

Tigris River Pollution in Baghdad: Challenges and Recommendations



Save the Tigris and Iraqi Marshes Campaign

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INTRODUCTION

After decades of neglect during the sanctions in the 1990s¹ and environmental damage caused by conflicts after 2003, pollution in Iraq has reached a peak level. The water quality of the Tigris River, the lifeline of the country, has deteriorated in recent times. This has left an imprint on the population: over 1,200,000 cubic meters of pollutants can be found in the Tigris River in Baghdad, one of the causes of inciting cancer among 600,000 Iraqis.² The rate of pollution has increased in the past decade especially from industrial and household discharges dumped into the Tigris River.³ Iraq's treated and untreated water is routinely dumped back into public waters. Absent is a comprehensive management strategy and treatment of these pollution causes. Subsequent governments have not taken their responsibility and have failed to acknowledge the issues at stake and to consider possible solutions to reduce pollution levels.

This report focuses on a particular example of river pollution in a specific geographical area: the Tigris River in Baghdad, the capital of Iraq and the administrative, industrial and population center of the country. Here wastewater from various sources flows directly into the river. Two specific case studies from the public service and industrial sector are presented here: Medical City and the Daura Refinery. The Daura Refinery is managed by the state-owned Midland Refineries Company (MRC)⁴ and Medical City by the Ministry of Health.

No accurate statistics are currently available for small-scale industrial wastewater treatment stations and their discharge. Large industries such as the Daura Refinery have their own treatment stations and discharge the treated water into the Tigris River. However, it is known among Iraqi scientists and experts that the treatment is not adequate and has a negative impact on the river.⁵ Meanwhile the public service sector in Baghdad, driven by population growth, disposes of wastewater into the river. Some of this is not adequately treated or not treated at all. This report provides an analysis of some of the sources of the pollution, the impact on the local population, the response up until now and recommendations. The aim of this research is to advocate for sustainable Tigris River policies in Baghdad and Iraq.

¹ "Iraq's battered refinery get no spare parts to relieve pollution in Baghdad", AP via Newspaper, 20 May 1999, <http://www.gasandoil.com/news/1999/06/ntm92712>.

² AL-BAGHDADI, M., "التلوث يحول نهر دجلة إلى مصدر للموت بالسرطان في العراق", Khaleej Online, 9 June 2015, <http://klj.onl/5DMPd>.

³ AHM | MAD, Y. K., "Legislations on Water Resources Protection in Iraq", Erbil, 2012, 6, http://www.mpfpr.de/fileadmin/media/Water_Law/Nationales_Recht/Treaties_Iraq/Overview_-_Water_Law_in_Iraq__English.pdf.

⁴ "Midland Refineries Company", <http://iraqministryofoil.com/midland-refineries-company-tenders-iraq>.

⁵ "Water and Sewage Sectors in Iraq: Sector Report – February 2013", Dunia Frontier Consultants, Washington, February 2013, http://www.meti.go.jp/meti_lib/report/2013fy/E002792.pdf.

BAGHDAD: A CITY WITH A POLLUTED RIVER

Baghdad, with a population of approximately 7.6 million (2014),⁶ is divided by the Tigris River into two parts: Al-Karkh on the Western bank of the Tigris River, and Al-Rusafa on the Eastern bank of the river. The polluted water of this river is a common cause of disease in the city. Sadr Hospital in Sadr City, one of the largest suburbs of Baghdad, is reported to receive about 400 children every 24 hours with diseases caused by polluted water, and five deaths on daily average have been recorded due to severe diarrhea as a result of drinking unpurified water directly from the river or eating contaminated food.⁷ Al-Sadr hospital receives hundreds of people daily who are suffering from poisoning, diarrhea and kidney, urinary tract diseases as a result of drinking polluted water. Some cases require treatment by a specialist doctor or even surgical intervention. Dr. Hashim Ali, a specialist in kidney diseases, considers polluted water to be one of the main causes for the increase in the number of children affected by skin diseases, smallpox and the "Baghdad boil".⁸ The latter can cause skin ulcers which leave lifetime scars. In Medical City, the largest complex of hospitals in Baghdad, polluted water is a common factor of diseases. "The Tigris River gives the people of Baghdad carcinogenic water"⁹ heads an article published by Kholoud Al-Ameri in Al-Hayat. The author witnessed patients suffering from the pollution effects: a man was subjected to an operation for a cancerous tumor in the bladder; while an old woman was being diagnosed with intestine inflammation. Family members of the victims attribute the diseases to pollution of the river and lament the passivity of the authorities. Paradoxically, Medical City is one of the main Tigris River polluters in Baghdad, which will be discussed further in this report, as are the many factories operating in the city. The wastewater disposed into the Tigris flows to Southern Iraq where the river's water is used for irrigation, providing Baghdad with food. Yet the water that is used to cultivate crops is contaminated, according to an official of the Baghdad Department of the Ministry of Environment.¹⁰ Pollutants affect the river water used by fisheries, agricultural farms and fields located on the banks of the Tigris. Not only those who depend directly on the river have been affected by polluted water. The issue also affects areas in the capital served by the public water network.

Generally, the decline in water quality of the Tigris River can be attributed to population growth, damage of infrastructure due to sanctions and conflict, as well as direct pollution from waste caused by the following three sectors:

⁶ MAMOUN, A., "Iraq's population reached 36 million people, says Planning Ministry", Iraqnews, 25 August 2015.

⁷ AL-AMERI, K., "دجلة يهيب البغداديين موتاً بالمياه المسرطنة بنفايات المصانع", Al-Hayat Online, 8 April 2014, <https://goo.gl/tEp4g9>.

⁸ Ibid.

⁹ Ibid.

¹⁰ AL-AMERI, K., "دجلة يهيب البغداديين موتاً بالمياه المسرطنة بنفايات المصانع", Al-Hayat Online, 8 April 2014, <https://goo.gl/tEp4g9>.

- a. Agricultural sector: since the era of Saddam, there have been a number of programs for the draining of soil. Pumping stations along the Tigris River have pumped drainage water into it, causing high salinity levels in the water of the Tigris River in Baghdad.
- b. Industrial sector: Baghdad houses a great number of factories and some of them discharge their waste into the Tigris River. By law they should be required to install plants in the factories to treat the water properly before it reaches the river.
- c. Public service/domestic sector: Some sewage pipes discharge directly into the Tigris River, whether they belong to private homes, government buildings, schools or hospitals. Some pumps discharge water directly into the river without treatment. These issues are related to lack of a rehabilitated and extended sewage system in Baghdad.



Figure 1.A sewage pipe empties into the Tigris River as it runs through Baghdad.

Environmental researchers generally agree that government-controlled institutions and industries are the single biggest polluters of the Tigris River in Baghdad, in addition to municipal sewages flowing into the Tigris River across Baghdad. More than 2,000 private and government-run factories in Baghdad dispose of their waste directly into the river.¹¹ Facilities of the Ministry of Oil, which include refineries, are the major source of pollution here. The Ministry of Environment in Iraq recognizes the

¹¹ AL-AMERI, K., "دجلة يهيب البغداديين موتاً بالمياه المسرطنة بنفايات المصانع", Al-Hayat Online, 8 April 2014, <https://goo.gl/tEp4g9>.

poor state of the Tigris River. However, since many oil and electricity producers use government installations whose activities cannot be halted easily, they receive merely a warning. The Director of the Baghdad Environmental Directorate, Muthanna Hassan, claims approximately 175 factories and plants were closed from 2016 to mid-2017, while dozens of others were only warned.¹² This small number compared to the total number of polluters of the Tigris River reveals that the issue is not seriously addressed. Paradoxically, Baghdad Medical City (controlled by the Ministry of Health) disposes of wastewater into the Tigris River without adequate treatment and is another major polluter in Baghdad. Local authorities explain this by pointing to limited technical capabilities and lack of maintenance. Generally, only 30% of wastewater in Baghdad is treated, while the rest flows into the river without any treatment. Sources estimate the amount of untreated water flowing into the Tigris River to be more than 1,5 million cubic meters.¹³

The water consumed by the population of Baghdad passes through more than 7,000 kilometers of pipe networks, this water is supposed to be suitable for human consumption and reach all of Baghdad. According to Dr. Hassan A-Janabi, current Minister of Water Resources, the coverage of the Baghdad sewage network reaches 75%,¹⁴ which means 25% of Baghdad's residential areas are not covered by the sewage network. A large part of the network is disrupted. Baghdad has approximately 1,022 informal settlement areas.¹⁵ Hundreds of thousands of Iraqis live in informal housing, suffering from bad housing conditions and deprived of many services, including sewage disposal.¹⁶ Iraq plans to upgrade these informal settlements through the National Program for the Rehabilitation and Regularization of Informal Settlements, which should address health and social aspects, including the waste disposal issue.¹⁷ Adel Kadhim Al-Atabi, Director of the Sewage Department at the Municipality of Baghdad, however says extending sewage networks and installing water treatment plants will take years. Authorities are awaiting the completion of several new wastewater treatment projects. Al-Atabi confirms that many parts of the networks have exceeded their 25-year design in life and require maintenance.¹⁸

Physical and chemical pollution rates of heavy metals and sulfate in the Tigris River in Baghdad

¹² Interview, Baghdad, 20 September 2017.

¹³ AL-AMERI, K., "دجلة يهيب البغداديين موتاً بالمياه المسرطنة بنفايات المصانع", Al-Hayat Online, 8 April 2014, <https://goo.gl/tEp4g9>.

¹⁴ Ibid.

¹⁵ "New research finds 3.2 million Iraqis living in informal settlements", Baghdad, 19 September 2017, <https://unhabitat.org/new-research-finds-3-2-million-iraqis-living-in-informal-settlements>.

¹⁶ NIKONOROW, A., "Iraqi Slums: Myths and Solutions", Erbil, 6 March 2012, <https://reliefweb.int/sites/reliefweb.int/files/resources/Report%20-%20Slums,%20Informal%20Housing%20in%20Iraq%20-%20NCCI,%20March%202012,%20Nikonorow,%20English.pdf>.

¹⁷ "New research finds 3.2 million Iraqis living in informal settlements", Baghdad, 19 September 2017, <https://unhabitat.org/new-research-finds-3-2-million-iraqis-living-in-informal-settlements>.

¹⁸ AL-AMERI, K., "دجلة يهيب البغداديين موتاً بالمياه المسرطنة بنفايات المصانع", Al-Hayat Online, 8 April 2014, <https://goo.gl/tEp4g9>.

exceed the levels allowed by the WHO and only increases as the river flows out of Baghdad. The results demonstrate that the water of the Tigris is not suitable for human consumption. This has been confirmed by other studies as well.¹⁹ According to the Director of the Center for Environmental Research at the Baghdad University of Technology, Dr. Abdul Hamid al-Obeidi, the pollution is exacerbated by expired sewage networks, the use of water pumps at home and illegal water network connections.²⁰

POLLUTION CAUSED BY MEDICAL CITY

Medical City, a complex of hospitals, is a prime example of pollution caused by the public servicesector in Baghdad. It is one of the largest health institutions in the Iraqi capital located on the Tigris River, employing approximately 500 doctors and a capacity of 1000 hospital beds. Medical City includes the following hospitals: Baghdad Teaching Hospital, Specialized Surgery Hospital, Private Nursing Home Hospital, Child Protection Hospital, Hospital of Diseases of the Liver and Digestive Systems, Iraqi Center for Cardiology. These medical centers dispose liquid pollutants directly into the Tigris River without treatment, once to twice daily (7am and 7pm).²¹ Ihsan Abdel Qader, an environmental activist, claims that large amounts of environmental pollutants (carcinogenic and pathogenic) from Medical City have been dumped into the river, including medical waste.²² A 2013 study by Baghdad University claimed that the wastewater of Medical City is directly affecting the Tigris River²³ while another study recommends the urgent need for treatment of wastewater disposed by the hospitals.²⁴ Medical waste from Medical City flows directly into the river, confirmed Member of Baghdad Provincial Council Hassoun al-Rubaie.²⁵ "The most prominent polluters are the Department of Health and the hospitals in Medical City, especially since the medical incinerators stopped working, confirmed an (anonymous) official from the Ministry of Health who explained that the Turkish company contracted to modernize the main medical waste

¹⁹ RAZZAK, I. A. A., AND SULAYMON, H. A., "Effects of Discharging Sewage of Baghdad To Tigris River on The Water Quality" in Engineering & Technology Journal Vol.27 No.16, Baghdad, 2 July 2009, [https://uotechnology.edu.iq/tec_magaz/volume272009/No.16,2009/researches/Text%20\(3\).pdf](https://uotechnology.edu.iq/tec_magaz/volume272009/No.16,2009/researches/Text%20(3).pdf).

²⁰ AL-AMERI, K., "مجلة يهيب البغداديين موتاً بالمياه المسرطنة بنفايات المصانع", Al-Hayat Online, 8 April 2014, <https://goo.gl/tEp4g9>.

²¹ MAALAH, W. N., AND AL-AZZAWI, M. N., "Pollutionary effect of the Medical city waste water on the Tigris river bacterial indicators on Baghdad city" in Iraqi Journal of Science Vol.55 No.1, Baghdad, 2014, p. 106-112, <http://www.ijscbaghdad.edu.iq/issues/Vol55/No1/Vol55Y2014No1P106-112.pdf>.

²² AL-BAGHDADI, M., "التلوث يحول نهر دجلة إلى مصدر للموت بالسرطان في العراق", Khaleej Online, 9 June 2015, <http://klj.onl/5DMPd>.

²³ MAALAH, W. N., "Examining The Effects Of Baghdad Medical City Waste Water On The Quality Of Tigris River", Baghdad, 2013, <https://www.scbaghdad.edu.iq/library/Biology/MS.C/2013/Examining%20The%20Effects%20Of%20Baghdad%20Medical%20City.pdf>.

²⁴ MAALAH, W. N., AND AL-AZZAWI, M. N., "Pollutionary effect of the Medical city waste water on the Tigris river bacterial indicators on Baghdad city" in Iraqi Journal of Science Vol.55 No.1, Baghdad, 2014, p. 106-112, <http://www.ijscbaghdad.edu.iq/issues/Vol55/No1/Vol55Y2014No1P106-112.pdf>.

²⁵ "مجلس بغداد يكشف عن تلوث بـ"دجلة" ودوائر الصحة والنفط ابرز المخالفين", 17 August 2017, Almaalamah Online, <https://goo.gl/CgNCu3>.

processing unit in Medical City halted its work in 2010.²⁶ Since then untreated water for years was being disposed into the sewage network which exits into the Tigris River. Yet the Director of the Department of Public Health in the Ministry of Health, Hassan Hadi, denies there is a lack of treatment,²⁷ claiming it is sufficient to isolate solid waste and that hospitals currently use regular processing units.



Figure 2. Pump station affiliated with Medical City

The effect of Medical City's liquid waste on the Tigris River manifests itself in different ways:

1. Presence of bacteria in the water, which have the ability to resist antibiotics.
2. The number of bacteria in the wastewater of the hospitals are larger than those in the city's wastewater.
3. The wastewater of Medical city contains viral water contaminants such as intestinal viruses, as well as other viruses such as blood viruses (Cirrhosis and HIV), coming directly from the infected bodies of patients.
4. Increased amounts of heavy metals such as silver, zinc and chemical compounds that may cause a variety of diseases.
5. The waste of Medical City contains a far larger amount of antibiotics than the city's wastewater.

²⁶ AL-AMERI, K., "دجلة يهيب البغداديين موتاً بالمياه المسرطنة بنفايات المصانع", Al-Hayat Online, 8 April 2014, <https://goo.gl/tEp4g9>.

²⁷ AL-AMERI, K., "دجلة يهيب البغداديين موتاً بالمياه المسرطنة بنفايات المصانع", Al-Hayat Online, 8 April 2014, <https://goo.gl/tEp4g9>.

There are many pollutants to be found in the medical waste from Medical City which are more dangerous than any other pollutants found in the city's wastewater, or industrial and agricultural waste. It is not possible to dispose of all these pollutants through treatment stations. Note that the wastewater does not contain medical materials (needles, blades).²⁸

Some of these pollutants are:

- Formaldehyde: one of the most dangerous pollutants in the medical wastewater. It is used in pathological surgeries to preserve samples and sterilization of medical equipment.
- Photographic processing chemicals: all major hospitals and even dental clinics have an x-ray department, which uses chemical compositions for x-ray photo-processing. This includes poisonous silver which is a pollutant in the wastewater of the hospitals. Usually in modern hospitals during waste treatment silver is extracted from photo-processing liquids. Yet in Baghdad many toxic liquids are still being disposed into the wastewater. Other toxic components from x-ray photo-processing that are not supposed to reach the wastewater are selenium and chromium.
- Solvents: xylene, methanol, acetone. These are the most commonly used solvents in hospitals and factories. They are often evaporated or released into the wastewater.
- Mercury: few medical wastes contain mercury, but local treatment stations are not able to filter any mercury. The pollutants result from a variety of sources, such as dental clinics. Teeth fillings with amalgam contain mercury. These days due to awareness about mercury pollution, its use has become less common.
- Hormones such as estrogen: hormones from chemical pharmaceutical compounds are sometimes disposed into the wastewater and may cause decline in the fertility of humans and animals.
- Antibiotics: Frequent exposure through the wastewater will increase the immunity of bacteria to medicines.
- Drugs to treat tumors and cancer cells: These may cause mutations, malformations and even cancer.

²⁸ MAALAH, W. N., AND AL-AZZAWI, M. N., "Pollutionary effect of the Medical city waste water on the Tigris river bacterial indicators on Baghdad city" in Iraqi Journal of Science Vol.55 No.1, Baghdad, 2014, p. 106-112, <http://www.ijscbaghdad.edu.iq/issues/Vol55/No1/Vol55Y2014No1P106-112.pdf>.

POLLUTION CAUSED BY THE DAURA REFINERY

Other main polluters in Baghdad are to be found in the industrial sector. One of these is the industrial oil complex in Daura, Baghdad. One of the oldest oil refineries in Iraq and located in the southeastern part of the city, it started operation in 1955 with a production of 140,000 barrels per day, producing gasoline, liquid gas, benzene, jet fuel, gas oil, diesel, crude oil. When Daura Refinery was established in the 1950s it was surrounded by agricultural land and there were no residential areas nearby. Due to the expansion of the population of Baghdad, the refinery is now located in the middle of a residential area. Despite numerous appeals demanding that the refinery be relocated out of the city, in accordance with environmental safety and health standards, the factory is still there. Asem Jihad, spokesman for the Ministry of Oil, explains: "Daura Refinery continued to operate in that location because Iraq was in dire need of oil derivatives, at least until the establishment of new refineries."²⁹ Pollutants originating from Daura Refinery are monitored using water quality tests by the Environment Department of the Daura Refinery. Sondas Hadi Goma, Head of the Department, explains that this data is submitted to the Department of Studies and the Office of the Inspector General,³⁰ in addition to periodic reports required by the Ministry of Environment. "We have a processing unit (ANGECO), established in 1980, covering the treatment of all wastewater for gas, gasoline and white oil," she explains. To improve the technical capacity and compliancy with safety and environmental laws, the department is collaborating with an Egyptian company.

The Ministry of Oil is working to mitigate the environmental effects and waste and has planned the establishment of green areas near the refinery.³¹ The water treatment station of Daura is currently processing 750 cubic meters per hour, but the treatment is not adequate.³² Jihad stressed that "the Ministry has set up new units to minimize the effects of waste produced by the refinery".³³ Iraq has not achieved self-sufficiency in oil yet, and spends large amounts of funds to import oil derivatives in order to fill the country's needs. "As soon as we achieve self-sufficiency in oil production, these refineries will be replaced by modern refineries using advanced technology," Jihad said.³⁴ Some MPs have called to transfer Daura Refinery to a different location because of its impact on the health of the surrounding population. Former member of the parliamentary Health and Environment Committee MP Abdul Hussein al-Musawi demanded in a public statement in 2014

²⁹ LUAIBI, G., "مصفاى الدورة" خارج حدود بغداد", Al-Mada Paper, 28 November 2014, <https://goo.gl/NN52oB>.

³⁰ Interview, Baghdad, 3 May 2017.

³¹ LUAIBI, G., "مصفاى الدورة" خارج حدود بغداد", Al-Mada Paper, 28 November 2014, <https://goo.gl/NN52oB>.

³² "Water and Sewage Sectors in Iraq: Sector Report – February 2013", Dunia Frontier Consultants, Washington, February 2013, http://www.meti.go.jp/meti_lib/report/2013fy/E002792.pdf.

³³ LUAIBI, G., "مصفاى الدورة" خارج حدود بغداد", Al-Mada Paper, 28 November 2014, <https://goo.gl/NN52oB>.

³⁴ LUAIBI, G., "مصفاى الدورة" خارج حدود بغداد", Al-Mada Paper, 28 November 2014, <https://goo.gl/NN52oB>.

the transfer of the refinery from its current place because of the great harm it causes to public health and the environment that are reaching dangerous levels, which cannot be overlooked.”³⁵ He added that “its productive capacity is not great” and called for a political dialogue on the matter. Waste pollution from the Daura Refinery has been known since the 1990s, when due to sanctions spare parts for maintenance of the treatment station could not be purchased by the government.³⁶

The Daura Refinery claims that waste discharged by the refinery into the river does not exceed the levels set by the Ministry of Health and Environment. But Manal Kamel, an engineer at Daura who was interviewed in the spring of 2017, claims that the Tigris River does suffer from pollution, due to untreated industrial discharge from the refinery and other industries.³⁷ Kamel says that Iraqi industries have been neglected and consequently have severely deteriorated. Processing and control units are inefficient. Wastewater containing toxic substances such as lead, mercury and cadmium flows straight into the river. This also applies to other industrial complexes such as the South Baghdad Thermal Power Station in Zafaraniya, where the head of the Department of Environmental and Occupational Safety confirms that considerable amounts of water flow back into the river without treatment.³⁸

Pollutants in the wastewater of the Daura Oil Refinery have the following effects:

1. Polycyclic aromatic compounds decompose only very slowly.
2. Decreased reproduction of algae, an important link in the food chain
3. Dissolved oxygen is depleted below the standard minimum.
4. Oils and grease in the sewage water can cause clogging of drainage pipes and impact the health of aquatic species.
5. Phenolic compounds are highly toxic, causing significant damage to the river ecosystem.
6. Highly toxic nitrogen and sulfur can be found in the wastewater.

RELEVANT LEGISLATION

Several laws exist in Iraq to protect its water resources, but implementation is far from efficient. Important in this regard is Law No.2 for Conserving Water Resources from 2001, which includes provisions on the discharge of waste into public waters, whether it is public or private. To discharge

³⁵ MAJEED, H., “عضو بالبيئة النيابية يطالب بنقل مصفى الدورة الى مكان بعيد عن السكان”, Al-Sumaria, 28 November 2014, <https://goo.gl/LEu3NY>.

³⁶ “Iraq’s battered refinery get no spare parts to relieve pollution in Baghdad”, AP via Newspaper, 20 May 1999, <http://www.gasandoil.com/news/1999/06/ntm92712>.

³⁷ Interview, Baghdad, 21 May 2017.

³⁸ Interview, Baghdad, 5 July 2017.

waste one needs to obtain approval from the Environment Protection and Improvement Directorate (EPID) from the Ministry of Health. Article 4 of this law prohibits discharging any pollutant into public waters, while Article 5 authorizes the EPID to issue environmental restrictions in order to maintain the quality of public water. Article 9 prohibits the disposal of certain materials and pollutants in the vicinity of water treatment stations. In addition, this law says provincial councils should offer protection of public waters and identify the sources of pollution.³⁹



Figure 3. Waste on the banks of the Tigris River near Zaafaraniyah. Southeast of Baghdad.

The Environmental Protection and Improvement Law No. 29 of 2009 aims to reduce the effects of water pollution and its effects on health and environment. Article No. 14 on this law prohibits water pollutants, in particular the discharge of any domestic, public service, industrial or agricultural liquid wastes or toxic materials into the water resources unless prior treatment in compliance with the with environmental legislations. Article No. 33 says that “the minister or his authorized representative may warn any establishment, factory or any authority or environment polluter to remove the affecting factor within ten days from the date a warning notification is served. In case of non-compliance with the minister's order, the minister may suspend the activity or order temporary closure for no longer than thirty days, which may be extended until the violation is removed.”⁴⁰ A penalty can be imposed.

³⁹ AHM | MAD, Y. K., “Legislations on Water Resources Protection in Iraq”, Erbil, 2012, 6, http://www.mpfpr.de/fileadmin/media/Water_Law/Nationales_Recht/Treaties_Iraq/Overview_-_Water_Law_in_Iraq__English.pdf.

⁴⁰ AHM | MAD, Y. K., “Legislations on Water Resources Protection in Iraq”, Erbil, 2012, 6, http://www.mpfpr.de/fileadmin/media/Water_Law/Nationales_Recht/Treaties_Iraq/Overview_-_Water_Law_in_Iraq__English.pdf.

RECOMMENDATIONS

Civil society, government, and other actors have the duty to protect the rivers and the water resources of Iraq. Facing a myriad of challenges including overconsumption of water, reduction in water levels due to upstream dam construction, and pollution of rivers, action needs to be taken through a comprehensive national strategy in order to halt the environmental degradation of the Tigris River.

To mitigate the consequences of pollution in the Tigris River, we suggest the following:

1. To execute Article No.14 of Law No. 27 of 2009 on the protection of the environment, which says it is forbidden to dispose of any home, industrial, agricultural waste into water resources.
2. To execute Law No.2 from 2001, in particular Articles 3 and 4 prohibiting the dumping of waste or discharge of any pollutants in public waters.
3. To speed up the implementation of the Environmental Police Act to monitor cases of environmental violations and to hold polluters accountable.
4. To build a system to measure the level of pollution for all of the Tigris River and its tributaries with the support of local authorities and civil society.
5. To force the industries who pollute the river with wastewater to fix and upgrade their treatment systems.
6. Baghdad Municipality is responsible for the maintenance of all sewage networks and water treatment stations and must ensure that sewage water does not pollute the river.