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Hydrodiplomacy and the Food, Water and Energy Nexus

A holistic approach for transboundary cooperation & peace

MEDITERRANEAN PROGRAMME

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Summary

- The rapid social and economic development in the world is leading to increased levels of water stress that point to potential water crises.
- As the most vital and strategic of natural resources, water can serve as an instrument of domination or of cooperation.
- Given the presence of key geopolitical concerns in the Near East, regional hydro-diplomatic cooperation is necessary to ensure fair sharing of the resource and to avoid additional tensions and conflict.
- Nine of the seventeen EMME countries are below the absolute water scarcity threshold of 500 m^3/year per capita, including all six countries in the Gulf region, Jordan and Palestine.
- Those countries that share major transboundary basins in the EMME region such as the Nile, Jordan and Tigris-Euphrates basins are subject to multiple challenges which include unilateral water resources management, water scarcity, and environmental degradation leading to food insecurity.
- Hydrodiplomacy is a tool for applying integrated water resource management at a national and transboundary level in accordance with a cooperative model seeking peace among riparian countries.
- Multiple UN agencies contribute to bringing riparian countries together with a view to fostering dialogue and the sharing of information on water management and transboundary cooperation.

Transboundary Waters in the Eastern Mediterranean and Middle East Region: Safeguarding a Cultural Heritage

By 2050, global water demand in terms of withdrawal will have increased by at least 55%.

Since the beginning of human history, most human activities have relied on water as a vital resource inseparable from any form of life. Today, ensuring water security globally and in the EMME region specifically has become a matter of urgent concern. The rapid social and economic development in the world is leading to increased levels of water stress that point to potential water crises. Water stress occurs when the demand for water exceeds the water available, taking into consideration its quality and quantity [1]. It is predicted that by 2050, global water demand in terms of withdrawal will have increased by at least 55 %, threatening most regions with water stress and food insecurity[2].

Kuwait and Saudi Arabia rely almost entirely on desalinized water.

Nowadays, sustainable development and our well-being depend on this resource and our access to it. Rapid social and economic development in the world is leading to huge water stress and warning of a potential hydraulic scarcity that could shake and threaten our existence; for instance the United Arab Emirates and Qatar have about 2- 3 days of fresh water and Bahrain, Kuwait and Saudi Arabia rely almost entirely on desalinized water.

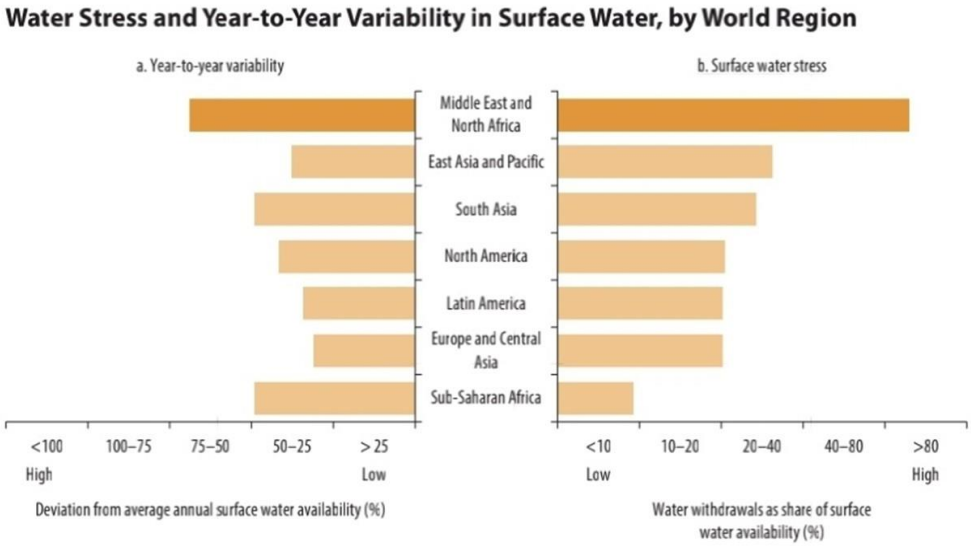


Figure 1 World Bank: water stress and year-to-year variability in surface water, by world region

The Jordan, Orontes, Nahr El Kebir, Tigris, Euphrates, and Nile—are subject to political, societal, and ecological tensions.

Within the EMME region, the problem of water scarcity and increased water stress appears with acuity in the southeast countries of the Mediterranean basin, where water resources are naturally limited, and especially in the Middle East. Water masses (seas and rivers), considered as the basis of civilization, are of particular importance in the EMME region. While climate change's impact in the region is already limiting the supply of freshwater, water consumption is expected to increase.

In this context, as the most vital and strategic natural resource, water can serve as an instrument of either domination or cooperation. In fact, transboundary waters in this region are a source of cross-border water management challenges and therefore generate interstate diplomatic tensions. Today, its main rivers—the Jordan, Orontes, Nahr El Kebir, Tigris, Euphrates, and Nile—are subject to political, societal, and ecological tensions.

[1] https://www.eea.europa.eu/archived/archived-content-water-topic/wise-help-centre/glossary-definitions/water-stress
[2] https://www.un.org/waterforlifedecade/water_and_sustainable_development.shtml

The "Water-Energy-Food" nexus is defined as the inseparable bond between water resources and the energy and food sectors.

Water courses which constitute part of the natural heritage of the planet Earth are at risk. The challenges to be overcome are not only linked to the resolution of political issues; in fact, they mostly concern the mismanagement of the "Water-Energy-Food" nexus, which is defined as the inseparable bond between water resources and the energy and food sectors. In fact, the use of water is not without cost and the anthropogenic water cycle utilizes at least 15% of total energy consumption, with this proportion steadily increasing in all countries. Conversely, it takes water to produce energy, whatever the technique used for its production. The International Energy Agency estimates that energy is responsible for 10% of global water withdrawals[3]. The food production chain consumes approximately 30% of global energy demand, which explains the impact the price of energies has on that of food.

The unilateral management of transboundary basins, including the failure to adopt a nexus approach to basins management, causes disruptions in the interconnection of the water-energy-food triptic and leads to the degradation of ecosystems and natural heritage. Alternatively, in practice, taking into consideration the interdependencies between water, energy and food entails monitoring the uses of water, energy and food with the aim of ensuring the sustainability of the resources. It also entails adapting strategies and governance structures towards greater integration and coherence through the creation of synergies at all levels.

The effects of the mismanage-ment of these rivers are threatening their ecosystems and indeed their very existence.

The "Water-Energy-Food" nexus is a global approach for a global problem. It allows the problems of each of the three areas—water, energy and food—to be treated by integrating their effects on the other two. This concept is based on a simple fact: the water resource is scarce, while high energy prices, the population and the needs of agriculture are putting increasing pressure on water resources. Taking this vital interdependence into consideration can foster regional cooperation on transboundary water management and lead to an approach that is better suited and adapted to the socio-economic and environmental challenges facing the region.

As a result of the failure to adopt such an approach to basins, tensions and conflicts have recently reignited in the region: the Grand Ethiopian Renaissance Dam constructed on the Nile basin is creating tensions between Egypt, Ethiopia, and Sudan. The water shortages hitting Iraq are also heavily impacted by policies undertaken by Turkey along the Tigris and Euphrates rivers. Adding to the increased impacts of climate change on the water cycle, the effects of the mismanagement of these rivers are threatening their ecosystems and indeed their very existence. The Jordan river and the gradual disappearance of the Dead Sea provides a striking example.

Regional hydro-diplomatic cooperation is air sharing of the resource and to avoid additional tensions and conflict.

The Dead Sea constitutes the end discharge location of the Jordan River basin. A saltwater lake of about 640km2, it has lost one third of its surface area over the last fifty years due to unsustainable approaches to its management. As a result, the level of the Dead Sea is decreasing by an average of 90 cm per year. The shrinking of the Dead Sea also creates a geological problem: huge sinkholes found in the villages and touristic sites on the riparian coasts. There are more than 5500 of them today, while there were none 40 years ago.

There are also examples of cooperation between riparian states that could serve as examples of best practices—on the Orontes River between Lebanon and Syria, for instance, or the cooperation over the Drin River, both of which will be looked at in depth below.

Water is thus at the heart of the diplomatic concerns of the region's various governments. Given the presence of key geopolitical concerns in the Near East, regional hydro-diplomatic cooperation is necessary to ensure fair sharing of the resource and to avoid additional tensions

[3] (World Energy Outlook, 2016).

and conflict. Innovative approaches to dealing with vital and strategic issues are urgently needed in a region faced with compounded crises that are different in nature and scale and involve different actors. The hydrodiplomacy framework and its water-energy-food nexus approach not only suggest solutions for overcoming the urgent crises that are already hitting the region, they actually point to the concrete and concerted smart actions that are already being undertaken to tackle the multiple environmental, economic, political, and societal challenges.

This paper provides an overview of the current global situation regarding water security and specifically tackles the situation in the EMME region, focusing on the role the hydrodiplomacy framework and water-energy-food nexus approach can play in overcoming the effects of climate change and managing the overlapping crises hitting the region. Best practices are showcased that practically illustrate the successful implementation of hydrodiplomacy using modern technologies and new approaches focused on sustainability, efficiency, and human dignity. Drawing on recent studies which looked at the EMME region, the chapter concludes with recommendations regarding broader policy implications and measures targeted at youth and female empowerment. Overall, building and investing in hydrodiplomacy and the nexus approach can help countries in the EMME region to absorb external and internal shocks through the efficient management of their water resources. As a way forward, current and future opportunities are presented for a coordinated international and regional response to the climatic and environmental challenges facing societies globally and the EMME region specifically.

Nine of the seventeen EMME countries are below the absolute water scarcity threshold of 500 m^3/year per capita.

Water resources in the Eastern Mediterranean and Middle East (EMME) region: an overview

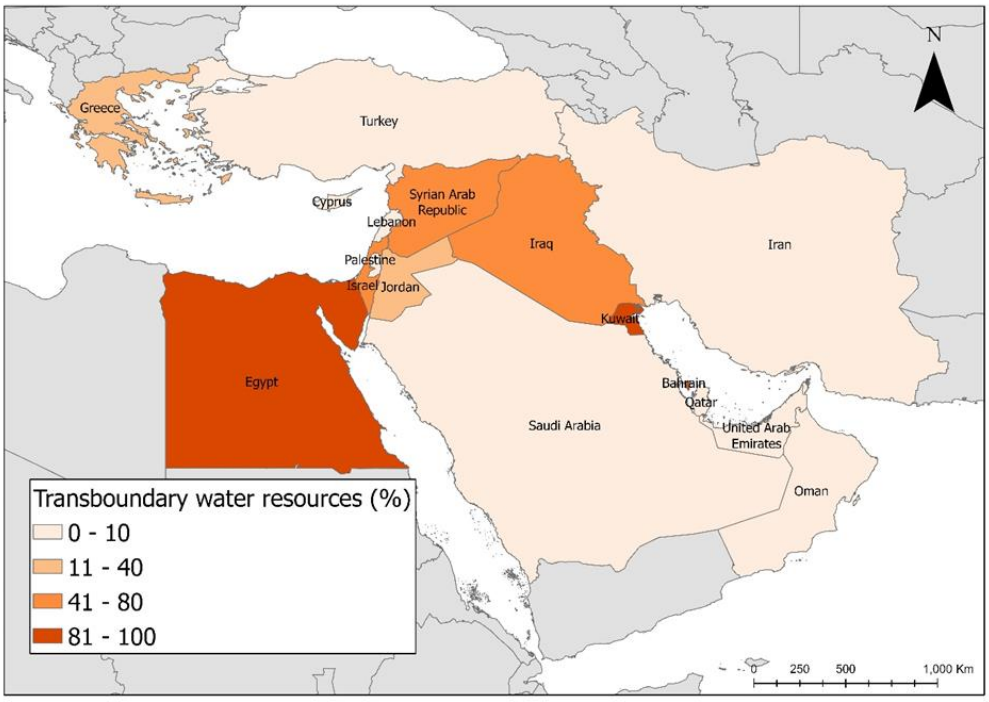
With reference to water scarcity, it is useful to consider the EMME region as a whole. Today, nine of the seventeen EMME countries are below the absolute water scarcity threshold of 500 m^3/year per capita, including all six countries in the Gulf region, Jordan and Palestine. Four others—Cyprus, Egypt, Lebanon and Syria—are below the scarcity threshold of 1,000 m^3/year per capita. This places nearly 200 million people under conditions of water scarcity. Greece, Iraq, Iran and Turkey are currently the only countries above the water scarcity threshold[4].

The Middle East is considered to be the world's most water-scarce and food-import-dependent region.

In fact, the Middle East is considered to be the world's most water-scarce and food-import-dependent region[5]. The increasing demand on water resources, their declining quality, as well as the mismanagement of basins are causing many challenges in the region. The Middle East is suffering a depletion of its water resources and alarming water stress. This situation hinders the sustainable development of this region. The total volume of surface water resources in the Arab countries is estimated at 277 billion m^3 of water per year, 43% of which originate in the Arab territories themselves, the rest being from territories outside the region.

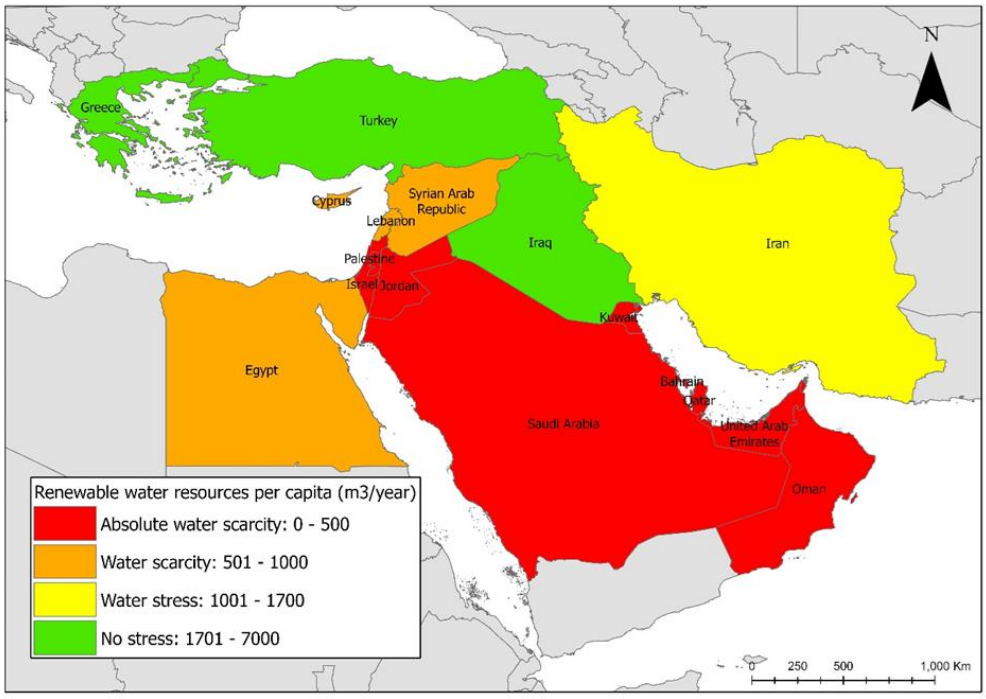
Given river geography, cooperation over transboundary rivers involves additional regional actors like Turkey, Ethiopia, and Israel. The management of tensions and conflicts thus entails the management of political and sensitive diplomatic environments in addition to technical and scientific issues. Therefore, given the complexity and fragmentation that characterizes the regional setting, shifting paradigms has become a necessity when dealing with water management.

[4] Executive summary, Eastern Mediterranean and Middle East Climate Change Initiative Report of the Water Resources Task Force
[5] https://www.unescwa.org/focus/climate



Source: FAO, 2021

Figure 2:Share of total renewable water resources originating outside each country



Source: FAO, 2021

Figure 3 Renewable water resources in the EMME region

The countries of the Levant, which represent a population growing at a rate greater than 2.8 %, have only a small percentage of the fresh water available in this region. In most countries on the southern shore of the Mediterranean, the average amount of water per capita is less than 1000 m^3 per year, while the world average is 7000 m^3 per year. It should be noted that on the Mediterranean edge, 180 million inhabitants live with less than 1000 m^3 per year per inhabitant and 80 million people face a shortage with less than 500 m^3 per year per inhabitant. Furthermore,

the average in Arab countries does not exceed 700 m^3 per person per year, which is the lowest worldwide (Fig. 3).

Consequently, the water needs to increase exponentially due to the demographic explosion, the effects of climate change, and increasing urbanization. In addition, the fragmented management of this resource compromises the socio-economic development of certain countries in the Near East characterized by an increased demand for water despite a limited, random, and poor-quality water supply resulting from pollution phenomena. Climate change's negative impact on the water cycle is pushing countries to use new technologies. To offset the high water demand, countries in the Middle East have shifted to non-conventional resources, one of which is desalination. Desalination is a very good substitute, but it is also very costly and energy consuming (1.7 kw/m^3).

The water needs to increase exponentially due to the demographic explosion, the effects of climate change, and increasing urbanization.

The Gulf Arab States spend about 30% of their energy production on desalination. Focusing on a water-energy-food nexus approach to planning in the region could help increase efficacy and efficiency and ensure food security for future generations. For example, under the international umbrella of the Sustainable Development Goals (SDG) set by the United Nations, this approach is well-established through SDG 2 (zero hunger), SDG 6 (water and sanitation), and SDG 7 (affordable and clean energy). A better integration of national regional and international policy approaches is needed, and the EMME region continues to be a hotspot for unsustainable water use. The Integrated Water Resources Management introduced by the Global Water Partnership[6] establishes a set of legal and institutional "horizontal" organizing elements that pertain to governance and policy. These include good governance, effective public and private partnerships, the introduction of "water codes" for sustainable water consumption, and demand.

Desalination is a very good substitute, but it is also very costly and energy consuming.

The EMME region: a hotspot of unsustainable water use

Today more than ever, the availability of transboundary water resources is a factor of tension and conflict, especially since nearly 40% of the world's population live in transboundary river and lake basins. At the level of these cross-border basins, we find heightened tensions and conflicts due to the inequitable sharing of resources and the deteriorating quality of the water.

Specifically, the major transboundary river basins in the EMME region are subject to increased tensions resulting primarily from inequitable sharing, amplified by the impacts of climate change, as well as competition for use and over control of shared water resources. First of all, climate change has reduced rainfall. According to the Intergovernmental Panel on Climate Change (IPCC) forecast, there are significant projected reductions in rainfall and snowfall in some areas by the end of the century. Climate change effects are also intensifying floods and droughts, shifting precipitation patterns and fueling rising sea levels[7].

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According to a recent report from the Eastern Mediterranean and Middle East Climate Change Initiative, studies have overwhelmingly shown that throughout the EMME region, changes in precipitation are magnified in water resources, causing hydrologic droughts, reducing streamflow and groundwater recharge, amplifying water-quality problems, and resulting in dramatic increases in reservoir risk levels for water supply and energy production[8].

[6] https://www.gwp.org/en/GWP-CEE/about/why/what-is-iwrm/
[7] https://www.wri.org/water
[8] Eastern Mediterranean and Middle East Climate Change Initiative
Report of the Water Resources Task Force p. 18

The above result in unsustainable water use if no action is taken to adapt to and mitigate these changes. In this context, the countries that share major transboundary basins in the EMME region such as the Nile, Jordan and Tigris-Euphrates basins are subject to many challenges including unilateral water resources management, water scarcity, and environmental degradation leading to food insecurity.

The Nile Basin:

The Great Ethiopian Renaissance Dam, which is being built and fully funded by Ethiopia on the Nile, has a reservoir capacity of 60 billion cubic meters with a hydroelectric production capacity of 7000 MW (three times that of the Aswan dam). The storage that Ethiopia intends to build up in 3 to 5 years will directly affect Egypt. Such a large reservoir represents 80% of the annual flow of the Blue Nile and would reduce the downstream Nile flow by at least 25%. Despite ongoing negotiations over the last four years, the countries have as yet failed to reach a consensus.

The Case of the Tigris and Euphrates:

Turkey could play a pivotal role in the reconstruction of Syria and Iraq through the Grand Anatolian Project (GAP), which could bring about peace and cooperation.

The two main water flows in the Middle East, the Tigris and Euphrates rivers, both originate in Turkey and are of paramount importance to Syria and Iraq's water supply chains.

Turkey refused to agree to and sign the 1997 UN Convention on Water, thus ensuring that neither Syria nor Iraq would have the higher legal ground in their water politics when it comes to the rights of downstream countries.

Turkey could play a pivotal role in the reconstruction of Syria and Iraq through the Grand Anatolian Project (GAP), which could bring about peace and cooperation as in the case of the Orontes basin, an example of successful cooperation based on the UN Convention of 1997.

Furthermore, the control and over-pumping of shared groundwater by several riparian countries is threatening to deplete transboundary aquifers and creating serious tension between riparian states. In addition to this, global changes brought about by the new factor of the COVID-19 pandemic, coupled with climate change effects and the resulting population transfers are causing societal and political instability which poses a greater threat to the region than ever before.

Other poor water management practices contribute to the non-sustainable use of water resources, including:

- Drilling deep wells in non-renewable underground (fossil) aquifer and pumping water to supply cities with drinking water and expanding agriculture. The irrigation sector uses around 85% of the region's renewable fresh water, compared with a European average of about 56%. Though depending on the country, irrigation efficiency is very low in the EMME countries, at an average of 30% compared to a world average of 45%.
- This low efficiency is due to the use of old irrigation methods rather than modern methods such as drip irrigation, which consumes 6000m^3 of water per hectare instead of 10000 m^3.
- Low potable water network efficiency, estimated at 52%.
- The lack of consumption of non-conventional water, such as water reuse, grey water and seawater springs.
- The lack of an integrated Water Information Database Systems for the EMME region.

Responding to the challenge of climate change: regional initiatives

The EMME region is under pressure due to political and military conflicts which are generating mass population transfers, displacing communities in a context of a growing demand for water, energy and food. In parallel, sound water demand management will be further complicated if extreme events resulting from climate change occurs.

A clear legal framework and solid agreements between riparian countries should therefore be envisaged and proposed, with resilient programs and comprehensive policies that tackle climate change effects efficiently.

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The adverse effects of managing these resources unilaterally and of failing to include consultation prior to drawing up a policy of cooperation between the riparian countries weigh heavily on the achievement of water peace. This transboundary resource, vital for the socio-economic and sustainable development of nations, is currently at the heart of debates between states in the EMME region, and is now on the agenda of their environmental diplomacy. National, regional, and international actors and institutions including universities, academics, think tanks, the private sector, and civil society organizations have been actively involved in the field of water cooperation since the Paris agreement, which encouraged the participation of a variety of stakeholders and the taking of a bottom-up approach. However, progress is lagging behind, and there is an urgent need to create a new momentum for cooperation and effective synergies between pivotal actors such as researchers and academics.

In this context, a set of initiatives were launched with the aim of producing more coherent and evidence-based policies informed by national, regional and international stakeholders. The Climate Change Initiative (CCI) was launched by Cyprus and approved by the Council of Ministers of the Republic of Cyprus in March 2019. This is a governmental initiative for coordinating regional actions to mitigate and adapt the impact of global warming. The recent report has produced important findings and recommendations. One notable recommendation concerns gender-responsive adaptation policies and identifying the constraints on promoting gender equality in climate change responses[9].

There is an urgent need to create a new momentum for cooperation and effective synergies between pivotal actors such as researchers and academics.

The Cyprus Institute's Climate Change Initiative in the EMME region

Cyprus' leading role in for tackling the climate crisis was highlighted at the 2nd International Conference on "Climate Change in the Eastern Mediterranean and the Middle East EMME region" staged in October 2021 within the framework of the Cypriot government's initiative for coordinating climate change actions in the EMME. The Climate Change Initiative (CCI) has yielded impressive scientific background work produced by thirteen scientific task forces and around 240 scientists from the EMME region. Effective policy measures and adaptation policies based on solid scientific facts and mature technologies have been proposed.

One of the thirteen task forces was the Water Resources Task Force, which concluded their report in December 2021. The report recommended strengthening the cooperation between countries in the EMME region in the field of shared water resources, both surface and groundwater. In this respect, the Cyprus Institute (CyI), whose CCI priorities include conflict resolution aimed at the sustainable management of transboundary water basins and aquifers, recognized that it could generate opportunities for cooperation with and between riparian countries.

[9] p. 45

The CCI includes a range of partnerships to allow for the creation of an integrated and concerted action. These include the EMME Hydrodiplomacy Partnership Program (HPP) launched in 2021 at the 2nd International Conference on Climate Change, which took place in Paphos, Cyprus, on 12–14 October 2021.

The Cyprus Institute's Hydrodiplomacy Partnership Program (HPP)

The HPP was endorsed and launched in March 2022 at the World Water Day conference staged at the CyI premises in Nicosia. The participants from the EMME region signed the World Water Day Declaration in which they acknowledged the Cyprus Institute's initiative for a Hydrodiplomacy Partnership Programme and agreed to do the following: promote the hydrodiplomacy framework; raise awareness among decision-makers in countries where there is a need for capacity building; and develop guidelines for Transboundary Basin Management. Recognizing that conflict resolution between riparian states should be addressed from the perspective of "water for peace" rather than "war for water" is key.

Moreover, as a scientific hub of excellence, the Cyprus Institute is leading a new project for the Mediterranean region: WEFE4MED. The project seeks to foster the adoption of a Water-Energy-Food Ecosystems nexus Approach in the Mediterranean through the establishment of a Nexus Community of Practice (NCoP) to confront the climatic and environmental challenges facing societies and agro-ecological systems.

As a scientific hub of excellence, the Cyprus Institute is leading a new project for the Mediterranean region.

Hydrodiplomacy at a glance: a framework for building regional cooperation

Hydrodiplomacy is a tool for applying integrated water resource management at a national and transboundary level, in accordance with a cooperative model seeking peace among riparian countries**.**

This cooperative approach in managing transboundary water leads to sustainable economic benefits for all riparian countries and will eventually help the Sustainable Development goals (SDG2, 6, 7) to be met.

The hydrodiplomacy **framework** seeks to build a new form of governance geared towards building peace, a process for mediation or negotiation which targets water-conflict resolution and the sustainable management of international water. This could be achieved through active cooperation between riparian countries, **instead of relying on** the "Harmon Doctrine" **approach to shared** water resources, **which underlines the** absolute sovereignty of a riparian country over the shared basin.

To achieve its purposes, hydrodiplomacy mobilizes technical, institutional and diplomatic expertise. It brings together diplomats, scientists, academics and policy makers who cooperate with a view to achieving Integrated Water Resources Management (IWRM) at a transboundary basins level. This innovative approach will help bring about an equitable and reasonable use of water, achieving mutual success and a win-win situation between shared water basins and riparian countries.

As a first step, the approach is purely technical. Sharing scientific data is essential and has to be approved by all riparian countries. It is also necessary to have the technological tools required to build water databases to produce simulations for future demand management which take global

changes into account. These changes will provoke extreme weather events that will require resilient adaptation plans capable of countering these recurrent natural phenomena. Smart water management is an important tool to ensure the effective and optimal management of shared water resources.

Hydro diplomacy mobilizes technical, institutional and diplomatic expertise.

The main objectives of hydrodiplomacy are:

- To remove tensions at the basins level by turning water into a catalyst for peace, not a source of conflict.
- To secure water resources and the supply of water for present and future generations in accordance with the principles of sustainable development.
- To create regional economic development dynamics, integrating the water-energy-food nexus that connects factors which interact in the economic and social development of the countries concerned.
- To establish Regional Basin Authorities which share projects databases and project information.
- To generate mutual benefits for riparian countries.
- To mobilize international donors for the development of shared basins.
- To create a community of technical and diplomatic practice to ensure the sustainability of the water resource agreements.

The institutional aspect of Hydrodiplomacy will follow as a second step. It will involve mediation and or negotiation, engaging the support of the European Union and the UN for conflict resolution in international basins (UNECE, UN Convention 1997 and EU Water Framework Directive), the implementation of SDGs, and the implementation of a participatory development approach that should lead to the establishment of regional basin authorities.

The main objective of the Danube River Protection Convention (DRPC) is to ensure that surface waters and groundwater within the Danube River Basin are managed and used sustainably and equitably.

This cooperative model can be also applied on the Jordan, the Tigris and Euphrates, and the Nile as it is in Europe on Danube, the Rhine etc. through the UNECE 1992 Convention.[10]

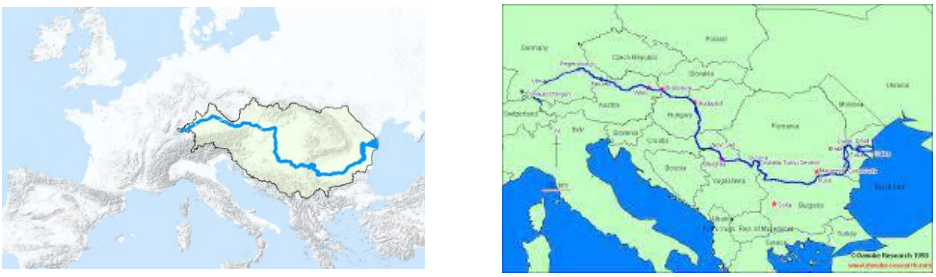

Figure 4: The Danube river

The main objective of the Danube River Protection Convention (DRPC) is to ensure that surface waters and groundwater within the Danube River Basin are managed and used sustainably and equitably.

[10] Hydrodiplomacy helps to overcome water-related conflicts and achieve win-win situations (the Danube, Drin, Indus, Senegal, Orontes rivers etc.); unilateral management certainly causes harm to downstream countries and endangers the water and food security of riparian countries (Tigris and Euphrates, Nile, Jordan rivers).

Figure 5: Danube River Protection Convention

The UNESCO Intergovern-mental Hydrological Program has been an important international platform for consensus-building and knowledge-sharing in the field.

The Convention was signed on June 29, 1994, in Sofia, Bulgaria, by eleven of the Danube Riparian States—Austria, Bulgaria, Croatia, the Czech Republic, Germany, Hungary, Moldova, Romania, Slovakia, Slovenia and Ukraine—and the European Community.

International cooperation on water issues is of paramount importance to the EMME region, due to the central geographical location of its water sources upstream (the Nile, Tigris, Euphrates and Jordan rivers) but limited water resources downstream. The importance of hydrodiplomacy in promoting this cooperation is clear from its implementation in several water basins around the world: Africa (Senegal river), Europe (Danube, Drin rivers etc.), Middle East region (Orontes river). The agreement on the Orontes River between the two riparian countries of Lebanon and Syria is considered a best practice in the region. Both countries were able to ensure their water rights to the Orontes River on the basis of the principles of equitable sharing and reasonable use of water resources postulated by the UN Convention of 1997[11].

The key to this success was the application by both countries of the UN Convention of 1997 as a legal framework that served as a basis for conducting technical and institutional processes of cooperation. Ultimately, the objective was to establish a river basin organization.

Multiple UN agencies contribute to bringing together riparian countries with a view to fostering dialogue and the sharing of information on water management and transboundary cooperation. Specifically, the UNESCO Intergovernmental Hydrological Program has been an important international platform for consensus-building and knowledge-sharing in the field. Its most recent initiative was the adoption of the "Strategic Plan of the Intergovernmental Hydrological Programme: Science for a Water Secure World in a Changing Environment, ninth phase 2022–2029". For the first time, the water strategy included an action plan and a financial implementation mechanism. Furthermore, the UNESCO Intergovernmental Hydrological Programme (IHP) has set up the ECOMED Academy as per their resolution XTR-IV-3; the Academy is hosted by the Cyprus Institute.

COP 27: an international framework for water security

In view of the above, and taking into consideration global changes worldwide, it is of paramount importance to grasp the extent and magnitude of the challenges that lie ahead. Equally important is the need for a quick and effective change in the manner in which water is managed by shifting to Integrated Water Resources Management (IWRM) at basin level.

[11] For more details, see the 2015 UNESCO publication *Science Diplomacy and transboundary water management, The Orontes River case*.

The Paris Pact signed at COP21 recommends the exchange of technical information between riparian countries as an essential prerequisite for any mediation or negotiation on international waters.

The climate crisis is the predominant threat to our planet, with cross-cutting implications for the stability, safety and sustainability of communities globally.

The **Paris Pact** on water and adaptation to climate change in the basins of rivers, lakes and aquifers was signed by 305 organizations from 87 countries at COP21 (2015, International Office of Basin Organizations INBO, International Office for Water).

The pact aims to improve forward planning and adaptation for aquatic ecosystems.

On 7-8 November 2022, 112 world leaders gathered in Sharm El-Sheikh, Egypt, for the COP27 climate summit entitled "Together for Implementation" to discuss and deliberate on how to best deliver on the global climate agenda and translate climate commitments into climate action.

The assembled heads of state and governments acknowledged the scientific reports on the current and future impacts of climate change and recognized the gravity of the climate emergency facing the planet. It was emphasized that the world has witnessed unprecedented extreme weather events with prominent costs that have dramatically affected the lives and livelihoods of the most vulnerable communities.

Leaders made it clear that the climate crisis is the predominant threat to our planet, with cross-cutting implications for the stability, safety and sustainability of communities globally.

While recognizing every county's responsibility to act and rise to the occasion, delivering on previous commitments enshrined in the Convention to the Paris Agreement, leaders reiterated that it was time to move from pledges to rapid, robust and impactful implementation.

Hydro diplomacy allows the establishment of a new governance to address the challenge of water policies--in particular, drinking water, agriculture and sanitation policies--by adopting innovative techniques within the framework of integrated management, while limiting socio-economic impacts.

In light of the above, leaders welcomed the convening of six multi-stakeholder high-level roundtable discussions over the two days of the Summit, which highlighted possible ways to chart a path to overcome climate challenges and to provide the finance, resources and tools to effectively deliver climate action at scale.

Hydrodiplomacy and the Transboundary Nexus: ensuring water, energy, and food security for future generations

The fight against global warming affects the entire world population; citizens and private and public actors should be mobilized to effectively address the adverse consequences of climate change. As stated earlier, climate change will impact heavily on the three branches of the nexus (water, energy and food) and eventually lead to disruptive social changes such as migration and extreme poverty.

It is important to ensure food, energy and human security in the EMME region through an equitable sharing of water resources. A joint, participatory, integrated and sustainable management of water resources supported and fully implemented by the EMME countries can reverse existing tensions.

Similarly, hydrodiplomacy could contribute to balanced agreements involving all the components in the nexus. Hydrodiplomacy allows the establishment of a new governance to address the challenge of water policies--in particular, drinking water, agriculture and sanitation policies--by adopting innovative techniques within the framework of integrated management, while limiting

socio-economic impacts. This governance brings together all the actors involved, notably through Public Private Partnerships (PPP).

This process depends on socio-economic benefits and cooperation opportunities to promote the sustainable development of countries which share the same basin, and thus to avoid political conflict while establishing a framework for conflict prevention and sustainable peacebuilding.

Finding new diplomatic approaches to achieve these objectives is key to ensuring that sufficient pressure is created for a positive dynamic in water cooperation. The involvement of civil society organizations in facilitating dialogue in informal settings can help build confidence and trust between various actors in the field. An example of such an initiative was undertaken by the NGO MEDURABLE with the involvement of the French Senate as the hosting institutions which play an important role within the framework of parliamentary diplomacy.

Partners in the Cyprus Institute's Hydrodiplomacy Partnership Program (HPP)

French Senate (Senator Olivier Cadic) with MEDURABLE

MEDURABLE is a French association which intervenes in fields relating to environmental protection, adaptation to climate change, sustainable development and international solidarity. Over the years, MEDURABLE has organized various symposia in collaboration with Senator Olivier:

2015: The Orontes River Basin

2016: The Jordan River Basin

2017: The Nile River Basin

2018: The Tigris and Euphrates

2020: The Governance of Water

These initiatives brought together under one roof "Luxembourg Palace" political figures and eminent experts in the field of water and sustainable development and provided an opportunity to debate in the service of the envisaged water peace.

Conclusion

Political stability is also an important factor in ensuring diplomatic dialogue between riparian countries.

Taking into consideration recent conflicts and the resulting energy crisis, which is already affecting the prices of commodities around the world and the EMME region, water, energy and food security is at risk. In 2020, between 720 and 811 million people in the world faced hunger and food insecurity. Since 2021, the World Food Programme has been warning of a global food crisis as the number of people facing acute food security increases[12]. The multiple crises of the COVID19 pandemic, climate shocks and the impact of conflicts have adversely impacted food and production systems globally. The multidimensional effects of the crises are therefore putting additional pressure on the intrinsic linkages between the three domains of water, food, and energy as the demand for each increases.

The international community should invest, as a priority, in diplomatic efforts aimed at achieving successful water partnerships and cooperation with a view to avoiding any further aggravation

[12] https://www.wfp.org/publications/war-ukraine-drives-global-food-crisis

of water stress and scarcity in the region, while ensuring food and energy security. To ensure the implementation of the ambitious yet pragmatic hydrodiplomacy framework and its nexus approach, the following need to be accomplished:

In the EMME region, water must create a bond between people.

- Implementing peace on the basis of water cooperation is a noble initiative which requires immense courage and goodwill from decision-makers. This cannot be achieved without funding from international donor agencies.
- Funding agencies should work on financing sustainable engineering projects that will help ensure the livelihoods of people in the MENA region.
- The role of international funding mechanisms is vital and should take into consideration at all times the social and economic background of each country.
- Technical cooperation between riparian countries plays a key role in creating a neutral platform where hydrodiplomacy actions addressing water conflict cases can be implemented and turn conflicts into success stories.
- For such cooperation to succeed, riparian countries should refer to the UN legal conventions (the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes, and the 1997 Convention on the Law of the Non-navigational Uses of International Watercourses) while seeking to solve their water conflicts. By doing so, they will act as "catalysts for peace" and benefit from the programs that provide funding for the development of the shared basins' economic sectors.
- When seeking to guarantee that everyone has access to water, energy and food, the technical responses and financial means often exist, but there is a need to transform national and regional sectoral practices that operate in a silo to a multidimensional governance that can integrate the use of new technologies and interdisciplinary approaches.
- Political stability is also an important factor in ensuring diplomatic dialogue between riparian countries. Political variables usually prevail over technical considerations in explaining the success or failure of an agreement in the field of water diplomacy. Recent examples from the Middle East region include the US-brokered maritime border agreement between Israel and Lebanon[13] and the UAE-brokered water-for-energy deal between Jordan and Israel[14]. However, in the context of a fragmented and volatile political situation, initiating hydro-diplomatic processes can foster an environment conducive to the emergence of more sustainable and just agreements.
- Awareness of the benefits of the hydrodiplomacy framework and the application of the transboundary nexus approach should be actively raised. The various initiatives targeting political leaders, decision-makers, researchers and civil society within the CCI will help foster economic and sustainable development in the EMME countries, which will help the adverse effects of climate change to be overcome and water peace ultimately achieved in the region.

Given the overlapping crises facing the EMME region, the various stakeholders in the field of water must rely on the implementation at scale of smart and multidimensional approaches to

[13] https://gulfnews.com/world/mena/lebanon-and-israel-sign-us-brokered-historic-maritime-agreement-1.91537989
[14] https://www.brookings.edu/blog/order-from-chaos/2021/11/23/israel-jordan-and-the-uaes-energy-deal-is-good-news/

transboundary water management that will enable long-term resilience. The hydro-diplomacy framework and the nexus approach illustrate the importance of opening up new horizons in terms of value and incentive creation for the implementation of pragmatic solutions which can allow ecological disaster to be avoided. As the former UN Secretary-General said in his speech at New York Climate Week 2014: “We don't have plan B, because there is no planet B".

In the EMME region, water must create a bond between people. This vital natural resource must become a tool for technical partnerships and broader reconciliation. The only remaining options for this region when it comes to finding new ways to deal with critical issues pertaining to the management of water resources and the preservation of ecosystems are based on cooperation and technical and economic criteria concerning resources, availabilities and current and future needs. Within the framework of integrated management and equitable sharing, it is possible to cultivate a “Water Culture” that will serve cooperation over this vital resource. We must give pay serious attention to the cooperation approach by fast-tracking diplomatic action at all levels, if we wish to maintain peace. In learning to share water, the populations will also get to know each other and learn to live together in a climate of confidence, respect and prosperity.

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