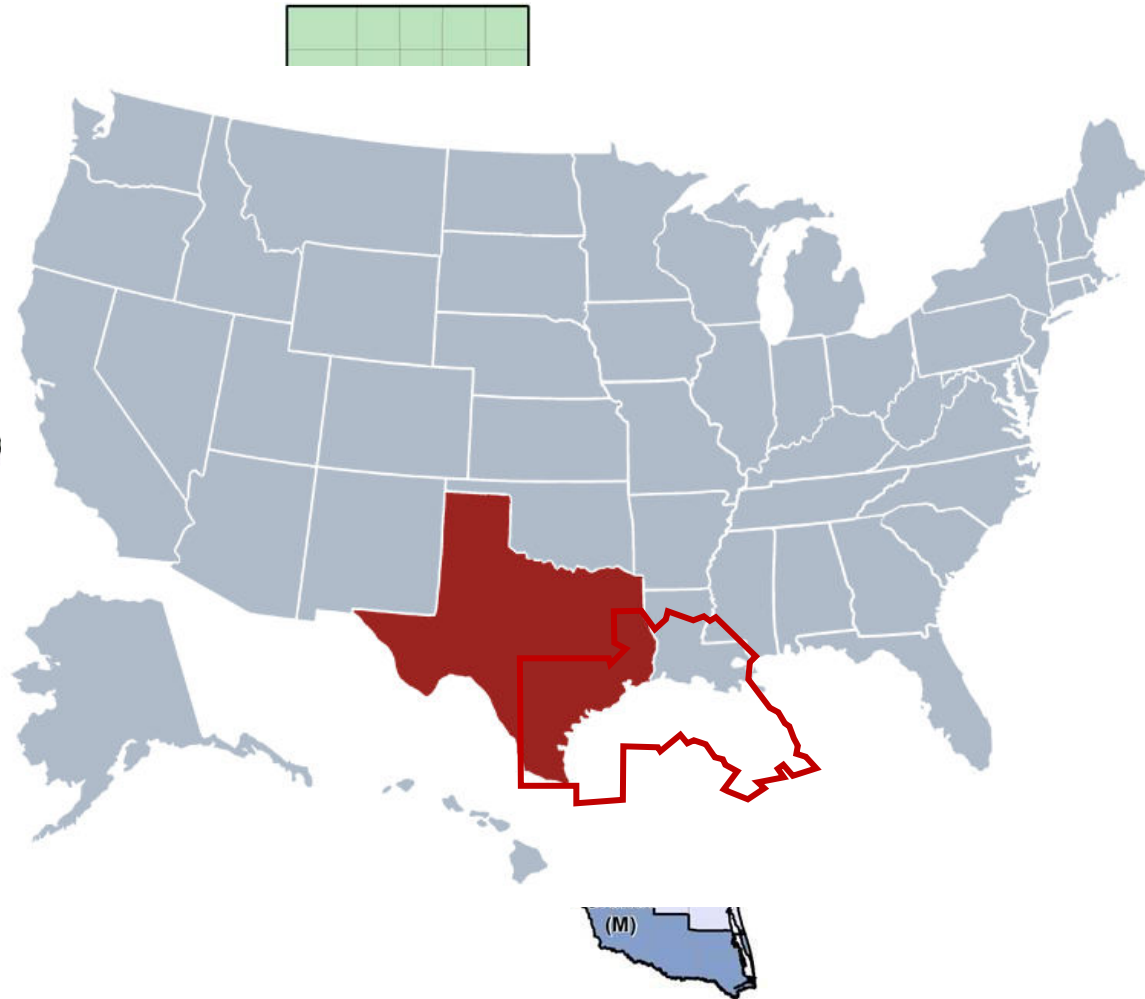
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IWRA World Water Congress | September 12, 2023

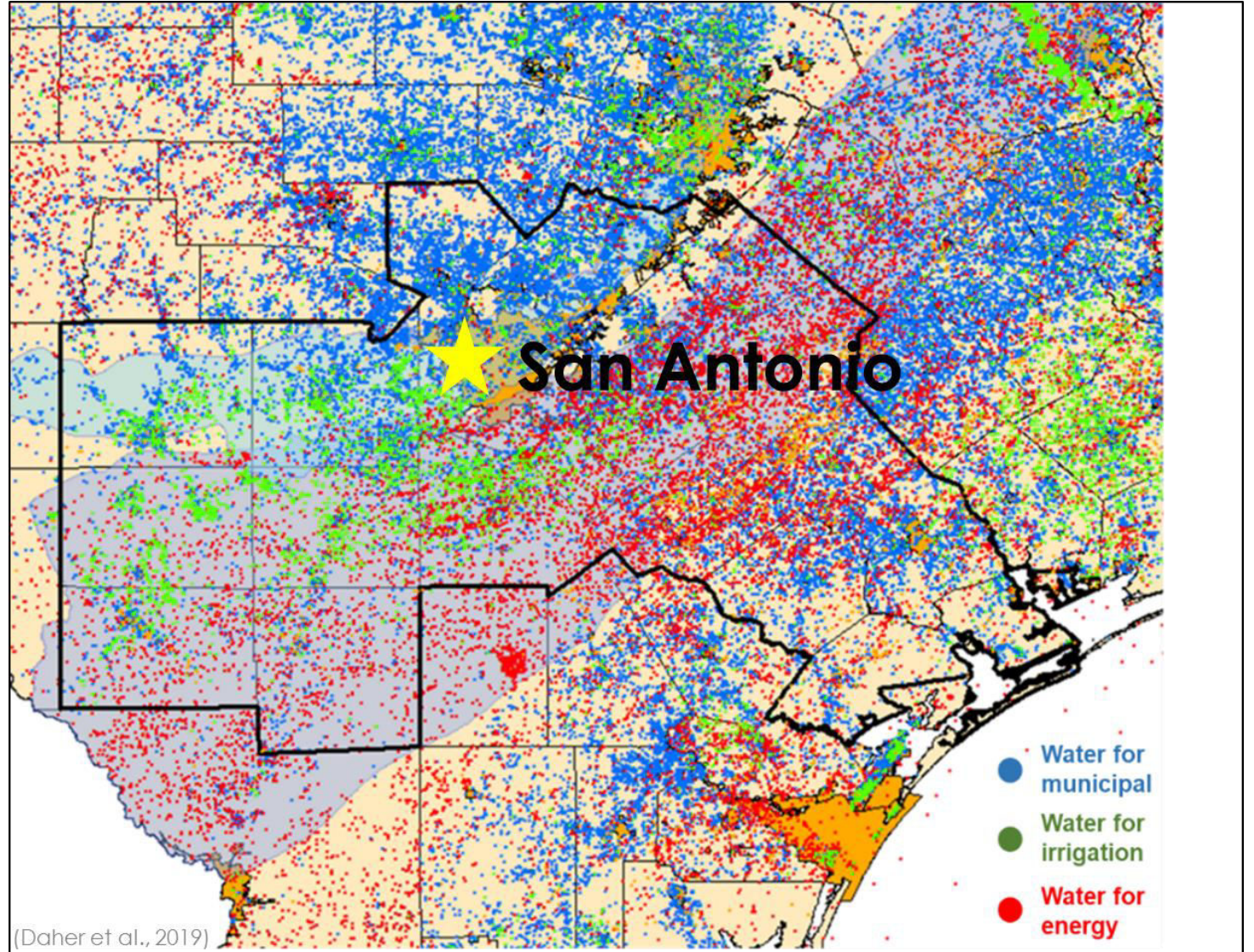
# Study Area: San Antonio Region, Texas



# Water-Energy-Food Nexus Hotspot

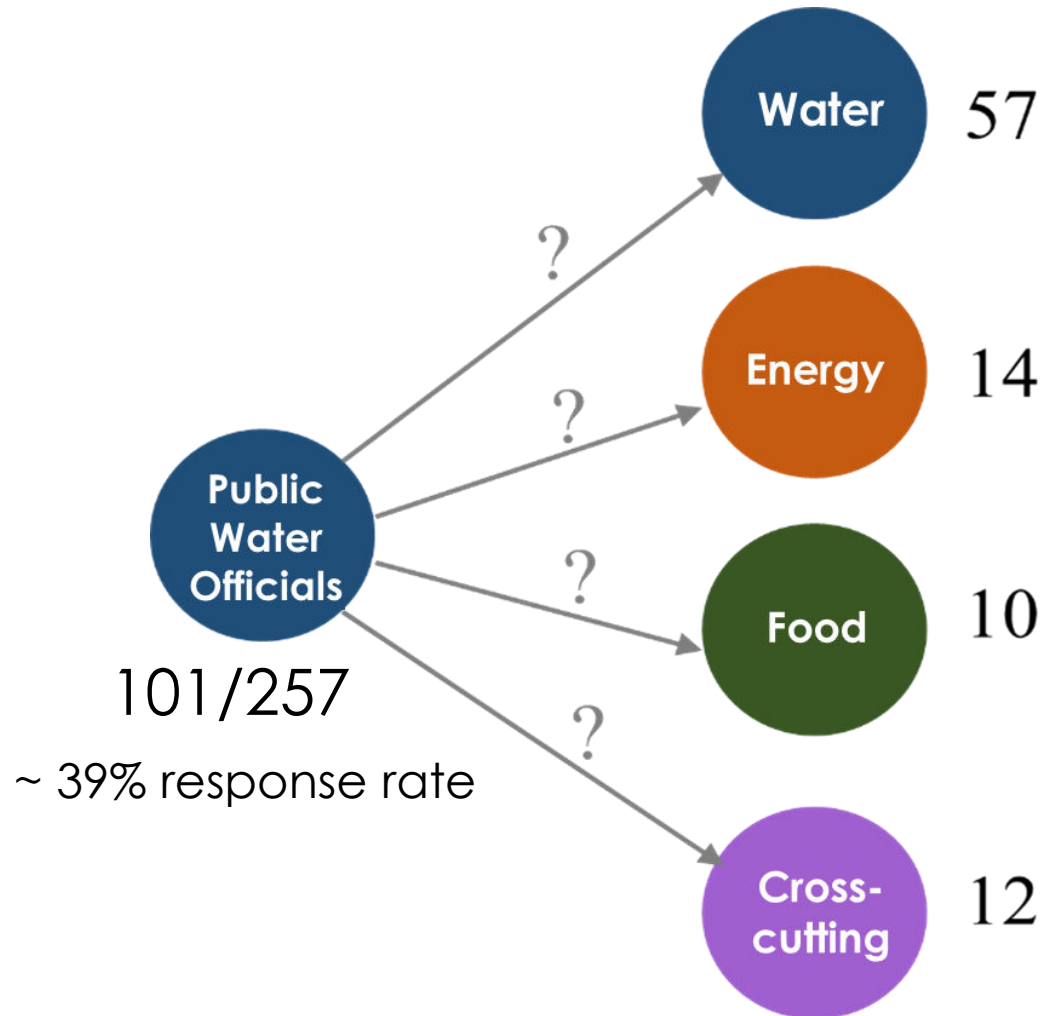
## Region L Projections 2020 - 2050

- Population: **+44%**
- Water demand: **+21%**
  - **49%** water for municipal
  - **24%** water for irrigation
  - **25%** water for energy (manufacturing, steam electric power, mining)
- Water shortage: **+78%**  
28% of 2050 demand



# Methodology

## Survey with Water Officials in San Antonio



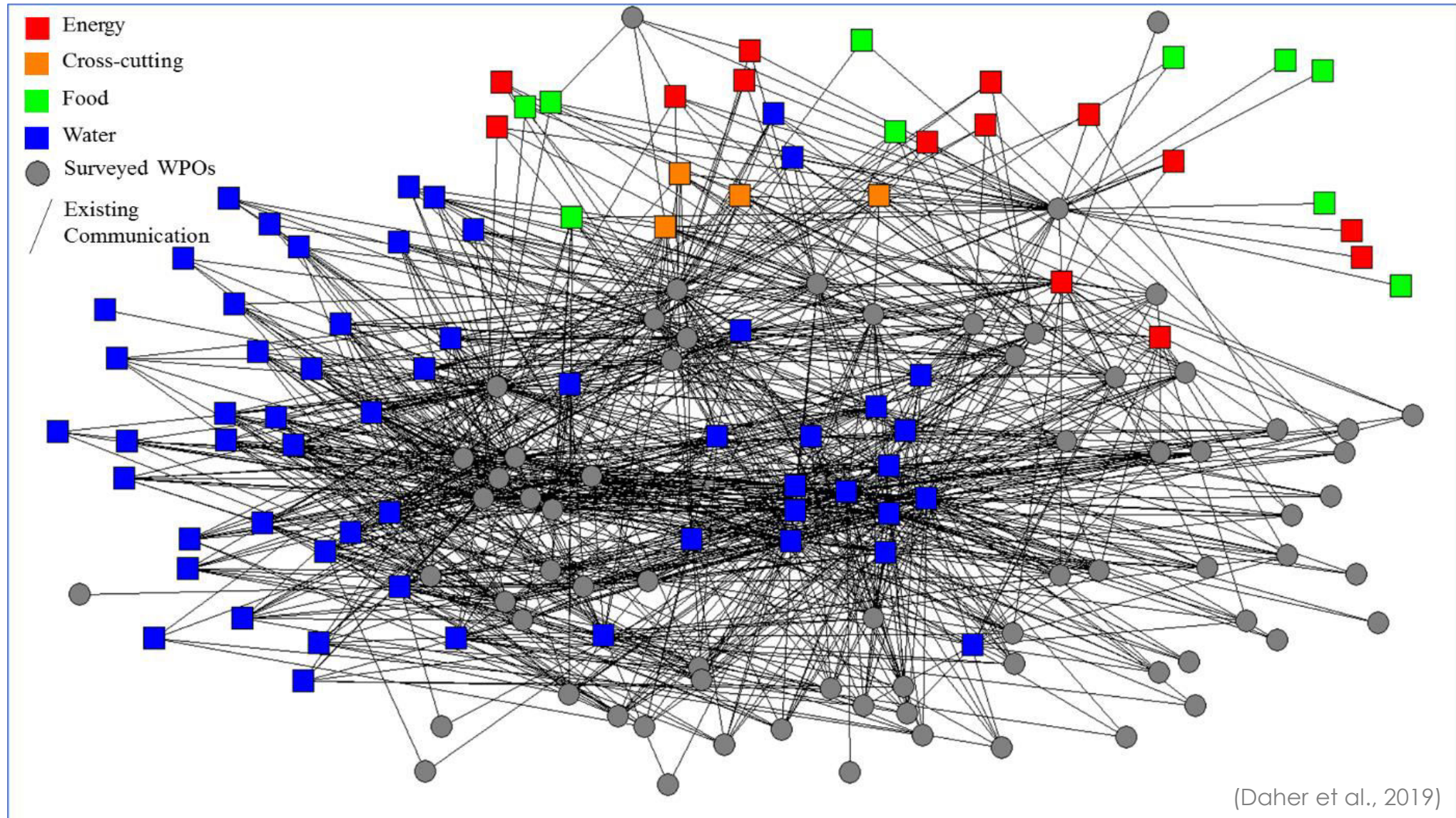
### Methods for Stakeholder Identification and classification

- Scoping/literature web search
- Self-identification

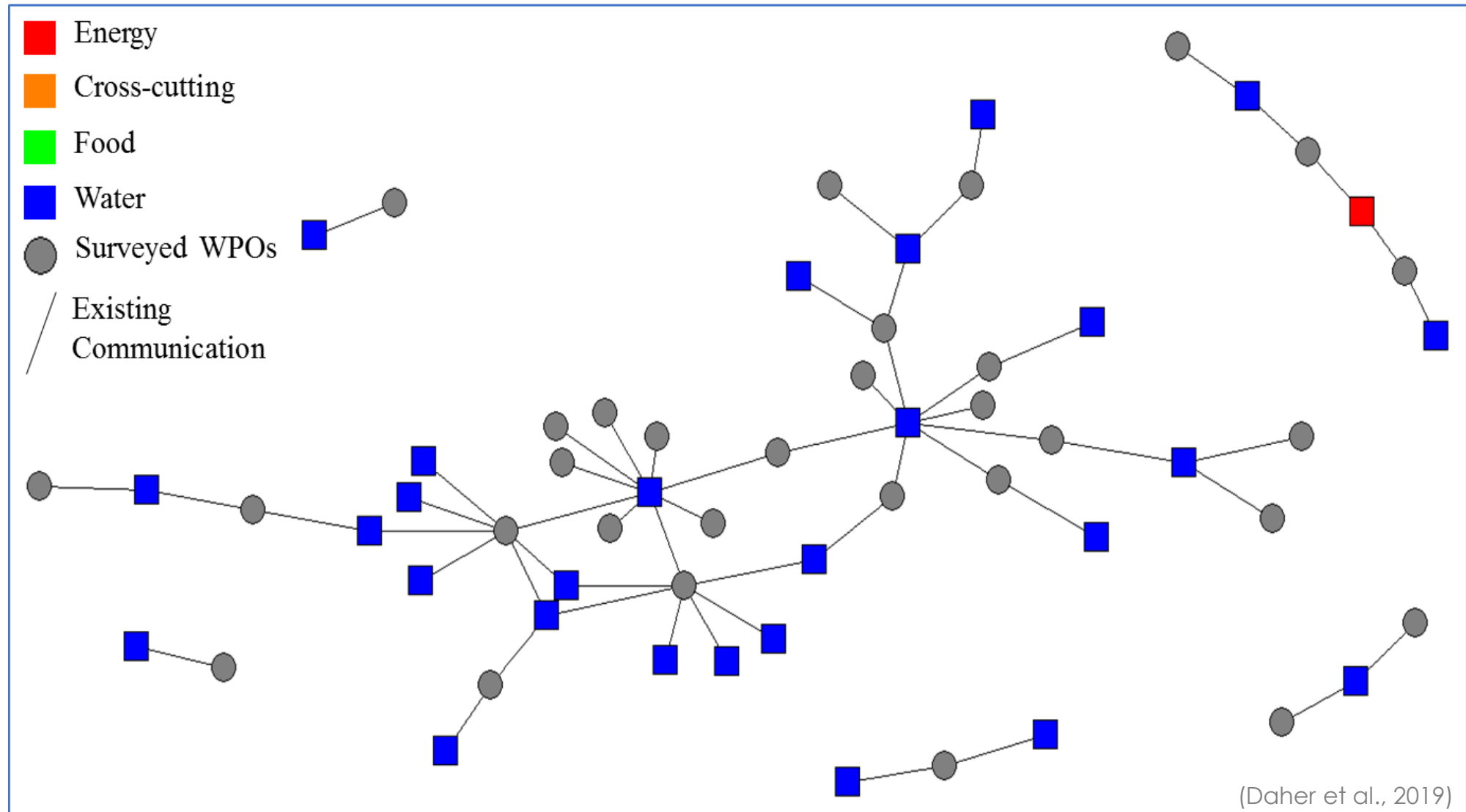
### Methods for Stakeholder Relations

- Social network analysis

# Network Map: any level of communication



# Network map: **weekly** communication



# Stakeholder Engagement Workshop

## Barriers to Communication



*Stakeholder Engagement Meeting in San Antonio, TX*

1. **Legal and procedural barriers:** Institutional mandates and lack of coordination mechanisms.
2. **Financial:** who will pay for the time and effort involved in pursuing increased communication?
3. **Uniformity of Language** (units, abbreviations, syntax and context of problems and solutions).
4. **Planning Horizons** differ for water, energy, and food (10 to 50 years) causing ideological differences and creating barriers.
5. **Different values systems** differ across sectors and organizations.
6. **Competition** between local, regional, global organizations and across industries leads to issues of confidentiality, restricted data.
7. **Self-interest versus collective goals** - Silo mentality
8. **Lack of common goals** and collaborative projects

# Establishing a WEFE NEXUS governance framework in Jordan



# Interviewed Stakeholders

## Consulted Stakeholders



- Prime Minister's Office
- Ministry of Energy and Mineral Resources
- Ministry of Water and Irrigation
- Ministry of Environment
- Ministry of Finance
  
- Water Authority of Jordan
- Jordan Valley Authority
- National Electric Power Company (NEPCO)
- Energy & Minerals Regulatory Commission
  
- National Center for Security and Crisis Management
- Member of Energy and Mineral Resources Committee/ The Jordanian Parliament
- The Higher Council for Science and Technology, The National Center for Research and Development
- Jordan Society for Scientific Research, Entrepreneurship, and Creativity
  
- EDAMA Association
- GIZ-Jordan
- German Development Bank
- World Bank
- EU Delegation to Jordan
- Friedrich-Ebert-Stiftung Jordan & Iraq

**30+** Zoom & In-person interviews  
in August-September 2022

## Questions on topics including:

- *Sectoral challenges*
- *Barriers for cross-sector cooperation*
- *Success stories*
- *Suggestions for improved governance structures and mechanisms*
- *Decision making challenges*

# Key challenges in the water sector

- Severe water stress; growing demand from growing population, urbanization and economic growth
- **High Non-Revenue Water; 50% of cost is for electricity bills**
- **Low water use efficiency in agriculture:** need to produce less water intensive crop with higher value added
- **Over-exploitation of Ground Water, and no clear penalties for violators**
- **High energy needs for pumping and for desalination** → high electricity consumption by the water sector
- **Rising energy tariffs**, putting a lot of pressure on the water sector
- Much **higher debt within the water sector** compared to the energy sector
- **Technical solutions exist**, yet the key challenges lie in **selecting most cost-effective options** and **financing** these solutions

# Key challenges in the energy sector

- **Over-dependance** on imports of fossil fuels, prices for which are at historical highs
- Fast development of *renewable energy* for electricity generation and **inability of the grid to adopt excess electricity** generated by RE sources (solar power)
- **Lack of energy storage capacity** and **grid operation** are the bottlenecks in Jordan; this prohibits adopting more renewables without investing heavily in the grid
- Need to have the **right analytics** to support moving away from the **single buyer model**

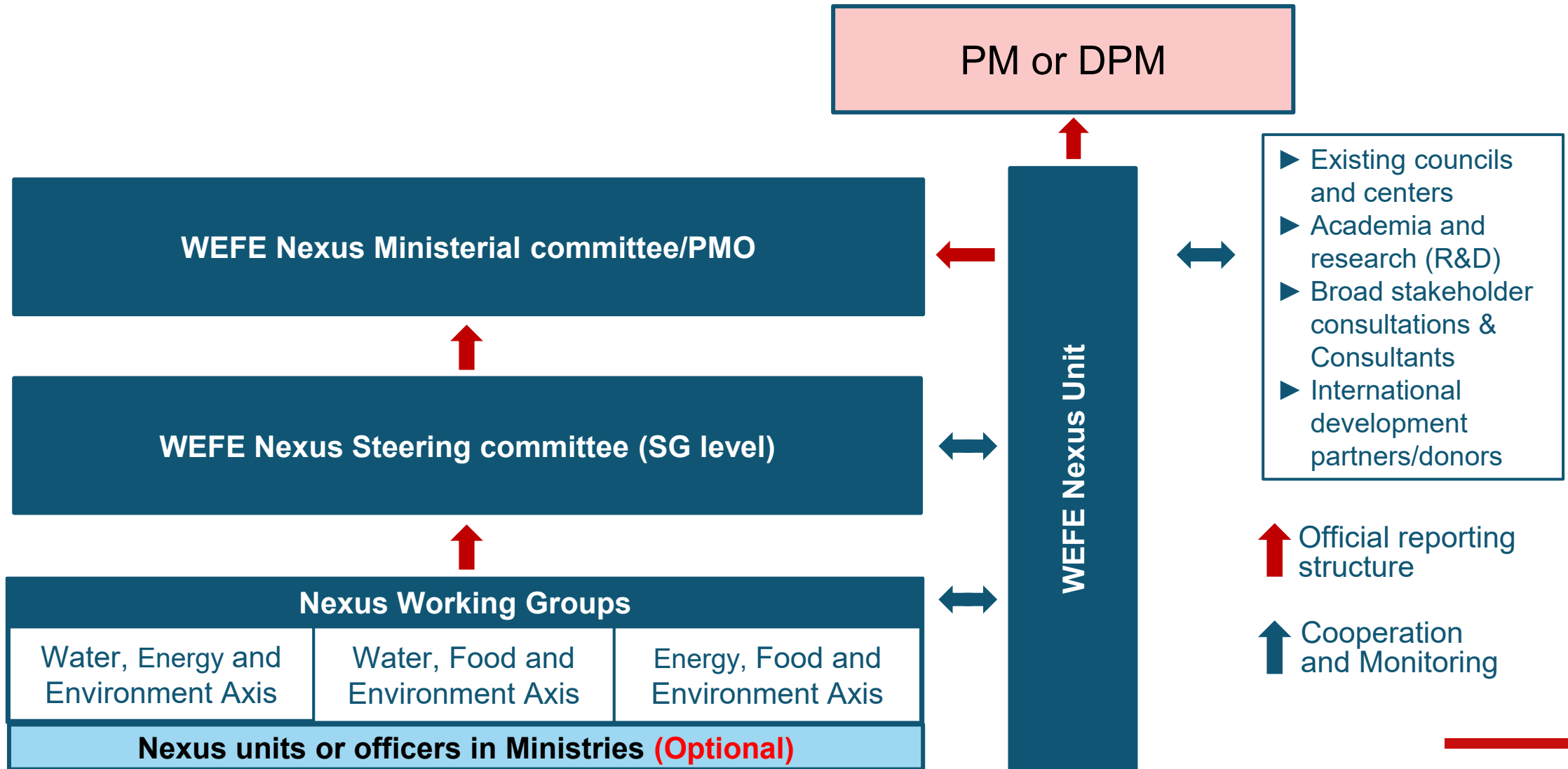
# Key institutional and governance challenges

- Two different sectors with **different strategic interests** and different legal frameworks and governance
- Lack of a common long-term vision; **silos planning**
- **Frequent changes in leadership**/ changes in guidance at higher levels → reluctance in bringing forward change
- **Lack of integrated management of water resources in Jordan**
- **Lack of efficiency in the public sector**
- **Challenge in capacity** of local partners (new technologies require technical capacity for operation and maintenance)
- Willingness of the ministries/ governments to be part of **earlier coordination activities**
- **Lack of proper organizational structure; lack in capacity to lead** such coordination efforts
- No **technical personnel** to follow up on high level agreements to coordinate
- Challenge in identifying **who will be leading this coordination** and **which ministries should be involved**

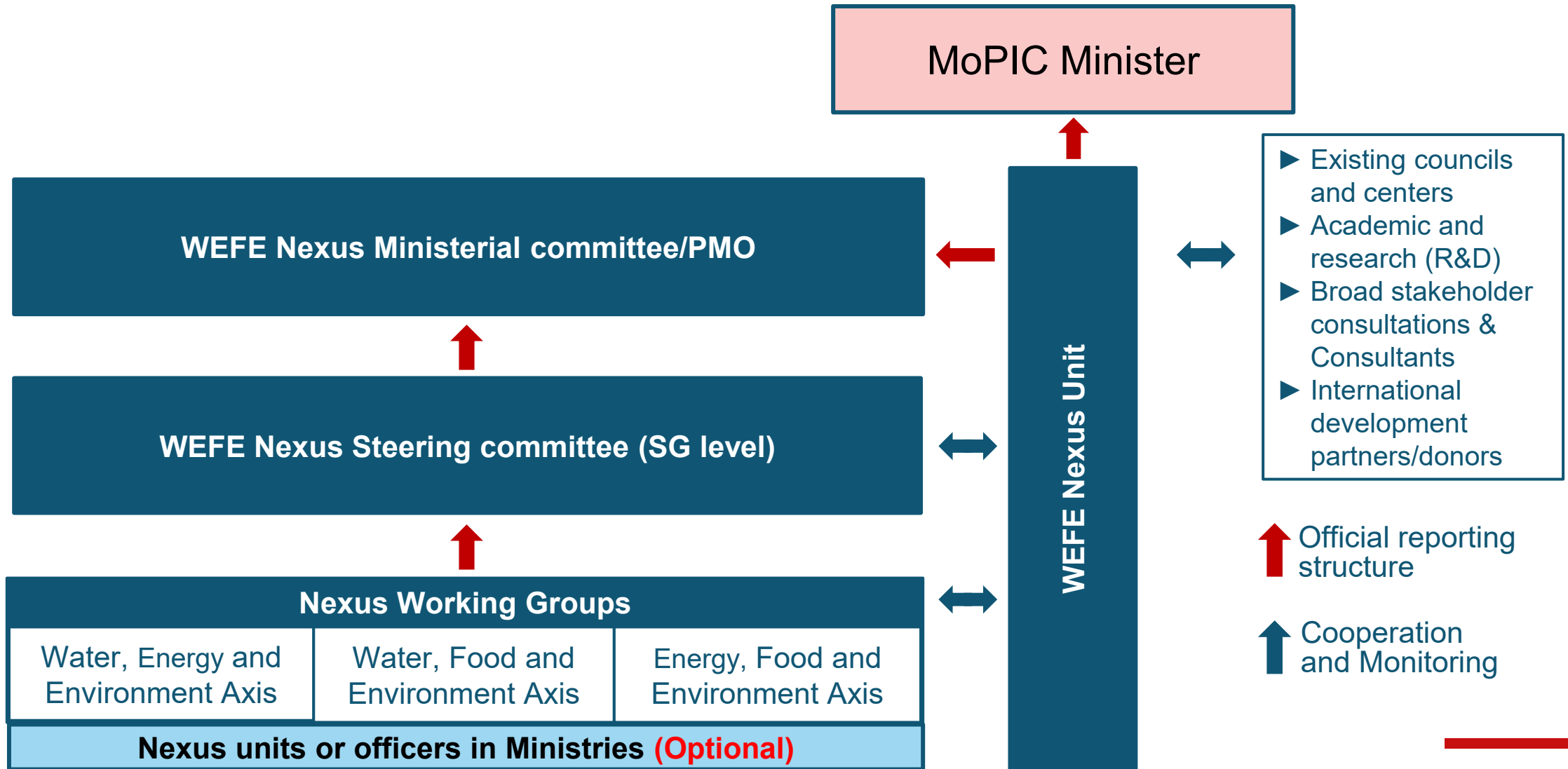
# Key Needs

- **Integrated strategic vision between both sectors** → needs to include other bodies to have a reliable vision that can be refereed when we have changes in leadership
- Needed coordination between the different stakeholders; needed to ensure **consistent understanding of project scope and outcomes**
- **Defining roles and responsibilities in the implementation and operation/** maintenance is critical
- **Committee of representatives for stakeholder groups**, with specific capacity and understanding of the interconnected issues
- **Mechanisms for integrating communities** in decision-making process; ensure social acceptance of nexus projects
- Utilities need to have a role in capacity building / good salaries to attract the right talents
- **Food** should also be part of the nexus equation

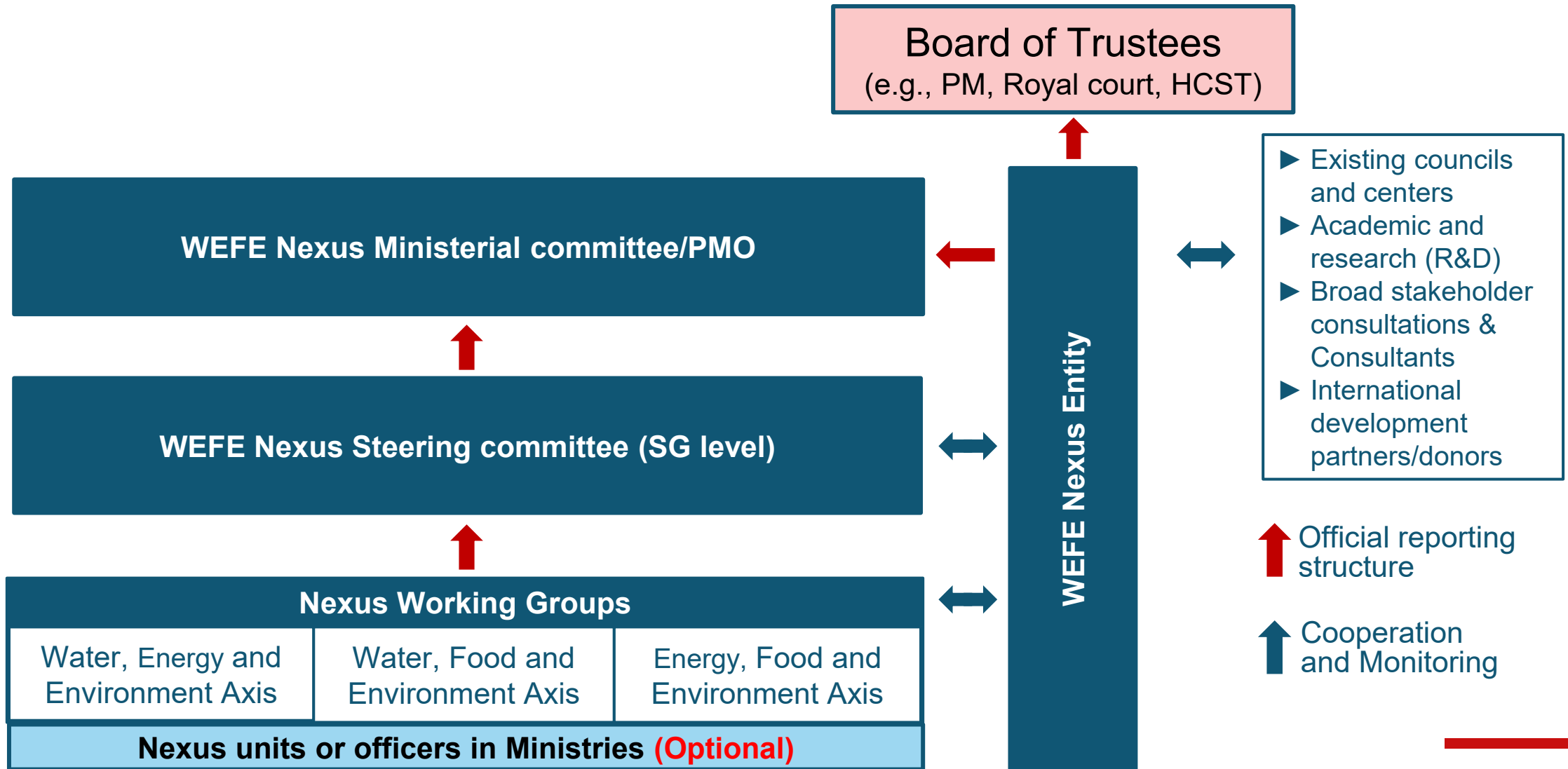
# Proposed WEFE NEXUS governance framework - PM



# Proposed WEFE NEXUS governance framework - MoPIC



# Proposed WEFE NEXUS governance framework - Independent





Option	Advantages	Considerations
<b>Option 1: Unit within the Prime Minister's Office</b>	<ol style="list-style-type: none"> <li>1. Ability to leverage the Prime Minister's authority and influence to advance the nexus governance entity's goals.</li> <li>2. Potential for more effective coordination with other high-level government officials and decision-makers.</li> <li>3. Ability to tap into the Prime Minister's network of contacts and resources.</li> </ol>	<ol style="list-style-type: none"> <li>1. Risk of being overshadowed by other high-profile issues and initiatives within the Prime Minister's Office.</li> <li>2. Risk of being seen as too closely aligned with the political priorities of the Prime Minister, potentially compromising the entity's independence and credibility.</li> </ol>
<b>Option 2: Dedicated Separate Entity</b>	<ol style="list-style-type: none"> <li>1. Greater flexibility to design and implement policies and programs tailored to the specific needs and challenges of the nexus governance entity.</li> <li>2. Potential for greater independence and public visibility.</li> <li>3. Ability to attract and retain staff- maintaining institutional memory, independent from government changes</li> </ol>	<ol style="list-style-type: none"> <li>1. Risk of duplication and inefficiencies if the entity is not properly integrated with other government agencies and initiatives.</li> <li>2. Potential for limited access to key decision-makers and stakeholders if the entity is not well-connected or recognized.</li> <li>3. Risk of inadequate resources and funding if the entity is not prioritized by the government or international partners.</li> </ol>
<b>Option 3: Under MOPIC</b>	<ol style="list-style-type: none"> <li>1. Ability to leverage existing resources, networks, and expertise to advance the nexus governance entity's goals</li> <li>2. Potential for greater cost-effectiveness</li> </ol>	<ol style="list-style-type: none"> <li>1. Risk of conflicting mandates and priorities between the existing entity and the nexus governance entity, potentially compromising the effectiveness and credibility of both entities.</li> <li>2. Potential for bureaucratic hurdles and delays if the entity is subject to existing administrative and regulatory frameworks.</li> <li>3. Being at an equal standing as other ministries, there might be a challenge in exercising authority and reporting</li> </ol>

Thank you

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