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More than infrastructures: water challenges in Iraq

With the liberation of Mosul from so-called Islamic State (IS) in November 2017 Iraq entered – once again – a post-conflict period. In the process of rebuilding the country, shrinking water quantities and acutely declining water quality have reached unseen levels and pose tremendous challenges: dam building in Turkey and Iran has contributed to a remarkably reduced water inflow of the Euphrates and Tigris; Iraqi water installations had been in very poor condition before IS used water as a weapon and further damaged infrastructure; Kurdish de facto control over the Tigris River's waterflow upstream of Baghdad requires careful coordination between the Kurdistan Regional Government (KRG) and central government; extremely salinised water resources and environmental degradation in the Marshes risk the extinction of agricultural activities and livelihoods in that area.

To address these challenges, technical measures will be important, and necessary – for instance, investment in water infrastructure. But that will not be nearly enough, as the water issue has the potential to accelerate re-emerging social divisions and political fragmentation and thus undermine Iraq's stability and security. The political implications of water policies must be carefully taken into account in Iraq's post-conflict process and should complement technical efforts in this crucial sector. The basin-wide protection of the supply infrastructure could serve as a technical as well as political entry point for water cooperation in the region.

Iraq's water crisis

Iraq is in the midst of a severe water crisis characterised by acute scarcity, dwindling resources and sharply declining water quality. Inadequate water management, neglect of and damage to infrastructure, failing water policies as well as instrumentalisation and weaponisation of water have plagued the country's water sector for decades. Violent conflicts and wars over more than 30 years have further worsened the situation. Moreover, Iraq ranks among the countries most vulnerable to climate change; the consequences of climate change, such as changing precipitation, rising temperatures or prolonged heatwaves and droughts will aggravate the water crisis in the years to come.[1] Iraq's rapid urbanisation and its population growth will continue to increase the demand for water; with an annual population growth rate of 3% the country is one of the fastest-growing

1 Medany, M. 2008. 'Impact of Climate Change on Arab Countries'. In: *Arab Environment: Future Challenges*; Report of the Arab Forum for Environment and Development. Ed. Tolba, K. M. and Saab, N. W.

nations in the Middle East. Water shortages are expected to occur more often and to be more severe in the future.

Iraq increasingly and more frequently experiences conditions of water scarcity or water stress. In a February 2018 report, Iraq realistically claims that the water flow of the Euphrates and Tigris rivers – the region's and particularly Iraq's most important water resource – has reduced by 30% since the 1980s and is expected to further shrink by up to 50% before 2030.[2] For the overall water supply, a reduction of up to 60% between 2015 and 2025 is estimated.[3] This also affects hydro-energy production at Iraq's large dams which accounts for more than 75% of the country's electricity supplies. Nearly all of Baghdad's electricity comes from the large dams near Haditha and Mosul. Moreover, the water crisis puts agriculture and food production at risk. Iraq's food basket, in the central south of the country, has lost about 50% of its production capacities due to salinisation over the last two decades. Mismanagement, neglect and lack of investment has left drains and infrastructure damaged or not maintained, and has led to deterioration of the formerly irrigated and well-drained fertile land around the so-called 'Third River'. More recently, and as a consequence of the territorial expansion of IS and the ensuing campaigns to defeat the militia, Iraq lost about 40% of its agricultural production capabilities, as equipment, seeds, stored harvests and livestock were looted or destroyed.[4] In addition, the dramatically low rainfall during the winter of 2017/18 – approximately one-third below average – will bring a very dry summer in 2018, with a predicted harvest loss of another 30% compared to the previous year.[5]

Against this background of growing water scarcity, tensions and disputes over water allocation, distribution and priorities are likely to increase. Given the importance of water resources for Iraq it is hardly surprising that water is a key factor for the country's stability and security. Consequently, water resources feature prominently in Iraq's Security Strategies of 2010 and 2015.[6] As underlined in these strategies, the water sector faces its main challenges on two interlinked levels – regional and domestic.

Regional tensions: water conflict, power and politics

Iraq is heavily dependent on the Euphrates and Tigris, which provide nearly all of the water supply; groundwater accounts for only 2-9% of all withdrawals.[7] As a consequence, the transboundary twin rivers originating in Turkey are at the very heart of both the water challenges in Iraq and regional controversaries over diminishing waterflows and deteriorating water quality.

The first conflicts over distribution and utilisation of these shared resources arose when Turkey, Syria and Iraq began to unilaterally develop large water infrastructure projects in the 1970s – for example, Iraq's Thartar Canal Project, Syria's Euphrates Valley Project and Turkey's Southeastern Anatolia Development Project (GAP).[8] Increasing energy and agricultural needs

2 Habib, M. 2018. *Iraq's Lack of Water "is a Foreign Policy Problem"*. http://www.iraq-businessnews.com/2018/02/24/iraqs-lack-of-water-is-a-foreign-policy-problem/

3 Al-Ansari, N. 2013. 'Management of Water Resources in Iraq: Perspectives and Prognoses'. *Engineering*, Vol. 5 No. 8. 667-684.

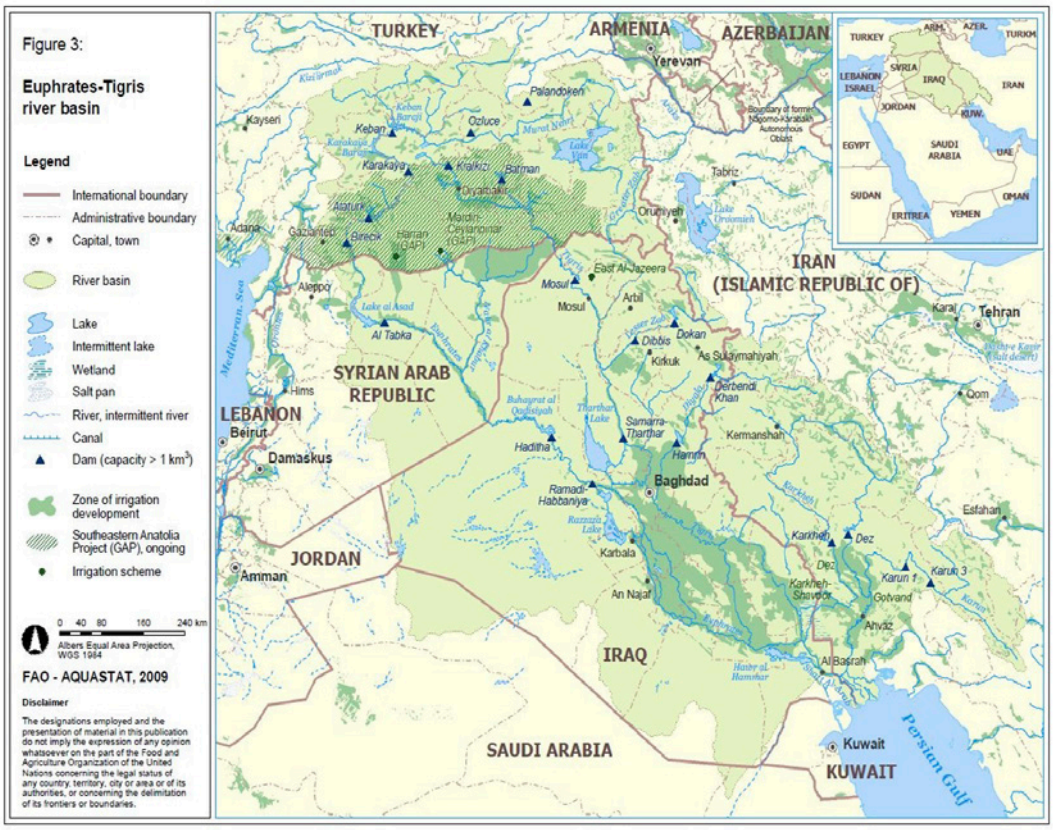
4 UN Environment. 2017. 'Environmental issues in areas retaken from ISIL Mosul Iraq'. Technical note, July-August 2017.

5 Middle East Monitor. 2018.'FAO: Iraq lost 40% of its agricultural production'. *Memo Middle East Monitor*, 14 February. Web. (Accessed on 28/06/18).

6 See: Iraqi National Security strategy 2007-2010; Shareef, H. 2016. '*Briefing on the Republic of Iraq's National Security Strategy*'.

7 Al Ansari, N. *op. cit.*

8 Abd-El-Mooty, M., et al. 2016. 'Challenges of Water Resources in Iraq', *Hydrology Current Research*, Vol. 4 No. 4. 1.



Map: Euphrates-Tigris river basin, FAO – AQUASTAT, 2009

in the region exacerbated the conflicts.[9] Despite bilateral and provisionally designed agreements, historical and unwritten conventions and the exchange platform Joint Technical Committee, cooperation in the basin is limited at best and foremost on technical issues. There is no legally binding, comprehensive or long-term treaty between all the riparian states to deal with water management or basin-wide planning. After 2013, cooperation and consultations were largely suspended, and renewed talks with Ankara in 2016/17 did not bring about any significant long-term achievements for Baghdad.

Located at the headwaters, Turkey has dominated water politics in the basin. It has consolidated its position as hydro-hegemon[10] even further in recent years when Syria and Iraq have been struggling with civil wars and the rise of IS. GAP is of particular concern for Iraq and Syria – being one of the world's largest water and developmental projects, with plans in place for 22 dams (12 are completed), 19 hydropower plants (15 are completed), schemes for irrigating 1.7 million hectares of land, and extensive drainage networks. With the Ilisu Dam, Turkey completed another large dam in 2018. The filling of this reservoir has the potential to reduce the Tigris' waterflow by more than 50% and to strain relations between Baghdad and Ankara. Turkey

9 Carkoglu, A. and M. Eder. 2001. 'Domestic Concerns and the Water Conflict over the Euphrates-Tigris River Basin', *Middle Eastern Studies*, Vol. 37 No. 1. 43 (41-71).

10 For the concept of Hydro-hegemony see Zeitoun, M. and J. Warner. 2006. 'Hydro-hegemony – a framework for analysis of trans-boundary water conflicts', *Water Policy*, 8, 435-460.

agreed to postpone the start of the filling process from March to June 2018 – even if impounding a dam during the summer is rather unusual. Turkey temporarily stopped the filling again at the beginning of June after Iraq complained about water shortages. Both countries agreed that the filling would resume in July 2018, using a method that supposedly guarantees adequate water supplies for Iraq for the time being.[11] These rather ad hoc concessions for one specific dam have helped to overcome a hydrologically critical moment in the year. However, they do not make up for the lack of a permanent, formal agreement that would sustainably regulate key issues such as filling reservoirs, operating dams or river waterflow during droughts.

Regarding water issues with Syria, current concerns are mainly about who controls major dams and thus the Euphrates waterflow. When Syria's largest dams were in the hands of IS, the militia withheld water in Syria in order to reduce the waterflow to Iraq.[12] The situation eased somewhat after the Free Syrian Army (FSA) and Kurdish units retook the Syrian dams from IS in 2017. Levels of Syrian water withdrawals went down during the civil war. Given the ongoing violence, it is not expected that there will be increasing levels of Syrian water utilisation in the short term. But once the situation in (parts of) Syria stabilises, the country will quickly have to increase its current water withdrawals for agricultural and industrial purposes, which will then add to water stress in Iraq.

Of further concern for Iraq are the Tigris tributaries originating in Iran, the Little Zab, Diyala and Karkeh, which account for 9-13% of the Tigris waters. Teheran has built a series of dams at these tributaries over the last decade. This has resulted in a dramatic reduction of the river's inflow, which is particularly felt in central and southern parts of Iraq. It additionally accelerates the process of land and environmental degradation, in particular in the Marshes (see below). Talks with Teheran over water inflow from Iranian tributaries during the last two years did not result in any concessions for Iraq.

Finally, water politics in the basin, and consequently Iraq's water supplies, are also affected indirectly by geopolitical conflicts, tensions and rivalries in the region. Turkish geopolitical claims include a water dimension: with its military intervention in Syria, Ankara further strengthened its hydrologically favourable position by de facto expanding Turkish control further into the Euphrates and Tigris basin. The same goes for Turkey's military operations against the PKK (Kurdistan Workers' Party) in the Qandil Mountains in Iraq's Kurdistan Region.[13] Furthermore, the conflict between Saudi Arabia and Iran could affect the water situation, with direct or indirect interference in domestic politics potentially reinforcing Sunni-Shia cleavages across the river basin. In the past, Saudi Arabia had played a constructive role along the Euphrates and Tigris when mediating between Iraq and Syria when a dispute over the water flow escalated in 1975.[14]

Domestic challenges: rehabilitation, politics and policies

On the domestic level Iraq faces many challenges that have the potential to threaten national security. Among them three prominent issues deserve particular attention.

11 Aboulenein, A. and T. Karadeniz. 2018. Turkey halts filling Tigris dam after Iraq complains of water shortages. *Reuters*. https://uk.reuters.com/article/uk-iraq-turkey/turkey-halts-filling-of-ilisu-dam-until-july-ambassador-to-iraq-idUKKCN1J3246 (Accessed 28/06/18).

12 von Lossow, T. 2016. 'The Rebirth of Water as a Weapon: IS in Syria and Iraq', *The International Spectator*, 51:3, 82-99.

13 Iddon, P. 2018. *How far will Turkey's anti-PKK operation in northern Iraq go?* http://www.middleeasteye.net/news/turkey-pkk-Iraq-operation-1642512166.

14 Kibaroglu, A. 2002. *Building a Regime for the Waters of the Euphrates-Tigris River Basin*. Leiden, Martinus Nijhoff Publishers. 226/229-230.

1. Damaged, dilapidated and vulnerable water installations

The condition of Iraq's water facilities has been constantly worsening over the last decades due to poor maintenance, poor water management and the impact of several conflicts and wars, as for instance the Iran-Iraq war or the two US interventions. A decade ago the country's water infrastructure ranked among the poorest worldwide; it further deteriorated with IS capturing and controlling water facilities, inadequately handling installations, and weaponising water for strategic political and tactical military purposes.[15] IS extensively sabotaged and looted – resulting in severe damage to or destruction of several installations. In addition to IS' scorched earth tactics, the airstrikes and military campaigns of the anti-IS coalition caused further damage.[16] First assessments from the Iraqi Ministry of Water Resources estimate direct damage to hydraulic infrastructure at 600 million USD. But while water installations need urgent rehabilitation and maintenance, the budget of the Ministry has been cut drastically from 1.7 billion USD in 2013 to 50 million in 2017 – as the anti-IS campaign increased military expenditure.[17] To a large extent it is financial constraints that prevent the Iraqi government from repairing facilities, and then implementing more comprehensive approaches to tackle the water challenges, such as laid out in the Iraqi water strategy.

Linked to the condition of water infrastructures is their protection. The way IS gained control over important water resources and infrastructure in Syria and Iraq and used them as a weapon dramatically demonstrated how vulnerable the country's key infrastructures are. IS weaponised water by retaining, flooding or contaminating water resources in order to achieve strategic political or tactical military goals. In April 2014, for example, IS created a major flooding at Fallujah Dam: the militia withheld water at the dam, thus submerging Iraqi government and military facilities at the banks behind the barrage. Two days later the militia diverted these waters into a side valley and flooded land up to 100km away, putting the city of Abu Ghraib up to four metres under water. More than 10,000 houses and 200km² of fertile farmland were destroyed, the harvest was lost, livestock were killed and about 60,000 people had to flee. In addition, the flooding prevented a rapid advance on to IS positions by Iraqi army follow-on units.[18] During its territorial expansion in 2014 the militia overran installations in Iraqi upstream branches in the Euphrates and Tigris basin and was able to quickly and easily seize all major dams (with the exception of Haditha Dam).

Since the security situation remains fragile in various parts Iraq, and given the complex political setting, the risk remains high that water will continue to be instrumentalised for political or military purposes, for instance by favouring certain users over others.

2. Hydro-political tensions with Kurdistan

In certain regions in the country tensions over water resources are inevitable. Such a geopolitical hotspot is the Kurdistan region at the Iraqi upstream branches of the Tigris. Compared to the rest of the country, the area is blessed with abundant rainfall, surface waters originating in the Zagros Mountains and natural groundwater recharge. While most of the agriculture is rainfed and dams are mainly used for electricity generation, the biggest challenges are increasing fluctuations, seasonal availability and local water shortages. In addition, tensions over water are increasing between indigenous Kurds and refugees who have fled from other parts of Iraq and Syria in the last years.[19]

Water use in the Kurdistan region has implications for water quantity and quality in the lower branches of the Euphrates and Tigris basin – following the same upstream-downstream logic as the regional water

15 von Lossow, T. 2016. *op. cit.*
16 UN Environment, 2017. *op. cit.* 4.
17 UN Environment, 2017. *op. cit.* 22-23.
18 Von Lossow, T. 2016. *Op. Cit.*
19 See for example Saaid, H. M. 2016. 'Syrian Refugees and the Kurdistan Region of Iraq', http://blogs.lse.ac.uk/mec/2016/09/21/syrian-refugees-and-the-kurdistan-region-of-iraq/ (Accessed 28/06/18).

conflict between Turkey/Syria/Iraq and Iraq/Iraq, respectively. Generally, public resources are controlled by the government under the Iraqi constitution, which includes 'Planning policies relating to water sources from outside Iraq and guaranteeing the rate of water flow to Iraq and its just distribution inside Iraq in accordance with international laws and conventions'.[20] Nonetheless, in the past the water question has repeatedly led to controversies between Kurdish authorities and central government.

With the referendum on Kurdish independence held in September 2017 the tone between Arbil and Baghdad sharpened and relations became strained. The central government openly considered a military intervention and occupied Kirkuk a few days later. In addition to contentious issues such as control over oil and the disputed territories, the question of control over water resources has the potential to increase tensions: the geographic position of Kurdistan at the upstream branches of the Tigris is strategically decisive for Iraq's water supplies. No matter the exact course of the border, administrative model, degree of sovereignty or political leadership, the Kurds will, by geography, always control Tigris water resources in Iraq. Theoretically, the Kurds are in the position to manipulate the waterflow and to use it as political leverage against central government.[21] Even if the Kurdish room for manoeuvre tends to be overestimated[22] in the current debate, this hydrological reality has always unsettled Iraqi governments and also played a role in the harsh and brutal marginalisation of the Kurds under Saddam Hussein.

3. Environmental tragedy and agricultural decline

Downstream of Baghdad, another more environmental geographic hotspot is the Marshes, one of the country's most important agricultural centres. While agriculture in the north relies on rainfall, in the south it is dependent on the waters of Euphrates and Tigris for irrigation. Here, in the lower branches of the twin rivers, it is evident that current water withdrawals in the basin already exceed the capacities of the river system. Massive dumping of drainage water into the rivers contributes significantly to declining water quality. The reduced water discharge puts the Marshes at risk of drying up and increases saline levels in the water and the soil. The reduction in waterflow leads to seawater intrusion, which is increasingly pushing inland – up to 45 miles upriver and as high as Basra at high tide, additionally contributing to water and land degradation.

In some areas the water is so heavily salinated that it can no longer be used for agricultural purposes.[23] Decreasing amounts of water often means failing supply for the widely spread-out irrigation systems. As a consequence, agricultural activities and food production have been declining over the last decade, particularly in the provinces of Basra, Dhi Qar and Maysan. This increases emigration from the region – approximately 90% of the population has left the area in the last few decades – leaving only about 20,000 people, mainly farmers, in the region, which has led to a further decline in food production.[24] Emigration from the region itself accelerates environmental degradation: abandoned agricultural land intensifies dust-storms – a phenomenon more frequently and

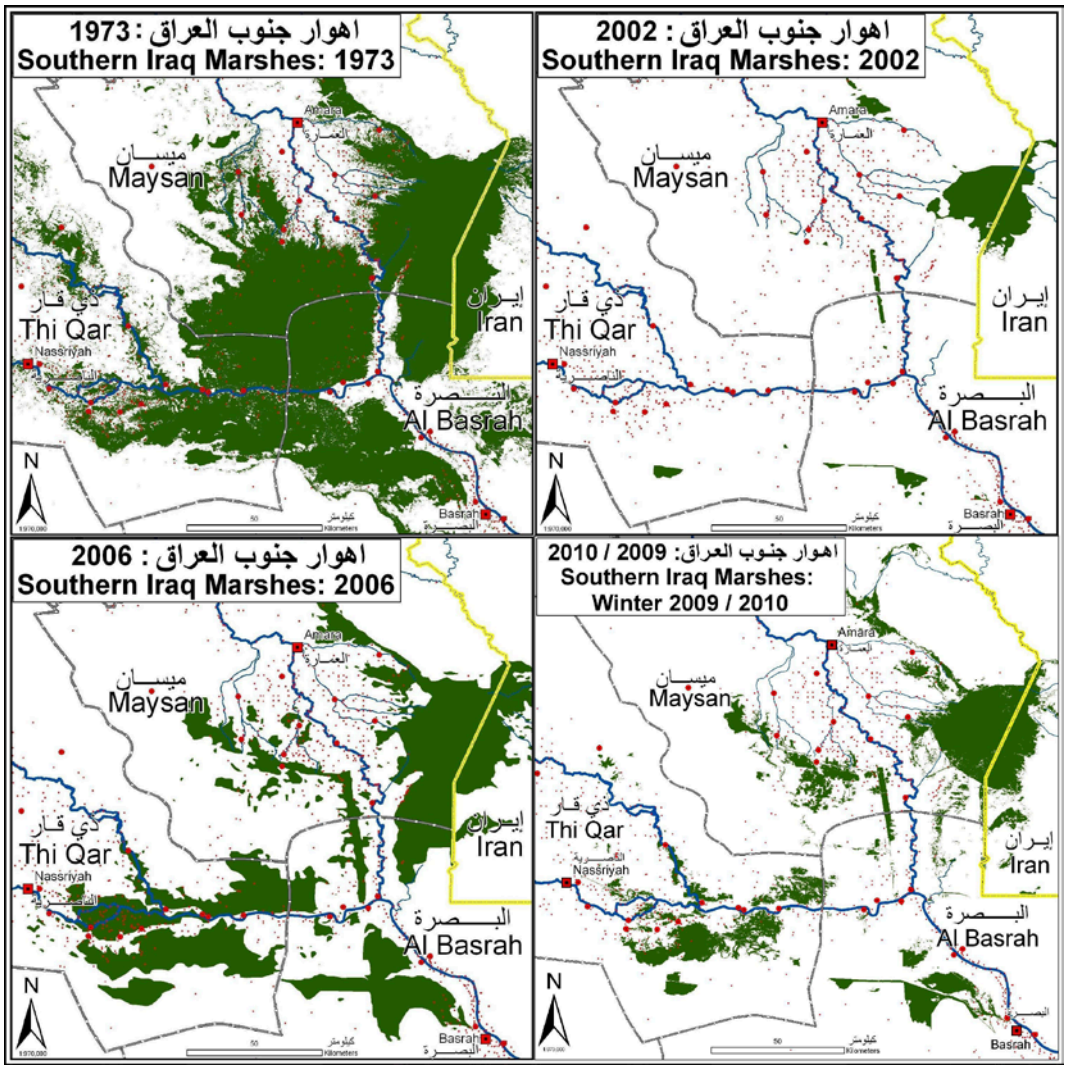
20 Iraqi Constitution, Article 110/Eighth, 'Iraqi Constitution' (English pdf), http://www.wipo.int/wipolex/en/text.jsp?file_id=230000 (Accessed 28/06/18).

21 Von Lossow, T. 2017. 'The multiple crisis. Perspectives on water scarcity in the Euphrates and Tigris Basin', *ORIENT*, Vol. 58 No. 1, 45-53.

22 Limited capacities to retain substantial amounts of water in the Kurdistan region and the complex political setting would make the Kurdistan Regional Government carefully weigh any interference with the Tigris' waterflow.

23 On salinity levels in central and southern Iraq see Christen, E.W. and K.A. Saliem (ed.) 2012. '*Managing Salinity in Iraq's Agriculture*', Iraq Salinity Assessment Report 1: Situation Analysis; Abdullah, A.D. et al. 2016. 'Anthropogenic and tidal influences on salinity levels of the Shatt al-Arab River, Basra, Iraq', *International Journal of River Basin Management*, Vol. 14 No. 3.

24 UN Iraq 2013, Water factsheet.



Map: Keith Holmes 2010, The extent of Southern Iraq Marshes 1973, 2002, 2006 and 2010

more intensively hitting southern Iraq over the last decade, which contributes to the land becoming degraded and drier.[25]

Such an environmental tragedy already occurred in the 1990s when Saddam Hussein drained the Marshes to punish the local Shiite population for an uprising against his regime. While restoration measures during the 2000s were quite successful – regaining about three-quarters of the area, the Marshes suffered again from reduced waterflows in the droughts of 2008 and 2015 as well as from IS retaining water at upstream dams.

Water for all: politics and fragmented societies

The challenges for the Iraqi water sector – and measures to address them – are embedded in a broader political and socio-economic environment. The liberation of Mosul marked a milestone in the fight against IS and heralded the end of the militia

25 JAPU. 2013. Sand and Dust Storms Factsheet. Joint Action and Policy Unit (JAPU), UN Iraq.

as a territorial force in Iraq. The various political and armed actors of Iraq's multi-ethnic and multi-faith society had joined forces for the common aim of overthrowing IS, and the country's various political, socio-economic and geographic tensions and rivalries were largely kept in check on the surface.[26]

However, in the subsequent process of rebuilding the country and fostering national cohesion tensions and frictions have been (re-)emerging. The rise and fall of IS has partly even intensified discontent, centrifugal dynamics and polarisation in society and stirred struggles for political power and control. One example is the rise of the Popular Mobilization Forces (Al-Hashd al-Sha'bi) – these highly heterogenous groups have become actors in the political landscape and need to be incorporated into the country's security setting.[27] As another example, the question of Kurdish independence culminated in the September 2017 referendum, and the military confrontation in the aftermath very well illustrated how quickly such tensions and underlying rivalries can escalate into armed conflict.

The results of the May 2018 parliamentary elections reflect the political fragmentation of the country, independent of the result of the current re-counting and its consequences. Moreover, the low turnout of 44.5% – in Baghdad only an estimated 33% – illustrated the population's general discontent with politics – not only with the government but with all parties, coalitions and alliances. A large online campaign even called for a boycott of the elections and attracted sections of the electorate for various reasons.[28]

Against this background, the rehabilitation of installations and potentially new infrastructures are necessary and important but will not be enough to sustainably address the country's water crisis. Over-focusing on (large) infrastructure projects turns a blind eye to political issues. An example of the political ramifications of the water question is the controversy over agricultural subsidies for irrigation, which contribute to the high levels of water consumption and groundwater extraction in the agricultural sector. Another key example is the population's access to water more generally – which must be linked to investment in water infrastructures,[29] as this topic relates to the core functions of a state and its legitimacy.

The provision of basic services such as water and electricity supply is fundamental for the political future of Iraq as such state-building measures are related to the legitimacy of the state and the government. In the past, flawed water and agricultural policies had repeatedly marginalised certain sections of the population, and increased tensions along geographical, sectarian, ethnic and socio-economic lines. In addition, neglect, corruption and marginalisation with regard to water access turned out to have favoured IS recruitment efforts in northern Iraq – thus contributing to the militia's rise and

26 Magri, P. 2017 'Introduction', In: *After Mosul Re-Inventing Iraq* ; ISPI, ed. Plebani A., 7-13.

27 Mansour, R. 2018. 'The Popular Mobilisation Forces and the Balancing of Formal and Informal Power'. http://blogs.lse.ac.uk/mec/2018/03/15/the-popular-mobilisation-forces-and-the-balancing-of-formal-and-informal-power/ (Accessed 28/06/18).

28 MacDonald, A. 2018. 'Iraq elections: Voters in poverty-stricken region reject "same faces" at polls'. *Middle East Eye*. http://www.middleeasteye.net/news/status-quo-politicians-keep-voters-away-iraqs-drought-stricken-diwaniyah-292976433 (Accessed 28/06/18); Habib, M. 2018. 'Stay at Home Campaign to Boycott Elections Appeals to Too Many Iraqis'. *Niqash*. http://www.niqash.org/en/articles/politics/5904/%E2%80%98Stay-At-Home%E2%80%99-Campaign-To-Boycott-Elections-Appeals-To-Too-Many-Iraqis.htm (Accessed 28/06/18).

29 Gleick, P. 2017. 'National Water Infrastructure Efforts Must Expand Access to Public Drinking Fountains'. *Science Blogs*. http://scienceblogs.com/significantfigures/index.php/2017/03/08/national-water-infrastructure-efforts-must-expand-access-to-public-drinking-fountains/ (Accessed 28/06/18).

acceptance among the population.[30,31] The militia deliberately operated in water scarce regions, highlighted water and electricity in its propaganda and, in a few cases actually improved supplies for its followers and thereby attracted members of the Sunni population, who had previously been deprived of networks and services.[32]

Only if the Iraqi government can implement socially inclusive water management and deliver basic state services to all of the population, will an inclusive political approach succeed in the post-IS era. Insufficient services could considerably impede reconstruction and peacebuilding efforts, in particular since water scarcity will increase and tensions over water intensify in the years to come. Such tensions have, in turn, repercussions for the fragmented political setting and thus the potential to threaten stability and peace in Iraq.

Way forward

Alongside other major long-term challenges, such as the resettlement and integration of refuges and internally displaced people, urban rehabilitation or political stability, a vital priority must be to address the water crisis in order to break the cycles of conflict- and post-conflict periods and to build a basis for sustainable peace in the country. Many of the pressing water challenges in Iraq are not new but rather are built on historic patterns, political considerations and financial constraints. Acknowledging political realities and their links with the water challenges is essential for adequately addressing the most urgent challenges, and thereby for enhancing water security in Iraq. In times of scarcity and declining availability, water is even more perceived as a matter of distribution – and thus as a political issue, particularly in a fragmented political and fragile post-conflict security situation, at regional as well as national level. Careful, well developed water policies must be developed that take political consequences into consideration. It is important to note that Iraq can barely meet its water challenges without external support[33] – measures to rehabilitate the most important infrastructures require funds that exceed the 2017 budget of the Ministry for Water Resources by more than tenfold.

At **regional level**, Iraq as a downstream country generally has little room for manoeuvre. A comparatively weak Iraq has not the means to politically enforce a fair water share towards Ankara or Teheran at the moment. Negotiations with Turkey and Iran over water inflow of Euphrates and Tigris are unlikely to deliver substantial results favouring Iraq's water interests in the years to come. Permanent, institutionalised cooperation, or at least sustainable and formalised agreements, between the riparian states are more or less precluded for political reasons even if such an effort would be ideal for the basin from a hydrological perspective.[34] New areas of common interests will have to be identified at a very basic level as potential entry point for a more sustainable, longer-term exchange on water.

On the **domestic level**, the rehabilitation and (re-)building of Iraq's **water infrastructures** is of utmost importance; in particular the irrigation and drainage systems need to be modernised and better

30 Schwartzstein, P. 2017. 'Climate Change and Water Woes Drove ISIS Recruiting in Iraq'. *National Geographic News*. https://news.nationalgeographic.com/2017/11/climate-change-drought-drove-isis-terrorist-recruiting-iraq/?beta=true (Accessed 28/06/18).

31 Al-Marashi, I. 2017, 'What Future for Iraq? Unity and Partition after Mosul', In: *After Mosul Re-Inventing Iraq*; ISPI, ed. Plebani A., 13-14.

32 Schwartzstein 2017. *op. cit.* (Accessed 28/06/18).

33 Despite its oil revenues; it is estimated that the (re-)construction process will cost approximately 88 billion USD within the next decade, see: 'Iraq: Reconstruction will cost $88.2 billion', *The Middle East Monitor*, https://www.middleeastmonitor.com/20180212-iraq-reconstruction-will-cost-88-2-billion/ (Accessed 28/06/18).

34 See also Shamout, N. and G., Lahn. 2015. '*The Euphrates in Crisis: Channels of Cooperation for a Threatened River*', Chatham House.

maintained.[35] In principle, all actors or parties in the country should have a genuine interest in improving or at least sustaining water and electricity supplies. Well-functioning infrastructures are also a precondition for implementing more sophisticated approaches, policies and strategies. Water infrastructures need to be linked with broader benefits for the population, i.e., improved supply services. This imperative highlights the need for Iraq's future water policies to be implemented in an inclusive manner politically and socio-economically to avoid mistakes of the past when water has repeatedly been used as political instrument.

The geographic position of the **Kurdistan region** is decisive for controlling the resources of the Tigris and elementary for Iraq's national water management. In the future, Iraq's water sector will require close coordination and cooperation between the upstream KRG and the downstream central government. Only in this way they can successfully tackle key challenges in the basin, as for example the ongoing maintenance operations to secure the fragile structures of Mosul Dam or future implementation of an effective water management for the lower branches of Euphrates and Tigris. Beyond domestic challenges, close cooperation and a common position would also be desirable in order to articulate Iraqi water claims towards the upstream states, particularly towards Turkey but to a lesser extent also towards Syria and Iran.

Environmental degradation in the Marshes is a pressing issue. It gives a taste of the country's dramatic future water and agricultural situation. Saltwater intrusion, the dumping of drainage water into the rivers and salination of the soil must be addressed urgently. Moreover, the country should work on a more comprehensive strategy for the region that would provide livelihoods for the population in order to stop the emigration trend that accelerates negative developments and dynamics.

Finally, a cross-cutting topic that is generally neglected is the **protection of water infrastructures**. Protecting the physical integrity of water installations and infrastructures during armed conflict, as well as preventing weaponisation of water by armed actors in the future, is in the interest of all actors and parties – at both national and regional level. The protection of infrastructures provides a solid basis for water-related cooperation. As well as the technical dimension, protection has a strong political component: it is an issue on which minimal consent could be reached, as it circumvents the more delicate questions of water control, quantity and quality. And as a vehicle for building confidence and trust it could be the much-needed entry point and first step for carefully fostering cooperation between Turkey, Syria and Iraq at the regional level. Last, but not least, on the domestic front, joint efforts on the protection of water infrastructures could serve improved water cooperation between the KRG and central government.

35 Iraqi Thoughts. 2018. 'Iraq's water crisis: Towards a new strategy'. *1001 Iraqi Thoughts*. http://1001iraqithoughts.com/2018/05/29/iraqs-water-crisis-towards-a-new-strategy/ (Accessed 28/06/18).

About the Planetary Security Initiative

The Planetary Security Initiative aims to help increase awareness, to deepen knowledge, and to develop and promote policies and good practice guidance to help governments, the private sector and international institutions better secure peace and cooperation in times of climate change and global environmental challenges. The Initiative was launched by the Netherlands Ministry of Foreign Affairs in 2015 and is currently operated by a consortium of leading think tanks headed by the Clingendael Institute.

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