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GOVERNANCE AND MANAGEMENT OF THE WATER, ENERGY, FOOD NEXUS

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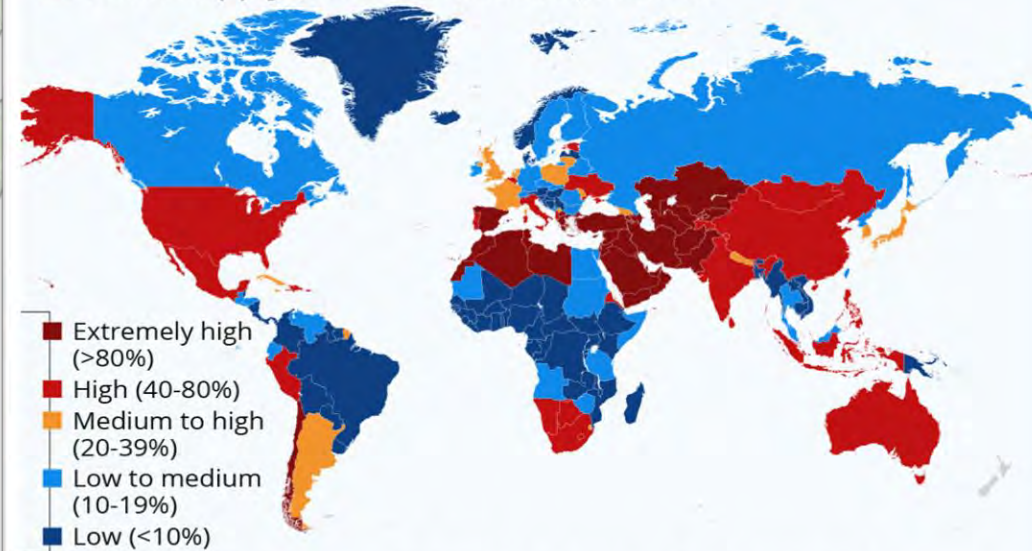
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Introduction

- ▣ The Water-Energy-Food (WEF) Nexus approach is essential for sustainable resource management, particularly in regions like the MENA, where resource scarcity and climate change present significant challenges.
- ▣ The Middle East and North Africa is the most water scarce region in the world.
- ▣ Agriculture in MENA is responsible for more than 80% of overall water use
- ▣ Primary energy demand in the region is forecasted to increase consistently at a rate of 1.9% per year until 2035.
- ▣ This study explored various aspects of governance and management within the WEF Nexus framework, drawing insights from several case studies in the MENA region to highlight practical approaches and lessons learned.

Where Water Stress Will Be Highest by 2040

Projected ratio of water withdrawals to water supply (water stress level) in 2040



Source: World Resources Institute via The Economist Intelligence Unit



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The Need for Integrated Governance

Complex Interdependencies

- Water, energy, and food sectors are highly interconnected.
- Isolated management strategies are inadequate.

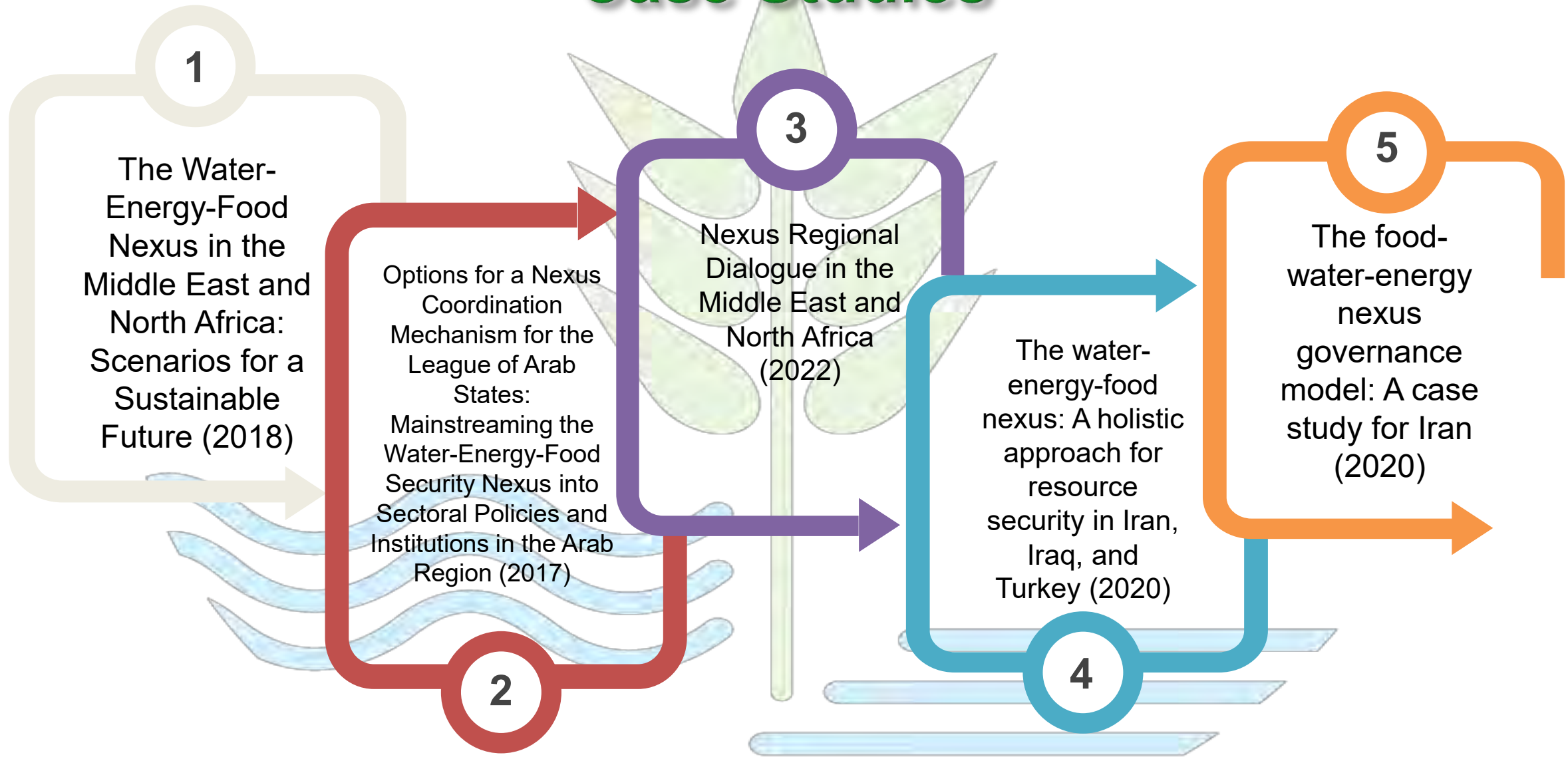
Resource Scarcity

- MENA faces challenges in water, energy, and food security.
- Climate change exacerbates these issues.

Governance Importance

- Coherent policies are essential for effective management.
- Involve stakeholders across sectors for successful implementation.
- Strengthen institutions for better cross-sector coordination.

Case Studies



Case Study 1: The MENA WEF Nexus (2018)

was conducted by the World Bank in 2018

- ▣ **Objective:** Assess the impacts of water scarcity on agriculture and electricity generation.
- ▣ **Approach:** Used the Global Change Assessment Model (GCAM) for scenario analysis.
- ▣ **Key Findings:**
 - High energy demands for water management (e.g., desalination).
 - Reliance on fossil fuels for electricity generation poses risks.
 - **Need for integrated planning and regional cooperation.**

Real Achievements

- ▣ Developed a framework incorporating environmental and economic variables for the Water-Energy-Food Nexus in the MENA region.

This Allows policymakers to simulate future scenarios considering socio-economic, climate, and technological changes and supports formulation of interconnected policies rather than sector-specific approaches.

The project highlights the need for adaptation strategies, such as investing in efficient irrigation technologies and developing resilient agricultural practices. Mitigation efforts, including reducing greenhouse gas emissions and adopting water-efficient energy technologies, are also essential for long-term sustainability.

Impacts

- ▣ Provides a foundation for policymakers to develop long-term visions for sustainability and security in MENA.
- ▣ Identifies synergies and manages risks across WFE in MENA.

Case Study 2: League of Arab States (LAS) Coordination Mechanism (2017)

developed by (GIZ) in 2017

- ▣ **Objective:** Integrate the WEF Nexus into LAS policies and institutions.
- ▣ **Approach:**
 - Developed coordination mechanisms across sectors.
 - Proposed inter-ministerial committees and coordination at the level of technical secretariats, involving the establishment of working groups or liaison officers to facilitate continuous information exchange and policy alignment.

▣ Key Insights:

- Challenges include varying national priorities and infrequent meetings at Ministerial level .
- Emphasis on policy coherence and improved cross-sector collaboration by coordination at the level of specialized agencies is suggested, with these agencies fostering early coordination in the strategy development process.

Real Achievements

- ▣ Development of **Institutional Coordination Mechanisms** for WEF Nexus
- ▣ **Mainstreaming** WEF Nexus in Arab Regional Policies
- ▣ Learning from International Experience

Impacts

Facilitating **Regional Cooperation and Knowledge Sharing**

The study contributes to promoting regional cooperation by providing platforms and mechanisms for coordination among key LAS stakeholders, such as the Arab Ministerial Water Council (AMWC), the Arab Ministerial Council for Electricity (AMCE), and the Arab Organization for Agricultural Development (AOAD). This cooperation is essential for policy learning, building trust, and sharing knowledge among member states, thereby fostering more effective and cohesive regional policies for managing WEF resources.

Case Study 3: Nexus Regional Dialogue in MENA (2022)

implemented by the (GIZ) with the League of Arab States (LAS) (2022).

- ▣ **Objective:** Institutionalize the WEF Nexus in national and regional governance.
- ▣ **Approach:**
 - Implemented demonstration projects to showcase Nexus benefits.
 - Focused on capacity building and influencing policy.
- ▣ **Outcomes:**
 - Improved sectoral coordination and policy integration.
 - Attracted investment by highlighting the financial viability of Nexus solutions.
 - Built local capacity through training and knowledge sharing.

Real Achievements

- ▣ **Establishment of Multi-Level Governance Structures**

Developed frameworks for integrated natural resource management that enable effective planning, coordination, and monitoring.

- ▣ **Established platforms to facilitate dialogue among policymakers, stakeholders, and investors.**

Impacts

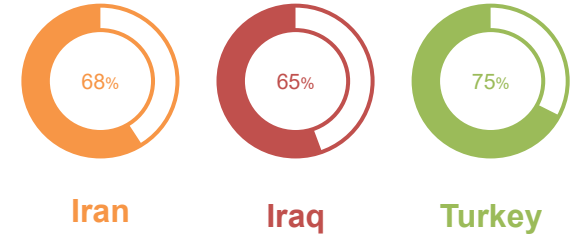
- ▣ The project has had a significant impact on how natural resources are managed in the region by catalyzing integrated policies that simultaneously address water, energy, and food security. This has helped break down silos within governments and encouraged more holistic approaches to policy-making that consider the interdependencies of these sectors.

Case Study 4: WEF Nexus in Iran, Iraq, Turkey

Research Paper: Zarei(2020)

- ▣ **Objective:** Address the interdependencies of water, energy, and food resources in these countries.
- ▣ **Challenges:**
 - Water scarcity and increasing demand due to population growth.
 - Lack of comprehensive international agreements on shared water resources.
- ▣ **Solutions Proposed:**
 - Regional cooperation to manage shared water resources.
 - Use of Nexus approach to reduce tensions and promote sustainable resource management.

Real Achievements



Analysis of Resource Management and Conflicts

The study provides an in-depth analysis of the transboundary water conflicts among Iran, Iraq, and Turkey, exploring the complex dynamics of water resource management. It identifies the main drivers impacting WEF security in the region, such as water scarcity, population growth, migration, and economic development

Development of WEF Security Index

The study introduces the WEF Security Index for Iran, Iraq, and Turkey, providing a quantitative measure of the security status of water, energy, and food in these countries.

Impacts

- The WEF nexus framework proposed in the study offers a strategic approach for future planning and decision-making. It underscores the importance of considering the interlinkages between water, energy, and food sectors to maximize environmental, social, political, and economic benefits for all parties involved.

Case Study 5: Iran's Governance Model (2020)

- ▣ **Objective:** Develop a WEF Nexus governance model tailored to Iran's needs.
- ▣ **The Sun Nexus Model:**
 - Integrates environmental, social, and governance factors.
 - Highlights the need for improved coordination among stakeholders.
 - Proposes restructuring water management and enhancing inter-agency collaboration.
 - **Fragmented governance is a major barrier to effective Nexus implementation.**
 - **A comprehensive governance model is crucial for sustainable resource management.**

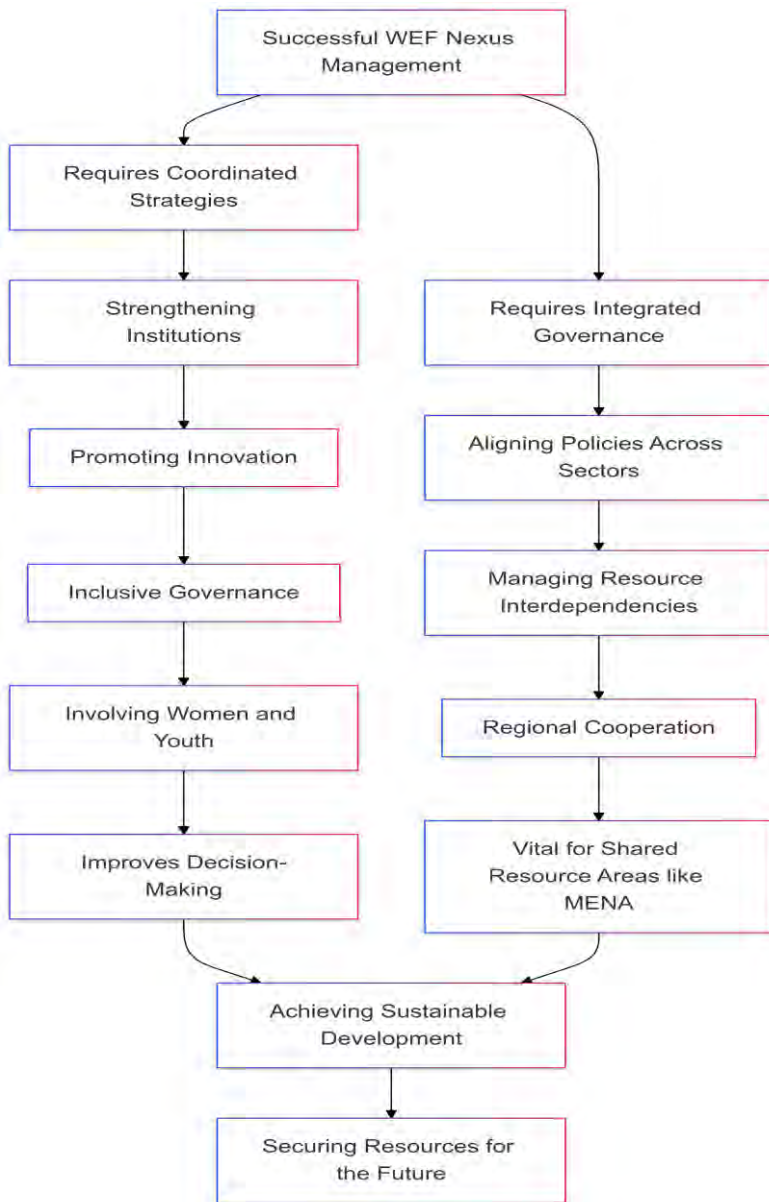
Real Achievements

- ▣ This study introduced the "Sun Nexus Governance Model," specifically tailored for Iran to address its critical challenges in water, food, and energy security. This model integrates social, economic, and environmental paradigms to provide a comprehensive framework for sustainable resource management. It emphasizes multi-layered governance involving different stakeholders, from government bodies to local communities, to ensure cohesive policy-making and implementation

Impacts

- ▣ The study's impact lies in its emphasis on creating policy coherence across sectors. By promoting a nexus approach, the model addresses interconnected challenges, ensuring that water, energy, and food policies do not operate in silos but in an integrated manner, enhancing overall resource security and sustainability.

Conclusion



- ▣ The case studies show that successful WEF Nexus management requires **integrated governance and coordinated strategies**.
- ▣ Aligning policies across sectors,
- ▣ Strengthening Institutions, and Capacity building.
- ▣ **Promoting Innovation and Inclusive governance**,
- ▣ Regional cooperation is vital, especially in shared resource areas like MENA. By applying these lessons, we can achieve sustainable development and secure resources for the future.

Strategic Recommendations for Effective WEF Nexus Governance

Raise Awareness Among Policy Planners and Decision-Makers

Develop skills to manage the interdependencies among water, energy, and food systems, addressing climate change risks and moving away from siloed approaches.

Integration and Coherence of Policies

Align new policies with sustainable development goals and climate change impacts.

Develop Institutional Capacities

Soft Capacities
Enhance stakeholder collaboration via communication tools like workshops and online platforms.

Hard Capacities
Strengthen institutional structures and technological capabilities.

Enable Women and Youth Participation

Promote women's roles in governance and resource management, while also engaging youth through creative methods like social media to help shape the future of the WEF Nexus.

Pilot Projects

Identify innovative solutions and technologies for sustainable development while promoting territorial value creation, socio-economic welfare, and environmental sustainability.

Thank
you!