Focus on: Water

Out of its Depth?

Syria’s water resources are under growing pressure from climate change, rapid population growth and an ever-expanding agricultural sector. This month’s Focus section places the spotlight on this precious resource, examining a range of issues: from the politics of water to the state of the country’s water resources and how users’ personal relationship to water is changing.

Focus editor Francesca de Châtel

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Parting the Waters

More than 70 percent of Syria’s water comes from outside its borders. Despite this, the country lacks firm water sharing agreements with any of its neighbours.

Syria’s rivers gave birth to civilisation. The country’s longest interstate river, the Euphrates, has been irrigated since 4,000BC and played a crucial role in forming the Fertile Crescent, together with its sister waterway the Tigris. Power over these waters has produced conflict since antiquity: 4,500 years ago control of the irrigation canals on the Euphrates sparked war between the ancient Sumerian states of Umma and Lagash marking, in effect, one of the earliest recorded water wars.

In the modern Middle East, Syria’s position is unique in that it has a stake in three of the region’s four largest transboundary rivers. These consist of the Euphrates, which rises in the mountains of eastern Turkey, flows through Syria and joins the Tigris in Iraq to form the Shatt Al-Arab before emptying into the Arabian Gulf; the Asi-Orontes River, which springs north of Baalbek in Lebanon, flows through Syria into Turkey before emptying into the Mediterranean Sea; and the Jordan River which originates in Syria and Lebanon and flows to the Dead Sea and includes the Jordan and Yarmouk rivers, as well as Israeli-occupied Lake Tiberias and the water resources on the Golan Heights. In 1999, the last year for which figures are available, the Euphrates-Tigris and Asi-Orontes basins accounted for 50 and 20 percent of Syria’s water withdrawal respectively, making their management of vital interest to the country.

Building a framework to manage Syria’s transboundary water resources has been, to date, a painfully slow task. Israel’s occupation of the Golan – and its significant water resources – is a dramatic example of a water conflict. Yet water has also often been an
underlying cause for political tension with Syria’s other neighbours. In 1974, Iraq threatened to bomb the newly constructed Al-Thawra Dam, one of the largest earthfill dams in the world. It was a similar story in 1990 when Turkey began filling the Ataturk Dam, cutting off the flow of the Euphrates River in the process. While loose bilateral water sharing deals between Syria and its neighbours – with the obvious exception of Israel – have been agreed upon, cementing a final, multistate water sharing framework ratified by all parliaments remains something of a pipe dream.

“We have different points of view on certain issues and this goes for the water we share with all of our neighbours,” Nader al-Bunni, Syria’s minister of irrigation, said.

Bunni is quick to point out, however, that there is no conflict between Syria and its neighbours regarding water, bar Israel. “We meet regularly with our counterparts from Lebanon, Jordan, Iraq and Turkey and have an open dialogue with them,” he said. “The exception is Israel.”

**Dividing the spoils**

A number of agreements have been struck with Syria’s neighbours to manage the country’s numerous transboundary river systems. To the north, in 1987 Turkey agreed to guarantee Syria a minimum flow of the Euphrates of 500m$^3$ per second, amounting to some 15.75km$^3$ of water per year, until a final water sharing agreement is signed. Two years later Syria and Iraq struck a deal, with 58 percent of the Euphrates’s waters going to Iraq and 42 percent going to Syria.

To the south, Syria and Jordan agreed to build the Unity Dam on the Yarmouk River in 1987. Under the agreement, Syria’s share of the water from the
100m³ dam is 6m³ when it is filled to capacity. The quota decreases proportionately in accordance with the volume of storage. Since the dam was finished, however, disputes over water have continued, generally involving Jordan accusing Syria of not allowing enough water to flow into the country. Another round of protests from Jordan early last year resulted in both countries agreeing to install devices to measure the quantity of water in the river. According to Jordanian media reports, Syria also agreed to halt agricultural activity on its side of the river.

In 1994, Syria and Lebanon reached a water sharing agreement regarding the Asi-Orontes River. Under the deal, Lebanon receives 80m³ of water per year if the river’s flow inside Lebanon is 400m³ or more. The figure is adjusted downwards relative to the reduction in flow. Wells in the river’s catchment area that were already operational were allowed to remain in use, but no new wells are officially permitted.

The problem with all these arrangements, say local water experts, is that they are essentially gentlemen’s agreements – generally observed, but not set in stone. “None of the agreements Syria has with its neighbours are official,” a local water expert said. “The agreement with Turkey is more like a memorandum of understanding; it still has to pass through the Turkish and Syrian parliaments to become official.”

It is a state of affairs which needs to be remedied, Faisal Rifai, executive director of the Euphrates-Tigris Initiative for Cooperation (ETIC), a non-governmental, non-profit initiative to stimulate dialogue among professionals and officials working in the Euphrates-Tigris (ET) region and foster sustainable cooperation on water sharing. “What the ET region needs is a concrete and innovative concept of cooperation,” he said. “Regarding the Euphrates-Tigris region, benefit-sharing among the three riparian countries, Turkey, Syria and Iraq may be the most suited framework for joint development.”

Differing views

Drawing up firm water sharing deals between Syria and its neighbours will be no easy task. A comprehensive deal on the Jordan River basin is tied to the seemingly endless Arab-Israeli peace process. Syria’s water agreements with Lebanon have held to date, but of greater interest is the Euphrates-Tigris basin, Syria’s single most important water resource.

At the heart of any future water sharing arrangement between Syria, Turkey and Iraq will be Turkey’s South-Eastern Anatolia Project (GAP), a massive damming and irrigation programme launched in 1980 which has already resulted in an estimated 50 percent drop in water flow to Syria. Controversial from the start – the World Bank refused to provide funding for it – the project envisions the construction of 22 dams and 19 hydropower stations, bringing some 1.7m ha of land under irrigation.

To date, 15 dams have been completed and 272,972ha of land have been brought under irrigation, a mere 15 percent of the area earmarked for development. The volume of water coming to Syria would again be reduced if the project is further implemented.
While the agreement is not yet halfway to getting the 35 countries necessary for its ratification, Turkey’s objection to the convention – it was one of only three countries to vote against it – dramatically highlights its deep reluctance to enter into long-term binding international agreements on water.

**Closer ties**

Despite such obstacles, local analysts say forming an internationally binding water deal is not mission impossible. They say deepening political and economic ties between Damascus and its neighbours, particularly Turkey, will ultimately pave the way for the adoption of more robust water sharing agreements.

“It is to the credit of both Syrian and Turkish leaders that they have been able to achieve the present-day warm and friendly relations,” Elias Samo, a professor of international relations at the University of Aleppo, said. “In the context of these new warm and friendly relations, the contentious issues including sharing water are on their way to being resolved, equally serving the interests of both.”

An organisation such as ETIC offers another way forward. The initiative, founded in 2005 by a group of scholars, retired diplomats and high-ranking officials from Syria, Turkey and Iraq, uses ‘Track II diplomacy’ to support collaboration in the ET region. One component of the initiative is the establishment of a data inventory that aims to collaboratively manage water and other resources in the ET region to improve the lives of those who live in it.

“The objective is to establish a database for the ET region, harmonising the data materials available in the three countries in a uniform way, which can then be put to use by researchers, university professors, students and governments institutions,” Rifai said.

Acknowledging that Syria and its neighbours do not see eye to eye on water, Bunni nevertheless believes that a regional consensus on water sharing is emerging.

“Currently there are disagreements,” he said. “Each of the parties has its own point of view regarding the sharing of these resources. But as we continue our dialogue, these points of view are drawing nearer to each other.”
Syrian-Turkish Hydrodiplomacy

The severe drought that ravaged the north-east of Syria over the last four years makes the resolution of tensions over transboundary waters in the Euphrates and Tigris basins evermore pressing.

By Marwa Daoudy

The waters of the Euphrates and Tigris form the core of political and strategic considerations for Syria. Yet decades of negotiations over the allocation of the rivers’ waters have still not resulted in a final agreement. Since 1980, Turkey has been building a mega-development project consisting of 22 dams and 19 hydroelectric power plants on the Euphrates and Tigris rivers. The ultimate objective of the South-Eastern Anatolian Project (GAP) is to irrigate about 1.7m ha and produce 27bn kWh annually, the equivalent of 19 percent of the country’s total irrigable area and 22 percent of its total hydroelectric potential.

Today, 44 percent of the GAP has been completed, which corresponds to 12.8 percent of all agricultural projects, 75.4 percent of the energy schemes and 58 percent of social projects.

Although Turkey considers this project to be a ‘domestic’ enterprise, the impact on downstream countries will ultimately be significant.

According to international experts, full implementation of the GAP will ultimately withdraw up to 70 percent of the Euphrates’ natural flow.

The combination of projects in Turkey and Syria will place the lowest downstream riparian, Iraq, in a highly vulnerable position. The consequences for downstream Syria are also far-reaching given the country’s heavy dependence on external water sources (80 percent) and the centrality of the Euphrates Basin to the country’s overall water supply (65 percent of resources).

As only part of the GAP has been completed to date, quality is currently more of a problem than quantity and the waters reaching Syria and Iraq are increasingly polluted with pesticides and herbicides.

Since 1962, Syria, Iraq and Turkey have been meeting on a regular basis to discuss water developments in the Euphrates and Tigris basins. The multipurpose Protocol of 1987 marked the first bilateral agreement between Syria and Turkey. In it, Turkey committed in writing to release a minimum of 500 m³ per second over the Syrian border.

In 1989, the two downstream countries came to a water-sharing agreement in which 58 percent of the waters were allocated to Iraq and 42 percent to Syria. However, in early 1990, Turkey proceeded to drastically cut the Euphrates flow in order to fill the Atatürk Dam for a full month and Syria and Turkey came close to war.

Since the early 2000s, Turkey has shifted its discourse over transboundary waters. Instead of focusing on sovereignty, it has advocated benefit-sharing on a bilateral basis with Syria, which has led to the organisation of a series of meetings, research projects and training programmes. The third bilateral agreement of 2001 between Syria and Turkey opened a new chapter, although it failed to address volumetric allocations, the pending issue of agricultural pollution from Turkey and the status of the third co-riparian Iraq.

The occupation of Iraq and the consecutive shift in power relations was another turning point in the ongoing debates about the waters of the Euphrates and Tigris. Syria and Turkey came closer to finding an understanding on water and security issues within the new post-2003 regional balance of power. Joint projects and the sharing of expertise and benefits were advocated.

Since 2005, Track II channels have also gathered experts and former officials from the three co-riparian countries through the Euphrates and Tigris Initiative for Cooperation (ETIC).

But as witnessed in the debates at the Fifth World Water Forum held in Istanbul in March 2009, Turkey still refuses to consider the Euphrates and Tigris as international rivers, to which international customary principles, such as equitable and reasonable utilisation, apply.

Despite media rumours and the resumption of trilateral meetings of the Joint Technical Committee (JTC), a comprehensive water agreement has still not been signed.

The years ahead will show whether the positive evolution of Syrian-Turkish relations will bring about a resolution of the potential conflict over transboundary waters in the Euphrates and Tigris basins or whether an agreement over the allocation and quality of shared waters will be left aside in the face of regional security concerns of higher priority, such as the American occupation of Iraq, the consecutive rise to power of Iraqi Kurds, Israel’s wars against Lebanon and Gaza, and the mounting international pressures placed on Iran’s nuclear programme.

Dr Marwa Daoudy is a scholar and researcher at the University of Geneva, Switzerland.
When Every Drop Counts

Rapid population growth, climate change and further expansion of irrigated agriculture are all putting pressure on Syria’s water resources. Experts say better management could go a long way in solving the country’s water deficit.

“This whole area used to be a paradise on earth,” Abu Mohammed, a former farmer from the town of Nebk in the Kalamoon Mountains, said. “The crops were so thick that the soil never saw the light of the sun; the air is the best in the world and the water used to be fresh and abundant.”

He looked down the barren valley – still known as Wadi Al-Miya (Valley of Water) – with an air of regret. “Today there is no agriculture at all anymore,” he said. “People just have small vegetable gardens for personal use, but it is a luxury.”

Since the groundwater in the area of Nebk dried up in the 1980s, most people have to buy water from tanker trucks at a rate of SYP 100 (USD 2.17) per cubic metre to irrigate their gardens.

“The Mleita plain used to be known as the vegetable garden of Nebk,” Abu Mohammed, who today works in real estate, said. “Farmers there grew grain and vegetables – potatoes, beetroot, onion, garlic, wheat, barley and walnuts. It was all rainfed and it was known as the Nebkis’ ‘beit al moune’ [breadbasket]. It fed the whole town.”

Today, the Mleita plain is a dusty wasteland on which a couple of half-
finished flat blocks announce the development of a new residential area.

Farmers in Nebk used to have plentiful water resources – a combination of rainfall, seasonal surface water from the Anti-Lebanon Mountains and groundwater from wells and qanats (underground water tunnels).

“Twenty-five years ago you could still find water at 15 metres depth,” Abu Mohammed said. “Each farm used to have a shallow well with a windmill that extracted the water. Then, in the 1980s, the water dried out. Now the windmills are just a form of decoration. They serve no purpose.”

When Abu Mohammad first started using a motor pump to extract water in 1984 he only had to dig down to 35 metres. “Today, you don’t find anything above 250 metres,” he said.

As water became more scarce and farming less profitable, a growing number of Nebkis left the land and migrated to the Gulf in search of work. This has resulted in a huge construction boom that has transformed the small farming village of just 4,000 people in 1944 into a medium-sized town of 45,000 residents today.

**Unsustainable growth**

The story of Nebk and the rapid
Just 40 years ago, the town of Nebk in the Kalamoon Mountains used to be surrounded by vineyards and wheat fields. Heavy overpumping of groundwater in the area has, however, led to a dramatic lowering of the groundwater level, forcing farmers to abandon their land.

“We don’t have laws; there is only something called ‘law’. Applying for permission to drill a well is for the weak. The others just do it.”

- Abu Mohammed, real estate developer and former farmer

depletion of its water resources encapsulates many of the problems facing Syria’s water sector. High population growth rates, a massive expansion of irrigated agriculture since the 1950s and less rain- and snowfall have all contributed to the current situation.

Syria has an average of 15.6bn m³ of water per year at its disposal. However, over the last 15 years water use has steadily increased, reaching 19.2bn m³ in 2007. The 3.5bn m³ deficit is largely made up for by tapping into groundwater reserves, which has led to the drying up of many springs and, as in Nebk, a dramatic lowering of the groundwater table.

As population figures and water use levels have increased, per capita water availability has dropped to 800m³ per year, classifying Syria as a water scarce country with a per capita water availability of less than 1000m³ per year.

Yet while natural factors such as population growth and lower, irregular rainfall play a role in this scarcity, experts point out that better water management could go a long way in resolving the deficit.

“Syria has enough water,” a regional water expert who asked to remain anonymous said. “It is a question of management. There is no strategy, no plan as to what should be done in the next 25 years.”

The Tenth Five-Year Plan (2006-2010) outlines a series of long-term goals on water, including sustainable use of the resource, the pursuit of food security policies and the expansion of irrigated areas in the north-east. Little insight, however, is provided as to how such goals should be achieved.

Nearly 90 percent of Syria’s water resources are used in agriculture, one of the highest percentages in the region. At the same time, efficiency and productivity of water use is among the lowest in the region, according to a 2007 World Bank report. In addition, the water sector is only slowly acknowledging the need for better demand management instead of further development of supply.

“Syria is late in this,” Wael Seif, a Syrian water engineer, said. “For too long, the sector has focused on technical issues such as building more dams and reclaiming more land. Many in the water sector still do not thoroughly appreciate the value of water, that the
Syria’s Water Resources in a Nutshell

Syria receives its water from three main sources: rainfall, surface water and groundwater.

The country is divided into seven hydrographic basins: Al Jazeera, Aleppo, Al Badia, Hauran/Yarmouk, Damascus, Asi-Orontes and Al Sahel.

The annual average rainfall is 252mm, with wide variations between the coastal mountains where rainfall can exceed 1400mm per year and the eastern desert regions where rainfall is often below 100mm per year.

There are 16 main rivers and tributaries in Syria, of which six are main international rivers:

- The Euphrates (Al Furat), which is Syria’s largest river. It comes from Turkey and flows down to Iraq, providing Syria with an annual average of around 6bn m³/year. Its total length is 2,330km, 680km of which is in Syria.
- The Afrin in the north-western part of the country, which comes from Turkey, crosses into Syria and flows back into Turkey.
- The Asi-Orontes in the western part of the country, which comes from Lebanon and flows into Turkey.
- The Yarmouk in the south-western part of the country, which has sources in Syria and Jordan. It forms the border between these two countries before flowing into the Jordan River.
- The El-Kabir, which has sources in Syria and Lebanon. It forms the border between these two countries before flowing into the Mediterranean.
- The Tigris, which forms the border between Syria and Turkey in the extreme north-east.

Most areas have groundwater resources, though some of the main aquifers are considered to be non-renewable and extraction from these sources is considered to be mining.

Accurate data regarding Syria’s water availability and use are difficult to obtain, with widely differing figures provided by various Syrian ministries and international organisations. For the purpose of this Focus section Syria Today has used data from the Syrian Ministry of Irrigation and Aquastat, the FAO’s information system on water and agriculture.

The country’s total available water resources were estimated at 15,6bn m³ in 2007. Total water use was estimated at 19,2bn m³ for that same year, resulting in a deficit of 3,5bn m³, which was mainly drawn from dam reservoirs and groundwater.

As in most countries in the region, over 80 percent of the country’s water resources are used in agriculture, while industrial and domestic use only take up 3 percent and 8 percent respectively.

Source: Aquastat (2008), Ministry of Irrigation (2008)
“There is legislation,” the expert said. “It is just not applied. That is why many aquifers are still being overexploited.”

Back in Nebk, Abu Mohammed seems to concur with the experts in Damascus. “We don’t have laws,” he said. “There is something called ‘law’, but it’s like someone who is called Sherif, but who isn’t sherif (honourable). Applying for permission to drill a well is for the weak. The others just do it.”

Nevertheless, Bunni is adamant that the government is serious about addressing the problems facing the water sector and that time is needed to follow through with all the different initiatives. “The government has invested considerably in these projects,” he said. “Now we just need time to implement them. If these laws are applied within 10 years, we will have made a step in the right direction.”

**Fragmentation of water institutions**

The failure to apply policies and enforce legislation to date is compounded by the sector’s arcane institutional framework and a colossal bureaucratic structure in which a series of ministries, commissions and directorates often have overlapping responsibilities and there is little coordination between the different bodies.

A 2008 report by Aquastat, an international information system on water and agriculture, described the capacity of government institutions to manage water resources as “limited”. It added that a number of attempts to restructure the water sector had been “somewhat superficial and have made no fundamental changes to its monumental structure”.

One of the consequences of the fragmentation and lack of coordination within the water sector is that key water resource data are not exchanged between the different institutions, which in turn hampers effective policy making.

The Tenth Five-Year Plan outlines a number of measures to facilitate the production and use of accurate data on water use and availability, such as the development of data and information management systems. Confusion over data and methods of calculating water availability remains a problem though.

“Reports are written, but then they are just shelved. Nothing is done with the material, and reports and studies are not given any follow-up.”

**Window of opportunity**

The need for far-reaching reforms, both with regards to water use efficiency and institutional capacity, seems indisputable. The question is how they can be achieved successfully.

Paradoxically, some scientists believe the looming threat of climate change and its predicted negative impact on rainfall levels and temperatures in Syria could provide the necessary impetus for the implementation of a new water policy.

While no detailed study specifically focusing on Syria has been made, studies by the Intergovernmental Panel on Climate Change show that the Mediterranean region will be particularly vulnerable to climate change with less rainfall, higher temperatures and more frequent droughts.

In addition, the Climate Vulnerability Assessment carried out by the United Nations Framework Convention on Climate Change evaluated Syria as “highly vulnerable” to the effects of climate change.

In this context water experts say Syria needs to start outlining adaptation measures. “Syria needs to develop climate change scenarios and define a strategy accordingly because climate change is a reality now,” the regional expert said.

While Syria’s low water use efficiency and water productivity in agriculture present an enormous challenge to future water management, it also has enormous potential for improvement.

A recent report published by the German Technical Cooperation (GTZ) said climate change presented “a window of opportunity to implement the much-needed adaptation measures that have been difficult to introduce until now”.

“Climate change may trigger a new model of agriculture and development, rather than incremental changes along the previous pathway,” the report added.
Pollution from agricultural drainage water, domestic wastewater and, to a lesser extent, industrial waste, is increasingly becoming a problem in Syria.

“In general one can say that the problem of pollution in Syria has not yet reached the point of no return,” Theib Oweis, a water specialist at the International Centre for Agricultural Research in Dry Areas (ICARDA), said. “But it does need to be monitored in future, both for groundwater and for surface water.”

Only 22 percent of the Syrian population has access to sewage treatment, while 53 percent of the population is not even connected to a sewage network.

The result is that untreated sewage water is released into the environment, posing a severe public health risk, particularly in rural areas.

According to a 2004 report by the World Bank on the cost of environmental degradation, 13 percent of all under-five mortality is caused by diarrhea, an easily preventable disease.

On top of this, the country’s five wastewater treatment plants – in Damascus, Aleppo, Homs, Hama and Salamiye – are severely overloaded, with the result that treatment is not up to standard.

“The main source of pollution is domestic waste and agricultural drainage water which seep into the groundwater and flow into surface water,” a regional water expert who asked to remain anonymous said.

In the governorate of Homs water pollution from agricultural, industrial and domestic sources is a major problem, Omar al-Shamali, the head of the Homs Water Directorate, admitted. Intensive agriculture along the Orontes River leads to pollution by agricultural drainage water, with nitrates and pesticides flowing into ground- and surface water.

“Homs is one of the most polluted regions of the country,” Shamali said. “It is our sickness.”

At the same time, industrial waste from the fertilizer and sugar plants, the oil refinery and many small factories have rendered the water in Lake Qatineh, the reservoir of the governorate’s largest dam with a capacity of 200m m³, unfit for drinking.

In a bid to address the problem of pollution, the government has outlined an ambitious plan to build 23 wastewater treatment plants in the country’s major cities and rural areas by 2011 in cooperation with the German Technical Cooperation (GTZ).

The aim of the project is twofold: to reduce pollution from domestic wastewater and to provide the agricultural sector with a new source of irrigation water. However, to date there has been little tangible result.

“Work is slow,” Shamali said. “There is a plan to upgrade the wastewater treatment plant in Homs in order to increase its capacity and the quality of treatment. But until now, nothing has happened on the level of reality.”
The Changing Tides

Nothing brings the importance of water to light as clearly as the personal stories of those whose lives are narrowly intertwined with this precious resource. We are all water users. With these portraits, *Syria Today* explores how our personal relationship to the water that surrounds us is changing.

*By Nouna al-Dimashqiya*

*Photos Adel Samara*

Sleepless Nights

“The norias are the soul of this city,” Oussama Tayfur says. The 68-year-old, who was born beside one of Hama’s ancient waterwheels, gets up every day at dawn to watch the sun rise from his secret garden perched on the river.

“The Orontes River is millions of years old. Millions of creatures depend on its waters. And then humans come and cut it off and everything dies. Everything dies behind the dams.” Diminishing water levels – following the construction of the Rastan Dam in 1956 and the increase of irrigated agriculture along the Orontes – have brought Hama’s giant wheels to a silent stop.

“I’ll never forget the first time the norias stopped turning 20 years ago. The silence woke me.” The norias of Hama were famous for the eerie sound they made, which inspired artists – in music and song especially. “Tourists still come to see the immobile wheels. But they look like sad pigeons now, tilting their heads in a gesture of defeat.”

The norias themselves are also suffering from their immobility, their wood decaying as it no longer moves in and out of the river, grinding and squeaking. In the past, the wheels needed work every 35 years. The five-year-old wheel beside Tayfur’s garden already requires serious repair. “Even my own children don’t care, like the rest of the people in Hama.”

But Tayfur remains faithful to his magical norias. “People ask me how I can live without a mobile. Why would I need one? So someone can call and ask me where I am? I am here, sitting alone beside the norias.”
“Without this lake, I wouldn’t have a life,” Fouaz, a 37-year-old father of four and fisherman on Lake Qatineh, says. He is probably the last in his family to follow in his father’s footsteps.

Located near Homs, the Qatineh Dam is said to be one of the oldest still functioning dams in the world, built by the Romans in the third century AD. The French, during their mandate in Syria, built upon and expanded the Roman dam, increasing the volume of the reservoir to 200m $^3$. Legend has it the Queen of Sheba spent her summers in a tower overlooking the lake – it stands to this day.

Fouaz remembers a time when Qatineh was much deeper. “The water used to reach the edge of the reservoir. People drowned in the depths of this lake.” Today, the lake is just two metres deep and only small fish survive. “Maybe one lucky fisherman will have a big catch like we used to get, but this is just chance. The largest fish I ever caught was 20kg.” The villages around the lake have all lived off fishing for generations. But now they have only four months worth of catch to last them the rest of the year. The lake no longer yields what it used to, and fishermen have less to sell off pushcarts in nearby Homs.

Fouaz enjoys what he does. “If you don’t love your job, you can’t live from it.” However, he does not plan on passing his trade on to his children. He sees no future for them on Qatineh. “Sooner or later, there won’t be any more fish for my children.” He is sending them to school and hopes they will continue on a different path.
Abu Adei, a forty-something-year-old shepherd, lives under the lonely ruins of Shmeimis Castle near Salamiyeh with his family and a flock of 200 sheep. Asked since when he has been doing this work, he answers: “Since early this morning.” He soon realises his mistake. “Oh, since when in my life? Since I was conscious.”

Abu Adei’s life hasn’t changed in aeons. He travels up to 20 kilometres a day to graze his flock. He is not nomadic like some of his family members, who stay on the move all year. He travels as far as he can go, but never so far that he cannot return to his home and family for the night.

Abu Adei buys a 1,000-litre cistern of water for SYP 400 (USD 8.80) to provide for his family and flock of sheep. “In the winter, I buy a cistern every three days. In the summer, I need one every day.” For the past six years, lower rainfall levels and drought have left the rangelands for his flock sparse and bare. Abu Adei expects this year to yield rain and a good grazing season in the badia though.

“This one, I send to school,” he points at his six-year-old daughter. “But all my children tend the sheep with me.” Abu Adei emanates a sense of wisdom and harmony. He loves what he does in a way that one loves something one has always known. “To be healthy and not depend on anyone, that’s enough.”
“I lived next door to a hammam as a child. When I was 14, I asked for work, and I have stayed in the hammam ever since.” Abu Brahim, 41, manages Hammam al-Atiqa in Aleppo and has seen it change over the years. “In the past customers used to come with a sense of respect.”

For Abu Brahim, the hammam is not a mere public bath. “The hammams of the Levant share in their traditions,” he says emphasising the centrality of water in Islam and in the region. Religious and cultural rites such as marriage and pilgrimage are intrinsically linked with water and cleansing, and these often include preparatory visits to the hammam.

Abu Brahim knew a time when water was cherished. Now, even in the hammam, this quickly dwindling resource has become but an accessory to entertainment. “Visiting the hammam has become just a pastime – groups of youngsters come, but they don’t take it seriously. ‘As old clothes change, people change. Customers have forgotten the soul of the hammam. If you lose the essence of something, you lose the thing itself. Like jewellery, it must be polished for its essence and value to shine.’

Abu Brahim deeply loves his work. He is already sharing it with his children. But he won’t force it upon them. “We don’t build a future for our children. If you make a dress for them, it may not fit. If they love the work they will come. As the hammam stays, the people who belong to it stay.”

Water Sanctuary
**Focus on: Water**

**Q&A: Nader al-Bunni**

Syrian Minister of Irrigation

Syrian Minister of Irrigation Nader al-Bunni tells *Syria Today* about his vision for the future of the country’s water resources.

*By Francesca de Châtel
Photo Adel Samara*

**Syria has experienced several consecutive years of low rainfall and, in certain regions, serious drought. In light of this, how would you assess the state of the country’s water resources?**

Before I answer, let me correct the term ‘serious drought’. It is true that rainfall levels have been below average in the past three years. But I would not call it a serious drought as not all governorates were affected.

Syria is made up of five so-called ‘stability zones’. The first and second zones were not affected by the drought: rainfall levels did not decrease and agricultural production was not affected. The third and fourth zones were affected to varying degrees, with rainfall dropping by 40 to 80 percent. The fifth zone is the *badia*, where agriculture is forbidden. It is rainfed steppe land which is used as rangeland for livestock. It may have been affected.

In view of this, we can’t generalise and say that the country experienced a serious drought. We would be too harsh on ourselves if we said that.

While we may have had less rain, we must not forget that we have an excellent water resources management system. This is critical. It was developed over the past 40 years and guarantees our irrigation water.

In terms of quantity, Syria’s total actual renewable water resources in 2008-2009 amounted to 17bn m³, while consumption was 19.4bn m³. The 2.4bn m³ deficit was made up by groundwater and reserves in dam reservoirs.

In terms of water quality, we are working with the Ministry of Housing on a very ambitious sewage treatment plan involving the construction of government-funded treatment plants throughout the country.

Treated wastewater forms an additional source of water for the Ministry of Irrigation and the agricultural sector. This means that freshwater that was formerly used for irrigation in places such as the Damascus Countryside will now be allocated to the drinking water sector.

**Syria receives most of its water resources from beyond its borders. What challenges does this pose to the management of the resource?**

At present, there are no challenges in this domain because of the excellent relationship between Syria and Turkey. We are planning to jointly develop the water resources we share with Turkey. This will partly be done through the Syrian-Turkish Strategic Cooperation Council.
During a recent meeting in Ankara, you met with your Turkish and Iraqi counterparts to discuss the sharing of water from the Euphrates. How do you feel the three countries can come to a just and equitable agreement that will provide all parties with a reasonable share, particularly during periods of drought?

To reach an agreement, we need ‘fair’ not ‘just’ division. Because justice comes from God and fairness is human, you should speak about a ‘fair and reasonable’ sharing of resources between the three countries.

Currently, there are disagreements. Each of the parties has its own point of view regarding the sharing of these resources. But as we continue our dialogue, these points of view are drawing nearer to each other. I said in Ankara that we understand that Turkey was not able to send the agreed amount of water this year due to the exceptional climatic circumstances. We also acknowledge the extent to which Iraq has been affected by drought and this is why we decided to release additional amounts of water from our reserves, beyond the amount that is agreed upon.

There were tensions recently over the water that Syria shares with Jordan. Do you see that as a dispute that could escalate in the future?
There are no problems with Jordan; the newspapers are the ones that create problems. We have different points of view on certain issues, and this goes for the water we share with all of our neighbours, but this is normal and does not lead to tensions. We meet regularly with our counterparts from Lebanon, Jordan, Iraq and Turkey and have an open dialogue with them. The exception is Israel. This issue is a red line. We demand the return of the land and water which they are occupying in the Golan Heights.

**To what extent do you think the current drought is caused by climate change? What measures can the government take to limit the impact of such extended periods of drought, both for local communities and the agricultural sector?**

Let’s leave it to the scientists to determine whether it is climate change or a climatic cycle. Currently it is not clear. The current patterns of rainfall do not suggest that it is climate change. However, if it is shown to be climate change, then we have a number of procedures to follow. In case of emergency, securing drinking water sources will be a first priority. The second priority will be agriculture.

**What is the government doing to improve the management of the country’s water resources?**

The government analysed the situation of water resources in the country following a study carried out by the High Commission for Water. It underscored the importance of modernising irrigation systems. The government will establish a fund for agricultural loans with advantageous rates and repayment schemes. We have also decided that there should be a law regulating the relationship between the consumer and the Ministry of Irrigation as part of which illegal extraction of groundwater will be punished. The report also recommends the establishment of a system of shared irrigation through water user associations. This will reduce overall water consumption. Farmers who are members of such associations will be able to obtain government loans from a specially established fund.

The government has invested considerably in this. If these laws are applied within 10 years, we will have made a step in the right direction. In parallel to this, irrigation networks will be modernised and upgraded in order to reduce waste. We have funding for all of these projects. Now we just need time to implement them.

**Around the world, tens of thousands of litres of water are wasted each day due to inefficient practices, leaking pipes and mismanagement of resources. What measures are being taken to limit water wastage at a domestic, industrial and agricultural level in Syria?**

There are two sides to this issue. On the one hand, the government must reduce the amount of water lost through leakages in the water networks. The Ministry of Housing and Construction is addressing this issue. On the other hand, the consumer must become more aware and learn to waste less water. We have programmes to raise awareness in schools and in the farming communities. Mothers also play an important role in this regard.

**Is Syria considering the use of alternative sources such as desalination?**

Personally, I don’t think desalination is currently an option. We must first fully exploit our existing resources such as the water from the Euphrates and the fresh water sources springing up in the sea along the Syrian coast. The latter amounts to about 400m m³ of fresh water that is currently wasted.

**Syria’s population is estimated to reach 35 million in the year 2050. Regardless of whether the current trend of lower rainfall persists, there will be less water available per person. How is the government planning to address this?**

Regardless of whether there is drought or not, Syria has limited water resources. We also face other challenges such as wastewater, population growth and the need to rationalise and modernise the irrigation networks.

In 2035 people will also be more aware of the need to save water. And networks will be modernised in order to waste less water – some networks currently waste up to 50 percent. With regards to agriculture, we assume that the governmental plan to modernise irrigation will have been successfully implemented. If we modernise our irrigation methods, we would save 40 percent, which would be a great help in 2035. We also have a plan to increase the productivity of each cubic metre of water. A committee, consisting of the minister of agriculture and the minister of irrigation, has been charged with organising a conference to discuss how this can be achieved.

With these measures, I believe we have made a good start. It took time and energy to get the projects moving, but I am confident we will reach 2035 in good shape. If you ask me about 2050, however, I would say that we should leave some work to our children.

“Regardless of whether there is drought or not, Syria has limited water resources. We also face other challenges such as wastewater, population growth and the need to rationalise and modernise the irrigation networks.”
Rethinking Water Use

Increasing the productivity of water resources in the agricultural sector will be key to boosting Syria’s food production in a sustainable manner.

By Theib Oweis

Syria must rethink its water use strategy if it is to maintain its policy of food security and increase food production in the future.

At present, almost all of the country’s available water resources are being tapped into and there is little prospect of new water resources becoming available in the future. In certain areas, farmers have even resorted to exploiting non-renewable groundwater sources.

If, in addition, the effects of climate change reduce precipitation levels and lead to more frequent and prolonged droughts, water availability in Syria is certain to decrease in the coming decades.

More than 85 percent of Syria’s renewable water resources are used in the agricultural sector. However, the demand from other, higher priority sectors such as industry and tourism is increasing. And as population figures rise and standards of living improve, the demand for domestic water will also grow. In the long term, this means that the agricultural sector will have to cede some of its water to other uses.

Syria provides substantial support to the agricultural sector and has, over the last 15 years, achieved a notable increase in the production of strategic crops such as wheat, cotton, legumes and sugar beet, but also olives, citrus and vegetables. This growth in production can mainly be ascribed to the expansion of irrigated areas, improved crop varieties and more agricultural inputs such as fertilizers.

Current policies focus on maximising crop yield per unit of land with less attention to how much water is consumed. And while there have been attempts to rationalise irrigation water use, such as the introduction of modern irrigation systems, results have been limited with only a small percentage of applications (irrigation of rainfed crops in the winter during dry spells) will marginally reduce yields. However, the water that is saved in the process can be used on new lands, resulting in higher total production levels and higher income. In addition, cutting down on the irrigation of summer crops can save considerable amounts of water.

As part of the policy rethink, a system of pricing for irrigation water needs to be introduced in order to encourage farmers to increase their water productivity. In addition, support to farmers should be directed to areas where they need not overuse, such as education, health and infrastructure.

Syria’s rainfed agricultural system has great potential to fulfil the nation’s food needs, particularly if it is combined with supplemental irrigation. In areas of lower rainfall, water harvesting is another way to improve productivity, though this may require changes to the land tenure system and grazing management policies.

Future water management strategies should be based on changes in irrigation scheduling, a modification of cropping patterns and creating enabling environments for farmers to adopt more water-productive systems and technologies.

Theib Oweis is the director of the Integrated Water and Land Management Program at ICARDA.
Mining the Deep

A new 2005 law to regulate groundwater extraction and legalise wells has had limited impact to date.

By Francesca de Châtel
Photos Adel Samara

Y ears of heavy overpumping have severely affected Syria’s groundwater resources. Not only have reserves been entirely depleted in some areas; rivers and springs across the country have also dried up and water quality has been affected. Experts say that reversing the damage will take years, if not decades.

“The sustainability of groundwater use is a serious problem,” Theib Oweis, a water specialist at the International Centre for Agricultural Research in Dry Areas, said. “Overpumping is a serious problem. Most aquifers are declining because more water is being pumped than is being recharged.”

Traditionally, most farmers living in areas removed from the major rivers had relied on seasonal rainfall to water their crops. They used shallow hand-dug wells to draw up groundwater manually, which they used for drinking water and domestic purposes only. As extraction levels were low, the groundwater was naturally replenished during rainy periods and depletion was not a problem.

Water use patterns change
The large-scale use of diesel motor pumps in the 1960s, however, led to a rapid drop in groundwater levels. The motor pumps were lowered into the wells to pump groundwater at much higher rates than had ever been possible previously, which led to a rapid drop in the groundwater table. From the 1970s to the end of the 1990s farmers across the country drilled hundreds of new wells and massively expanded the areas irrigated by groundwater. The new-found resource under the ground allowed them to increase their agricultural production and thus their income.

According to figures from the National Agricultural Policy Centre (NAPC) lands irrigated by groundwater more than doubled between 1985 and 2005 from 652,000ha to 1.4m ha in 2005. The number of wells is estimated to have increased from around 135,089 in 1999 to over 213,335 in 2007.

Fred Kloosterman, a Dutch hydrogeologist working for the Syrian-Dutch Water Cooperation (SDWC) Programme has mapped the evolution of groundwater levels in the Asi-
Orontes Basin. He said the advent of electricity in the 1970s brought about a fundamental change in water use in the area. “In the 1950s there were hardly any wells,” he said. “The groundwater reservoir was almost full. What was extracted for drinking was naturally replenished through rainfall. In the 1960s people started drilling new wells and then there was an explosion of new wells in the 1980s and 1990s.”

While there are no exact figures, Kloosterman says that in the 1980s and 1990s withdrawal rates were approximately five times higher each decade than they had been in previous decades. In the worst-affected areas, such as Mhardeh in Hama governorate and Khan Shaykhun in Idleb governorate, the overpumping led to a drop of 50m to 100m between the 1950s and 2000.

“They thought that the groundwater supply was endless. They didn’t understand that you should not pump more than what is recharged. And now there is a problem of depletion in some areas.”

- Wael Seif, water engineer

Depletion of resources
The huge increase in groundwater use had similar effects in many other areas. A 2002 study by The Arab Center for the Studies of Arid Zones and Dry Lands and the German Federal Institute for Geosciences and Natural Resources, BGR, found that in the period between 1993 and 2000 groundwater levels in the Damascus Ghuta and its surroundings had dropped by more than 6m per year in certain areas.
“From a resources point of view, these values are extremely high, especially if somewhat longer time periods are taken into consideration,” the report states. “Obviously, the present groundwater withdrawal rates are not sustainable.”

In the region around the Khabour River near the northeastern city of Hassakeh, vast areas where farmers relied on rainfall to cultivate their crops until the 1980s are now irrigated by groundwater and massive overpumping has led to the drying up of many springs, while most wells and shallow aquifers have been depleted. The Khabour River no longer flows in summer since 1999, while the flow of the Ras al Ain spring that used to feed into the Khabour has dropped from an average discharge of 60 m³ per second between 1942 and 1972 to nil after 2001.

Far from acknowledging the limits of the resource during the 1980s and 1990s, the government encouraged the large-scale expansion of groundwater-irrigated areas and supported the digging of new wells.

“In the 1980s and 1990s there was a huge growth in the drilling of wells,” Omar al-Shamali, the head of the Homs Water Directorate, said. “During this period there was rapid agricultural development in the Asi-Orontes Basin and large-scale cultivation of cotton.”

Farmers had easy access to advantageous loans to drill wells and install pumps, and fuel prices were heavily subsidised, making it inexpensive to extract water, even from great depths. In addition, the licensing and monitoring of wells was poorly organised and thousands of new wells were sunk without government licences during the 1980s and 1990s.

“They thought that the groundwater supply was endless,” Wael Seif, a water engineer and the Syrian resident manager for the SDWC, said. “They didn’t understand that you should not pump more than what is recharged. And now there is a problem of depletion in some areas.”

**Slow implementation of new law**

Today, the government is aware of the threat to the country’s groundwater resources. It has made several attempts to curb the illegal drilling of wells, including the issuing of a decree in the late 1990s demanding the licensing of all illegal wells by 2001 – a measure which had little concrete effect.

More recently, the 2005 Water Law outlined various measures to improve water resource protection, license wells and better regulate drilling procedures.

“The law regulates the relationship between the consumer and the Ministry of Irrigation,” Nader al-Bunni, Syria’s minister of irrigation, said. “From now on, illegal extraction of groundwater will be punished.” Those caught breaking the law are liable to fines and up to three years in prison.

In parallel to this new law, a decree passed in May 2008 removed the subsidies on diesel fuel. The result was that prices shot up from SYP 7 to SYP 25 overnight and many farmers today can no longer afford to pump groundwater as they used to.

However, despite all these new regulations, 2008 figures from the NAPC show that the total number of wells has continued to increase from around 202,274 in 2005 to 213,335 in 2007. The share of unlicensed wells has remained more or less constant at 57 percent, despite efforts to step up licensing and apply the new law.

Water experts in the public and private sector interviewed by *Syria Today* said that regularising the situation surrounding illegal wells would take time.

The abrupt and massive closing down of wells across the country would not only put thousands of farmers out of work; it would also impact the national economy which has over the years come to rely on the crops produced with water from illegal wells.

“If you close down all these unlicensed wells at the same time, you lose a considerable part of the national income,” a Syrian water expert who asked to remain anonymous said. “It has to be done gradually. You have to offer farmers alternatives.”

One such alternative is the creation of water user

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**Mapping the Underground**

A lack of knowledge about the exact amount and location of the country’s groundwater reserves forms a major obstacle to the development of a sustainable groundwater policy.

Water specialists interviewed by *Syria Today* concurred that essential know-how was missing in this domain and that while there was accurate and extensive data available about the country’s surface and rainwater, groundwater remained a poorly understood resource.

“Groundwater is an enigmatic source, it is somehow seen as mysterious and much more difficult to understand than surface water,” Fred Kloosterman, a Dutch hydrogeologist, said.

Together with a team of engineers from the Syrian Ministry of Irrigation, Kloosterman and his Dutch colleagues have been working since 2002 to map the groundwater resources in the Orontes Basin that covers parts of the governorates of Homs, Hama and Idleb and runs from the Lebanese to the Turkish border.

After collecting and digitalising a range of historical records about the basin’s water resources, the Syrian-Dutch Water Cooperation team conducted an extensive well survey in cooperation with the Syrian General Company for Hydraulic Studies. Based on all these data a groundwater model was developed which can provide policy makers and decision makers with a planning tool.

“The groundwater model allows you to get a grip on what is going on,” Kloosterman said. “With this model we can for the first time chart the evolution of groundwater use in the Orontes Basin and make projections about possible future scenarios, which in turn allows you to plan ahead.”

Following the completion and review of the second phase of the project in 2008, the Syrian-Dutch Water Cooperation launched the third phase last month which will focus on three ‘problem areas’ and introduce new water management tools.
associations in which several farmers would share the water of a single, licensed well and receive advice on how to increase water use efficiency and productivity.

**Rechargeable battery**
The Water Directorate in Homs governorate has also adopted other measures to preserve and replenish heavily depleted areas, including the mandatory use of water-saving irrigation techniques such as drip irrigation.

Shamali explained that farmers using groundwater from licensed wells have to introduce modern irrigation techniques on their farm in order to renew their licence. He added that the process is not straightforward, however.

“It is very difficult to convince the farmers,” he said. “There is continuous resistance.

And most farmers who end up adopting the new system, don’t do so because they are worried about the environment or because they want to comply with the law. It is because they have less water. The wells aren’t giving water like they used to.”

In addition, extraction is being closely monitored in areas with low groundwater levels, and the cultivation of summer crops is forbidden in some of the worst-affected areas. A governorate-wide ban on the use of groundwater for the irrigation of water-intensive crops such as cotton and sugar beet is also expected to contribute to the replenishing of groundwater reserves.

Water experts studying the Asi-Orontes Basin hope that the combination of these and other measures including better land use planning, will lead to a sustainable use of the water resources in the area.

Kloosterman and his colleagues recommend an intensification of agriculture in the fertile and water-rich al-Ghab plain north-west of Hama, while reserving other, less water-rich areas for housing or industry.

“The situation in the Orontes Basin is not hopeless,” Kloosterman said. “You just have to use the water in the right way. You must monitor it, you must understand it, you must model it, and you must be prepared for the worst-case scenario.

“It’s simple, like a battery. If I don’t charge my mobile phone, I can’t phone the next day. It’s not complicated.”

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**Low and Dry**
The rapid decline of an ancient underground irrigation system used throughout the Arab world is a clear warning sign that the region’s groundwater resources are not being used in a sustainable manner.

*By Joshka Wessels  
Photos Joshka Wessels*

Climate change, drought and the lowering of the groundwater level through overpumping have had a devastating impact on Syria’s qanats, ancient underground water systems. Their drying out should be seen as a warning sign alerting us to the disastrous state of the region’s groundwater resources.

Developed in Northern Persia more than 2,500 years ago, qanats remain to this day the most sustainable way of bringing water to arid lands. Over the centuries the technique spread through the Middle East, North Africa and beyond to Kyrgyzstan, China, Japan, Spain and Mexico.

The principle behind the technique of qanats is simple yet ingenious. It taps into a subterranean source and leads the water through a tunnel – which
can be between 100m and several kilometres in length – down a slow gradient to communities and crops. A series of airshafts are dug along the tunnel’s length to provide workmen with air while they are repairing or constructing the qanat. By relying entirely on gravity and not using any mechanical energy, these technologies are the ultimate sustainable method of extracting groundwater.

But while these underground networks have provided communities in arid regions with water for thousands of years, they have fallen into disrepair over the last 20 years and many have been abandoned. The drying up of qanats in the region has many causes, including lower rain- and snowfall levels in the qanats’ catchment area and the use of motor pumps which lowers the groundwater table and ultimately dries up underground springs. There are also economic causes, such as farmers abandoning their land in search of more lucrative forms of employment.

When qanats are abandoned, it is not just a source of water that is lost; valuable local knowledge about the local water and land resources are also forgotten, together with the skill of building and maintaining this precious cultural heritage. As the most sustainable form of extracting groundwater, qanats should be protected for future generations.

Joshka Wessels is a Dutch film-maker with a PhD in human geography. She has done extensive research on qanats in the Middle East and North Africa and also made a film on qanats in Syria.
Barada Memoirs

Described by medieval poets as ‘The Nile of Damascus’, the Barada River used to provide water to the city and its gardens. Today it has been reduced to a trickle. *Syria Today* travels down from the Barada’s source to the Ghuta and beyond to trace people’s memories of the river.

*By Nouna al-Dimashqiya
Photo Adel Samara*
At the Source

Which way is it to the Barada Spring? “That way,” replies a young man with a tattoo on his arm standing on the edge of the road. “But don’t go, or you’ll cry.”

What has become of the Barada River? Its spring – which used to collect into a lake before flowing down to Damascus, through the Ghuta Oasis and on to the Ateibeh Lake – is now dry for most of the year.

At the Barada Spring, carcasses of rowing boats lie belly up baking in the sun. The depletion is serious. “You don’t need figures to understand the depletion of the Barada River,” a regional water expert who asked to remain anonymous said. “You can see it with your own eyes!” Both the Barada Spring and the Ain al-Fijeh Spring are dry, he explains tersely. “You cannot put one third of Syria’s population in one city so quickly.” He speaks grimly about urbanisation and the colossal role it has played in sucking dry local water sources. “Farmers are not to blame for the depletion of the river. It is the growth of Damascus.”

The memory of the Barada River, of what it once was, is now the current that carries its waters. This river is becoming a legend.

Shallow Depths

Abu Hassan lives on what is left of the banks of the Barada. He grows quinces and apples on land that his father farmed before him. A 60-something father of 10, he is proud of his land: “This is the Barada Valley. Poets lauded it. Fairouz sang about it.”

Abu Hassan has been struggling to sustain his orchard. He used to draw water for his family and trees from the river with a pump. “We have seen the level of the Barada decrease drastically in the last eight years. It used to be seven metres deep,” he says pointing at a trickle of rainwater.

“It was a river, a real river with a current that could pull a strong man under. And the water was pure – so cold that if a man stayed in it for 15 minutes, his heart would stop. If my father were to come back from the dead, he would not believe this is the Barada. I think my grandchildren will not even know about its existence at all.”
Forgotten Fijeh

Further downstream, Abu Baker remembers the hills overlooking the Fijeh Spring. “They used to be covered in trees. The vegetation was so dense, you couldn’t see the ground.”

A father of three in his 40s, Abu Baker now manages a restaurant in Ain al-Fijeh. He is unable to maintain his father’s orchard in the valley. “The land consumes money and time, but it doesn’t produce anymore. I am afraid we will experience even more severe desertification in what used to be one of the greenest valleys in Syria.”

The Fijeh Spring used to be three times as large as the Barada Spring and formed the sole source of drinking water for Damascus and the surrounding countryside.

“The Barada River was always full thanks to Fijeh,” the water expert said. “Now, it is completely dry.” So, a spring that has nourished the city of Damascus, its oasis and all the valleys of the region for thousands of years has been depleted in the last half century? “Yes.”
“Come, sit... there’s wind today,” an elderly woman invites. She sits in Dummar Park, a concrete slab wedged between the old road to Beirut and the Barada River. Here, the river is just finger-deep.

Amina is from Sheikh Mohiedin in Damascus, where she remembers the Barada propelling norías (waterwheels) in the house next door. “I could even hear the river.” She moved to Qudsaya 15 years ago and has been coming to the park ever since.

Amina has 10 children and 42 grandchildren. “But I am always alone. This is the best place to come. Sometimes I stay all day, until they kick me out when they close the park at dusk.

“The river used to be full of water and now it’s all gone. There’s no more sound. It used to rush by and you could hear it. What are we to do? What else should I say? I have nothing else to say.”
It is at Rabwe that the Barada River splits into seven arteries, which fan out across Damascus and its oasis. This valley has been a popular picnic spot for centuries. Today, restaurants flank the steep riverbanks – picnicking is over. Abu Ahmad owns a café along the Barada in Rabwe. His grandfather used to run it as a picnic spot, setting up bamboo mats and tents for families looking to escape Damascus. He remembers the water running fast and clean all year. “This was a most beautiful place. Nature has changed.” Abu Ahmad does not fear that customers will stop coming as the Barada dries out. “They have memories here. They will keep visiting even though the river is dry, because of their loyalty to the memory.”

Muhammad Lahham, fellow café owner in Rabwe, concurs. “No one wants to eat next to this filth. People return for the memory. Everyone came together in Rabwe. They sat in amazement staring at the river and the lush valley springing forth from its banks.”

But how long will people keep coming before the memories fade?
Rumour has it a young man fell madly in love in Rabwe. However, his love was betrothed to another, so he wrote upon a rock, “Remember me! Goodbye!” and threw himself off. His message is still visible and hangs above this threatened valley like an omen.
Ahmad, 52, and his family farm a patch of land in the Ghuta not far from Bab Sharqi in Damascus. The Barada used to pass in a channel under his home before running out to irrigate the fields. It was enough to sustain both family and farm.

Now he asks, “What river?” It’s impossible to imagine farming here. Nearby, garbage trucks dump rubbish into the Ghuta. “In a few years time, this land will be done, finished. Every day a stone is set.” Ahmad and his family have been waiting. Waiting for the news they know will come. “It’s just a matter of time before our land will be swallowed by concrete.”
The Wheel of Time

“The last time the wheel turned was 20 years ago,” Abu Oussama motions. He follows in his father’s footsteps as the sole guardian of an ancient waterwheel tucked behind Sheikh Mohiedin Mosque in Damascus.

Al-Jazari – an engineer, inventor and scholar from the Jazeera region in northern Mesopotamia – designed the wheel in the 12th century; it is among the earliest demonstrations of mechanics in a water supply system. The wheel was powered by the Barada’s flow and through an intricate system of cogs and gears lifted the water to an aqueduct, which in turn carried the water to the mosque’s ablution fountain.

“Fish used to come with the river; we swam with them. Now just look at it – only sewage.” Abu Oussama, in his 40s, does not flinch when he says his four children have no interest in the wheel. “I am the only one who looks after the unmoving wheel. My father cared for it alone. And I’ll carry on alone.”
The Last Drop

The Barada River ends in Ateibeh, a village situated on the banks of what used to be a 10-metre-deep lake. Now, the land is barren and dry. “I got married in 1955 and the lake was full that day,” Ahmad Muhammad Abdo recalls. He sits flanked by his sons and grandsons, three generations of Ateibeh farmers, not counting those before them. “My eldest grandson who is 13 remembers the water, but the others only know desert.”

Abdo doesn’t know what to grow anymore on his parched farm. “Villagers used to gather together for chitchat and tea. Farmers brought their cows with them. I remember there used to be 600 cows.” Abdo’s son admits: “I do not want to have anymore children. I don’t want to bring another unemployed child into this world.”

The Barada River depends on collective memory now. It is drying out fast, and as the last who know it grow older, it threatens to disappear altogether.