

The water problem between Iraq and Turkey and its environmental effects

Tarteel Faisal Gaze Al-Banawy

Corresponding author: eyhabrazzaq2@gmail.com. 009647800088807.

waters of the two rivers due to the climatic changes that occurred on the planet, where there has been an increase in recent talk regarding the Tigris and Euphrates rivers. Turkish ts that exceed the ability of projec the two rivers to renew. The questions that the research will try to answer are what is the importance of the waters of the Tigris and Euphrates rivers for Iraq and this The Turkish projects in the future will lead to ase in competitionan incre the countries of the between Dallah and Euphrates basins, especially since the current capabilities of the two rivers are less than the needs of the countries . Except for them, and the rate of precipitation in most it in Turkey or of its parts is from Syria. What is the role of Turkey's water policy in changing the nature of Turkish relations previously, presently and in the future.

Introduction

It seems that the abundance of water that Iraq was known for throughout its long history has become more and more threatened with the advent of the first century. The water -twenty incoming to Iraq from the Tigris and Euphrates rivers has been in ntradiction since the serious co seventies of the last century when both Syria and Turkey began to establish huge water projects on The Euphrates Basin in particular, which caused a dangerous decrease in the quantities of water coming into great Iraq. The reasons for this contradiction in the waters of the two rivers entering the borders of Iraq are mainly due to what is drained by the giant Turkish dams that have arisen since the early eighties of the last century within the framework of the ia, as Southeast project. Anatol well as the Syrian dams, and the natural contradiction of the

Turkish relations and the strategic location of Iraq, while tion dealt with the the second sec characteristics of the Tigris and Euphrates rivers and the projects .built on them

The first topic: the geographical characteristics of the Tigris and Euphrates rivers and the projects established on them

Iraq's resources of frozen surface water before the establishment of the Turkish Southeastern Anatolia project and the Syrian projects are estimated at (80 coming from the (billion m³ Tigris and Euphrates rivers and the tributaries of the Tigris that from Iran, Turkey and Iraq, flow in addition to the seasonal valleys that flow into the two rivers. Water experts estimate that Iraq's current uses of water amount to (about (45.5 billion cubic meters Experts believe that the amount . ll rise of water used by Iraq wi during the next two decades to annually, (billion m³ 64.65) which is the maximum that can be achieved, assuming the stability of the quantities of water that Iraq receives from the Euphrates and Tigris before the inauguration of the Turkish and

First : the research objective:

The research aims to identify the Turkish relations to reveal -Iraqi tent of their influence and the ex their vulnerability to the water variable. Then the research deals with the Turkish projects built on the Tigris and Euphrates rivers in a brief manner and their importance to Turkey, and then presents the effects of these cts on Iraq in terms of proje decreasing amounts of water reaching it .

Second : the research problem:

The research deals with the water crisis and its impact on the between Iraq and relations Turkey, and then presents the most important problems that the Tigris and Euphrates rivers suffer from, regarding the problem of . pollution

Third : research methodology

It relied on the descriptive and analytical approach in describing e size of the Turkish and th .Turkish water projects in Iraq

Fourth : Research Structure

The research was divided into three sections. The first section -dealt with the history of Iraqi

Characteristics of the - 1 Euphrates River

The Euphrates is one of the large rivers in southwest Asia and the largest river in the Arabian plate. The river originates from Mount Taurus in Turkey and consists of two rivers in Asia Minor, the Murad Su (meaning the water of its mourning) in the east and its source between Lake Van and Mount Ararli in Minya and Far Su (i.e. Black water) to the west and its source in northeastern Anatolia, and the two rivers flow in the direction of the west and then meet, so their water flows south and is penetrated by the southern Taurus mountain range, then the river flows to the southeast and a mechanism of many branches is organized before it passes through the Syrian lands to run in the Iraqi lands and meets in the Tigris River in Karma Ali area to be the which flows into Arab-Shatt al the Persian Gulf. As for the sections of the Euphrates River, fluctuation is observed due to the large number of branches of the river, the difference in flow rate, and the difference in pollution loads according to wastewater treatments for each section, and pollution

rian dams. However, the Syrian reality is heading in a different direction, as the absolute quantities of water to Iraq contradicted, starting with the construction of both Turkey and Syria for the Keban and Tabqa dams in the seventies of the last century to reach the peak until the early nineties, and it continues to contradict because of Turkey's continuation in the southeastern Anatolia project that drained the waters of the two rivers and consumes them. The Syrian projects are about -Turkish the Euphrates of (billion m³ 26) water, which led to a decrease in the Iraqi water supply to (7 in 2000, and this (billion m³ amount is a quarter of the amount Iraq received from the Euphrates water before the establishment of these projects

Therefore, in this topic, we will discuss the most important characteristics of the Tigris and Euphrates rivers, in addition to the Turkish projects built on two rivers, to show the importance of these projects for Turkey and their implications for Iraq

First: the geographical characteristics of the Tigris and Euphrates rivers

The third: the limestone loam
(²) unit and the child unit
As for the borders of the
Euphrates River basin, the
Euphrates River basin lies
between latitudes 2-30 .45 to the
north, and the higher parts are
confined to the area feeding the
main river north of the Turkish
Keban 10 .3750- .43 east, and
part is confined the lower
between longitude 45 .3638- .48
east. It is one of the longest rivers
in West Asia and the largest in
terms of area, the feeding basin.
) It is the river number 24 in the ()
(³) world in terms of length
e Among its characteristics is th
Euphrates River and the Nile
River, after two rivers descended
in the Arab world. The Euphrates
River enters the Syrian lands at
the city of Tripoli in Syria. It
organizes the mechanism of the
Balikh River, then the Khabur
River, then passes through the
Ruqqa Governorate, and then
heads to the Deir Ezzor
Governorate, and exits from it at
Bukamal, and -the city of Al

Obaidi, Study and -Alaa Hussein Ali Al -²
ization of the Evaluation of the Causes of Salin
Euphrates River in Central and Southern Iraq,
Muthanna -Al -College of Agriculture
p.52017) ,) University

.The same source, pg. 15³

where an excessive increase in
phosphate is observed in the river
Muthanna -section within Al
Governorate due to the
convergence of the river's
branches, so the Euphrates River
is exposed to different changes in
due to the its different sections
large number of branches And
the large number of variables of
agricultural and municipal
(¹) expenditures for each section
As for the formation of the
Euphrates River, this formation
dates back to the lower Miocene,
rocks and is one of the oldest
condensed on the surface through
which the Euphrates River
.passes

In effect, it is a major influence
on the quality of the Euphrates
River water and its chemical
properties. The formation of the
Euphrates River is shown in the
and west southeast of Lake Sawa
-Khader district in Al-of Al
is Muthanna Governorate, and it
.divided into three rock units
The first: the unit of the child, the
.hummock and the limestone
.The second: the limestone unit

Sabah Obaid Hamad, Comparison of some -¹
water characteristics of the Tigris River with
the Euphrates River, Ministry of Environment
. p ,2015 Central Environmental Laboratory -
.193

interest, and they all serve lands farmers in reaching their through highly sensible networks. These streams contribute to the depletion of a large amount of water. The waters of the Euphrates River inside the governorate, as well as the severe bias operations during the summer, in addition to what is into it of agricultural thrown waste, tap water, sewage waste, and waste, where the waste appeared clearly in the Euphrates River or in the streams branching .⁽¹⁾ from it

The activity of the sedimentation process in the city of Nasiriyah icating has a clear impact, ind what this activity leaves of river islands affecting the morphology of the Euphrates River, as well as the mutual influence between them and the existing activity in the city. River islands geomorphically from one region ural to another depending on nat and human factors, and their shapes vary according to the variation in the impact of these factors. River islands appear

Water Pollution of the Euphrates , Sadkhan¹
River in Dhi Qar Governorate, Environmental
-Geographical Study, College of Education
33-34 . . pp ,2007)) University of Basra

enters The lands of Iraq are at the Anbar -Qaim in the Al-city of Al Governorate, after which it enters the Babil Governorate and -it to the Shatt Al branches from Hillah, then enters the Euphrates River to the Karbala Najaf -Governorate, then to the Al Diwaniyah -Governorate, Al -Governorate, then the Al Muthanna Governorate, then the Dhi Qar Governorate, to expand and form the marshes and unite h the Tigris River in Iraq, wit Arab that -forming the Shatt Al flows Waters a distance of 90) miles 120 km) to flow into the Arabian Gulf. The length of the Euphrates River from its source in Turkey to its estuary in the) Arab is about-Shatt al 2940 which km), of (1176) km in Turkey, 610 km in Syria, and 1160) .km in Iraq 200 to more () than 2000 meters at the mouth. (Iraq is called Mesopotamia due to the presence of the Tigris and .Euphrates rivers in it

Then, many streams branch out from the Euphrates River, -starting from the area of Al -Batha to the district of Al Chibayish. These streams are large, of public interest, and others are small, of private

The Tigris River originates from the Taurus Mountains, southeast of Anatolia, crosses the Syrian border for a length of approximately 50 km, and then enters the lands of Iraq at the municipality of Fishkhabour. The Tigris River splits into two the city of Kut, branches at Gharraf and Dujail -namely the Al rivers. The Tigris River enters the city of Baghdad about five kilometers before the tourist island of Baghdad, and ends three kilometers south of the Diyala River . It ranges between 190 ght parts and more meters) in strai) than 500 meters) in other places, then the Tigris River penetrates the city of Baghdad and forms a number of river twists and a number of islands, due to its slow speed and increase in sedimentation, dividing the wo parts: city of Baghdad into t Karkh and Rusafa, and the river clay bed is formed of sand, silt and .3

Likewise, with regard to the quality of the water of the Tigris River, in general, the best quality

Amir Fleih and Khaled Abbas Rashid, Study ⁻³ of some physical and chemical properties of the Tigris River in the city of Baghdad, Nahrain -Biotechnology Research Center, Al .31 .University, pg

clear in the middle islands of the river passing through the city of As for the climate .⁽¹⁾ Nasiriyah gion, it of the Euphrates River re continental -enjoys a semi climate, where the average temperature in the region during the summer reaches (32) degrees Celsius, and in the winter it is less than (15) degrees Celsius, which can reach freezing temperatures , and this is by light winds. And accompanied variable, and this results in a negative impact on agriculture and communications in the region, and the region witnesses large changes in temperature during the day, and this is accompanied by light precipitation of the lower rains of the Tigris and Euphrates rivers, and instinctive rains on the heights of that region, and snow can fall and melt during the spring season, which leads to an) increase in the size of the rivers .⁽²⁾

Characteristics of the Tigris -2 River

Ziyadi, Hydrology -Hussein Alewi Nasser Al ⁻¹ of the Euphrates River in Dhi Qar Dhi Qar -Governorate, College of Arts .3 . University. p

.Ibn Manzoor, Lisan Al Arab, p. 4 . ⁻²

f the expand on both banks o river, causing local pollution at the mouth and low values of the qualitative characteristics along the river, and despite that, the results showed that all the included characteristics are within the Iraqi standard for the urces protection of natural reso) from pollution1-25a of the () year1967 AD) and it became clear that the water quality of the Tigris River in general is still acceptable despite the liquid waste that is thrown into the river .⁽²⁾

The river discharge and the size load are among the of the river factors that most affect sedimentation in the Tigris River, so the Tigris River is characterized by varying discharges from year to year depending on the water year, and this case applies to the monthly discharges from the river if we nd the peaks of discharge occur fi in the month (March, Ness, Maice) is based on rainfall and snow melting at the source of the Tigris River. The discharge of the Tigris River during the recent

hammad Ali, The Effect Mayada Hazem M⁻² of Water Quality on the Tigris River and Its -Primary Treatment, College of Engineering .23 . p ,(2009) University of Mosul

of the water of the Euphrates River, because the Tigris River the Euphrates River differs from in that it receives quantities of fresh water inside Iraqi territory through a group of important tributaries, while the Euphrates lacks such tributaries, and at the same time the Euphrates River is exposed to The effect of dams ainages of Tharthar and and dr Habbaniya lakes upstream, in addition to the drainage of a large number of drains, especially in central and southern Iraq, and the difference in hydrology of the Euphrates River from the Tigris .⁽¹⁾ River

e quality of th , In addition to that the water of the Tigris River in the upper part of the river at the unified water desalination station is less polluted with organic matter compared to the results of Hadiya -the old bridge and the Al bridge, which were affected by nd civil waste industrial a discharges, in addition to what was washed away by torrents from roads, streets and rainwater channels, as they all reach the river Tigris without conducting any treatment or treatment through a number of outfalls that

. Sabah Obaid Hamad, previous source, p⁻¹ .194 7844

projects that Turkey relies on in
(3) lansits development p

Dams and reservoirs contribute to the water balance of the water course in the river section during the year, through which it is possible to control the amount of water and prevent flooding and plains, especially during the seasons, as spring and winter as well as regulating water for irrigation purposes, electric power generation, and industrial and human uses. The construction of dams and reservoirs leads to a modification of the water system of the river through changing the patterns of re and arrangement in the sculptu course of the river and changing the geomorphological characteristics of the bottom and (4) the banks

Turkish projects on the -1
Euphrates River

A- Keban Dam: It is the first Turkish project, and planning for it began in 1957, with a storage

Kakahi: The -gha AlAdeeb Fattah Khalil A -³
Political and Legal Character of the Turkish
Projects Built on the Euphrates River Basin,
.41 .pg

Hadithi, Tigris and -Aziz Shaban Al -⁴
Euphrates between acquired rights and Turkish
. 14 . water politics, University of Diyala, p

period, especially the past twenty years, has tended to decrease significantly, which is a reflection of the drought prevailing in the region, and the annual rates of discharge have (1) become below the general rate (2) without definitive treatment .

Second: The projects built on the Tigris and Euphrates rivers

Turkey is always trying to determine the maximum possible amount of the waters of the Euphrates River, bypassing all international agreements, treaties and norms that determine how to share the waters of international rivers. Since the seventies of the t century, Turkey has built las quite a few dams, irrigation projects on the course of the Euphrates River, as part of the Southeast Anatolia project.

) KnownGAP This project is (considered one of the large

Akkam and Anfal -Ishaq Salih Al -¹
Saeed Daoud, The High Percentage of
of the Tigris Sediments Pollutants in the
.199-200 . pp ,(2011) ,River

Obeidi, -Hamid Muhammad Jawad Al -²
-Rahman Abdul-Janabi, and Abdul-Zahraa Al
Kubaisi, Distribution of some heavy -Jabbar Al
elements in the Tigris River in central Iraq
.985 . p ,(2014)

megawatts/hour, and the dam has
) a storage capacity of 11.40 (.
billion cubic meters

2 projects on the Tigris Turkish -
River

The situation with the Tigris
River before the start of
implementing the Turkish dams
on this river was less
complicated, considering that
Iraq's dependence on the main
course is not entirely, but there
generate from are tributaries that ori
(²) Iraqi lands

Turkey did not build any dams or
constructions in the use of the
waters of the Tigris River before
) the year 1997 as it began ,(
operating its projects after that
year, the most prominent of
:which were

izi Project: The Tigris Keral K -A
This project was completed in
1997 and includes a dam called
the Tigris Dam with a storage
) capacity of 595 million cubic (.
meters and generating electric
) power of 110 square (.
megawatts. It also includes Keral
Kizi Dam with a storage capacity
) of 1.919 Million m³ (, and

Abdul Karim Jabbar Shanjar, Turkish and ²
Iranian water projects and their
r, food and implications for the wate
.environmental situation in Iraq, p. 16

) capacity estimated at 7-30)
billion cubic meters, and the
capacity of its power station is
1240 megawatts, and the annual
energy production rate is 5870
. .hours per year-million kilowatt

Qaraqayah Dam: This dam -B
was completed in 1987 with a ,
) storage capacity of 9.54 (.
billion cubic meters and a power
plant capacity of 1800
megawatts, producing an average
of (7500 hours -million kilowatt (.
¹.per year

Irrigation projects within the -C
lower Euphrates: It is the largest
on the Euphrates Turkish project
River and represents the largest
part of the Anatolian Sharaf basin
development project. It includes
the Ataturk Dam, in addition to
21 ,small dams 11 power plants
.and irrigation projects

The Ilisu Dam Project: The -H
the largest Ilisu Dam is one of
dams that Turkey will build on
the Tigris River. The main
objective of the dam is to
generate electric power, with a
) capacity of 200 (.

Farah Abdul Karim Muhammad, The -¹
Conflict Over Water Between Iraq and Turkey,
unpublished ,(2014) ,Middle East University
.125-124 . pp , thesis master 's

when the Turkish government used the American company Brown & Roth) to prepare a study

The economic feasibility of the project, which represents between Turkey and neighboring countries, given that life is a revolution that will witness the next ten years a severe drought shortage affecting the economies of these countries, and this Turkish project works to direct part of Turkey's waters to the countries of the Middle East and the Arab Gulf, even if it is the approval of this project provided an opportunity to present a really an interesting technical solution. In addition to Turkey's desire to use water to support and strengthen its geopolitical role in the region, it also wants to exchange water for oil, noting that Turkey imports 50% of its annual energy needs.⁽²⁾

D- The Turkish development Ghab) and its impact -project (Al Ghab -on national security: Al plan consists of thirteen projects, including six projects on the

Bayati, Turkish -Raji Yousef Mahmoud Al -²
-water projects and their impact on Iraqi
.106 . Turkish relations, Faculty of Law, p

) generates electric power of 94 (megawatts, and the project irrigates agricultural lands) amounting to 126080 hectares (igris on the right bank of the T .River

Southeastern Anatolia Project -B GAP :

This project is one of the most ambitious projects in the world and in Turkey, and it is basically the ideas of Suleiman Demirel, the former Turkish Prime Minister. Time magazine one of described the project as the nine largest projects in the world, or it is one of the seven wonders of the world. This project is considered the Tigris and Euphrates basins. One, because the area is mountainous, so the project includes huge tunnels to deliver water to the Iran Plain, where there are Ha) approximately 1.7 million (hectares of flat land that desperately needs water for .⁽¹⁾ development

The Turkish (Peace Pipeline) -C Water Project: Planning for this project and preparing preliminary) studies for it began in 1986 ,(

. Hamid Obaid Haddad, previous source, p -¹
.275

The main objective of establishing Iraqi dams (because Iraq is a downstream country) is to secure and regulate the water needed for irrigation through plans that include summer and winter to meet the water needs throughout the year for sectors, especially the that use water agricultural sector, in addition to -generating electric power as a by product after securing irrigation. Dam lakes are water bodies for the production of fish wealth. Dam lakes are also considered in very suitable areas for the development of tourism in Iraq and the revitalization of navigation between Iraq and neighboring countries⁽²⁾.

2: political goals

Water is a resource with political and economic dimensions, as it acquires great importance in the world in general and the countries that suffer from the scarcity of this resource in particular, especially the Arab countries. Therefore, a number of international agreements and international laws have been relied upon in order to regulate the exploitation

Tigris River and seven on the Euphrates. This plan includes no less than 21 water harvesting () and storage dams and 19 () stations. Electricity and the most important dams in terms of size and storage capacity is the Ataturk Dam in the name of Abu .Modern Turkey

Iraqi projects -4 built on the two rivers

1- Kut Dam: on the Tigris River in 1939. It is considered one of the longest dams in Iraq, () as it consists of 56 gates. It () controls water distribution among the governorates of Iraq .(Maysan, Wasit, Dhi Qar)

2- Samarra Dam: It is one of the major irrigation projects that completed in Iraq during the royal era, which is the first project^{its} of kind .

The second topic is the objectives of the Turkish water :projects

1- economic goals

Former Minister - Dr.. Latif Jamal Rashid² of Water Resources, Water Resources in .53-Iraq, 2017, pp. 51

pp ,Hamid Obaid Haddad, previous source -¹ .277-278

targeting armed unrest for a long time for internal reasons due to the nature of the Turks' view and their superior dealings with other nationalities, such as the Kurds, Armenians, and the Arabs of Alexandretta. The Turks argue the best way to eliminate that unrest in the Kurdish regions is to develop these regions to the limits that push the Kurds in particular to settlement and stability, which could lead to their reluctance to make any separatist or nationalist demands

s of Turkish water The effect ** projects on Iraq

The large and steady -First decline in the quantities of water coming into Iraq as a result of the construction of Turkish dams, the effects of which Iraq has begun to feel, and many of the dams in are still not southeastern Anatolia completed yet, as Turkey has become able to deprive Syria and Iraq of Euphrates water for a long period, and its capacity will increase. To control the Tigris River after the completion of the) Ilisu Dam, which accounts for 53 % of the Tigris of the water (%
.River

of this resource in a way that guarantees the rights of the riparian countries in International rivers, including the international law on the use of watercourses for navigational purposes, -onfor n which was approved by the United Nations in 1997. Turkey did not recognize all these international laws, considering the waters of the Tigris River as Turkish waters, and that everything that comes to Iraq is .⁽¹⁾ transboundary water

3-Internal goals

One of the internal goals that Turkey seeks to achieve through its water policy is to solve the intractable internal problems that constitute a source of anxiety, turmoil and internal instability. Thus, it considers that the projects that have been drawn up for it are a means to solve and end all these problems, and that Turkey's implementation of the Southeastern Anatolia project, which Large sums have been allocated to him, and he exploits all the southeastern regions of key, which have been Tur

Hassan Wahid Aziz, Water Policy in the -¹
.583-Tigris River Basin, 2015, pp. 582
7849

rate in the two rivers will range
s) / ³ m 2000-ween (200bet
depending on the demand for
.energy in Turkey

The impact on -Fourth
agricultural development in Iraq.
The development of irrigated
agricultural lands in Iraq faces
:three obstacles

- 1- needed water to provide
- 2- Nature of the land
- 3- ation of salinity Exacerb
problem

Increasing And it is considered
salinity in the Euphrates water
and compensating for the
One shortfall in irrigation water
of the most salty waters of
Tharthara Lake is one of the most
important causes of land
is known that salinization, as it
the frequent irrigation of the land
from water containing a high
percentage of salts leads to an
increase in the concentration of
salts in the soil and thus turning it
(²) into deep soil

Results

1. Continued pressure on Iraq and
damage will be severe that the

.The same source, p. 11²

the environmental -Second
damage represented in the
deterioration of the water quality
and its pollution due to the
decrease in the annual incoming
rate of the water of the two
rivers, as the percentage of
n it, in salinity will increase i
addition to the irrigation water
waste in the upstream countries
of chemical fertilizers and salts,
in addition to the increase in the
concentration of sewage water
that flows into the Euphrates on
) A length of 1117 km that it ()
) Turkey and Syria covers all over T
1 1(

Turkey's complete control -Third
over the discharges of the two
rivers, which will lead to a large
fluctuation in the quantities of
water released from Turkey to
both Syria and Iraq, thus
confusing agricultural plans and
disrupting energy projects in the
two countries. A study approved
by the Turkish Ministry of
Foreign Affairs stated that
controlling the quantities of water
released from the Turkish dams
is according to Turkey's need for
energy, so that the water flow

, previous source ,Muhammad AliwiYasser -¹
277-278 . pp

- Turkish for not provide it and re mix it up With waters the river , command Which will lead to me more the problems health , Lost pointed out the report (1977) ional for the yearinternat to Spread number From diseases Dermatology and esoteric Such as cholera in a pelvis Balikh River And the khabour tributaries river Euphrates in a Syria occurrence many From projects From Enterprise industrial near rivers Before Stream The two . their entry Iraq
5. Iraq is currently suffering from a water deficit that is expected to continue during the coming years, while Turkey suffers from a water glut in which the available water for various needs .exceeds
 6. dangers, as Today, Iraq faces real it depends on water and its source is entirely from outside Iraq, and the rest is little sourced from within, and it is currently exposed to the dangers of terrorist operations after the water resources were exposed to danger from neighboring ountries by building dams and c .cutting off water
- and affecting Iraq in the event of the completion of the Turkish water projects. Turkey may resort to selling water and refrain from doing so, according to their leaders, because they own the oil .and we own that water
2. more Percentage salinity in a sewer Lower Iraq Because reviews water and extreme Its) in Turkey (%30) percentage is in Syria or Too much At (30-20 Login river Euphrates Syria , With Science that Percentage salinity accepted in a water Must for purposes (% that be (1.5 irrigation the good . And for this Will be antiquities negative consecutive On lands and production agricultural With Appearance of signs marsh . Walpur
 3. -clay red -lack quantities silt that transmit it my river Tigris specially in a and the Euphrates E season the flood a result investment Turkish in quantities big From waters The two rivers , command Which Will Lead to me disable fertility the soil and . appearance signs desertification
 4. pollution Because waters : ill be heights Because crap You w back to me The two rivers without Processing directly From fields irrigation in a lands

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