



# OVERVIEW OF ARAB FOOD SYSTEMS AND CLIMATE FINANCING TO ENHANCE RESILIENCE

THE SIXTH MEETING OF THE  
HIGH LEVEL JOINT TECHNICAL COMMITTEE FOR WATER AND AGRICULTURE  
LEAGUE OF ARAB STATES  
16 OCTOBER 2024



## Introduction

The Arab region faces a significant food production deficit, importing over half of its food, especially staple cereals. This gap is widening due to low agricultural productivity, which operates at less than 65 per cent of its potential, and a heavy reliance on rainfed systems. Increasing variability in rainfall patterns exacerbates water stress, further impacting food production. Agriculture production systems consume up to 80 per cent of the available renewable freshwater resources. Climate change intensifies these challenges, with water mismanagement and overuse exacerbating the scarcity issues. Currently, 19 out of 22 Arab countries experience severe water stress, falling below the 1,000 cubic meters per capita threshold, with 13 countries facing absolute scarcity below 500 cubic meters per capita.

These issues reflect a lack of proper coordination between the water and agricultural sectors towards improving food and water security. Addressing these challenges through a food systems approach may provide a comprehensive understanding of the interconnections between various sectors and their impact on their level of food and water security.

This approach emphasizes the need for improved management of water resources to enhance food production, safety, access, and resilience. By adopting a food systems perspective, the region can better address the interconnected, multi-sectoral challenges affecting food and water security and improve climate resilience in both agriculture and water sectors.

Moreover, climate financing presents a significant opportunity to address these challenges. Increased investment in food systems can simultaneously benefit both agriculture and water sectors. Targeted climate financing can support innovative projects that improve resource management, boost agricultural productivity, and mitigate water scarcity, creating a more resilient and sustainable future.

## The food system concept

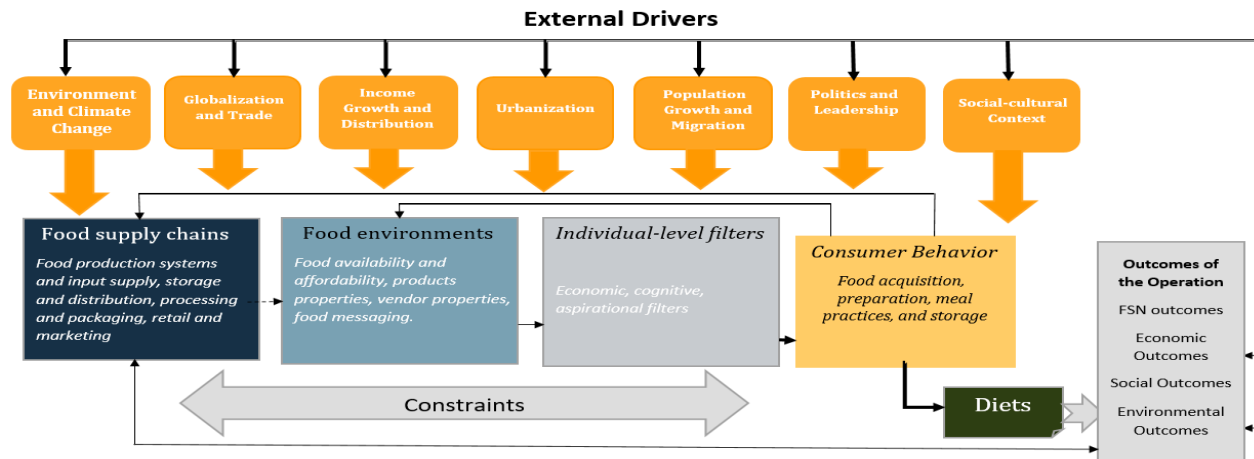
The Food Systems Framework, based on Fanzo et al. (2020), integrates biophysical and socio-economic drivers to analyze food systems, focusing on four key components: food supply chains, food environments, individual-level filters, and consumer behavior. These components interact to determine dietary and nutritional outcomes. The framework emphasizes the importance of external drivers, such as environmental, economic, political, and socio-cultural factors, which influence the food system's operation.

The Food Systems Framework also highlights the critical link between food systems and natural resources, particularly water. Biophysical drivers, such as the availability and management of natural resources, play a crucial role in shaping food systems. Water, as a vital natural resource, directly impacts every component of the food supply chain—from production and processing to distribution and retail.

Water availability influences agricultural productivity, which in turn affects food supply chains and the broader food environment, determining food availability and affordability. Furthermore, water is essential for food safety, hygiene, and preparation, directly affecting consumer behavior and dietary outcomes.

The framework also underscores external drivers like climate change, which alters water availability and distribution, and can significantly disrupt food systems. By understanding these interconnections, policymakers and stakeholders can develop strategies to enhance water management within food systems, leading to more sustainable and resilient outcomes in terms of food security and nutrition.

**Figure 1: Food System framework**



Source: Adapted from Fanzo et al. (2020)

### Characteristics of Arab food systems

The Food Systems framework uses two typologies to describe food systems characteristics. The first typology identifies and describes specific food systems characteristics, i.e., outcome, policies, sustainability, complexity and diets, while the second typology builds on the concerned country state of development and prevailing socio-political situation. The analysis of Arab food systems, based on a conceptual framework, identifies three transformation stages: traditional, emerging, and modernizing. These stages vary by income level and socio-political context.

To obtain a thorough analysis, the conceptual approach of food systems was combined with a previously available food security monitoring framework<sup>1</sup> to obtain a food system assessment tool. Building on twenty-eight indicators distributed along the original food security dimensions of availability, access, utilization and stability were added the recently proposed dimensions of agency and sustainability, allowing the assessment of food systems to better understand how they deliver on key outcomes. The above identified indicators are distributed along the food systems components, drivers and outcomes with each able to characterize one or several of the attributes of inclusivity, resilience, and sustainability.

The application of this tool at the Arab region reveals limited progress towards SDGs and food security targets<sup>2</sup>. Data from 2022 show significant issues affecting the region, including 37 per cent food insecurity, 13.5 per cent undernourishment, 31.7 per cent obesity, and 19.4 per cent stunted children. Additionally, low agricultural yields, high food import dependency (65 per cent), and limited public investment are major challenges for the Arab region. Poverty affects a third of the population, with inflation reaching up to 200 per cent in some countries.

<sup>1</sup> The Regional Framework on Monitoring Food Security in the Arab Region was adopted on 28 March 2019 by the Executive Council of AOAD. More information available at [Tracking Food Security in the Arab Region - United Nations Economic and Social Commission for Western Asia \(unescwa.org\)](https://www.unescwa.org/)

<sup>2</sup> Most of the information and data are taken from publications prepared by ESCWA including the upcoming report on the Arab Food Systems Assessment Tool (2024) and various policy briefs related to climate-related financing for the water sector and draft paper on climate financing for food systems.

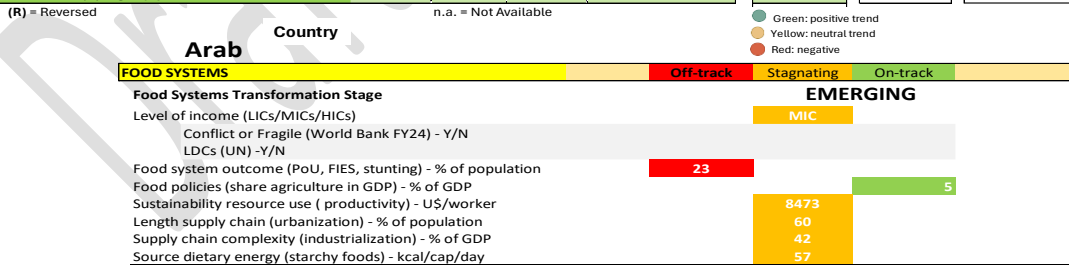
Evidence shows that about two-thirds of the Arab population cannot afford a healthy diet, which result in about 33 per cent of Arab women suffering from anemia.

Arab food systems are seen as emerging but struggle with inclusivity, resilience, and sustainability. The systems fail to ensure equitable food security and respond effectively to disruptions while damaging natural resources. The agricultural sector's contribution to the GDP in 2021 is 5.1 per cent, and food systems impact social outcomes like health, nutrition, and equity (World Bank data, accessed August 2023).

Water use in agriculture is excessive, with withdrawal rates over 200 per cent of renewable resources, and agricultural yields are suboptimal. Improved policies to promote resource sustainability and environmental conservation are lacking. Coordination issues between water and agricultural systems, exacerbated by climate change and other factors, hinder food system performance.

Figure 2: Arab food system dashboard (2024)

Indicator	World	Arab				Trend	Score	Food System Attribute
		latest	2010	2015	Latest year			
<b>CORE INDICATORS</b>								
CO1 Undernourishment (R) - %	9.2	10.4	n.a.	13.5	2022	●	0.0	Outcome: off-track
CO2 Food insecurity (R) - %	29.6	n.a.	n.a.	36.8	2022	●	0.0	Outcome: off-track
CO3 Obesity (R) - %	13.1	24.6	24.9	31.7	2022	●	0.0	Outcome: off-track
CO4 Child stunting (R) - %	22.3	23.6	20.5	19.0	2022	●	0.0	Outcome: off-track
<b>AVAILABILITY INDICATORS</b>								
AV1 Yield gap - %	n.a.	59.5	52.7	63.7	2021	●	0.8	Sustainability: off-track
AV2 Agriculture expenditure - index	0.5	0.2	0.2	0.2	2021	●	0.7	Resilience & Sustainability: off-track
AV3 Dietary energy supply - %	124.0	126	128	126	2022	●	3.0	Inclusivity: on-track
AV4 Import dependency (R) - %	-1.7	61	55	65	2021	●	1.0	Resilience: stagnating
<b>ACCESS INDICATORS</b>								
AC1 Poverty (R) - %	26.2	33.0	29.8	33.9	2022	●	0.0	Inclusivity: off-track
AC2 Food expenditure (R) - %	n.a.	37.1	n.a.	31.5	2021	●	2.1	Inclusivity: on-track
AC3 Logistics - index	3.0	2.6	n.a.	2.7	2022	●	1.5	Resilience: stagnating
AC4 Inflation (R) - %	8.3	6.8	5.1	17.3	2022	●	0.5	Resilience: off-track
<b>UTILIZATION INDICATORS</b>								
UT1 Water &/or sanitation access - %	84.0	n.a.	n.a.	64.2	2022	●	1.9	Inclusivity: stagnating
UT2 Starchy food (R) - %	51.0	47.7	56.8	56.7	2019	●	1.3	Inclusivity: stagnating
UT3 Healthy diet (R) - %	42.2	n.a.	n.a.	38.1	2021	●	0.0	Inclusivity: off-track
UT4 Women anaemia (R) - %	29.9	34.0	33.0	33.3	2019	●	0.0	Inclusivity: off-track
<b>STABILITY INDICATORS</b>								
ST1 Food stock - (1000t)	50016.0	-260.1	306.9	-1850.2	2021	●	0.0	Resilience: off-track
ST2 Political stability - ranking	n.a.	20.0	16.9	15.8	2021	●	0.5	Resilience & Inclusivity: off-track
ST3 Production variability (R) - 1000 International \$/capita	2.6	13.9	10.0	13.2	2020	●	2.7	Resilience: on-track
ST4 Supply variability (R) - kcal/cap/day	3.0	33.3	49.5	33.5	2023	●	2.6	Resilience: on-track
<b>AGENCY INDICATORS</b>								
AG1 Income inequality (R) - ratio	6.5	3.8	3.8	3.7	2021	●	1.3	Inclusivity: stagnating
AG2 Gender inequality (R) - index	0.5	0.5	0.5	0.5	2021	●	0.3	Inclusivity: off-track
AG3 Education inequality (R) - %	21.7	25.8	27.6	33.3	2021	●	0.7	Inclusivity: off-track
AG4 Voice & accountability - ranking	n.a.	14.8	16.5	14.6	2021	●	0.4	Inclusivity: off-track
<b>SUSTAINABILITY INDICATORS</b>								
SU1 Agriculture water (%) (R)	n.a.	173.9	223.3	217.3	2020	●	0.0	Sustainability & Inclusivity: off-track
SU2 Land cover - index	100.0	80.6	100.0	101.2	2020	●	3.0	Sustainability: on-track
SU3 Agroecological footprint (R) - bio ha	2.6	2.4	2.6	2.2	2022	●	1.8	Sustainability: Stagnating
SU4 Food waste (R) - kg/cap/yr	121.0	n.a.	n.a.	141.2	2021	●	0.0	Sustainability: off-track



FOOD SYSTEMS AVERAGES	World	Arab	HIC	MIC	LIC
	EMERGING	EMERGING	MODERNIZING	EMERGING	TRADITIONAL
Food Systems Transformation Stage					
Level of income (LICs/MICs/HICs)	MIC	MIC	HIC	MIC	LIC
Conflict or Fragile (World Bank FY24) - Y/N					
LDCs (UN) -Y/N					
Food system outcome (PoU, FIES, stunting) - % of population	20	23	5	18	28
Food policies (share agriculture in GDP) - % of GDP	4	5	2	10	17
Sustainability resource use (productivity) - US/worker	4042	8473	40034	12511	4784
Length supply chain (urbanization) - % of population	55	60	86	62	37
Supply chain complexity (industrialization) - % of GDP	27	42	47	35	13
Source dietary energy (starchy foods) - kcal/cap/day	51	57	46	59	47

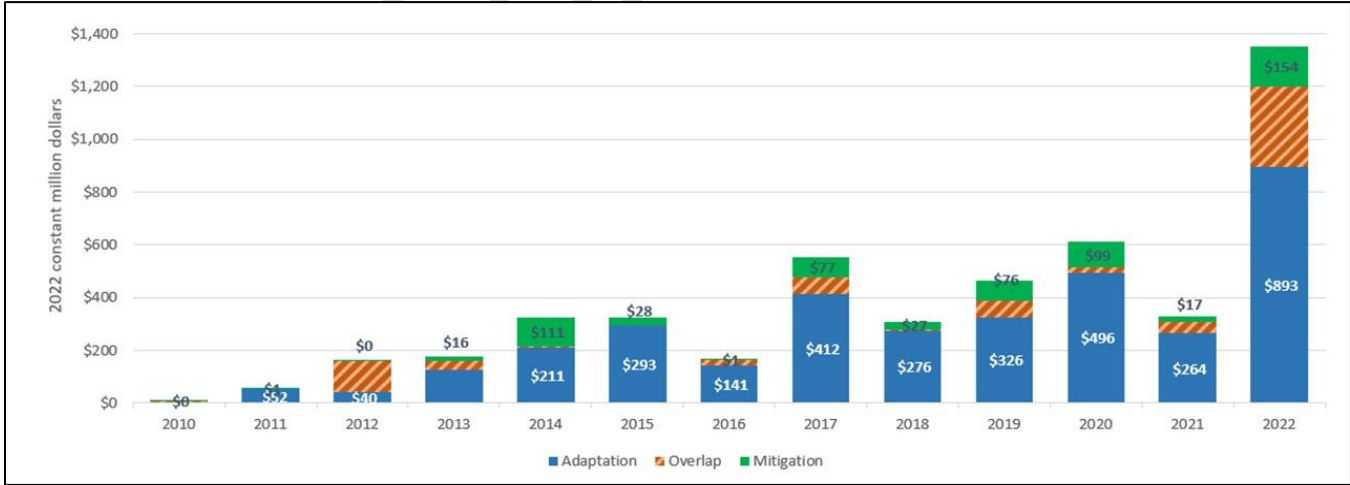
Transforming Arab food systems requires increased investment in agriculture and water sectors. Rainfed farmers, who produce most of the region's food, struggle with poverty and lack access to advanced technologies, leading to inefficient resource management. Investment in rainfed systems is significantly lower (under 15 per cent of that for irrigated systems) despite their higher returns when rainfall risks are managed. Meanwhile, water sector financing is inadequate, with a pressing need for \$127.46 billion to address wastewater treatment, desalination, water harvesting, irrigation, and climate-related water shortages. Inefficient water management and high operation costs further deter investments. With climate change exacerbating pressures on agriculture and water, the region must integrate climate considerations into infrastructure, preparedness, and national development planning to enhance food system resilience and enhance levels of food and water security.

**Climate finance for Arab food systems<sup>3</sup>**

To enhance food and water security, it is crucial to undertake projects that demonstrate tangible climate adaptation or mitigation outcomes in food systems. This can be achieved by integrating climate resilience into daily operations, addressing climate risks, and reducing vulnerabilities. Securing additional climate finance for food systems is not only necessary to meet immediate needs but also to ensure the long-term sustainability of resources. Increased investment in transforming Arab food systems will lead to more resilient food systems, better water management, and, ultimately, improved food and water security in the face of growing climate challenges.

Looking at the Arab region it can be observed that overall, in the years between 2010 – 2022, food systems in the Arab region received financing amounting to about \$8 billion for both adaptation and mitigation purpose. More than 80 per cent of the climate-related financing allocated towards the food systems are for adaptation purposes with the financing received in 2022 doubling the annual financing received of previous years (Figure 3).

**Figure 3: Climate-related finance for the food systems by purpose**



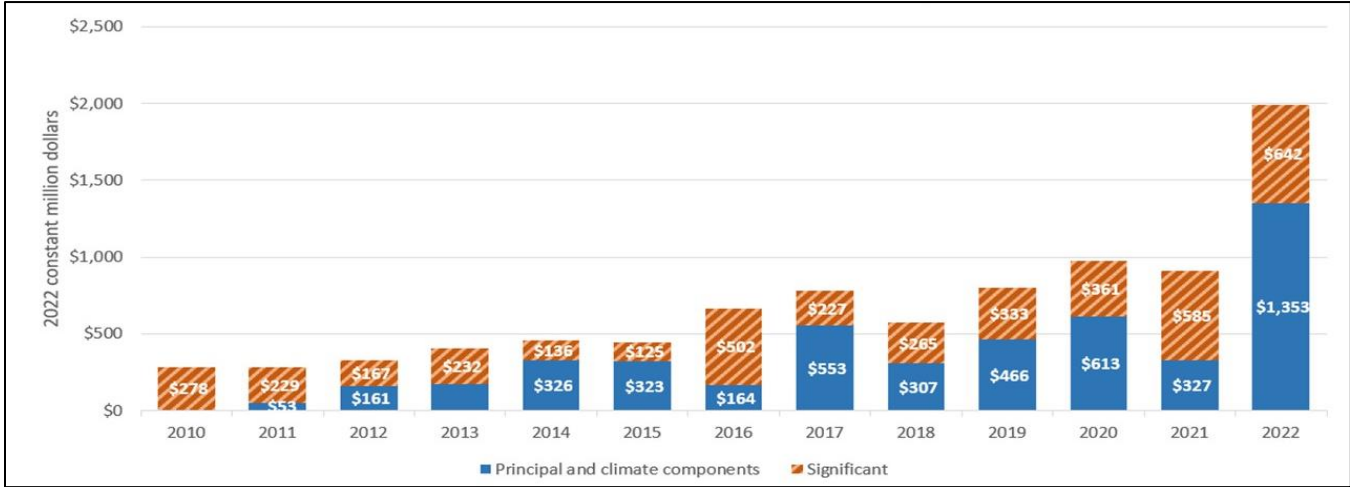
Source: Compiled by ESCWA from OECD database

The Rio markers for climate financing differentiate flows that are “principal,” i.e., projects with climate or environmental consideration as prime objectives, and those that are “significant,” i.e., projects with prime objectives other than climate while multilateral organization refer to “climate component” to designate projects

<sup>3</sup> Specific data was obtained through the FAOSTAT and the WDI database as well as the OECD database on climate-related development financing.

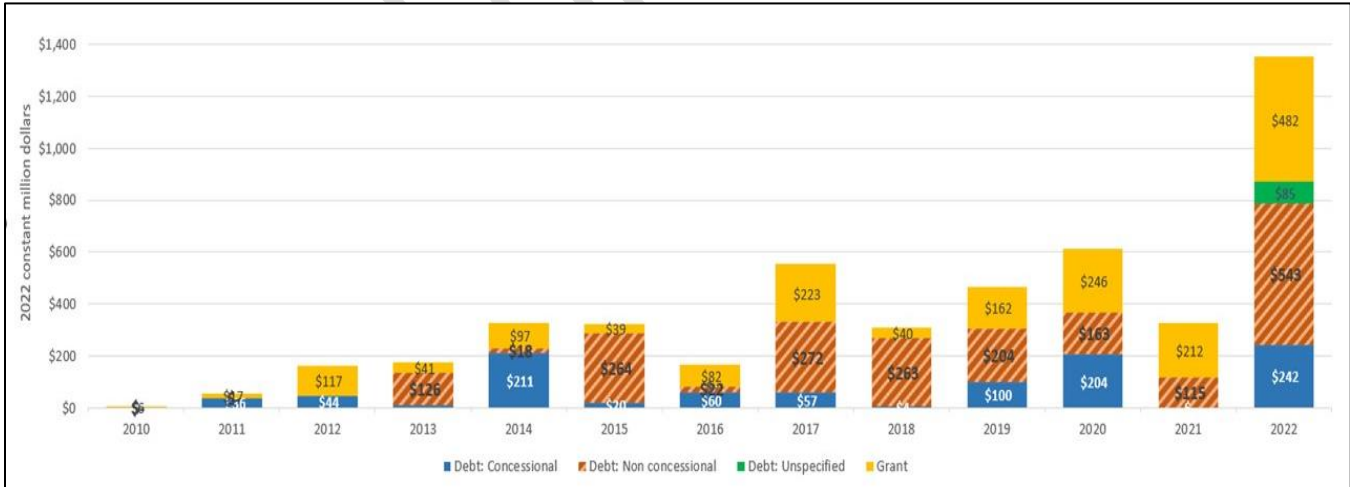
receiving climate financing. Project with both a principal objective and climate components received about 20 per cent more financing than projects with a significant objective between 2010-2022 (Figure 4). Though in some years such as 2016 or 2021, the financing dedicated to projects with a significant objective dwarfed those with a principal and climate component objective, though there is no apparent trend in the provision of those funds.

**Figure 4: Climate-related finance for food systems by climate objective**



Food systems climate-related financing relied more on debt than grants though some of the debt was on a concessional basis (Figure 5). Since 2019, there has been a significant increase in grants-based climate financing with a noticeable surge in 2022 when about a third of the climate financing for food systems was provided as grants and another third on concessional debt.

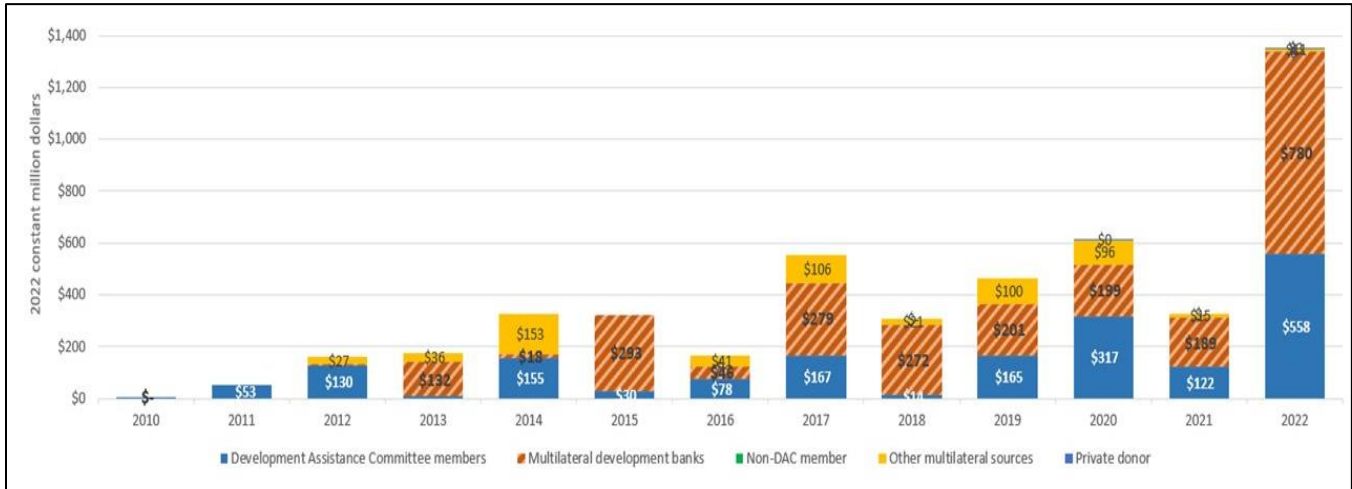
**Figure 5: Climate-related finance for food systems by financing instrument**



Source: Compiled by ESCWA from OECD database

Climate-related development finance for the food systems in the Arab region was largely provided by multilateral development banks (Figure 6). Development Assistance Committee (DAC) members provided about half of the financing compared to multilateral banks.

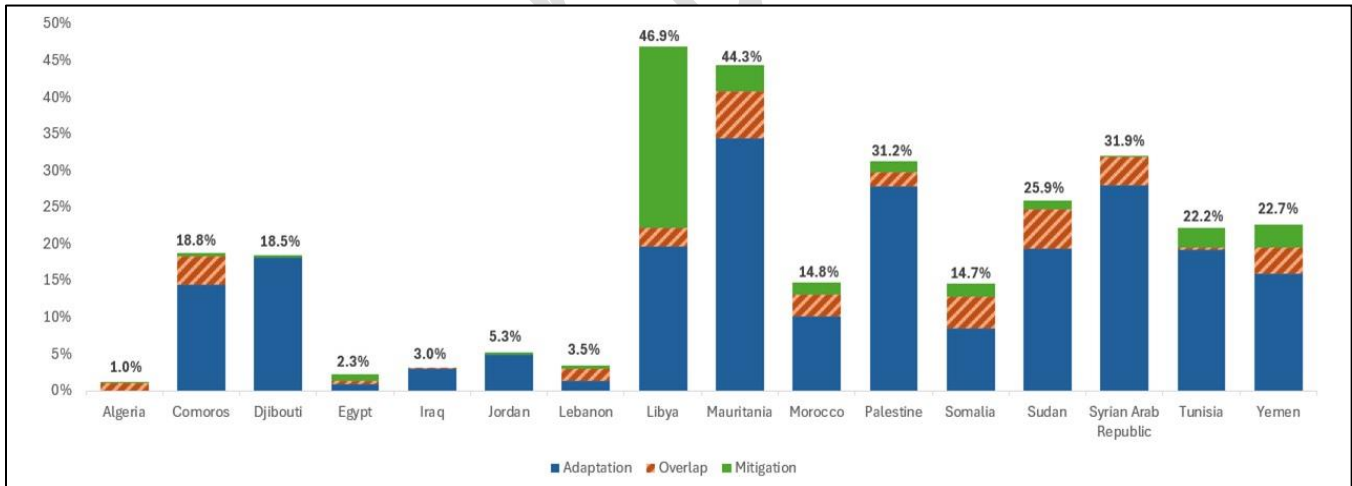
**Figure 6: Climate finance towards food systems by provider type**



Source: Compiled by ESCWA from OECD database

There is a great disparity among countries when it comes to climate-related financing towards the food system out of all climate-related financing at country level. Libya and Mauritania received the highest percentages (46.9% and 44.3% respectively), of the available funds for the Arab region. Other countries, such as Algeria, Egypt, Iraq, and Lebanon, received less than 5%. Countries like Palestine (31.2%), Syria (31.9%), and Sudan (25.9%) received funds moderately.

**Figure 7: Portion of climate finance devoted to food systems out of all climate finance by country**



Source: Compiled by ESCWA from OECD database

To conclude, international climate finance offers a valuable opportunity to channel essential funding into food systems including irrigation sector, helping to bridge the financing gap they often face due to low prioritization by traditional investors. To increase the flow of resources, it is essential to actively promote projects for transforming Arab food systems by clearly highlighting the benefits of investing in them for both climate adaptation and mitigation. This will encourage a broader range of investments and contribute to improving food and water security. Figures for water sector financing, including irrigation are available in Annex 1.

## Recommendations

The Arab region's food systems face significant challenges, impacting food security, nutrition, and overall sustainability. To address these issues, an integrated and holistic approach is necessary, recognizing the interconnectedness of agriculture and water sectors within broader economic, social, and political systems. Climate financing plays an essential role by providing the necessary resources to address these multifaceted issues.

Targeted investments in food systems can support the development of adaptive agricultural practices, improve water management, and reinforce overall system resilience. By directing funds towards initiatives that increase resilience to climate variability and extreme weather events, climate finance can support immediate needs and raise long-term adaptation and sustainability. The following recommendations and actionable measures are proposed to improve Arab food systems resilience, and addressing the complex challenges facing the Arab region's food systems:

### 1. Foster Inclusivity and Collaboration in the Water and Agricultural Systems

- Enhance Governance: Ensure governance and decision-making processes incorporate diverse stakeholder perspectives, aligning decisions with stakeholder priorities for effective implementation.
- Build Capacity: Strengthen the capacity of stakeholders to adapt and learn throughout the implementation process, promoting cross-sectoral learning and adaptation.
- Adopt a Long-Term Vision: Implement a long-term approach that considers the complexities of the food system, allowing adequate investment of time and resources for sustainable change.
- Encourage Multi-Disciplinary Collaboration: Promote collaboration through multi-disciplinary teams that integrate technical, managerial, and political expertise across agriculture, water, environment, and other relevant sectors.
- Establish Collaborative Platforms: Create platforms for regular dialogue, community engagement and collaboration between diverse stakeholders, including government, private sector, and civil society, to align efforts and share best practices.

### 2. Enhance Climate Financing for Food Systems

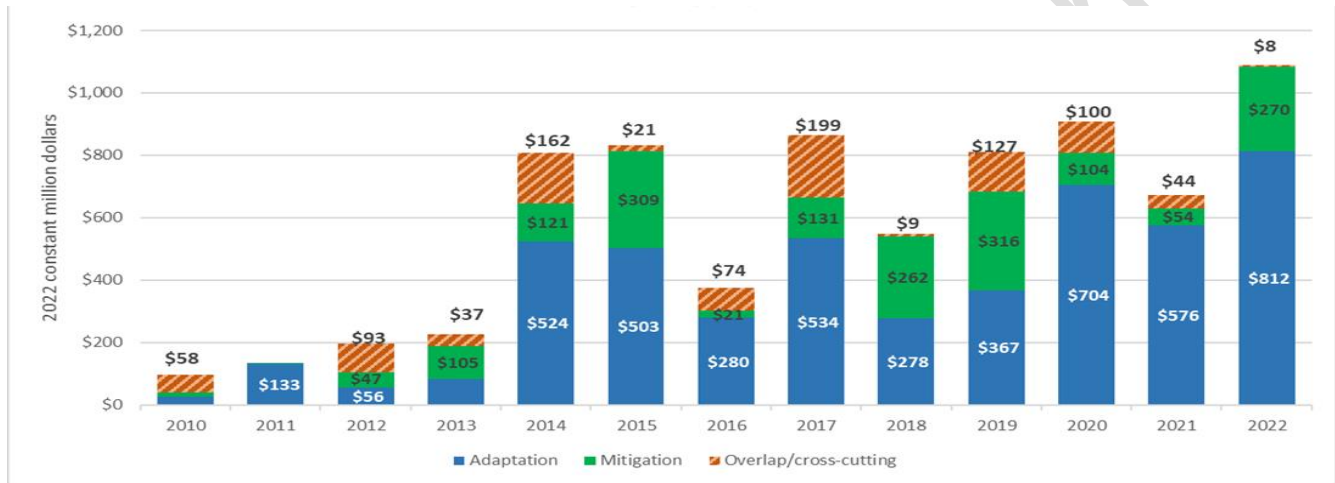
- Context-Specific Financing Strategies: Develop financing strategies tailored to national and local contexts to attract both public and private investments, focusing on sectors most affected by climate change.
- Policy and Regulatory Reforms: Implement policies and regulatory reforms to enhance climate finance readiness and attractiveness, aligning with national development goals.
- Detailed Project Proposals: Create comprehensive, needs-focused project proposals that clearly outline benefits and risks, making them more appealing to potential donors.
- Engage International and Private Sector Actors: Strengthen engagement with international and private sector actors through improved accountability, inclusion, and adaptable monitoring approaches.
- Improve Data and Indicators: Enhance data availability and access and develop adaptable project proposals with measurable indicators to attract funding and showcase best practices.



## ANNEX 1: Climate finance flows to the water sector in the Arab region<sup>4</sup>

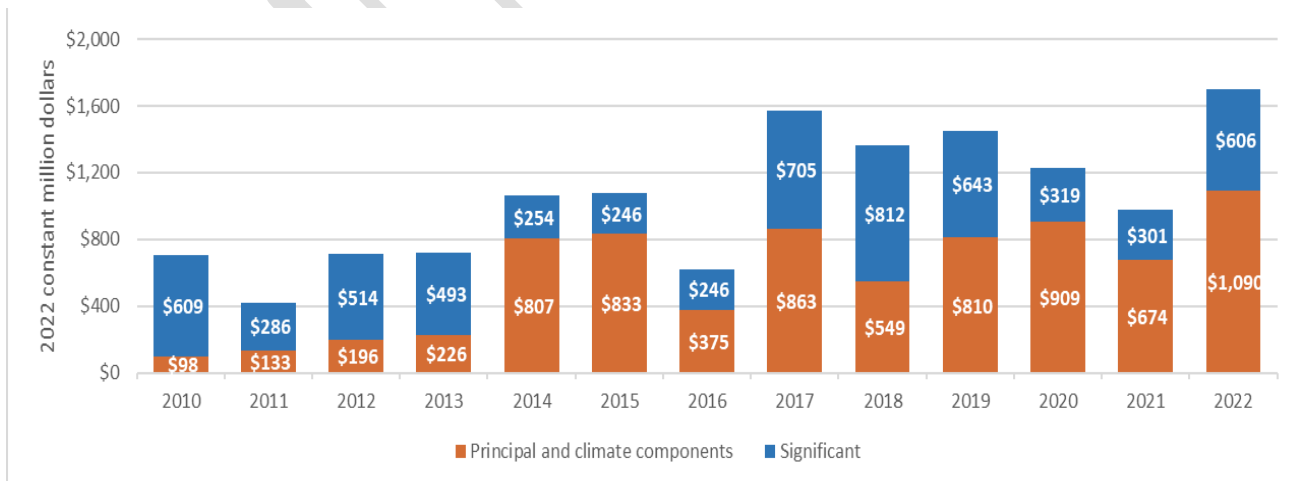
The water sector of the Arab region received about a billion dollar in climate finance per year since 2014 with dips in 2016, 2018 and 2023 (Figure 8). Most of the funds were for adaptation projects. The financing for the water sector includes projects on wastewater treatment, desalination, water harvesting and irrigation, early warning systems as well as for reducing climate-induced water shortages for vulnerable communities and the agriculture sector.

Figure 8: Climate-related finance for the water sector by purpose



Over the period 2010–2021, financing with a significant or principal climate objective for the water sector and agricultural water resources amounted to a combined \$14.3 billion (Figure 9). While water financing with climate as a significant objective initially exceeded financing with a principal climate objective by a factor of more than double, the share of water-related financial commitments with a principal objective has remained constant since 2014 and represents about two-third of the climate financing.

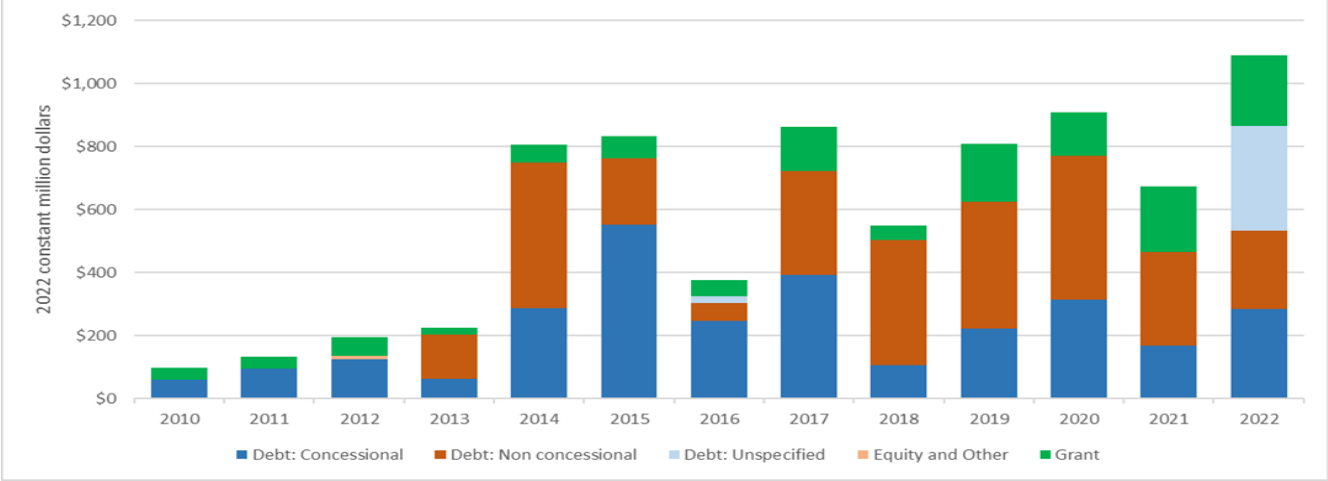
Figure 9: Climate-related finance for the water sector by climate objective



<sup>4</sup> Extracted from “[Climate finance for water in the Arab region](#)”, E/ESCWA/CL1.CCS/2023/Policy brief.3

Despite growing debt burden in the Arab region, climate financing for water is primarily debt based reaching up to 80 per cent since 2010 though there were a few fluctuations in selected years (Figure 10). The type of debt oscillated between concessional and not concessional with a slight dominance of non-concessional financing. The share of concessional debt in total debt financing has represented about 50 per cent of all debts since 2017.

**Figure 10: Climate-related finance for the water sector by financing instrument**



Providers of water-related climate finance are mainly Development Assistance Committee (DAC) and multilateral development banks notably since 2014 (Figure 11). More than 50 per cent of all climate finance for the water sector came from DAC members.

**Figure 11: Climate finance for the water sector by provider type**

