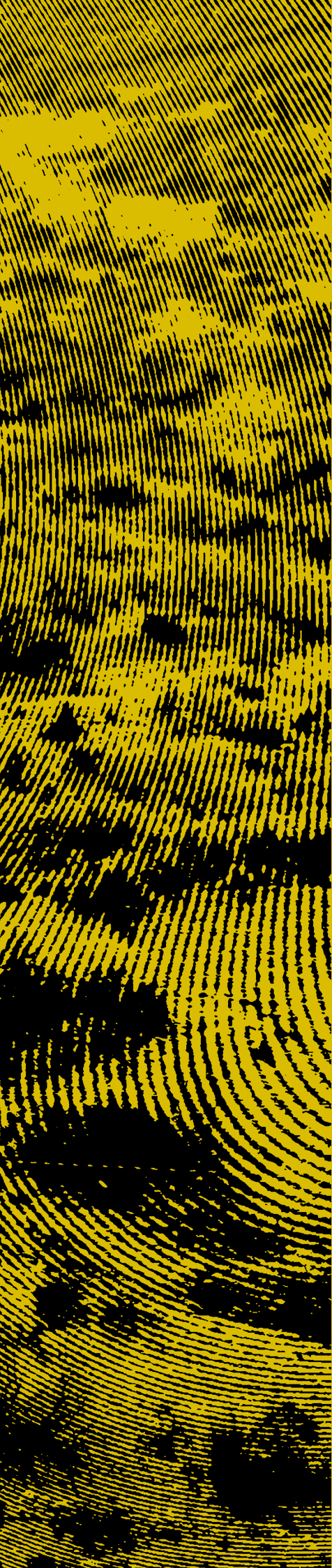




ENVIRONMENTAL JUSTICE IN EARLY RECOVERY AND RECONSTRUCTION EFFORTS IN SYRIA

sy/rbanism

 Robert Bosch
Stiftung

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Disclaimer

The results obtained from the study are the culmination of the researcher's efforts with the greatest possible credibility. The personal views and opinions mentioned in quotes in this research do not necessarily reflect the perspective of Syrbanism or the Robert Bosch Stiftung.

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ACRONYMS

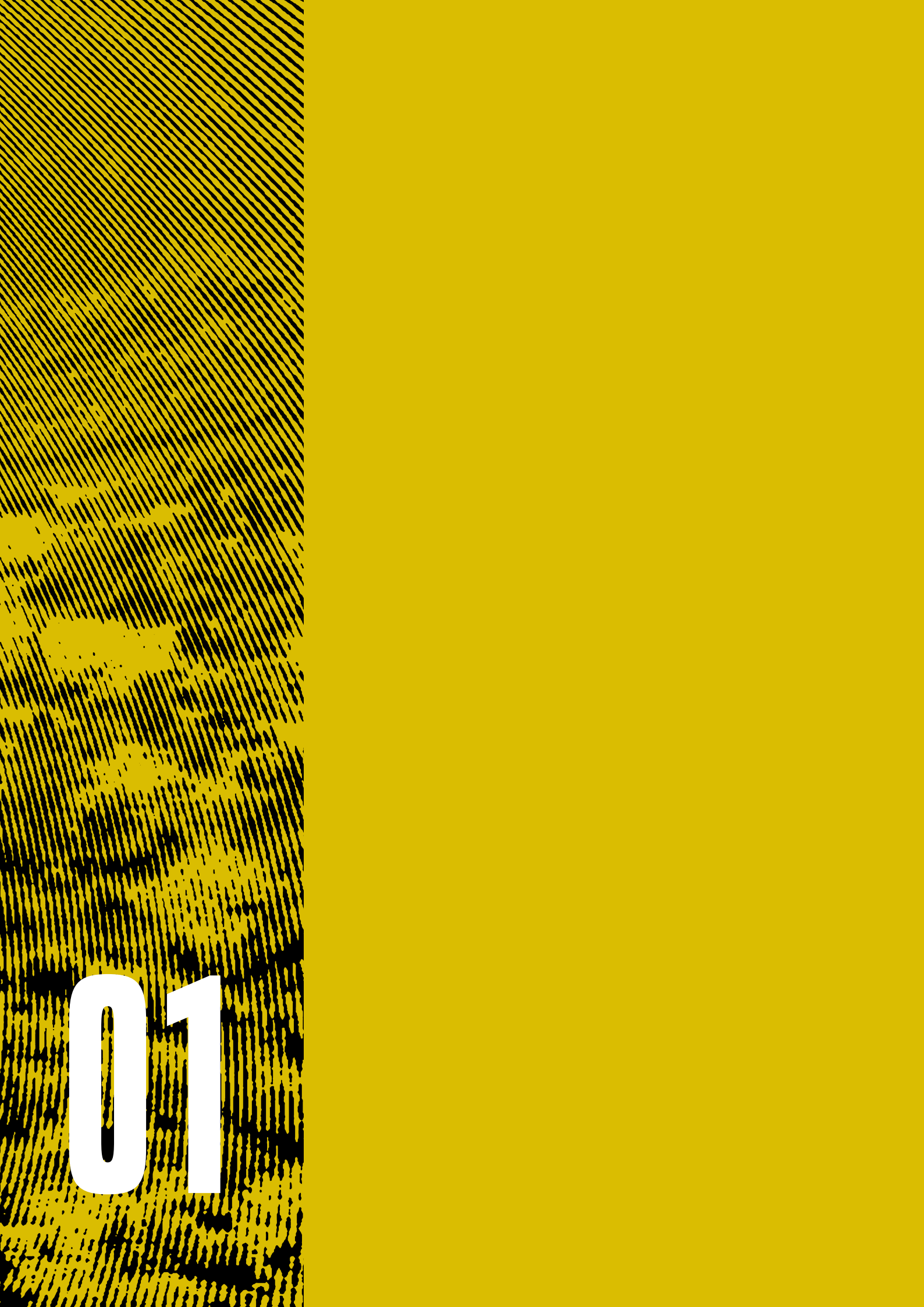
Abbreviation	Full Name
ADRA	Adventist Development & Relief Agency
AKAH	Aga Khan Agency for Habitat
AKF	Aga Khan Foundation
AKHS	Aga Khan for Health Services
CBO	Community Based Organisation
DRC	Danish Refugee Council
FAO	Food and Agriculture Organisation
IMC	International Medical Corps
INGO	International Non-Governmental Organisation
IOM	International Organisation for Migration
NGO	Non-Governmental Organisation
NRC	Norwegian Refugee Council
SARD	Syrian Association for Relief and Development
SDF	Syrian Democratic Forces
SRTF	Syria Recovery Trust Fund
UNDP	United Nations Development Programme
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations International Children's Emergency Fund
UNRWA	United Nations Relief and Works Agency
UNFPA	United Nations Population Fund
WHO	World Health Organisation

LIST OF INTERVIEWEES

Nr.	Name	Field of expertise
1	Wim Zwijnenburg	Policy advisor of disarmament and security works at PAX. Project leader in Humanitarian Disarmament at Arab Reform Initiative (ARI)
2	Zeina Shahla	Journalist and independent researcher with interest in environment
3	Angham Daiyoub	Pre-doctoral researcher at CREAM and a collaborating researcher at the Institute of Environmental Science and Technology (ICTA) of the Universitat Autònoma de Barcelona.
4	Sarine Karajerjian	Program director of the Environmental Politics program at the Arab Reform Initiative (ARI)
5	Salwa Almhedi	Architect and grants management officer at different organisations in Syria
6	Mais Katt	Investigative journalist working on Syria and other countries
7	Jalal Alattar	Agricultural engineer specializing in agricultural scientific research
8	Mudar Ismael	Agricultural engineer working for the Aga Khan Foundation in Syria
9	Marwa Daoudy	Associate professor in international relations and a chair in Arab Studies at Georgetown University
10	Farah Al Asa'ad	Co-Founder of the Syrian Climate Pioneers
11	Sally Resly	Environmental engineer based in Turkey
12	Khalid Sulaiman	Environmental journalist, researcher, and author from Kurdistan in Iraq
13	Riyad Al-Mehdi	Agricultural engineer and a lecturing doctor at the University of Damascus, works with UNDP programs
14	Hanan Sharabi	Agricultural engineer and a lecturing doctor at the University of Damascus, works with UNDP programs

LIST OF EXPERT WORKSHOP'S PARTICIPANTS

Nr.	Name	Field of expertise
1	Angela Saade	Engineer and anthropologist, the co-founder of JIBAL initiative in Lebanon
2	Anmar Saleh	Chief culture officer at the Syrian Climate Pioneers with a background in journalism
3	Faten Dahbar	Architect and officer at UN-Habitat
4	Hakimah Hawash	Environmental engineer works at the Ministry of Local Administration and Environment
5	Hanan Sharabi	Agricultural engineer and a lecturing doctor at the University of Damascus, works with UNDP programs
6	Jalal Al-Attar	Agricultural engineer specializing in agricultural scientific research
7	Khalid Ghazi	Engineer and representative of the Environmental Protection Agency in Aleppo
8	Laila Jarouj	Environmental journalist and representative of Lahlah environmental magazine
9	Mudar Ismael	Agricultural engineer working for the Aga Khan Foundation in Syria
10	Mwaffak Chikhali	Ecologist, general manager of ELARD, and the founder of Flora Syria Online
11	Riyad Al-Mehdi	Agricultural engineer and a lecturing doctor at the University of Damascus, works with UNDP programs
12	Tamara Tamzok	Project Coordinator at UN-Habitat
13	Yara Ward	Project coordinator of JIBAL initiative in Lebanon with a background in management and sociology
14	Zeina Shahla	Journalist and independent researcher with interest in environment
15	Alaa Al-Masri	CEO of Evolveng company
Syrbanism Team		
16	Edwar Hanna	Architect and Urban Planner - Co-founder of Syrbanism
17	Karim Al Muati	Architect and Graphic Designer
18	Nour Harastani	Architect and Urban Planner - Co-founder of Syrbanism
19	Talah Alshami	Architect and Urban Researcher



01

INTRODUCTION

It is undeniable that the new “post-war” phase in Syria underlines critical humanitarian priorities. Urgent humanitarian aid, such as the provision of basic life services including waste management and clean water supply, is the bare minimum requirement for a stable living. The current economic condition in the country is devastating, with more than 90% of the population living below the poverty line and 16.5 million people (70%) in need of aid, while 14 million people are displaced both outside Syria and internally (ReliefWeb, 2025) and (UNHCR, 2025). While the discourse on relief and early recovery often focuses on such pressing needs, environmental measurements and precautions might look less demanding and important. However, these considerations could not be more pivotal during the current paradigm shift the country is undergoing. The war has left the Syrian cities and countryside with great environmental damage. The destruction of water, agriculture, transportation, fuel, and many other aspects has pressured the people to dire security issues. Internally displaced people, women, the elderly, and children are among the weakest groups and most vulnerable to environmental hazards.

Since the launch of the 2024-2028 Early Recovery Strategy for Syria by the UN humanitarian coordinator in 2024, there have been discussions on its terminology, meaning, and application about “circumventing” sanctions against the Assad regime. Hence, the implementation was always hindered to some extent with concerns about the exploitation of such opportunity by the former regime’s institutions to the regime’s benefit. The strategy “*aims to support building long-term resilience and address the ongoing humanitarian crisis in the country.*” (OCHA, The United Nations Resident Coordinator and Humanitarian Coordinator (RC/HC) for Syria, Adam Abdelmoula, launches the Early Recovery Strategy (2024-2028), 2024). With the fall of the Assad regime and the partial lifting of sanctions, the scope of recovery is widened, and the new transitional government is already signing energy and reconstruction contracts.

The little attention paid to environmental concerns in a post-war context in Syria conveys the need to introduce and advocate for just practices that ensure equity in access to natural resources, facilities, and services in a way that preserves the livelihoods of people, especially the most vulnerable. This handbook aims to propose actionable recommendations for practitioners in Syria who work on recovery or reconstruction projects in order to integrate sustainable and environmentally just measures in their plans.

Why is environmental justice important in early recovery processes?

Climate vulnerabilities like drought, water scarcity, water and air pollution and contamination, oil spills, land degradation, and low precipitation rates can force dramatic social and economic changes in exposed areas. Whether or not they were conflict triggers should not lessen the crucial effect they have on communities and livelihoods. The discourse of environmental issues is not separable from social concerns. The instant efforts to bring refugees back are always talked about as the voluntary safe return, but it should also be a safe return in all aspects of life that affect the people's health and preserve their dignity. Therefore, in such dire climatic and environmental situations, centering the environment in the recovery discourses and practices is pivotal to establishing a stable and just ground on which equitable social and economic benefits are distributed, and long-lasting community resilience is built.

What questions does this research/ handbook raise and investigate?

The main question of this research is how to orient (early) recovery/ reconstruction processes in Syria to be environmentally just. This question has many aspects that revolve around the relationship between the recovery projects and the environment, the stakeholders and practitioners contributing to and affected by it, and the understanding of environmental justice itself. In this regard, more questions should be asked, like what the environmental condition in Syria is today, why environmental justice is important and who the most affected groups are, how the decade-long war affected the natural environment, what the causes of environmental inequality are, how early recovery projects might contribute to environmental injustice, and what possible mitigation strategies are. Investigating these questions should give an overview of the current status quo of both environmental conditions and early recovery efforts, clarify the challenges facing the environment, and draft actionable recommendations for sustainable recovery.

Methodology

This handbook is based on, first, a comprehensive desk-review study of international organisations' reports regarding the current environmental situation in Syria. Second, the collected data is refined and validated through non-structured interviews with environmental experts, journalists, activists, and researchers, who reflected their own observations and visions on what priorities stakeholders should tackle, as well as environmental challenges. Engagement with initiatives and organisations that concern environmental justice gave us a wider perspective on how regional activists handle similar cases. Actively engaging in webinars on environmental justice, we gained insights and varied experiences from around the MENA region and were able to better comprehend how injustice occurs even within green projects. Since the aim of this handbook is the engagement with real, active stakeholders, a workshop designed for September 2025 was a core event upon which the handbook was refined and tuned with the help of experts.



02

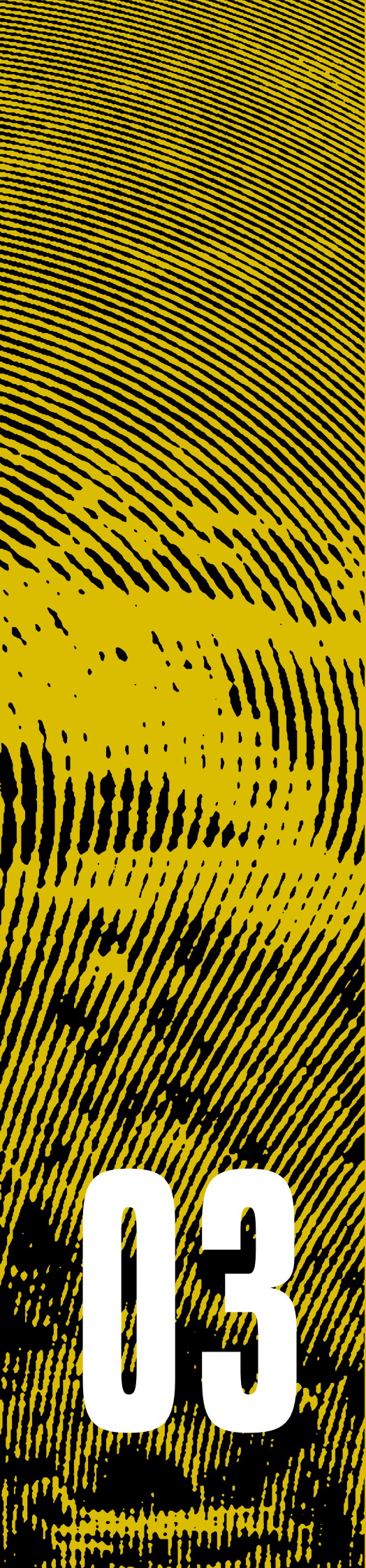
THE STATUS QUO OF NEEDS IN SYRIA

A Very Brief Introduction

In 2024, 16.7 million people were assessed as needing humanitarian assistance across Syria, of whom 5.5 million are displaced. After 12 years of hostilities and persistent economic crisis, people in Syria saw their situation worsen when a series of earthquakes hit northern Syria and Türkiye on 6 and 20 February 2023.

Today, after the fall of the Assad regime, the needs are still high, with 14.5 million people food-insecure, over a third of the hospitals are fully or partially non-functional, and more than 90% of the population lives below the poverty line, and the GDP is down by 46 billion dollars since 2011 (ACAPS, 2025), (OCHA, United Nations Office for the Coordination of Humanitarian Affairs-UNOCHA- Syria Hub, n.d.), and (ReliefWeb, 2025).

The UN Deputy Special Envoy, Najat Rochdi, declared that 414 people, a third of whom were children, have been victims of unexploded ordnance, and many more have been injured since December 2024 at a time when half of the healthcare system's capacity is not fully functioning (United Nations, 2025). Many other essential challenges are facing Syrians today, like the drought, destruction of infrastructure, security breakdown, societal fragmentation, the collapse of the economy, and lack of resources. The construction of a new social contract between the emerging authorities and society is crucial for establishing a fair and inclusive transitional phase, in which vulnerable communities and marginalised groups are not overlooked in the process of rehabilitation and recovery.

A close-up of a fingerprint, showing the intricate ridges and valleys. The image is stylized with a high-contrast, almost graphic quality, featuring wavy lines in shades of yellow and black that follow the contours of the fingerprint. The overall effect is one of precision and detail.

03

CLIMATE AND ENVIRONMENTAL (IN)JUSTICE IN SYRIA

Climatic And Environmental Characteristics And Challenges

Climate overview and temperature: Syria is geographically diverse; hence, it has variable climatic conditions. It extends from the coastal Mediterranean zone in the west toward an eastern dry and desert zone. More detailed classifications divide the country into arid, semi-arid, and temperate zones (Climate Center, 2024). The average temperatures in Syria ranged from 18.07 to 18.94 degrees during the period from 1995 to 2014 (IFRC, n.d.). Syria's dominant semi-arid environment is influenced by the precipitation levels, where drought has long been a recurrent characteristic (Doun, Darwish, Patel, Mhawish, & Sharba, 2025). Figure 1 shows the Climate Classification map of Syria 1980-2016, and Figure 3 shows the Agricultural Stabilization Zones in Syria.

Water resources: Precipitation contributes to the provision of 46 billion cubic meters (BCM) of water in Syria, while surface water averages at 10 BCM and renewable groundwater at about 6 BCM. Figure 4 shows the water basins in Syria that form around the flow of the country's main rivers and around the proximity to the sea, namely the Euphrates, the Orontes, Al-Khabour and Dijlah (Tigris), the Coastal, Barada and Al-Aawaj, and Al-Yarmouk basins (Fanack Water, 2025) in addition to the Badiah (the Syrian desert). Before the 2006-2007 drought, these basins constituted 46%, 16%, 14%, 13%, 6%, 3%, and 2% of the total water volumes, respectively (Ülker, Erguven, & Gazioglu, 2018). The groundwater inflow is estimated at 1.33 cubic kilometres per year, 90% of which flows from Turkey and the rest from Lebanon (Fanack Water, 2025).

Land cover (Figure 5): As Syria extends from coastal to desert land zones and contains variable geographical topographies and running rivers, it hosts a range of highly fertile and less fertile lands. According to official statistics in 2015, the land use in Syria is divided into six categories: 1. Forests, 2. Meadows and pastures, 3. Rocky and sandy lands, 4. Rivers and lakes, 5. Buildings and facilities, and 6. Arable lands (MoLAE, 2020).

Current environmental challenges: The decline of precipitation levels in Syria is becoming increasingly frequent with natural and human-induced climate change effects increasing around the eastern Mediterranean region (Paradigm MENA, 2025). At the same time, temperatures in Syria are expected to rise by 0.3 to 0.9 degrees each decade. As a result, the country's climate has been susceptible to recurrent drought waves over the last 100 years. The drought of 2006-2007 was the harshest of all (UN-Habitat, Pursuit of Environmental Sustainability and Climate Resilience through Urban Recovery in Syria, 2022). One remarkable aftermath of the 2006-2007 drought was the loss of 144 cubic km from the Tigris and Euphrates basins, which was exacerbated by excessive surface water usage and groundwater pumping, an amount comparable to the volume of the Dead Sea (Doun, Darwish, Patel, Mhawish, & Sharba, 2025). The recent drought in 2021 has affected the availability of water and the population's access to it, especially in the northeastern governorates, namely Aleppo, Deir-ez-Zor, Al-Hasakah, and Al-Raqqah, as well as Al-Swiedaa governorate in the south (Relief Web, Syria: Drought 2021-2025, 2025).

Among the top nine countries threatened by natural disasters, Syria stands out as the third most at risk of drought. The low rainfall levels and drought have consequences on agricultural production that might affect around 5 million people who depend on crops for their livelihoods, among whom are 1.3 million around the Euphrates River (OCHA, Syrian Arab Republic - Euphrates Water Crisis & Drought Outlook, 2021)

Water shortages, rising temperatures, low precipitation, and drought have been stimuli for land-use change over the years. Syria's forest cover dropped from 30% in the 20th century to less than 3% in 2007 (UN-Habitat, Pursuit of Environmental Sustainability and Climate Resilience through Urban Recovery in Syria, 2022). At the time of writing this research, this ratio is still threatened by the ongoing wildfires.

The environmental damage not only affects the environment itself but also impacts individuals, communities, and the national economy. Drought and water scarcity bring environmental risks, followed by societal and economic change, like high levels of evaporation, desertification, hygiene difficulties, health issues, agricultural production degradation, farmers losing their livelihoods, migration, pressure on resources, and further chained societal and economic problems.

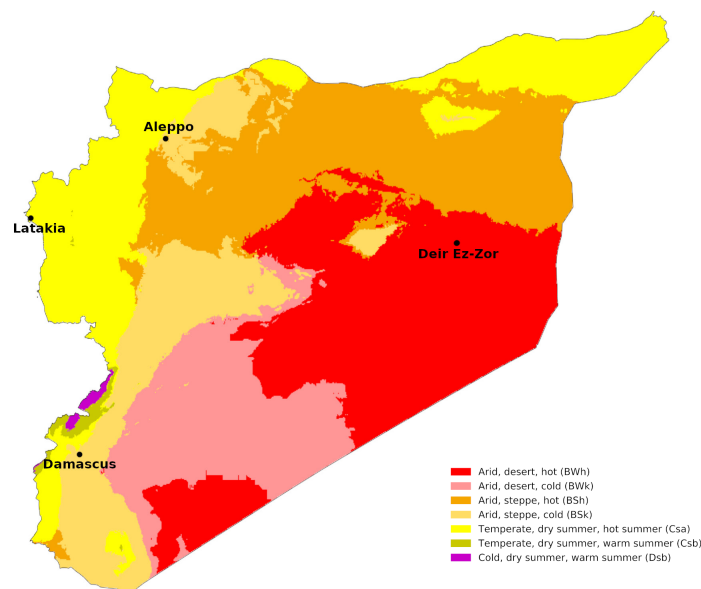


Figure 1 Climate Classification map of Syria 1980-2016 |
source: "Present and future Köppen-Geiger climate
classification maps at 1-km resolution". *Nature Scientific Data*.
DOI:10.1038/sdata.2018.214

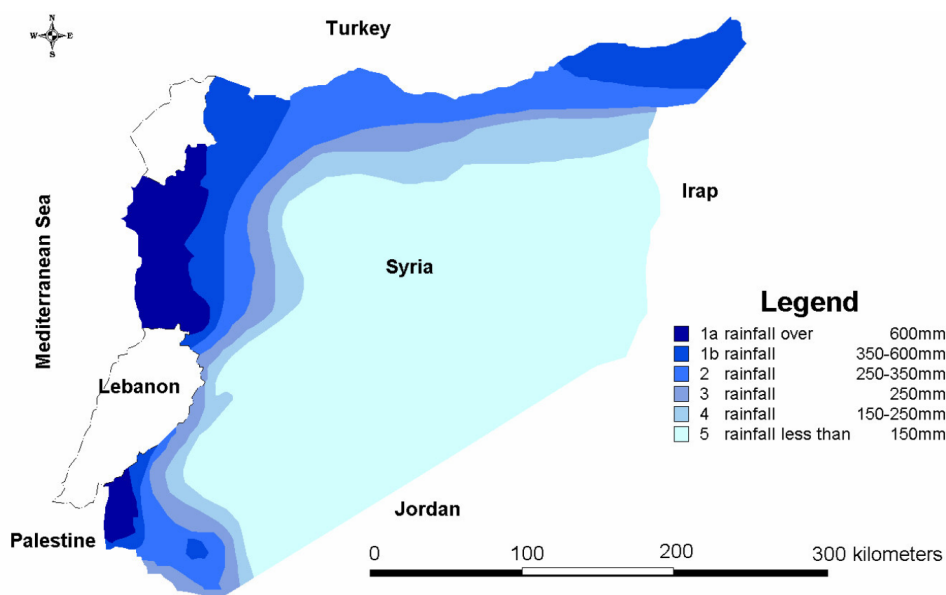


Figure 2 Rainfall stabilization: GIS and remote sensing
applications for rainwater harvesting in the Syrian desert
(al-badia) 2008.

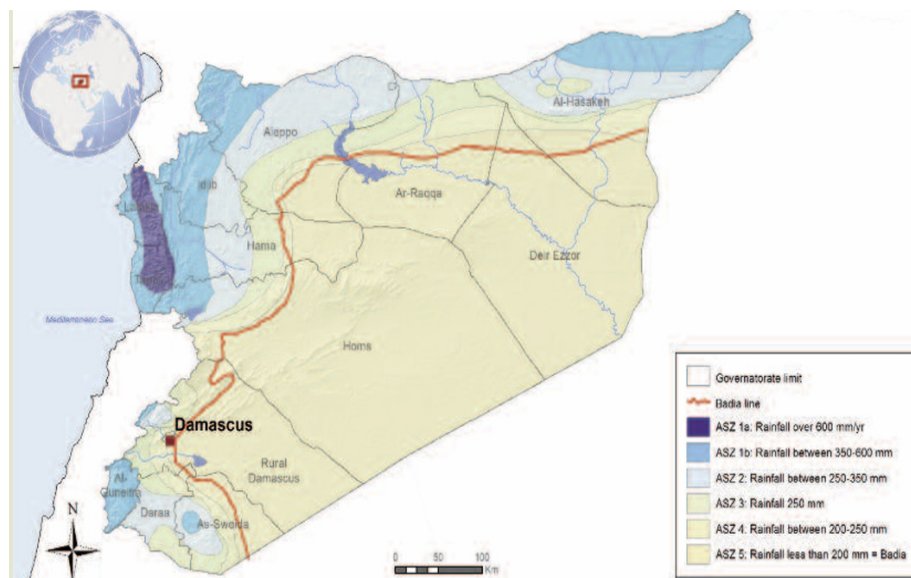


Figure 3 Agricultural settlement zones (ASZs) 2006 |
Resource 2012: IFAD - Syrian Arab Republic: Thematic
study on participatory rangeland management in the Badia
- Badia Rangelands Development Project

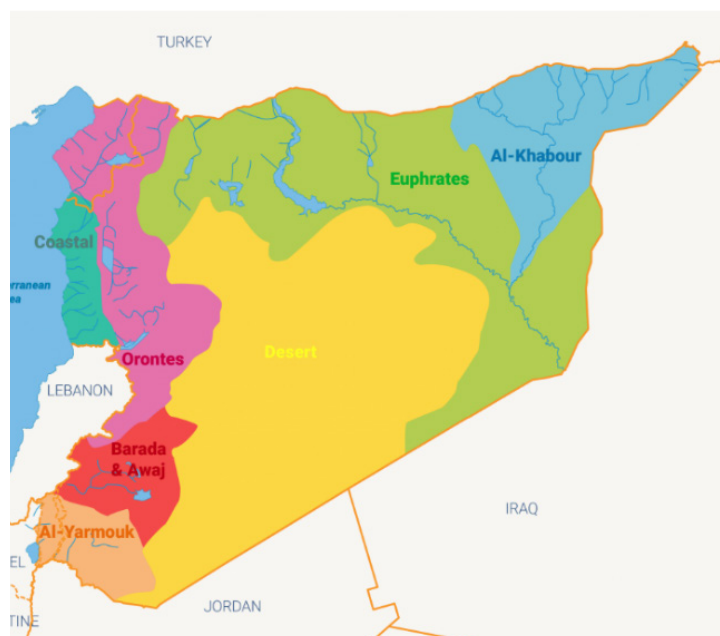


Figure 4 Syria's Water Basins | Source: Fanack Water: Water
Resources in Syria - Fanack Water

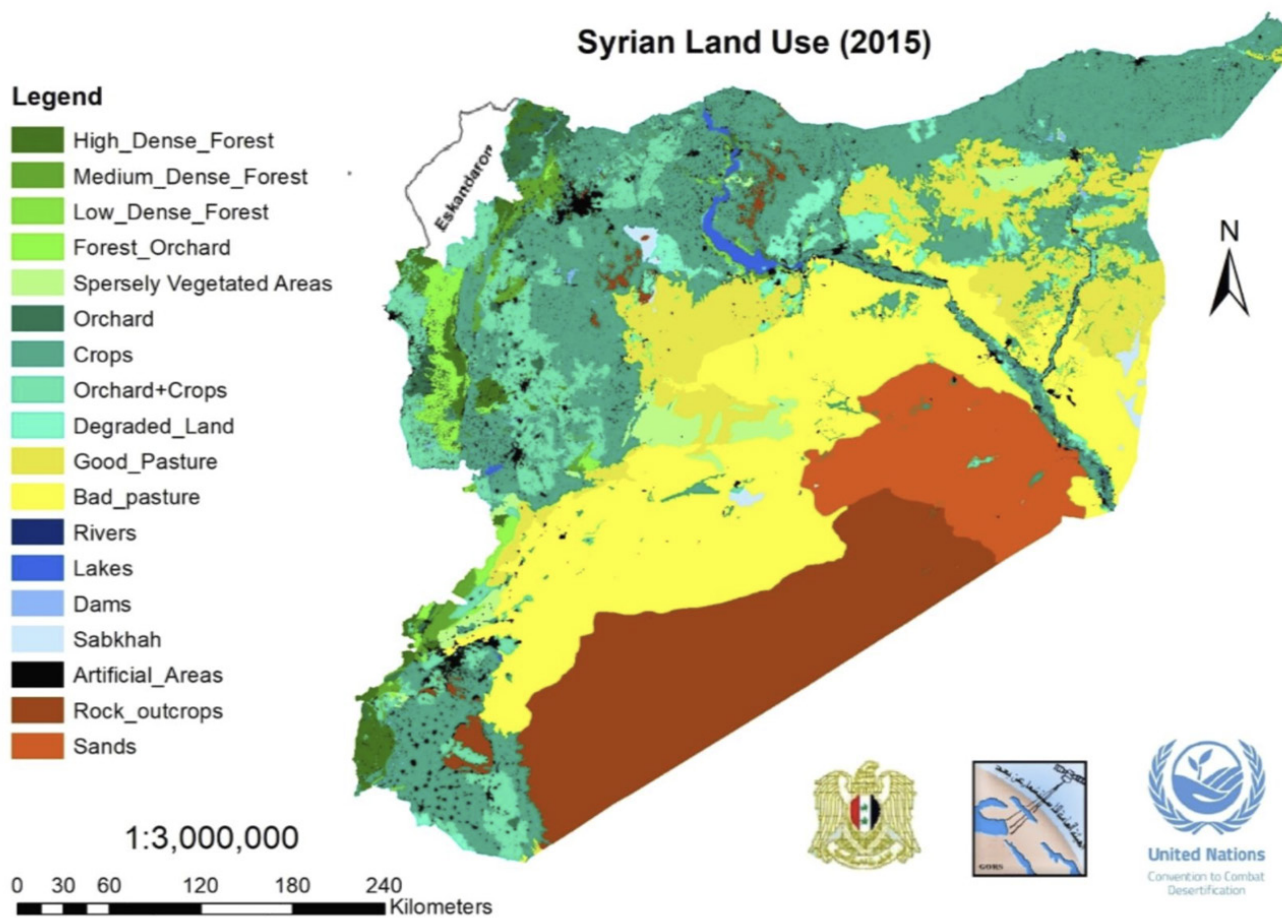


Figure 5 Land Use Map of Syria. Source: Land Degradation Neutrality Target Setting Programme Final Country Report, 2020

War Effects On The Environment

One-half of Syria's Gross Domestic Product (GDP) derives from the petroleum and agriculture sectors. Accounting for 18.5 percent of GDP, agriculture is extremely important to Syria's economy. The impacts of climate change could, therefore, adversely affect the economy of Syria (UNDP, Climate change is a matter of justice – here's why, 2023). It is also worth mentioning that the Syrian GDP dropped from 67 billion dollars in 2011 to 21 billion dollars in 2024, recording its lowest in 2021 at only 9 billion dollars (World Bank, 2025) and (Trading Economics, n.d.).

The environment in Syria has been significantly impacted not only by climate change but also by the decade-long war. Both natural factors and human-induced practices have damaged the quantity and/or quality of key natural resources such as water and soil, as well as air, through contamination and pollution. These factors and related damaging practices are not isolated in their impact; rather, they contribute to a chain of environmental harm and harmful responses that destabilize the livelihoods of people.

Air quality in Syria was not at its best before the conflict. In 2010, 69% of the population was exposed to particulate matter (PM_{2.5}), and the percentage increased to 72% in 2015. Particulate matter can affect agricultural production, particularly in wheat and oilseed crops. The small area of forests in Syria (less than 3%) was also prone to damage from fires, logging, and charcoal production, and the country had limited capacity to manage the losses (Gaafar, 2021). Agriculture and crops were direct victims of ground fighting, fires, and heavy shelling. Thousands of olive oil trees were lost in rural areas of governorates such as Idlib and Aleppo. To the east, where oil fields exist and oil is refined unprofessionally, the soil was damaged, and the air carried combustion particles that land on the soil or are inhaled by residents.

The large scale of conflict areas left enormous amounts of debris and waste all over the country. Waste management systems were almost completely dysfunctional, and areas where fighting finally went silent have a large probability of the existence of explosive remnants awaiting a mistaken footstep or arm to shout the final scream loud.

The following is a survey of what the research found to be important threats and factors contributing to the destruction of the environment in Syria. Each point highlights some of the most dangerous consequences and gives examples of where such hazards are found.

Enormous Quantity Of Debris And Rubble

The war in Syria has left around 3 million residences heavily damaged or destroyed (SNHR, Satellite Imagery Proves that Russian Attacks Have Exterminated Entire Eastern Ghouta Towns, 2018). Destruction by munitions crumbles building materials into small particles and dust that spread to vast areas and cover the land. The result is a massive amount of pulverized building materials (PBMs) that include different dangerous substances, like cement, silica, asbestos, and different kinds of metals, which can cause serious health problems (PAX, 2015), not to mention the explosive remnants of war buried under rubble and within populated areas. Hazardous materials vary depending on the use of the destroyed building. Debris can include oil, lubricants, and solvents from industrial sites; heavy metals from buildings; corpses; pesticides; and so on (UNEP, 2020). While measuring the size of destruction of buildings could be estimated or surveyed, the scale of the environmental, as well as social, impact requires longer studies and in-depth field work. Further steps in recycling debris should be taken with cautious measures like choosing the site and documenting the process to minimize environmental impacts like noise, dust, odour, storm water, and contamination (ibid).



Figure 6 Aerial view of Eastern Damascus, Al-Qaboun. Source: Mulham Team, 2025.

Enormous Quantity Of Unmanaged Waste

Waste includes different types of junk objects, materials, and substances, like wastewater produced after using clean water for domestic or industrial purposes; solid waste from different livelihood or production activities; and chemical and hazardous waste, like batteries and medical waste. Noise and urbanisation activities are also sources of pollution (European Commission, 2009). The grand destruction in Syria targeted all kinds of facilities, including residential, industrial, educational, and medical buildings. It has also destroyed the waste management systems across almost the entire country. It is estimated that waste production has doubled (850 tons per day) compared to what it was before the war (Gaafar, 2021). Waste collection initiatives, whether run by organisations or individuals, had a very limited capacity to handle the different types of waste that could be mixed with debris leftovers. Not to mention that waste management in Syria used to depend on basic collecting services and dumps, and open landfills for disposal. Not only does the unmanaged waste accumulation around cities and towns cause environmental harms to the air, water, and soil, and a direct threat to the general human health, it also causes indirect threats related to the emergence of waste pickers and informal recyclers (PAX, 2015) who risk their own health and their communities' health through uncontrolled second production. Where people have lost their jobs and means to livelihood, especially around camps where displaced people had to establish new lives, garbage recycling has become a source of income for some (earning around 10 USD per day), risking their health with no protection measures or insurance coverage. This is one example of dangerous informal activity playing a part in recycling plastic or metal that is bought by traders and resold to factories that reproduce it in usable forms, like rugs in Idleb (Kurdistan24, 2023). This phenomenon is also widespread in refugee camps in Jordan, like in Al-Zaatari, where refugees join this informal picking activity since they struggle to obtain a legal working permit and are being exposed to dangerous, sharp objects without any protection measures (Mauvais, 2020). Informal garbage picking is an indicator of a deep need for jobs and a lack of regulation over waste management.

Another example could be found in Wadi Al-Hadda solid waste treatment plant in Tartous, where the plant reached its maximum capacity (400-450 tonnes per day) in 2017 and yet continues to receive more garbage, endangering the groundwater quality in a governorate where two-thirds of its population works in agriculture. The pressure on this landfill is exacerbated by the migration waves to Tartous, which amount to around 20% of its estimated population. Likewise, in Lattakia, the landfill of Al-Bassa has been a problematic environmental issue after exceeding its capacity and becoming an open hotspot of insects and pollution, only to be closed by the former government, following local demands, and relocated to a different location near Al-Haffa region in the governorate (Daiyoub, Muhamad, & Singla, Environmental Injustice in Syria How the War is Disproportionately Affecting Vulnerable Communities, 2024). This incident was validated by Mudar Ismael, an activist and environmental specialist: *"Wadi Al-Hadda landfill, next to the villages of Yahmour and Al-Fotasiya, collects most of Tartous' waste. It reached its maximum capacity in 2017. Residents of the upscale areas, who had regular garbage collection, felt no problem, but the entire burden was on the communities living around the landfill basin. Toxic leachate seeps into the soil and groundwater, and in winter, greyish water comes out from the wells. Therefore, all the artesian wells in the basin area close to the landfill within a 10 km radius have been contaminated that water from the 100-meter-deep wells smelled foul."*

It appears that also the capital suffers from waste mismanagement. Dr. Riyad Al-Mahdi, an agricultural engineer, talked about the mismanagement of solid and medical waste: *"Three years ago, we were on a visit to Al-Bayrouni Hospital of Cancer Diseases. A quantity of the hospital's waste was used to irrigate farms in Harasta and Duma, where vegetables and other crops are produced."*

In times of war, garbage and cleaning facilities become the least priority, while residents pay the price. When each treatment plant, according to the latest discussion, is responsible for the treatment of hundreds of tonnes per day during peace days, it is highly questionable how much waste is produced and accumulated during war times, exacerbated by high displacement waves and lack of governance. Measuring environmental effects becomes nearly impossible, and vulnerable communities (the poorer, the older, and the most marginalized) become the easiest victims of hazardous consequences of air, water, and land contamination, and diseases spread.

While building or assisting in providing landfill or dumping locations, it is important to raise questions on where landfills' locations are chosen, whether they provide precautions to the surrounding communities, how they are being maintained, what capacities do they have, whether they exclude areas from services, and whether their treatment methods are sustainable and ensure doing no further harm to the natural environment.



Figure 7 Waste | Source: Syria Civil Defence volunteers haul garbage from camps and residential areas in northwestern Syria – May 1, 2024 (Syria Civil Defence).



Figure 8 Waste | Source: AFP

Enormous Amounts Of Unexploded Munition And Mines

The combatant parties in Syria took shelter everywhere in the country. Military booby-trapping did not exclude residential complexes or agricultural lands. The past decade witnessed over 500,000 incidents of unexploded ordnance (UXO), while the past 6 months alone (following the fall of Assad) resulted in over 1000 incidents, of which a bit less than half the people were killed (HALO, n.d.) (UNICEF, *Where War Lingers Long after the Fighting Stops: Children in a Landscape of Death and Danger*, 2025). The White Helmets are leading significant efforts to dismantle mines across Syria; however, their capacity remains small compared to the estimated huge number (300,000) and the unknown locations. Efforts to clear lands of ordnance are also largely taken by local groups and individuals, whether trained or not. With the slow increase in returnees' numbers, people are worried about an unsafe return threatened by mines, especially in agricultural soils. Rockets and cluster munitions found are being reported by individuals who call for help from organisations, like HALO and the White Helmets. Cluster munitions are particularly dangerous as they explode into smaller particles and threaten lives at a distance. Such organisations are leading awareness campaigns and instructions led by their local team members (Shahla, *Mines: The Deadly Legacy of Syria's War*, 2025).

Unexploded war ordnance means a prolonged return; a prolonged return means more vulnerability and instability; and more of these mean a more fragile community and lesser care of the lands. The mismanagement and arbitrary return can cost the Syrians more lives and, therefore, more needy families.

Unexploded ordnance not only pose a direct threat to the lives of residents and returnees; less widely acknowledged harms include the contamination of the land where they are disposed of. *"The unexploded munitions and mines are being disposed of in the soil itself. There should be questions about the contaminating effects this process has. At the same time, there seems to be no other solution to cluster munitions, for example. They are detonated in places where they are found. This is the international approach to disposing of such munitions. The UXO is surrounded by sandbags and then detonated. They absolutely know the hazards, but it seems the only way,"* said Zeina Shahla, an environmental journalist, in an interview (Shahla, *Environmental journalist*, 2025).



Figure 9 Image of cluster ammunition remnants fired by government warplanes on Al Ma'adi neighbourhood in Aleppo city, 14 July 2016. Source: SNHR.

Direct Damage And Contamination To Agricultural Lands, Fertile Lands, And Crops

In contested areas, especially in the north near Idlib, combatant forces, like the US, Russia, opposition fighters, the now-former regime forces, and other military groups, often fought with disregard for location sensitivity; both rural and urban areas were targeted. The period between 2017 and 2019 witnessed the harshest targeting of agricultural lands. At least 358 incidents of targeting were carried out by airstrikes or ground explosives, and over 203 farmers were killed (Insecurity Insight, The persisting challenges of Syrian Agriculture from air-delivered explosive weapons and ground-based explosives, 2023). Until 2022, the number of incidents against agricultural lands reached almost 700. Just less than half of the incidents (45%) were caused by shelling and air strikes, another 40% by mines and unexploded ordnance, and 14% by arson. Those were mostly occurring in Idlib and Aleppo governorate (Insecurity Insight, The Links between Conflict and Hunger in Syria - Conflict, Hunger and Aid Access, 2023). The governorates with the most productive agricultural lands, like Al-Hasakeh, Hama, and the Aleppo countryside, and parts of Daraa and Al-Suweida, were the most affected by the conflict fires and targeting (Insecurity Insight, The recurring Risks of Crop Destruction in Syria from Conflict-Ignited Fires During the Summer Months, 2023).

Military operations used nature to accomplish their targets through tree cutting to clear an area, trenching, land expropriation, cutting water, and the like. Since 2015, Russia has brought different military aircraft and ground combatants to Syria to experiment and to advertise its power while allegedly attacking ISIL and targeting regions where the armed opposition took hold. Large fertile agricultural lands (100,000 ha) were lost in such areas and also poisoned as a result of the use of internationally prohibited chemicals. In Afrin, in the northern countryside of Aleppo Governorate, the loss of tree cover, especially olive trees, is caused not only by military attacks, but also by unregulated logging for sale or for firewood, with some of the wood even exported to Turkey.¹ In Hama's countryside, some areas were reported to have turned into rocky land after being exploited by militias (also Turkish-backed) who cut down the trees (Haj Youssef, Katt, & Albadry, 2022).

Syria's main agricultural and industrial crops were severely damaged in the period from 2010 to 2021; the war contributed to this damage starting in 2014. There is an overall production decline of 43% in the main crops. While the areas of productive trees increased by 5% during this period, the production was 30% lower. The interest in planted crops changed with the division of areas under different controlling forces. This resulted in the decline of cotton and sugar beet in favour of corn and tobacco, for example (Al-Terkawi & Al-Mugharbel, 2024). With 70% of Syria's crop production dependent on rainfall, the sector struggles to irrigate the lands with difficulties in water provision due to the damage to infrastructure and the rise in fuel prices. Syria's production of wheat fell from 4 million tonnes before 2011 to 1 million tonnes in 2022. Similarly, barley production has also fallen to unprecedented levels, forcing herders to sell their livestock (El-Dahan, 2022).

¹ غابات عفرين تتحول إلى صحراء جرداء وجهات نافذة تبني ثروات على حساب قوت الناس | وكالة ستيب نيوز: More to it could be found on:



Figure 10 Remnants of a 9M79M Tochka ballistic missile used to deliver submunitions in an attack in Sarmin, Idlib governorate. © 2020 Syria Civil Defense. Source: Human Rights Watch.

Damage to the oil refineries and oil spills

Oil and gas production was one of Syria's natural, lucrative resources, contributing to nearly a quarter of the country's revenues (U.S. Energy Information Administration, 2015). The oil production peaked in 1996 (600,000 barrels per day) and started to gradually decline to reach around 400,000 barrels per day in 2010. While consumption marked lower than production in all years preceding 2011, this ratio flipped beginning in 2012 (Worldometer, 2016).

The war in Syria flared in almost all governorates, and Deir ez-Zor, Al-Raqqa, and Al-Hasakeh suffered the blessing and the "curse" of oil fields when this natural resource was weaponised to force power and control by the contested forces, including ISIS, the SDF, and the former regime. Currently, 100,000 barrels per day are being produced in the areas under the control of the SDF compared to only 10,000 barrels per day in regions under the new government (Ibrahim, Karazi, Al-Mahmoud, & Al-Khouja, 2025). At the time of writing this research, negotiations are expected to be held between the new government and the SDF.

While forces were vying to gain control over the oil fields, since the latter form a strategic economic resource, the civil population often bore the largest burden of the fighting consequences. People were threatened and forced to seek refuge or alternative forms of income. Either as a coping mechanism or as a financial chance, the individual primitive refining of oil found a way into residents' lives, as they sold the refined oil or smuggled it to the neighbouring areas. The US and Russian forces targeted thousands of oil infrastructure and facilities while fighting ISIS, especially in Al-Raqqa governorate. Since 2011, over 5,700 makeshift oil refinery spots have emerged in Deir ez-Zor (Zwijnenburg, Scorched earth and charred lives - Human health and environmental risks of civilian-operated makeshift oil refineries in Syria, 2016). Al-Furat Petroleum Company (AFPC) reported² the attacks on its fields in 2013, and satellite images of its four fields, Al-Omar, Al-Tayyem, Al-Tanak, and Al-Ward, show great destruction of the facilities.

Sulphur dioxide, nitrogen dioxide, polycyclic aromatic hydrocarbons, and heavy metals are all substances released into the air by burning oil. These substances are harmful to the respiratory system, as some are carcinogenic, and can easily cover vast areas to finally land in soils, harming the environment. Similarly, oil spills pollute the soil and surface and groundwater, leading to serious health problems related to the liver, kidneys, and cancer (Zwijnenburg & Postma, Living under a black sky, 2016). People who find themselves working in a primitive refinery often have no other choice but to make a living. They join this industry with no previous knowledge and no protective equipment, and they are prone to burns, skin cancer, and explosions in exchange for 15 USD per day (Bader, 2015). While these stories are largely found in Deir ez-Zor, the oil capital of Syria, similar ones are also found in Al-Hasakeh, where herders and farmers are losing their livestock due to polluted rivers, soil, and air (Souleiman, 2020). Photos of such pollution can be seen around open refineries or polluted tributaries.

Wim Zwijnenburg, during an interview (2025), has argued that the political powers who have caused environmental damages to have the duty to restore and clean after the missions are done. He also stressed that it is part of a larger discussion on responsibilities and accountability, not merely about blaming parties: *"At the moment, the Turkish strikes on oil facilities in the northeast and energy facilities is leading to pollution. The same can be said for the US-led coalition strikes on oil fields. Even though we understand it was done to prevent ISIS from making income. And that could be a legitimate reason, but I would also then argue if you destroy, cause environmental damage, then you also have to provide cleanup and remediation efforts."* Zwijnenburg expects that the responsibility of dealing with the hazardous aftermath of the war on the environment will be thrown on the shoulders of the community, since no party will undertake it. In his words, environmental justice or injustice are more of *"legal concepts outside of wartime situations"*, and when moving to the next phases *"it's businesses or governments' [roles], governments making decisions that affect communities, land, or water resources that people are dependent on. And people have no right in making or have no say in decisions, but they are affected by decisions the governments are making."*

² This data was confirmed through a personal contact who showed a non-published video prepared by the company.

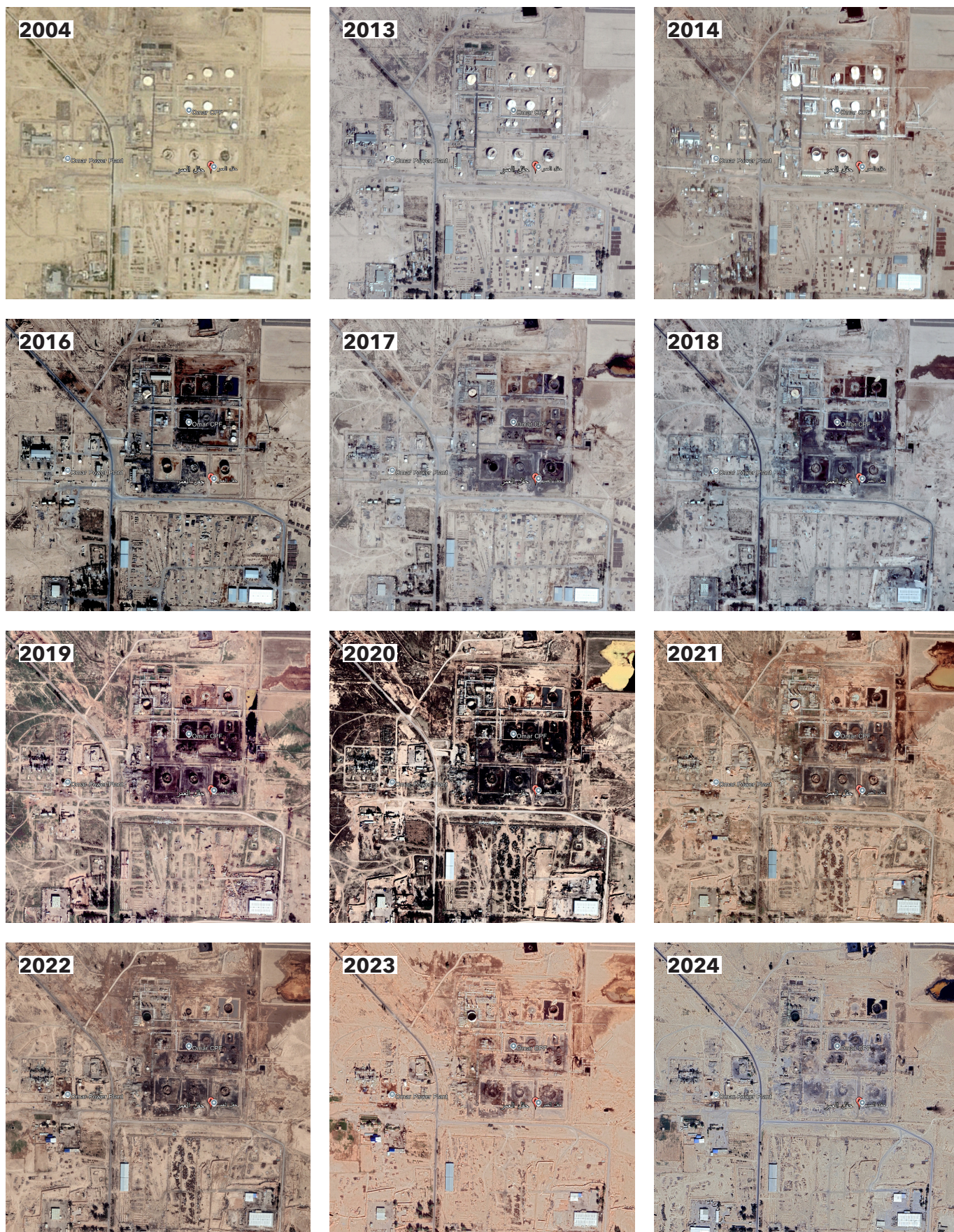


Figure 11 Sequence of targeting Al-Omar oil plant.



Figure 12 The Black Sheep. | Source: AFPC



Figure 13 Children working at an oil burner used for makeshift oil refining in Qarayah, northeast Syria. November 30, 2018. Copyright Wim Zwijnenburg | Found at: *In Syria, the Environmental Toll of War Beginning to Emerge*

Damage to water resources and distribution systems, along with dire drought

This May, the Water Association in Damascus sounded the alarm over water availability and supply to the capital, stating that the country is experiencing its worst drought in 70 years. The city's main water source, Al-Fijeh spring, has reached a record low due to the country's driest winter on record. The Association called for rationalising water consumption and issued a water-provision plan (Syria TV, Water Association: Damascus faces the worst drought in 70 years, and warnings of harsh summer [Translated from Arabic: دمشق تواجه أسوأ موجة جفاف منذ 70 عاماً وتحذيرات من صيف قاسٍ], 2025). Before the war, almost the entire population in Syria had access to safe water, although this varied from cities to the countryside (98% in cities compared to 92% in the countryside), but by late 2021, only 50% of water infrastructure worked properly (Al-Sarraj, 2022). Climate change affected the main water resources in the country, and low capacity of managing water networks enlarged the scale of the problem within a fragmented political control situation, causing evaporation of rivers' water, like the Euphrates, the lowering of dams' water levels, like Tishreen, Al-Tabqa (Al-Furat), and Al-Baath, and the inefficiency of piped water. Moreover, Cholera broke out in the northern governorates in 2022 due to water contamination (Orto, 2025).

Water in Syria was already facing challenges before the outbreak of war. Policies taken by the former governments, like the agrarian reform and the focus on strategic water-consuming crops (cotton and wheat) without a rational plan, put the already-climatically-threatened water resources under great pressure, especially groundwater. Yet, during the war, the warring adversaries used water as a strategic tool to gain control. There has been a remarkable contest over water and water-generated electricity that lasted over 2 years between Turkey on the one side and the SDF and former government forces, namely the Alouk water station that provided water to Al-Hasakeh governorate, and the Tishreen electricity power plant. Both sides exchanged accusations of cutting water or not providing enough electricity, while attacks on water pipelines occurred. The resulting consequences were borne by the residents and farmers who had to find alternatives to potable water, either by buying expensive tanked water or digging deep in the soil to pump groundwater (Al-Sarraj, 2022). The Alouk water station was established in 2010 and is a reservoir of 25,000 cubic meters of water piped to the surrounding areas and villages, providing a population of 800,000 with drinking water (STJ, 2020). It was reported by (REACH, 2023) that water in Northeast Syria was provided by several methods, including normal water network, boreholes, water trucking, bottles, rainwater storage, or direct surface water. Where people lacked access to piped water, it was substituted by trucking, like in areas previously dependent on the Alouk water pipes or in IDP camps, provided by public, private, or NGOs. There are concerns about the quality of piped water as well as trucked water, especially after the outbreak of Cholera in 2022.

To the south of Syria, especially in Daraa Governorate, Muzayrib lake provided many towns and villages and 18% of As-Suwayda governorate with water. The lake dried up completely in 2022, along with many springs in the region; Oyoun Al-Sakhnah and Zayzoun, to name a few (Eid & Ibrahim, 2024). Other areas, such as Tseel and Tall Shihab, have also been reported to face a worsening water situation due to the increased number of wells dug near drinking water springs, leading to a general decline in available groundwater. The dire situation affecting the city of Daraa and its surroundings has intensified the need for water trucking, while the Water Supply and Sewerage Authority in Daraa has called for the rationalization of water consumption and the closure of informal wells. At the same time, it has pledged to work on investment plans and explore alternative solutions (Al-Hasheesh, 2025). The trucked water does not undergo any sterilization process like the water provided by the governmental wells that have an installed sterilizing machine along with the pumper. Moreover, the price of trucked water is seemingly high. One-barrel (200 L) costs, on average, 3000 Syrian pounds, while the average family could consume 25 barrels in 10 days (Muhammad, 2023). In the light of drought and insecurity issues under the previous regime, migration was the choice of a vast percentage of the youth of Daraa to seek better livelihood opportunities (Eid & Ibrahim, 2024).



Figure 14 A boy dives into a crater filled with water in Aleppo's al-Shaar neighborhood. The crater was made by a barrel bomb dropped by regime forces. July 10, 2014. Photo by Hosam Katan

Wildfires And Deforestation:

Between 2010 and 2019, Syria lost an estimated 19.3% of its forest cover, amounting to approximately 63,700 hectares—an area comparable to the entire metropolitan area of Barcelona. Remote sensing and machine learning studies attribute this dramatic decline primarily to war-induced drivers, including uncontrolled illegal logging for heating and construction materials near displacement sites, deliberate burning during military operations, and the destruction of wooded areas from shelling and bombardment (Daiyoub, Gelabert, Saura-Mas, & Vega-Garcia, 2023) and (Morató, 2024). Protected areas such as Al-Shouh and Al-Arz Reserve—home to endemic and rare tree species—have faced escalating pressures from unregulated wood extraction, grazing, and habitat encroachment, aggravated by weakened environmental governance during the conflict. The reserve's ecosystems, once carefully managed, now show clear signs of fragmentation and biodiversity loss.

The situation remains acute. In July 2025, Qastal Maaf in Lattakia witnessed severe wildfires that burned for days, forcing evacuations and destroying large tracts of vegetation (SARD, 2025). These fires compounded cumulative wartime damage, as many affected forests had already been degraded by previous logging and land clearing. Together, the combined effects of war, displacement, illegal exploitation, and increasingly frequent wildfires have eroded forest resilience, threatening Syria's biodiversity, worsening soil erosion, and undermining local livelihoods dependent on forest resources.

Since April 2025, wildfires have ravaged Syria's western forests, from Jabal Al-Mashhad Al-Ali in Masyaf to the coastal ranges of Lattakia and Tartous, destroying thousands of hectares of forest and farmland. Unlike the seasonal fires that usually begin in late May, this year's blazes started earlier, spread widely, and were fuelled by drought, high temperatures, strong winds, agricultural burning, deliberate arson, illegal logging, and war remnants. The recent Masyaf fire alone consumed 178.3 hectares—four times the size of April's fires—and is one of 2,217 forest fires recorded in Syria in 2025 so far. These events have caused severe biodiversity loss, soil erosion, air pollution, and economic damage, overwhelming local communities despite grassroots protection efforts (Youssef, 2025). By September 2025, an expert participant during the "Environmental Justice Workshop in Syria" estimated the burnt forest area in Lattakia at 15,000 hectares.



Figure 15 A firefighter attempts to extinguish a wildfire, in the northern countryside of Latakia, Syria July 29, 2023.
REUTERS/Firas Makdesi

Absence Of Energy/ Blackouts:

The elongated time of war had left Syria's electricity generating capacity below the required threshold. The difficulty in supplying fuel and gas to power plants, resulting from the contestation over the oil and gas fields and lines in the northeast, has even worsened generating the necessary power. Not even one third of gas and half of oil requirements were received by the Ministry of Electricity, leading to the capacity degradation of 50% in power supply (Alattar, 2024).

Syrians who witnessed the latest years before Assad's fall can report the long blackout hours per day when they only received 1 to 4 hours of power at best. The vast majority supplied their apartments with fuel-powered generators or batteries. These solutions were a source of constant noise pollution as well as air pollution. Depending on their size and lifespan, batteries could only power basic domestic lighting and/or run one or two domestic electrical devices. This drove Syrians to organise their daily schedules into exhaustingly tight tasks parallel to the short power supply durations, which were very likely unstable and inaccurate.

Household heads, who in many cases in Syria, were the women bore the highest burden. Poorer communities found no financial means for generators or batteries and could only overcome the cold winter nights through tree logging and by turning their fuel heaters into manually assembled wood chimneys centred in apartment spaces—a respiratory disaster and a burning machine turning not only wood but plastic and waste into breathable ash.

Syrians who were able to afford a couple solar panels had no other choice to bring light to their lives again after more than a decade of dark nights and unpowered days. Youth and students crowded in cafes and internet shops to proceed with their work and find sources to charge their devices. Less lighting in streets could lead to increased accidents and threaten lives, as well as imposing security risks on people, especially women, as the darkness equips the streets' atmosphere for dangerous violations.

The devastating destruction caused by war to Syrians' basic life assets is worsened by the added burden of the absence of energy required to run households, work, education, and production. Damage to water systems has prompted people to search for alternatives in groundwater for drinking, washing, cooking, and irrigation, which requires energy from either fuel or electricity. Both options are causing direct and

indirect health and environmental issues, as the use of fuel by thousands of people to run engines contributes to air pollution, respiratory problems, and noise. When the fuel option is more expensive or unavailable, solar panels become a substitute; however, their excessive use is causing the depletion of groundwater, since individual usage is not regulated—if the dug well is legal at all.

The damage to one key environmental resource not only adds a burden to a single sector; the complex agricultural, industrial, and humanitarian network, hence the social and economic, are largely intertwined (Figure 16).



Figure 16 A mapping of possible direct and indirect environmental harming consequences, aspects, and coping mechanisms of the war-induced environmental damages in Syria. Author: Syrbanism, 2025.

Informal Coping Mechanisms

Examples of Potential risky or inadequate management

- Informal Jobs
- Informal settlements
- Informal landfills

Hasty urban expansion and rubble removal without precautions

- Informal Jobs
- Child labour
- Informal landfills

Unplanned relocation of landfills

- Informal settlements
- Child labour

Unsupervised return to former conflict areas

- Individual planting initiatives
- Informal groundwater pumping
- Informal landfills

Farming contaminated lands or growing unsuitable crops

- Child labour
- Informal groundwater pumping

Individual water clearing and unexamined tanked water
The provision of unmonitored solar-powered pumpers

- Child labour

Prioritising extraction and overlooking environmental measures

- Risky Heating Methods
- Individual planting initiatives

Unregulated afforestation

- Child labour
- Dependence on fuel
- Risky Heating Methods
- Forest Logging
- Illegal electricity connections

Overdependence on fuel-run generators

Understanding climate and environmental injustice

In this section, we investigate the concepts of both climate and environmental justice, outlining their historical background and comparing them within the Syrian context. We conclude that environmental justice is a concept related to equality and the fair distribution of duties and responsibilities. It entails principles such as the inclusion of all community groups in decision-making in projects that affect them directly or indirectly; the equal distribution of benefits resulting from such projects (environmental, health, economic, urban, etc.); protection from disproportionate exposure to environmental impacts, such as natural resources consumption during construction or pollution; and the right of these communities to hold those in power, whether organisations or governments, accountable for any resulting damages.

Differentiating climate justice and environmental justice: Choosing between the terms 'climate justice' and 'environmental justice' in this research brought us to briefly examine the nuances between the two terms. Both definitely address the ethical and practical responsibility and the distribution of burdens regarding the effects of climate change and environmental factors. In both cases, vulnerable groups bear the negative impacts of environmental threats that another group contributes most to. Climate justice encompasses a larger spatial scope and often deals with the responsibilities of countries toward other, less-contributing countries to climate issues (usually developed vs. developing countries). It presents many facets, including structural, socioeconomic, and intergenerational inequalities (UNDP, Climate Change is a Matter of Justice - Here's Why, 2023). Environmental justice is more commonly used in localised and regional contexts and reveals shorter-term actions or policies that deal more directly with tangible environmental issues. It also operates within local legal frameworks, particularly among organisations and activists more than in countries' policies (Kmetz, 2024). However, as our focus is oriented toward the measures that should be taken to prevent or mitigate the environmental impacts and cross-generational hazards in the early recovery processes, we emphasize the importance of reducing the distinction in responses between the state bodies and local networks and institutions. This action-oriented and procedural understanding represents the environmental security concept that, according to Marwa Daoudy, *"seeks to reduce or prevent the environmental consequences of war, natural disasters, erosion of the earth's carrying capacity, and armed conflict—including war that itself results from environmental change."* (Daoudy, 2020). We envision environmental security as an actionable framework that would bring the principles of environmental justice into practice. We assume that any recovery and rehabilitation processes envisioned in Syria should consider the local environmental equity and apply sustainable climate principles.

The demand for justice is always a response to unjust activities or consequences, or unequal treatment or distribution of resources. While climate change affects regions unevenly, it is primarily driven by groups that derive the greatest benefit from resource exploitation, often to the detriment of more vulnerable populations, e.g. developed industrialised countries contribute to the largest share of CO₂ emissions, while developing countries suffer the most from global warming effects. *"In environmental concerns, borders are meaningless. The wildfires in the Amazon can affect us here in the Middle East"*, stated Sally Resly, an environmental engineer based in Turkey (Resly, 2025). Climate justice concerns the historical responsibilities of all groups/communities who contribute to the harms of the climate. It calls for placing "equity and human rights at the core of decision-making and action on climate change" (UNDP, Climate Change is a Matter of Justice - Here's Why, 2023). Climate-related inequalities are understood, first, in the poor capacity of vulnerable groups to endure the impacts of climate change compared to the more powerful groups contributing to it due to discriminatory classifications or socio-economic status, and second, in the burdens left by the current generations to the future generations to bear (ibid.)

Environmental justice is not a new concept; its roots can be traced back to a civil rights movement among African Americans in the United States in the 1960s, where the black communities were mostly affected by pollution as their neighbourhoods were located close to landfills (The Golden Environmental Prize, 2022). The general aim of the concept is to minimize the disparities between communities related to environmental harms. This equity could be achieved through principles, like equitable comprehensive treatment to all people, participatory approaches with communities in decision-making, planning sustainably to ensure the rights of future generations, and acknowledging historical environmental grievances (The Oxford Review, n.d.).

The imbalance in the distribution of natural resources, whether through conscious decisions or due to a lack of planning, will create grievances within communities. Some natural disasters are unpredictable, like earthquakes. Still, the human-induced practices are, and recovery and development efforts, following natural or human-induced harms, could be monitored to achieve equity in recovery processes. Therefore, inequality is rooted in decision-making and the application of all kinds of projects.

Environmental injustice occurs as groups of interest dominate changes in certain areas and result, intentionally or unintentionally, in discriminatory practices based on race, income, lack of representation, profit accumulation, poor siting, poor regulatory policies and planning, and neglect (Ben Crump, n.d.). Main drivers for environmental injustice are excluding marginalized groups from decision-making processes or not considering the environmental case as a priority altogether. For example, companies can choose to dump their production waste near areas inhabited by people of colour, whose zones are designed to accommodate such facilities, because it is cheaper than choosing a site near white-inhabited or richer zones (Yale Sustainability, 2020).

The inequality facets are spatially tangible in cities and around them. The environmental journalist 'Khalid Sulaiman' explained: *"First, it is evident in the expansion at the expense of agricultural lands or arable lands owned by local farmers. This is true for all [Arab] Lands, like for example Damascus. When our cities expand, farmers are the first to be affected and lose their source of income, which is agriculture. So instead of natural CO2-absorbing gardens, we have emission-intensive blocks. A second point is that the infrastructure of the cities' peripheries is always poor or dilapidated, which makes it hard for people to access services and facilities. It is impossible to talk about climate justice without ensuring accessibility."* Uncontrollable and unsupervised urban growth leads to different kinds of violation of the land and therefore violation of resources.

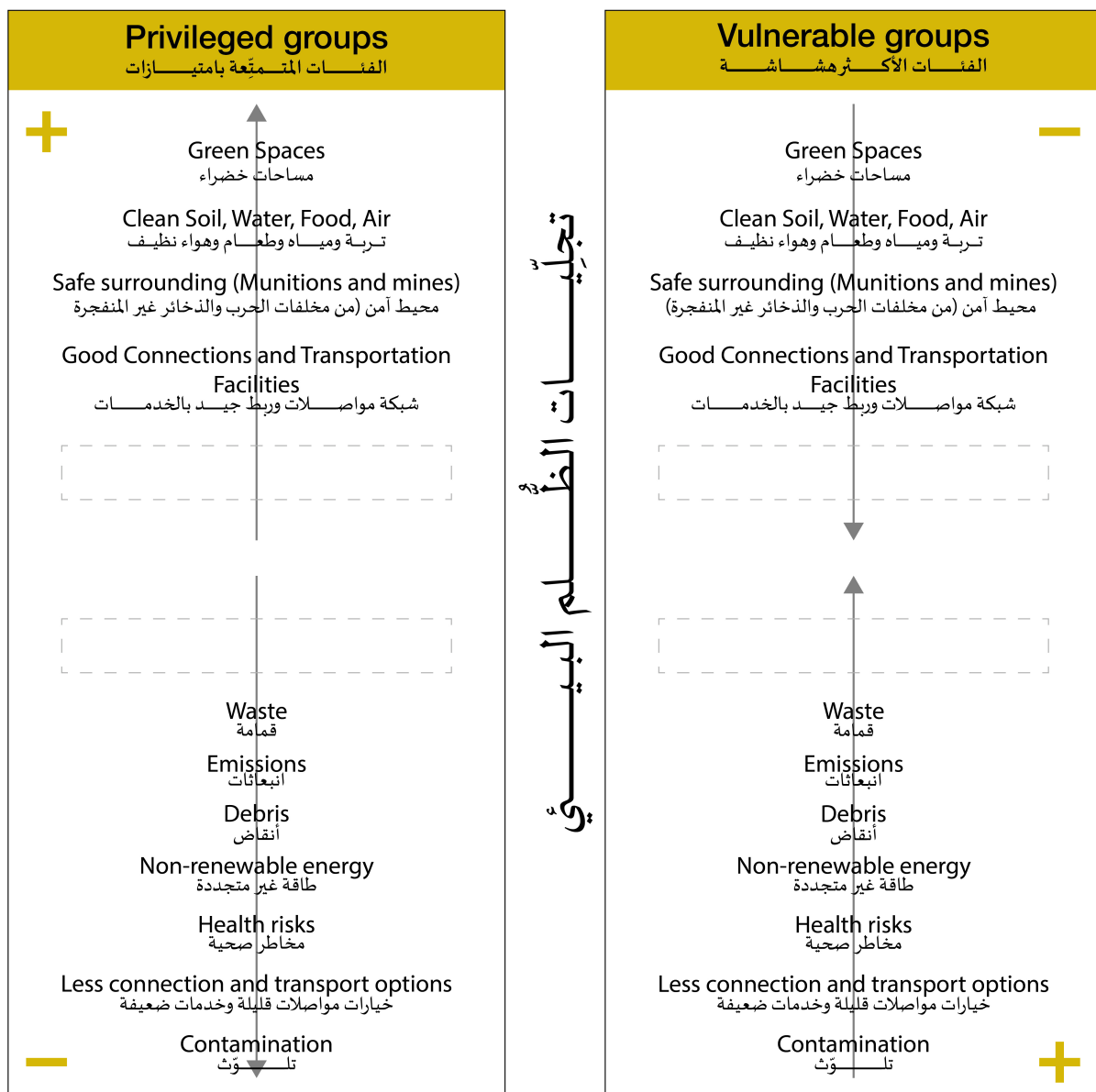


Figure 17 a diagram illustrating how injustice occurs between different communities. Syrbanism, 2025.

In Syria, the dynamics of vulnerability differ but lead to comparable patterns of environmental injustice. The mass displacement of millions has created fragmented communities with uneven access to land, housing, and basic resources. Access is often determined not only by economic capacity but also by political affiliation, sectarian belonging, and the degree of control exerted by de facto authorities. Communities living on urban peripheries, near rivers, landfills, or degraded agricultural lands are disproportionately exposed to pollution, water contamination, and poor waste management. Workers in hazardous sectors, such as informal oil refining, waste collection, or subsistence farming, face direct environmental health risks with little protection. Figure 18 illustrates some facets of environmental injustices between two communities. Children and the elderly are more vulnerable to pollution and extreme weather, while women often bear additional burdens due to social roles and unequal access to decision-making. Displaced populations—having lost homes, land, and livelihoods—are among the most marginalized, with limited ability to claim rights to safe housing or clean environments. These intersecting layers of exclusion highlight the urgent need for inclusive governance and equitable representation in early recovery efforts to prevent environmental and social injustice from deepening.

According to a study conducted by the 'Sida's Helpdesk for Environment and Climate Change' (Hansson & Beier, 2024), the poor in Syria in the context of environmental vulnerability could be arranged into four categories: 1) poor in natural resources (its availability, accessibility, affordability, and quality), 2) poor in opportunities and choices (to use available resources), 3) poor in power and voice (lacking the means to demonstrate their needs and be part of the decision-making processes), and 4) poor in human security (like having their properties destroyed or being threatened in certain circumstances).

Two types of 'poor' communities apply in a lot of cases to women. Women are often poor in choice and opportunities, and poor in power and voice. They get most affected by environmental deterioration consequences due to the traditional gender-based roles that add more burden to their daily life tasks. *"In most societies, women take the responsibility of providing water and she is the one carrying out the household work. She has more domestic tasks related to maintaining hygiene, cooking, washing, and other essential household activities, like bringing water from distant areas. Furthermore, when families face resources or assets difficulties, they often prohibit girls from pursuing education in order to cut expenses, or they force them into marriage as an alternative solution. This is why empowering women is critical in our societies"*, said Khalid Sulaiman.

In the Damascus workshop, the participants had also highlighted aspects of vulnerability and areas of injustice. Their answers included defining vulnerability according to location (Adjacency to pollutants, adjacency to wildfires, areas hosting migrants, and areas distance from city centres). They have also defined some factors leading to it (mismanagement, lack of support, poor environmental measures, lack of data and fragmentation of lands and political power, and poor capacity building and monitoring mechanisms).

Vulnerable communities are usually singled out for blame for not aligning with environmental measures, like forest logging, building informally, or digging wells informally. *"Poorer people get affected and then they would create their own means to survive, like the ones living off tree-logging in mountains without thinking of this behaviour as a future problem. Arbitrary over exploitation of land is a problem resulting from them concentrating solely on how to make a living. This is making them prone to exploitation themselves. They are not aggressors, but their bad living conditions motivate them towards such behaviours"*, said Laila Jarouj, the environmental journalist at Lahlah Magazine. Angela Saade, the co-founder of Jibal initiative in Lebanon, commented: *"It is common that those people are blamed for their behaviours, while those who use the four-wheel cars cause greater harm to the environment."*

This blame is indirectly practiced, by the superficial media coverage of environmental issues, which over-simplifies the problem. This is at least the perspective of Mais Katt, the journalist who specializes in covering conflict zones. She said: *"I am too annoyed by the media's view of the environment as being solely the plastic bags thrown on the streets, smoking, and individual behaviours. This throws responsibility on the individuals, while it is the major responsibility of governments, wrong environmental policies, businessmen, and leaders of mega projects. Those are the true polluters. This distraction and the creation of causality only between the plastic rubbish thrown on the ground and global warming, is somehow deliberately oriented."*

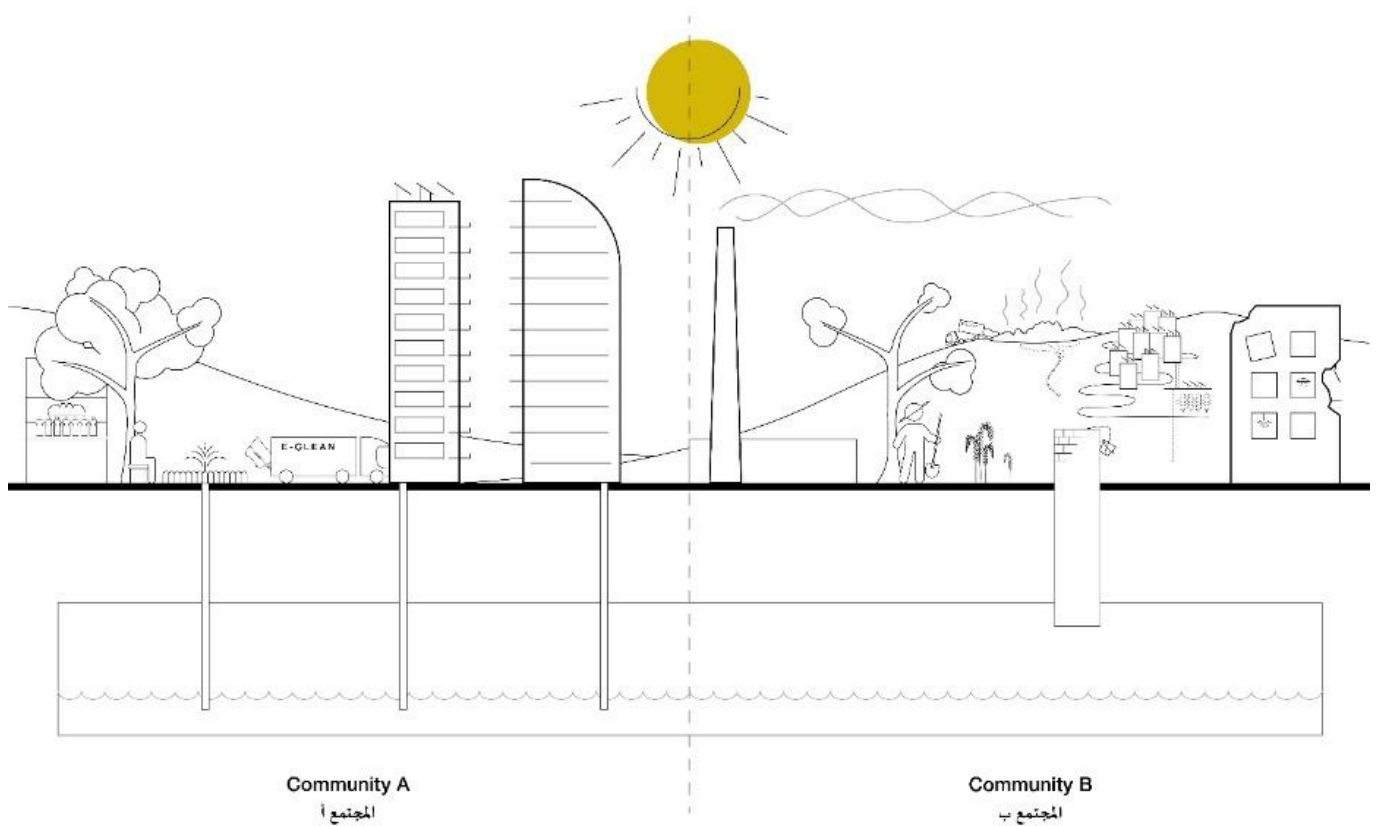
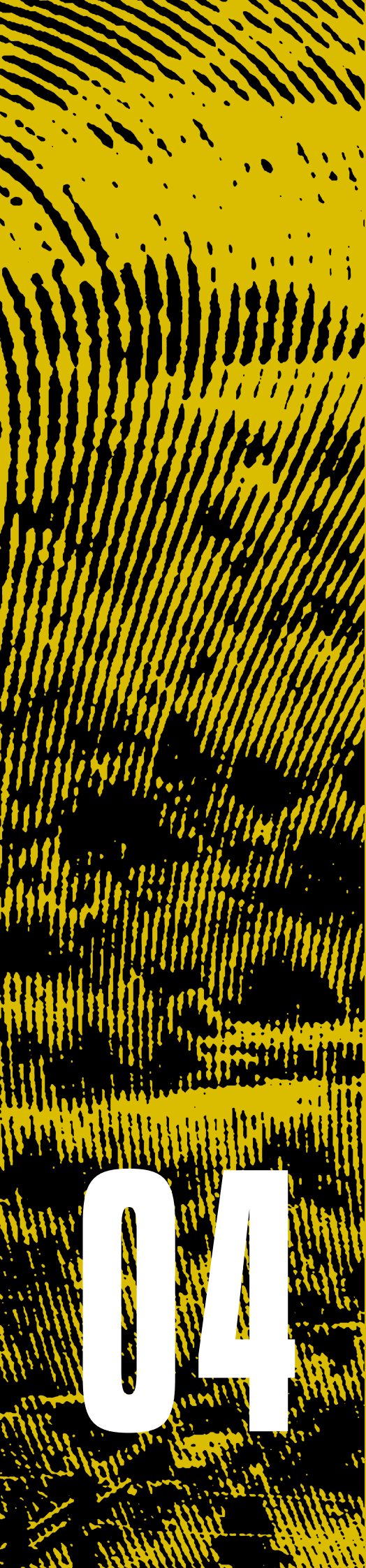


Figure 18 Explaining environmental injustice. Syrbanism, 2025.



04

EARLY RECOVERY FOR SYRIA

The Concept, Its Critical Understanding, And Principles

Early recovery is explained by the Global Cluster for Early Recovery³ (GCER, 2016) through all the facets and domains that recovery should contain and influence. Early recovery is then defined as a non-linear process and a group of programmatic actions that bridge efforts between humanitarian relief and sustainable development, and aims to enable people to be self-reliant and self-sustaining and to strengthen communities to become resilient after a devastating crisis. It integrates all stakeholders at all levels and calls for wide and multidimensional responses that bring together efforts and avoid fragmentation.

Early recovery is a wider concept than humanitarian relief, as the latter focuses on the immediate rescue of human lives through direct and quick provision of water, food, shelter, and medical assistance (UNDP, Global Cluster for Early Recovery (GCER), n.d.) and (GCER, 2016). Relief is then shorter and immediate, while early recovery targets longer-term interventions and establishes locally driven stability.

The GCER addressed principles for early recovery, of which we highlight, summarise, and rephrase as follows:

1. Recovery actions should be locally led and emphasize participatory approaches to include stakeholders at all levels in the community. This requires capacity building and the engagement of all groups regardless of their gender, ethnicity, age, language, religion, political stance, national or social origin, disability, property, birth, or other status to avoid discriminatory practices.
2. Building resilience requires a thorough understanding of root causes and needs, by applying participatory and area-specific approaches since each area or region has different specifications and existing capacities.
3. Ensure that interventions do no harm in the short and long term. This includes attention to external biased assistance, which overpowers the local ownership of the process.
4. Accountability systems are necessary in the application of just processes and give the community power to hold actors accountable, question the process, demonstrate grievances, and demand redress.

Early recovery efforts have always been linked to the stability of the country and the end of the conflict. The international community pressured the Syrian regime to reach a political solution and ended with the step-by-step approach that presented the concepts of early recovery as part of its conditions. The concept differs from humanitarian aid and reconstruction mainly by its goals and execution stakeholders. Early recovery was meant to commence projects as soon as the conflict declines, and not necessarily halts, and focuses the efforts on the local community initiatives and organisations to avoid direct contracting with the internationally sanctioned regime (Al-Dassouky, 2024).

Since the fall of the Assad regime in December 2024, there have been ongoing negotiations to lift the sanctions imposed on Syria. With American promises and the actual removal of many European sanctions, the critical uncertainty over the implementation of Early recovery became of minor importance. At the time of writing this handbook, the transitional Syrian government has already signed trade contracts and memorandums of understanding with different parties, including Saudi Arabia. Just recently, the Syrian-Saudi Investment Forum was launched in Damascus and resulted in the signature of 47 investment agreements worth over 6 billion dollars. The contracts cover different sectors, including energy, real estate, industry, infrastructure, health, and agriculture (Aljazeera, 2025).

3 The Global Cluster for Early Recovery is chaired by the United Nations Development Program (UNDP).

Project examples

Throughout the past 14 years, recovery projects have been mainly covered by organizations. UN bodies and international organizations are of the highest influence over the projects. These organisations were providing humanitarian aid and quick responses to the affected communities and have been focusing on early recovery since the conflict subsided. Their main areas of coverage are usually early recovery and livelihoods, agriculture and food security, WASH, health, education, and shelter. The sectors cover the areas of intervention listed by the UN strategy for early recovery.

Examples of such efforts are the following:

Education

In 2017-2018, the **Syria Recovery Trust Fund** launched a one-year rehabilitation project that covered 15 schools in Al-Quneitra Governorate (affecting 3,800 students), providing them with the necessary facilities, including water, stationery, fuel, furniture, and IT equipment. Moreover, the project provided salaries for teachers, headmasters, cleaners, and other officers. Very shortly reported, the project is said to establish a local support fund by raising awareness on the importance of education to ensure the sustainability of the project (SRTF, Rehabilitation of 15 Schools in Quneitra Governorate, n.d.). Rehabilitating schools appears also to be in coordination with the Turkish counterparts or authorities (Fedaa, 2025).

The **UNICEF** had planned to target 3.2 million beneficiaries of educational services in Syria and has reached around half a million between January and June this year (UNICEF, Education- Whole of Syria Response, 2025). It had also helped repair 26 schools across Syria since 2023 through structural reinforcement, installation of doors, and other interventions. Those included sustainable measurements, like providing solar power, recycling grey water and old desks, and providing garbage containers (Salameh, 2024).

Reports talk about the destruction and damage of 3873 schools all over Syria (SNHR, A Report of the Destruction of Schools and its Consequences, 2013) and (Latschan, 2024) while others declare that one-third of the schools are no longer usable (OCHA, Ten years of war in Syria, more than half of children continue to be deprived of education, 2021) or that 8000 schools are out of service (Fedaa, 2025). As a result, a great deal of children, exceeding 2 million, were forced out of schools and deprived of education, 40% of whom are girls (Latschan, 2024) and (OCHA, Ten years of war in Syria, more than half of children continue to be deprived of education, 2021).

Taking the vast devastation of the educational system in Syria and the destruction of its facilities, it is, indeed, an urgent requirement for INGOs and Local NGOs to set plans to remedy this side of the deep social and physical destruction that has struck the country. However, it is also important to raise questions about how these plans are being sustainable, and how "quality" education is ensured.

Other organizations like **the Adventist Development and Relief Agency (ADRA), the Norwegian Refugee Council (NRC), the Aga Khan Foundation (AKF), and the Aga Khan Development Network (AKDN)** are contributing non-formal education, vocational training, and capacity building.

Agriculture

In Al-Raqqa governorate, the **Syria Recovery Trust Fund (SRTF)**, in collaboration with the UNDP, supports farmers by helping them access water resources through the rehabilitation of a pumping station, the rehabilitation of irrigation channels, and the clearing and reopening of agricultural drainage and rainfall water courses (SRTF, Rehabilitation of Pumping Station and Channels in Ar-Raqqa, n.d.). The organisation has executed a multi-phase agricultural intervention to support farmers in Al-Raqqa by providing equipment, delivering training, water sprinklers, and rehabilitating roads (SRTF, The SRTF's Agricultural Support Yields Notable Results in Northeast Syria: Bountiful Wheat Production and Improved Livelihoods in Ar-Raqqa Governorate, n.d.).

At the end of 2022, **FAO and UNDP** restored the Sector 7 pumping station in Al-Bukamal, Deir Ez-Zor, allowing farmers to resume year-round cultivation. The project included repairing equipment, providing training, and establishing local Water User Associations to manage irrigation. It aims to strengthen food security, create jobs, and improve rural livelihoods (UNDP, UNDP and FAO restore the irrigation operations at Sector 7 in Deir Ez-Zor, 2023).

Agriculture and farming make up the main income activities for around a third of the Syrians (FAO, Syrian Arab Republic - Emergency and Recovery Plan of Action 2025-2027, 2025), and estimates suggest that the 2024 outcome was 50% less than the pre-crisis level, and this year's crop lands are facing severe drought and are at risk of failure (FAO, Drought Alert - Widespread crop failure to impact the food security of failed 2024/2025 winter rains, 2025).

Supporting the sector of agriculture is a pivotal intervention to restore resilience and stability. Many organisations are assisting and pushing toward recovery. The FAO had published the 'Emergency and Recovery Plan of Action 2025-2027' that aims to provide evidence-based data, improve food security and nutrition, build resilience, and rehabilitate farming systems. Similar projects and interventions are led by other organisations and initiatives, like **the Aga Khan Development Network (AKDN)**, which provides solar panels to communities and farmers to irrigate their lands (AKDN, 2024), the **Syria Recovery Trust Fund**, which assists farmers with allowances, kits, and seeds, and supports bakeries with assets (SRTF, Complementary Project for Enhancing Food Security in Dar'a and Quneitra Governorates, n.d.), and **the Environmental Protection Agency of Syria (EPA)**, which focuses its work in the northeast and northwest governorates and provides support to farmers, especially women, to maintain a resilient livelihood through training programs (EPA, n.d.).

WASH

The **UN-Habitat, UNDP, and FAO**, in cooperation with the **Ministry of Local Administration and Environment**, have launched a 3.5-year project to rebuild resilience against climate change in Eastern Ghouta, focusing especially on mitigating the consequences of water scarcity and drought. *"Through Integrated Natural Resource Management and Immediate Adaptation Interventions"*, the project targets 68,000 people in Al Mleiha, Zebdine, Deir El Assafir, and Marj El-Sultan. It executes projects, like rehabilitating sewage networks that have been pouring into streets and houses, and contaminating water sources (UNDP, Environmental Challenges and the Road to Resilience: Transforming Eastern Ghouta's Landscape, 2023) and (UN-Habitat, UN-Habitat, UNDP, FAO to launch Adaptation Fund Project to address climate change, 2021).

Qatar Charity⁴ maintained water plants and covered their operational costs, rehabilitated water networks, built one drinking water pumping station, and installed solar panels for the use of pumping water and generating electricity. **UNICEF**⁵ focuses on long-term interventions like water treatment technologies, wetland construction, WASH-in-schools projects, and building capacity, and it is targeting almost 4 million people since December 2024. **SRTF**⁶ carries on the rehabilitation of water pumping stations in Al-Raqqa and Deir Ez Zor, and water supply networks in Aleppo and Idlib.

Other local organisations are also contributing to the support of WASH services, like **Amal**⁷, **ATAA**⁸, **Violet**⁹ (Banafsaj), and others.

The reality of water in Syria is catastrophic, and it needs to be addressed by all-levels stakeholders.

4 For more information, visit: Qatar Charity implements WASH projects in northern Syria - Syrian Arab Republic | ReliefWeb

5 For more information, visit: Water, sanitation and hygiene | UNICEF Syrian Arab Republic

6 For more information, visit: Water and Sanitation - Syria Recovery Trust Fund

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8 - Water and sanitation

9 HomePage - Violet Org || منظمة بنفسج

Health and Nutrition

International Medical Corps (IMC) has been operating in Syria since 2008 and currently supports health facilities in multiple governorates, providing primary and secondary healthcare, mental health services, and nutrition programs targeting children and pregnant or lactating women (International Medical Corps, Syria, n.d.). The organisation also operates mobile medical units to reach remote and conflict-affected areas, ensuring access to life-saving care. Between January and March 2025, the UN Population Fund (UNFPA) reached nearly 800,000 people across Syria with reproductive health services, gender-based violence support, and health awareness activities, working through a network of 165 service delivery points (UNFPA, Programme Achievements Overview, 2025).

Other international NGOs, such as the **Medical Humanitarian Action for Development (Mehad)**, provide emergency medical services, rehabilitation support, and training for local health workers, while **Ghiras Al-Khaeer and Amal Foundation** focus on health support programs, including the distribution of medicines, medical equipment, and nutritional aid to vulnerable populations.

Considering Syria's fragile healthcare infrastructure and widespread malnutrition risks, the combined efforts of these actors are vital; however, the challenge remains to ensure sustainable healthcare delivery systems rather than temporary relief, especially in underserved rural areas.

Livelihoods

After the destructive earthquake in northern Syria, the **UNDP** started to implement early recovery and livelihood programs supporting vulnerable communities to restore income-generating opportunities. Their interventions included rehabilitating access to basic services and dignified livelihoods, as well as removing debris, watching Housing, Land, and Property rights (HLP), and supplying water and solar systems (UNDP, UNDP in Syria Rebuilding Lives and Hope, 2023). The **Danish Refugee Council (DRC)** advocates for integrating protection concerns into livelihood programming, highlighting that economic recovery must go hand in hand with safeguarding vulnerable populations (DRC, 2025).

Local NGOs such as **SARD (Syrian Association for Relief and Development)** run projects that provide professional training, small-scale agricultural support, and market access to conflict-affected households (Belt, 2025).

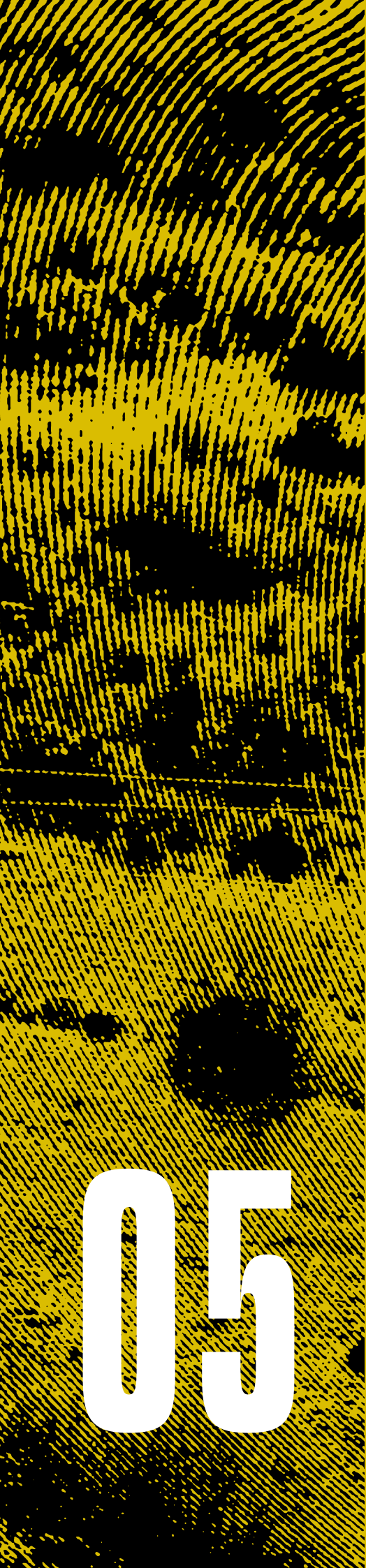
With unemployment rates remaining high and economic hardship intensifying, these efforts are essential to rebuilding resilience and preventing further displacement. Nonetheless, questions persist about the scalability and inclusiveness of such programs, particularly in reaching marginalized rural communities and ensuring equitable opportunities.

Clean energy

The Syria Recovery Trust Fund (SRTF) is leading multiple projects in the electricity provision sector, like providing solar power to health centers, restoring urban lighting, and rehabilitating electrical transformers (SRTF, Electricity, n.d.). Just recently, in May 2025, a cooperative initiative to develop a 12-month period Renewable Energy Master Plan for Syria has been launched by UNDP and Norway to scale up solar and wind energy solutions and reduce the reliance on fossils (UNDP, Driving Sustainable Energy Transformation **Norway** and **UNDP** Support the Development of a Renewable Energy Master Plan for Syria, 2025).

On the national level, the current **Minister of Energy**, Mohammad Al-Bashir, held, in early November, a series of meetings with energy leading companies, like Chevron, TotalEnergies, Siemens, and the Saudi Energy Company to negotiate future technical cooperation and exchange in expertise in energy sectors (SANA, Syrian Energy Minister Discusses Cooperation with U.S. Deputy Secretary of Energy, 2025).

Syria's critical need of electricity and overreliance on polluting fuels make a holistic strategy for energy infrastructure rehabilitation a necessity for environmental resilience and economic recovery.



05

MAPPING INITIATIVES AND STAKEHOLDERS

Which Agencies are doing what in Syria within the working domains of early recovery?

UN-Agencies

	ER&L	Agriculture and Food Security	Health	WASH	Education	Shelter
UNDP						
UN-Habitat						
UNHCR						
UNICEF						
UNRWA						
UNFPA						
FAO						
WFP						
WHO						
IOM						
Syria Recovery Trust Fund (SRTF)						

International Non-Profit Organizations

	ER&L	Agriculture and Food Security	Health	WASH	Education	Shelter
DRC						
NRC						
Syria Relief						
Mercy Corps						
Oxfam						
IMC						
AKAH						
AKF						
AKHS						
ADRA						
Mehad Org.						
Qatar Charity						
War Child Alliance- Holland						

National Non-Profit Organizations

	ER&L	Agriculture and Food Security	Health	WASH	Education	Shelter
Amal						
Sanad						
SARD						
NAMAA						
White Helmets SCD						
Env. Protection Agency of Syria EPA-Syria						
Violet Org.						
Ghiras						
Afia Fund Association Charity (Homs)						
ATAA. HRA						
Syrian Establishment for Human Care and Dev. (MASRRAT)						
BINAA Org. for Dev.						

Governmental Authorities

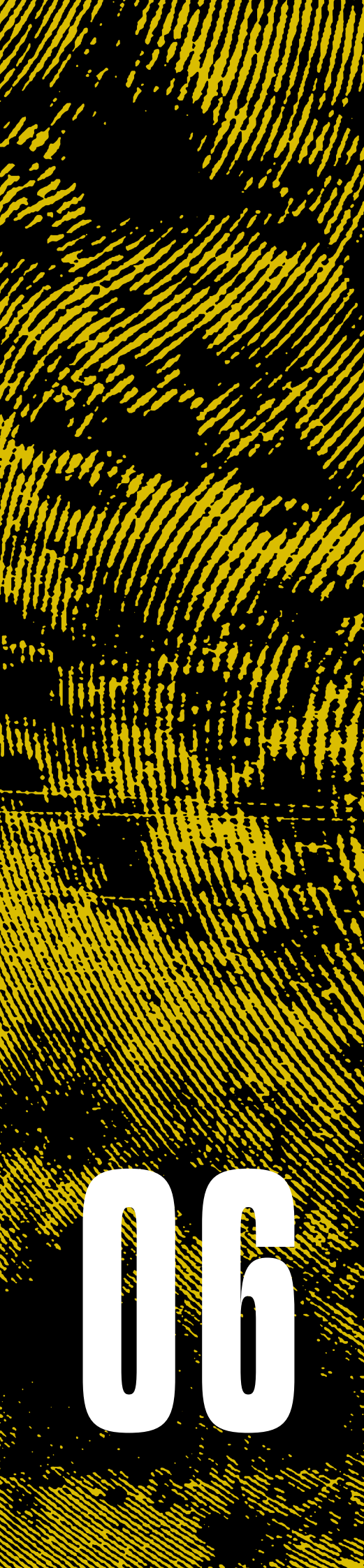
	ER&L	Agriculture and Food Security	Health	WASH	Education	Shelter
Ministry of Local Administration and Environment						
Ministry of Culture						
Ministry of Agriculture and Agrarian Reform						
Ministry of Education						
Ministry of Health						
Ministry of Higher Education and Scientific Research						
Ministry of Social Affairs and Labour						
Syrian Commission for Family Affairs and Population (SCFAP)						
Ministry of Energy ¹⁰						
Ministry of Housing						

Red Crescent: The Syrian Arab Red Crescent, Qatar Red Crescent, Turkish Red Crescent, Kurdish Red Crescent, Palestine Red Crescent Society.

¹⁰ The Ministry of Energy was newly established on August 25th through a presidential decree, merging the Ministries of Oil and Mineral Resources, Electricity, and Water Resources into a single entity.

Active local Initiatives

Initiative's Name	Activities	Website or Social Platform
Nabteb	Agricultural information exchange via the internet	Facebook: NABTA
Lahlah	Environmental Magazine	Website: lahlah.space Instagram: lahlah.space
Syrina Climate Pioneers	An initiative to empower youth in the field of the environment	Website: climatepioneers.org Instagram: Syrian_climate_pioneers
Syrian Project for Climate Change	An independent environmental initiative to raise awareness and support environmental policies	Website: spccsy.org Instagram: spccsy
Al-Saniaat Al-Khadraa (Green Makers)	A Syrian youth initiative to support and promote agricultural and environmental awareness	Instagram: chloroplasts.team
Waraqa (Paper)	A paper recycling initiative	Instagram: waraqa.recycling
The Syrian Environmental Initiative	A non-governmental environmental organization concerned with studying the environmental impacts of war and promoting environmentally safe practices	Instagram: Syrianenvironmentalinitiative
The Syrian Seeds Archive	A national Syrian project to protect local (heritage) seeds	Instagram: syrianseedsarchive
Jazer (Root)	An organization for environmental conservation and documentation of environmental disasters	Instagram: jazer_forum



06

UNJUST ENVIRONMENTAL FLAWS IN EARLY RECOVERY/RECONSTRUCTION

Changing how we think about recovery. From delivering aid to a nation-connected network of recovery that builds on participation and environmentally aware plans.

From our baseline study, we understand two major aspects of damage occurring through recovery projects: the first is the unjust distribution of attention needed over the different regions of Syria, which includes discrimination against marginalized groups, poor planning, and short-sighted outcomes. The second is the immediate and delayed harms inflicted on the environment itself and, hence, the unjust and unsustainable activities toward both current communities' and future generations' access to quality resources.

Where can recovery and reconstruction go wrong? Actually, in all places where justice, the rights of people, and the environment are not a priority. In post-conflict recovery and reconstruction settings, environmental justice is often sidelined in the urgency to rebuild. In other contexts, it is the corruption of authorities that magnifies the environmental injustices through reconstruction. The journalist Mais Katt ensured: *"There is a risk of environmental corruption because it is the easiest to commit because no one defends it. At this stage, I believe the most dangerous outcome would be ignoring environmental priorities during urban and economic reconstruction."* However, when recovery efforts bypass key environmental and social safeguards, they risk reinforcing or even deepening existing inequalities and environmental harms. The following are examples from the MENA region and Syria.

Bypassing environmental or social safeguards (Short-term planning and lack of experience)

Projects implemented without inclusive planning, proper environmental assessments, or equitable access considerations may inadvertently cause displacement, degrade ecosystems, or marginalize vulnerable groups. The following examples illustrate how the absence of these safeguards in debris management and waste relocation can lead to unjust outcomes in Lebanon and Syria.

In Lebanon, following the 2020 Beirut port blast, concerns arose about the hazardous materials contained in the remaining construction and demolition waste (CDW), especially asbestos. To follow up on the consequences, a Parliamentary Environmental Committee (PEC) has been established, and assessments were held by the UNDP (LCPS, 2021). A 3.6-million-dollar allocation was designated for the removal of debris in collaboration with a German company. Asbestos, which is being used for roofing purposes, was proven to be present in some of the accumulated rubble around the port. This fiber-based material threatens the surrounding communities' health as it can cause respiratory issues (L'Orient-Le Jour, 2020). However, the rubble removed was accumulated in the Karantina area, where it was stored with no known official treatment or management plan (Youth4governance, 2025). One main issue that challenges implementation is not finding a proper plot for treatment (Awwad, 2024). The measurements taken by the government through establishing the PEC and the efforts exerted by local initiatives and NGOs were theoretically on the right track. However, it seems that even with recommendations set by the PEC to manage the disastrous incident, the implementation lacked a systematic study to allocate plots of land for the disposal of debris and the treatment of hazardous materials, which could continue to threaten the people's health in the new area where it was removed.

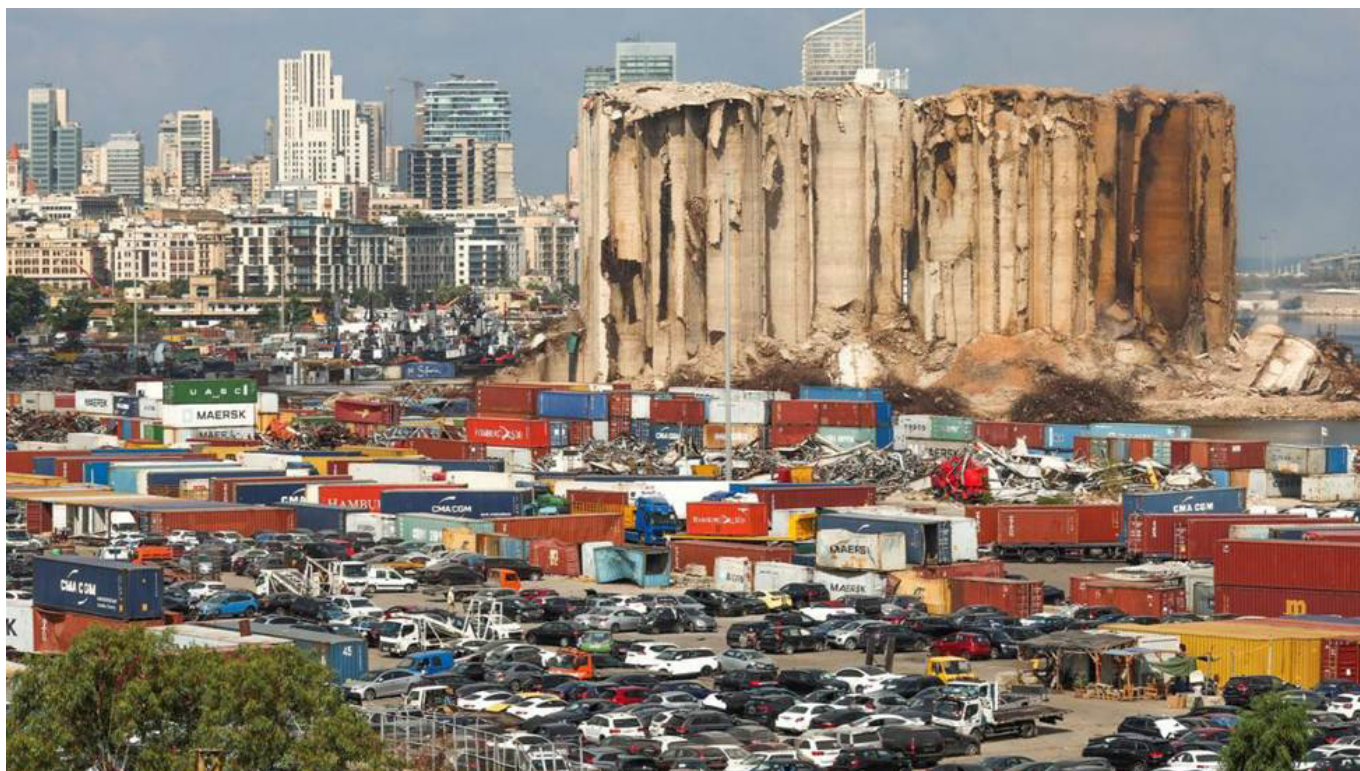


Figure 19 A picture showing the general site of the Beirut blast in August 2020. Photo credit: Mohammed Azaqeer, Reuters. Source: Al-Arabi Al-Jadeed.

In Syria, the removal of the incalculable tonnes of debris that contain various types of pulverised polluting materials has become a priority for any project in any damaged area. The UNDP, for example, is helping with the removal of accumulated debris in northwest Syria, especially after the 2023 earthquake. The removed debris is being recycled and used to rebuild roads and other infrastructure. This is said to be 'a foundation for better environmental management' (OCHA, Clearing debris to save and improve lives, 2025). In Syria, Asbestos is being used in buildings and pipelines to deliver water. The destruction resulting from war and the following devastating earthquake raises serious concerns about the possible presence of this substance in the rubble of buildings. The Syrian Civil Defence is reported to carry out clearance efforts and rehabilitate agricultural roads, while at the same time removing and demolishing hazardous materials contained in building rubble (Gamila, 2023). Damaged water pipes made of asbestos were also an issue in Idlib, before the Public Corporation for Drinking Water had, in collaboration with humanitarian assistance organisations, replaced most of Idlib city's pipelines. Mr. Khalid Gazi, from the EPA Syria, assured that Asbestos tubes are still being used in the north. However, not all the governorate's cities have had their water network renewed (Al-Khouli, 2024). Accordingly, there should be attention to the materials being dealt with and the way it is being recycled or reused. Similarly, Marwa Dawoudy, an associate professor in international relations and a chair in Arab Studies George Town University, highlighted: *"When the USAID invested in Africa, they used to send lead pipes for transferring water. These pipes pose a significant health risk to people and the environment. [So, international investors] have the responsibility to take care of the environmental health of Syrians and the land in general. So, I see a responsibility on all these parties together. I believe there should be a "local" responsibility, which means taking action locally by the government, but also by the municipalities and local actors. It should be in the hands of Syrians, both the government and businesspeople, as well as the diaspora."*

With many Syrians returning to their cities and villages, some are trying to rehabilitate their properties by themselves or with the help of organisations. The unplanned initiatives may pose future risks related to health and safety and put the recovery efforts in question as to whether their implementation is sustainable or may cause further harm directly to people or the environment.

Angham Daiyoub, an environmental specialist, gave an example of how this could happen: *“When people observe the decline of forests as a result of logging or fires or any other reason, they, and especially the youth, would gather in a march and buy arbitrary species of trees from agricultural nurseries, which could be of harmful effects on the Syrian environment, like the so-called ‘invasive trees’ originating, for example, from Australia and not local. The vendors would sell these for their quick growth and people don’t question why, since they fit the bill. These trees grow fast because they consume a huge amount of water, hence draining the groundwater. Furthermore, they create a huge shade beneath them and prevent plants from growing. Not to mention the aromatic gases they emit that kill every plant around it.”* Angham stressed the necessity of consultation and monitoring before and after the processes.

Consultation and connection with local authorities are unignorable steps that should be part of the local initiatives’ projects. The ‘Syrian Climate Pioneers’ is an initiative cofounded by a group of young Syrians and is leading a group of environmental interventions and online campaigns in Syria. Farah Al-Assad, a co-founder, elaborated on some of the projects. One of which was ‘Nafas I and II’, an implanting campaign led in Hama, Homs, and Latakia governorates. *“The trees were planted in public places, and the project was funded by the Aga Khan based on a study they did about which tree types and species were suitable for planting. We have a consultation team that visited the ministry and asked for a permit. Without this permit, every planted tree would be removed and taken. Yet, only 15% of the trees survived without sustainable monitoring.”* In Nafas II, they avoided the problem by engaging with the community, providing seeds, and running long-term training sessions. *“We contacted the municipalities to have access to the affected people. [...], we got the names of the affected, the number of burnt trees, the types of trees that were planted in the burnt land, and the type of needed fertilisers. The last was not listed in our budget, but we did it through personal funding because it was necessary for the project”* she explained.

Lack of maintenance is also a major contribution to the water pollution. Water treatment plants, that are built to refine the used water and wastewater, might be overlooked. In an interview with Dr. Riyadh Al-Mehdi and Hanan Sharabi, they pointed out to the problem of Hospitals’ water treatment plants. They, however, have stressed this further during the workshop: *“Al-Adawi area in Damascus, also called ‘the Eastern Park’, is considered the food basket of Leafy-vegetable of the governorate, providing lettuce, parsley, and so on. This land was expropriated by law, so the Water Resources Authority did not allow farmers to dig wells. The farmers’ only option was to irrigate with water from the river, which is a tributary of Barada River. The river receives water from the wastewater of Rukn Al-Deen area, some of this is the waste of Ibn Al-Nafees Hospital, which its treatment plan had stopped working. So, imagine: the basic food basket of Damascus is irrigated with untreated sewage and hospital waste.”*

Unsustainable resource extraction

Early recovery projects may rely on local natural resources (water, timber, minerals) without regard for sustainable yields, causing long-term environmental degradation.

There is an alarming decrease in groundwater levels in the northwest area of Syria, specifically Idlib and the northern and northwestern sub-governorates of Aleppo. A research survey (Atik, et al., 2024) found that more than two-thirds of the population rely on groundwater wells as their primary water source, while the rest depend on permanent flowing rivers (13%), wastewater (7%), and collecting rainwater (5%). The number of wells has more than doubled since before 2011, now totalling just under 17,000. The overextraction of groundwater is threatening the existing aquifers and raises serious concerns about the quality of the soil and the land’s capacity to support crop growth.

Similarly, in Northeast Syria, and primarily in Deir Ez Zor, groundwater extraction is a critical environmental issue. While the upper northern areas have higher precipitation levels and more agricultural lands, the lower areas, like villages located not close to any of the Euphrates’s tributaries, have less precipitation, and the land cannot depend on rain for irrigation. Consequently, more wells were dug under a vague understanding of the quantity of wells in the region due to institutional failure. For example, in villages like Abu-Khashab, the number of wells increased by over 300% since 2010. Farmers in the region have already noticed that groundwater levels are lower than before (Jalabi, 2024).



Figure 20 A farm-owner uses solar panels to irrigate the lands of groundwater, Al-Qetaifah, Rural Damascus.
Photo credit: Syrbanism, 2025.



Figure 21 A picture of Al-Eadaasharieh landfill near Bab-Sharqi in Rural Damascus, 12 March 2025.
Source and Credit: Kristina Al-Shammas/ Enab Baladi.

Misplaced Projects, Overlooked Communities, and Powerful Public Sector

Unjust siting in recovery projects is a form of environmental injustice where marginalized communities are placed near environmental hazards or excluded from safe, resource-rich areas. In Syria, such practices risk deepening vulnerability by concentrating pollution, waste, or degraded land in already disadvantaged areas.

Waste management is one of the challenges facing the transitional government and burdening society. Just recently, the governorate of Damascus announced the relocation of the 'Bab Sharqi' landfill as a response to the residents' demands suffering from fetid odours and complaining about the adjacency of the landfill to a religious complex (SANA, 2025). The Director of the Damascus cleaning directorate declared to (Enab Baladi, Damascus Governorate Responds to the Complaints on 'Al-Edaasharieh' Landfill. [Arabic: 2025, "محافظة دمشق تستجيب لشكاوى مكب "الإدعشيرية"]], that the temporary landfill is going to be removed to 'Al-Kissweh' station that has been established since 2006, after conducting an environmental effects assessment. A sorting contract is signed by an investor with this station. The waste that has been improperly managed throughout the years has given room for garbage pickers to benefit from it. People and city cleaners were reportedly (Shammas, 2025) complaining about waste pickers as they have been getting attacked by the waste pickers for stopping them from rummaging through garbage and scattering it. However, this problem uncovers the severity of economic deterioration.

Enab Baladi newspaper has published a video report conveying the pickers' complaints after the decision to remove the landfill in Bab Sharqi, which has threatened their only source of income (Enab Baladi, Damascus- Waste Pickers Lose their Jobs after Relocating the Landfill [Arabic: دمشق.. النباشون.. يتوقفون عن العمل بعد نقل المكب], 2025). In Al-Kissweh, People are protesting and interrupting the work of relocation as the chosen location is threatening their agricultural lands, lying only 1 kilometer away from the landfill (Syria TV, Landfill expansion sparks public anger in Al-Kiswah, Rural Damascus [Arabic: (توسعة مكب النفايات يثير غضبا شعبيا في الكسوة بريف دمشق)], 2025).

On April 14th, 2025, the Arab Reform Initiative (ARI) held a webinar on 'Environmental governance in State-led green projects in North Africa.' With the participation of four experts from the MENA region, the webinar discussed actual environmental development projects mainly in Morocco, Tunisia, and Egypt.

Iman Louati, manager of the political ecology program at Rosa Luxemburg Foundation, North Africa Office, presented during the ARI conference the intersections and differences of large environmental projects in Egypt, Tunisia, and Morocco, where Egypt focuses mainly on large-scale urban projects and the latter countries, rather, on renewable energy projects, especially solarisation and green hydrogen. Iman saw that the affected communities are: *"people in rural areas and marginalized areas who depend largely on lands and water resources. These lands are being expropriated, and water is being exploited, resulting in competition over resources. The projects are being promoted as providing development to the [marginalized] communities. For example, Nour Midlet Complex, a new solar energy complex in Morocco, which extends over 4000 ha, half of which is run by Amazigh tribes and communities, and the other half is forest lands currently run by local groups. These lands were expropriated to the benefit of this project through national laws that allow expropriation in favour of public benefit. It is a clear representation of 'Green Confiscation'".* She emphasised that the large share of beneficiaries are the external funders and local elites, while the affected communities found themselves without their livelihood resources.

In such projects, the state gives up on the vulnerable groups (the social capital) in favour of increasing the urban value of projects. The projects do not achieve economic revenue for the people, and they start competing over resources. Dr. Mwaffak Chechali referred that this problem was recurrent during the previous regime's power; decisions were taken regardless of the Environmental Impact Assessment and placed in environmentally risky places. *"There was a plan to establish a gas cylinder filling plant in al-Hasakah, and I was commissioned by the director of the Environment Directorate to do an Environmental Impact Study. The site location turned out to be only 150 meters away from Al-Basil Dam! The site was absolutely unacceptable and should not have moved to the next step at all. Yet, the project went ahead because someone else approved the study. The waste plant in Qamishli is located directly on the groundwater basin from which Al-Qamishli drinks!"* Dr. Chechali pointed out another problem regarding land availability. Avoiding new expropriations made the state look for already expropriated lands for its projects. *"A national hospital was built in Mashqita in Latakia, on expropriated land within the protected zone of Tishreen Dam, from which people drink! This is because the public sector was able to work wherever it wished."*

Neglection of certain areas while putting the focus on others further deepens the grievances between communities. Recovery projects and development plans should take into consideration all the cities and rural areas in Syria according to the needs and severity of damage it had undergone. Sarine Karajerjian, the manager of the environmental policies sector at the Arabi Reform Initiative, assured: *"The plans should be holistic and applied in consideration of all cities and not focusing on certain cities over others, like delivering electricity to Damascus or rural Damascus but not to Al-Raqqa or Lattakia."* It is also important to note that the communities already served are not aware of the problems of other areas, such as in the villages of Tartous, where landfills polluting groundwater wells are a problem only for the villagers and not the city residents.

Exclusion of communities from decision-making

Local communities, especially civil society organizations (CSOs), are often excluded from meaningful participation in planning and implementation.

In the same course of the ARI conference, Adem Mokrani, a lawyer and consultant specializing in energy and environmental policies, emphasised the risks of over dependence on foreign investment which can lead to accumulated loans, and criticised the large-scale Green Hydrogen projects in Tunisia which overtakes vast lands in marginalized areas, deplete water resources, and threatens food security. He stressed the necessity of active accountability mechanisms and penalties: *"The signed contracts and memorandums of understanding [between the state and foreign companies] were not conducted through participation of civil society organizations, which exacerbates social tensions and hinders the citizens' trust in the authorities."*

In his contribution in panel 2 of the ARI conference titled "Rethinking Justice in Environmental Transition during Times of Conflict and Crisis," Yasser Souilmi, a natural resources management Engineer and a research consultant at the ARI, highlighted the importance of real inclusive participation of the local communities. He described an incident in the village of El-Aroussa in Tunisia, where the government authorities saw implementing a public water tap near the village as the area does not have proper water connections, only to have the tap destroyed after three weeks of its installation by the women of the village. The women refused such a solution, which prevented them from their weekly stroll to a 4-to-5-km distant spring to bring water, meet each other, chat, and enjoy a housework-free time together. He added: *"Discussion is the bridge that takes you from point A, where there is injustice and problems, to [point B], a realistic understanding of the needs and requirements of people in the intended area, to deliver the best solution possible, that is compatible with society, so it guarantees its sustainability. And no one solution fits all areas in a country; solutions differ according to the regions".* He also emphasized the problematic "paradoxical" application of the foreign recommendations without understanding the local core problems: *"Participation was never implemented so that the state could listen to citizens' demands and understand their priorities. Instead, it was treated as a compulsory step in the process to initiate the project, rather than as a necessary means to achieve suitable results and avoid creating new problems."* This alienation from the real problems on the ground is a key feature in environmental and social injustice, he added: *"Almost a third of Tunisia's drinking water flows into sewage channels, even as authorities focus on seawater treatment plants!"*

Recovery – and later, development – require the participation of those most in need and most vulnerable to environmental and climatic hazards, as they lack the means to protect themselves. Projects implemented by organisations, whether international or local, sometimes follow a rigid, checklist-driven approach and fail to engage with the community. Therefore, coalitions formed within the communities themselves are essential for meaningful participation in decision-making and for delivering on local needs. Dr. Sarine Karajerjian assured her view on building coalitions: *"We need to relink environmental justice to politics. We need to understand who the actors are and where do they work. Collaboration is a key in this case, like organising open discussions in certain areas with the participation of associations. Participants of organisations can present what they are working on, and researchers share their studies, and the problems they pointed out. As civil society, we should acquire accurate information and evidence-based data collected directly from the ground. We have learnt from previous experience that areas where*

collaborative work was implemented, were more successful than other areas.” No top-down committee, even with representatives, can fully assess the needs of an area. Such initiatives must be supported from within the community and overseen to ensure that all voices are included – especially those of women, who are often denied the space to express their views. Top-down projects risk undermining social cohesion and producing unbalanced outcomes, which can lead to further social injustices, including environmental injustices. Participation can always be wrongly applied, and prone to corruption. It is important, however, to give the focus to the final benefit. Hakima Hawash explained: “Participation means dialogue between the government body, the local community, and stakeholders, based on scientific evidence, realistic planning, and neutral judgment. This dialogue should lead to the right decision. It does not mean that 100% of the community’s requests are met, nor that every proposal from the government is adopted.”

Short-term gain and short-sighted and conflicting interests

Projects are sometimes justified as “sustainable” or “green” but prioritize quick wins, donor visibility, or political objectives over real community needs and long-term resilience.

In 2021, the former Syrian government established “the support fund for renewable energy usage and power quality upgrading,” which carried a solarisation plan dependent on interest-free loans from the banks. An investigative report (Alabadi, 2025) showed that this plan appears to have targeted economically stable social groups and to have limited the choices of commercial companies, contractors, and engineering offices to 427 agencies, with which users can establish a contract. Moreover, there are concerns about the quality of the imported panels and more doubts about the monopoly exercised by some companies and importers who control the products and their prices in the market. The new government, according to the report, has suspended the electronic platform for submitting applications for renewable energy support loans.

It is common for organisations to support the targeted groups by providing job opportunities to operate the project they had implemented. But instead of sustaining the operational process and securing the people’s livelihoods, the opportunities seem less encouraging. Salwa Almehti, an architect and a Master of Business Administration graduate who works as grants and policy officer at several organisations, supported this view with an example: *“Let’s assume an organisation restored a water station. After restoration, you realise you do not have staff. Simply because when the staff salaries do not exceed 100,000 S.P., they would not work. Ideally, the network was restored and people got educated, but there were no incentives for them to work. No matter how much they learn about the environment and the rationalization of water consumption, they would not consider this as important as feeding their kids and surviving.”* It is then a conflict of interests and priorities, where the applied efforts do not meet the need and the planned projects are either short-sighted or not targeting the correct audience. On awareness raising campaigns, Salwa continued: *“You cannot instruct them on water rationalization, in this case. They won’t listen! I wish that such campaigns target the people who are not severely affected logistically and economically by the war. This is not being considered in the humanitarian response. Imagine proposing to train the people of Al-Malki neighbourhood, a very elite area, to rationalize water consumption. They are the target, the people who own over 3 cars and wash them with a hose, not the people who suffer to find clean water. It just does not make sense to the donors.”*

The discussion on the conflicting interests of stakeholders was a spot-on during the workshop. Dr. Jalal Al-Attar pointed out that the agricultural sector is economically poor; *“60% of the Syrians work in agriculture, while the sector contributes to only 25% of the GDP. At the same time, agriculture consumes 85% of the water resources. We can not proceed in agriculture with the same methods.”* It is noticeable that the rural areas surrounding the cities, like Damascus, are gradually turning into “cement masses”, in Zeina’s words. Yet, landowners would still choose to build a profitable project, like rentable villas, over working in agriculture as it brings more financial income. The participants then agreed that introducing new methods in agriculture should be the way to go, rather than giving up the sector in favour of other interests.

Short-sighted policies are also a major reason why sustainably looking projects fail the targeted communities and create, instead, a large-scale problem. An example explained by Khalid Sulaiman: *“This is what currently*

happens in Tunisia. They imported Spanish olive trees instead of planting local rainfed ones, that have the capacity to endure cold and heat unlike the irrigated Spanish trees, therefore the local farmers were affected and left their lands to the cities due to the lack of water and as a result of unsustainable policies."

If not managed sustainably and in equality measures, environmental risks in any recovery or reconstruction projects would be prone to re-emergence by arbitrarily adaptation methods, quick solutions of urgent needs, and short-sighted institutional responses. This would exacerbate the challenges and layer up grievances, especially when the underrepresented and vulnerable communities were not considered.

Cycle of environmental injustice

حَلَقَةُ الْأَعْدَالَةِ الْبَيْئِيَّةِ أَوْ الظُّلْمِ الْبَيْئِي

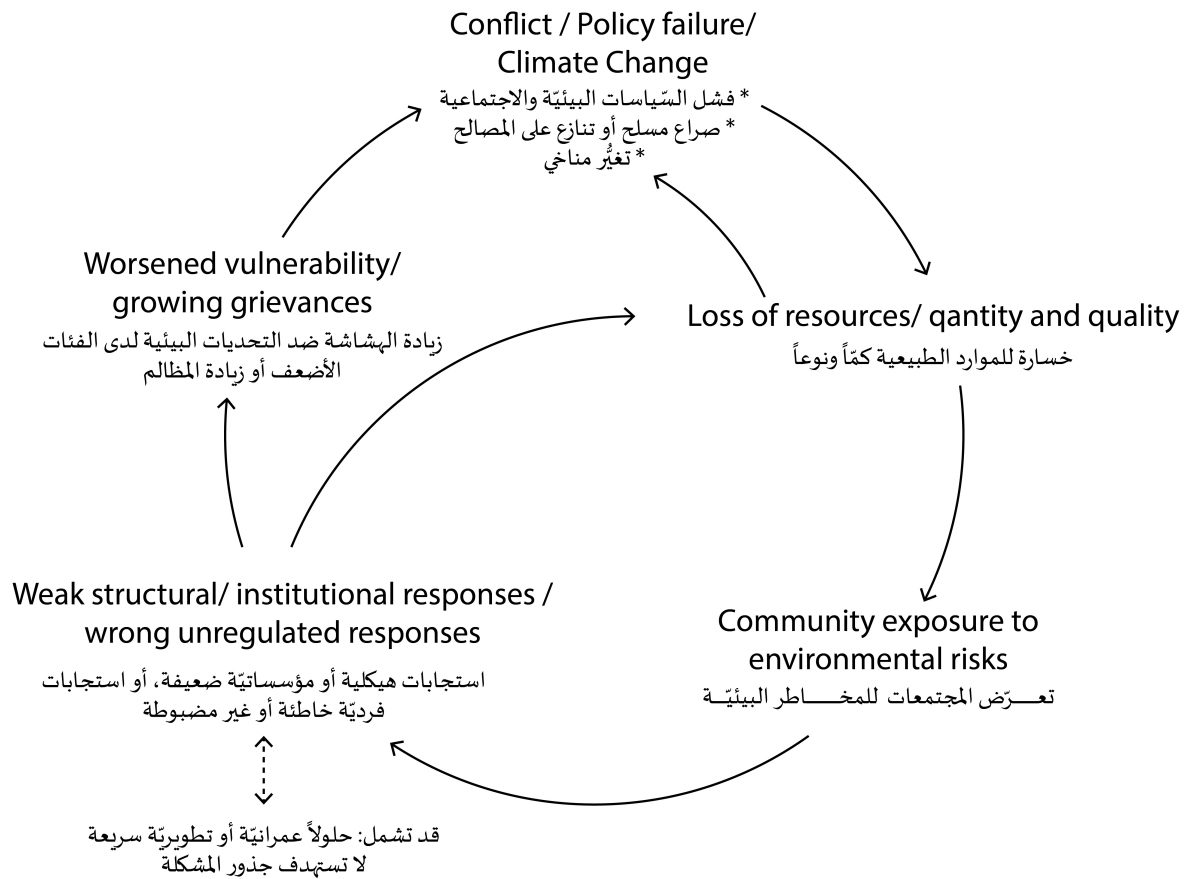
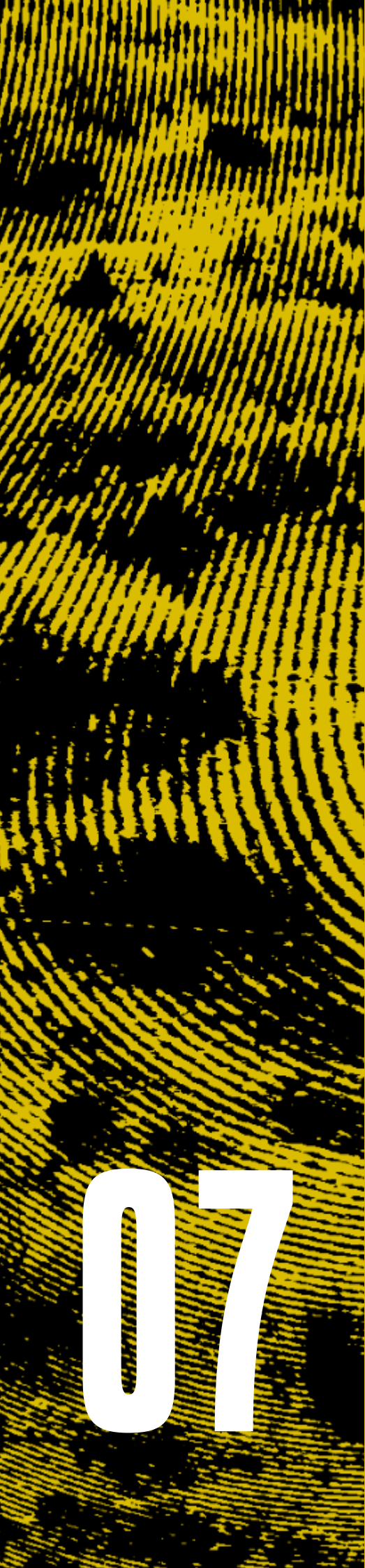


Figure 22 The vicious circle of environmental injustice. Syrbanism, 2025.



07

RECOMMENDATIONS

During the workshop, as well as in interviews, participants of diverse expertise presented a great deal of advice and critically revised the initial recommendations offered within this document. An extended discussion was carried out about the implementation of the 'Environmental Impact Assessment' before the initiation of any project. Since the experts agreed that the recommended actions in this handbook are theoretically mentioned in the Syrian 'Environmental Law No. 12 in 2012', its implementation is that being violated and the contradiction with other laws could hinder the correct procedures toward just and rightful actions. Ms. Hakima Hawash explained: *"Environmental Impact studies [might be] just theoretical in some cases, but a proper, serious study should be backed with analyses, images, and maps to support the findings. It's not just a checklist or a paper submitted to the project owner. It should be a thorough, well-developed study. But the mechanisms for implementation require all of us to cooperate on all levels to actually complete the project"*.

An example brought by Dr. Chikhali was the distinction between rural and civil services; the infrastructure provided for a city-area are of a higher quality than those of the rural areas, backed by law. The discussion whether the agricultural sector being profitable for the GDP or not was also an intense topic. Issues related to land expropriation laws, inheritance laws, the fragmentation of the agricultural property, and land commons were advised to be revised in that manner. Other discussions tackled the public sector immunity against projects cancellation, environmental monitoring authority, longer term programs by the organisations, mechanisms for public participation and neutral assessment, and the clarification of the current and future governmental structure.

Finally, we emphasize that priorities in reconstruction and recovery efforts should start where the most vulnerable populations live and where their resources are most affected, not where projects are most profitable. A pragmatic solution-finding strategy is, indeed, required. However, community empowerment, capacity building, and long-term sustainable thinking are pivotal for socially and environmentally just practices.

*By governmental authorities and institutions, we mean all responsible ministries, councils, directorates, municipalities, and area-units that lawfully affiliate to the governmental structure.

In the tables: dark grey represents major responsibility, and light grey represents secondary, indirect, or limited responsibility.

Short-term Recommendations (Immediate action, 0-3 years)	Gov. authorities & Inst.*	Academic & Research Institutions	INGOs and UN	Local NGOs & CBOs	Media	Private sector
Clarifying institutional structure						
Revising the laws of environment, like law 12 in 2012. And revising laws in a matrix to define responsibilities and duties of each ministry and gov. body.						
Providing emergency hot link to report about environmental damages, hazards, and violations.						
Activating the Environment Observatory (Established in 2012)						
Activating the Environment Impact Assessment measures as a binding condition before authorisation.						
Establishing a national Environmental Experts Committee to provide consultation for projects.						
Including multi-parti, and cross-sectoral collaborative mechanisms in conducting surveys to ensure the neutrality of the executers and the inclusivity of all communities.						

[illegible]

Medium-term Recommendations (3-10 years)	Gov. authorities & Inst.*	Academic & Research Institutions	INGOs and UN	Local NGOs & CBOs	Media	Private sector
Provide an open-access, holistic national environmental country profile including informative research-supported maps						
Organise an area-specific (governorate-based and region based) profile through public and organisational participation						
Integrating environmental justice in teaching curricula in schools and universities						
Introducing green cement and safe debris recycling methods in accordance with international measures						
Supporting and facilitating environmental research in state and private institutions						
Revising inheritance laws and the fragmentation of land to overcome hurdles in the agricultural sector, as well as property management and documentation						
Making use of the innate and local knowledge in agriculture and supporting awareness among farmers						

Long-term Recommendations (Over 10 years)	Gov. authorities & Inst.*	Academic & Research Institutions	INGOs and UN	Local NGOs & CBOs	Media	Private sector
Supporting agricultural production and regulate market competition to boost the sector's contribution to the national GDP						
Integrating green technologies, and supporting agricultural machinery and innovative planting methods aimed at reducing water dependency on the long run.						
Developing a strategic national-level plan to solve the issues of common lands and small-scale ownership.						
Blurring the legal distinction between rural and urban services to ensure both regions receive equal service quality.						
Planning for independent research centers to monitor environmental practices and have the power to hold governmental authorities accountable.						
Revive and reassess previous national plans for the revitalization of the Syrian desert.						
Planning to reverse green-space deterioration and the national green cover in Syria.						



08

CHECKLIST FOR PROJECTS

Questions for practitioners/ The environmental justice checklist brainstorming

Encircling all possible hazardous effects of early recovery seems nearly impossible. There are hundreds of possibilities and types of projects that may meet one aspect of the environmentally related social need, but inadvertently damage another. Therefore, the proposed questions depend on the desk review and the participation of practitioners, who helped reflect and shape the questions during the workshop. Sarine Karajerjian, brought, through an interview, certain questions to be necessary before any recover or reconstruction processes: *"Are the reconstruction efforts going to be green? Would electricity be available for everyone? Could we re-establish a strong and comprehensive agricultural sector again and strengthen the agricultural economy? Which laws are going to be applied? It is important today that new legislations be applied participatorily with the local society, which is struggling today in several areas."* She stressed many times on the crucial role building collaborations play in achieving justice: *"I reassure and insist on the concept of building alliances. We have learnt from previous experience that areas where collaborative work was implemented, were more successful than other areas. [...] We need to initiate communication with municipalities and mayors so that they take responsibility toward the civil society."*

Since projects are always linked to the surrounding environment, it is important to ask whether the project or initiative utilizes a vital environmental resource such as water, soil, or air and whether it negatively impacts it, such as through emissions. Are the proposed solutions to the problem under study sustainable and renewable? Do people gain experience and knowledge through them? Case study questions should include ensuring the inclusion of vulnerable groups, including rich and poor, men and women, adults and children, residents and refugees or returnees. Are people actively involved in decision-making, explaining and communicating the problem, monitoring the project's progress, or are they held accountable in the event of harm? It is essential that projects include basic questions about project ownership and revenues, and the extent to which local landowners or stakeholders' benefit. All of this must be discussed and shared in a transparent manner that provides sufficient information to all.

How do we take preventative measures to ensure fairness in projects across the three phases: planning, implementation, and monitoring, evaluation, and maintenance?

The following checklist is our suggestion for guidance:

1. Pre-Assessment, Conflict sensitivity, and Planning Phase

- Are the public informed about the project?
- Have there been surveys and interviews with the residents of the chosen area?
- Were all community groups represented in the assessment/ survey (Gender, age, economic class, ethnicities, and handicapped)?
- Have all conflict-affected environmental hotspots been identified?
- Were local environmental grievances (e.g., unequal access to land/water/clean air) mapped?
- Are there risks of worsening historical or regional inequalities?
- Have there been coordination with related governmental sectors?
- Have the Environmental Impact Assessment been properly completed and backed with evidence and surveys?
- Are there mitigation measures for the unwanted effects?
- Is the project being planned for a long-term monitoring and sustainable outcome?
- Are decisions about site selection, contracts, and funds publicly available?

2. Execution phase

a. Rubble Removal and Pollution and Waste Management

- Is there a plan for safe removal and sorting of war rubble (with asbestos, heavy metals, etc.)?
- Are there procedures to avoid dumping debris into agricultural land, rivers, or coastal zones?
- Are recycling, reuse, or circular economy approaches considered?
- Have local communities been consulted on rubble site selection?
- Do the project's implementation processes produce noise? Is it being mitigated to lower the impact on residents?
- Do the project's implementation processes produce waste? Where is it being deported? What measures are taken to avoid harming other areas' environment?
- Do the project's implementation processes use health-endangering materials (asbestos, cement, and the like)? Have alternatives been considered?

b. Use of Natural Resources

- Does the project use natural resources for operations? If yes, how are the use being rationalized?
- Have agricultural areas impacted by drought, salinization, or bombings been prioritized?
- Is irrigation or water access built equitably, especially for displaced farmers?
- Does the project ensure the cleanness of water delivered according to national and international measures?
- Is reforestation or agroecology part of the recovery strategy? If yes, is the process consulted by specialized authorities (deciding type, quantity, and timing)?
- If the project removes trees from the site, are the trees being relocated or new trees planted? Is the percentage of green cover of the area being considered?

c. *Reconstruction, Infrastructure, and Land*

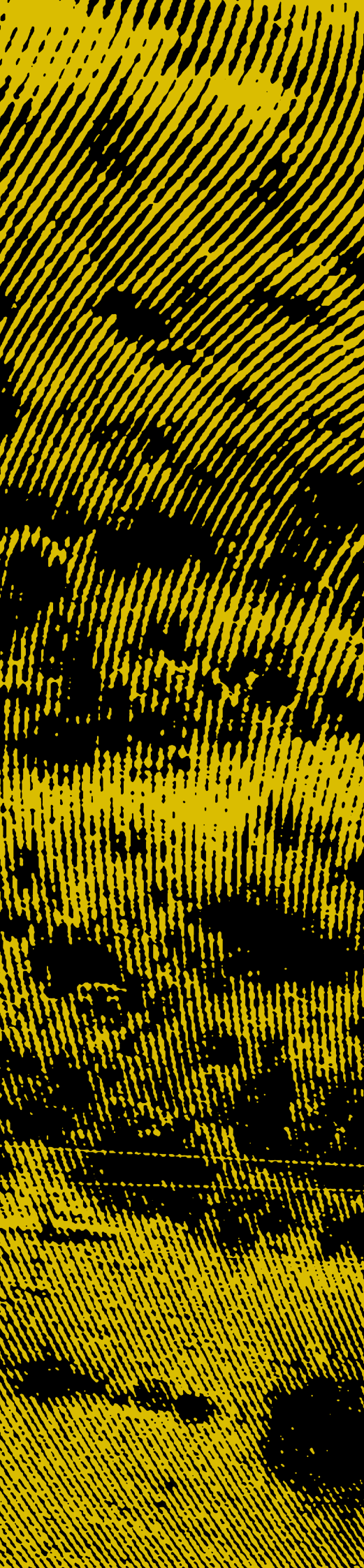
- Is there a clear plan for decontaminating industrial, military, or fuel-related sites?
- Are green infrastructure or climate-adaptive designs being used (e.g., water harvesting, thermal insulation)?
- Are workers and nearby communities protected from pollution exposure during rebuilding?
- Are land tenure issues and housing, land, and property (HLP) rights being addressed?
- Do all residents of the targeted area have equal access to the services, and gender facilitation considered?

d. *Running the Project and Energy Choice*

- Are energy recovery plans considering clean alternatives (solar, wind) over generators?
- Are informal oil refining or fuel trades being phased out and replaced with safer systems?
- Is there a transition plan to reduce long-term dependency on diesel or conflict-related energy networks?

3. *Finalizing, Monitoring, and Accountability*

- Are there mechanisms set for long-term follow-up to maintain, adapt, or correct what could go wrong (also follow-up by other stakeholders)?
- Are independent monitors tracking environmental and social impacts?
- Does the project achieve community resilience by providing jobs, stability, and clean resources?
- Is there a grievance mechanism or reporting process for environmental complaints?
- Are the operating authorities (governments or organisations) held accountable for any ecological harm or social exclusion?
- What is the mechanism for the public practice accountability rights? Is there an independent and non-biased juristic authority that receives complaints?
- Are results and reports shared publicly and with affected communities (considering those with no access to the digital media)?



REFERENCES

1. ACAPS. (2025). Country Analysis-Syria. ACAPS. Retrieved from <https://www.acaps.org/en/countries/syria#>
2. AKDN. (2024). How solar energy is helping this Syrian village become more climate-resilient. Aga Khan Development Network. Retrieved June 09, 2025, from <https://the.akdn/en/resources-media/whats-new/spotlights/how-solar-energy-is-helping-this-syrian-village-become-more-climateresilient>
3. Alabadi, R. (2025). Solar Energy in Syria - How Renewable Energy Became a Tool for Corruption. Aljumhuriya. Retrieved 06 24, 2025, from <https://aljumhuriya.net/en/2025/03/14/solar-energy-in-syria/>
4. Alattar, J. (2024). Syria: Energy Transition under Conflict Conditions. Carnegie Endowmnet . Retrieved October 10, 2025, from <https://carnegieendowment.org/sada/2024/10/syria-energy-transition-under-conflict-conditions?lang=en>
5. Al-Dassouky, A. (2024). Early Recovery Trust Fund in Syria: A Technical Approach With Political Implications and Associated Risks. Omran Strategic Studies. Retrieved April 22, 2025, from <https://omranstudies.org/index.php/publications/papers/early-recovery-trust-fund-in-syria-a-technical-approach-with-political-implications-and-associated-risks.html>
6. Al-Hasheesh, M. (2025). The Water Supply Authority Sounds the Alarm - Informal Wells are drying drinking water springs up [Arabic: مؤسسة المياه تدق ناقوس الخطر - الآبار المخالفة تجف ينابيع الشرب - بدرعا]. Enab Baladi. Retrieved July 15, 2025, from <https://tinyurl.com/ymvmv54t>
7. Aljazeera. (2025). 47 agreements worth \$6.4 billion signed at the Syrian-Saudi Investment Forum. Aljazeera. Retrieved July 28, 2025, from <https://www.aljazeera.net/ebusiness/2025/7/24/saudi-arabia-investment-forum>
8. Al-Khouli, A. (2024). Asbestos water pipes pose cancer risk in Idlib. Enab Baladi. Retrieved 07 02, 2025, from <https://english.enabbaladi.net/archives/2024/02/asbestos-water-pipes-pose-cancer-risk-in-idlib/>
9. Al-Sarraj, A. (2022). A Decade of War and the Enduring Water Crisis in Syria. Emarites Policy Center. Retrieved June 17, 2025, from <https://www.epc.ae/en/details/featured/a-decade-of-war-and-the-enduring-water-crisis-in-syria>
10. Al-Terkawi, K., & Al-Mugharbel, A.-A. (2024). The status of major crops in Syria after 2010 [Arabic: حالة 2010 المحاصيل الزراعية الرئيسية في سوريا بعد عام 2010]. Jusoor for Studies. Retrieved July 07, 2025, from <https://tinyurl.com/433227za>
11. Atik, O., Kadour, A., Mahmoud, I., Al-Hasan, K., Al-Nabhan, A., Jazieh, H., . . . Pianosi, F. (2024, October 29). Irrigation Water in Northwest Syria: Impact of the Recent Crisis and Drought. *Water*, 16(21). doi:<https://doi.org/10.3390/w16213101>
12. Awwad, R. (2024). Burying Destruction: The Sea as Lebanon's Post-War Dumping Ground. DARAJ. Retrieved 07 02, 2025, from <https://daraj.media/en/burying-destruction-the-sea-as-lebanons-post-war-dumping-ground/>
13. Bader, M. (2015). Life inside Syria's makeshift oil refineries. Middle East Eye. Retrieved July 09, 2025, from <https://www.middleeasteye.net/features/life-inside-syrias-makeshift-oil-refineries>
14. Belt, J. (2025). Rebuilding Lives Through Livelihoods. SARD. Retrieved November 4, 2025, from <https://www.sardngo.org/blog/rebuilding-lives-through-livelihoods>

15. Ben Crump. (n.d.). What Causes Environmental Injustice? Retrieved from Ben Crump Trial Lawyer for Justice: <https://bencrump.com/environmental-justice-lawyer/what-causes-environmental-injustice/>
16. Climate Center. (2024). Climate Fact Sheet - Syria. Climate Center. Retrieved from <https://www.climatecentre.org/publications/14134/syria/>
17. Daiyoub, A., Gelabert, P., Saura-Mas, S., & Vega-Garcia, C. (2023, July 28). War and Deforestation: Using Remote Sensing and Machine Learning to Identify the War-Induced Deforestation in Syria 2010–2019. *Land*, 12(8). doi:<https://doi.org/10.3390/land12081509>
18. Daiyoub, A., Muhamad, L., & Singla, L. R. (2024). Environmental Injustice in Syria How the War is Disproportionately Affecting Vulnerable Communities. Fundació Autònoma Solidària UAB Universitat Autònoma de Barcelona. Retrieved from https://www.uab.cat/doc/informeSiria_en
19. Daoudy, M. (2020, December 14). Syria's Human Security Is Inseparable from Its Environmental Health. Retrieved from The Century Foundation: <https://tcf.org/content/report/syrias-human-security-inseparable-environmental-health/>
20. Doun, G., Darwish, O., Patel, N., Mhawish, A., & Sharba, H. (2025). Identifying the Pockets Most Affected by Temperature Rise and Evaluating the Repercussions on Urban Communities and Their Agricultural Lands. *Remote Sensing*. Retrieved from <https://www.mdpi.com/2072-4292/17/9/1601>
21. DRC. (2025). The Missing Link - The Centrality of Protection in Early Recovery in Syria . Danish Refugee Council. Retrieved 4 November, 2025, from <https://drc.ngo/resources/documents/missing-link-the-centrality-of-protection-in-early-recovery-in-syria/>
22. Eid, A., & Ibrahim, H. (2024). Daraa's second war: Drought and migration. Enab Baladi. Retrieved June 18, 2025, from <https://english.enabbaladi.net/archives/2024/11/daraas-second-war-drought-and-migration/>
23. Eklund, L., Theisen, O., Baumann, M., Tollefsen, A., Kuemmerle, T., & Nielsen, o. (2022). Societal drought vulnerability and the Syrian climate-conflict nexus are better explained by agriculture than meteorology. *Commun Earth Environ* 3. doi:<https://doi.org/10.1038/s43247-022-00405-w>
24. El-Dahan, M. (2022). Exclusive: Climate change, conflict decimate Syria's grain crop. Reuters. Retrieved July 07, 2025, from <https://www.reuters.com/markets/commodities/exclusive-climate-change-conflict-decimate-syrias-grain-crop-un-fao-2022-09-20/>
25. Enab Baladi. (2025). Damascus Governorate Responds to the Complaints on 'Al-Edaasharieh' Landfill. [Arabic: "محافظة دمشق تستجيب لشكاوى مكب "اليدعشرية"]. Enab Baladi. Retrieved August 05, 2025, from <https://tinyurl.com/5ccepst5>
26. Enab Baladi. (2025). Damascus- Waste Pickers Lose their Jobs after Relocating the Landfill [Arabic: "دمشق.. النباشون يتوقفون عن العمل بعد نقل المكب"]. Enab Baladi. Retrieved August 05, 2025, from https://www.youtube.com/watch?v=tQ-KCdGT_j0&t=5s
27. EPA. (n.d.). Projects. Retrieved from Environmental Protection Agency of Syria: <https://epa-sy.org/projects>
28. Erian, W. K. (2011). Drought vulnerability in the Arab region: Case study – Syria. United Nations International Strategy for Disaster Reduction (UNISDR). Retrieved from https://www.preventionweb.net/english/hyogo/gar/2011/en/bgdocs/Erian_Katlan_&_Babah_2010.pdf
29. European Commission, D. G. f. (2009). Country Environmental Profile for the Syrian Arab Republic - Contract N° 2008/171432 - Framework Contract Beneficiaries – Lot 6 - Final Report. European Union - Capacity4dev. Retrieved from https://capacity4dev.europa.eu/library/country-environmental-profile-syria_en
30. Fanack Water. (2025). Water Resources in Syria. Retrieved May 22, 2025, from Fanack Water: <https://water.fanack.com/syria/water-resources/>
31. FAO. (2025). Drought Alert - Widespread crop failure to impact the food security of failed 2024/2025 winter rains. Rome: Food and Agriculture Organisation of the United Nations. Retrieved August 12, 2025, from <https://openknowledge.fao.org/items/bf52f354-c8f3-4f3f-9367-4d5347016c7b>

32. FAO. (2025). Syrian Arab Republic - Emergency and Recovery Plan of Action 2025-2027. Rome: Food and Agriculture Organization of the United Nations. doi:978-92-5-139670-4
33. Fedaa, K. (2025). Syrian-Turkish talks to restore 59 schools. Syrian Arab News Agency. Retrieved June 04, 2025, from <https://sana.sy/en/?p=359543>
34. Gaafar, R. (2021). The Environmental Impact of Syria's Conflict: A Preliminary Survey of Issues. Arab Reform Initiative. Retrieved April 10, 2025, from <https://www.arab-reform.net/publication/the-environmental-impact-of-syrias-conflict-a-preliminary-survey-of-issues/>
35. Gamila, S. (2023). Breathing amidst Ruins. Untoldmag. Retrieved 07 02, 2025, from <https://untoldmag.org/breathing-amidst-ruins/>
36. GCER. (2016). Guidance Note on Inter-Cluster Early Recovery. GCER. Retrieved from <https://reliefweb.int/report/world/guidance-note-inter-cluster-early-recovery-january-2016>
37. Global Cluster for Early Recovery. (2016). Early Recovery In One Minute. Retrieved from YouTube: <https://www.youtube.com/watch?v=t1eOGG3KSYE>
38. Haj Youssef, L., Katt, M., & Albadry, W. (2022). Syria's Poisoned Earth - How years of conflict have polluted and destroyed Syrian land. Retrieved June 05, 2025, from <https://unbiasthenews.org/syria-war-poisoned-soil/>
39. HALO. (n.d.). Deaths and Injuries in Syria Since the Fall of the Assad Regime. The HALO Trust. Retrieved May 8, 2025, from <https://www.halotrust.org/where-we-work/middle-east/syria/>
40. Hansson, L., & Beier, A.-C. (2024). Environmental and Climate Change Policy Brief. Sida's Helpdesk for Environment and Climate Change. Retrieved 09 26, 2025, from <https://tinyurl.com/5a6kb3vx>
41. Ibrahim, H., Karazi, H., Al-Mahmoud, H., & Al-Khouja, M. (2025). Oil and gas slowly flowing into Syria. Enab Baladi. Retrieved July 09, 2025, from <https://english.enabbaladi.net/archives/2025/04/oil-and-gas-slowly-flowing-into-syria/#>
42. IFRC. (n.d.). Syria Climate Fact Sheet. The International Federation of Red Cross and Red Crescent Societies. Retrieved from <https://go.ifrc.org/countries/206/additional-info>
43. Insecurity Insight. (2023). The Links between Conflict and Hunger in Syria - Conflict, Hunger and Aid Access. Insecurity Insight. Retrieved July 06, 2025, from <https://insecurityinsight.org/wp-content/uploads/2023/04/Syria-Conflict-and-Hunger-March-2023.pdf>
44. Insecurity Insight. (2023). The persisting challenges of Syrian Agriculture from air-delivered explosive weapons and ground-based explosives. Insecurity Insight. Retrieved from Insecurity Insight: <https://tinyurl.com/5n8dnaw2>
45. Insecurity Insight. (2023). The recurring Risks of Crop Destruction in Syria from Conflict-Ignited Fires During the Summer Months. Insecurity Insight. Retrieved May 18, 2025, from <https://tinyurl.com/stx33pey>
46. Jalabi, S. (2024). The Ugly Face of the Renewable Energy Transition in Agriculture in Northeast Syria. Justice For Life. Retrieved 06 26, 2025, from <https://jfl.ngo/en/the-ugly-face-of-the-renewable-energy-transition-in-agriculture-in-northeast-syria/>
47. Kmetz, R. (2024, July 09). Bridging the Gap: Environmental Justice and Climate Justice. Retrieved April 24, 2025, from LinkedIn: <https://www.linkedin.com/pulse/bridging-gap-environmental-justice-climate-ryan-kmetz-cibje/>
48. Kurdistan24. (2023). Syrians Turn Plastic Waste into Rugs to Make A Living. Retrieved from Kurdistan24: <https://www.kurdistan24.net/en/story/391643>
49. L'Orient-Le Jour. (2020). Environmental expert: No action has yet been taken to deal with the danger of asbestos in the debris from the Beirut port blast. L'Orient-Le Jour. Retrieved 06 30, 2025, from <https://tinyurl.com/3eacwawp>
50. Latschan, T. (2024). In data: Syria after the war. DW TV. Retrieved June 03, 2025, from <https://www.dw.com/en/in-data-syria-after-the-war/a-71126617>

51. LCPS. (2021). The Government Monitor No. 19 - Hazardous Waste from the Beirut Port Explosion. The Lebanese Center for Policy Studies. Retrieved 06 30, 2025, from <https://www.lcps-lebanon.org/en/articles/details/2455/the-government-monitor-no-19--hazardous-waste-from-the-beirut-port-explosion>
52. Mauvais, L. (2020). The "invisible recyclers": Syrian refugees seek a living in Jordan's informal waste sector. Syria Direct. Retrieved May 7, 2025, from <https://syriadirect.org/the-invisible-recyclers-syrian-refugees-seek-a-living-in-jordans-informal-waste-sector-2/>
53. MoLAE. (2020). Land Degradation Neutrality Target Setting Programm - Final Country Report. UNCCD. Retrieved from <https://tinyurl.com/3nsncbm4>
54. Morató, A. C. (2024). The war in Syria has wiped out 19% of the country's forests, equivalent to the entire metropolitan area of Barcelona. CREAf. Retrieved August 12, 2025, from <https://www.creaf.cat/en/articles/war-syria-has-wiped-out-19-countrys-forests-equivalent-entire-metropolitan-area-barcelona>
55. Muhammad, H. (2023). The Barrel Costs 3000 SP - Costly and Unsanitary Tanks Substitute the Drought in Daraa [Arabic: صهاريج مكلفة وغير صحية بديل الجفاف في درعا - البرميل بثلاثة آلاف ليرة]. Enab Baladi. Retrieved July 14, 2025, from <https://tinyurl.com/yf3ndvw4>
56. OCHA. (2021). Syrian Arab Republic - Euphrates Water Crisis & Drought Outlook. OCHA. Retrieved from <https://reliefweb.int/report/syrian-arab-republic/syrian-arab-republic-euphrates-water-crisis-drought-outlook-17-june-2021>
57. OCHA. (2021). Syrian Arab Republic: Euphrates water crisis & drought outlook, as of 17 June 2021. OCHA. Retrieved from <https://www.unocha.org/publications/report/syrian-arab-republic/syrian-arab-republic-euphrates-water-crisis-drought-outlook-17-june-2021>
58. OCHA. (2021). Ten years of war in Syria, more than half of children continue to be deprived of education. United Nations Office for the Coordination of Humanitarian Affairs (OCHA). Retrieved June 05, 2025, from <https://www.unocha.org/publications/report/syrian-arab-republic/ten-years-war-syria-more-half-children-continue-be-deprived-education>
59. OCHA. (2024). The United Nations Resident Coordinator and Humanitarian Coordinator (RC/HC) for Syria, Adam Abdelmoula, launches the Early Recovery Strategy (2024-2028). OCHA. Retrieved from <https://www.unocha.org/publications/report/syrian-arab-republic/united-nations-resident-coordinator-and-humanitarian-coordinator-rchc-syria-adam-abdelmoula-launches-early-recovery-strategy-2024-2028>
60. OCHA. (2025). Clearing debris to save and improve lives. United Nations Office for the Coordination of Humanitarian Affairs. Retrieved June 25, 2025, from <https://tinyurl.com/285cs5zt>
61. OCHA. (n.d.). United Nations Office for the Coordination of Humanitarian Affairs-UNOCHA- Syria Hub. OCHA. Retrieved May 9, 2025, from <https://www.ocha-sy.org/index.htm>
62. Orto, N. (2025). Syria's Water Crisis: Assessing the Intersection of Climate Change and Geopolitical Interests. Fanack Water. Retrieved July 09, 2025, from <https://water.fanack.com/publications/syrias-water-crisis-assessing-the-intersection-of-climate-change-and-geopolitical-interests/>
63. Paradigm MENA. (2025). From Abundance to Deficit: a Historical and strategic Review of Syria's water security (1970 - 2024). Paradigm MENA. Retrieved from <https://tinyurl.com/bdfymtmy>
64. PAX. (2015). Amidst the Debris: A desktop study on the environmental and Public Health Impacts of Syria's Conflict. PAX. Retrieved from <https://paxforpeace.nl/wp-content/uploads/sites/2/import/import/pax-report-amidst-the-debris-syria-web.pdf>
65. REACH. (2023). Current Situation of the Water Crisis in Northeast Syria and its Humanitarian Impacts, July 2023 | Northeast Syria. REACH initiative. Retrieved July 14, 2025, from <https://reliefweb.int/report/syrian-arab-republic/current-situation-water-crisis-northeast-syria-and-its-humanitarian-impacts-july-2023-northeast-syria>
66. Recovery, G. C. (2022). EARLY RECOVERY IN ONE MINUTE. Retrieved from YouTube: <https://www.youtube.com/watch?v=t1eOGG3KSYE>

67. Relief Web. (2025). Syria: Drought 2021-2025. Relief Web. Retrieved June 07, 2025, from <https://reliefweb.int/disaster/dr-2021-000125-syr#appeals-response-plans>
68. Relief Web. (n.d.). Syria: Drought - 2021-2024. Retrieved May 7, 2025, from Relief Web: <https://reliefweb.int/disaster/dr-2021-000125-syr#appeals-response-plans>
69. ReliefWeb. (2025, March 15). 14 years of conflict in Syria: Humanitarian needs remain immense. Retrieved from ReliefWeb: <https://reliefweb.int/report/syrian-arab-republic/14-years-conflict-syria-humanitarian-needs-remain-immense>
70. Resly, S. (2025, May 15). Interview on environmental justice in Syria. (T. Alshami, Interviewer)
71. Salameh, S. (2024). Children in Homs and Hama will continue their education in schools repaired by UNICEF - UNICEF provides rehabilitation support to damaged schools across the country. UNICEF. Retrieved August 11, 2025, from <https://www.unicef.org/syria/stories/children-homs-and-hama-will-continue-their-education-schools-repaired-unicef>
72. SANA. (2025, July 30). Damascus Governorate: the Transfer of Bab Sharqi's Landfill to an Alternative Location [Arabic: بدء نقل مكب النفايات في باب شرقي إلى موقع بديل]. Retrieved from SANA: <https://tinyurl.com/3kdub7rj>
73. SANA. (2025). Syrian Energy Minister Discusses Cooperation with U.S. Deputy Secretary of Energy. Syrian Arab News Agency. Retrieved November 4, 2025, from <https://sana.sy/en/economic/2275732/>
74. SARD. (2025). SARD Flash Report 01: Latakia Wildfires, Syria (7 July 2025). Relief Web. Retrieved August 12, 2025, from https://reliefweb.int/report/syrian-arab-republic/sard-flash-report-01-latakia-wildfires-syria-7-july-2025?utm_source=chatgpt.com
75. Shahla, Z. (2025, April 27). Environmental journalist. (T. Alshami, Interviewer)
76. Shahla, Z. (2025). Mines: The Deadly Legacy of Syria's War. The New Humanitarian. Retrieved May 8, 2025, from <https://www.thenewhumanitarian.org/news-feature/2025/04/10/mines-deadly-legacy-syrias-war>
77. Shammass, K. (2025). Pollution and Attacks on Residents and Cleaners - unsupervised 'Waste Pickers' in Damascus Neighbourhoods. [Arabic: تلوث واعتداءات تطول السكان وعمال النظافة - "نباشون" دون رقيب في أحياء دمشق]. Enab Baladi. Retrieved August 05, 2025, from <https://tinyurl.com/5bzvpfjr>
78. SNHR. (2013). A Report of the Destruction of Schools and its Consequences. Syrian Network for Human Rights (SNHR). Retrieved June 04, 2025, from <https://snhr.org/blog/2013/01/01/981/>
79. SNHR. (2018). Satellite Imagery Proves that Russian Attacks Have Exterminated Entire Eastern Ghouta Towns. Syrian Network for Human Rights. Retrieved from <https://snhr.org/blog/2018/05/31/52253/>
80. Souleiman, D. (2020). Black Waters: Oil Spills Pollute Northeast Syria Creeks. International Business Times. Retrieved July 09, 2025, from <https://www.ibtimes.com/black-waters-oil-spills-pollute-northeast-syria-creeks-3015723>
81. SRTF. (n.d.). Complementary Project for Enhancing Food Security in Dar'a and Quneitra Governorates. Syria Recovery Trust Fund. Retrieved August 12, 2025, from <https://www.srtfund.org/projects/255-complementary-project-for-enhancing-food-security-in-dar-a-and-quneitra-governorates>
82. SRTF. (n.d.). Electricity. Syria Recovery Trust Fund. Retrieved August 16, 2025, from <https://www.srtfund.org/categories/20-electricity>
83. SRTF. (n.d.). Rehabilitation of 15 Schools in Quneitra Governorate. Syria Recovery Trust Fund (SRTF). Retrieved June 04, 2025, from <https://www.srtfund.org/projects/227-rehabilitation-of-15-schools-in-quneitra-governorate>
84. SRTF. (n.d.). Rehabilitation of Pumping Station and Channels in Ar-Raqqa. Syria Recovery Trust Fund. Retrieved August 11, 2025, from <https://www.srtfund.org/projects/576-rehabilitation-of-pumping-station-and-channels-in-ar-raqqa>

85. SRTF. (n.d.). The SRTF's Agricultural Support Yields Notable Results in Northeast Syria: Bountiful Wheat Production and Improved Livelihoods in Ar-Raqqa Governorate. Syria Recovery Trust Fund. Retrieved August 11, 2025, from <https://www.srtfund.org/news/820-the-srtf-s-agricultural-support-yields-notable-results-in-northeast-syria-bountiful-wheat-production-and-improved-livelihoods-in-ar-raqqa-governorate>
86. STJ. (2020). Timeline of the Disruptions Series of Aluk Water Pumping Station, North East Syria. Syrians for Truth and Justice. Retrieved June 18, 2025, from <https://stj-sy.org/en/timeline-of-the-disruptions-series-of-aluk-water-pumping-station-north-east-syria/>
87. Syria TV. (2025). Landfill expansion sparks public anger in Al-Kiswah, Rural Damascus [Arabic: توسعة دمشق مكب النفايات يثير غضبا شعبيا في الكسوة بريف دمشق]. Syria TV. Retrieved August 04, 2025, from <https://www.youtube.com/watch?v=FHIX-H3S-ho&t=13s>
88. Syria TV. (2025, May 27). Water Association: Damascus faces the worst drought in 70 years, and warnings of harsh summer [Translated from Arabic: 70 منذ أسوأ موجة جفاف منذ مؤسسة المياه: دمشق تواجه أسوأ موجة جفاف منذ 70 عاماً وتحذيرات من صيف قاس]. Syria TV. Retrieved June 04, 2025, from Syria TV: <https://tinyurl.com/fdnh5wdx>
89. The Golden Environmental Prize. (2022, January 04). What Environmental Justice Means—and Why it Matters. Retrieved April 12, 2025, from The Golden Environmental Prize: <https://www.goldmanprize.org/blog/what-environmental-justice-means-and-why-it-matters/>
90. The Oxford Review. (n.d.). Environmental Justice – Definition and Explanation. Retrieved April 08, 2025, from The Oxford Review: <https://oxford-review.com/the-oxford-review-dei-diversity-equity-and-inclusion-dictionary/environmental-justice-definition-and-explanation/>
91. Trading Economics. (n.d.). Syria GDP. Retrieved July 23, 2025, from Trading Economics: <https://tradingeconomics.com/syria/gdp>
92. U.S. Energy Information Administration. (2015, June 24). Syria. Retrieved July 09, 2025, from U.S. Energy Information Administration: <https://www.eia.gov/international/analysis/country/syr>
93. Ülker, D., Erguven, O., & Gazioglu, C. (2018). Socio-economic impacts in a Changing Climate: Case Study Syria. *International Journal of Environment and Geoinformatics*, 5(1), 84-93. doi:10.30897/ijgeo.406273
94. UNDP. (2023, June 30). Climate change is a matter of justice – here's why. Retrieved from UNDP: <https://climatepromise.undp.org/news-and-stories/climate-change-matter-justice-heres-why>
95. UNDP. (2023). Climate Change is a Matter of Justice - Here's Why. United Nations Development Programme - Climate Promise. Retrieved May 19, 2025, from <https://climatepromise.undp.org/news-and-stories/climate-change-matter-justice-heres-why>
96. UNDP. (2023). Environmental Challenges and the Road to Resilience: Transforming Eastern Ghouta's Landscape. United Nations Development Programme. Retrieved June 06, 2025, from <https://www.undp.org/syria/stories/struggle-survival-transforming-eastern-ghoutas-environmental-landscape>
97. UNDP. (2023). UNDP and FAO restore the irrigation operations at Sector 7 in Deir Ez-Zor. UNDP. Retrieved July 25, 2025, from <https://www.undp.org/arab-states/press-releases/undp-and-fao-restore-irrigation-operations-sector-7-deir-ez-zor>
98. UNDP. (2023). UNDP in Syria Rebuilding Lives and Hope. UNDP. Retrieved November 4, 2025, from <https://www.undp.org/syria/blog/undp-syria-rebuilding-lives-and-hope>
99. UNDP. (2025). Driving Sustainable Energy Transformation Norway and UNDP Support the Development of a Renewable Energy Master Plan for Syria. UNDP. Retrieved August 15, 2025, from <https://www.undp.org/syria/press-releases/driving-sustainable-energy-transformation-norway-and-undp-support-development-renewable-energy-master-plan-syria>
100. UNDP Climate Change Adaptation. (n.d.). Syrian Arab Republic. Retrieved 05 9, 2025, from Adaptation UNDP: <https://www.adaptation-undp.org/explore/arab-states/syrian-arab-republic>

101. UNDP. (n.d.). Global Cluster for Early Recovery (GCER). Retrieved from United Nations Development Programme - Representation Office: <https://www.undp.org/geneva/global-cluster-early-recovery-gcer>
102. UNEP. (2020). Environmental Management Guidelines for Debris Recycling Sites in Iraq. United Nations Environment Programme. Retrieved from <https://www.unep.org/resources/toolkits-manuals-and-guides/environmental-management-guidelines-debris-recycling-sites>
103. UN-Habitat. (2021). UN-Habitat, UNDP, FAO to launch Adaptation Fund Project to address climate change. UN-Habitat. Retrieved August 12, 2025, from <https://tinyurl.com/z3p8seep>
104. UN-Habitat. (2022). Pursuit of Environmental Sustainability and Climate Resilience through Urban Recovery in Syria. UN-Habitat. Retrieved from https://unhabitat.org/sites/default/files/2022/09/environment_paper.pdf
105. UNHCR. (2025, March 13). Syria Refugee Crisis Explained. Retrieved from USA for UNHCR The UN Refugee Agency: <https://www.unrefugees.org/news/syria-refugee-crisis-explained/>
106. UNICEF. (2025). Education- Whole of Syria Response. UNICEF. Retrieved August 11, 2025, from <https://www.unicef.org/syria/documents/response-snapshots-january-june-2025>
107. UNICEF. (2025). Where War Lingers Long after the Fighting Stops: Children in a Landscape of Death and Danger. UNICEF. Retrieved May 8, 2025, from <https://www.unicef.org/press-releases/where-war-lingers-long-after-fighting-stops-children-landscape-death-and-danger>
108. United Nations. (2025). 'Syria simply cannot withstand another wave of instability,' Security Council hears. UN News. Retrieved October 27, 2025, from <https://news.un.org/en/story/2025/06/1164481>
109. United Nations Office for the Coordination of Humanitarian Affairs. (2025). Clearing debris to save and improve lives. United Nations Office for the Coordination of Humanitarian Affairs. Retrieved June 25, 2025, from <https://tinyurl.com/285cs5zt>
110. World Bank. (2025). Syrian Arab Republic. World Bank. Retrieved July 23, 2025, from <https://tinyurl.com/yck4hjuv>
111. Worldometer. (2016). Syria Oil. Retrieved from Worldometers: <https://www.worldometers.info/oil/syria-oil/>
112. Yale Sustainability. (2020, October 01). Yale Experts Explain Environmental Justice. Retrieved April 02, 2025, from Yale Sustainability: <https://sustainability.yale.edu/explainers/yale-experts-explain-environmental-justice>
113. Youssef, D. (2025). Forest fires that devour our hearts [Arabic: حرائق الغابات التي تلتهم قلوبنا]. Lahlah. Retrieved August 12, 2025, from <https://tinyurl.com/mr2d7ve2>
114. Youth4governance. (2025). Lebanon's Rubble Crisis: A Choice Between Environmental Rehabilitation and Irreversible Damage. Youth4governance. Retrieved 07 02, 2025, from <https://www.youth4governance.org/news/lebanons-rubble-crisis-a-choice-between-environmental-rehabilitation-and-irreversible-damage/>
115. Zwijnenburg, W. (2016). Scorched earth and charred lives - Human health and environmental risks of civilian-operated makeshift oil refineries in Syria. PAX. Retrieved April 28, 2025, from <https://tinyurl.com/ypsejvsy>
116. Zwijnenburg, W., & Postma, F. (2016). Living under a black sky. Pax. Retrieved July 09, 2025, from <https://tinyurl.com/4envkzzm>

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