

WEFE Nexus for Fragile and Conflict Affected Contexts: Enabling Environment for the MENA Region

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February 8, 2024

International Water Management Institute

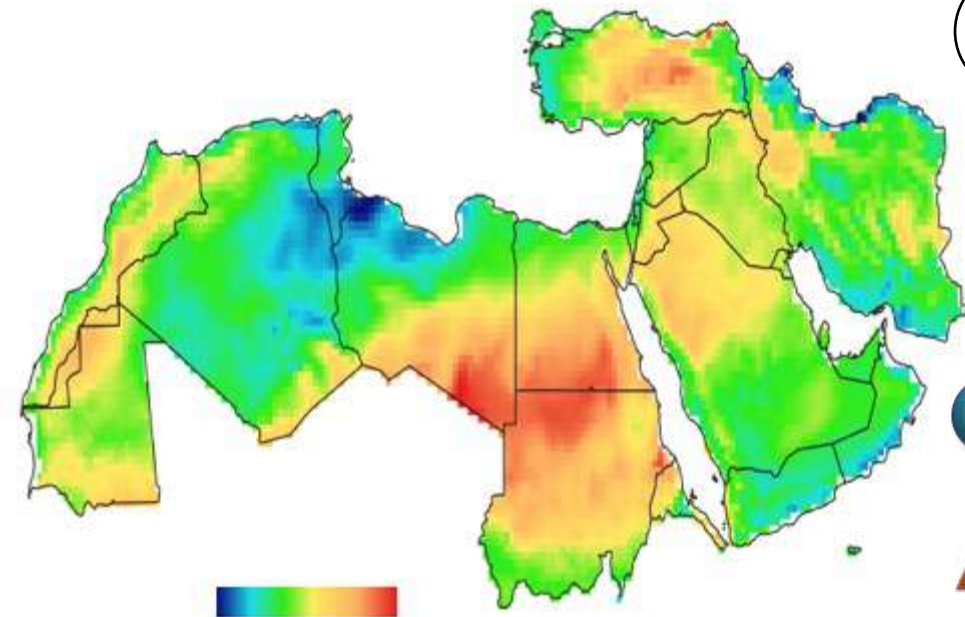


Who we are?, Where do we work?, What do we do?



INITIATIVE ON
Fragility to Resilience in Central
and West Asia and North Africa





01

Limited water for agriculture: Water scarcity caused by climate change and competition with other activities and sectors - 60% of water in some countries 85% used for agriculture

02

Drought is a major cause of this production variability in countries in CWANA (temperature increase by 4 °C by 2100) leading to 30% yield reduction

03

Increasing food imports of locally adapted crops: Dependence on food imports— leaving them vulnerable to sudden price hikes (30-40% of cereal staples are imported)

04

Population growth: MENA population annual growth is 1.7% (latest data 2020) - 500 M and is expected to reach 723 M by 2050.

05

Fragility and conflicts: numerous countries have experienced declining agricultural production as a result of conflicts

06

Youth unemployment in the dry areas is the highest in the world

07

Gender Inequalities and the Feminization of Agriculture: While predominantly men migrate, women are left behind

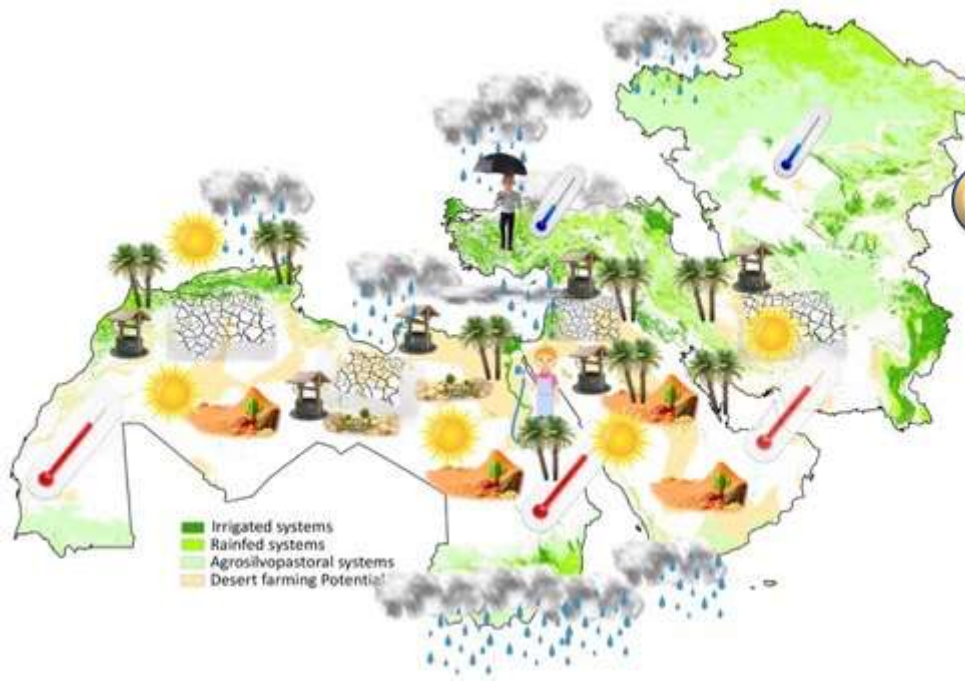
08

Weak institutional governance and policy settings: struggling to access resources to manage risks and are not adequately supported by policies and institutions

09

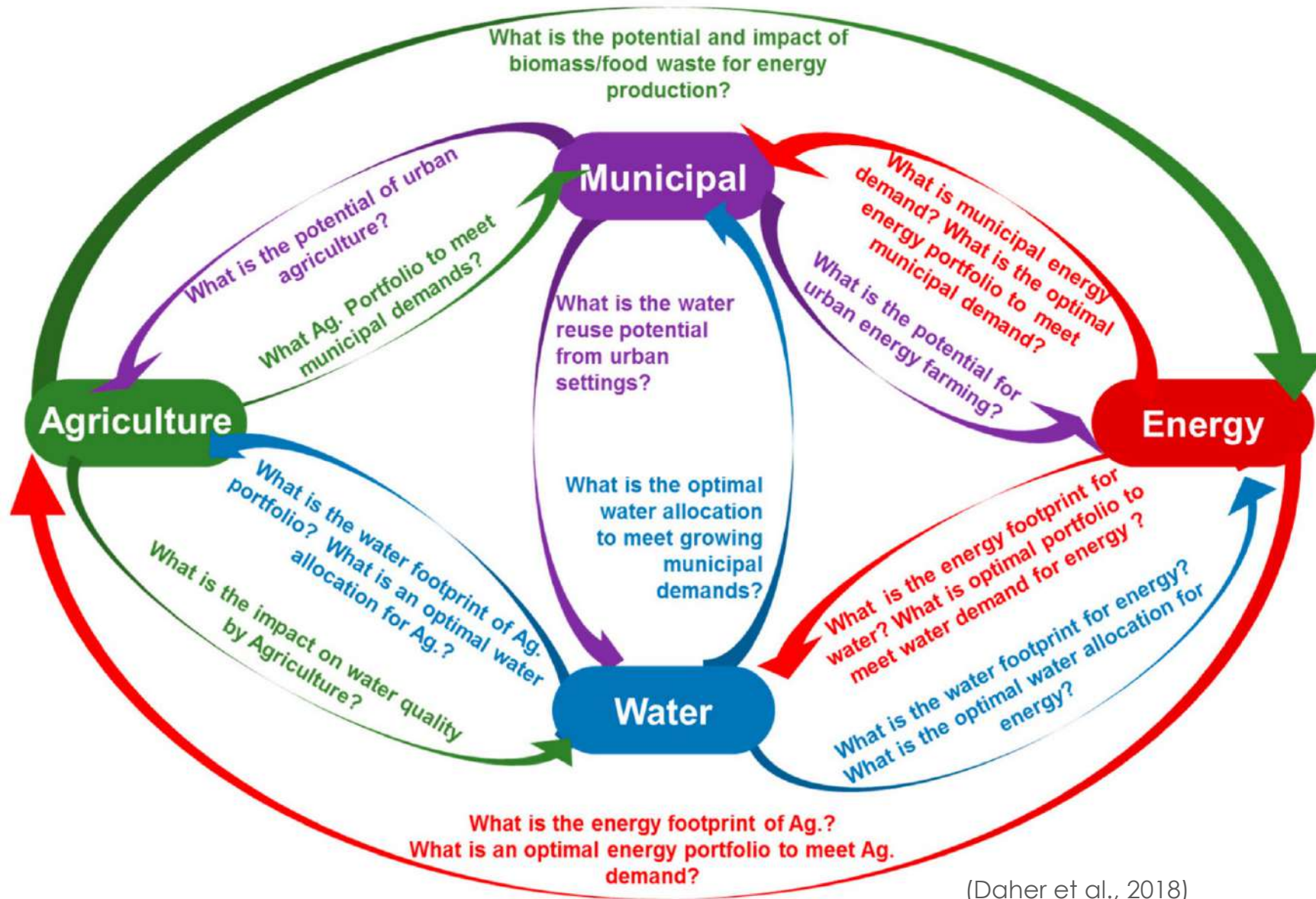
Rural-urban divide: Population is increasing and urbanization is expanding - 60% of the population currently living in rural areas

(Baum and AL-Zu'bi, 2022)



Challenges

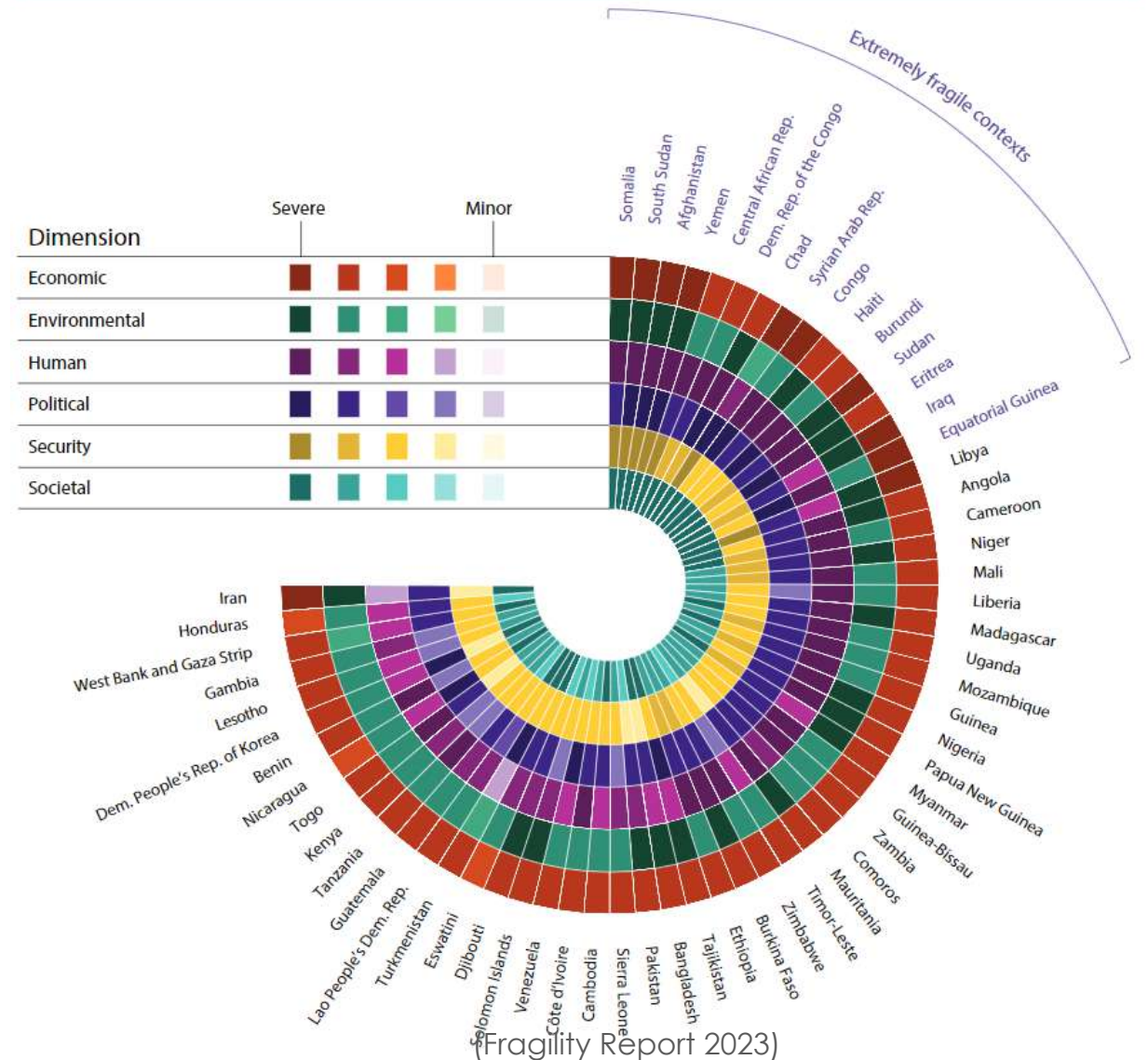
Critical Questions Across Resource Systems

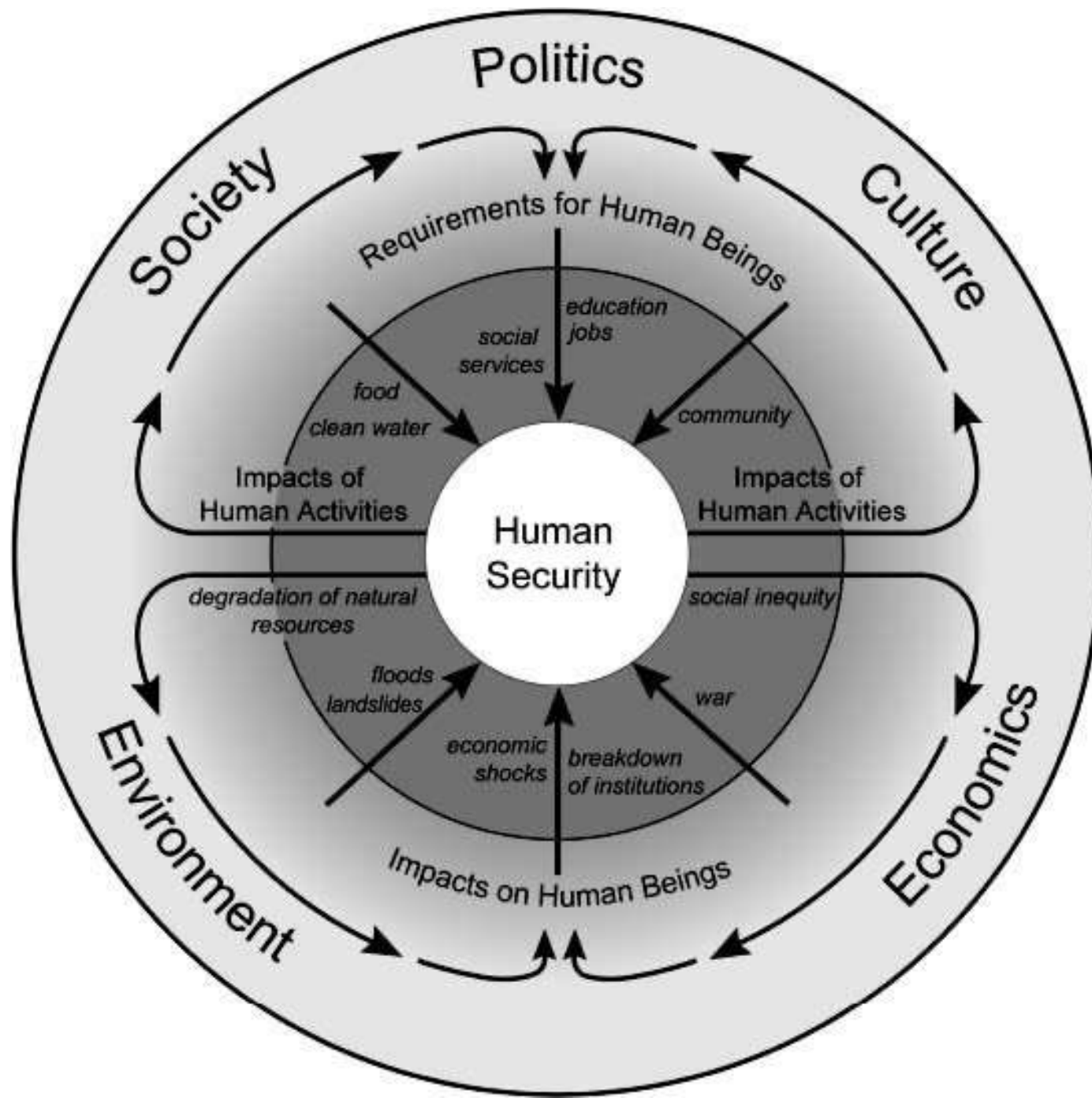


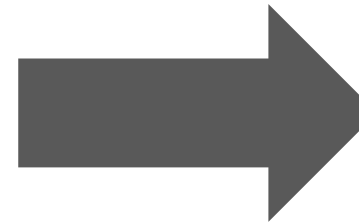
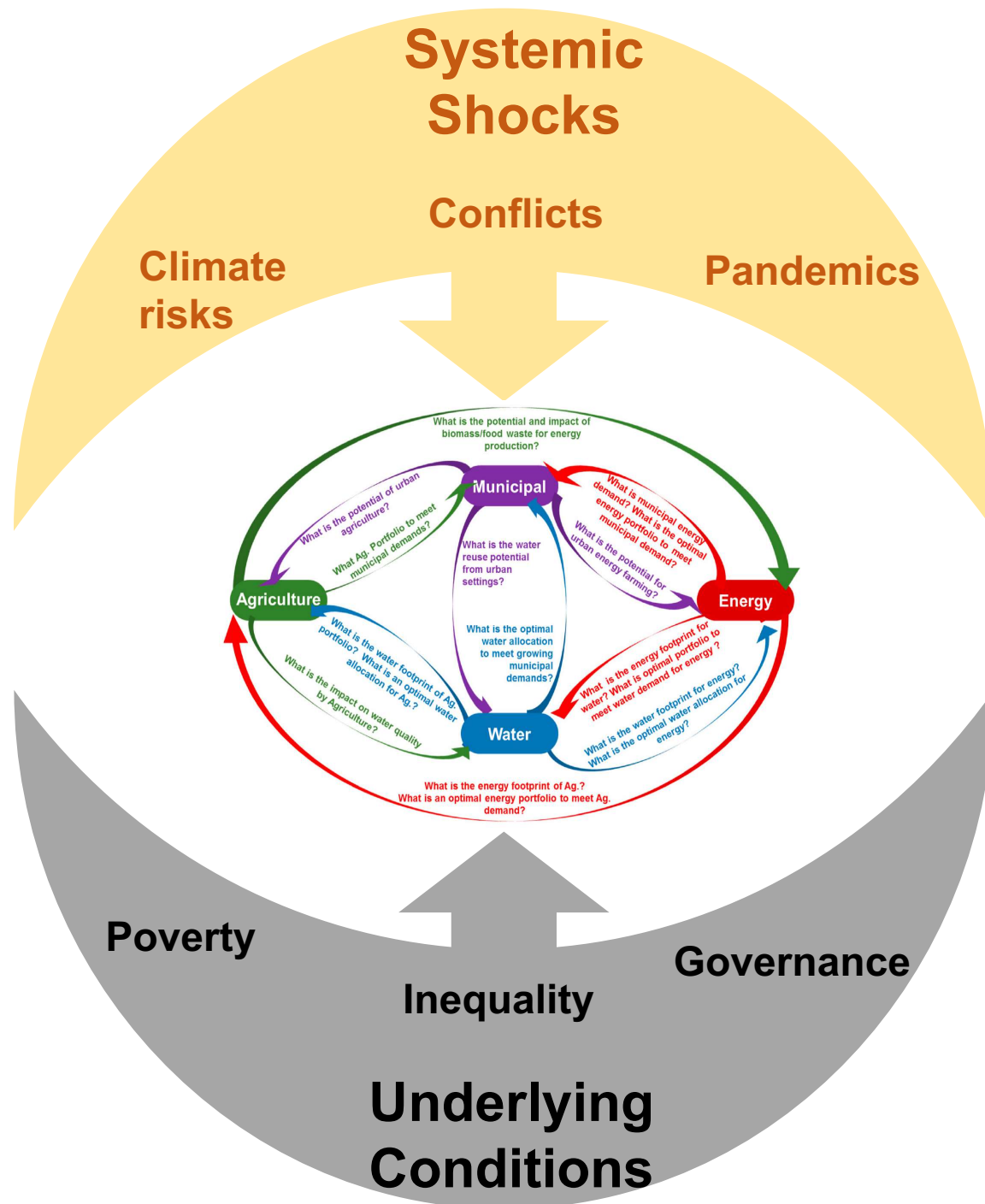
Fragility

- **Fragility** is the combination of **exposure to risk** and **insufficient coping capacities** of the state, system and/or communities to manage, absorb or mitigate those risks (OECD, 2022).
- Fragility is **complex** and **multidimensional** and occurs in a spectrum of intensity across six dimensions: **economic**, **environmental**, **political**, **security**, **societal** and **human**.

Infographic 1.1. The OECD's multidimensional fragility framework







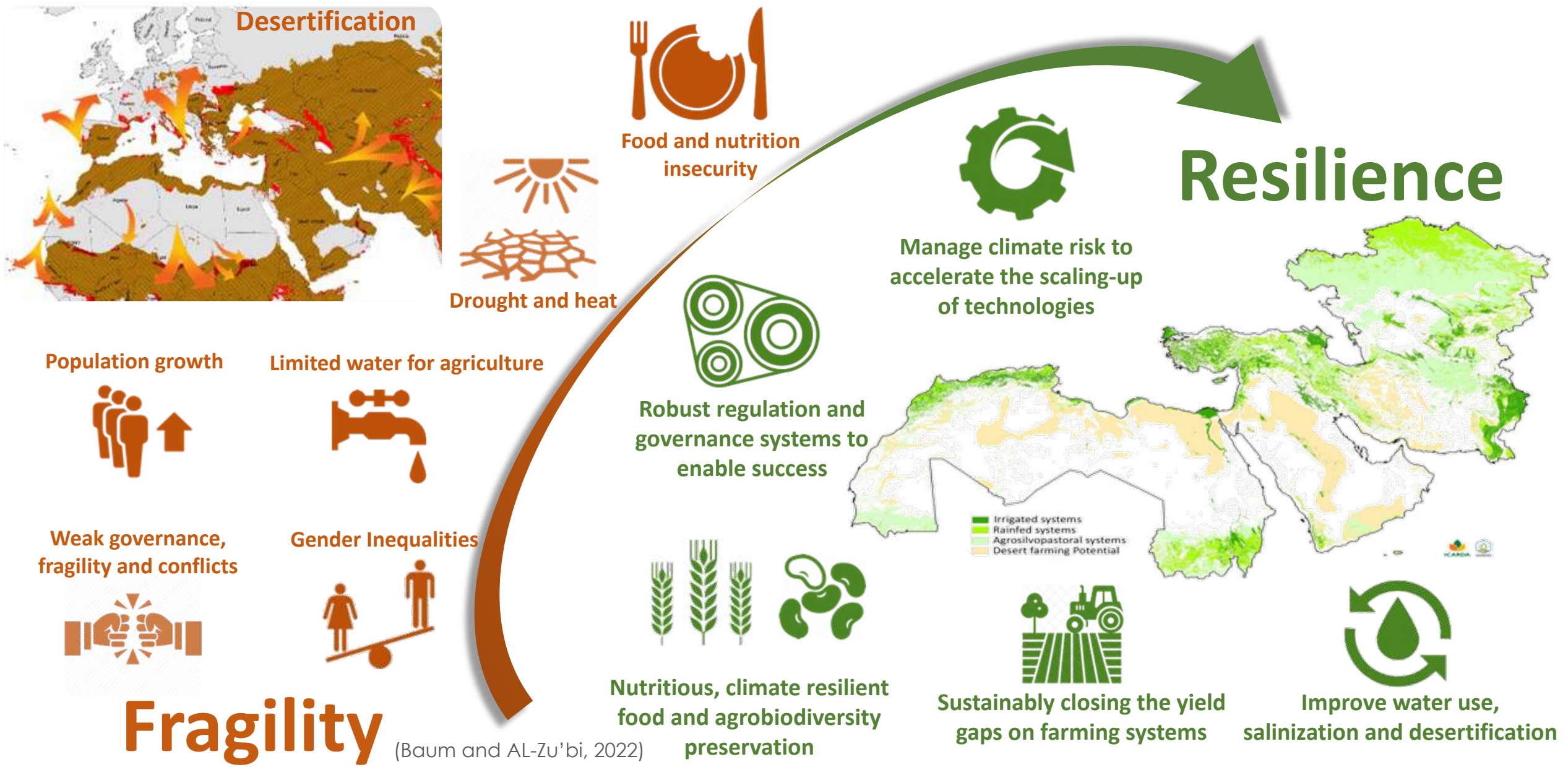
**Food
insecurity**

**Forced-
Displacement**

**Decline in real
incomes**

**Affected
livelihoods**

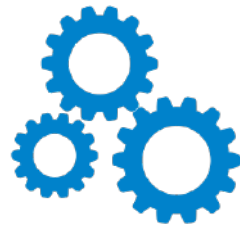
From Fragility to Resilience in Central and West Asia and North Africa



WP4: Integrated food, land, water and energy systems for climate resilient landscapes



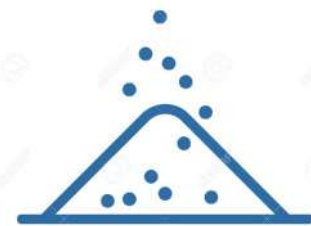
Limits & potentials of Growth
& sustainable development
(ex: Natural resources)



Poor integration between different
policies (Water, Food, Energy,
Land)



Slow scaling up of alternative
water resources and water storage



Low productivity in marginal saline
contexts

Support communities and stakeholders for more **sustainable, resilient and inclusive water, energy and landscape management policies, design and practices** at the regional, national and landscape scales.

WEF Nexus Examples

1. National Level – Egypt
2. Water Shed Level – Morocco and Uzbekistan
3. Regional Dialogues / Knowledge Products
Policy Brief

EGYPT Case Study

How can the productivity of marginal and saline landscape be maintained or improved at watershed and country level?

Maintaining and improving productivity in marginal and saline landscapes



Remote sensing, and integrated hydrological modelling

Valuation of soil retention

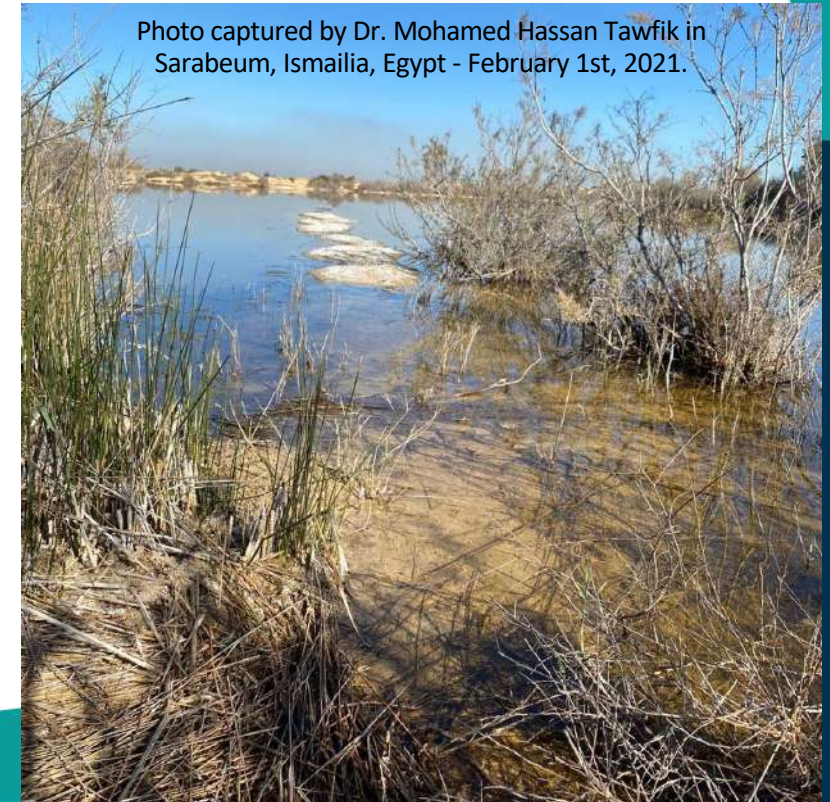
Socioeconomic data analysis

Policy mapping and analysis

Qualitative analysis

Multi-stakeholders dialogue

Monitoring & evaluation



2023 Activity in Egypt

“Maintaining Productivity of Salt-affected Agricultural Areas: A Roadmap for Egypt”

Aim:

- Enhance the management and productivity of saline landscapes in saline-affected agricultural areas in Egypt.

Output:

- A comprehensive report/roadmap proposing strategies to address water and soil salinity while considering national priorities and indigenous practices.



How?

- **National baseline assessment** for saline landscapes in Egypt
 - Literature Review
 - Produce a salinity map for Egypt
 - Prediction of water and soil salinity in Egypt
- **Situation Analysis** of water and soil salinity at field level
 - Field investigation on soil salinity
 - Field investigation on water salinity
- **Common practices and local solutions** for maintaining/improving productivity of saline landscapes
 - Design questionnaire
 - Conduct Survey
 - Data analysis
- **Assessment of the governance system** of managing saline landscape in Egypt
 - Analysis of the institutional setup of managing saline landscapes in Egypt
 - Managing saline landscapes from the governmental perspective
- **A roadmap** for managing saline landscapes in Egypt
 - Synthesis of farmers' good practices for managing saline landscapes
 - Analysis of success stories for managing saline landscapes
 - Proposed practices for managing saline landscapes on technical level
 - Actions needed for improving the governance system of managing saline landscapes
 - Developing a roadmap for managing saline landscapes in Egypt

Morocco and Uzbekistan Cases

- **What is the current and long-term potential and extent for sustainable livelihoods at the landscape scale (basin and country) within a climate change context?**
- **How can water-energy-food Nexus governance be improved to strengthen resilience of food, land and water systems and improve productivity at country and basin level?**

Strengthening inclusive policies and governance beyond water for integrated management across the food-land-water-energy nexus



Socioeconomic data analysis

Water governance analysis in piloting countries

Policy mapping and analysis

Qualitative analysis

Multi-stakeholders dialogue

Decision- making tools on WEF Nexus for multi-sectoral coordinated planning



How?

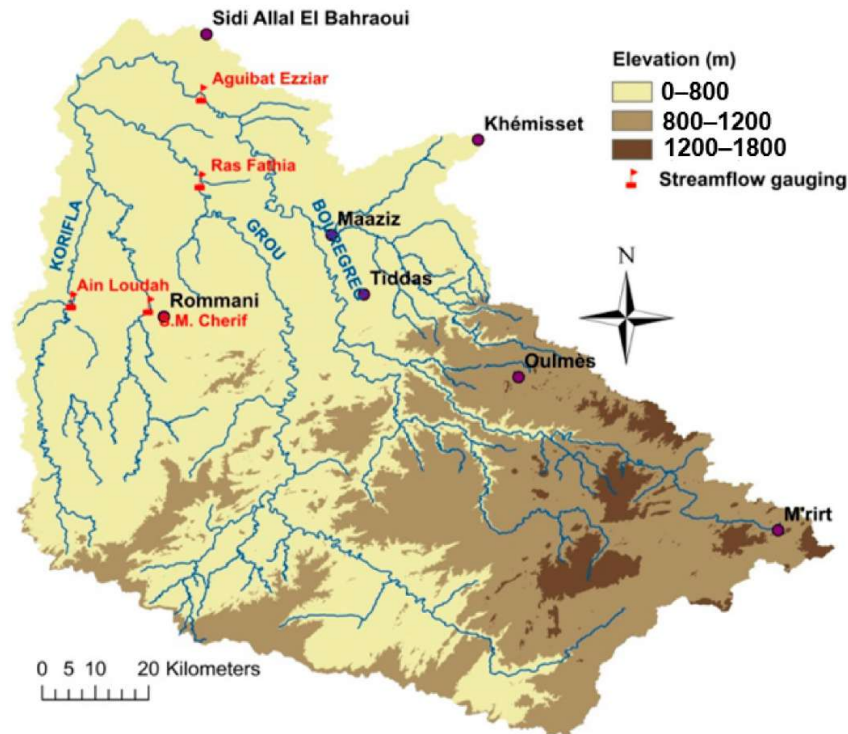
- **Assessing the state of water, energy, food and land systems** for climate-resilient landscapes.
- **Identifying** fragilities and limits to development at watershed level.
- **Proposing/considering governance scenarios**, along the water, energy, food and land **nexus**, integrating **communities** at the watershed level.

Approach



- **Desk review**
- **KIIs**
- **GIS & Modeling**
- **Focus groups**
- **Surveys**

Bouregreg Watershed – Morocco



Context of 4 Systems.... 3 risks



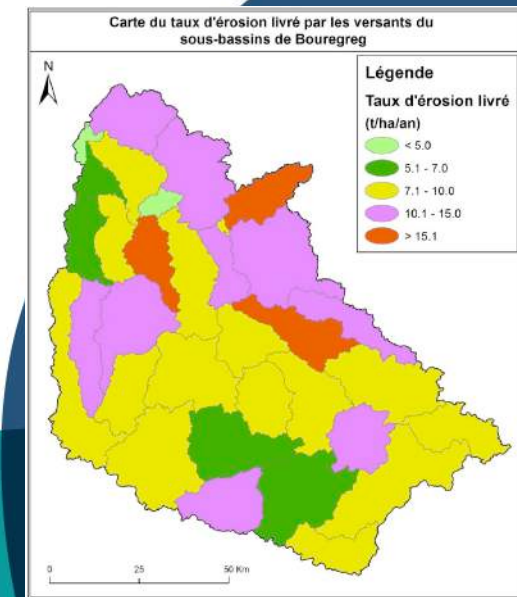
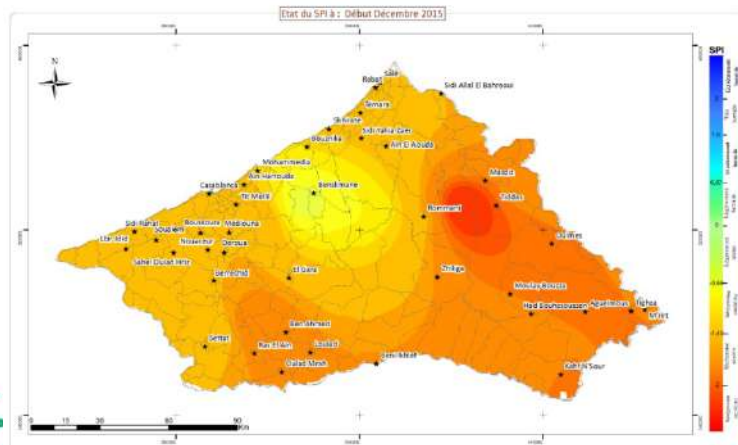
Drought



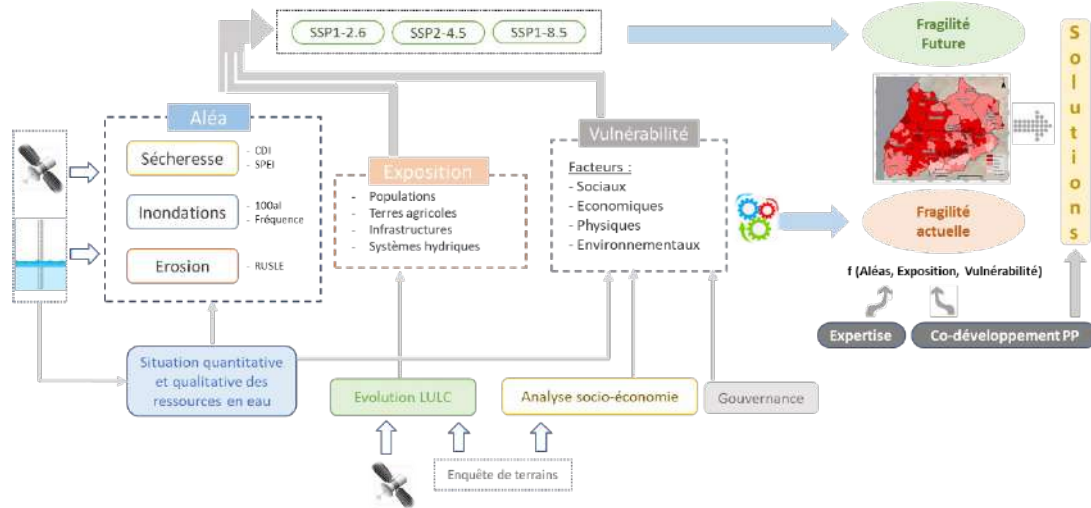
Flood



Erosion



Way forward: Composite Fragility Index



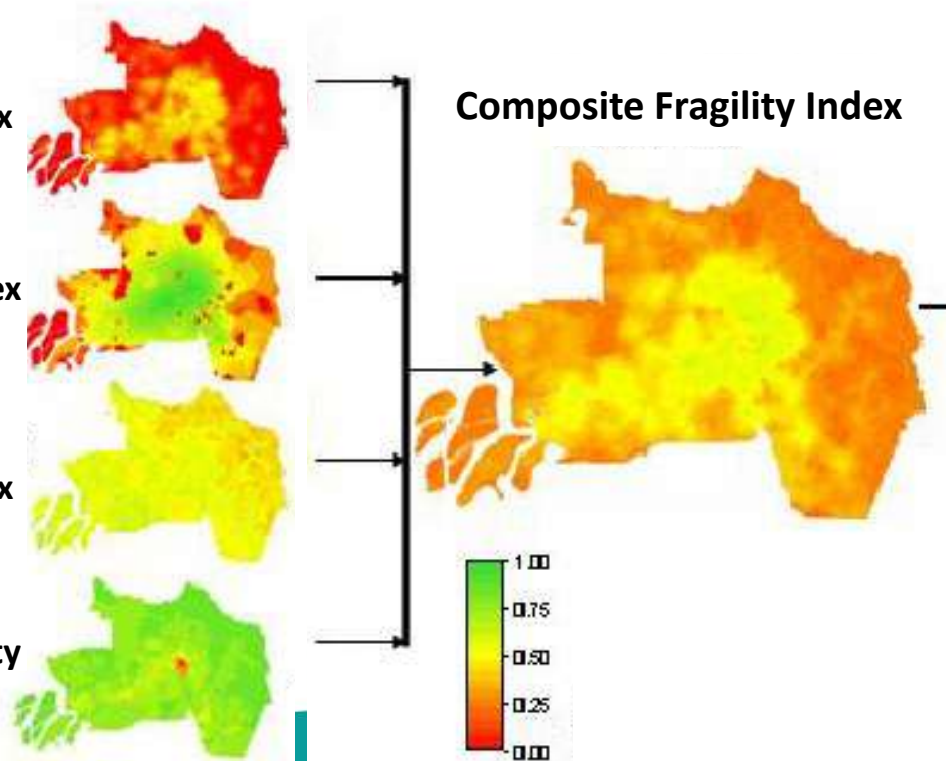
Water Fragility index

Food Fragility index

Land Fragility index

Population Fragility index

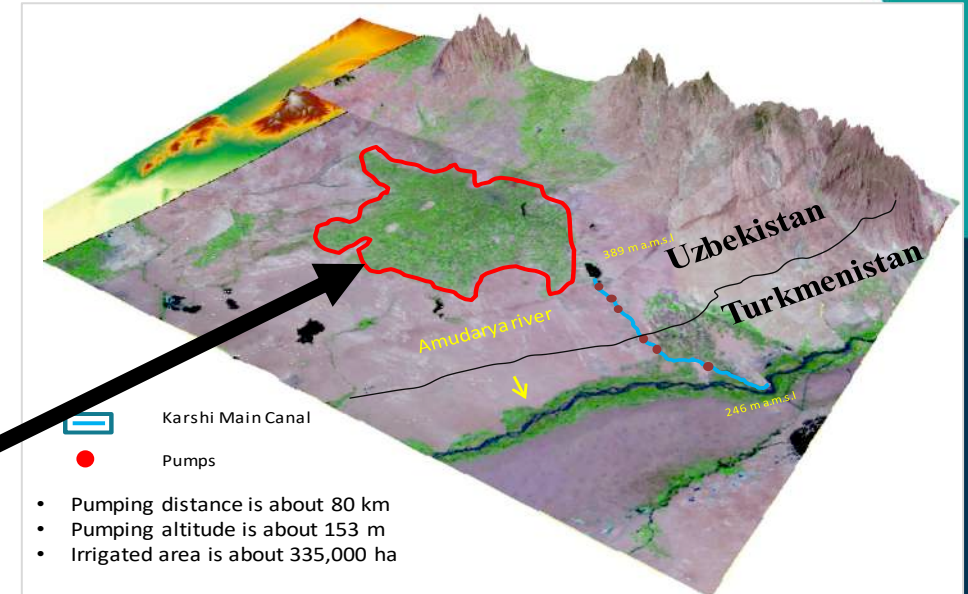
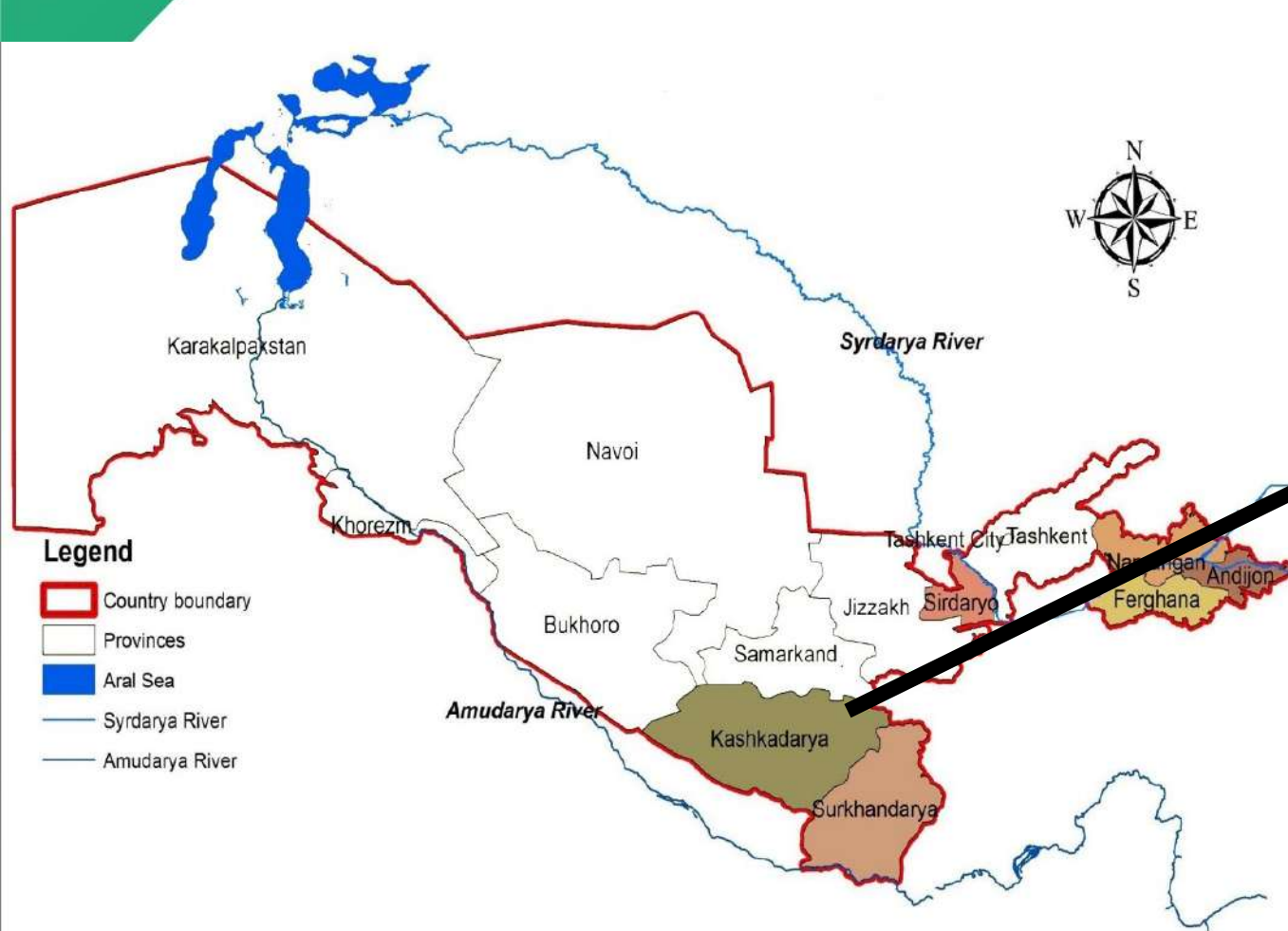
Composite Fragility Index



Recommendations

- Proposes **integrated, multi-stakeholder scenarios** for **resource planning** (with a focus on water and land).
- Encourages **collaboration with stakeholders** at different levels to **improve governance, planning and public sector-led** information flows.
- Proposes **"smart", ecologically and socially sound infrastructures, particularly adaptive and basin-centric**, such as the development of climate-related infrastructures in irrigation, hydropower production and flood and erosion management.
- Proposes **solutions for developing, coordinating and harmonizing policies** (trade-offs and synergies) to eliminate conflict between policies.

Karshi Watershed - Uzbekistan



1. Study area **population 1.5 million.**
2. **Water** is lifted from Amudarya river with 7 pump cascades to irrigate 335,000 ha.
3. Pumping distance is about 80 km.
4. Pumping altitude is about 153 m
5. Irrigated agriculture (cotton)

Context

- **Uzbekistan** is one of the most vulnerable countries in CA terms of climate change.
- **Kashkadarya Province** facing multifaceted challenge, including inefficient water use and organizational shortcomings in water management services.
- The economic landscape is fundamentally rooted in **irrigated agriculture** (16% of the province's total area).
- The area known as lift-irrigated area challenged by **water stress** and **inefficient agriculture water use practices**. Energy, land and food sectors are intrinsically linked to water availability and quality.
- **Transboundary water issues** with upstream countries (e.g., Afghanistan).

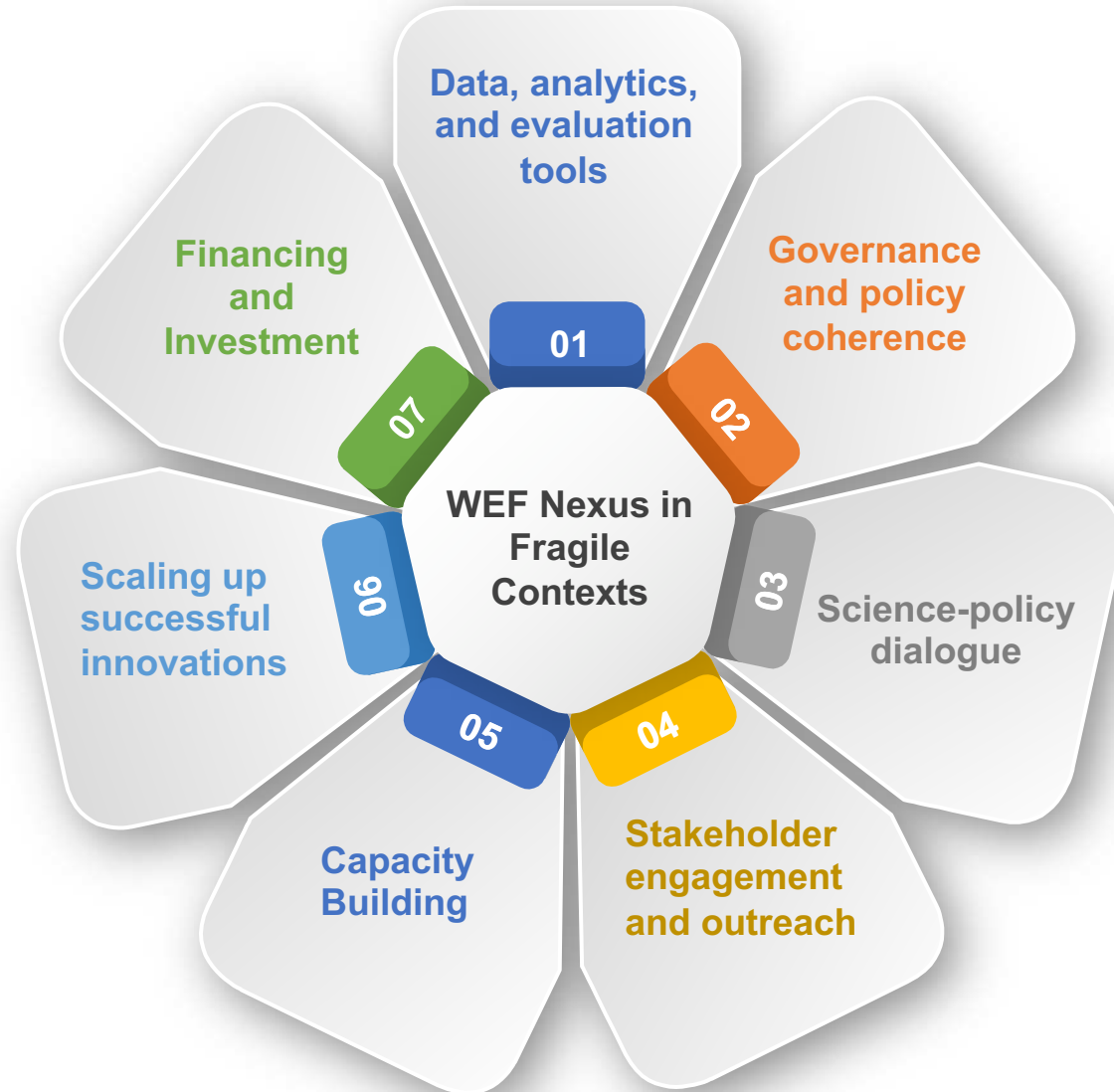


Recommendations

- **Enhance** water use efficiency in agriculture
- **Develop** climate-resilient water management strategies and infrastructure to adapt to changing climate and mitigate the impact on water resources.
- **Strengthen governance and intersectoral collaboration**, and expedite the public-private partnerships
- **Promote digitalization and** utilizing remote sensing and digital tools to monitor and optimize water
- **Promote crop diversifications** and crop rotations
- **Address environmental challenges**, including water pollution and salinity control, to protect local ecosystems.
- **Consider the transboundary water** with upstream countries

Seven Strategic Action Areas

**Building
resilience in
fragile and
conflict-affected
agrifood systems
through a WEF
nexus approach**



Knowledge Product



[Video](#)



Q&A

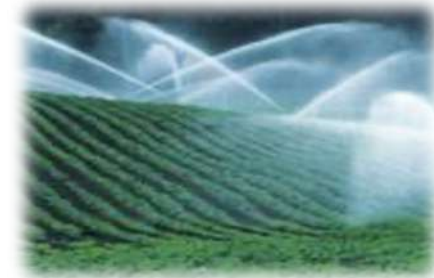
Household Water-Energy-Food Nexus: A case study from Jordan

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Introduction

- Most WEF Nexus debate/research efforts to date have focused on macro level supply-side infrastructure provision and policy design.
- Missing from the WEF Nexus debate are **demand-side, meso and micro level, and participatory approaches**
- **Demand management** inherently relates to users' choices, consumption patterns, behaviors, and socio-economic conditions.
- Demand management of the WEF requires the active engagement and participation of consumers/citizens.
- With respect to policy-making, **I argue that household level intervention makes sense as a foundational scale unit to measure the demand for and consumption of WEF, and response to CC.**



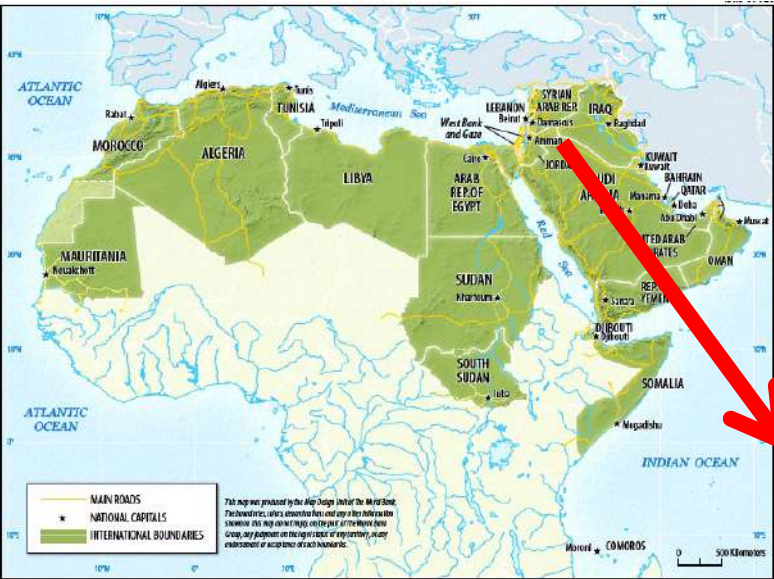
Localize Actions

- It is significant to locate cities at the center of the WEF nexus approach and to localize actions as cities are:
 - Spaces where the majority of consumption of water, energy, and food takes place.
 - Spaces where the majority of CO₂ emissions are generated.
 - Vulnerable to climate change impact.
 - Spaces for demand-side policies (energy efficiency, water conservation, food waste reduction, water harvesting, greywater recycling, urban design etc.).
 - Best governance level to explore the potential for bottom-up community engagement in policy formulation and adoption focused on demand-side policies.
 - **SDG 11 “Make cities and human settlements inclusive, safe, resilient and sustainable”**

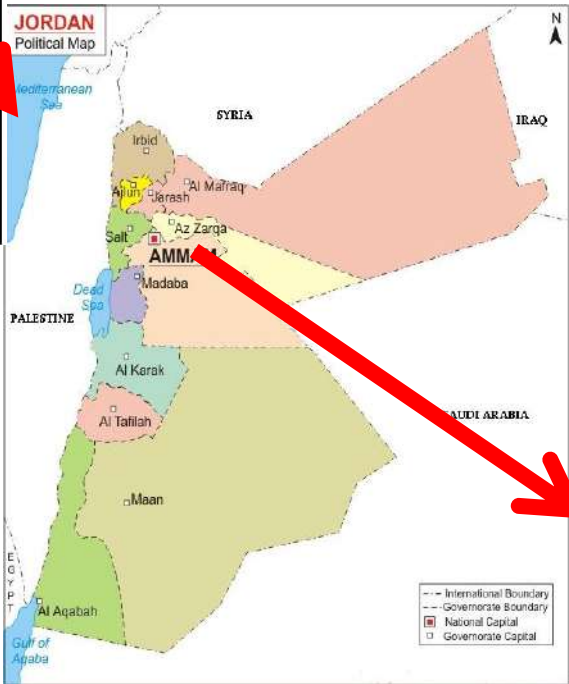


Total Area: 13.13 million km²
Population: 423 million

Localize Actions ...

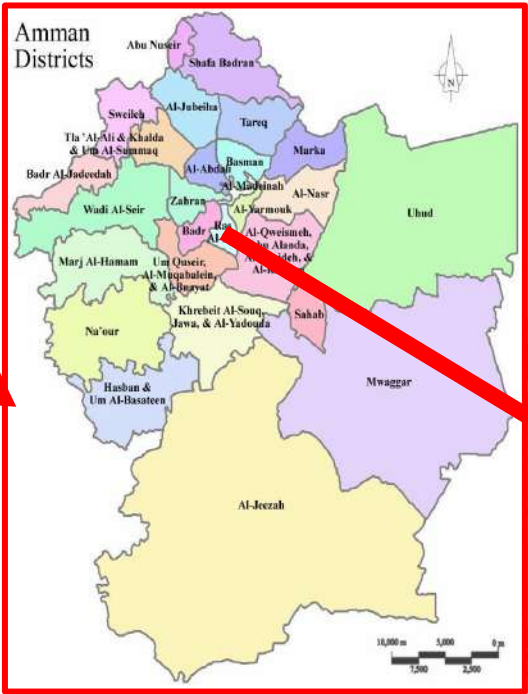


Total Area: 89, 000 Km²
Population: 11 Million



Total area: 700 Km²

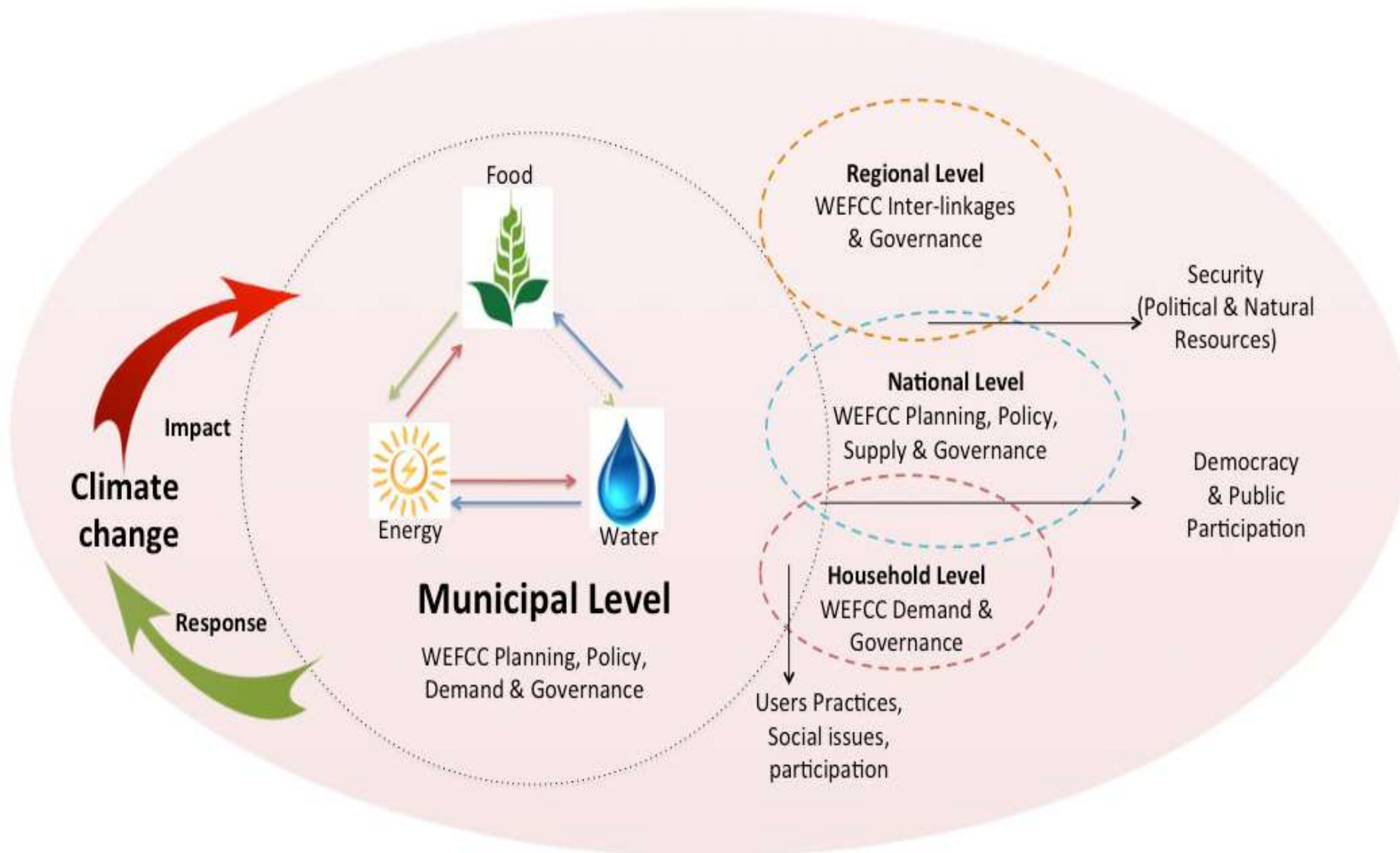
Total population: 4.5 million inhabitants
(50% of Jordan's population)

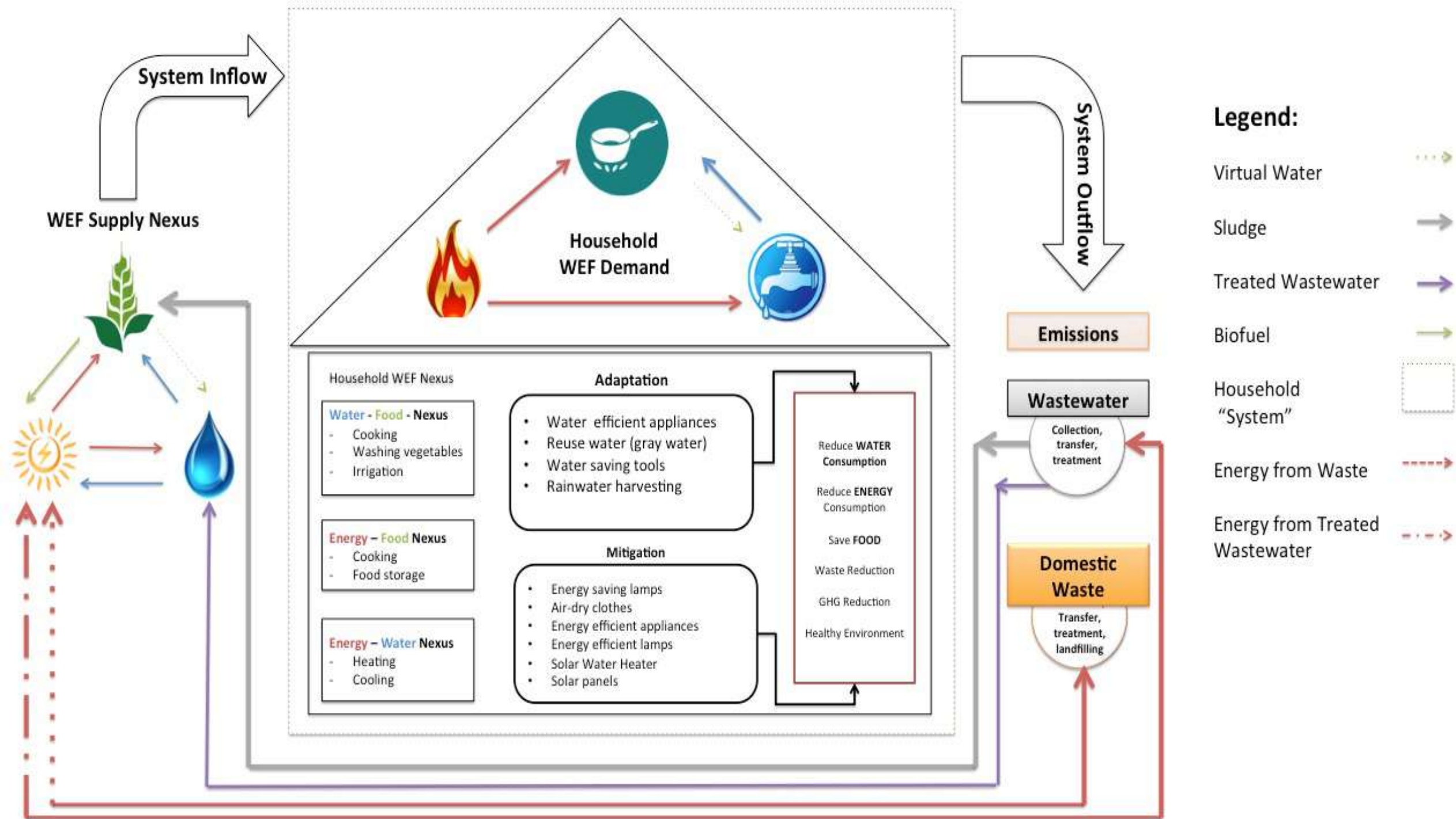


- Location: Jabal Al-Natheef District (East Amman)
- Area: 1.25 Km²
- Population : 65,000 inhabitant



Research Conceptual Framework





Results

(1) Socio-economic conditions;

- All 300 participants (females) aged between 18 and 60 years.
- 15% of informant households were headed by women.
- 75% of the participants were housewives, approximately 20% had part time jobs remainder held full times jobs.
- 50% of the participants were illiterate, 39 (elementary school), 30 (secondary school), 25 (college degree), and 2 (university degree).
- Over 75% of the participants were renters (50% of the participants shared the water meter with neighbors, 34% share electricity meters, and 15% shared both water and electricity meters).

(2) Climate change awareness

1. Over 41% of the participants indicate that they have heard of “climate change” (television, relatives and friends, and radio);
2. Low level of understanding of climate change concept stands for and reasons for its occurrence (65% believe it is act of God, 22.5% do not know the causes, and 12.5% relate it to air pollution)
“I believe the first hints of what will one day be a severe problem can already be seen in the here and now” (Um-Ahamd).
3. Fair well-understanding of the impact and effect of climate change.
“Of course we have witnessed hotter and longer summers, and shorter but colder winters” (Khawla).
4. Fair ability to identify vulnerable groups (sick, the elderly, children, and people with a disability (physical and mental))
“My husband is sick with lung disease. Every summer when the temperature increases and if there are dust storms he can’t breathe and we have to take him to the hospital” (Um Ibraheem).
5. Little concrete awareness and knowledge if whether governments (national, local) are taking any steps or creating programs to address climate change impacts.

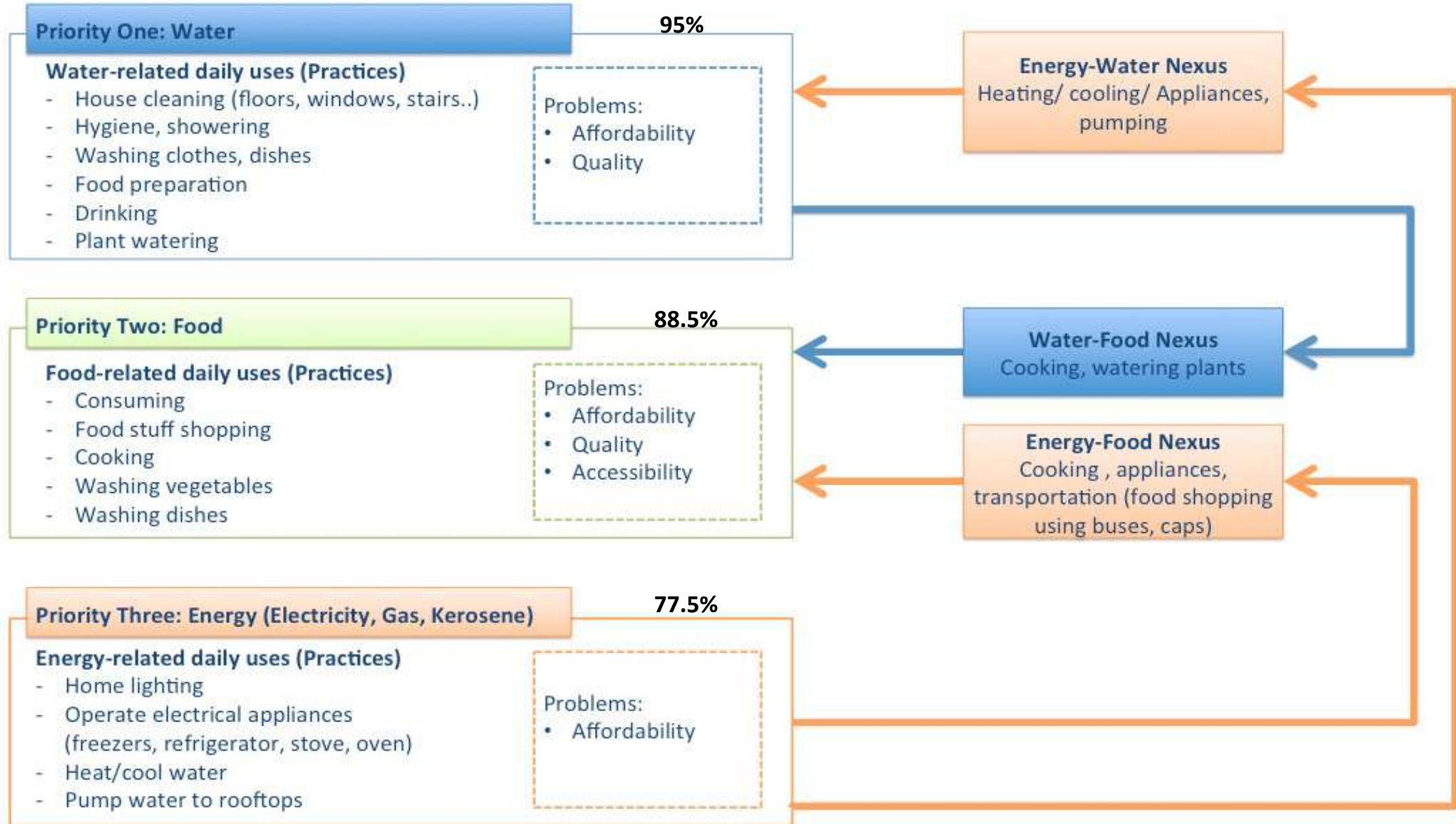
(3) Knowledge of WEF resources challenges;

- 75% exhibited that they have no awareness of water and energy sources (e.g., where does their water come from? is it surface or ground?). However, 60% of participants show a fair awareness about the sources of their food (imported or local).
- Fair understanding of water scarcity in Jordan. However, this was not the case concerning the energy and food challenges.
- 90% were not aware of food challenges, and 72% were not aware of energy challenges. However, 84.5% of participants were aware of water scarcity.

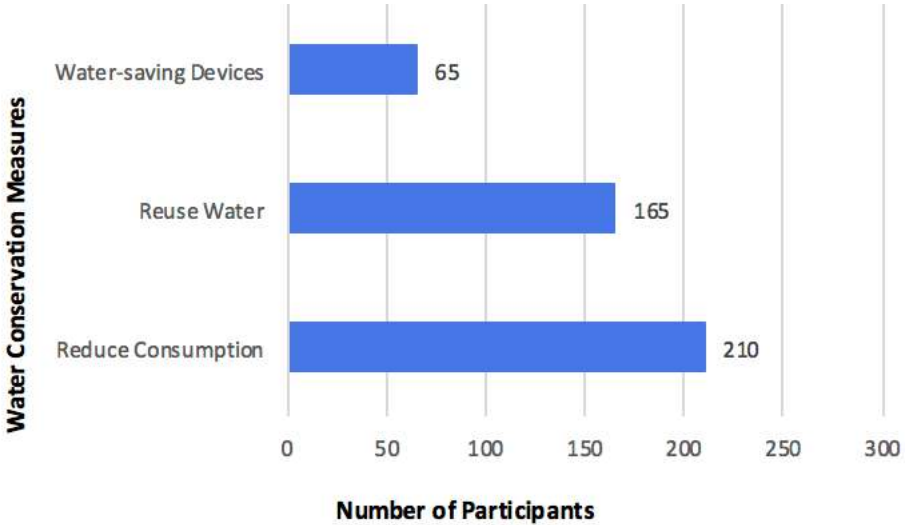
“What government is doing is just keeping the energy prices high; it is difficult to afford during winter times” (Ikhlas)

“The day we receive water is like a holiday; we clean the house, wash clothes, have showers, and store water in plastic barrels in addition to the rooftop tank” (Om Mohammad).

(4) Household WEF Prioritization and Nexus

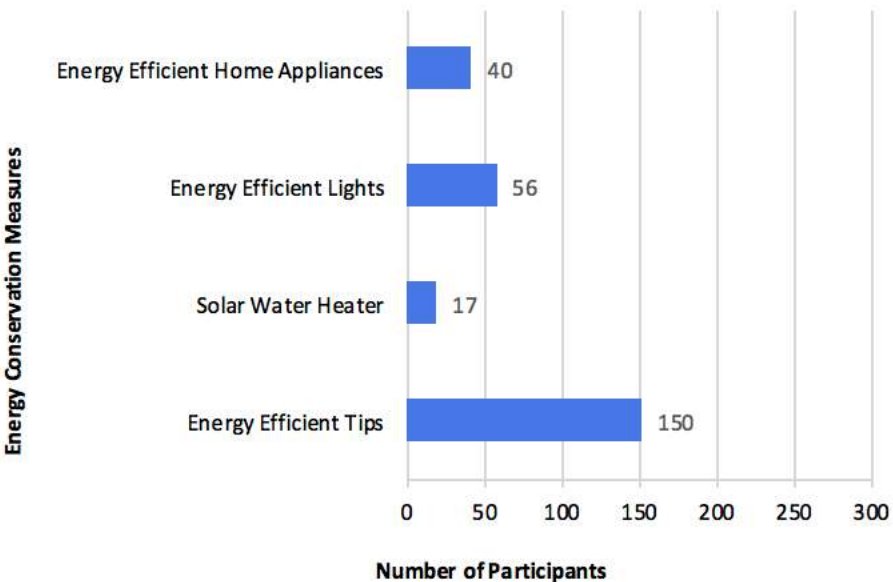
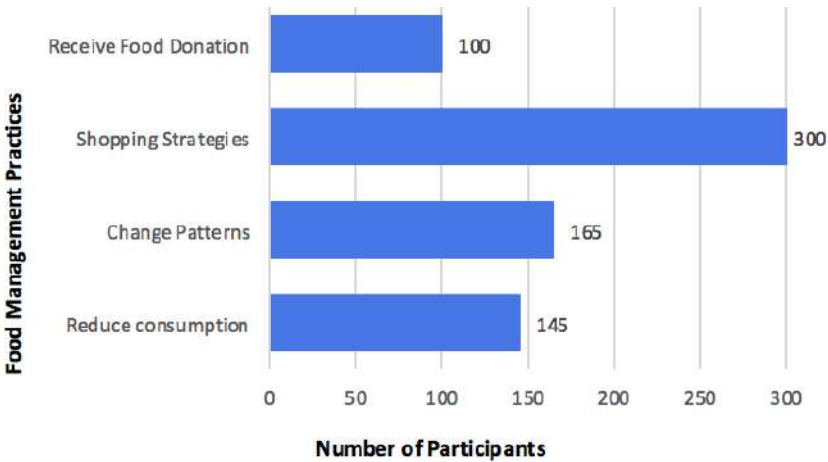


(5) WEF Conservation/Management Measures



Water

Food



Energy

(6) Household water, energy, and food governance

Water- Energy-Food Related Decisions	Decision-maker		
	Mutually (Husband and Wife)	Husband	Wife
Choosing appliance	62%	12%	26%
Pay bills (water, energy)	0%	81%	19%
Energy-conservation-related decisions	0%	4%	96%
Managing household resources (cooking, laundry, dish washing, cleaning)	0%	7%	93%
Food shopping	55%	25%	20%
Water-conservation-related decisions	0%	8%	92%
Maintenance-related activities	0%	85%	15%

Conclusions

BOTTOM-UP PERSPECTIVES.....

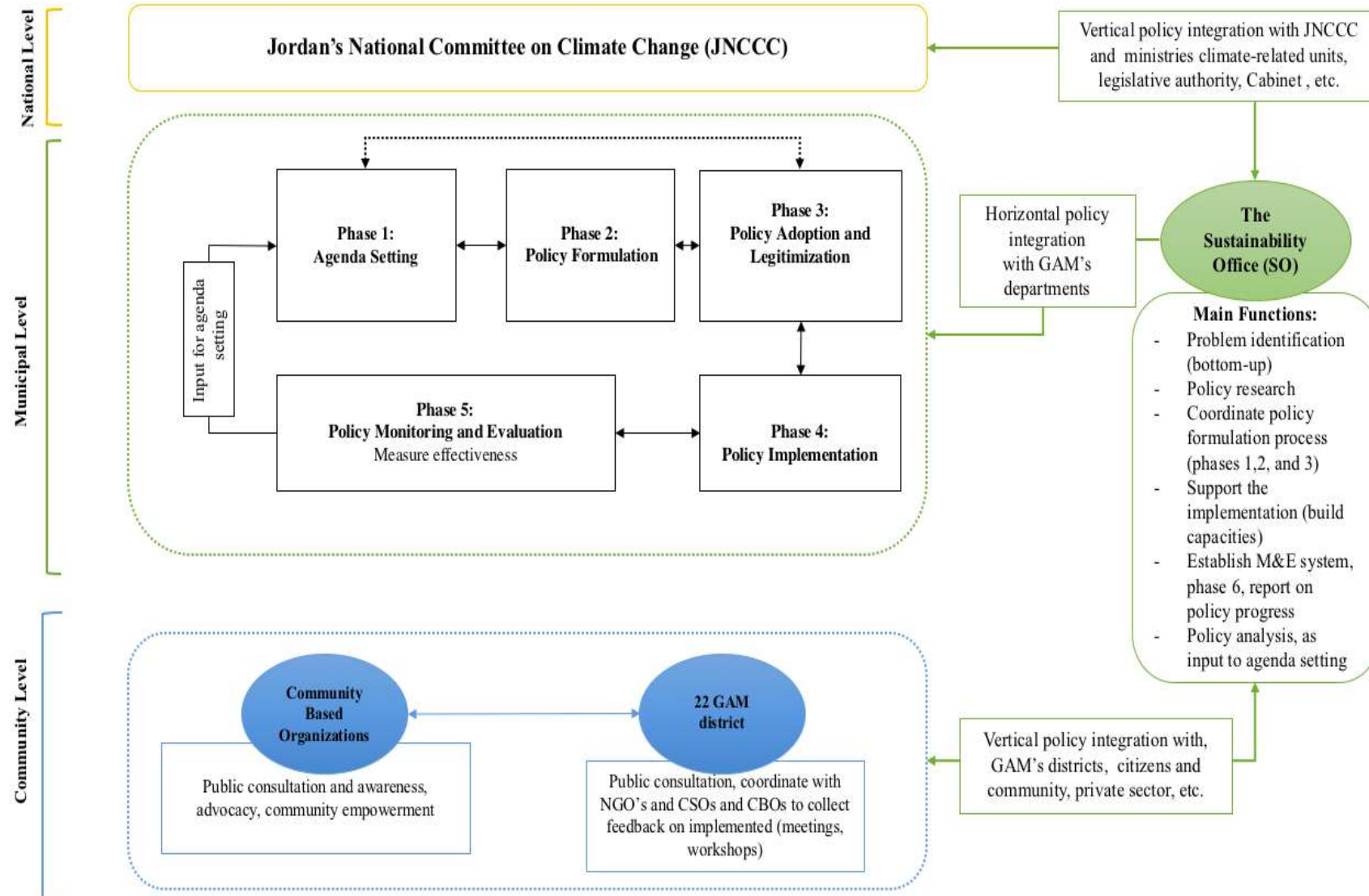
- (1) Discrepancies between householders and policy-makers in terms of perceptions and priorities.**
- (2) Householders' perspectives revealed governance issues that would affect advancing the water-energy-food-climate change nexus**

- *Lack of Transparency*
- *The low level of climate change related awareness*
- *The low level of participation and ineffective vertical communication channels*

“We are poor. No one wants to hear our voices. If they do, our view, questions, and needs will be received with ridicule because we are not educated” (Abu Akram, Jabal Al Natheef).

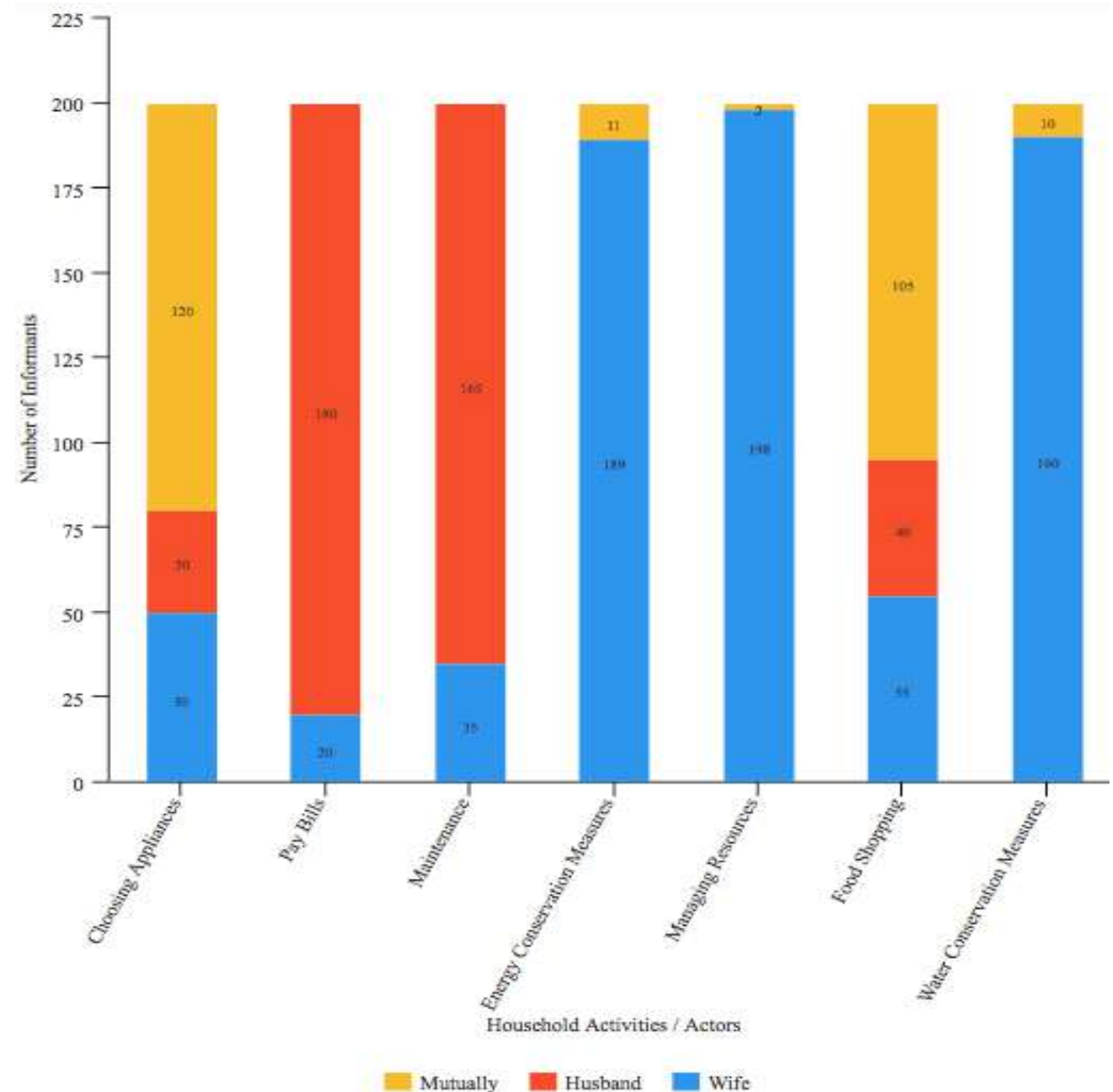
- *Impact of political instability on Jabal Al Natheef residents*

GAM's Integrated climate policy-making framework



(3) Significant relation between gender and WEFCC Nexus

- *Men and women do not have the same roles, responsibilities, and practices over natural resources at household level;*
- *Women have less power to make decisions over purchasing climate-related appliances and food shopping; and*
- *Policymakers pay inadequate attention to the need for a gendered dimension in managing natural resources, coping with climate change, and planning for sustainable development.*



(4) Householders can be effective climate change agents

	Skills	Materials (Tools)	Meanings
Water	- Reducing water consumption - Water reuse - Water conservation measure	- Water saving devices - Water efficient appliances	- Recycling (paradigm of a successful housewife's action to save money) - Conserving water (religious meaning) - Water precious resources - Save money - Realize its scarcity
Energy	Using various energy efficient tips	- Energy conservation measures - Energy efficient appliances - Energy efficient light bulbs - Solar Water Heaters	Reduce electricity bills
Food	- Changing cooking patterns - Various grocery shopping tips and strategies - Changing consumption patterns, behavior, and choices	- Using cooking related tools (using pressure cooker) - Cooking related appliances	Reduce and manage food-related expenses



Urban agriculture



Water conservation



Water reuse



Save energy

Thank You!