

A dry horizon: Iraq's interlinked drought and climate crises

October 2022



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The Norwegian Refugee Council (NRC) is an independent humanitarian organisation helping people forced to flee. In crises across 31 countries, NRC provides emergency and long-term assistance to millions of people every year. NRC promotes and defends displaced people's rights locally, nationally and on the world stage.

Cover photo: A boy tries to navigate his boat in the drying marshes in Basra governorate. Photo: Caroline Zullo/NRC

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Introduction

In 2022, Iraq witnessed a second consecutive year of drought and record low levels of rainfall across the country. Drought conditions are exacerbated by the broader impacts of climate change as Iraq remains one of the most vulnerable countries in the world to rising temperatures, decreased rainfall, and related food and health after-effects.¹ In addition, water scarcity is compounded by decreased transboundary flows from the Tigris and Euphrates rivers, as well as poor water resource management and treatment systems.

These interlinked crises related to water and climate have served as a threat-multiplier for millions of conflict- and displacement-affected people throughout the country. Most recently in the 2022 cropping season, drought conditions and decreased river levels significantly limited access to drinking and irrigation water, depleted harvests and incomes, and heightened barriers to food accessibility. These findings not only remain consistent with analysis from the previous season,² but also, notably mark a broader pattern of continued crop and livestock losses in Iraq as a result of water scarcity. Further, ongoing drought conditions—alongside the impact of climate change—could result in longer-term socioeconomic effects on vulnerable communities that rely on agriculture as their sole source of income, particularly related to increased social tensions and climate-induced displacement to urban areas. Water scarcity in Iraq has already displaced thousands from their homes in search of alternative pathways for incomes and employment.

With projections of a third consecutive season of below-average rainfall in Iraq,³ critical investment is needed from Iraq and the international community to adapt to and address both the immediate and longer-term effects of the drought and climate change on farming communities throughout the country.

Background

Iraq relies on the Tigris and Euphrates rivers for drinking water, irrigation, and sanitation for the country's more than 40 million people. The rivers originate in Turkey and flow to the Shatt al-Arab basin in southern Iraq. Both the Tigris and Euphrates serve as a critical lifeline not only for water security, but also for agriculture, livelihoods, and food production. Agricultural development is a vital component of Iraq's economy as the sector employs one-fifth of the country's workforce. Further, the primary source of income for farmers throughout the country is both rainfed and irrigated crop production, particularly harvesting wheat, barley, fruit, and vegetables.⁴

Despite the Tigris-Euphrates river basin serving as Iraq's primary water source, water supply has significantly reduced over the last year. The Iraqi Ministry of Water Resources estimated in April 2022 that the country's water reserves had been reduced by 50 percent due to drought, lack of rainfall, and declining river levels from the Tigris and Euphrates.⁵ Swathes of farmland and drinking water sources have been depleted of water, which has impacted crop production and had widespread socioeconomic repercussions on incomes and food prices throughout the country.⁶

This reduction is in part a result of the broader impacts of climate change, which pose an increasing threat to Iraq's water resources. Iraq has been identified as the fifth most vulnerable country to decreased water and food availability, rising temperatures, and associated health problems as a result of climate change.⁷ It is estimated that by 2050, average temperatures will increase by 2 percent Celsius and rainfall will decrease by 9 percent.⁸ This rise in temperature and expected prolonged heat waves will result in more frequent and extreme instances of drought, which already affected at least 7 million people in Iraq in 2021 alone.⁹ Moreover, access to drinking and irrigation water will deteriorate as groundwater replenishment rates are expected to reduce and worsen water quality and quantity for both municipal and industrial use. Without needed action, nearly one-quarter of available freshwater in Iraq is expected to be depleted within fifteen years as a result of climate change.¹⁰

Alongside a climate-induced decline in rainfall, the frequency of sand and dust storms have increased and are expected to continue as a result of the lack of water and vegetation coverage that prevents dust and soil being carried by wind.¹¹ By May 2022, Iraq witnessed nine sandstorms in less than two months, which not only had grave health and respiratory repercussions,¹² but also negatively impacted soil and water quality and crop production. Experts and Iraqi government officials point to a correlation between climate change and the increased frequency of dust storms, particularly as a result of rising temperatures and land clearing that stems from farmers being forced to abandon their agricultural livelihoods due to drought and water scarcity.¹³

Additionally, the transboundary nature of Iraq's water resources poses additional challenges to water scarcity. Iraq is reliant on cooperation from upstream riparian governments, namely Turkey and Iran, for regular flows from the Tigris and Euphrates rivers.¹⁴ However, developments that include irrigation and hydro-electric damming projects have substantially decreased the combined volume of both rivers by up to 60 percent.¹⁵ While there are reports of agreements signed between Turkey and Iraq in October 2022 to allocate fair and equitable water for Iraq,¹⁶ the broader absence of regional agreements for transboundary water supply and management has hindered collaboration on water sharing and resulted in significant consequences for drinking and agricultural water for Iraqi households.

Amid these challenges, water management and service delivery has deteriorated as a result of a lack of minimal investment in infrastructure development, clear strategies for social and economic development, and the lasting effects of conflict has had on irrigation and water systems. Damaged irrigation and water treatment systems characterise conflict-affected governorates- particularly in the "breadbasket" of the country. In Ninewa governorate, the legacy of conflict has resulted in unregulated water extraction and the overuse of surface water. The lack of new infrastructure combined with limited investment in upgrading or establishing water treatment plants has exacerbated water quality, especially in downstream governorates. Basra witnessed a water crisis in 2018 following an intrusion of seawater for the first time in recorded history as a result of changes in land use, poor groundwater management, and reduced flow of the Tigris and Euphrates rivers. The consequent reduction in freshwater resulted in mass public health epidemics due to poor water quality and consequent protests regarding chronic neglect of water infrastructure.¹⁷

Critical policy and institutional reforms are needed on water security. However, the delays in forming a government since parliamentary elections in October 2021 impeded the Government's ability in passing a 2022 budget to address the effects of the climate crisis and transboundary river flows, as well as investing in climate adaptation to adjust to the damaging effects the drought has already had on agriculture, livestock, and livelihoods.¹⁸ Access to reliable and affordable water supply, sanitation, and irrigation- alongside environmental protections- are urgent priorities for the incoming government to respond to household needs, economic recovery, and the broader question of water security in Iraq. Further, international assistance and investment is needed to tackle the impact of climate change in Iraq and support climate-adaptation pathways at the local and national level.

Methodology

In Iraq, NRC surveyed 1,341 households in Anbar, Basra, Dohuk, Kirkuk, and Ninewa governorates. The survey was conducted in August 2022 to assess the impact of drought and the climate crisis on the most recent harvest season. Of these households, 57 percent of respondents were returnees, and more than 40 percent were part of the host community or had remained in their areas of origin during the conflict. Further, 84 percent of the surveyed households dwell in rural areas.

To generate a representative sample across the five governorates, sample sizes in each district were computed according to Raosoft software at 95 percent confidence level and a 6 percent margin of error. The districts were purposively sampled based on NRC areas of operation throughout Iraq.

To complement these findings, eight key informant interviews (KIIs) and four case study interviews were conducted from June to September 2022 in Basra, Anbar, Kirkuk, and Ninewa to validate survey findings and assess how climate change and water scarcity have impacted displacement, incomes, and crop production across households, as well as the Government of Iraq's response.

Trees and other forms of vegetation dry up as a result of drought in Anbar governorate. Photo: Fared Baram/NRC



Key findings

The household survey and interviews demonstrate the impact of drought, climate change, and decreased river flows on farming communities across five governorates in Iraq, with serious repercussions on access to food, water, and harvestable land, as well as the erosion of incomes.

Findings reveal that the crisis has had an immediate impact on access to drinking and irrigation water, as well as on the production of crops as 61 percent of households stated that their access to drinking and domestic water had been disrupted in the last year. In addition, one-quarter of all households witnessed upwards of 90 percent wheat crop failure. One in three households resorted to reducing the area of land cultivated, thereby reducing harvests. Forty-two percent of households stated that their production of barley, fruit, and vegetables declined in comparison to the previous cropping season.

Water scarcity also had a secondary effect on socioeconomic indicators, namely incomes and food accessibility. One-quarter of farmers were not able to generate any profit from their harvests, while one-third had to spend their savings or capital to survive. Additionally, the water and climate crisis has served as a threat-multiplier with regards to displacement and community tensions. Four percent of households had a family member displaced in the last twelve months as a result of the drought, and 38 percent stated that tensions have increased in their communities due to water scarcity.

1. Access to water

Farming communities throughout Iraq require water for drinking, irrigation, and agricultural purposes. However, accessing sufficient and safe water has been exacerbated by the broader effects of climate change, deteriorating infrastructure, and diminishing river flows. Sixty-one percent of households stated that their access to drinking and domestic water had been disrupted in the last year. One in five noted that they ran out of water entirely, while others had to rely on less or low-quality water. In Hawija district in Kirkuk and Ana district in Anbar, more than a quarter of households said there was less quantity of drinking water due to the lower levels in the Lesser Zab and Euphrates rivers, respectively. Other districts rely on groundwater for drinking water - namely Baaj and Sinjar- to which 25 percent of households report less water quantity and 23 percent stated lower quality as over-exploitation of the aquifer and climate change have exacerbated groundwater replenishment rates.

In Basra, 41 percent of households in Qurna and 29 percent in Shatt al-Arab reported that there is no drinking water available in rivers or canals due to decreased water levels and the high salination of the

water. While access to drinking water varies by each district, 28 percent of households across all governorates have started purchasing drinking water, 25 percent have changed their water source, and 24 percent have reduced the quantity of water they use, demonstrating various coping mechanisms that could result in diminished incomes or incurring debt. In terms of irrigation water, 64 percent of households rely on irrigation systems for crops, particularly in Anbar, Kirkuk, and Basra, while the other 30 percent depend on rainfall- primarily in Dohuk and Ninewa governorates. Of those that have rainfed crops, nine out of ten stated that rainfall was not sufficient this season for their crops to thrive. In order to cope with these challenges, households reported reducing the area of land cultivated (34 percent), which evidently resulted in lower quantity of crops to harvest for consumption and/or profit.

Households in Hawija, Ramadi, Dabes, and Sinjar reported reducing the quantity of water for irrigation and many sought new water sources- namely by drilling boreholes- to access water for irrigation purposes, which is a result of both lower water levels in canals and the 50 percent reduction of irrigation water from the Ministry of Agriculture decision in 2021. Other districts have resorted to purchasing water and trucking it in, namely in Ana, Qurna, Shatt Al-Arab.

However, some districts have minimal alternatives for water sources and cannot purchase water for socioeconomic reasons. Households in Baaj and Mosul in Ninewa, as well as Bardarash, Sumel, and Zakho in Dohuk, have been forced to reduce the quantity of water they use for irrigation. Baaj suffered major crop losses in 2021 and 2022 and farmers report lacking the income to buy more water. Furthermore, households in Dohuk have been impacted by displacement, which include both IDPs as well as Syrian refugees, which could be an indication that they lack the socioeconomic standing to purchase additional water.

In terms of assistance needed, households in Hawija, Ramadi, Ana, and Qurna identified rehabilitated irrigation as the central need in order to address access to water and support crop production. In these districts, households have access to the water source and the system, but often they are inefficient and require updated and improved irrigation pathways. However, other districts lack any existing infrastructure, namely in Baaj and Sinjar, where households report the need for drought-tolerant seeds as the most immediate form of assistance to address the impact of the drought. Lastly, other districts' needs related to inability to afford food or rent or send children to school demonstrated the socioeconomic impact of the water crisis as households in Bardarash, Mosul, Sumeil, and Zakho—all areas impacted by both internal displacement and refugee flows—identified food assistance as their primary need.

“Our lives depend on the marshes”

Jassim is from the marshes of Chibayish in Dhi-Qar governorate in southern Iraq. He and his family raise water buffalo and grow their own fruits and vegetable to eat. However, with declining river flows, drought, and climate change, the salination levels of the water has negatively impacted their buffalo and their crops.

“There is not enough clean water for our buffalo. They get sick easily and they get stuck in swamps because of the mud and the lack of water. They keep moving inward in the marshes to find less salty water.”

Jassim stated that it is too expensive to truck in water for the buffalo. In the end, he and other families in his community have been forced to sell their buffalo to make money to feed the rest.

“Life have become so unaffordable. Water levels have decreased more than one meter compared to last year. Our lives depend on the marshes.”

A woman works with her family in the marshes in Chibayish district. Photo: Caroline Zullo/NRC



2. Crop production

As a result of challenges in accessing water for agricultural or irrigation purposes, crop production was reported to decrease in the 2021-2022 harvest. One-quarter (25 percent) of all households surveyed witnessed over 90% of wheat crop failure this season. Some districts in particular witnessed widespread crop failures, such as Baaj (89 percent) and Sinjar (84 percent) in Ninewa governorate, as well as Sumeil (56 percent) in Dohuk governorate. These districts have a high reliance on rainfed crops, particularly wheat and barley, and the high proportion of those that reported crop failure demonstrates the lack of alternatives involving irrigation systems or practices.

Half of all respondents stated that wheat crop production this season was poor or low. This was most significant in Ninewa among 90 percent of all households. Nearly two-thirds of households said that this decline in quantity and quality of production was a result of drought and water scarcity.

In addition to wheat, 42 percent of households surveyed stated that they have seen their production of barley, fruit, and vegetables go down in comparison to the previous cropping season. In Anbar, half of households stated their fruit and vegetable crops had diminished as a result of the lack of water in rivers and canals that they could access on a daily basis. Meanwhile, in Basra, 61 percent stated that their fruit and vegetable crops have failed as a result of the increased salination levels of the water due to dwindling river flows and poor water management.

“How am I supposed to provide for my family?”

Tayseer is a 42-year-old farmer from Hur Al-Sufun village in Kirkuk governorate. He has five children and grows different vegetables on his land and raises livestock. The drought has significantly impacted him and his family, ranging from crop failure to livestock health to the effect on his children.

“I couldn’t plant on all my land due to water scarcity and the lack of electricity. I also have cows on my land and I had to sell one of them to afford digging a new well. Because of these water issues, I’ve planted almost less than half of my land.”

He described how the cost of planting fruits and vegetables has been higher than what he can sell it for, especially corn and cantaloupe. He’s been forced to borrow money for seeds and fertiliser and has not been able to pay off his debts. Further, he can no longer provide for all of the needs of his children due to the costs associated with going to school.

“Before the drought, I would get about 10,000,000 IQD each harvest season from my crops. But this year, I may not even get 2,000,000 IQD because I could only plant on some of my land and will not be able to produce the same amount.... How am I supposed to provide for my family?”

Tayseer stated that if drought conditions continue or worsen, he will have to find another job.

“I will have to leave my land- if I can’t plant it, who is going to do so? Almost ten families have already left and gone to cities because they couldn’t dig wells or afford electricity to pump water for their crops.



Tayseer is a 42-year-old farmer from Kirkuk governorate. Photo: Ahmed Kaka/NRC

2. Incomes

More than half of all respondents produce barley, potatoes, and other crops for household income. Notably, as a result of the impact of drought on crop production, one-quarter of farming households stated that they did not make any profit from selling their wheat crop this year. In Baaj in particular, 88 percent of households said they did not make any money selling their crops, compared to 75 percent in Sinjar and 54 percent in Mosul. Without any income, farmers cannot pay their rent on the land that they typically lease from the government and also are unable to purchase needed inputs, such as seeds or fertilizer, for the following cropping season.

For the households that were able to generate some income, 27 percent stated that the money that they made from their crops did make went towards household expenses, while another 22 percent said that they paid off debts. Nearly half of all households in Bardarash and Hawija reported that they needed to devote their incomes to paying off debts incurred from ongoing crop failures between the current and former harvest seasons, which is expected to continue cyclically as they borrow money to afford the inputs for upcoming seasons.

Nearly one-third of all respondents spent their savings in the last three months due to their lack of incomes. Further, 16 percent reduced expenditures on health and education and 14 percent sold household property. Nearly half of all households in Sinjar and Zakho spent their savings, which signifies setbacks to building resilience among conflict and displacement-affected households. In Ramadi and Mosul, one in five households have been forced to reduce their expenditure on health and education as a result of the drought, which has resulted in children dropping out of school, according to case study interviews. In Bardarash in Dohuk, 28 percent have sold household property, which points to potential displacement as households are forced to move in search of more sustainable livelihoods.

With the quantity of crops decreasing amidst water scarcity challenges, farmers' incomes have not only dwindled, but also the need for seasonal workers has diminished. In Anbar, Basra, and Kirkuk, 80 percent of respondents stated that they did not employ seasonal workers this year due to lack of sufficient crops and incomes, which remains consistent with the same percentage of farmers not hiring temporary wage workers in the previous season.¹⁹ The lack of employment opportunities particularly affects displacement-affected households- namely returnees, IDPs, and Syrian refugees- due to their reliance on seasonal work for household income, which could contribute to more serious negative coping mechanisms related to debt or secondary displacement.

3. Food accessibility

As drought and the broader effects of climate change have impacted incomes across Iraq, farmers and daily laborers have increasingly faced challenges financially accessing food. Thirty-five percent of households surveyed reduced their food intake as a result of the effects of the drought this harvest. While households reported difficulties obtaining food in the last cropping season, various districts described sharp reductions in nutritious and varied food for their families (47 percent in Sumel, 46 percent in Baaj, and 41 percent in Sinjar). These districts have a high reliance on rainfed crops and were thus forced to cut the quantity to quality of their food due to slashed incomes, which also demonstrates the lack of alternatives available in terms of irrigation for crop production.

Further, nearly one-quarter of farming communities received food assistance this year due to challenges in producing crops and supplementing their incomes. Households in Basra described in case study interviews how even the crops that they produced for their own consumption rather than for profit failed and how they were thus forced to rely on external assistance for food for their children. In Dohuk governorate, the majority of households surveyed received food aid, namely 91 percent in Sumel, 82 percent in Zakho, and 75 percent in Bardarash. Alternatively, despite the high needs in Baaj with regards to crop failure, only 1 percent has received food assistance, demonstrating the need for greater humanitarian aid in districts that have not received sufficient support.

Crops have dried due to water scarcity and drought in Sinjar. Photo: Fared Baram/NRC



4. Displacement

A pattern of gradual climate-induced displacement has continued in Iraq as 4 percent of households have been forced to move to other areas due to drought this harvest season.²⁰ Individuals report moving to urban areas or locations with better access to water in search of the means to support themselves and their families. By the end of 2021, IOM recorded that an estimated 20,000 people had been displaced due to water scarcity, high salinity, and poor water quality across 10 of Iraq’s governorates.²¹

A similar percentage of families (3.5 percent) stated they intended to move in the future- with the majority reporting they will move to a city. Interviews demonstrated that families intend to move to Erbil, Karbala, Basra, and Mosul in order to adapt to new livelihoods outside of agriculture. Notably, a higher percentage of IDPs and returnees (8 percent) stated that a family member had already moved as a result of the drought, reaffirming that displacement-affected households have comparatively been forced to migrate in response to the drought.

“I’ve been displaced for a year now”

Ali Khalil is a 54-year-old farmer originally from Hawija district in Kirkuk governorate. He and his wife have four daughters in college and high school that were all born and raised on their farm. Ali Khalil’s crops have been his family’s sole source of income for the last several generations. However, the decreasing water levels and drought have depleted their crops and income, which forced them all to move to Kirkuk city in search of other work.

“When we first realised that there was a drought, we thought that it would be temporary. However, we soon found that our wells had gone dry and it became very hard to get water to our land. Most of us farmers have lost our crops.”

“I stayed in my village for a month hoping things would improve, but the drought conditions became worse and worse. So, I decided it was time to leave the village with my family and come to Kirkuk to do any job. I’ve been displaced for a year now.”

Ali Khalil described how his farm was not close to the canals and his crops failed due to the water shortage and hot temperatures. He lost his only source of income and could not afford to dig a new well or buy fertiliser, pesticides, or drought-tolerant seeds. He was forced to abandon his land in search of other work to support his family.

“All of the villages in Hawija have been affected by drought and low water levels. I know ten families that have also left the village and were displaced to Kirkuk. Some of them work as daily labourers in construction. If drought conditions remain the same, more people will be displaced, and they will keep coming to Kirkuk.”

Ali concluded, “The next generation will face tragic conditions: no jobs, no salaries, no source of income to build their future. Agriculture used to cover all Iraq, but there is no support for farmers anymore.”

Young people continue to witness the impact of drought as interviews demonstrate pressure on children and youth to leave school to support household income and move to cities in search of economic opportunities and jobs. Forty-five percent of people told NRC in 2021 that youth throughout Iraq have been forced to leave home.²²

Ali Khalil is a farmer from Hawija district who has been displaced to Kirkuk city. Photo: Ahmed Kaka/NRC



“We are depending on agriculture to earn an income”

Huda is a 24-year-old university graduate and a farmer who works with her father and brothers on their land in Hawija district. She has witnessed people leaving their land and moving to the city to earn money since they have

“I’ve seen people either move to the city to work and earn money to provide for their families or move to another village working as a labourer on someone else’s land to earn money or have a share of the harvest. Those farmers have lost their crops because their wells have dried up which they depend on for irrigating their land.”

Huda has also heard about drought and water shortages affecting southern governorates where people had to move to the city because they have lost their crops and livestock. “In the south, the conditions that water buffalo live in have deteriorated due to drought because they can only live in water. The marshes dried up; the crops dried up, so people had to migrate to the city”

“If drought conditions continue, agriculture is going to deteriorate because if there is no water how are we supposed to irrigate the land? We are depending on agriculture to earn an income,” says Huda, who is concerned about water shortage and the future of farming in the country.

Huda is a university graduate and farmer from Hawija who relies on agriculture to support herself and her family.

5. Social tensions

In addition, more than one-third of households (38 percent) said there has been an increase in tensions among communities due to water scarcity. Households remarked in interviews that challenges in pumping water due to decreased river and canal levels and illegal drilling of boreholes or water pumping have exacerbated inter-communal tensions in their districts. Importantly, the areas where the highest percentage of households reported these tensions are districts that were significantly impacted by the conflict and continue to host IDPs or witness waves of returns. Fifty-seven percent of households in Hawija, 63 percent in Ramadi, and 55 percent in Mosul described this rise in community tensions. Thus, water security is not only critical in restoring the social capital necessary for economic recovery post-conflict and the achievement of durable solutions, but it also could serve as a catalyst for future unrest or conflict among communities due to competition for resources essential for drinking and agriculture.

Livestock is also affected by the drought and rising temperatures in Baaj, Ninewa. Photo: Fared Baram/NRC



Conclusion

The water and climate crisis in Iraq represents the perfect storm of inter-linked crises- increased temperatures, decreased rainfall, diminished transboundary river flows, and poor water management- without the political or financial resources to adapt to or combat the immediate and long-term repercussions on the most vulnerable communities. The high proportion of Iraqis that rely on agriculture as their sole source of income is indicative of what is to come: not only will access to drinking and irrigation water worsen and crop failure increase, but also the secondary effects of climate change related to incomes and livelihoods will exacerbate existing protection concerns and serve as a threat-multiplier and an increased risk of displacement for farming communities, women, and youth.

As agricultural-based livelihoods become unsustainable in some areas in the future, Iraqis will be forced to resort to moving to cities—areas that are not equipped with the resources, systems, or social safety nets to accommodate individuals in search of economic opportunities and reliable incomes. Institutional reform investing in upgraded water management systems, improved social support, and climate adaptation pathways through financial and technical international support are essential to tackle the broader impacts of climate change and drought that could unhinge the lives and livelihoods of displacement-affected communities.

Water buffalo cool off in the marshes in Basra governorate. Photo: Caroline Zullo/NRC



Recommendations

Government of Iraq (GoI) and the Kurdistan Regional Government (KRG):

- Advocate for existing transboundary water sharing agreements to be adhered to by upstream riparian countries in the region and for the establishment of additional regional basin-wide agreements and enforcement mechanisms with support from the international community.
- Invest in and improve water filtering and treatment systems for areas significantly impacted by high salination levels that have negatively impacted crop growth and livestock, especially in southern governorates.
- Develop local level plans in consultation with smallholder farmers and those most affected by the drought that support climate adaptation practices in the midst of anticipated decreased rainfall and increased temperatures.
- Establish effective and implementable water resource management plans and service delivery through increased financing and improved private sector participation.
- Regulate the use of aquifers to prevent over-exploitation that damages groundwater replenishment rates and water quality.
- Invest in robust data collection on the impact of water scarcity with relation to effects of drought, climate change, and transboundary flows on water quantity and quality, as well as the impact on farming communities.

Donor Governments and International Financial Institutions:

- Invest in rehabilitating irrigation infrastructure and/or providing infrastructure where it does not currently exist among affected smallholder farmers.
- Provide assistance to vulnerable families dealing with negative coping mechanisms resulting from the impact of the drought, which include school dropouts, increased rates of child labour, etc.

- Provide financial support to districts and governorates based on evidence of their primary needs related to drought and water scarcity. For example, invest in alternative water supply options or training in alternative income-generating activities, such as rainwater harvesting techniques for crops and livestock rearing livelihood practices.
- Support the GoI in ensuring transboundary water sharing agreements are adhered to by upstream riparian countries, such as in upholding agreements with Turkey and Iran to ensure healthy water flow into Iraq.
- Support the establishment of a basin-wide regional agreement regarding water sharing quantities through the Euphrates and Tigris rivers.
- Support the GoI and KRG in the establishment of an early warning system for shocks related to climate and water resources to be communicated to vulnerable populations and those most at risk.
- Provide capacity building, guidance and financing to district, governorate, and ministerial water resource departments to increase the ability of government authorities to manage water resources governance in Iraq.
- Provide financial and technical support for GoI and KRG to invest in climate resilience planning to reduce vulnerability to the negative impacts of climate change and to implement the National Adaptation Plan (NAP) at the local level.
- Include displacement considerations in the NAP and other planning tools for climate adaptation and identify necessary support from financial institutions, UN agencies, and other stakeholders to collectively implements such plans.

Farmland dries as a result of drought and rising temperatures in Anbar.
Photo: Fared Baram/NRC



Humanitarian and development partners:

- Implement programming that provides drought tolerant seeds to farmers with wheat and barley crops in order to reduce crop failure or major crop losses. Ensure the proper training and agricultural tools are provided to farmers to adapt to new seeds and water conservation processes.
- Provide immediate support to livestock farmers to buy livestock feed and veterinary supplies until the next season when pasture will be available so that farmers are not forced to sell their livestock and/or prevent them from dying.
- Implement multi-purpose cash assistance to households impacted by the drought, namely for drinking water, food assistance, trucking in water, and cash for farmers to pay their rents and afford agricultural inputs for the upcoming harvest season. In addition, provide cash assistance to the most vulnerable IDPs and returnees, who in many cases rely on daily work in farms that are currently not hiring because of the drought situation, based on clear vulnerability criteria to supplement their lack of income.
- Implement programming that focuses on alternative income-generating activities, such as livestock rearing, in areas where rainfall is anticipated to continue to decline, namely in Sinjar and Baaj.
- Provide support to households that have been displaced due to drought and climate change to urban areas, particularly through cash assistance and connecting to livelihood pathways.
- Implement negotiations training and conflict management practices among communities that witness increased social tensions related to water scarcity.
- Integrate displacement in national DRR policies and strategies with reference to commitments under the Sendai Framework on DRR.

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