

# Climate vulnerability and security in the Euphrates- Tigris Basin

Three scenarios for 2050

Adrien Detges, André Mueller & Michelle  
Helene Reuter, adelphi

---

Research Paper | October 2022

# Table of contents

Acknowledgements	3
Scope of the paper	4
Climate vulnerability and resilience scenarios	5
Scenario 1: <i>'turbulent transition'</i> .....	6
Scenario 2: <i>'authoritarian autarchy'</i> .....	8
Scenario 3: <i>'precipitated progress'</i> .....	10
Outlook	13
Appendix: Methodological approach	14

# Acknowledgements

We would like to thank our interview partners and regional experts for their time and for sharing their expertise with us: Aysegül Kibaroglu, Charles Iceland, Dursun Yildiz, Hamza Shareef, Jeroen Warner, Kamal Jalouqa, Mara Tignino, Martina Klimes, Nadim Farajalla, Rami Zurayk, Sadeq Al Jawad, Ömer Lütfi Şen, Tessa Terpstra, Tobias von Lossow, and all other participants of our scenario planning workshops.

---

## Scope of the paper

Climate change will affect millions of people in the Euphrates-Tigris basin. It will add to other foreseeable challenges in a region that is undergoing rapid demographic changes and development, that is grappling with political instability, and that struggles to manage its shared water resources sustainably. Resisting and preparing for the adverse impacts of climate change will be essential for the riparian countries Iraq, Turkey, Syria, and Iran. Their chances to do so successfully over the coming years will largely depend on their ability to build and bolster strong institutions and a healthy economy, to provide a safe environment for their citizens, to carefully manage their natural resources, and to maintain peaceful and productive relations among each other.

Looking ahead to the year 2050, this paper develops three possible scenarios for the Euphrates-Tigris basin, each one marked by distinct vulnerability conditions and opportunities for the basin countries to withstand the effects of climate change. Based on these distinctions, the paper identifies scenario-specific climate risks for water resources, lives, and livelihoods, as well as possible implications for migration, political stability, and cross-border water cooperation.

The paper builds on research conducted in the EU-funded project ‘*CASCADES*’ ([www.cascades.eu](http://www.cascades.eu)), which examines the impacts of climate change on trade, investments, sustainable development and human security in the European neighbourhood, with a view to inform European policies and improve interregional cooperation. The scenarios presented in this paper have been co-developed with 30 experts from the region, representing the fields of climate change adaptation, natural resource management, conflict prevention, and other relevant areas, to allow for a multidisciplinary perspective on major challenges and possible solutions. The methodological approach is described in the appendix.<sup>1</sup>

The scenarios presented here are not exhaustive. Rather, they display a diverse set of possible future challenges and opportunities to inform strategic planning, promote flexible policies, and encourage a range of adaptation measures by the basin countries and their European partners.

---

<sup>1</sup> A thorough analysis of climate impacts and vulnerability conditions in the Euphrates-Tigris basin can be found in Mueller, A.; Detges, A., Pohl, B., Reuter, M.H., Rochowski, L., Volkholz, J. and E. Woertz (2022). Climate change, water and future cooperation and development in the Euphrates-Tigris basin. *CASCADES Report*. <https://www.cascades.eu/publication/climate-change-water-and-future-cooperation-and-development-in-the-euphrates-tigris-basin/>

# Climate vulnerability and resilience scenarios

The three scenarios discussed in this paper show possible futures shaped by different aspirations, behaviours, and constraints faced by governments and civil society in the Euphrates-Tigris basin. Each one contains pitfalls, challenges, and opportunities for climate adaptation along the following four dimensions: politics, economy, natural resource governance, and riparian relations.

The scenario descriptions start with a brief summary, outlining the main theme and idea behind each scenario, the key socioeconomic and political dynamics at play in the scenario, and the way they affect vulnerability and resilience to the effects of climate change. The latter two points are then addressed in greater detail in the remainder of the scenario description.

Scenario 1 '*turbulent transition*' describes a situation in which a new generation of politicians calls for democratic and economic reforms. This pits them against a conservative elite anxious to preserve its privileges. The struggle between the factions creates challenges but also some openings for climate adaptation. Scenario 2 '*authoritarian autarchy*' portrays a future in which repressive regimes consolidate their power in the basin. Social, political, and economic systems are geared towards that end. This creates serious challenges for marginalized groups and difficult conditions for cross-border cooperation in the wake of climate change. A strong faith in free markets and technological progress dominate riparian societies in scenario 3 '*precipitated progress*'. Resources are used more efficiently, but benefits are not evenly distributed. Powerful interest groups influence resource governance and cross-border cooperation, sometimes to the detriment of sustainability and multilateral approaches.

---

**Vulnerability**<sup>2</sup> "The propensity or predisposition to be adversely affected. Vulnerability includes a variety of concepts and elements, including sensitivity or susceptibility to harm and lack of ability to cope and adapt."

**Resilience** "The ability of social, economic, and environmental systems to cope with a dangerous event, trend, or disturbance by responding or reorganizing in ways that maintain their essential function, identity, and structure, while retaining a capacity to adapt, learn, and transform."

**Adaptive capacity** "The ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences."

---

---

<sup>2</sup> Definitions taken from: IPCC, 2014 Annex II: Glossary [Mach, K.J., S. Planton and C. von Stechow (eds.)]. In: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, pp. 117-130.

## Scenario 1: *'turbulent transition'*

---

### Summary

- This scenario is driven by a strong desire of new generations for democratic change, which runs against the vested interests of conservative elites.
  - Some progress is achieved but the struggle between more progressive and conservative politicians creates unsteady political and economic conditions that complicate water sector reforms and cross-border water cooperation.
  - Opportunities for climate adaptation are present, but unsteady political conditions make it hard to fully exploit this potential. While the most vulnerable are better protected and minor shocks are more easily absorbed, major climatic pressures remain a threat to political stability.
- 

### Politics

Politics are volatile, marked by persistent struggle between a conservative elite and a new generation of politicians that is more progressive. While the former clings to its power and privileges, the latter calls for democratic reforms, better social protection, and sustainable management of natural resources in the Euphrates-Tigris basin. Social media have empowered more progressive voices and facilitate their mobilisation, but the remnants of centralised and autocratic structures work to the advantage of conservative leaders. Some progress has been made in fighting corruption. Yet, constant political struggle has destabilising effects and absorbs a great deal of political attention and resources, which are then lacking for addressing the structural social and economic challenges the region is facing. Politics are volatile, protests and disruptions are frequent, and the military could be tempted to step in.

### Economy

The volatile political situation has a somewhat deterring effect on much needed foreign investments and complicates relations with international donors. It also creates a challenging environment for domestic businesses to operate in. Yet, some progress has been achieved in decentralising the economy and breaking up monopolies in the hands of politically connected elites. Small businesses can enter the market more easily and progressive reforms are promoting the participation of young, female, and minority entrepreneurs. Overall, the economy is growing slowly but has become more diversified and offers better opportunities to rural communities in particular.

### Natural resource governance

Reforms in the water sector are encouraging more efficient and environmentally sound practices, yet financial resources and political will are often lacking to really

push them through. Some progress has been achieved in terms of water saving techniques (including the expansion of wastewater treatment and reuse) and new water infrastructure projects put a greater emphasis on avoiding adverse environmental and social impacts. Decentralised systems of water use are gaining ground in many rural areas, which improves local food production capacities. Still, uncertainty persists, as initiatives to strengthen environmental regulations are often blocked by conservative politicians. Hence, progress is slow and unsteady, only partly mitigating water over-use and strains on rivers and aquifers.

### Riparian relations

Volatile domestic politics also complicate cooperation among the riparians of the Euphrates-Tigris basin. In some cases, governments exploit moments of weakness of their neighbours (e.g. political instability) to play to nationalism and assert their national interests, in particular when it comes to the management of transboundary water resources or the development of water infrastructures. This situation also makes it more difficult to effectively manage drought and flood risks across borders. External actors, especially the EU, find it difficult at times to offer support for transboundary water cooperation. Civil society initiatives are stepping up to make up for missing cooperation at inter-state level. Yet, their efforts can only go so far. There is increased awareness and public support among the younger generation for regional and more sustainable approaches to managing shared water resources. Yet, opposition from conservatives, as well as administrative rigidities, prevent this potential from being fully exploited.

### Vulnerability and resilience to the effects of climate change

- Unsteady political conditions in this scenario increase its vulnerability to climate hazards. Discontinuity in disaster risk reduction and climate adaptation plans make it harder to avert climate-related risks to lives and livelihoods. Protracted climatic stress could exacerbate ongoing power struggles and increase the risk of forced regime change.
- On the other hand, scenario 1 benefits from a partial transition towards more responsive institutions and social systems that protect the most vulnerable. This is an advantage in the face of adverse climatic change, even though financial means and political support for climate adaptation are unsteady.
- A somewhat more inclusive economy and increased opportunities in rural areas act as safeguards against climate-induced economic shocks. Forced migration due to climatic stress is reduced, which relieves urban centres.
- Improved democratic participation and conciliatory attitudes, at least among progressive politician, reduce the risk of conflict among riparians in the wake of climate change and reduced water availability. Yet, conditions for cross-border cooperation are unstable, limiting the basin's potential for effective climate adaptation.

## Scenario 2: *'authoritarian autarchy'*

---

### Summary

- This scenario describes a future in which authoritarian regimes consolidate their power in the basin. Social, political, and economic resources are geared towards that end. Dependence on revenues from fossil fuel exports is high.
  - Political and military repression bring some stability to the basin, but at the expense of civil liberties and economic opportunities for the less privileged. Resource governance is inconsistent and relations between the riparians tense.
  - The promotion of local agriculture and involvement of the military in disaster risk reduction brings some opportunities for climate resilience, but smallholders and disadvantaged communities remain very vulnerable. Tensions between the riparians risk escalating in the wake of climatic pressures on water resources.
- 

### Politics

In this scenario, politics in the basin is shaped by authoritarian forces. Leaders have taken strong measures in an effort to preserve their power, fight rebel groups, and suppress the democratic movements that had gained momentum in the region at the start of the century. A lot of resources and effort have gone into strengthening sitting regimes and buying loyalty from the military and key business interests. Social services and support structures are often allocated in a way that benefits political supporters. Grievances and tensions between ethnic and religious groups abound, in particular in the bulging cities of the region, but governments have been mostly successful in suppressing dissent and violence, for now.

### Economy

The political survival of sitting regimes is tied to their ability to ensure economic benefits to their supporters among the business elite and specific ethnic and religious groups. Protectionist policies are in place to serve the interests of these constituencies, which reduces economic opportunities for others. Corruption and nepotism create obstacles in particular for young entrepreneurs and marginalised rural communities, which is a reason for some to leave the region. Social and economic challenges, including food security, are somewhat kept in check with subsidies and extensive hiring by the public sector. The economy is showing signs of weakness though, as oil and energy exports, a major source of revenue in the region, are decreasing.



### Natural resource governance

In a bid for greater food autarchy, the basin countries promote local agriculture and improve their capacities for irrigation and mechanised agriculture, which adds strains on local water resources and ecosystems. Strict rules are in place to limit pollution, waste, and overuse of natural resources, yet they do not seem to apply equally to those with and without political connections. Hence, environmental degradation is only partly mitigated. There is increased awareness among the elite about the risks posed by climate change. Efforts are made to protect affluent urban areas, industries, and large-scale agricultural projects from floods and other extremes. More often than not this leads to greater risks for smallholders and people in disadvantaged neighbourhoods.

### Riparian relations

Room for cross-border cooperation in the basin is limited. Relations between the riparians are partly pragmatic, dictated by the interest of the ruling elite to maintain stable economic and political conditions. Yet, tensions can arise as powerful elites vie for influence in the region and interfere in the affairs of their neighbours when it can strengthen their position at home. Pervasive nationalism, protectionism, and the pursuit of autarchy are major obstacles to regional cooperation and joint governance of water resources.

### Vulnerability and resilience to the effects of climate change

- Subsidies for agriculture have a slightly positive effect on the implementation of local climate adaptation measures. Strict environmental laws and political repression contain communal disputes and prevent violence over climate-sensitive natural resources.
- But risks are unevenly distributed: the regimes' inner circle is well insulated, while less privileged groups remain highly vulnerable to the effects of climate change, with implications for unemployment, rural-urban migration, and a range of social challenges and tensions in urban areas.
- The military takes on a central role in disaster risk reduction, but governments seem more eager to look good than to actually offer protection to the most vulnerable, even if this means undermining civil society initiatives, which could make them look weak.
- Climate vulnerabilities are a source of political grievances for the less privileged but resulting tensions are unlikely to escalate in view of the effectiveness of the military and state propaganda. This apparent stability is fragile though, as decreasing oil revenues weaken authoritarian regimes in the region.
- Riparian relations are tense, but despite fiery nationalist rhetoric and the occasional intimidation, governments maintain a certain level of pragmatism and water cooperation when it serves the interests of their inner circle. This fragile equilibrium could fall apart though, if climate change was to drastically alter available water resources in the basin.

## Scenario 3: ‘precipitated progress’

---

### Summary

- A strong faith in free markets and technological progress dominate riparian societies. Policies prioritise efficiency and growth over sustainability and inclusion. Economic prospects improve overall but social inequalities give rise to grievances, which are exploited by populists and extremists.
  - Resources are used more efficiently and risks from disasters are reduced. Yet, not everyone benefits from this. Business interests sway domestic politics and riparian relations, sometimes to the detriment of environmental protection and regional approaches. Dependence on food imports is high and basin countries rely heavily on foreign investments and technologies.
  - Climatic shocks can be better absorbed, even though their adverse consequences will be unevenly distributed. Economic and political resilience to climate change seems secured overall, but any major blow to the economies of riparians (e.g. food price shock) could disturb this fragile equilibrium.
- 

### Politics

Economic pragmatism and a strong faith in free markets and technological progress dominate the political landscape in the Euphrates-Tigris basin. Policies prioritise efficiency and growth over social and sustainability issues. Private sector engagement and influence is high and, in many cases, services have improved (e.g. health, education). Yet, not everyone can afford them and some are constrained to rely on public alternatives, which are often inferior, due to important cuts in public budgets. Urban elites thrive, but rural communities and others who feel the downside of precipitated economic reforms feel alienated and left behind. The resulting frustration is a breeding ground for populists and religious extremists, which stir anger by blaming technocrats, foreign corporations, and the demise of traditional values. Free press and the right to protest allow people to voice their concerns. Yet, overall improved economic prospects keep contestation at bay.

### Economy

The economy of the basin countries has become more diversified, creating a number of jobs and opportunities outside the agricultural sector. In particular the service industry is flourishing. Dependence on food imports has increased as a result. Improved economic prospects attract foreign investments in manufacturing and a nascent high-tech sector built on foreign technologies. Deregulation of the economy has encouraged the emergence of oligopolies. Agriculture and distribution, in particular, are dominated by a small number of big players that put pressure on small producers. Opportunities for educated urban elites have improved considerably but not everyone has access to this life.

Technological progress and investments allow for the expansion of renewable and nuclear energy, yet energy demand is growing so rapidly that oil and gas remain important in the regional energy mix.

### **Natural resource governance**

Thanks to new technologies and supportive policies, basin countries find ways to use water and other natural resources more efficiently. Water needs, infrastructures, and irrigation systems are better monitored and managed through data-driven applications. Waste is reduced, thanks also to improved irrigation techniques, waste water treatment, and maintenance of leakages. Better data also enable better forecasting and improved disaster risk reduction. Climate insurance cushions the effects of droughts and floods, while more resistant seeds and plants are being developed. Yet not everyone can afford them. At the same time, domestic and industrial demand for water and hydropower is skyrocketing. The expansion of export-oriented agriculture is outpacing efforts to conserve aquifers and freshwater ecosystems and is gradually pushing away smallholders and pastoralists. Water pollution remains an issue in the region, despite improved treatment capacities. Private sector involvement in water services has also deepened inequalities between more and less privileged neighbourhoods and regions. Private security firms protect infrastructures from sabotage and illegal water use, which occasionally leads to violent incidents.

### **Riparian relations**

Economic and political relations between the riparian states are governed by pragmatism and aim towards mutual benefits. Water cooperation has been extended to allow for more efficient water storage and hydropower production. The joint management of several dams and economic interdependence have brought the riparian countries closer together. Private companies and interest groups have great influence on regional politics – leading at times to short-term thinking and obstacles to reforms towards greater sustainability and environmental protection. Bilateral water cooperation dominates over multilateral arrangements that would involve all riparian countries (and especially Iran). Cross-border projects focus on tackling specific issues, most of which fulfil mutual economic or security interests. These projects are usually executed by private companies. Riparian relations have improved through such projects, with a calming effect on some of the region's power struggles and tensions. Technical and financial support by international donors remains important for the basin countries.

### **Vulnerability and resilience to the effects of climate change**

- More efficient resource use and improved irrigation allow basin countries to better cope with the effect of climate change on crops and water resources. Yet, rapidly growing demand for water and hydropower leaves regional economies more vulnerable to climate-induced water scarcity. Ecosystems are also rendered more vulnerable due to pollution, partly unsustainable use of land, and over-extraction of groundwater resources. Nevertheless, disputes over resources are unlikely to escalate very far.

- Technological progress and trade improve food security but basin countries are highly vulnerable to food price shocks in the wake of multiple breadbasket failures (i.e. several global food exporters experiencing climatic shocks simultaneously).
- Economic opportunities have improved outside of agriculture and insurance mechanisms offer safeguards against climatic shocks. Yet, not everyone is able to access them. New jobs in manufacturing and high tech come with their own water requirements and climate-sensitivities (e.g. to floods, heat stress). Climate adaptation measures in the regions remain highly dependent on foreign capital and technologies.
- Increasing living standards lead to greater popularity of governments overall, despite deepening inequalities in some areas. Populists and extremists challenge the status quo and could gain more ground if economic conditions were to deteriorate due to food price shocks and major climatic pressures.
- Water cooperation in the region is pragmatic and geared towards realising mutual benefits. Relations among the riparian could become more aggressive though, if climatic pressures were to reduce available water resources and affect the energy security of the basin countries. In such a scenario, the lack of truly multilateral and inclusive water governance could prove a major weakness.

## Outlook

The three scenarios presented in this paper outline three different trajectories for the Euphrates-Tigris basin, each one with its specific vulnerabilities to climate change and opportunities for resilience and adaptation. The scenarios aim to stimulate a conversation on future challenges and ways to prepare for them.

Climate change is neither the sole nor necessarily the most important threat to lives, livelihoods, political stability, or diplomatic relations in the basin. Yet, as this paper details, it could aggravate existing and create new challenges for the people in the basin, under certain social, economic, and political vulnerability conditions which are discussed in this paper. It is difficult to imagine a future that would be completely free of such conditions, just as a doomsday scenario of penury, decay and total political failure seems unlikely. The scenarios presented here reflect this. Despite their archetypical and somewhat hyperbolic nature, they feature a range of challenges and opportunities for climate adaptation that are worth considering.

Ultimately, it comes down to basin countries' ability to build cohesive societies and maintain productive relations among each other; to show solidarity with those most severely affected by climate change; and to provide for healthy conditions for societies, ecosystems, and markets to thrive. Due to their proximity and ties to the region, European partners have a unique opportunity to support them in this endeavour. The future of the basin is yet to be determined.

## Appendix: Methodological approach

The three scenarios presented in this paper describe possible future situations. They do not predict the future, but rather explore diverse trajectories and show the breadth of possible futures. In doing so, they offer the chance to scan the horizon for future challenges in order to better prepare for them.

The scenarios were co-developed with 30 experts from the Euphrates-Tigris region representing the fields of climate change adaptation, natural resource management, conflict prevention, and other relevant areas to allow for a multidisciplinary perspective on challenges and possible solutions. The process was organized in four steps.

- **Step 1:** Research by the project team and preparatory interviews with regional experts helped to identify key factors of future vulnerability and resilience to the effects of climate change and their potential repercussions on livelihoods, water security, political stability, and other relevant issues in the region.<sup>3</sup>
- **Step 2:** In an online workshop, researchers and regional experts discerned the most important and uncertain vulnerability and resilience factors and outlined three scenarios characterized by different manifestations of these factors and thus different levels of vulnerability and resilience. ‘Important’ refers here to the strength of the factor's influence on the region's vulnerability to climate-related hazards. This criterion ensures that the scenarios developed capture the most relevant issues. ‘Uncertain’ refers to how unpredictable future changes of the factors will be. This criterion ensures that the scenarios developed are oriented towards different but plausible future situations. The four most important and uncertain factors that all scenarios focus on are: (1) Natural resource governance; (2) Resilience of political systems, (3) Economic conditions, and (4) Riparian relations.
- **Step 3:** Three additional sessions with smaller working groups allowed to flesh out the scenarios and to develop a coherent picture of the future for each of them.
- **Step 4:** Following this step, the research team assessed the final scenarios in view of potential impacts of climate change on lives, livelihoods, economic and political stability, and cross-border water cooperation.

---

<sup>3</sup> The results of this analysis are discussed in greater detail in Mueller, A.; Detges, A.; Pohl, B., Reuter, M.H., Rochowski, L., Volkholz, J. and E. Woertz (2022). Climate change, water and future cooperation and development in the Euphrates-Tigris basin. CASCADES Report. <https://www.cascades.eu/publication/climate-change-water-and-future-cooperation-and-development-in-the-euphrates-tigris-basin/>



The project has been funded by the European Union's Horizon 2020 research and innovation programme under grant agreement No. 821010



## Author biographies

**Adrien Detges** is a Senior Advisor in the diplomacy and security programme at adelphi. He is member of several international research and advisory groups and has conducted extensive research on climate and security risks in Africa and elsewhere.

**André Mueller** is an Advisor at adelphi. He specialises in water policy, freshwater biodiversity and water resources management.

**Michelle Helene Reuter** is a Project Assistant at adelphi, supporting the Climate Diplomacy and Security Programme with research activities.