Food and Agriculture Organization of the United Nations

Land and Water Governance to achieve the SDGs in Fragile Systems

Background paper prepared for the Plenary Session on Land and Water Governance

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Executive summary

This background paper proposes a general overview of the current situation of land and water governance in the NENA region, the connection with fragile systems, and the main challenges and opportunities in addressing land and water governance challenges. Given the complexity of the issues at hand, the list of topics covered is non-exhaustive, but bring light on the main topics of concern and their ramifications. The paper intends to demonstrate how land and water governance can help to reduce fragility, improve resilience and even assist in conflict resolution in the NENA region.

The NENA Region is facing complex challenges, which increase the fragility in the area. Although fragile systems are a result of many competing factors, water scarcity and land degradation are among the more serious risks that threat to sustainable development in the region. Population growth, climate change and conflict in the region form leading issues that contribute to the fragile environment. Efforts to strengthen land and water governance are fundamental to improve resilience in the region.

The Sustainable Development Goals (SDGs) are constructive allies for tackling fragility through improved land and water governance. As interconnected goals, SDG 6 (water and sanitation), 2 (food) and 15 (land) are especially relevant. These three goals represent the land, water and food nexus, with all three subjects closely linked such that a positive or negative dimension in one issue will be reflected in the other two. Thus, successful governance methods will entail dealing with this sensitive interrelation and complexity between land, water and food.

The concepts of land and water tenure have gained traction in the last decade as the growing urgency to improve land and water governance becomes evident. In the NENA region, the application of the voluntary guidelines on the responsible governance of tenure of land, fisheries and forests, as well as the development of the water tenure´s concept provides the bases to promote Integrate Water Resources Management, ensuring sustainability, and water security. The implementation of International conventions and specially the principles of international water law are essential to improve the management of natural resource. Groundwater is an overexploited source, which requires special attention in order to achieve the sustainable use and development of it. Adequate water governance plays a pivotal role in strengthening sustainability and cooperation and decreasing fragility in the NENA region.

Policymakers should rely on the support of international and regional frameworks to achieve better governance. The Rio Conventions, the 1997 Convention on the Law of the Uses of Non-Navigational Use of Transboundary Watercourses, and the 1992 UNECE Convention as international instruments in force, and the OECD Principles on Water Governance as guidelines, are some examples of tools that can facilitate land and water governance and assist countries in achieving the SDGs. However, policies may not always align with the long-term goal of improved governance and sustainable development. In the water sector it is not uncommon to have conflicting external and internal needs. Thus, it is crucial to keep in mind the importance of balancing competing needs and inter-sectoral policy coherence.

Acronyms

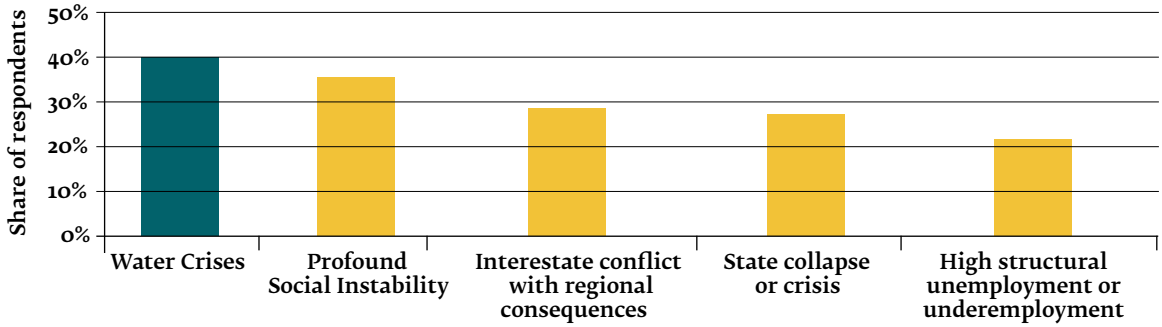
CBD	Convention on Biological Diversity
FAO	United Nations Food and Agricultural Organization
GDP	Gross Domestic Product
ITPS	Intergovernmental Technical Panel on Soils
MDGs	Millennium Development Goals
NENA	Near East and North Africa
OECD	Organisation for Economic Co-operation and Development
SDGs	Sustainable Development Goals
UNCBD	United Nations Convention on Biodiversity
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nation Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
WEF	World Economic Forum
WSI	Water Scarcity Initiative

1. Introduction

1.1. NENA Region defining features and regional challenges

Countries in the Near East and North Africa (NENA) region include Algeria, Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, United Arab Emirates and Yemen. Each nation faces similar challenges to achieving adequate land and water governance, food security and inclusive agricultural development (1). The Food and Agriculture Organization (FAO) points to persistent high rates of population growth, urbanization and declining food production as the main obstacles in the region.

Main Global Risks for which the Middle East and North Africa Region is Least Prepared (%)

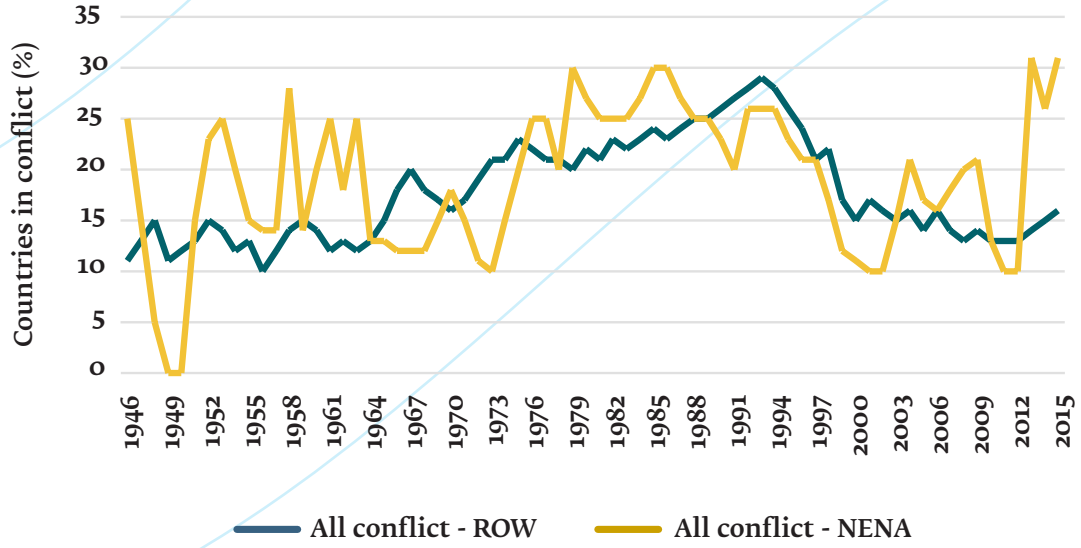


Source: FAO, 2015

Countries in the NENA region have been facing a continuous increase in the fragility of their natural and social environments. The concept of fragility has many different facets, including armed conflict, migration, political instability, weak economy and natural resource scarcity. Socio-political instability has grown in the region over the past decade as several countries in the region have experienced political turmoil. Governments have, therefore, needed to prioritize security concerns over investment in sustainable development.

Violence and political instability in a number of countries in the region cause citizens to lose trust in state institutions and policies, including those related to efficient management of land and water resources. The belief, by the general population, that the government is failing to provide basic services, can foster instability. Nonetheless, fragility is not exclusive to regions affected by armed conflict; it is a result of different risk factors including violence, conflict and chronic underdevelopment.

Frequency of civil conflict in the NENA region and in the rest of the world (ROW), 1946-2015



Source: FAO, 2017

In order to minimize the impacts of fragility, the region must continue along its path to achieve the SDGs by using land and water governance as tool for empowerment. The effects of water shortages, land degradation and food insecurity are intensified by deficient land and water management and increase in the demand for natural resources, triggered by population growth and urbanization. Land and water governance play a vital role in managing natural resources in fragile countries. Good governance can provide a means to avoid additional stress to further aggravate socio-economic conditions and increase risk of conflict. It can also serve as a measure to alleviate current grievances.

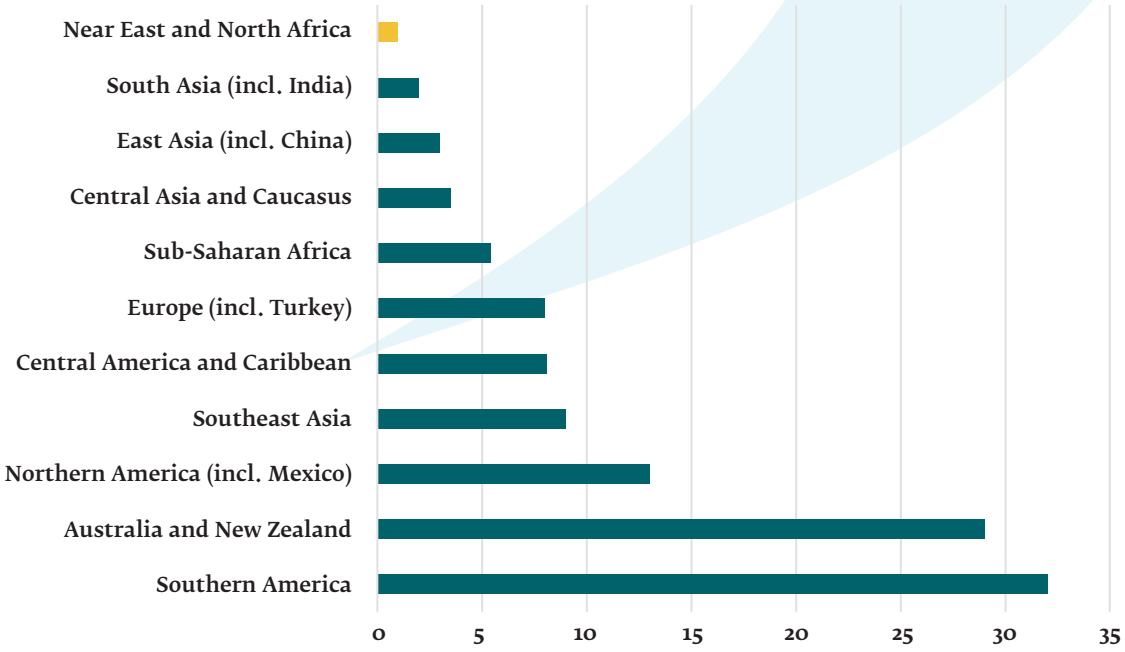
Although the problems in the region are complex, there are tools available that can help the NENA region to improve land and water governance. SDGs have potential to vastly improve the standard of living in the region by strengthening land and water governance. The nexus between food, water and land found in SDG 2 (food), SDG 6 (water) and SDG 15 (land) are of particular relevance for the NENA region. Governance tools and specific international conventions, such as the Rio Conventions, can have a positive impact on land and water governance, if effectively implemented.

1.1.1. Water scarcity (drivers and impacts)

The NENA region has one of the lowest levels of freshwater availability in the world and, in the last 40 years fresh water resources have decreased by two thirds. A further 50 percent fall is expected in the next thirty years. In addition, 90 percent of the region is classified as arid, semi-arid or dry areas and 85 percent of the available water is used by agriculture; while agriculture contributes an average of 13 percent to the regional GDP, providing jobs and income for 38 percent of the economically active population in the region. The region has a highly variable arid to hyper-arid climate, which is being unpredictably altered by climate

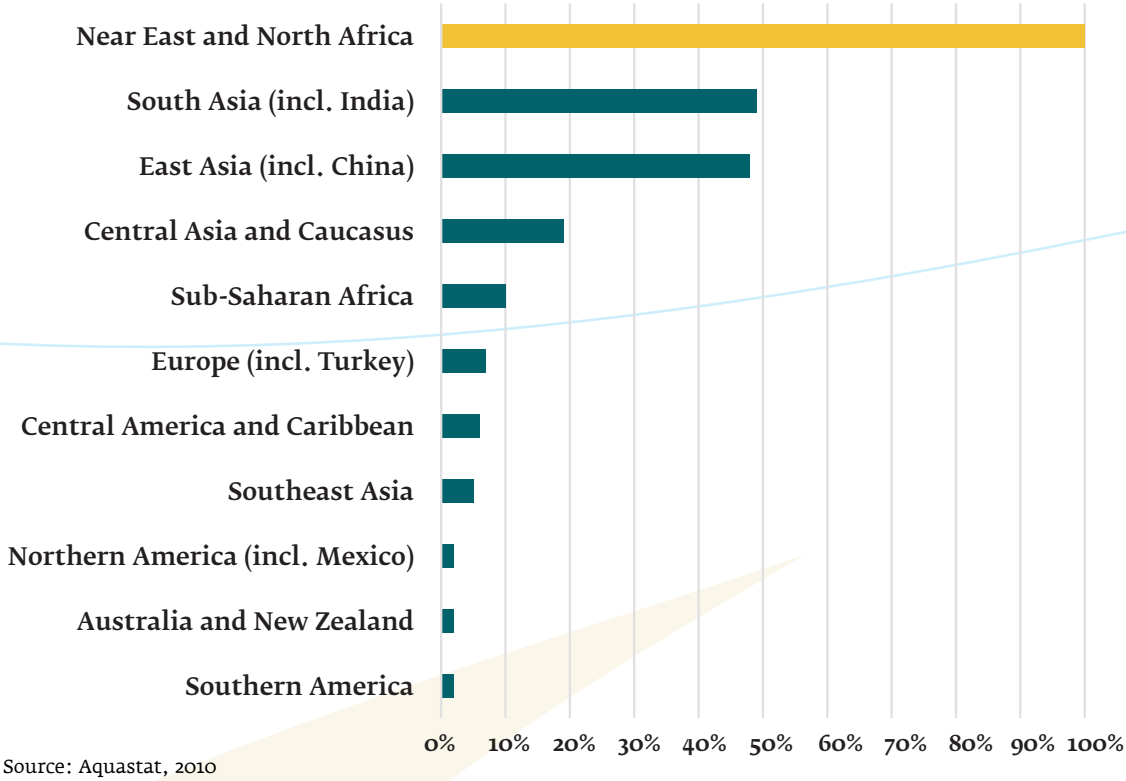
change. These weather variations pose new risks to water sources and vulnerability to those who depend on climate patterns.

Renewable water resource per capita, 2013



Source: Aquastat, 2013

Percentage of renewable freshwater resources withdrawn, around 2010

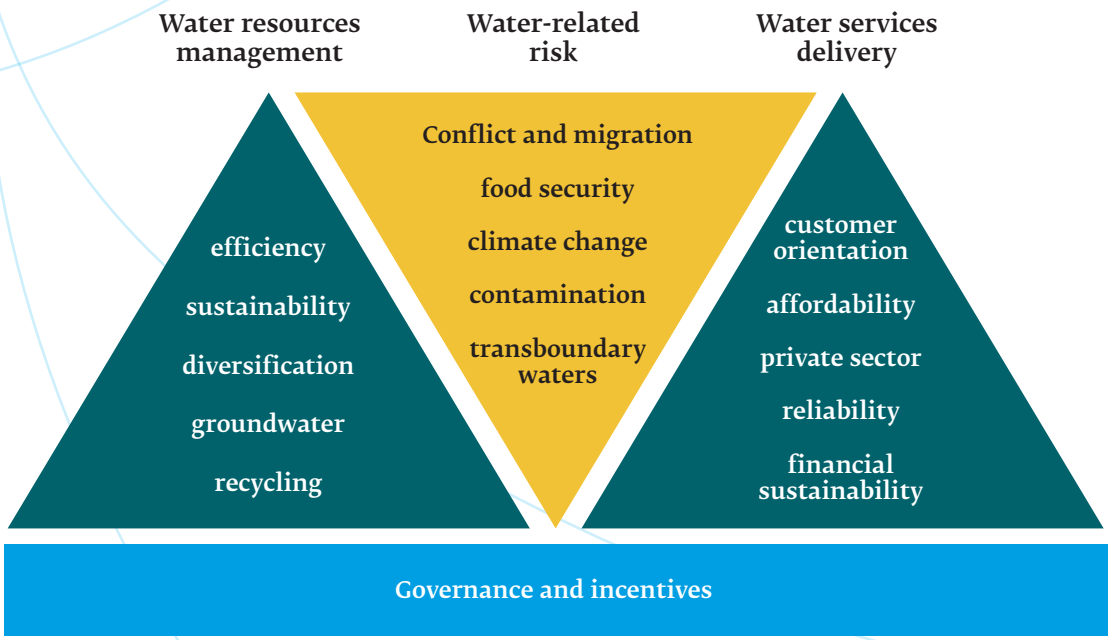


Source: Aquastat, 2010

Water scarcity is defined by a lack of balance between supply and demand; as this relationship remains uneven, the threats to the region grow. On the supply side of the problem, low water availability and high climate instability are increasing water scarcity. Simultaneously, on the demand side, the continuously increasing need for water is intensifying scarcity, especially in sectors like industry and manufacturing.

The World Economic Forum 2015 Global Risks Report rates water crises as the highest risk in the NENA Region (5). Water scarcity is already common in the region and current predictions point to further deterioration. This could exacerbate fragility as 70 percent of the region's poor live in rural areas and are mainly reliant upon agriculture for their livelihoods. Small-scale farmers supply around 80 percent of the region's agricultural production and their ability to produce is directly correlated with the food security of the region.

Governance and incentives to seize emerging opportunities in water resources management and water services delivery and to mitigate water-related risks



Source: World Bank, 2018

Climate change is a significant variant in the balance between supply and demand. Even though the degree of impacts and variations differ among countries, the NENA region is highly vulnerable to climate change. The most evident concerns are the rise in temperatures with increased instances of heat waves, less and unpredictable precipitation and more extreme storms. Secondary effects consist of more frequent and intense droughts, floods and seawater invasion into coastal aquifers as ocean levels rise. These changes exacerbate the already critical water scarcity, increase levels of aridity and intensify the impacts from extreme weather events.

Jordan is considered one of the most water scarce countries in the world with an estimated renewable water resources of 148 m³ per capita per year. Population is expected to further increase due to natural growth, immigration and refugees; while the percentage of cultivated land has increased by 10% in less than 20 years. Irrigation intensification has fully relied on often unsustainable groundwater abstraction.

In Jordan, water harvesting is used as a way to capture water that otherwise would have evaporated. The surface water collected is distributed to rural communities and serves as a source of groundwater recharge through percolation and seepage. It has been assessed that there are 250 existing water harvesting structures in Jordan. Harvested water collects in small dams, with small contributions from ponds and pools. The use of these dams is for irrigation and ponds and pools are used for both irrigation and livestock. Moreover, conjunctive use of groundwater and surface water has been also developed as a strategy against groundwater over-exploitation (8).

The policy is to reduce the use of groundwater in the agriculture. In the developing groundwater policies, the main objectives refer to managing supply and increasing the availability of groundwater; controlling the number/expansion of wells and the reduction in abstraction by existing wells (9).

Due to the dependence of NENA countries on agriculture, climate change may pose an even bigger threat when compared to other areas of the world. Access to water is the foundation of success for agricultural in the region. Climate change will cause a decrease in soil moisture and river flows, while evaporation will increase because of warmer temperatures. Because of a hotter climate, crops and the local population will demand more water for their survival.

The NENA Region faces a need for increased food production with less water resources. The rural economy in the region will struggle to grow or even maintain the level of production, causing a negative impact on the income of the population and food security. To counter these negative consequences, agriculture needs to become more resilient and water efficient (6).

Policies are key tools to address the issues laid out above and should be used by governments to mitigate water scarcity. Presently, in the NENA region, the lack of institutional response towards adequate water governance is a factor that can add stress to the fragile context.

1.1.2. Land degradation

Land degradation and water scarcity are two critical concerns in the NENA region that go hand in hand, because of the symbiotic relationship between land and water. The triggers of these two issues, as well as their consequences are similar, for example, population growth poses stress on natural resources, causing land degradation, reducing water supply,

and decreasing biodiversity. Like lack of water, poor land management has a severe impact on agricultural productivity and food security.

Increasing soil organic carbon by improved land management techniques can raise food production by 17.6 MT per year and help maintain productivity in drier conditions (12).

The NENA region is almost completely composed of hyper-arid and semi-arid land and faces climatic challenges like aridity, recurrent drought and desertification, the latter of which is partially human-provoked (10). Deserts cover large parts of the national territory in the region, such as Egypt, Kuwait, Qatar and the United Arab Emirates. Even though agriculture is one of the main sources of incomes for many countries in NENA, arable land makes up only 6.8 of the total land areas of the region, while pasture uses 26 percent of the land and 7 percent is occupied by forest. The amount of arable land varies from country to country, ranging from 30 percent of the land in Syria and Lebanon, to only 0.5 percent in Saudi Arabia and Oman.

Efforts to expand agriculture, with no adequate land governance, has caused further harm and exacerbated water erosion and soil degradation. In addition, extreme climate conditions, overgrazing, inappropriate cropping patterns and salt concentration have transformed large plots of land into unproductive areas. Degradation of rainfed cropland is pronounced

Algeria is an example of a country facing increasing demand for agriculture products. This is directly connected to population growth and rising standards of living in parallel with land and water constraints. Since 1962, Algeria has applied land policies, which provided the transformation of 17 000 former colonial farms into 2 200 'self-managed' estates with an average of 1 000 hectares. The estates employed 250 000 permanent farm workers and over 100 000 seasonal workers. Although, Algeria has increased support to agriculture, the food deficit has also increased due to a population boom. Increasing urban demand, particularly for fresh produce (fruits and vegetables, meat) and the rehabilitation of private initiatives from the 1980s, favoured the emergence of small agricultural entrepreneurs who accessed land mainly by leasing. This dynamic is mainly observed at the agricultural frontier in arid areas. The exploitation of the high (but mostly non-renewable) water potential of the Saharan aquifers through irrigation and encouraging agricultural entrepreneurship, is seen by policymakers as a solution to land shortages and other agricultural constraints in the northern regions.

The overall picture of the implementation of land development policy in arid regions is mixed. The areas effectively developed are relatively limited and their contribution to so-called strategic agricultural productions (wheat first and foremost) remains marginal. This shows the limits of a model consisting in the development of irrigated perimeters allocated to beneficiaries who generally lack the technical and economic resources required for an ex nihilo development of intensive agriculture in arid regions. Further integration and management of land and water resources is needed in order to create agriculture entrepreneurs (11).

in the North Africa region, whereas the eastern sub region, composed of Iraq, Jordan, and Syria, is mostly affected by land degradation.

Land degradation can affect surrounding areas, with degradation in rangelands, where there is little rain, negatively impacting resources of adjacent farming areas. How the local agricultural communities use water varies widely, but the main problem in the NENA region is still the lack of appropriate policies and water costs and centralized management systems which are not water efficient. Several efforts have been made in the region to tackle the root cause of land degradation, but major challenges exist in enforcing environmental regulations and implementing conservation policies. The main implementation constraints are: the weakness of institutions at all levels; the difficulty of coordinating action across sectors, themes, donors and stakeholders; the lack of participation of the local communities; and tenure insecurity.

1.2. Fragility and the integral role of land and water governance

Land and water governance can help to reduce risks in fragile systems. Priority should be given to reforming governance institutions and mitigating institutional weaknesses and social inequality. Institutions in the land and water sector should aim to improve accountability, build stronger regulations, strengthen public participation and reinforce investments in countries where governance and institutions are already established. The aim is to develop efficient policies and continuous strengthening of governance institutions. More importantly, land and water reform should include public participation, welcoming those who are marginalized such as women and young people. As such the bond between citizens and the institutions who serve them will be more stable and legitimate.

A large part of the water resources in the NENA region is transboundary. Around 60 percent of surface water in the NENA flows across boundaries within the region or reaching countries in the Middle East region. Even though the region has a history of shared water management, there is still a lack of cooperation management of transboundary water. The absence of an agreement on transboundary water resources has serious consequences on livelihoods and ecosystems, for example, by increasing the desiccation of the Mesopotamian marshes. Moreover, it has caused tensions between the countries in the region. Cooperation over transboundary water resources is particularly complex in regions experiencing impacts of fragility.

A river basin approach can help to address a fragile environment, as it offers the opportunity to adopt inclusive, participatory approaches at a local level, which will culminate in a stronger sense of ownership, equality and trust. Additionally, building a cohesive community around reliable institutions should involve a bottom-up approach, promoting stakeholder engagement, decentralisation and subsidiarity. It follows that water scarcity in agriculture is better managed by empowering water-user associations and water management institutions to feel responsible for including the local community in decision-making processes.

Transboundary river basin arrangements on the Tigris-Euphrates have evolved over time, depending on power dynamics and affected by conflict and fragility. Turkey, Syria and Iraq, have begun utilizing the shared water resources under conditions of complex interdependence. Crises have occurred frequently among riparian countries due to the lack of regularized consultation mechanisms and the isolated, country-led planning of infrastructural investments on shared waters.

Research shows the evolution in transboundary politics in the basin over four periods. The first period (1920s-1950s) coincided with nation building in the region, when the riparian states focused on their domestic need for socioeconomic development rather than the formulation of external water policies. The second period (1960s-1980s), saw increased competitive trans-boundary water politics shaped by the initiation of uncoordinated, large-scale water development projects. The third period was the most complex (1980s-1990s), given the link between transboundary water issues and non-riparian security issues. In the fourth period (1990-present), the role of water bureaucracies in the re-orientation of water policies from hostile to cooperative became significant.

Even in the midst of frequent crises, tensions and conflict, partial institutionalization of water cooperation and growing networks of water dialogue at both the governmental and non-governmental levels continue to serve as open channels for easing existing tensions. At the same time, the problem of deteriorating political relations in the region may have a counter effect on the development of transboundary water cooperation. In this fragile context, water diplomacy can set in place joint initiatives (e.g. for data collection and sharing) and dialogues and planning platforms (including issues related to salinization, groundwater management, agricultural development and other pressing issues) to sustainably bring together stakeholders towards the rehabilitation and reconstruction of sustainable water management systems and peaceful cooperation.

Egypt is a water scarce country: about 850 m^3/year of water per capita are currently being used and these are expected to drop to 600 m^3/per capita/year by 2025. Because water resources are limited, the Government of Egypt has recognized the need to establish organizations to improve the effectiveness of water management, as well as cost recovery mechanisms.

Egypt has promoted the participation of civil society through the development of Water Users Associations (WUAs). Capacity Building of WUAs is a crucial element in the governance of water resources. Participation and capacity strategies have been prepared to ensure the involvement of stakeholders in water resources management. The development of WUAs requires technical improvements, especially in the distribution of water and application of land levelling; management improvements such as training of staff, organizational set-up; automation of data collection and processing, as well as institutional reform including decentralization, user participation, and privatization.

2. Land and water governance in overcoming challenges and realising the SDGs

The 2030 Agenda for Sustainable Development was announced by the UN in 2015, inaugurating the 17 Sustainable Development Goals (SDGs), which urge countries to end poverty, improve health and education, reduce inequalities and spur economic growth. Moreover, the implementation of the SDGs has the potential to improve management of land and water resources.

In the context of fragile systems, like those in the NENA region, the SDGs can offer a plan of action. The SDGs can facilitate the recovery process in fragile context by helping to re-establish basic services. The SDGs should be part of long-term solutions to improve land and water governance in the region.

A key characteristic of the goals is that they are all interconnected; however, in relation to land and water governance, there is a crucial nexus to consider between SDG 2 (food), SDG 6 (water) and SDG 15 (land). The SDGs should be viewed as an opportunity to improve governance efforts and provide a more holistic approach to water and land services. However, there are specific targets within each goal that are a priority (13).

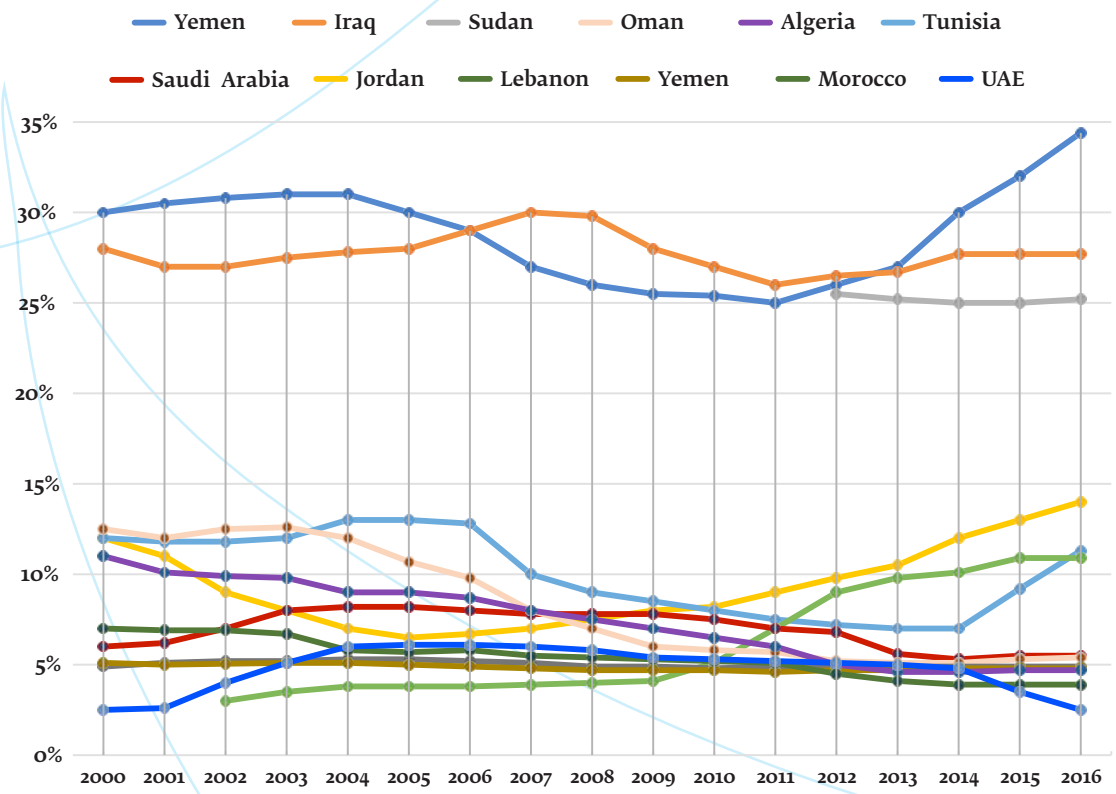
- SDG 6 addresses the ability to provide water for food production through water efficiency (target 6.4);
- SDG 15 supports better soil management by reducing land degradation (target 15.3).
- SDG 2 strives for universal access to safe food, ensuring sustainable food production and achieving food security (targets 2.1, 2.5 and 2.4) (14).

While governance is essential to achieving the SDG outcomes, it is unclear how it can be integrated into the SDGs. The UN High Level Panel of Eminent Persons argued that governance is best positioned as a stand-alone goal that would help accomplish "a fundamental shift—to recognize peace and good governance as core elements of wellbeing, not optional extras" (15). An alternative, though not mutually exclusive approach, is to integrate governance into issue-specific goals for water, food, gender, and so forth (16). The SDGs should be viewed as an opportunity to improve governance efforts and provide a more holistic approach to water and land services. SDG 6.2, for example, goes beyond focusing only on access and highlights the importance of quality of access to sanitation and hygiene for vulnerable groups, especially women and girls.

2.1. Regional progress in sustainable development

The ongoing conflicts in areas of the NENA region have overturned some of the achievements linked to the Millennium Development Goals (MDGs) and stalled progress toward the SDGs (17). In the NENA countries with fragility, the prospects for achieving SDG 2 are below optimal. The most affected countries are Syria, Yemen and Libya. It is estimated that 27.2 percent of people in these three countries are chronically hungry or undernourished. In stable countries where there is no conflict, the number drops to 4.6 percent of the population (18). In general, the NENA region has been very successful in reducing undernourishment in the past 15-20 years.

Share of people who are undernourished



Source: FAO, 2016

NENA countries have developed government policies and strategies to improve hunger, food insecurity and malnutrition (SDG 2). Policies aimed at reducing malnutrition, promoting economic growth, improving maternal and childhood nutrition and public health, increasing food supply and reducing violence, often had successful results in relation to the reduction of undernourishment and stunting (20).

The SDGs goals require a transformation in managing strategic resources such as water, land and energy according to the COP21 "Paris Climate Change Agreement" and the 'Intended Nationally Determined Contributions' (INDC). Water resources management requires a review of water, food security and energy policies; development of effective investment plans; provision of decentralization at the governance and institutional level; taking account

Bahrain as most countries in the NENA region is making important positive steps towards proper water governance. Since 1999, when the political reform took place, several aspects have contributed to improve the management of water resource in Bahrain. The governance elements included in the reform that have directly impacted in the implementation of the SDGs and the water sector are the following:

(1) Freedom of press, which has contributed to move the issue of water into the political and governmental agenda.

(2) More accountability in the water sector by the parliament, with the result of the establishment on Water Resources Council in 2009.

(3) More involvement by the public, where their elected members represent the citizens and a major participation of the civil society in policy/decision-making processes related to water.

(4) The three previous factors are expected to increase and enhance with time, especially with a stable and mature democracy in the country.

Although there is clear progress on water governance, it is required a strong groundwater authority connected to agriculture, a more decentralized institutional framework, where mechanisms allowed communities of water users to participate in decision making (21).

Integrated Water Resource Management Scoring according to SDG 6.5.1 and 6.5.2

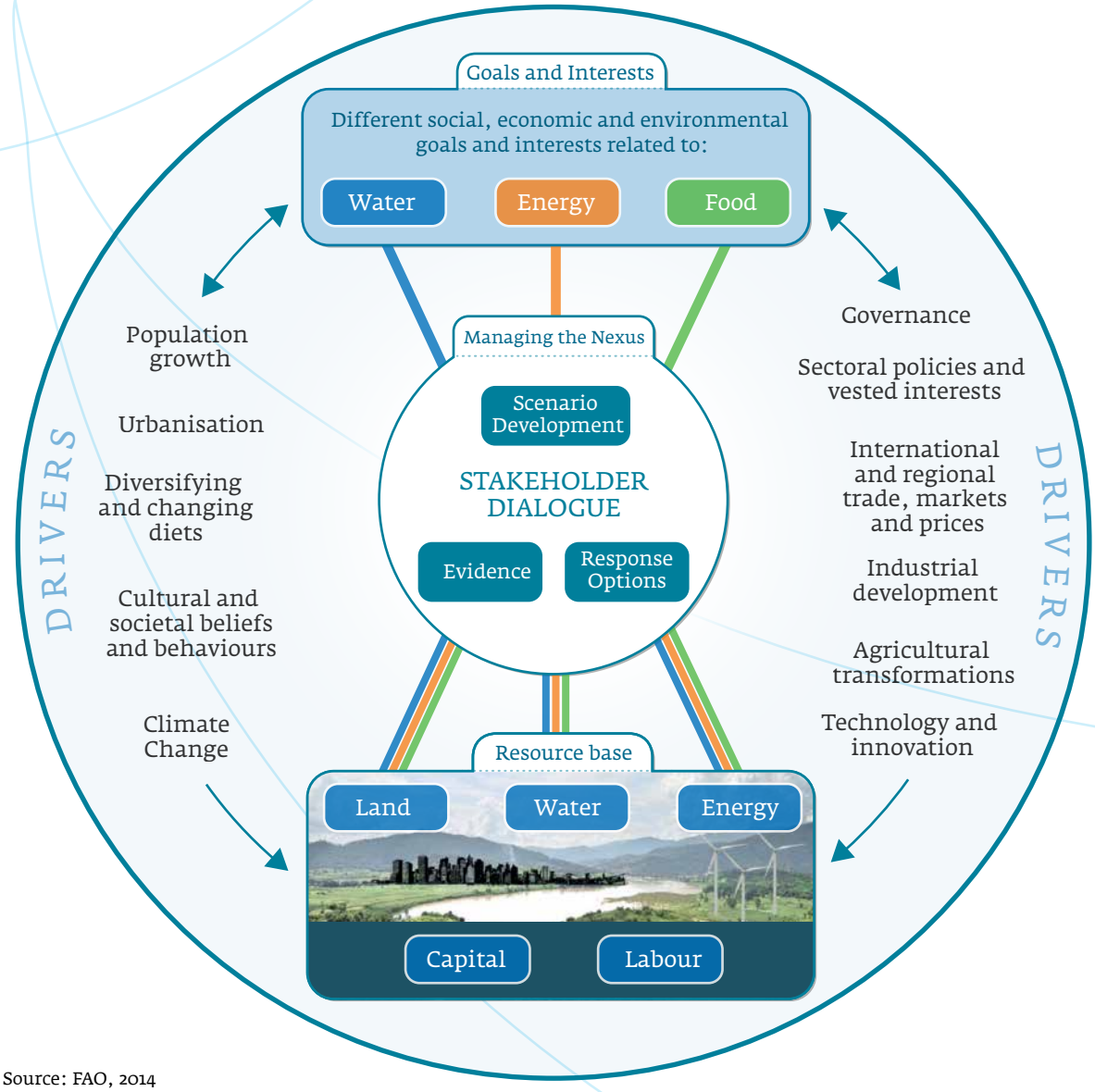
	SDG 6.5.1.					SDG 6.5.2.		
	IWRM score	Enabling environment	Institutions and participation	Management instruments	Financing	Cooperation score	River and lakes	Aquifers
Algeria	48	40	42	51	60	-	-	-
Bahrein	40	28	48	43	40	-	-	-
Egypt	40	47	42	49	24	-	-	-
Iraq	25	24	22	42	12	13.5	17.3	0
Jordan	63	68	57	70	58	21.9	61.7	13.9
Kuwait	82	84	82	80	80	-	-	-
Lebanon	32	37	40	40	12	-	-	-
Libya	47	57	45	53	32	-	-	-
Mauriatnia	45	53	51	33	44	-	-	-
Morocco	64	68	69	64	55	-	-	-
Oman	33	33	18	57	24	-	-	-
Qatar	82	55	100	89	85	-	-	-
Saudi Arabia	57	43	68	71	46	-	-	-
Syria	-	-	-	-	-	-	-	-
Tunisia	55	67	53	58	40	80.5	0	100
UAE	75	59	90	71	80	-	-	-
Yemen	39	50	51	36	20	-	-	-

Source: UN Environment and DHI Centre, 2019

of international water, on the surface and underground, as well as adopting good practices. These actions would help (i) establish the limits of water use for each sector, and (ii) use each drop of water in the best way including non-conventional water sources. A Water-Food-Energy-Climate-Ecosystem Nexus approach is essential to developing integrated policies.

The current efforts of FAO in the NENA region, regarding the implementation of the SDGs includes the development of a framework, which establishes "a robust water accounting system, implementing a series of interventions to increase water efficiency and productivity, and ensuring that higher efficiency/productivity achievements for the 2030 time horizon are attained within 'safe operational boundaries of water use' defining the conditions for 'water sustainability' and, therefore, for a sustainable, socially equitable and human-rights

The FAO approach to the Water-Energy-Food nexus



Source: FAO, 2014

based development" including gender equality. FAO aims to empower countries in the NENA region in order to achieve "technical, institutional and policy levels to implement their water sustainability, food security, renewable energy and climate resilient agenda and to achieve the SDG to 2030 within safe operational boundaries of water use."

With a specific focus on the governance of water resources, indicators 6.5.1, integrated water resources management, and indicator 6.5.2, transboundary cooperation, show insufficient progress in the NENA region. Most of the countries in the region have not yet provided an update on the successful implementation of transboundary cooperation arrangements for aquifers or river and lake basins. All NENA countries, except Syria, have provided a progress report on the implementation of Integrated Water Resources Management (IWRM) arrangements. Data shows that, while all of them have laid foundations for the implementation of IWRM, accelerated implementation should be the focus. Only Jordan, Morocco and Tunisia show an overall satisfactory level of implementation of most of the IWRM elements and are potentially able to reach the SDG target. For all other countries, the primary focus should be on removing barriers to the implementation of IWRM and implementing at the local and national level strong institutional frameworks that promote integrated water management in collaboration with all stakeholders.

To achieve successful land and water governance the nexus between land, water and food should be considered. In other words, different dimensions of water, food and land have to be equally recognised and the interdependencies of various resource uses need to be developed in a sustainable way (23). By using the nexus concept, it makes it easier to comprehend and describe the complexity and interrelation of global resource systems to accomplish social, economic and environmental objectives, including the SDGs.

2.2. Groundwater depletion and the link with unsustainable use in agriculture

Groundwater is essential for irrigated agriculture where surface water of adequate quality is not available or not sufficient. Yet, the vast majority of the world's aquifers are being overexploited and in the NENA region this is no exception. Groundwater is being depleted at an alarming rate, just as the competition for water is growing rapidly.

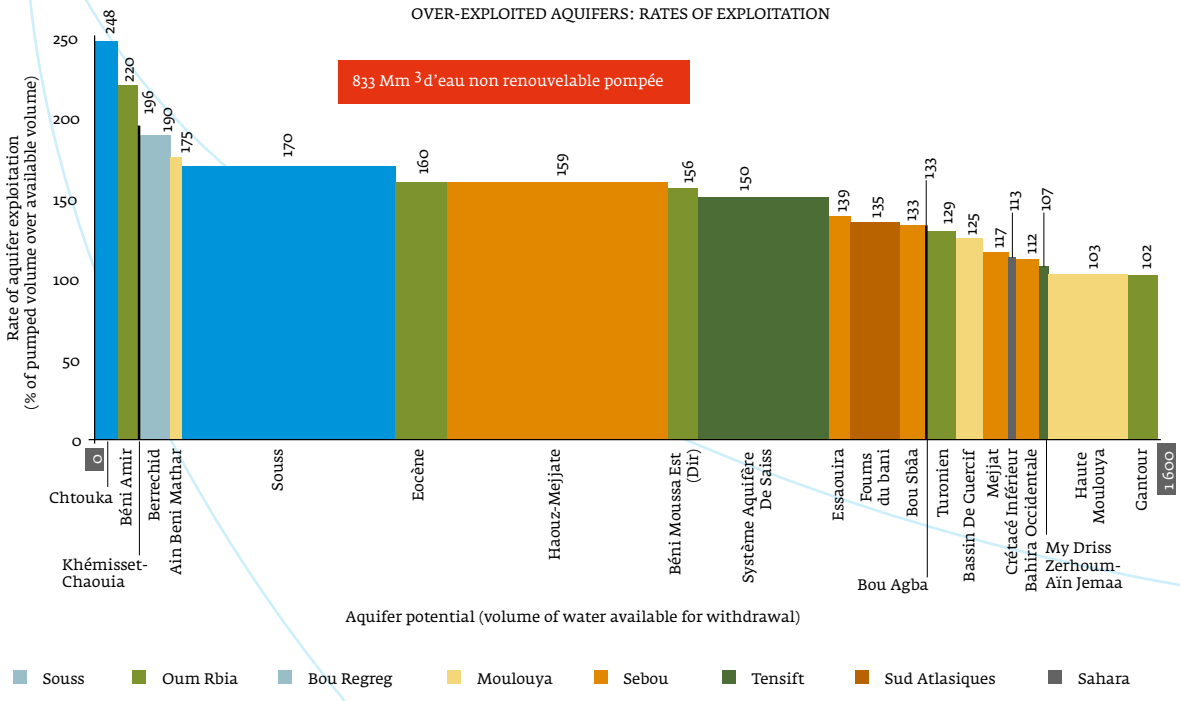
The boom of groundwater extraction happened in the 1970s, due to the arrival of the tube well and motorised pump technology, coinciding with growing demand for higher value agricultural produce from internal and external markets. Thus, groundwater has rapidly become an important source of water for agricultural purposes in the NENA region and it has allowed the growth of new agricultural economies in the Arabian Peninsula. Due to favourable government programs, cheap credit, low energy costs and lack of regulation, the use of groundwater has quickly become the norm.

However, all the countries in the region are now facing problems with groundwater depletion. The high levels of withdrawal of groundwater exposes agriculture to a vulnerable scenario with high competition for water with other sectors, exacerbated by the risks posed by climate change.

In Arab countries, water management and related institutions are relatively advanced, although groundwater regulation is generally very weak; levels of stakeholder participation vary, with large-scale irrigation remaining largely "top down", but smaller groundwater schemes – both tradition and modern – having high levels of participation

The absence of land and water governance to assist in regulating groundwater extraction has contributed to the depletion of the water sources. The rapid growth of groundwater use in an unregulated environment has proven to be difficult to control. Because of the dependence of the agricultural sector on this source, it is difficult to modify the established status quo. Equitable distribution and utilization have become an issue as powerful individuals have appropriated water rights. Also, as groundwater comes from a common pool, this has led to competition among people who are in a race against others to pump water, which is more apt to lead to excess pumping. With no incentives to preserve the resources, water quality has deteriorated, and saline intrusion has become more frequent.

Morocco - Annual Renewable Groundwater Potential and Current Withdrawal Rates



Source: FAO, 2018

Morocco has contributed to the advent of new models of government, promoting "groundwater contracts," which intend to regulate the use of groundwater in the same aquifer, especially protecting the aquifer from overexploitation and promoting measures to recharge the water table. The "contract" brings flexibility, analyzing the specific circumstances for each case, and creating adaptation according to the needs of stakeholders and the conditions of the aquifers. The "groundwater contract" is facing challenges in the implementation process, as its voluntary characteristic limits the number of participants. The lack of institutional capacity and decentralization; the lack of a clear environmental, agricultural and irrigation policy; and the need for data to ensure the integration are complex groundwater management issues that need to be addressed.

Mechanisms and institutional arrangements that promote IWRM that address the nexus approach on land, water, and agriculture are aspects addressed in the Moroccan legislation, Law 1995, which is inspired by IWRM. The law takes into consideration the creation of water agencies at the level of each watershed, the sectorial relation of water uses, and their conjunctive management. The law reflects decentralization, including sustainability and the notion of subsidiarity for water management.

2.3. Role of land and water tenure for the improvement of livelihoods and sustainable management of natural resources

The concept of tenure arrangement is not new as it determines how people, communities and organizations gain access to and use natural resources. However, the term tenure is most commonly linked to land. One definition of land tenure explains it as "the relationship, whether legally or customarily defined between people, as individuals or groups, with respect to land" (27). Similarly, the definition for water tenure involves "the relationship, whether legally or customarily defined among people, as individuals or groups, with respect to water resources."

The definition of tenure recognizes that land and water tenure are social constructs and that the rights of individuals and groups should be acknowledged. Moreover, the definition demonstrates two different relationships that regulate tenure, one regulated by formal law and another based on customary or local law.

Land tenure is not an abstract notion; it focuses on claims to specific plots of land. Likewise, water tenure deals with claims to specific water resources, i.e. water as it is present in the natural environment, in rivers, lakes, streams and groundwater aquifers. Hence, the land tenure relationship refers to specific areas of land, whereas water tenure is concerned with the water contained in specific sources.

On the other hand, water tenure helps to protect vulnerable individuals and their livelihoods, by taking into consideration small scale uses of water (e.g. drinking water collected from rivers or streams), which in most legal systems are excluded from formal water laws. Tenure is relevant for small-scale users who rely on natural sources to provide water for their basic needs and livelihoods. In developing countries water tenure is especially relevant to protect the livelihood of women and girls who are usually the ones responsible for collecting water.

One important point about the concept of water tenure is the fact that it is indifferent to the purpose for which water is used. Nonetheless, it is possible to link different types of water tenure with various categories of water use. It is also possible to compare different types of water tenure to security, equity, sustainability and efficiency issues. In respect to water governance, water tenure can be understood as an element of the former.

Water is a public good under Islamic law and in most of the NENA countries, including Iraq, water is considered free and jointly owned by the public. Similarly, groundwater is not the property of any particular person although certain rights are acquired when water is supplied. In Iraq, there are no water rights, nor concessions under common law or civil law systems. As in many other NENA countries, rivers with a continuous flow cannot be privately owned. The Islamic law states that all persons and animals have the right to take water for drinking purposes. Regarding irrigation, everyone has the right to irrigate their lands from rivers and may dig canals and mills for this purpose. However, these activities will not be permitted when they cause any damage to other users.

An example of integration between land and water governance can also be found in the Iraqi Civil Code, which codifies the rights under Islamic law of land owners to use water. The Iraqi law provides regulations about rainfall, which cannot be stored in any dam and the flow should be free. In addition, the owner of the land may use the rain that falls in her land and the water of natural springs emanating from her land without causing harm to the downstream landowners. Compensation is stipulated in case of harm. Every person may irrigate his land from rivers and public canals and may dig a passage to obtain water which must be in accordance with the specific laws and regulations. The farmer or landowner has the right over the water available on the farm, but this right has been arranged according to the regulation number 1 issued in 2015 whereby farmers have the right to obtain and provide water for their lands after the approval is given by the department of water resources.

Regarding irrigation, everyone has the right to irrigate their lands from rivers and may dig canals and mills for this purpose. However, these activities will not be permitted when they cause any damage to other users. Required regulations have been developed to facilitate the implementation of the laws, especially with regard to wells and irrigation system.

With respect to the interaction between the concepts of governance and tenure within the land and water context, it should be noted that tenure focuses on access and use of resources, while governance deals with social and economic processes – the distinction between the two terms is important and has often been undermined. A clear separation between tenure and governance can be beneficial for the advancement of both concepts. Land and water tenure can increase the success of policies and measures determined by governance mechanisms.

FAO has developed the Voluntary Guidelines on the Responsible Governance of Tenure, which have been considered for a potential application in the NENA region. In fact, in Syria, Palestine, and in the future, Libya and Yemen, further steps are to be taken on promoting

partnership building and creation of national donor platforms in order to ensure a long-term follow-up of the land governance improvement processes. In addition, FAO is planning to develop future activities in Tunisia, Algeria and Morocco on promoting and facilitating an integrated and sustainable multi-stakeholder approach to recognizing and protecting legitimate tenure rights (through, for example, national and local multi-stakeholder platforms).

Governance, water governance, water tenure governance and water tenure

Source: FAO, 2016

While land tenure has been fully explored and implemented in several countries, the concept of water tenure is still a new approach. The concept of water tenure includes the different spheres and elements on the management of water. Water tenure incorporates a more accurate knowledge and comprehensive understanding of existing arrangements concerning the allocation, management and control of the use of water. In this regard, it is also addressing the criteria of equity, sustainability, efficiency and accounting. Water tenure aims to reflect several aspects including hydrological, hydrogeological, legal, administrative, IWRM, human rights, and any type of arrangement at the local, national and basin levels, taking into consideration the institutional and legal framework for land and water tenure relationships. The conceptual approach of water tenure is very broad looking into all environmental, physical, legal, institutional, social and economic aspects of water and its management. Currently, FAO is working on the development of this concept and how it can be applied to countries in order to enhance the application of the sustainable goals.

3. Legal, policy, and institutional frameworks in support of effective land and water governance

Legal frameworks serve as the foundation from which policies stem and determine the actions taken to effectuate the matters they seek to govern. Importantly, the legal framework is the first step in establishing institutional frameworks and mechanisms for monitoring and enforcement. As such, they are essential in the realisation of effective water governance.

3.1. International, regional, and national legal frameworks

The importance of international conventions and declarations in land and water governance cannot be underestimated. They strengthen an enabling environment for international cooperation, which is crucial to contend with issues that arise in the context of transboundary shared water sources. International and regional frameworks provide an important role in cooperation for sustainable and equitable use of resources between States. This cooperation is particularly significant in regions coping with fragile systems, as incompatible management of transboundary water resources can lead to conflict.

International conventions play an important role in facilitating land and water governance and achieving the SDGs. These conventions should be used as a blueprint for action, in other words, by effectively implementing international conventions that relate to land and water issues, countries are strengthening their path towards a better governance system, less fragility and achieving SDG targets.

The Rio Conventions

To improve land and water governance in the NENA region it is important to address the synergies between water, land and biodiversity. The link between these issues is significant due to their social, economic and environmental impact; the key United Nations conventions dealing with these topics have committed to working together. Namely, the Framework Convention on Climate Change (UNFCCC), Convention on Biodiversity (UNCBD) and the Convention to Combat Desertification (UNCCD), have engaged in collaborative actions to solve these challenges (29).

United Nations Framework Convention on Climate Change (UNFCCC)

The UNFCCC was created in 1992 as a framework convention for international cooperation to fight climate change by limiting the rise of average global temperature and to manage the consequences of climate change. During the same year, the UNFCCC opened for signature at the Rio Earth Summit, together with its sister Rio Conventions: the Convention on Biodiversity (UNCBD) and the Convention to Combat Desertification (UNCCD) (30).

Convention on Biodiversity (CBD)

The Convention on Biodiversity came into force in late 1993, with three main goals: the conservation of biological diversity, the sustainable use of the components of biological diversity and the fair and equitable sharing of benefits resulting from the use of genetic resources (31). The term biological diversity includes all life on Earth and the natural patterns created by it. The loss of biodiversity has devastating effects on the planet and on human health, including posing a threat to food, water, and land supplies. Therefore, land and water governance play an important role in preserving fundamental natural resources and protecting biodiversity.

Convention to Combat Desertification (UNCCD)

The UNCCD was established in 1994 and remains the only legally binding agreement connecting environment and development to sustainable land management (32). The Convention focuses on dealing with arid, semi-arid and drylands (dry sub-humid areas), where the environment can be extremely fragile for both people and the ecosystem.

Parties to the UNCCD seek to improve the livelihoods of people living in drylands, maintain and repair soil land and soil efficiency and to diminish effects of drought. As the relationship between land, water, climate and biodiversity is interconnected, the UNCCD collaborates with the other two Rio Conventions to achieve better land and water governance.

The 1997 Convention on the Law of Non-navigational Use of Transboundary Watercourses

The UN Watercourses Convention entered into force 17 August 2014 and counts multiple NENA countries as State Parties. The Convention codifies the principles of international water law: Equitable and reasonable utilization and participation, the obligation not to cause significant harm, general obligation to cooperate and regular exchange of data and information, and notification. In the case of shared international watercourses, States shall use the watercourse, in its territory, in a manner that is equitable and reasonable in relation to the other States sharing it. States are to consider all relevant factors established in Article 6 of the 1997 UN Watercourses Convention and participate in the development and protection of the watercourses. This treaty is applicable to surface water and groundwater connected to surface water.

More than half of the annual renewable surface water comes from outside the NENA region, marking it as the world's highest dependency on international water bodies. For instance, Egypt and Syria have a sizeable share of their water resources (rivers or aquifers) which come from other countries. As they are naturally affected by decisions made upstream or elsewhere in the aquifer, international agreements on water allocation and source protection are vital (33).

3.2. Land Governance

Land governance pertains to the laws, policies, regulations, institutions, and processes by which decisions are made about the use of and control over land. Equitable and secure access to land and water resources is crucial for sustainable development. Notably, land governance includes both formal state centred legal frameworks and institutions, as well as customary procedures and informal practices. The decisions which encompass the use and control over land, including land planning has a direct impact on agricultural production, which in turn is directly linked to viable livelihoods and food security.

Governance also has an important role in equitable distribution of land. This is particularly relevant to the NENA region where 10% of farms hold 60% of the agriculture area (34). In this regard land governance has a role in managing access to land and addressing displacement of smallholder farmers' dependant on their lands for food and livelihoods. Moreover, in the instance of unavoidable forced eviction, governance frameworks must include the effective implementation of the necessary compensation and relocation support.

Principles of good land governance

The Voluntary Guidelines (Voluntary Guidelines) on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security were endorsed by the Committee on World Food Security on 11 May 2012 (35). Commendably the guidelines articulate general principles as well as those specific to implementation. In line with the complex issues that affect the NENA region, the guidelines urge governments to implement policies and laws that take into consideration impacts of natural disasters and climate change. It also stresses that tenure problems should be resolved so they do not lead to conflicts. When conflicts arise, States and others should try to protect tenure rights and related records. When conflicts cease, States should ensure that the restitution and resettlement programmes support lasting solutions.

Special issues concerning women

Women are intimately involved in land and water management. However, these efforts are seldom for land which they own, nor with equally shared benefits of the gains from their work. Women's access to land rights are influenced by a number of interrelated factors, from

the social and cultural, to the economic, legal and political, and from the household level to the international level. Recognizing the pivotal role that women play in land and water management and the complexity related to gender and land tenure, the Voluntary Guidelines affirms that States should consider the obstacles faced by women and girls regarding tenure and associated tenure rights and take measures to ensure that legal and policy frameworks provide adequate protection for women and that laws that recognise women's tenure rights are implemented and enforced. Capacity-building is necessary to inform women of their rights and support institutional mechanisms to help enforce them.

Conflict

Land governance has a pivotal role in conflict avoidance and resolution. Uncertainty of land rights and associated resources can ignite competition over scarce supplies. This can be the case at various levels, such as between two local tribes against one another, hosting populations against refugees and migrants, or State to State over transboundary resources. In this context, regions touched by fragility and the resulting precarious situations that accompany it, effective governance of natural resources is an important factor in achieving and sustaining a harmonious social environment.

Land governance should be applied and integrated in a holistic manner with other interdependent sectors like water, agriculture, and industry. Good governance will require not only reform of legal and policy frameworks but will also have to be supported by effective mechanisms to institutionalise them.

3.3. Water Governance

Water Governance encompasses the political, social, economic and administrative systems which directly or indirectly affect the use, development and management of water resources at different levels of society. This includes the formulation, establishment and implementa-

In 2010 the United States Agency for International Development (USAID) conducted a water governance benchmarking initiative to evaluate water governance capacity and performance in Egypt, Jordan, Morocco and Oman. These countries have organized their water sectors well in setting policy goals and assigning responsibilities. Egypt and Morocco were more effective in applying good governance and decision-making practices. The water sector is highly centralized in Egypt, Jordan and Oman, where the government is playing a dominant role. Morocco succeeded in decentralizing water governance by involving agricultural water user associations and creating hydrological river basin agencies. But accountability, integrity and transparency need substantial improvement. The water sector lacks strategic legal planning due to the absence of comprehensive water laws. A systematic, in-depth assessment of water governance in these countries would help monitor their evolution. Water governance benchmarking can assess the state of water resources and the effectiveness of water policies or plans through performance indicators. These indicators can be formulated to measure and evaluate (37).

tion of water policies, legislation and institutions, and clarification of the roles and responsibilities of government, civil society and the private sector in relation to water resources and services (36). Effective water governance should be characterised by transparency, including meaningful participation from diverse stakeholders with robust accountability mechanisms in place.

OECD Principles on water governance and evolving water governance practices

In 2015, the Organization for Economic Co-operation and Development (OECD) presented 12 Principles on Water Governance. The Principles are centred around three dimensions: effectiveness, efficiency, and trust and engagement. They serve as guidance for governments to design and implement effective, efficient, and inclusive water policies. The Principles have been endorsed by more than 170 stakeholder groups and governments.

Since the adoption of the Principles, they have been used for various purposes by decision and policy makers in the water sector to develop, implement, research and assess of water governance gaps. The Principles can be applied by diverse stakeholders, in various sectors and across different levels of governance. They can serve as a tool to evaluate the performance of water governance systems at local, basin or national level, or as template to assist decision making for stakeholders and institutions. To demonstrate aspects of the implementation phase, principle (1) is discussed below for a more comprehensive analysis.

OECD Principles on Water Governance

Principle 1. *Clearly allocate and distinguish roles and responsibilities for water policymaking, policy implementation, operational management and regulation, and foster co-ordination across these responsible authorities.*

Principle 2. *Manage water at the appropriate scale(s) within integrated basin governance systems to reflect local conditions, and foster co-ordination between the different scales.*

Principle 3. *Encourage policy coherence through effective cross-sectoral co-ordination, especially between policies for water and the environment, health, energy, agriculture, industry, spatial planning and land use.*

Principle 4. *Adapt the level of capacity of responsible authorities to the complexity of water challenges to be met, and to the set of competencies required to carry out their duties.*

Principle 5. *Produce, update, and share timely, consistent, comparable and policy-relevant water and water-related data and information, and use it to guide, assess and improve water policy.*

Principle 6. *Ensure that governance arrangements help mobilise water finance and allocate financial resources in an efficient, transparent and timely manner.*

Principle 7. *Ensure that sound water management regulatory frameworks are effectively implemented and enforced in pursuit of the public interest.*

Principle 8. *Promote the adoption and implementation of innovative water governance practices across responsible authorities, levels of government and relevant stakeholders.*

Principle 9. *Mainstream integrity and transparency practices across water policies, water institutions and water governance frameworks for greater accountability and trust in decision-making.*

Principle 10. *Promote stakeholder engagement for informed and outcome-oriented contributions to water policy design and implementation.*

Principle 11. *Encourage water governance frameworks that help manage trade-offs across water users, rural and urban areas, and generations.*

Principle 12. *Promote regular monitoring and evaluation of water policy and governance where appropriate, share the results with the public and make adjustments when needed.*

Principle 1 states the need for clear roles and responsibilities. This will entail clarifying what are the current procedures and legal frameworks in place at every government level (e.g. federal, state and municipal) and what are the responsibilities of each authority. The objective is to identify who is responsible for (38):

- Policy making: priority setting and strategic planning;
- Policy implementation: financing and budgeting, data and information, stakeholder engagement, capacity development and evaluation;
- Operational management: service delivery, infrastructure operation and investment; and
- Regulation and enforcement: tariff setting, standards, licensing, monitoring and supervision, control and audit, and conflict management.

3.4. Groundwater governance

Historically, specific legislation on groundwater has been absent, and while momentum has increased in its prioritisation, legislation remains deficient in many jurisdictions. Establishing coherent legal frameworks on all sources of water is necessary as some frameworks deal primarily with surface water, ignoring groundwater completely. This leaves users to favour groundwater abstraction in avoidance of any legal or regulatory hurdles. This deficit is problematic in the face of increased pressures on groundwater sources from accelerated growth in the agriculture and industry sectors.

Motivated to contend with the precarious predicament facing groundwater resources, the Groundwater Governance: A Global Framework for Action initiative was launched in 2011 to raise political awareness and to seek urgent action. These efforts culminated in delivering a Framework for Action to achieve effective water governance and sustainable development

globally. The coalition of international organisations championed the need for a dedicated global framework to address over-exploited aquifers and put in place suitable management frameworks to improve their sustainable use (39). In so doing, they identified non-performing legal and regulatory systems on groundwater as one of the key deficiencies in groundwater governance.

One of the working definitions on groundwater governance confirms: Effective groundwater governance comprises the promotion of responsible action to ensure the protection and sustainable use of groundwater resources and long-term management of aquifer systems. This action is facilitated by an enabling framework and a set of guiding principles (40).

Furthermore, four distinguishing components characterise groundwater governance:

- An institutional framework characterised by leadership, sound organisations and sufficient capacity, permanent stakeholder engagement, and working mechanisms to coordinate between groundwater and other sectors;
- An effective and articulate legal and regulatory framework;
- Accurate and widely-shared knowledge of the groundwater systems concerned, together with awareness of the sustainability challenges; and
- Policies, plans, finances and incentive structures aligned with society's goals.

Like general water governance, a set of principles have been specifically articulated for guidance in the implementation of groundwater governance:

1. Groundwater should not be managed in isolation, but conjunctively as appropriate with other water sources to improve water security and assure ecosystem health. Groundwater can often play the vital role of a strategic reserve to cover variations in surface-water availability and can be both recharged by and discharged to surface-water bodies.
2. Groundwater quality and resources should be co-managed, and thus groundwater management needs to be harmonised with land management. Land-use exerts a major influence on how groundwater is recharged, and groundwater recharge zones are thus in urgent need of protection from pollution and degradation.
3. Effective groundwater governance requires co-governance of all activities in the subsurface space, from waste disposal to tunnelling to hydrofracturing – a point of action not normally discussed in water management policy making.
4. 'Vertical integration' between national and local level in the elaboration and implementation of groundwater management and protection plans.
5. Coordination with the macro-policies of other sectors – such as agriculture, energy, health, urban and industrial development and the environment. In many cases policy action in these sectors holds the key to groundwater resource sustainability.

A helpful example of efficient groundwater governance can be drawn from a decade-long water reform program in Australia. The country has similar characteristics as those of the NENA region regarding aridity, water shortages, and inter-sectoral competition. Over ten years Australia conducted an inclusive process of investigation and debate to reach an agreement on a national water reform agenda, the National Water Initiative.

The reform set three goals that mirror the needs of many NENA region countries: to return all water systems to sustainable levels of extraction, to sustainably manage groundwater and to respect the environment's need for water. In addition, three objectives were also defined for the improvement of water allocation, namely: providing secure water entitlements for irrigators, securing entitlements for the environment and introducing water sharing plans with legal force.

Strengthened governance and institutions were also a fundamental part of the initiative, which highlighted the importance of investment in knowledge, capacity building, data collection and accounting. The success of the initiative in improving water management, demonstrates the importance of governance and institutions.

Delineating water governance principles is a necessary and supportive step in securing effective and targeted results for goals which span multiple sectors and high-profile socio-economic and political issues. Moving beyond acceptance of principles to actual sustained implementation has some challenges. Insufficient institutional capacity, financial resources and/or political will are known obstacles to such implementation. Nonetheless, these frameworks can be adapted accordingly to the regional context to identify and address such barriers. As part of the water governance cycle, continued monitoring and evaluation of what does and doesn't work will strengthen effectiveness of the governance principles in practice.

Policies affecting agricultural groundwater use

There are various policy approaches that have been identified as shaping agriculture groundwater use. The NENA region has primarily approached issues of water scarcity and food security focusing on increased water supply, technological solutions, and increased production in respect of agriculture. Presently, the region is charting a new course to give more attention to effective water governance with a focus on the demand side to better manage water resource use.

Some key policy approaches related to agricultural groundwater use in the region include (41):

Regulatory – A chief component of this approach is the control of groundwater abstraction through legal obligations. An example of this strategy is the requirement to secure a license to withdraw groundwater or limiting amounts of water for withdrawal or the depth at which water can be withdrawn. Coherent frameworks and resources for implementation and enforcement are key to the success of applicable laws and regulations having a positive impact.

Economic intervention – Subsidy pricing policies, utilised in most NENA countries, can contribute to unsustainable and inefficient use of groundwater. While energy and agriculture subsidies can make practices attractively low-cost (like pumping groundwater), it is often not aligned with sustainable and efficient use of water, and thus negatively impacts availability.

Collective management – This approach engages users at the basin / aquifer level. This approach is distinguished by local level responsibility to manage water resources, typically through a water users' authority body. A positive aspect is the engagement and participation of users as their direct connection with, and dependency on, the source creates an incentive for active decision-making and understanding of the benefits of sustainable water management. Outcomes include improved monitoring and enforcement as the effects are felt directly in the community instead of relying upon distant centralised entities with limited resources.

Supply side management – The focus is on increasing the volume of water available through initiatives such as aquifer recharge, surface water mobilisation through dams, and enhancing water reuse. While this approach has its benefits, in regions of severe water scarcity it must be enacted in conjunction with sustainable management.

Ultimately, a comprehensive approach is required which engages effective principles of water governance that maintain sustainable development at the forefront.

4. Governance challenges and solutions

4.1. Competing interests between sectors

As we recognize that water and agriculture are inherently interconnected, it is essential to recognize that the interests driving the sectors will not always be compatible. A balancing of competing needs unfolds as demand for water increases in pursuit of broad economic development and sustained livelihoods. Such competition is seen at the upper governance levels where frequently ministries of sectors deemed directly connected to economic growth, such as agriculture, dominate over other ministries perceived to be tied to policy-making for sustainable development, like environment or water.

This issue is exemplified by the competing interests of pursing agricultural productivity, which has increased the use of groundwater in recent years, and groundwater conservation. In pursuit of effective governance, especially as it pertains to sustainable development, political and economic factors must be considered and incorporated in sustainable development advocacy to garner political will. As the economy has such a strong influence on political decision-making, matters on the governance of natural resources should include aspects of economic utility to attract political will.

Framing sustainability and conservation policies in a manner that shows they coincide with policies understood as economically beneficial is helpful to bolster their support. For example, currently the NENA region's water charges average only 35% of the total costs for conventional sources and 10% in the case of alternative sources such as desalination. As sustainable management of water comprises the principle that water pays for water, herein lies an opportunity to use cost recovery policies to demonstrate that the implementation of sustainable measures is not meant to be a deficit generating activity.

One cost recovery policy approach in the region involved recovering cost of irrigation and drainage improvements projects at the farm level from beneficiaries with the actual costs divided over a specified period. Although the cost recovery rates are still below target, there has been an increase in collection rates to demonstrate acceleration towards economic efficiency (42).

4.2. Limited resources for implementation of laws and policies

The pace of executing sustainable measures remains slow with barriers preventing laws and policies from being implemented. This particularly holds true for regulatory policies that

seek to control the quantity of groundwater utilised. The NENA region has accepted that water demand has to be managed, and the responsible agencies charged with regulating management controls are in agreement that such controls are beneficial. Nonetheless, the issue consistently arises of inadequate resources, both financial and human, to implement the necessary monitoring and controls to identify non-compliance with regulatory policies. Therefore, despite the presence of an existing sustainability governance framework, the over extraction of water goes unchecked and thus ultimately leaves the measure ineffective. Again, this is part of harnessing political clout and being able to receive support for reallocation of manpower and funding.

4.3. Inter-sectoral policy coherence, cooperation, and managing trade-offs

The SDGs have an explicit call for States to enhance policy coherence for sustainable development in target 17.14. This is not surprising as the SDGs are fully integrated with economic dimensions such as poverty eradication. The achievement of this goal is interdependent with other SDGs rooted in the environment and social spheres. Moreover, policy coordination and coherence should not only be carried out across sectors but also reinforced at all levels of government.

With respect to effective water governance, an identified challenge is the division among sectors in approaching interdependent issues of concern. This silo approach has confined problems such as water scarcity to be addressed solely by the water sector, without recognition that other sector policies, like agriculture, have an impact and are integral to cultivating the requisite solutions. For instance, given the interlinkages of water to food, agriculture, and energy, it should be foreseen that economic, trade, and land policies will have a direct impact on water use. Conversely, water affects almost all economic activities; thus good water governance in support of sustainability is essential to economic growth and should form part of the discourse of economic reform (43).

OECD offers guidance on policy coherence for sustainable development and emphasises the need to foster synergies across economic, social and environmental policy areas and manage potential trade-offs and conflicts between priority policies such as economic growth and environmental protection (44). Instead of focusing on general broad headings such as water or agriculture, concentration should focus on issues-based common challenges such as enabling conditions for achieving food security. This approach should encourage multi-stakeholder cooperation across traditional policy sector divisions.

Moreover, inter-sectoral collaboration should be fostered through formal mechanisms which will support an enabling environment for exchange among ministries. For instance, Morocco has the Water Inter-ministerial Commission (Commission interministérielle de l'eau) which serves as a link between different ministries and works to strengthen governance mechanisms with representatives from Interior, Health, and Finance Ministries, among others. In such a body with a variety of vested stakeholders at the table, complementary sectoral policies can be developed, differences concerning competing demands can be discussed and compromises agreed.

5. Conclusions

5.1. Sustainable land and water management initiatives and outcomes

Water is of crucial importance for food production in all the NENA countries and as a core issue, it cannot be resolved through a limited sectoral approach. More sustainable water management is urgently needed, as well as efficient distribution among sectors. Although NENA countries have achieved important advances in the management of their water resources there are still aspects of the management of water resources that need to be addressed. For this reason, in 2013 FAO launched the Regional Initiative on Water Scarcity in the Near East and North Africa (WSI), to assist countries in streamlining policies, governance and practices related to water (45).

*The **Regional Initiative on Water Scarcity in Near East and North Africa (WSI)** has been established by FAO to support countries in **identify, develop** and **implement**: Evidence-based policy-decisions; Sound governance and institutions; Cost-effective water investments, and Best management practices.*

*Agriculture water use efficiency and productivity, and food security as well, can, thus, be significantly improved in the region. **Innovation is key**. The elements of innovation are:*

- *A **Regional Collaborative Strategy** among the NENA Countries*
- *A **Strategic Partnership**, actions-oriented and results-based, to generate a critical mass of 'capacities' for 'impact-at-scale'*
- *Forward-looking ways of visioning future trajectories of development for strategic planning of water allocation*
- ***Evidence**-based approaches*
- ***Farmers** as full partners (commercial operator and ultimate manager of soil and water)*
- *Involvement of **private sector** (food value chain, **technology**)*
- *Effective synergies in **innovation** and **learning** (from farmer-to- farmer exchange of solutions, practitioners as main actors)*
- *An **inclusive** approach to change*

- ***Strategic planning*** *&* ***policies*** *of water resources for water and food security (including a water-food-energy nexus approach)*
- *Strengthening/reforming* ***governance*** *at all levels*
- *Improving water management,* ***performances*** *and* ***productivity*** *in major agricultural systems (rainfed and irrigated) and in the food chain*
- *Managing the water supply through* ***reuse*** *and* ***recycling***
- ***Climate change****, resilience, Disaster Risk Reduction and drought management*
- *Building* ***sustainability****, with focus on ground water, pollution and soil salinity*
- ***Benchmarking****,* ***monitoring*** *and* ***reporting*** *on water use efficiency and productivity*

Since the fall 2013, the WSI has been applied in several countries of the region such as Algeria, Egypt, Iran, Jordan, Lebanon, Morocco, Oman, Tunisia, United Arab Emirates (UAE), West Bank and Gaza Strip (WBGS) and Yemen, which have applied the analytical framework of the WSI including water accounting, food supply cost curve, and gap analysis addressing policies, governance and performance of agriculture water management.

In the implementation of the Decision Support- Sustainable Land Management Project (2015 -2018), Tunisia has developed a land use systems map characterised by the ecosystems and their socio-economic context (46). The project sought to address institutional and political obstacles to the expansion of sustainable land management in national sectoral policies and investment programs. Institutional constraints were identified as obstacles that limit the choice of decision-makers to adopt good agricultural practices. Noting the importance of sustainable development and good governance that includes adaptation of agricultural public policies and ministerial department coordination, the project involved key institutions and ministries from across sectors for the Steering Committee and/or the National Project Coordination Unit. Some of the key actors included the Ministry of Environment and Sustainable Development, the Ministry of Agriculture, the Institute of Arid Regions and the National Institute for Crops.

This cross-sectoral collaboration resulted in the initiation of a strategy for integrating sustainable land management into political decision-making, planning, financing, and local management processes; a beneficial step to facilitating the implementation and extension of good sustainable land management practices. Also established under the project was a framework and action plan for the gradual integration of good practices into development policies at national and local levels. It was concluded that an assessment of the impact on different land-use types is optimal for each good practice to demonstrate their effectiveness in conserving natural resources, overcoming obstacles and improving sustainable land management.

5.2. Land and water governance as a tool in conflict resolution

Principles of good governance, particularly: legal rights recognition, participation, non-discrimination, transparency, and accountability help to reduce instances of conflict concerning natural resources. Open dialogue and public participation specific to land and water resources of populations encountering conflict can create an enabling environment conducive to generating resolutions. Good governance for land and water resources with a comprehensive and systematic approach can help to reduce escalation of conflicts and contribute to broader objectives of economic growth and poverty reduction.

It is extremely encouraging that even amid increasing water scarcity and in areas experiencing fragility, land and water governance is gaining traction. An example of the opportunities for conflict resolution in this regard is demonstrated in a case study from Yemen. An allegation of water use above the agreed allocation of one tribe led to discord, including violent confrontations. While in response to the disagreement the tribal legal system restricted access to all and the supply eventually evaporated. Fortunately, a women's water users association facilitated a solution that was agreed to by all the affected parties. Their success is a testament to the advantages of participation of the local community in water management. Further, it was noted that the involvement of women has proven to be an effective way to build partnerships and cooperation among the community. This case study also observes the valuable outcome of community water resource management as part of local level conflict resolution and the positive shift in attitudes towards water conservation (47).

An important factor identified for supporting conflict resolution related to resources is the need to have an efficient and effective water management system which includes a clear and coherent governance framework. Strong frameworks should include the institutions needed to settle conflicts and to implement relevant water governance provisions in support of sustainable solutions (48).

A definite connection can be drawn between water scarcity and violence, with a growing number of examples having emerged over the last decades, especially in the NENA region. In Syria, a long period of drought in the east of the country caused significant internal displacement of the rural population towards the urban areas in the west. The migration exerted social and political pressure, causing a surge of hostilities. In Yemen, the pattern is similar, as the current crisis can, in part, also be linked to a severe period of drought. Dispute over transboundary water basins located in fragile areas can also be a source of internal and external tensions.

Fragility in a region will have spill-over effects on neighbouring countries, which affect the national economy, increase stress on water and land resources and can spark conflicts between the local and migrant populations. In this context, water can be a tool for peace – investing in efficient governance and cooperation, can improve political stability. As one of the most water scarce countries in the world, Jordan struggles to cope with the inflow of refugees and its immediate consequences. Nonetheless, the country has been able to set positive examples of good practices that can inspire other States.

Action Framework for Water Security during Protracted Crises and Situations of Development Opportunity

	Situations of Development Opportunity	Situations of Shocks and Protracted Crisis
Provide water services Guaranteeing water services that meet standards of affordability, reliability and quality helps to reverse the vicious cycle of water insecurity and fragility. Investments to reduce inadequate and unequal access to water services can promote stability in fragile contexts.	Promote cost recovery and efficiency in water utilities Develop a customer database Finance labour intensive irrigation, rehabilitation and expansion Strengthen dam safety Construct small scale hydropower for isolated communities	Support cost recovery with one-off subsidies or in-kind donations for operating needs Retain skilled staff Extend water utility services to IDP's and host communities
Protect from water-related disasters Preparedness and response to disasters are central elements of the social compact. Disaster impacts and recovery options vary widely, so investments need to account for different gender, social and economic circumstances.	Develop disaster preparedness plans Integrate remote sensing data into information systems Upgrade hydrometeorological forecast and early warning systems Enhance flood protection and drought management systems Adopt conflict-sensitive approaches to DRR Strengthen communication for disaster response	Protect key hydrometeorological early warning and ICT systems Ensure equity and transparency in disaster response and relief efforts
Preserve surface, ground- and transboundary water resources Governments need to guarantee the adequacy of water resources for their populations and to preserve healthy aquatic ecosystems. Working toward sustainable water resources management and cooperative water sharing agreements is key to reverse the water security and fragility cycle.	Sustain water resources planning, monitoring, and enforcement Regulate and monitor groundwater abstraction Rehabilitate/develop water storage infrastructure, using labor-intensive methods Share information in transboundary basins Pursue cooperative transboundary water agreements	Protect critical interconnected infrastructure Prevent encroachment by private and fractional interests Prevent investments in nonsustainable solutions Monitor compliance with transboundary agreements

Source: World Bank, 2018

As the host State for over a million Syrian refugees, Jordan has seen a decrease in freshwater availability, increased pressure on groundwater resources and growing competition for water from the population and different economic sectors. However, in different water-related scenarios, the country was able to implement governance strategies by focusing on participation, community-led water resource management and engagement of local stakeholders in responsible management of resources.

Moreover, investing in water governance efforts, equally means investing in conflict prevention. In terms of financial benefits, a less hostile environment is more profitable one, which can attract investors to finance water-related infrastructure as the country emerges from a fragile context.

5.3. No "one size fits all"

When it comes to implementing effective land and water governance, there is no "one-size fits all" approach. Land and water governance principles and frameworks will need to be adapted to regional contexts, including those which accompany fragile systems.

To tackle the fragile environment in the NENA region, this will require institutional reform to improve land and water governance. Reform should address efficiency and accountability with respect to land and water governance, strengthen regulations, adopt participatory approaches and improve investment planning processes. There is a need for effective and transparent institutions, which can develop inter-sectoral water allocation and that are able to account for the distributional impacts that allocations have on various socioeconomic groups.

With goals and targets that are interlinked and interdependent throughout the Agenda, the SDGs represent a keen opportunity to continue the nexus-driven approach to support sustainable development, particularly as it concerns water, food and land. Good governance is integral to land and water management. The concentrated international coordination and political commitment at national level to achieve the SDGs, should be harnessed to continue the momentum to strengthen and implement effective land and water governance frameworks.

Sustainable agriculture preserves ecosystems and avoids land degradation. Continued efforts of society will have to focus on evaluating the trade-offs between present-day consumption and conserving resources for future generations. This balancing can only be carried-out effectively with increased dialogue and cooperation between the different sectors responsible for decision-making concerning land and water. In this regard, awareness must be maintained that land and water issues are connected to wider matters such as economic and trade policies.

Most of the NENA countries have enhanced their legal and policy frameworks over the years to include provisions and goals such as decentralisation, basin-wide management planning, better coordination of decision making, and multi-stakeholder participation.

Nonetheless, one common theme that permeates throughout the region is translating these governance frameworks to effective implementation. Inter-sectoral cooperation is essential in this regard. As no one policy can sufficiently address the complexities of sustainable land and water management; coordination is necessary among a multitude of sectors so that they work together for robust practical frameworks that are compatible and can be effectively implemented. To this end, formal inter-sectoral bodies charged with such coordination are valuable mechanisms through which negotiations concerning trade-offs and competing interests in land and water management can be undertaken.

Demonstrating the economic benefits and contributions of policies related to the sustainable management of resources is key as economic growth holds a strong influence over the

political decision makers who impact policy. Therefore, water and land governance should be bolstered and effected in such a manner to be received as aligned with positive economic growth.

Finally, it is necessary to understand that the law and policy frameworks of land and water governance are part of a living cycle. Challenges of implementation and undesired policy effects should be fed back to policymakers to continue to adapt frameworks as necessary to meet the ever-changing landscape that issues of climate change, environmental degradation, and impacts of fragility generate. Not only are effective governance frameworks (and the implementing processes that follow them), vital for sustainable development, but they also support strengthened environments that aid in the promotion of conflict resolution.

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