

## Water and the struggle for peace and democracy

*Presentation to Workshop on  
“Water as a Tool for Peace-building”*

*Organised by Save the Tigris Campaign*

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Nicholas Hildyard, The Corner House

I am very pleased to be back in Baghdad. Thank you for inviting me. Thanks too to everyone for the presentations today: I have learned a lot.

So far we have focussed on:



[http://www.natureiraq.org/uploads/5/2/9/9/52997379/dsc-0481\\_1.jpg](http://www.natureiraq.org/uploads/5/2/9/9/52997379/dsc-0481_1.jpg)

- Pollution of water sources through industrial and other development;



Husain Hatem – Amara: <http://www.iraqicivilsociety.org/archives/8394>

- The threat to the marshes in southern Iraq from both pollution and declining water flows due to upstream dam development; and



<http://wikimapia.org/1772451/Dez-Dam-Reservoir-%D8%B3%D8%AF-%D8%AF%D8%B2>

- The impacts of Iranian dams (the picture is of the Dez Dam) both within Iran and between Iran and Iraq.

I would like to build on these discussions and explore how they relate to each other. And, in particular, how pollution, reduced water flows and dam construction relate to conflict and, in particular, the denial of democracy.

### **Hidden pollution**

So maybe I could start with this picture:



[https://i2.wp.com/www.naturphilosophie.co.uk/wp-content/uploads/2013/12/Water\\_Quality.gif](https://i2.wp.com/www.naturphilosophie.co.uk/wp-content/uploads/2013/12/Water_Quality.gif)

This water may look clean. It has no turds floating in it. It is not visibly polluted by oil or chemicals.

But that does not mean it is not polluted. Or that its use does not have devastating consequences.

The pollution I want to talk today about is pollution that you cannot see.

I am talking about increasing levels of salt in Iraq's water.



[https://cdn2.trend.az/media/thumbnails/410x307/2013/05/01/Ground\\_salination\\_010513.jpg](https://cdn2.trend.az/media/thumbnails/410x307/2013/05/01/Ground_salination_010513.jpg)

You will have seen land like in the picture above. It isn't snow on the ground: it is salt.

As a result of increasing salt levels in water, huge areas of agricultural land are now being rendered infertile.

Currently 25% of Iraq's irrigated land — 2 million hectares — is now so salinized that it does not permit crop cultivation.

The water in the Tigris and Euphrates rivers in Iraq is becoming increasingly saline. It is now too salty to support most crops in the Basra area<sup>1</sup> – and also dangerous to human health if drunk regularly.

The economic impacts are also severe. In salt-affected areas farmers are cropping only about 30% of their land and are achieving only about 50% of expected yields. That's costing Iraq an estimated US\$300 million per year.<sup>2</sup>

And here is a fish kill at Dhi Qar in Iraq (I hope I have pronounced that right!) that has resulted from high salinity levels and low water flows.



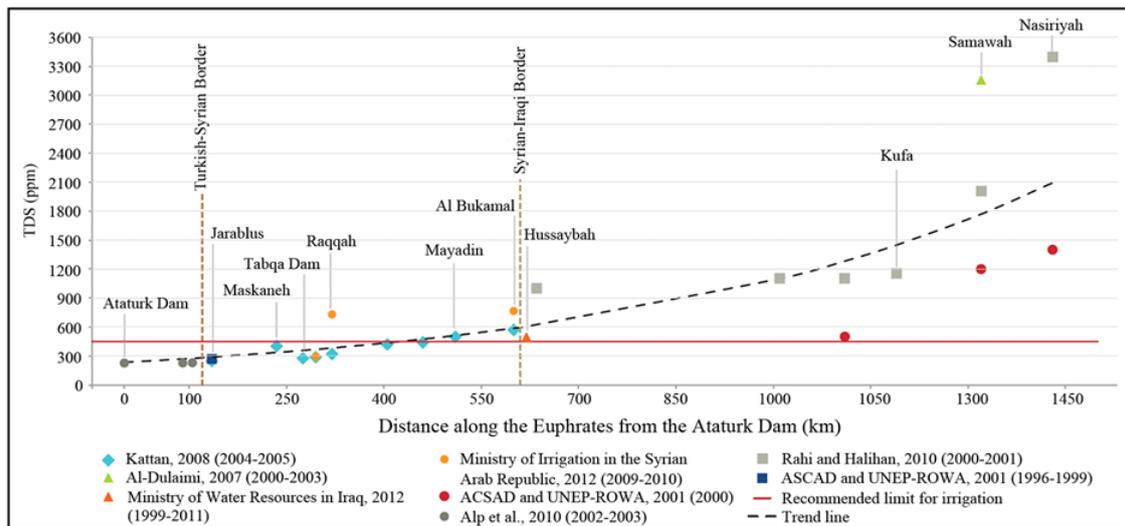
<https://pbs.twimg.com/media/CLKgsWwUcAA4a23.jpg:large>

## Salinisation in Iraq

Salinisation is caused by minerals in the soil being dissolved. This is mostly the result of irrigated agriculture.

If irrigated land is not properly drained or is used without fallow periods then the salts build up - and eventually the land is unusable.

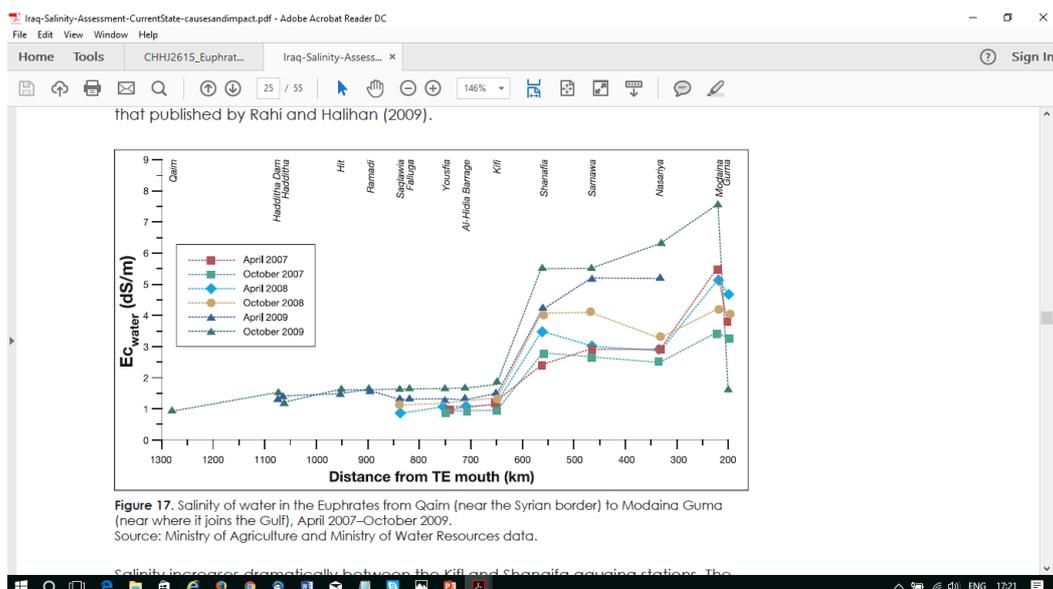
And you will see from the picture below salinity levels in the River Euphrates rise as one travels downstream – due in large part to salts building up in the soils and being washed into the river through irrigation.



<http://html.scirp.org/file/8-8102551x9.png>

They are now way above the recommended safe limit for use in irrigation, represented by the red line.

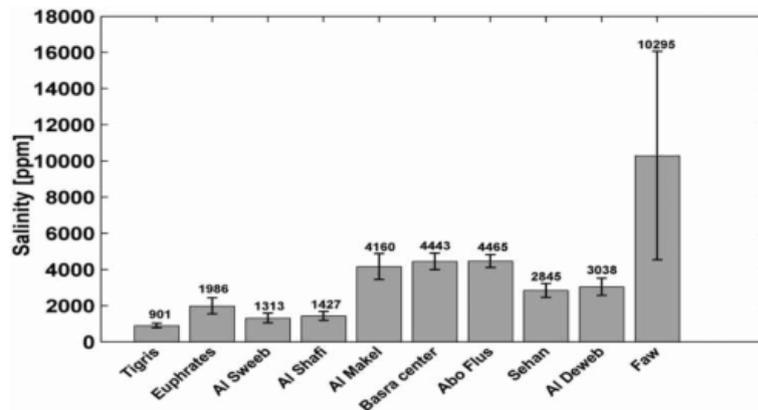
And here are some figures for salinity levels at different locations in Iraq.



[https://apps.icarda.org/wsInternet/wsInternet.aspx/DownloadFileToLocal?filePath=Iraq\\_Projects/Iraq\\_Salinity/Iraq-Salinity-Assessment-CurrentState-causesandimpact.pdf&fileName=Iraq-Salinity-Assessment-CurrentState-causesandimpact.pdf](https://apps.icarda.org/wsInternet/wsInternet.aspx/DownloadFileToLocal?filePath=Iraq_Projects/Iraq_Salinity/Iraq-Salinity-Assessment-CurrentState-causesandimpact.pdf&fileName=Iraq-Salinity-Assessment-CurrentState-causesandimpact.pdf)

And it gets particularly bad in the Shat Al-Arab.

Here are the results of tests done in 2014 at 10 locations.



[https://www.researchgate.net/profile/Abdul\\_Haleem\\_Al-Muhyi/publication/312054616/figure/fig15/AS:446819151945770@1483541395635/Fig15-average-salinity-concentration-for-10-station-along-the-SAR-during-February-2014.ppm](https://www.researchgate.net/profile/Abdul_Haleem_Al-Muhyi/publication/312054616/figure/fig15/AS:446819151945770@1483541395635/Fig15-average-salinity-concentration-for-10-station-along-the-SAR-during-February-2014.ppm)

The concentrations of salt in the water are way above those classified by the World Health Organisation as unfit for human consumption – currently 600mg/l.

And it is not just salt levels that are rising.

Modern intensive agriculture relies on the use of large amounts of pesticides and nitrogen.

This too ends up in the rivers – and contaminates water.

One study suggests that the planned expansion of irrigated agriculture in Turkey (of which more later) could cause insecticide levels in the Syrian portion of the Euphrates and its tributaries to increase by 35% in the coming decades.<sup>3</sup>

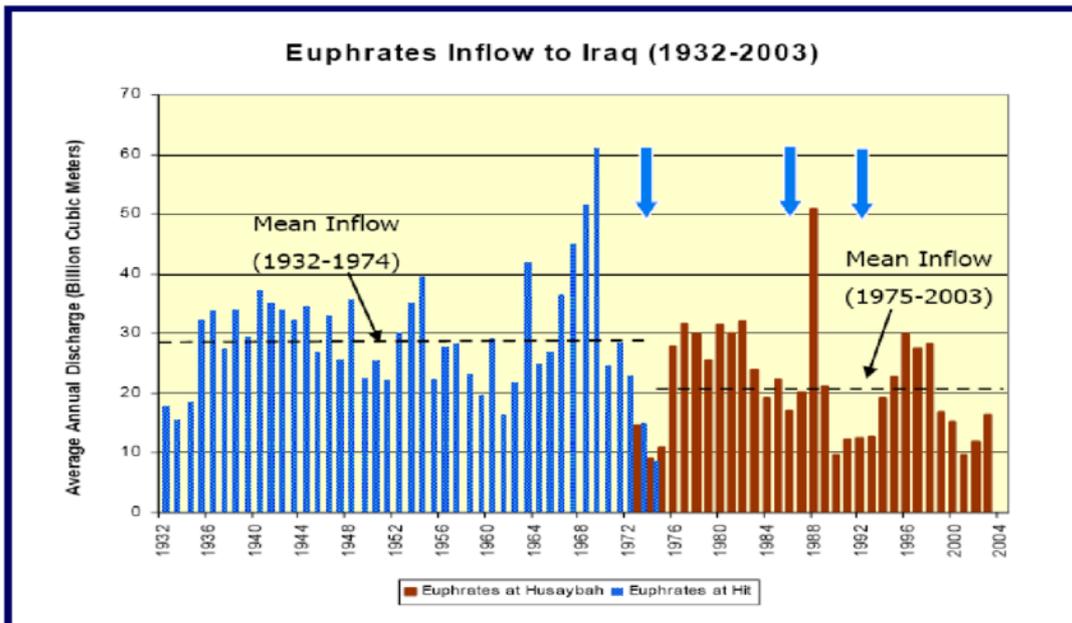
### Salinity and Reduced Downstream Flow

There are many causes for this pollution.

Part of the problem lies in mismanagement of irrigation in Iraq itself – particularly poor maintenance of drainage in irrigated areas, not least due to sanctions during the 1990s and conflict in the past years.

But a large part of the problem also lies in the reduction of downstream flows from Turkey and Syria. There is simply less water to flush out the salt from irrigated land in Iraq.

As you will see from the next slide, the flow at the Iraqi border fell by almost a third between the early 1970s and the mid-2000s.



[https://www.researchgate.net/profile/Ammar\\_Kamel/publication/299546772/figure/fig2/AS:365620219662341@1464182061866/fig2-Inflow-of-Euphrates-River-in-Iraq-1.png](https://www.researchgate.net/profile/Ammar_Kamel/publication/299546772/figure/fig2/AS:365620219662341@1464182061866/fig2-Inflow-of-Euphrates-River-in-Iraq-1.png)

Critically, the water coming into Iraq is increasingly saline due to irrigation in Turkey and Syria.

And as irrigation expands in upstream states, the salinity levels are expected to rise as this graph shows.

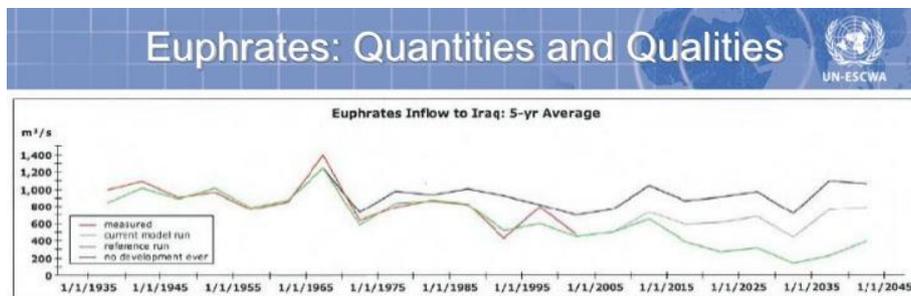


Figure 26. Euphrates Inflow to Iraq—Five-Year Average

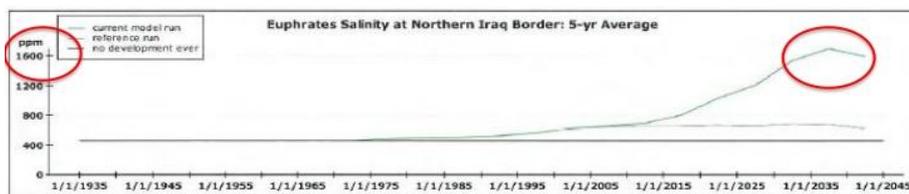


Figure 35. Euphrates Salinity at Northern Iraq Border—Five-Year Average

Grey, D. & Blackmore, D., 2011. Pres. at donor coordination meeting, Sep 2011

28 March 2012

www.escwa.un.org

9

<https://image.slidesharecdn.com/20120127rkingbeilescwawatermgmtchallengesunderdroughtcondirg-moenv-120327112440-phpapp02/95/r-kingbeil-2012-water-management-challenges-under-drought-conditions-9-728.jpg?cb=1333528790>

Technical studies conducted by Iraq have also forecast a doubling of salinity levels in the Tigris as a result of upstream irrigation in Turkey.<sup>4</sup>

Declining water quality as a result of existing and planned projects on the Tigris and Euphrates will affect about 1.3 million hectares of agricultural land in Iraq - some 40 per cent of the agricultural land available.

## Dams in Turkey and Iraq

A major cause of this reduced flow and increased levels of salt and chemicals is the building of dams in Turkey and Iraq.

Here's is a list of existing dams:

**TABLE 2**  
**Large dams in the Euphrates-Tigris River Basin**

Country	Name	Nearest city	River	Year	Height (m)	Capacity (million m <sup>3</sup> )	Main use *
Turkey	Keban	Elazig	Firat	1975	210	31 000	I, F
	Karakaya	Diyarbakir	Firat	1987	173	9 580	H
	Ataturk	Sanliurfa	Firat	1992	169	48 700	I, H
	Ozluce	Bingol	Peri	2000	144	1 075	H
	Kralkizi	Diyarbakir	Maden	1997	126	1 919	H
	Kuzgun	Erzurum	SerCeme	1996	110	312	I, H
	Dicle	Diyarbakir	Dicle	1997	87	595	I, H, F
	Batman	Batman	Batman	1999	85	1 175	I, H, F
	Erzincan	Erzincan	Goyne	1997	81	8	I
	Zernek	Van	Hosap	1988	80	104	I, H
	Kockopru	Van	Zilan	1992	74	86	I, H, F
	Kayalikoy	Kirklareli	Kaya	1986	72	150	I
	Demirdoven	Erzurum	Timar	1996	67	34	I
	Tercan	Erzincan	Tuzla	1988	65	178	I, H
	Birecik	Sanliurfa	Firat	2000	63	1 220	I, H
	Sarimehmet	Van	Karasu	1991	62	134	I
	Sultansuyu	Malatya	Sultansuyu	1992	60	53	I
	Mursal	Sivas	Nih	1992	59	15	I, H
	Surgu	Malatya	Surgu	1969	55	71	I
	Polat	Malatya	Findik	1990	54	12	I
	Goksu	Diyarbakir	Goksu	1991	52	62	I
	Kayacik	Karaburun		2002	50	117	I
	Hancagiz	Gaziantep	Nizip	1989	45	100	I
	Camgazi	Adiyaman	Doyran	1999	45	56	I
	Medik	Malatya	Tohma	1975	43	22	I
	Hacihidir	sanliurfa	sehir	1989	42	68	I
	K. Kalecik	Elazig	Kalecik	1974	39	13	I
	Gayt	Bingol	Gayt	1998	36	23	I
	Devegedidi	Diyarbakir	DevegeCidi	1972	33	202	I
	Dumluca	Mardin	Bugur	1991	30	22	I
	Karkamis	Kahramanmaras	Firat	2000	29	157	H
	Cip	Elazig	Cip	1965	23	7	I
	Palandoken	Erzurum	GedikCayiri	1997	19	1 558	I
Porsuk	Erzurum	Masat	1994	17	770	I	
				<b>Total</b>		<b>99 598</b>	
Syrian Arab Republic	Al Tabka	At Thawrah	Euphrates	-	-	11 200	
				<b>Total</b>		<b>11 200</b>	
Iraq	Mosul	Mosul	Tigris	1983	131	12 500	I
	Derbendi Khan	Ba'qubah	Diyola river	1962	128	3 000	I
	Dokan		Lesser Zab	1961	116	6 800	I
	Haditha	Haditha	Euphrates	1984	57	8 200	I, H
	Hamrin	Ba'qubah	Diyola river	1980	40	4 000	I
	Dibbis		Lesser Zab	1965	15	3 000	I
	Samarra - Tharthar	Samarra	Tigris	1954	-	72 800	F
			<b>Total</b>		<b>110 300</b>		
Iran (Islamic Republic of)	Karoun 3	Eizeh	Karoun	2004	205	2 970	I, H
	Dez	Andimeshk	Dez	1962	203	2 856	I, H, W
	Karoun 1	Masjedsoleyman	Karoun	1976	200	3 139	I, H
	Masjedsoleyman	Masjedsoleyman	Karoun	2001	177	230	I, H
	Gavoshan	Kamyaran	Gaveh roud	-	136	550	I, H, W
	Karkheh	Andimeshk	Karkheh	2001	127	5 575	I, H, F
	Vahdat	Sanandaj	Gheshlagh	-	80	224	I, H, W
	Eilam	Eilam	Baraftab & Chaviz	-	65	71	I, W
	Guilangharb	Guilangharb	Guilangharb	-	51	17	I
	Shahghasem	Yasouj	Parikedoun	1996	49	9	I
	Hana	Samiroom	Hana	1996	36	48	I
	Bane	Bane	Banechay	-	20	4	W
	Chaghakhor	Boldaji	Aghbolagh	1992	13	42	I
Zarivar	Marivan	Zarivar	-	11	97	I	
			<b>Total</b>		<b>15 832</b>		
			<b>TOTAL</b>			<b>236 930</b>	

\* I = irrigation; H = Hydropower; W = Water Supply; F = Flood protection

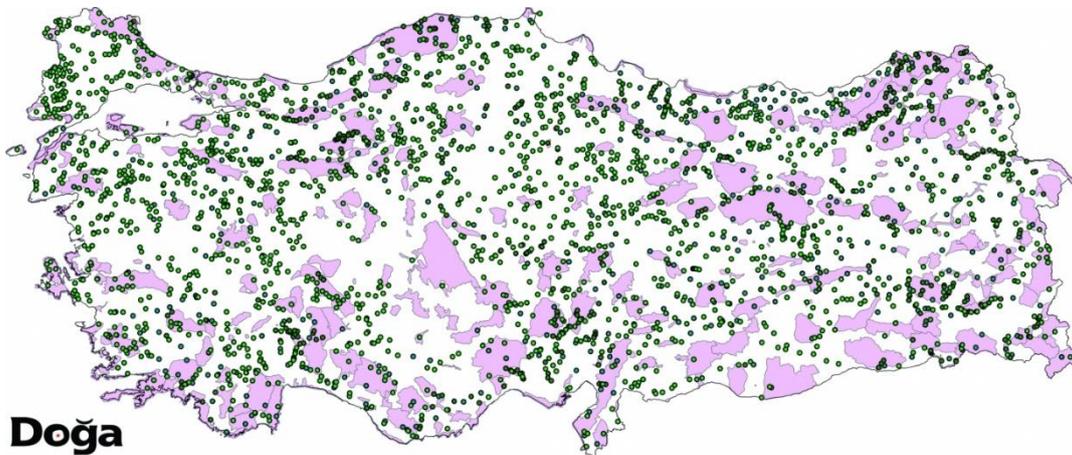
[http://www.fao.org/nr/water/aquastat/basins/euphrates-tigris/Table\\_2.png](http://www.fao.org/nr/water/aquastat/basins/euphrates-tigris/Table_2.png)

Many of these have been built to water irrigation schemes. So much of the water they help to abstract does not return to the rivers. It is taken away in the food or seeps into groundwater aquifers.

And still more dams and associated water programmes are planned.

Below is a map for dams planned in Turkey, many of them under Turkey's so called GAP project.

The green dots are all dams. Over 500 of them.



[https://www.internationalrivers.org/sites/default/files/styles/600-height/public/images/resource/lori\\_pottinger/turkey-key-biodiversity.jpg](https://www.internationalrivers.org/sites/default/files/styles/600-height/public/images/resource/lori_pottinger/turkey-key-biodiversity.jpg)

To give some idea of the impacts of dams on water flows, consider the planned Ilisu Dam in Turkey.



The Ilisu Dam: [http://www.hurriyetdailynews.com/images/news/201412/n\\_75489\\_1.jpg](http://www.hurriyetdailynews.com/images/news/201412/n_75489_1.jpg)

The dam is now under construction. It is a hydroelectric dam – so, in theory, the water in the reservoir (less what is lost to evaporation and seepage) will flow downstream and not be abstracted - but a second dam is planned at Cizre on the Syrian border. Much of the water from Cizre will not be returned to the river because it will be used for irrigation.

In conjunction, the two dams could reduce the flow of the Tigris to a trickle during the dry season.

Here's what one study concludes:

“The operation of the Ilisu Dam in combination with diversions from the future downstream Cizre project would probably significantly reduce summer flows in Syria and Iraq below historic levels... It is even possible that with full

implementation of the Ilisu/Cizre projects, during drought periods, all the summer flows could be diverted before it crossed the border.”<sup>5</sup>

And dams in Iran are also having an impact.

Daryan Dam on Daryan River, for example, has significantly decreased the flow of Sirwan River in Halabja Governorate, affecting water availability for agriculture in Garmian.<sup>6</sup>

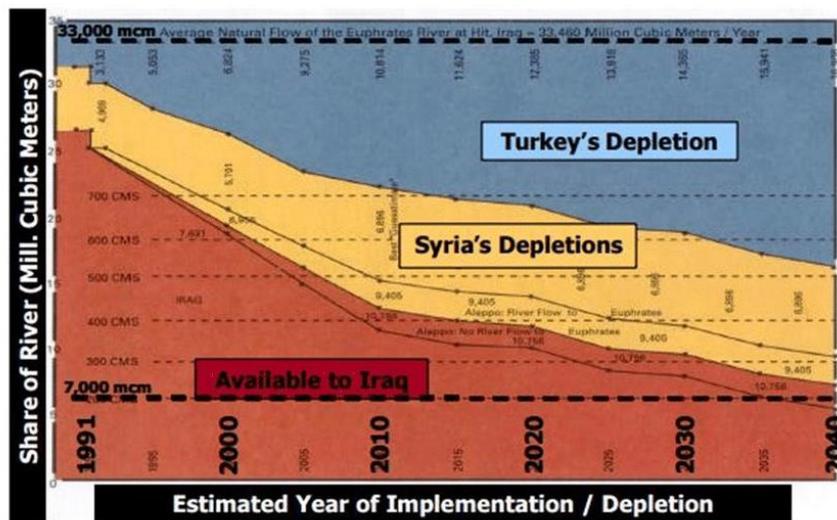
The former Iraqi Minister of Water, Latif Rashid, has warned:

“Inflows to our country has been declining, due to the construction of dams in Turkey and Syria.

This has resulted in severe water scarcity conditions in the country with elevated salinity levels, massive rural population displacement, reduced agricultural productivity, environmental degradation, shrinking land cover and increased vulnerability to climate change.”<sup>7</sup>

And Latif Rashid is right.

Below is a diagram projecting the reduced share of the Euphrates going to Iraq as a result of dams and other developments upstream.



[https://www.researchgate.net/profile/Abdul\\_Haleem\\_Al-Muhyi/publication/312054616/figure/fig13/AS:446819151945754@1483541395561/Fig13-Depletion-of-water-from-Euphrates-24-recently-warned-that-the-Tigris-and.jpg](https://www.researchgate.net/profile/Abdul_Haleem_Al-Muhyi/publication/312054616/figure/fig13/AS:446819151945754@1483541395561/Fig13-Depletion-of-water-from-Euphrates-24-recently-warned-that-the-Tigris-and.jpg)

Some warn that some 1.5 million hectares of agricultural lands could fall victim to desertification, creating a widespread humanitarian crisis.<sup>8</sup>

Certainly there is a real threat of severe water shortages for agriculture and for household use, let alone for the Marshes or for industry.

### The water “arms race”

Many now predict “water wars” as a result of this grabbing of water upstream.

Already there are examples of near conflicts.

The start of construction on the Keban Dam in Turkey, for example, prompted protests from Syria to Turkey, whilst the completion of the Tabqua Dam led Iraq to

threaten military action in 1974 and again in 1975,<sup>9</sup> with both Syria and Iraq mobilising their troops and moving them to the border.

And dams are already being used as weapons of war against downstream neighbours. Turkey reportedly stopped the flow of the Euphrates in 2014 to put pressure on Syria, cutting off water to millions of people around Aleppo.<sup>10</sup>

And ISIS has of course threatened to destroy dams under their control as part of its military strategy.

And it is this potential for conflict that has led the UK Defense Forum to describe Turkey's GAP project as "one of the region's most dangerous water time bombs".

One response from governments has been to mount a "water arms race".

So the Kurdish Regional Government has a major dam building programme aimed at securing water supplies in its own governates.

The biggest planned dam in the KRG is the Gomaspan-Bastorah dam, which would hold 3.75 million cubic metres of water.<sup>11</sup>

KRG officials have made it clear on a number of occasions that the "KRG's water" could be used as a weapon against Baghdad.

When in 2014 former Prime Minister Nuri Al-Maliki cut the KRG's share of the national budget, a number of politicians suggested cutting the water of Sirwan River and Lesser Zap.

### **Engineering conflict**

Dams are also being built in an attempt to engineer a way out of water shortages.

Other engineering "solutions" involve massive water transfer schemes.

In Iran, two high-profile projects would see water transferred to the central plateau from the Caspian Sea and from the Persian Gulf and Sea of Oman<sup>12</sup>

But these engineering approaches are false solutions

One reason is that they create their own conflicts.

Although water development projects can improve human welfare, the overall record of large dams to date has been one of poor performance and severe social and environmental impacts.

So a dam like this one, Ataturk in Turkey, involved the forced resettlement of thousands of people, many of whom were never properly compensated.

Worldwide millions have been displaced by dams.

Many never fully recover psychologically.

And those moved have to go somewhere, creating potential for conflict in the areas where they are resettled.

The irrigation and other development schemes associated with dams also bring potential conflicts.

Who gets to farm the land that is irrigated?

Often one group grabs the land – creating conflict with others.

Or peasant farmers gets squeezed out by agribusiness companies

### **No Act of God**

One conclusion I draw from all this is that water shortages in the region – and the conflicts that arise from them – are largely human-made.

Water wars are not Acts of God.

Water scarcity in the region is largely the result of power plays, water grabs and politics.

If people cannot drink the water in Basra because it is too saline, this is not an act of God.

It is the result of decisions that have been made by **specific** people with **specific** political and economic interests that have led to poor drainage, reduced downstream water flows, increased salinisation and increased levels of chemical run off into water ways.

### **A Basin-wide Approach**

A second conclusion I draw is that the problem of salinity or reduced flows cannot be solved nationally or locally.

Any actions that Iraq takes unilaterally to improve its irrigated agriculture and reduce salinization is likely to be undone if upstream agriculture and dam building are not also addressed.

### **Mega-dams increase the scope for conflict**

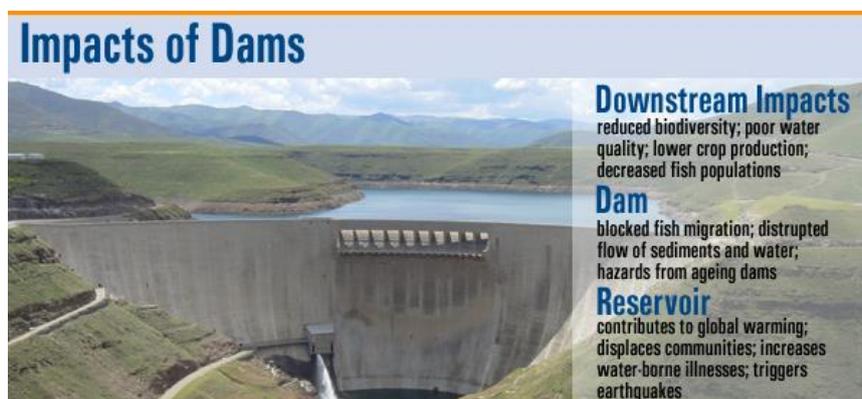
A third is that the issue of dams just cannot be sidelined.

Whatever water conflict you seek to address in Baghdad or Basra will ultimately be linked to a dam or water engineering scheme somewhere.

One reason is the era of mega-dams has greatly increased the scope for conflict, not least through enabling whole watersheds to be controlled by a single party.

Another is the sheer number of problems that dams create through the attempt to re-engineer rivers.

The slide below illustrates just a few of them – from reduced downstream biodiversity to increased waterborne disease to the disruption of sediment flows.



<https://www.internationalrivers.org/sites/default/files/images/book/admin-old/impacts-of-dams.png>

Indeed, in the view of one academic, Fiona Curtin, "the control of water by dams" is the single most important cause of "water related conflicts, including scarcity and water quality issues" in the world today.<sup>13</sup>

### **Water and the struggle for democracy**

A fourth conclusion is that dams are more than slabs of concrete.

By enabling large volumes of water to be stored, dams make it possible for one group in society to gain control over the water supply at the expense of another.

They profoundly affect the distribution of political and economic power.

Dams do not build themselves. They rely on a political infrastructure that is heavily dominated by economic and political elites.

And, as the World Commission on Dams, a body comprising governments, multilateral development banks and civil society representatives, notes, those who have most frequently lost out include subsistence farmers, indigenous groups, women and ethnic minorities.

It is their land and water that has been expropriated, often with minimal compensation, whilst the beneficiaries have tended to be richer sections of society, most notably commercial farmers and industry.

And it is for this reason that the World Commission on Dams entitled its landmark 2002 report *Dams and Development: A New Framework for Decision-Making*.

Because if there is water scarcity today it is engineered water scarcity.

And the struggle is not simply to improve the technologies of water development programmes – although improved technologies will undoubtedly be necessary.

The key struggle is over who makes the decisions that lead to some people getting access to water and others being denied it.

Whose voice counts?

Whose environment gets protected and whose gets impacted?

Who gets to enjoy the benefits?

Whose needs get to be met?

And that is a struggle over decision-making processes.

For the struggle over clean water is a struggle over what sort of society we want to live in.

It is a struggle over how we produce goods or food and for whose benefit?

Over who sets the rules?

Over whether we chose to collaborate over water or fight over water.

Over peace

And over democracy.

It is intrinsically political.

And the key question is: Whose side are you on?

## Each according to their share

I end with this quote from the Koran:

“And inform them that the water is to be shared between her and them. Each one's right to drink being established by turns.”

Whether one's starting point is pollution or the Marshes or dams, there is unlikely to be a way forward that is not grounded in fairness and collaboration.

That way, and only that way, lies justice.

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- 1 [https://apps.icarda.org/wsInternet/wsInternet.aspx/DownloadFileToLocal?filePath=Iraq\\_Projects/Iraq\\_Salinity/Iraq-Salinity-Assessment-CurrentState-causesandimpact.pdf&fileName=Iraq-Salinity-Assessment-CurrentState-causesandimpact.pdf](https://apps.icarda.org/wsInternet/wsInternet.aspx/DownloadFileToLocal?filePath=Iraq_Projects/Iraq_Salinity/Iraq-Salinity-Assessment-CurrentState-causesandimpact.pdf&fileName=Iraq-Salinity-Assessment-CurrentState-causesandimpact.pdf)
  - 2 [https://apps.icarda.org/wsInternet/wsInternet.aspx/DownloadFileToLocal?filePath=Iraq\\_Projects/Iraq\\_Salinity/Iraq-Salinity-Assessment-CurrentState-causesandimpact.pdf&fileName=Iraq-Salinity-Assessment-CurrentState-causesandimpact.pdf](https://apps.icarda.org/wsInternet/wsInternet.aspx/DownloadFileToLocal?filePath=Iraq_Projects/Iraq_Salinity/Iraq-Salinity-Assessment-CurrentState-causesandimpact.pdf&fileName=Iraq-Salinity-Assessment-CurrentState-causesandimpact.pdf)
  - 3 Kolars, J. and Mitchell, W.A., *The Euphrates River and the Southeast Anatolia Development Project*, Southern Illinois University Press, Carbondale, 1991, cited in Daoudy, M., "The Development of the Euphrates and Tigris Basins: An Assessment of Upstream Development (Turkey) on Downstream Riparians (Syria)", Submission to the World Commission on Dams, Presented at the Africa/Middle-East Regional Consultation, December 1999, available from www.dams.org.
  - 4 Government of Iraq, *Position Paper Indicating Iraq's Position on the Utilization of the Tigris River Waters*, Baghdad, 2002.
  - 5 Philip Williams and Associates, *A review of the Hydrologic and Geomorphic impacts of the proposed Ilisu Dam*, World Economy, Ecology and Development (WEED), 2005.
  - 6 <http://rudaw.net/mobile/english/business/13012016>
  - 7 <http://latifrashid.iq/views-of-the-euphrates-from-iraq/>
  - 8 [https://www.researchgate.net/profile/Abdul\\_Haleem\\_Al-Muhyi/publication/312054616\\_The\\_Challenges\\_Facing\\_Shatt\\_Al\\_Arab\\_River\\_in\\_Present\\_and\\_Future/links/586d0b8e08ae6eb871bcc853/The-Challenges-Facing-Shatt-Al-Arab-River-in-Present-and-Future.pdf](https://www.researchgate.net/profile/Abdul_Haleem_Al-Muhyi/publication/312054616_The_Challenges_Facing_Shatt_Al_Arab_River_in_Present_and_Future/links/586d0b8e08ae6eb871bcc853/The-Challenges-Facing-Shatt-Al-Arab-River-in-Present-and-Future.pdf)
  - 9 Petrella, R., *The Water Manifesto: Arguments for a World Water Contract*, Zed Books, London, 2001, p.45. The Tabqa High Dam was completed in 1973.
  - 10 <http://www.globalresearch.ca/water-war-turkey-cuts-water-supply-to-syria-euphrates-shut-down/5386054>
  - 11 <http://www.orsam.org.tr/index.php/Content/Analiz/3875?s=su%7Cenglish>
  - 12 <https://www.theguardian.com/world/2016/may/09/iran-desalination-water>
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