

**Yarmouk Futures Programme
Knowledge and Analysis Track**

**Basin-Wide Survey: Narratives and perceptions on the Yarmouk
tributary of the Jordan River**



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Basin-wide Survey: Narratives and perceptions on the Yarmouk tributary of the Jordan River

Lead Researcher: Dr. Muna Dajani

Consultant: Dr. Rola Quba'a

Research Assistants: Yazan Melhem and Enas Bakri

Illustrator: Ishraq Awashreh

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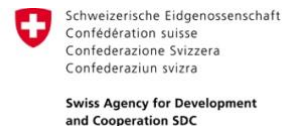


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ABBREVIATIONS

AFD	Agence Française de Développement (French Development Agency)
CSO	Civil Society Organisation
FAO	Food and Agriculture Organization
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (German Corporation for International Cooperation)
GoJ	Government of Jordan
IDRC	International Development Research Centre
JVA	Jordan Valley Authority
KfW	Kreditanstalt für Wiederaufbau Bankengruppe (German Development Bank)
MoLA	Ministry of Local Administration
MWI	Ministry of Water and Irrigation
NGO	Non-Governmental Organization
OSOI	Occupying State of Israel
SDC	Swedish Development Cooperation
SIDA	Swedish International Development Cooperation Agency
UEA	University of East Anglia
USAID	United States Agency for International Development
WAJ	Water Authority of Jordan
YHPB	Yarmouk HydroPolitical Baseline
YTB	Yarmouk Tributary Basin
YTJR	Yarmouk tributary of the Jordan River
YWC	Yarmouk Water Company

1 INTRODUCTION

1.1 Background: The Yarmouk Tributary Basin (YTB)

The Yarmouk Tributary Basin (YTB) is a transboundary basin and a tributary of the Jordan River (Error! Reference source not found.), which for decades has been the focus of water governance and conflict resolution academic and policy interest. The YTB is highly exploited, especially its groundwater and hosts very rich and dynamic agrarian communities in Syria, Jordan and Israel. For decades, there has been reliance on international actors (states, and donor agencies) in addition to local and regional hydrocracies and knowledge holders to provide recommendations for sound policy interventions and regulations to carry out enhanced water management both on a country level and also within the riparian countries sharing the basin. However, this involvement still lacked any significant breakthrough between riparian countries and knowledge of the science, policy, politics and societal/economic/cultural characteristics of water management remained inadequate and incomplete, a caveat the Yarmouk Hydropolitical Baseline (YHPB) report explores extensively (UEA, 2019).

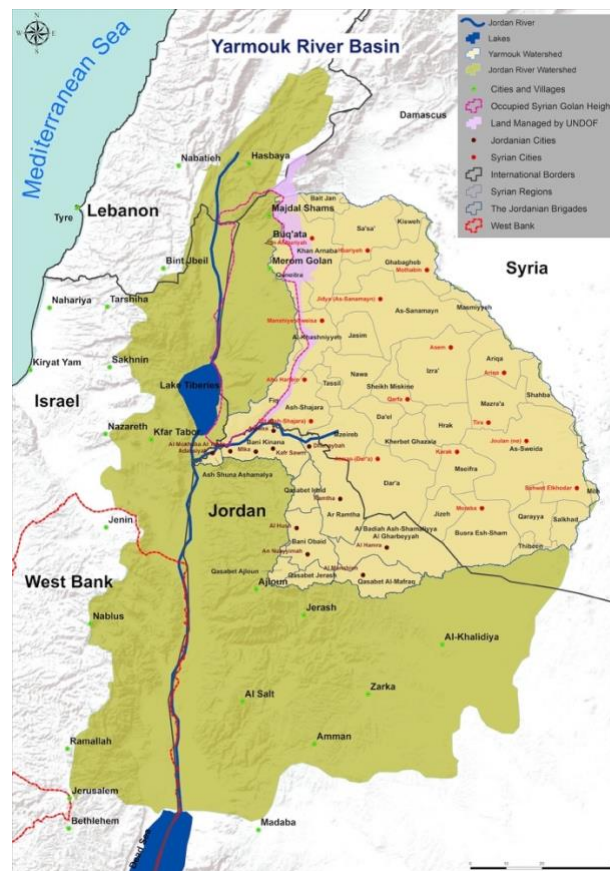


Fig 1 YTB Map (YF, 2021)

The YHPB report and the rich resources that accompany it, in addition to the Yarmouk Futures knowledge depository¹, an online platform that highlights the main findings of the Yarmouk Programme, have filled this caveat in interdisciplinary knowledge production about the basin. One feature of this work is its attention to and investment in centring the voices of the communities of the basin as important stakeholders in water governance and management. In addition to the production of a video series highlighting the relation between the basin communities and its resources, an ethnographic study of the changing relations with the Yarmouk River has been produced. Furthermore, this survey attempts to explore the basin's communities knowledge and perceptions of water issues in this transboundary basin, and to ensure that communities who are experiencing the trickle down of policies and regulations on water use are a) aware b) engaged c) and knowledgeable about water arrangements signed on their behalf.

The water agreements¹ signed in the YTB have gained a lot of media attention and has solidified narratives and discourses on water governance, it always did so without scrutiny or transparency, leaving communities of the basin mostly lacking a clear picture of what the agreements stipulated. Media attention is heightened when water related events are raised by politicians and can be characterised as being reactive to such events. For example, in 2019, the return of al Baqoura and Ghamr sparked media attention throughout Jordan and the media also significantly covered the event². From a quick overview of news media outlets online, we can see that communities are visibly active and mobilised on transboundary water issues. However, only a few news outlets and platforms, like 7iber³, exposed the historical and political legacies and the implications of such a move on Jordanian communities that live in those areas and engaged the public in a more informative approach on the implications on water management in Jordan.

Based on the above, this survey was carried out to shed a light on the perceptions and viewpoints of primarily the communities in Syria and Jordan who reside in the YTB basin on transboundary water management. In addition, the survey also sought to gather perceptions of inhabitants of the Arab world and the wider international public working in the water sector. This survey was prepared by the Yarmouk Futures Team in collaboration with WDC-JUST and funding from University of East Anglia (UEA) and the Swedish Development Cooperation (SDC). It is considered to be one of the deliverables of the Knowledge and Analysis Track under the Yarmouk

¹ Yarmouk Knowledge Depository website. <https://wdc-just.com/publications/yarmouk-blog/>, see also Yarmouk Hydropolitical Baseline Project website: <https://wdc-just.com/the-yarmouk-hydropolitical-baseline/>

² BBC News Arabic (2018) 'rejoice in Jordan as Baqoura and Ghamr lease to Israel is suspended' <https://www.bbc.com/arabic/trending-45940954>

³ 7iber (2017) ' Will Jordan reclaim control over its land from Israel next year?' by Shaker Jarrar <https://www.7iber.com/politics-economics/will-jordan-reclaim-control-over-its-land-from-israel-next-year/>

futures programme which aims to raise awareness and enhance knowledge about the basin and the water management.

1.2 Literature Based-Narratives of Water Governance in Transboundary River Basins

It is widely acknowledged that discourses shape water policy making. Water discourses “stands for different intellectual frames within which water, its manifold attributes, utility as well as associated stresses and threats are viewed, narrated, discussed and evaluated by others (Salamé et al., 2021:147). Therefore, discourses can legitimise and back certain solutions and discredit and silence others (Dryzek, 1997). In a highly volatile region, certain narratives also tend to be reinforced by political unrest and long-term events.

Zeitoun and co-authors (2013) have explored how official narratives are found to open or shut windows for resolution of the conflict in the Upper Jordan River Basin and therefore, have to be re-considered and challenged to achieve a more transformative water management arrangement. Hussein and co-authors (2020) argue that amidst the Syrian refugee crisis, host countries of Jordan and Lebanon discourses about water scarcity and hydropolitics were further reinforced by including new narratives about refugees and how demand for scarce water increased because of Syrian migration to nearby countries. What this tells us is that discourses also spill over to shape communities’ understandings and positions about water and its utilisation.

A thorough investigation of discourses of water management was carried out by Hussein (2018a). In this work, Hussein identifies two predominant narratives in Jordan; i) one of water insufficiency, and ii) one of water mismanagement. The one on water insufficiency assumes that water issues are external to the Jordanian government, and where Jordan needs to adapt to it. Nature limitations, refugees and actions of neighbouring countries are identified by the government as the limiting factors to sound water management. This water insufficiency narrative is widely held by government officials and actors.

In the second discourse of water mismanagement, the culprit of shortcomings are blamed on the Jordanian government by non-government actors, international donors and agencies. In such an investigation, an important actor is missing, which is the local communities. It is clear that perceptions of water users and local communities within the basin has not been taken into account in neither policy nor in academic fields. “Perception of water users” refers to how local communities experience and understand their water reality and to what extent they are aware of the realities and conditions that shape water governance today. These perceptions can be derived and influenced by stronger discourses and narratives shaped by decision makers and

other influential actors. They can also be developed from daily interaction and local knowledge of the resources in question.

How does discourse and narrative construction trickle down to water users who are usually detached from decision making circles? For instance, Hussein (2018b) has explored how narratives of water scarcity are integrated into the Jordanian education curriculum and textbooks. In transboundary basins, this translates to increased emphasis on discourses of politicisation and securitisation of water that is replicated widely in mainstream media and amongst communities and practitioners. Hence, the water insufficiency narrative became a dominant narrative translated into policy interventions and solutions which trickle down and impact water users' access and use of water, especially for agriculture.

Moreover, having a big gap between decision makers and the general public, even between communities living within the boundaries of the basin, may hinder a truly transformative approach to participatory water management and precisely a transformative transboundary water governance.

A basin-wide survey is an attempt to account for the diversity of knowledge and values attributed to water management through participatory approaches and how such approaches are highly relevant to transboundary water management (Reynaud et al, 2015). We haven't come across a survey that is concerned with transboundary water management in the Arab region in particular and the indication is that there's more to learn through engaging with local communities on matters related to transboundary water management.

1.3 Survey Objectives

The aim of this survey is to identify narratives on the Yarmouk tributary of the Jordan River (YTJR) held by different sectors of society in countries of the YTB (Jordan, Syria, and the Occupying State of Israel (OSOI), including the occupied Syrian Golan), as well as neighbouring countries (Lebanon and Palestine) and the international water diplomatic and management community. Specifically, the survey aimed to investigate narratives related to water use and water management and how it changed over the past 30 years, as well as perceptions on the bilateral agreements and the hydrocolloidal conflict within the YTB. To do so, the survey relies on two dominant narratives identified by Hussein (2018a) of water insufficiency and water mismanagement as a departing point and then expand to investigate additional narratives that arise when analysing survey participants' responses. To do so, the survey also investigates whether water users construct varying narratives on water conflict, or they replicate the official discourses as well as to explore whether the basin inhabitants and populations of the countries in the region concur or disagree with these narratives.

2 METHODOLOGY

The main activities of the research included carrying out a literature review, developing the questionnaire and identifying gatekeepers to assist with reaching out to stakeholders and participants, conducting the survey online, followed by analysis of findings and reporting.

YTB Geographical Extent

The survey covers the YTB and its communities in Syria and Jordan who reside in the YTB basin on transboundary water management.

In Syria,

In Jordan, the Yarmouk River Basin is located in the northern part of the country and constitutes the border between Jordan and Syria. Of the 6,231 km² area of the Yarmouk River basin (YRB), around 1,139 km² are located within Jordan (MWI, 2015). Fig 2 illustrates the boundaries of the YRB within Jordan and the villages considered to be located within the YRB. The tentative list of those villages is presented in Annex I.

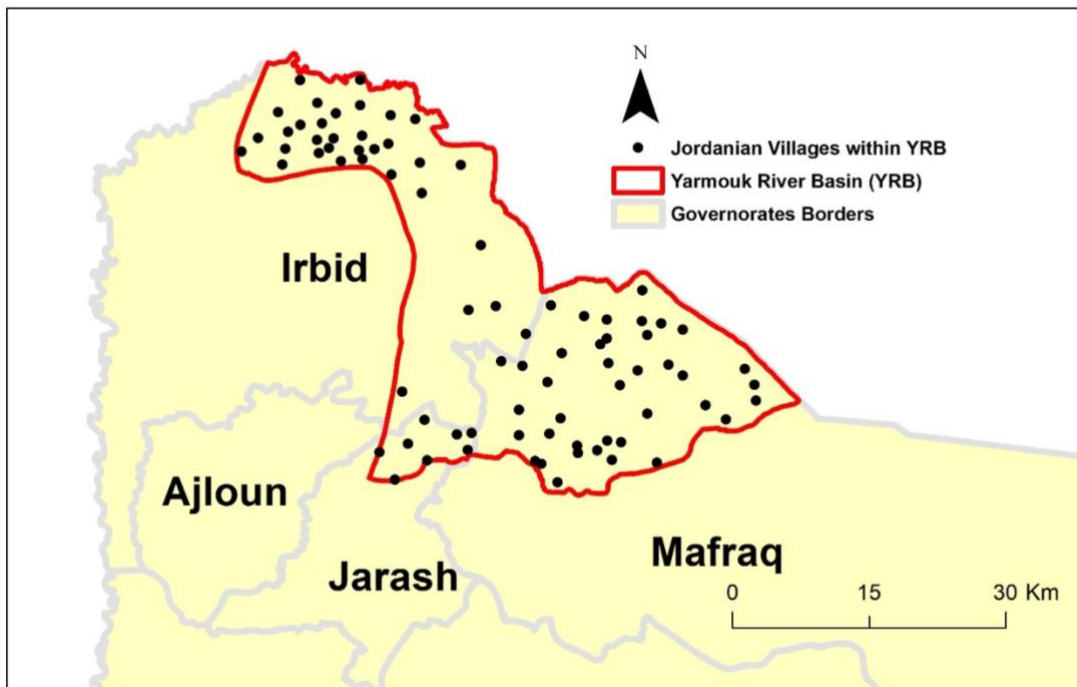


Fig 2 Yarmouk River Basin within Jordan (Yarmouk Futures, 2021)

Stakeholders Identification

The objectives of stakeholder identification are to:

- Understand the different types of stakeholders of relevance to the objectives of this research and group them into categories.
- Understand the role/interests of the different stakeholders; and
- Ensure that the different stakeholder groups have been engaged where required and ensure that the target stakeholders of this research are engaged through appropriate means of engagement.

The targeted stakeholders of this survey included i) Jordanian governmental institutions such as Ministry of Water and Irrigation (MWI), Jordan Valley Authority (JVA), Yarmouk Water Company (YWC), Ministry of Local Administration (MoLA), Ministry of Planning and International Cooperation (MoPIC), Irbid Governorate, Ajloun Governorate, Jarash Governorate, Mafrq Governorate, Bani Kinanah Department, ii) representatives of surface and ground water farmers, iii) educational institutions within YRB, iv) research and educational individuals, as well as previous employees of MWI and JVA, v) local and international non-governmental organizations (NGOs) and cooperatives in the Yarmouk Basin. The list of stakeholders from governmental ministries and institutions to international donors and non-governmental and water users' associations are provided under Annex II.

A similar stakeholder identification could not be possible for the Syrian part of the basin. The team relied on its extensive network of partner organizations, researchers and civil society members to disseminate the survey among Syrian participants.

For the OSOI, we relied on a network of water professionals to help us disseminate the survey.

Questionnaire Design and Dissemination

The questionnaire was designed based on the survey objectives and it was reviewed by a number of local experts from the Yarmouk Futures team⁴ and regional partners. Conventional survey topics and themes included knowledge of history, diplomacy, conflict and cooperation, hydrology and water quality and quantity. The survey was developed by the team (Annex III for

⁴Check Yarmouk Futures Programme webpage: <https://wdc-just.com/yarmouk-futures/>

the full questionnaire in English) and was available in three languages: Arabic, English and Hebrew. It was disseminated through SurveyMonkey platform.⁵

A total of 199 questionnaires were filled out online and they were as follows: 179 as Arabic respondents, 17 as English respondents, and 3 as Hebrew respondents.

More than 80% of the participants were male, and the majority of participants (70%) were from the age group between 40-69 years. Also, the questionnaire was filled out by university graduates at different levels (91% total; 25% by PhD holders, and 58% with Bachelors' and Masters' degrees). One of the comments received about the questionnaire is that it was a complex survey to fill out by the general public. This reiterates how water and knowledge about water remains within the realm of experts who have been delegated as holders of superior knowledge about a common resource such as water. More than half of participants were Jordanians (62.5%), then Syrians (13%, including the occupied Golan Heights), followed by Palestinians (8%), Lebanese (7%), in addition to participants from other countries (4% mainly Europe and US, 3% from OSOI , and 2% from Iraq).

Challenges

The survey faced a group of challenges related to its online format and design. While it offered reaching wider group of participants beyond the area of the basin and region, the main limitation was to reach participants through online dissemination and word of mouth. Most participants as highlighted above were involved to an extent in the water sector and more experienced in using online surveys. This limited our outreach when we wanted to reach out to community members who had access to mobile phones only and limited internet connection. These limitations were partly alleviated by hiring a local researcher in Jordan who managed to provide tablets to fill out some surveys with women farmers' cooperatives and farmers association in Irbid and nearby villages. This type of survey was revealed for the team to require a simplification of questions and the support of an established social media platform (for example, a news agency or other social media platforms) to disseminate it widely.

Another challenge has been the technical and policy nature of the survey topic and questions. This has affected the willingness of some participants to fill out or complete the survey resulting in incomplete data. Some of our survey participants have declined participating in filling out the questionnaire or expressed it in their answers because they believed they had little knowledge about how water is managed in the basin. This is not surprising as previous research has shown

⁵ SurveyMonkey platform. www.surveymonkey.com

that water management and policy making is relegated to decision making circles and is completely detached from the general public.

The third challenge and limiting factor is the outreach of the survey. While the initial representative sample was estimated to include up to 400 in total from the YTB inhabitants in Jordan and Syria and the OSOI, it was envisioned to include to also include voices from the general public in the region and beyond. Therefore, the survey results are not of a representative sample and therefore the findings and recommendations are equally limited.

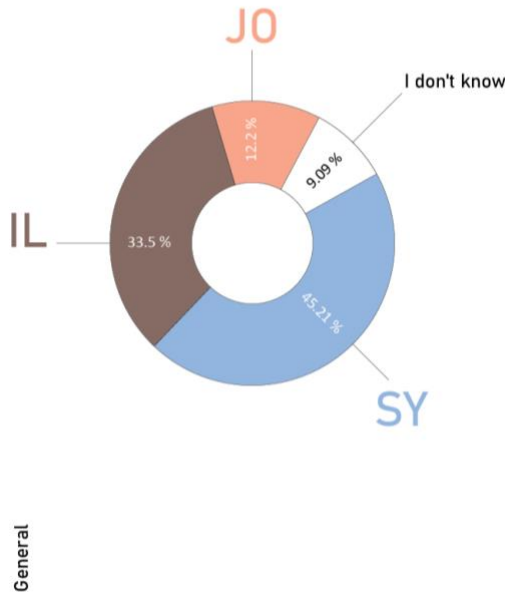
3 FINDINGS AND RESULTS

3.1 Perceptions on Water Use in the Basin

According to the survey results, around 45.2% of the participants perceive that Syria is the riparian using most of the Yarmouk Basin's water (78% of the respondents were Jordanian, 14% Arab and 8% Syrian). As illustrated in Fig 3 (responses to Q8 of Annex III), the participants reasons for this selection seems to conform with the realities on the ground and were as follows: i) the basin lies mostly in Syria and the river source is within its territories, and ii) Syria has throughout the decades developed its water infrastructure to facilitate and promote water abstraction for agriculture.

Around 33.5% of the participants also think Israel is using the basin's water significantly, but due to its encroachment on the basin's water and its power to exploit and enforce its current abstraction (63% of Jordanian respondents, 24% of Arab respondents and 13% of Syrian respondents). This is in line with discussions provided in the YHPB, which also indicates that Israel benefits from storing of excess flood water (as stipulated in the Jordan-Israel Peace Treaty Water Annex) in addition to water stored in dams in the occupied Syrian Golan Heights (UEA, 2019).

Q8: Which country uses most of the Yarmouk Basin's water?



Descriptive Responses

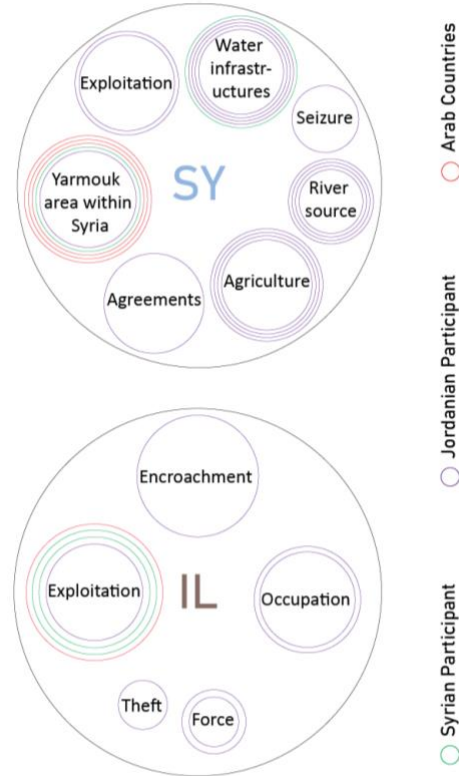


Fig 3 Water use in the Yarmouk Basin (IL: Israel, JO: Jordan, and SY: Syria) (YF, 2021)

3.2 Perceptions on Water Management

Historical Legacy of Water Management

The narrative on historical legacy of water management in the basin was investigated through Q9 of Annex III, where Q9 asks about the most significant period that shaped the water reality of today in the basin. The participants responses are illustrated in Fig 4 and it shows that the decades between 1948 and 1970 were identified as critical. These decades were rightly significant as they shaped water realities in the YTB and the wider JRB through processes of colonialization (British and French colonial mandate and the nation-state projects which ensued), in addition to the Palestinian Nakba and refugee crisis after the creation of the Israeli state (see more details in UEA, 2019).

Another significant period highlighted by survey participants was 1990-2011 because of signing and implementation of bi-lateral agreement to share the waters of the basin, in addition to the proliferation of water infrastructure in the basin to meet the growing population's demand. Participants also found significant but to a lesser extent two other periods; namely

1970-1990, where each country was investing in its water infrastructural development and developing its agricultural sector with huge reliance on the water in the basin. Another period is the current period (2011-present), where participants expressed how these decades have both resurfacing conditions (war, conflict) with an emphasis on population growth and climate change.

Fig. 4 illustrates how different participants (Jordanian, Syrian and other Arab nationalities) answered the question and their choice. For the decades 1948-1970, it is evident that these decades were characterised by political motivations to secure water by colonial powers, which all participants agree to. The 1970-1990 decades show how political conditions continue to control how water is managed, but Jordanian participants show how it was also a period of development of agricultural infrastructures, while Syrians continue to see it as a period where politics played a big role. For 1990-2011, Jordanian participants show that the agreements played a central role in water management in the basin, while the Syrian participants show less attention to agreements and show that water management in the basin in those years were focused on development of infrastructure and the agricultural sector. Arab participants highlight the big politics of peace treaties and agreements and the focus on infrastructure. Clearly, for Jordanians, it can be deduced that agreements largely shaped the water management and governance in the basin much more than it did for Syrians. This is due to the fact that for Jordanians, the YTB is of more significance and contributes much largely to the provision of water than it does for the Syrians. Since 2011, Jordanian participants show how war, displacement, population growth shaped the management of water in the basin, a topic that many academic and practitioners (e.g. Selby et al., 2017) have also paid close attention to in order to shed light over the long-term effects on water management in the basin. For Syrian participants, these decades are significant because of the impact of climate change, another factor where its contribution and impact on long term water management requires much more scrutiny and is one factor which current agreements in the basin show no concern for (UEA, 2019).

Q9: In your opinion, what period has been the most important in shaping the water reality of today in the Yarmouk Basin? and why?

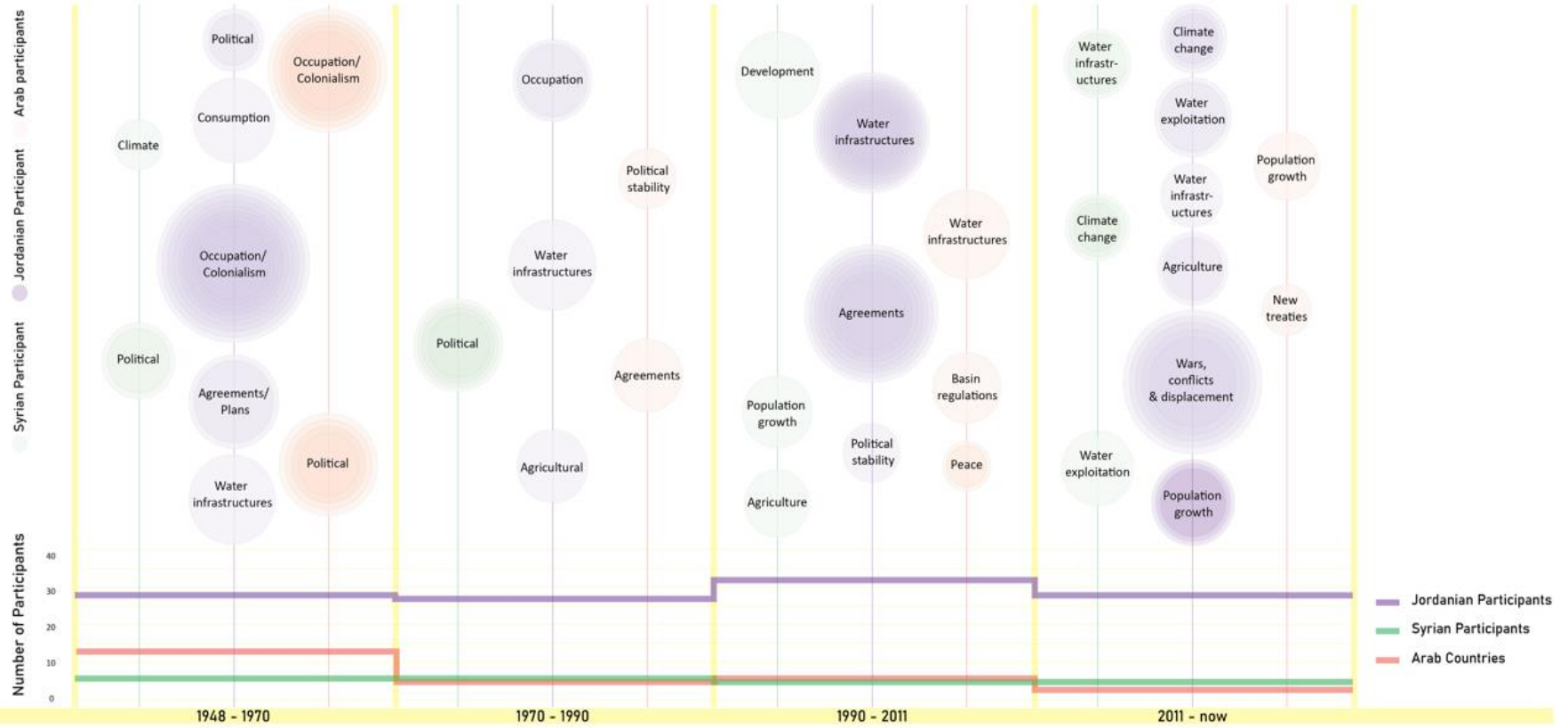


Fig 4 Historical periods shaping water reality in the YTB (YF, 2021)

Who Plays a Role – All are Responsible

Evidently, there are multiple actors that play a role in shaping water realities in the basin. Most participants agreed that their own government, other governments and international donor community all play a role in shaping this water reality (Q10 of Annex III). 29% of Syrian participants stated that their government plays a role in shaping the water reality in the basin, while 33% thought it's the role of other governments in the basin. For Jordanians, only 14% thought it's only the Jordanian government who shapes the reality, while 47% shared that this reality is shaped by other governments. 22% of Jordanian agreed that it's both their government and other governments who play a role. These results may imply that for Jordanians, water realities in the basin are influenced by other governments in the basin (i.e. Syria and Israel) but that it's the transboundary aspect of the basin that dictates that all countries have a role to play (22%).

Water Management in the Past 30 years has Worsened – a Human-Induced Crisis?

Most answers (Q11-Q13 of Annex III) describe water management as significantly worsening in the last 30 years. 77% of Jordanian, Syrian and Arab respondents agreed that the water management in the YTB has significantly worsened, while around 16% responded that it remained the same and 7% think it improved. Fig. 5 highlights what participants have shared as the reasons for the worsening of water management in the YTB. What Jordanian, Syrian and Arab participants agree on is that agreements, weak water management and weak regulations and laws contribute to this state of worsening conditions.

Water agreements signed in the basin are highlighted as the main reason behind that worsening, as they are weak and irrelevant to water realities faced by communities of the basin. This conforms with the findings of the YHPB report, where agreements were analysed meticulously to highlight their inadequacy (UEA, 2019). Another important reason behind the worsening was identified as the inappropriate infrastructure. As Zeitoun and co-authors reveal (2019a), the infrastructure built and operated under the bi-lateral agreements (between Israel and Jordan, and Jordan and Syria) impede transformative approaches to just and equitable water management, and to a large extent reinforce the power asymmetries between riparian countries. In relation to discourse, it can also be argued that agreements and the infrastructures they materialise into, impede discourse transformation and strengthen certain narratives on water securitisation, for example. This leads to silencing or weakening of other narratives that might arise that take into account communities' knowledge and generational experience in managing and knowing water. Climate change also has a significant role in the deterioration, exacerbating an already alarming inefficiency and shortcoming as seen by participants.



Q11: Do you think water management in the Yarmouk Basin in the past 30 years has (Significantly improved/ Remained the same / Significantly worsened)? and why?

Fig 5 Worsening water management in the YTB (YF, 2021)

3.3 Bilateral Agreements in the YTB

As the UEA Hydropolitical Baseline on the YTB shows, the agreements signed in the basin (1987 Jordan-Syria Agreement and the 1994 Jordan-Israel Water Annex of the Peace Treaty) both have been concluded to be part of the problem of sustainable water management (UEA, 2019). The report concludes that the Syria-Jordan Agreement is characterised by omissions, contradictions and ambiguities and is no longer ‘fit for purpose’ (p. 108). The fact that the Agreement was signed to build al Maqaren dam makes it unfit and has given Syria a sanctioned approval for its development of dams and groundwater upstream. Therefore, it’s not surprising that survey participants’ perceptions show that Syria is not committed to the agreement, while Jordan fully adheres (Q 19 in Fig. 6). The ambiguities that are inherent in the 1987 agreement result in a consistent narrative that centres the failure of the agreement on Syria. The Syrian water policies are blamed for the lack of adherence to the treaty, mainly the proliferation of illegal groundwater wells and the dams that were a long-term strategy of the Syrian government. Little knowledge is available about how the Agreement itself is very

limited and has clearly approved of the dam construction on the Syrian side, placing Syria as the stronger party. Here, the upstream advantage is mentioned but not as prominently as the power and control over water through infrastructure.

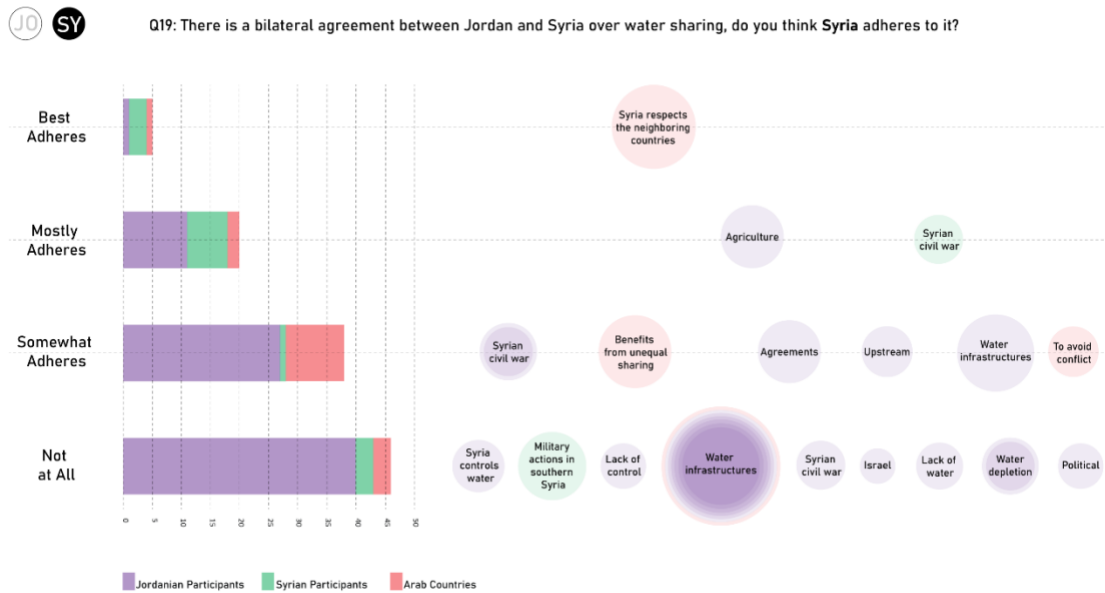


Fig 6 Does Syria adhere to the bi-lateral agreement with Jordan (YF,2021)

The Water Annex of the 1994 Jordan-Israel Treaty shows similar narratives regarding Jordan’s adherence to the Treaty, with a prevalent explanation of Jordan having ‘no choice’ but to adhere, revealing material, bargaining and ideational power at play (Q.20 of Annex III). As for Israel, there was an agreement by most of the participants that Israel’s hegemony over water as an occupying water maintains its lack of interest to adhere to agreements (Q21 of Annex III). Jordan is perceived as the weakest link having no other choice but to accept the terms of the agreement.

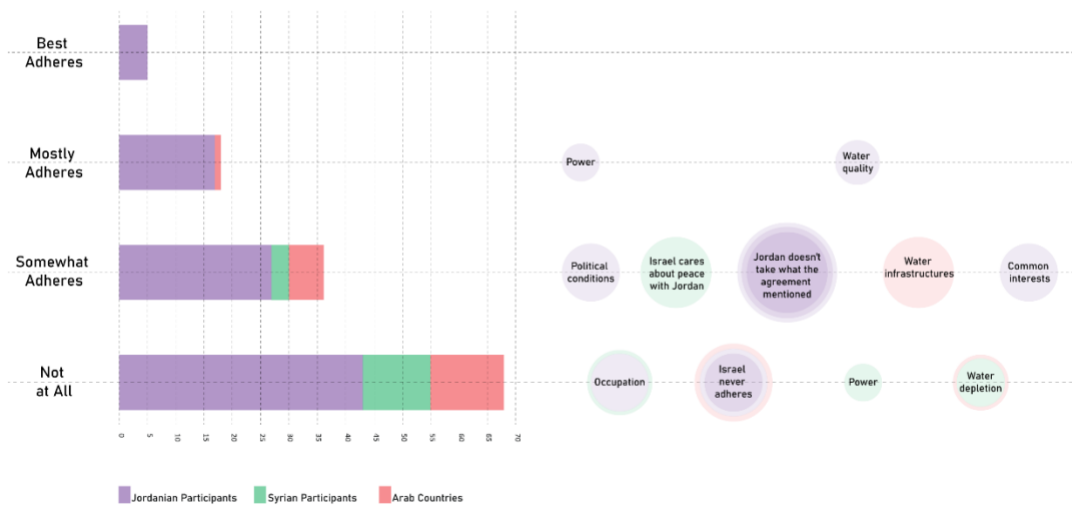


Fig 7 Does Israel adhere to the bi-lateral treaty (YF, 2021)

This confirms what Hussein (2017) refers to as the dominant Jordanian narrative of *'Syria keeps violating the agreement'* indeed is reciprocated by communities in the basin, especially Jordanians. This also reflects how the ambiguity of the agreement, and its evident shortcomings and limitations are not fully understood or explained to water practitioners and less so to the wider public (Zeitoun et al, 2019b).

3.4 Why is there conflict in the YTB? Is it only about Water scarcity?

Water scarcity has been a persistent sanctioned discourse for the failures of water management in the basin and extends not only to official and government positions but also spills over to media, curriculum and the public discourse as Hussein (2017) shows. According to the survey results (Q22 of Annex III), conflict in the basin is partially due to water scarcity but is further compounded by 'political reasons' (Fig 8). This shows that while scarcity of available water sources is acknowledged as an important factor for conflict over water, respondents were also aware of the multiple factors at play including mismanagement, climate change and demographic issues.

Q22: Why is there conflict over water in the Yarmouk Basin?



Fig 8 Selection of reasons for conflict over water in the YTB (YF,2021)

4 CONCLUSION

Narratives, like other critical factors leading to transboundary water arrangement in the YTB (Fig 9) are imbued with power – namely ideational power to impact decision making and public opinion about water and its centrality to our lives and livelihood (UEA, 2019:99). Within the considerable limits of the data, we may conclude that narratives are dominant and travel to water users and community members within the YTB and the region, representing an extension of those ideas to the general public, as explored by Hussein (2018a). What can also be concluded within the limits of the study is that communities can construct multiple narratives regarding the water management in the basin: acknowledging ‘natural’ causation (climate change, limited water availability) but also clearly identify failure in water management by the governments in the basin, where infrastructures and agreements are expressed as inadequate and contributing to the worsening of the water situation in the YTB.

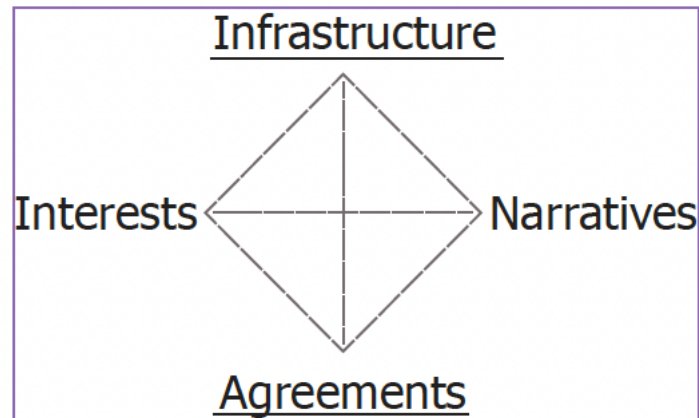


Fig 9 Factors influencing current water arrangements (UEA, 2019)

Within the limitations of the survey, the survey provides a first of its kind exploration of how local community members and basin inhabitants assess current transboundary water governance. The survey results show that these groups may indeed be knowledgeable about water governance in general but lack clear engagement with policymakers to remain up to date with arrangements happening over water in the basin. It also shows that there could be potential for community engagement in water governance, where communities are part of the expertise knowledge due to their generational accumulative and adaptive management practices.

What the survey revealed as well is how socially constructed our ideas about water are, and how it has become so hyper-politicised and framed as an object of conflict between nation-states and riparian countries. This is a cause for concern, as any attempt to transform such dominant narratives and perceptions will require engagement and adherence to a truly transformative approach to transboundary water governance (Zeitoun et al, 2020).

Finally, the survey outcomes do reflect that communities are aware of the shortcomings of current transboundary arrangements and although the survey couldn't be extended further to consider solutions and recommendations, it is evident that local and regional communities are interested, engaged and willing to participate and share their reflections and experience to enhance and formulate more inclusive, effective and participatory water governance. From a practical point of view, recommendations for surveys in the future is to expand the survey to include a deeper engagement with communities and to expose highlight community-driven narratives that may exist but require further investigation and extensive fieldwork. A blended approach would require triangulation of data sources and methods and an immersion in qualitative approaches, where surveys could be

one of the methods used in addition carrying out ethnographic work (Masamreh, 2021) and the use of visual methods (Stories of the Yarmouk video series, 2021).⁶

⁶ Voices from the Yarmouk River Basin. Video series produced by Ramzy Haddad for the Yarmouk Futures Programme. <https://www.youtube.com/channel/UCeU0LBQ-m6mJam2LYqe2tqA>

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6 ANNEXES

6.1 Annex I Jordanian Villages identified as located within the Yarmouk River Basin

Governorate	Village Name
Irbid	No'ayymeh, Bwaidhah, Industr. City, Ramtha, Mghayyer, Al'al, Torrah, Hatem, Shajarah, Azriet, Saileh, Mzaireeb, Balad Ashaikh, Khrayybeh, Kharja, Ebder, Al-Qseeryan, Zwayeh, Mansheyat Kofor Soom, Hebras, Malk, Bareshta, Samar, Kofor Soom, Yebla, Emrawah, Dnaibeh, Hartha, Saham, Yarmook, Rfaid, Aqraba, Maqaren
Jerash	Qafqafa, Kofor Khall, Jnaidiyeh, Al-Harhasheyah, Mshairfeh, Fayha, Baliela
Mafraq	Erhab, Um Batmah, Mafraq, Bwaidhet Elaimat, Bwaidhah Sharqiyeh, Aqeel, Um Enna'am Sharqiyeh, Um Enna'am Gharbiyeh, Teeb Isem, Rojom Essabi'e El-Shamali, Dair El-Waraq, Manshiyyet Bani Hasan, Zbaidiyeh, Um Elloolo, Ghadier Abyadh, Khanasri, Hwaijeh, Nahdhah, Mansoorah, Rodhet Errwai'l, Fa', Rba' Sarhan, Al-Matalah, Um Essrab, Somayya Serhan, Hamra, Braiqa, Hoasha, Al-Drazy, Dandania, Mghayyer Serhan, Sama Serhan, Manshiyyet K'aiber, Harfoshiya, Swailmeh, Mshairfeh, Akaidar, Jaber

6.2 Annex II Yarmouk River Basin Stakeholders relevant to the Jordanian Territories

Stakeholder Group	Identified Stakeholders	Description of Involvement
Local Authorities	Ministry of Water and Irrigation (MWI)	MWI is mandated the development of strategies, policies and plans for the water sector. It operates through the Water Authority of Jordan (WAJ) and the Jordan valley Authority (JVA).
	Jordan Valley Authority (JVA)	JVA is responsible for the social and economic development of the Jordan Rift Valley including the development, utilisation, protection and conservation of water resources.
	Yarmouk Water Company (YWC)	YWC, a national company wholly owned by the Water Authority of Jordan, works to operate and maintain drinking water production and distribution systems that depend mainly on groundwater, along with a group of different springs and water sources in addition to collecting and treating wastewater in the four northern governorates of Irbid, Jerash, Ajloun and Mafrqa (MWI, 2021).
	Ministry of Local Administration (MoLA)	MoLA is the technical, financial and administrative advisor to all local councils in the Kingdom, and it also supervises the work of municipal councils and common services councils to ensure that the work of these councils is in compliance with the laws, regulations and instructions in force.
	Ministry of Planning and International Cooperation (MoPIC)	MoPIC role is in development, planning, and international cooperation. It is considered to be the recipient of any funding, and is responsible for providing, coordinating and managing the necessary funding for developmental projects in accordance with national priorities and strategies. Accordingly, MoPIC will know about the internationally funded initiatives within the YRB.
Governorates and Departments	Irbid Governorate	The role of the Governorates as stakeholders in this research study is that they are the entity to approve the needs of the governorate of services and development projects.
	Ajloun Governorate	
	Jarash Governorate	
	Mafrqa Governorate	

Stakeholder Group	Identified Stakeholders	Description of Involvement
	Bani Kinanah Department	It is one of the nine departments that constitute the Irbid Governorate of Jordan and has 5 municipal councils.
Water User Associations		Water User Association (WUA) represent the interests of water users and organize the water users and their interests in front of the governmental institutions. So, in this research study, the WUA can represent local water users' perceptions and knowledge on water resources within the YRB.
Water Users / Large Farms / Owners of Private Water Wells	Representatives of surface water farmers at Kharja area	These stakeholders are direct water users with interests in the water resources of the YRB. So, in this research study, this group of stakeholders can represent local water users' perceptions and knowledge on water resources within the YRB.
	Representatives of groundwater farmers at Mafraq / Sama ALSirhan	
	Representatives of groundwater farmers at Irbid / Ramtha	
	Representatives of groundwater farmers at Mafraq	
Research / Educational Institutions / Individuals and Previous employees of MWI and JVA	Educational institutions within YRB include: – Jordan University of Science and Technology (JUST) – Yarmouk University	These stakeholders have extensive knowledge about national water resources including conditions within the YRB and participate in research studies that may include the resources from the YRB. Thus, they can provide the research study with feedback on the tools and approaches developed to survey the area.
	Research and educational individuals, as well as previous	These stakeholders have extensive experience and knowledge about national water resources including conditions within the YRB. Thus, they can provide the research study with feedback on the tools and approaches developed to survey the area.

Stakeholder Group	Identified Stakeholders	Description of Involvement
	employees of MWI and JVA	
Industrial Institutions	Al-Hassan Industrial Estate	It is the largest QIZ (Qualified Industrial Zones) in Jordan and accommodates more than 154 industries. Thus, it is a major water user within the YRB.
Local Community	See Annex I for a list of potential villages located within the YRB	Around 81 villages and towns are considered to be located within the Yarmouk River Basin. These stakeholders live and use the water resources within the YRB. Hence, they would provide the research with the local perceptions.
Non-Governmental Organizations (NGOs)/ Civil Society Organisations (CSOs)	Identified some NGOs and cooperatives in the Yarmouk Basin	NGOs and civil society organizations usually voice out opinions or potential concerns on behalf of local communities.
International Financing Agencies/ Donors	GIZ SIDA KfW AFD SDC IDRC USAID Arab Fund for Economic and Social Development FAO	These stakeholders are not affected by the research within the YRB but have interest in the results of this research or have previously funded research studies or developmental activities within the YRB related to water resources management.
International NGOs	OXFAM - Jordan	These stakeholders are not affected by the research within the YRB but have interest in the results of this research or have previously been involved in research studies or developmental activities within the YRB related to water resources management.

6.3 Annex III Survey Questions

Survey Title: Narratives and perceptions on the Yarmouk tributary of the Jordan River

Information about participants

1. Gender

Male Female prefer not to say

2. Age

18-39 40-69 70+

3. Education

High school certificate Diploma/college degree Bachelor's degree Masters
 Higher degree other

4. Profession

Farmer Government employee Teacher Academic
researcher
 Freelance other profession

5. Home location

Syria Jordan Palestine Lebanon
 occupied Syrian Golan Heights other country

6. *If you live in the basin, select the name of governorate (after selecting location, it will open these options for Syria/Jordan)*

In Syria: As-Suwayda governorate Daraa governorate Quneitra
governorate

In Jordan: Irbid Ajloun Jerash Al Mafrq

I don't live in any of these governorates

Survey questions - Please answer to the best of your knowledge

7. Complete this sentence: Most people who live in the YTB are _____.

- Jordanian Syrian Other I don't know

8. Which country uses most of the Yarmouk Basin's water

- Jordan Syria occupying State of Israel I don't know

I. History

9. What period do you think was the most important in shaping the water reality of today in the YTB?

- 1948-1970s 1970s – 1990s 1990s – 2011 2011 – present day

Please explain why you chose this period [text box]

10. Who is the main actor(s) shaping this water reality? You can choose more than one:

- The international community and donors your own government
 other governments in the basin local communities I don't know

11. Do you think water management in the YTB in the past 30 years has:

- significantly improved stayed the same significantly worsened I don't know

Please explain why here and/or choose from the options below

12. If you answered: 'significantly improved' (choose one or more of the following options)

- Water Agreements signed in the basin are strong

- Development of appropriate water infrastructure
- Development of an effective water management
- Strict and effective water laws and regulations
- other reasons

13. If you answered: 'significantly worsened' (choose one or more of the following options)

- Water agreements signed in the basin are weak
- inappropriate water infrastructure
- weak water governance
- ineffective water laws and regulations
- climatic changes
- Other reasons

Surface water and groundwater

14. Which country sits on the largest area of the YTB?

- Syria Jordan occupying state of Israel I don't know

15. Which type of water is more important/significant in the basin (surface water/ groundwater)?

- groundwater surface water they are both equally important I don't know

16. How do you rate the quality of surface water in the basin

- high to good quality acceptable quality low quality I don't know

17. How do you rate the quality of groundwater in the basin?

high to good quality acceptable quality low quality I don't know

Policy

18. There is a bilateral agreement between Jordan and Syria over water sharing, do you think **Jordan** adheres to it?

Not at all Somewhat adhere Mostly adheres Best adheres I don't know

19. There is a bilateral agreement between Jordan and Syria over water sharing, do you think **Syria** adheres to it?

Not at all Somewhat adhere Mostly adheres Best adheres I don't know

20. There is a bilateral agreement between Jordan and Israel over water sharing, do you think **Jordan** adheres to it?

Not at all Somewhat adhere Mostly adheres Best adheres I don't know

21. There is a bilateral agreement between Jordan and Israel over water sharing, do you think Israel adheres to it?

Not at all Somewhat adhere Mostly adheres Best adheres I don't know

22. Why is there conflict over water in the YTB? (choose more than one)

- water scarcity inequitable distribution of water mismanagement of water
- political reasons demographic reasons climate change other reasons
- I don't know There is no conflict

Elaborate: [insert text box]

23. In your opinion, which country has more rights to use the water of the YTB?

- Syria Jordan occupying state of Israel they all have equal rights I don't know

24. In your opinion, what are some of the characteristics that determine the water rights of any country?

- Geographic location and the percentage of basin area within its borders
- Technological advancements in water development
- Capability of integrated water management
- Historical use of the water (the longer the period of use, the more rights it has)
- Political conditions
- Population growth
- Power of that country to control its water resources
- I don't know

Thank you for participating in this survey!