



St Dominic's Sixth Form College

Geography Transition work 2026-27

Please print off the first five pages of the work as part of your Transition Work. You will submit this to your teacher in September.

What is a transboundary water conflict?

As demand for water rises and water shortages increase, the potential for conflict over water supplies increases too.

- 263 rivers in the world cross or form political boundaries between countries.
- 90% of all countries share water basins with at least one geographical neighbour.
- 158 of the world's transboundary water basins lack any type of cooperative management framework. This increases the potential for conflict.

Conflict can occur when economic development along a river varies; some countries may take more water out of the river for irrigation, industrialisation and human use. Additionally, the ongoing threat of climate change and drastic changing of weather patterns is both increasing drought risk and shifting precipitation levels for many counties. Borders can become tense places.

Table 3 International water disputes.

Rivers/aquifers	Countries involved in dispute	Subject of dispute
Nile	Egypt, Sudan, Ethiopia, Uganda, Kenya, Democratic Republic of Congo, Eritrea	siltation, flooding, water flow/diversion
Euphrates, Tigris	Iraq, Syria, Turkey	dams, reduced water flow, salinisation, hydroelectricity
Jordan, Yarmouk, Litani, West Bank aquifers	Israel, Jordan, Syria, Lebanon, Palestinians on the West Bank	water flow/diversion, allotment of water from common aquifers
Brahmaputra, Ganges	Bangladesh, India	siltation, flooding, water flow/diversion
Mekong	Kampuchea, Laos, Thailand, Vietnam	water flow, flooding, irrigation
Parana	Argentina, Brazil	dam, land inundation
Lauca	Bolivia, Chile	dam, salinisation
Rio Grande, Colorado	Mexico, United States	salinisation, water flow, agrochemical pollution
Great Lakes	Canada, United States	water diversion
Rhine	France, Netherlands, Switzerland, Germany	industrial pollution
Danube	Austria, Slovakia, Hungary	water diversion, hydroelectricity



Study table 3 on the previous page.

Identify the three most common causes of transboundary dispute	
Which regions on the world has the most identified?	
Pick one of the disputes identified. Explain in detail what the cause of the tension is.	

For your transition work, you will be tested on three major transboundary water tensions in locations across the world.

Research the causes of the tensions and any attempts made to resolve the situation and then evaluate how successful it has been and how likely it is to develop into a full-scale conflict between countries in the future.

Below is the table you will fill in for each example:

Name of transboundary tension	
Causes of tensions	
Attempts made to resolve tensions	
How successful?	
How likely to develop into conflict in the future?	

The summary templates for each case study are on pages 3, 4 and 5. The research for each case study begins on page 6.

Good luck, happy reading and we look forward to meeting you in September.



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Name of transboundary tension	The Nile Basin
Causes of tensions	
Attempts made to resolve tensions	
How successful?	
How likely to develop into conflict in the future?	



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Name of transboundary tension	The Mekong River Delta
Causes of tensions	
Attempts made to resolve tensions	
How successful?	
How likely to develop into conflict in the future?	



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Name of transboundary tension	The River Jordan
Causes of tensions	
Attempts made to resolve tensions	
How successful?	
How likely to develop into conflict in the future?	



Case Study 1: The Nile River Basin

To begin, watch this clip: <https://www.youtube.com/watch?v=JdizU0arrJ0>

Link doesn't work?

Search 'What's behind the Egypt-Ethiopia Nile dispute?' by Al Jazeera English.

Other reading:

Troubled waters on the River Nile



The 6700 km long Nile is the world's largest river, with two main sources: the White Nile, whose source is Lake Luvironzo, near Lake Tanganyika, which subsequently flows into Lake Victoria through Uganda and into Sudan, and the Blue Nile, which rises in the Ethiopian Highlands. Their confluence is at Khartoum, from where the river continues to flow northwards into the desert state of Egypt and on to its delta in the Mediterranean Sea. The Nile Basin covers about ten per cent of the African continent (Figure 3.16, page 69). There are both physical and human factors which could trigger conflict over the Nile's waters.

Hydrology of the River Nile

Eleven countries compete for the Nile's water and yet, with a measured flow of 84 billion cubic metres, the Nile has a very modest discharge compared to other great rivers of the world, for instance the Amazon and many other African rivers such as the River Congo.

There are three key features about the pattern of discharge that could increase the potential to cause disputes. These are linked to the south-north direction of flow through contrasting climate zones.



Figure 3.16 Map of the Nile Basin and existing dams

- 1 The White Nile provides a mere 30 per cent of the flows measured at Aswan, Egypt. While the catchment of the Blue Nile is small relative to that of the White Nile, the heavy monsoonal rainfall from July to September means that it is by far the greatest contributor to Lower Nile flows. The difference in the two major river regimes is very marked (Figure 3.17).

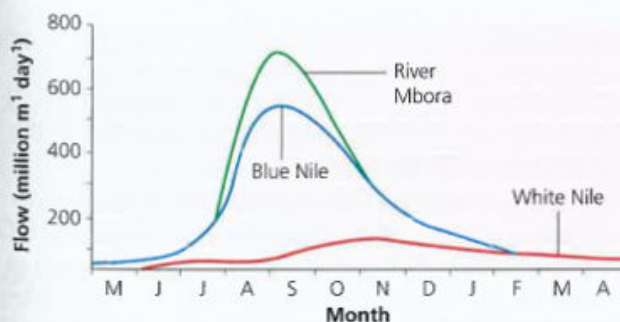


Figure 3.17 The discharge pattern of the Nile

- 2 The seasonal variation in flow poses a key challenge to river basin planners and agriculturists, especially as it is susceptible to major inter-annual

and decadal fluctuations brought about by El Niño–La Niña cycles and, in the future, the possible impact of climate change. These drought and flood cycles are a particular problem for Ethiopia and Sudan, and in the past for Egypt before the building of the Aswan High Dam.

- 3 Much of the river system is located in hot, arid areas where evaporation losses are high, especially in the Sudd area of Southern Sudan. Between entry to and exit from the Sudd swamp, the White Nile loses up to 50 per cent of its flow – leading to early summer water shortfalls in Egypt and Sudan when flows from the Blue Nile are at their pre-monsoonal low point. Egypt was very keen to sponsor the Jonglei Canal Scheme to speed up the flow through the Sudd, so reducing evaporation losses. The scheme was begun in 1979 but remains unfinished to this day due to deteriorating relations between Egypt and Sudan. It is being reviewed as part of the latest Nile Basin Initiative (NBI).

Geopolitical issues

One of the key geopolitical features of the Nile Basin is the large number of national borders that traverse it. Largely as a result of the European colonial era, these boundaries pay scant regard to the physical and human geography of the Nile Basin.

Currently, over 300 million people live within the Nile Basin, but this is expected to double to 600 million by 2030, placing further pressure on water supplies for domestic and agricultural use. Egypt is dependent on the Nile for 95 per cent of its water needs, but other states, such as Rwanda and Ethiopia, need large supplies of water to develop crop irrigation, HEP production and industrial processing in order to lift their nations and their people out of poverty.

For water conflicts to develop, there have to be underlying water scarcity issues (i.e. a threshold figure of below 1000 m³ per person per year). While many African nations do not currently have physical water scarcity issues, many, such as Tanzania, have economic water scarcity issues whereby they lack the capital and technology to exploit supplies. Demands from growing populations and development combined with the impact of climate change means that of the Nile Basin countries, Burundi, Rwanda, Egypt, Ethiopia, Kenya, and possibly Sudan and Tanzania, will all be potentially water scarce by 2025. This water scarcity will ultimately impact on food security, especially in countries such as Egypt, which already have high levels of virtual water use because of the need to import substantial quantities of food. (Source: Adapted from/ Geo Factsheet 282.)

The impact of history

The original agreements for sharing the Nile's waters were bilateral between Egypt and Sudan (the two 'Arab' nations), agreed by their colonial masters – Britain.

- In 1929, the first Nile Waters Agreement was signed, giving 48 million cubic metres to Egypt and 4 billion to Sudan, with only fourteen per cent going to the other African countries. The big issue was that Egypt (as the downstream nation) was given the right of veto on any modifications in the use of the Nile's water in the other nine nations. Egypt was favoured as an important agricultural asset and the Egyptian run Suez Canal was vital for British imperial ambitions. The British riparian colonies - Sudan, Uganda, Kenya and Tanganyika (now Tanzania) – as well as Ethiopia, had no say.
- In 1959, a second Nile Waters Agreement was signed, giving 55.5 billion cubic metres to Egypt and 18.5 billion to Sudan – in effect giving *all* the water to these two countries as the rest of the discharge is lost to evaporation. The increased allocation to Sudan represented the increased needs of the country for irrigation (for example, for the Gezira Scheme). This agreement was again signed by the British colonial powers on behalf of upstream countries, who felt that all these countries had plenty of water from other sources. Ethiopia refused to recognise the legitimacy of the agreement.

The acquired rights from these historic agreements have resulted in an unfair allocation of the Nile's waters. For example, Ethiopia has a major production of water but very low capture of the resources, in contrast to Egypt and Sudan, which have low internal renewable resources but high capture of the Nile's water.

Will there be water conflicts among the Nile nations?

Sudan and especially Egypt have ever-increasing needs for more Nile water. Nevertheless, a riparian-led process of joint decision-making called the Nile Basin Initiative (NBI) emerged during the 1990s.

Since 2005, nine of the ten Nile Basin countries (with Eritrea observing) have been exploring the development of the NBI in partnership with key external agencies such as the World Bank to establish a common vision. Two subsidiary action plans, the Eastern Nile Program and the Nile Equatorial Lakes Program, have been established.

The good news is that Egypt and Sudan are involved in the NBI, but the bad news is that so little was

really achieved in spite of the funding of many worthwhile development projects.

In 2010, Ethiopia, Rwanda, Tanzania and Uganda signed a new water treaty, with Burundi, DRC and Kenya promising to sign later. This treaty stated that *all* riparian countries should have equal rights to use the Nile waters. While the upstream countries have now urged Egypt and Sudan to sign and eventually agree to the treaty, much will depend on the politics of the Nile, with Egypt and Sudan now politically weaker and less well supported by powerful allies. Indeed, in current unipolar geopolitics, it is the neo-colonisation of China that is building all the schemes and dams, especially in Ethiopia.

Table 3.6 (page 71) summarises the existing and new dam proposals for the River Nile, which will clearly have a major impact downstream. The big shift in influence is exploitation by Ethiopia, a country with major economic ambitions and an impressive growth rate of around eight to ten per cent per annum.

Conclusion – war or peace?

It is all too easy to state that there will be water wars in the twenty-first century and, indeed, in some locations such as the Middle East, where existing conflicts are prevalent, this does seem increasingly likely. However, in the Nile Basin, where many of the ingredients are present (such as currently inequitable use and increasing scarcity) the emphasis so far has been on co-operation. Some would argue that Egypt and Sudan are so politically weak with other wars that they have no spare capacity to fight a Nile war.

It is possible that the common vision of the Nile Basin Initiative, which seeks to achieve sustainable socio-economic development through the equitable usage of, and benefit from, the common Nile Basin resources, and peace, will prevail.

Most recently it would seem that Ethiopia-Egypt water wars are more likely. In 2020, Ethiopia's largest mega-dam project the Grand Ethiopian Renaissance Dam (GERD) will be completed. The process of filling the reservoir behind it will decrease the flows of the Blue Nile by 25 per cent.

For the last decade, three-way talks have been going on between Egypt, Sudan and Ethiopia to agree a management strategy including how fast and when (it must be in the rainy season) the filling should happen. The Blue Nile in Sudan has recently experienced several years of climate change-induced drought, but Sudan sees an opportunity to get HEP from Ethiopia's dam as part of the deal and so is in the middle of the two protagonists in spite of concerns of water loss.

Egypt is totally opposed to Ethiopia's intent to exercise 'hydro hegemony' and has been seeking support from all Arab league countries and the USA

who chaired the negotiations to 'drum up' opposition to the dam. The talks have concluded with no solution and considerable acrimony.

Table 3.6 New plans for the Nile waters. All these countries are developing countries

Country	Population (million)	GDP (US\$ billion)	Schemes
Egypt	74	75.1	Hydropower potential almost fully tapped; Nag Hammadi barrage under construction New Toshka irrigation scheme to be completed in 2017 to irrigate 220,000 hectares New Salam Canal to divert water to northern Sinai Many new desert settlements needed to house growing population
Sudan	36	19	Many dams raised in height, e.g. Roseires Dam Huge new Merowe Dam, as well as Kajbar Dam Plans to restart the Jonglei Canal as part of Sudan-Egypt co-operation
Ethiopia	77	9.8	Many new dams on the Blue Nile including Tis Abay, Tekezé and the GERD In all, proposals for 33 irrigation and HEP plants on the Blue Nile, which will make Ethiopia a food and power exporter, but will block sediment transfer and cut the flow of water considerably
Uganda	29	6.8	Construction of the Bujagali Falls Dams
Tanzania	52	48	Plans for a new pipeline from Lake Victoria to provide drinking water

Case Study 2: The Mekong River Delta

Environmental tensions over water in south-east Asia

Trans-boundary water conflicts in south-east Asia can, in part, be linked with globalisation. In recent years, tension and conflict has grown between user groups both *within* and *between* countries.

- Globalisation has brought foreign investment to India while also has helping Indian-based TNCs such as Tata to thrive. These industries put pressure on water supplies. In the drought-prone Indian state of Kerala, an aquifer lies close to the village of Plachimada. In 2000, Coca-Cola's subsidiary firm Hindustan Coca-Cola Beverages established a bottling plant nearby. Six wells were dug, tapping into the precious groundwater store. Very soon afterwards, water shortages began to be reported.
- India's integration into global systems helps explain the income rise for hundreds of millions of Indians who now enjoy the use of flushing lavatories and

showers. Improving the situation for the remaining 250 million Indians who still lack access to clean water will increase pressure on scarce water supplies in many places.

As a result of such changes, India's total demand for water is expected to soon exceed all current sources of supply; the country is set to become water scarce by the year 2025 (measured as per capita water availability of less than 1,000 cubic metres annually). India's own heightened water demands could, in turn, lead to trans-boundary tension and conflict over the use of large rivers shared with other countries, notably China. The transboundary Brahmaputra River originates in Tibet and flows through China before reaching India. There are real Indian concerns that China – whose own water needs have sky-rocketed recently – might build dams capable of diverting the Brahmaputra away from India.

Figure 4 The dams built and proposed along the Mekong and its tributaries, plus the likely impacts on the six countries involved



China

China owns half the length of the Mekong. The upper basin is mountainous, but the southern part is in one of China's poorest regions. Damming the river to generate hydroelectric power would encourage economic development there.

Myanmar (formerly Burma)

Myanmar is the country least affected by the current Mekong proposals. It contains several tributaries of the Mekong, but none of them would be affected by the existing dam proposals. It has no plans to build any dams of its own yet, but any such plans would affect the water flow in downstream countries.

Laos

Laos is one of the world's poorest countries, and 90% of its population depends on the Mekong for agriculture. Most water comes from tributaries within Laos, but dams for hydroelectric power or flood control would reduce the flow downstream.

Vietnam

The Mekong delta is a fertile area of 50 000 km², which supports 40% of Vietnam's population. Annual floods there allow a large amount of rice to be grown. Continuing to dam the Mekong further upstream will reduce the river flow in Vietnam (10% has already been lost).

Cambodia

Nearly all of Cambodia is within the Mekong basin. It depends on the river for the crucial annual flooding of its rice-growing area. Its lack of reliable energy sources has led to the depletion of its forests for firewood. Hydroelectric power would boost the country's economic development, but it would also displace villagers from fertile land beside the river.

Thailand

Only 36% of Thailand's territory is within the Mekong basin, but Thailand would like the water and electricity generated by the dams for industrial development – and to aid rural investment to stem the flow of migrants to its cities.



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The Mekong River Commission:

https://wwf.panda.org/wwf_news/?207221/WWF---Regional-cooperation-on-Mekong-River-in-tatters

Case Study 3: The River Jordan

To begin, watch this clip: <https://www.youtube.com/watch?v=taMWUjda3fA>
Link not working? Search 'How Israel became a leader in water use in the Middle East' by PBS Newshour.

Some further reading needed:

<https://www.theguardian.com/world/2019/feb/23/israel-where-jesus-preached-holy-waters-draining-away-sea-of-galilee-river-jordan>

<https://www.timesofisrael.com/government-inks-plan-to-clean-part-of-jordan-river-make-it-fit-for-swimming-again/>

To go more in depth:

<https://carnegieendowment.org/research/2024/04/the-looming-climate-and-water-crisis-in-the-middle-east-and-north-africa>