# Seeing Through One Health:
## The Disaster Economy of Recycling in Post-Earthquake Türkiye

Achieving One Health through Food Security

KALKINMA ATÖLYESİ

Funded by:
RSE The Royal Society of Edinburgh
KNOWLEDGE MADE USEFUL

# Seeing Through One Health:
## The Disaster Economy of Recycling in Post-Earthquake Türkiye

**Prepared by**
Ann-Christin Zuntz
Ertan Karabıyık
Umut Kuruüzüm
Afnan El-Gayar
Lisa Boden

*March 2025, Ankara*

**Design**
Kurtuluş Karaşın

**Funding**
*Research for this report was funded by a Research Workshop Grant from the Royal Society of Edinburgh.*

# Table of contents

# 1 Introduction

The Kahramanmaraş twin earthquakes on 6 February 2023 affected approximately 14 million people in Türkiye and produced between 116 million and 210 million tons of rubble - i.e. between ten and sixteen times as much as the 1999 Marmara earthquake.[1] Some calculations are even higher, assuming between 350 and 580 million tons of rubble. Experts estimate that this may include up to around 1.5 million tons of hazardous waste.[2]

Two years later, reconstruction remains an ongoing challenge. Shortly after the earthquake, local authorities classified buildings into five categories: collapsed buildings; those to be demolished within three months due to critical damage; high-risk buildings scheduled for demolition within six months; moderate-risk buildings that could be repaired; and no-risk buildings, deemed safe and free of structural damage. As of 22 January 2022, damage assessment studies conducted in the 11 affected provinces had identified the status of 2,258,622 buildings as follows (see Figure 1):

- 39,361 buildings collapsed,
- 21,191 buildings classified as requiring immediate demolition,
- 202,571 severely damaged,
- 43,344 moderately damaged,
- 1,952,155 slightly damaged or undamaged.

Among the collapsed or severely damaged buildings were not only residential structures, but also government service buildings, historical and cultural landmarks, schools, hospitals, and commercial establishments.[3] In addition to the material losses, three million people were displaced, of whom two million were housed in temporary shelters and containers.[4]

While the Turkish Ministry of Environment, Urbanization, and Climate Change committed to building 358,859 houses by the end of 2025, two years after the

[1] UNDP (2023). "Millions of tons of earthquake rubble await removal in Türkiye." *UNDP*, 24 Feb, www.undp.org/press-releases/millions-tons-earthquake-rubble-await-removal-turkiye.

[2] Doğdu, Gamze, & Seda Nur Alkan (2023). "Evaluation of post-earthquake construction and demolition wastes: 6 February 2023 Kahramanmaraş earthquakes." *Artvin Çoruh University Journal of Engineering and Science* 1(1): 38-50.

[3] Presidency of Strategy and Budget (2024). "Kahramanmaras and Hatay Earthquakes Reconstruction and Development Report." *Presidency of Strategy and Budget*, www.sbb.gov.tr/wpcontent/uploads/2024/02/Kahramanmaras-ve-Hatay-Depremleri-Yeniden-Imar-ve-Gelisme-Raporu-1.pdf.

[4] UNICEF Türkiye (2024). "Humanitarian Situation Report No. 20." *Reliefweb*, 9 May, www.unicef.org/media/156471/file/T%C3%BCrkiye-Humanitarian-SitRep-Earthquake-Response-Q1-2024.pdf.

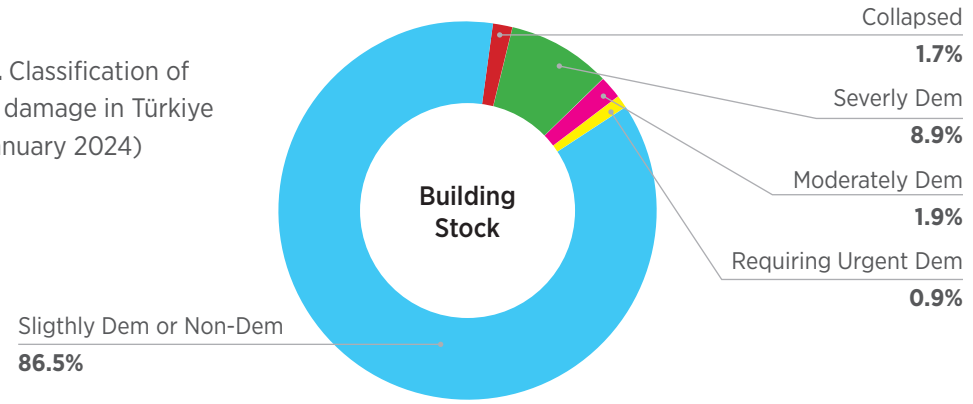



**Figure 1.** Classification of building damage in Türkiye (as of January 2024)

disaster, only 47% of these have been delivered.[5] Due to inflation, costs for imported building materials have increased, and more expensive industrial electricity has also driven up steel prices.[6]

In this report, we focus on the situation of Turkish and Syrian earthquake-affected people and workers in the rubble removal, one and a half year after the disaster, in the worst hit province: Hatay, where over 24,000 people lost their lives in the earthquake, out of a total of over 50,000 victims in Türkiye.[7] We also include additional ethnographic data from the neighbouring Gaziantep province. The research was conducted while demolition was ongoing, and new housing was not ready. In many locations, earthquake-displaced people still lived in container camps, often in flood-prone areas with frequent power outages and a lack of social amenities.

In August 2024, a representative of AFAD, the Turkish disaster management agency, confirmed that there were 204 container camps in Hatay province, with 64,000 containers. Twelve of these camps were inhabited by Syrian refugees and other refugees and migrants. Outside organised camps, another 16,000 people had received containers and self-settled. A year and a half after the earthquake, 7,000 new flats had been assigned to Turkish homeowners, but only 1,100 people in Hatay had already moved in. For example, in Iskenderun, Hatay's second-largest city, the municipality estimated that 24,000 people were still living in containers in spring 2024, and that the demolition of medium- and high-risk houses would continue throughout 2025.

[5] Turkish Medical Association (TTB) & Health and Social Service Workers Union (SES) (2025). "TTB-SES Şubat 2023 Depremleri 2. Yıl Raporu Yönetici Özeti." *TTB*, 6 Feb, www.ttb.org.tr/haber_goster.php?Guid=00c350f4-e4bc-11ef-bf7d-d35b4c6b34c4.

[6] Barnard, Lucy (2024). "How Turkey is rebuilding a year on from devastating earthquake." *Construction Briefing*, 19 April, www.constructionbriefing.com/news/how-turkey-is-rebuilding-a-year-on-from-devastating-earthquake/8034705.article?zephr_sso_ott=AOp1xv.

[7] Erkılıç, Orhan (2024). "Depremin birinci yılında Hatay: "Toplam ölü sayısının yarısı Hatay'dan"." *VOA TÜRKİYE*, 4 Feb, www.voaturkce.com/a/depremin-birinci-yilinda-hatay/7470126.html.

## A One Health Approach:

### *From a post-disaster to an inter-disaster response*

Our analysis in this report is informed by the One Health framework that recognizes the deep interconnections between human, animal and environmental health. The One Health High-Level Expert Panel (OHHLEP) defines One Health as "an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems. It recognizes that health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and inter-dependent."[8]

Originally, championed by veterinary and public health scientists, One Health emerged as a need for monitoring and managing zoonotic diseases. Over time, the framework has evolved into a global approach with the establishment of institutions like the One Health High-Level Expert Panel (OHHLEP) in 2022 by the World Health Organization (WHO), Food and Agriculture Organization (FAO), World Organisation for Animal Health (WOAH) and the United Nations Environment Programme (UNEP).

More recently, One Health advocates have criticized the idea of a universal approach, emphasizing the importance of more context-specific strategies. A key element of this is collaborative knowledge production which takes local communities into consideration for producing locally-relevant sustainable and inclusive solutions. As the scope of One Health has been broadened beyond zoonotic diseases, it has come to include environmental justice and the need to rethink relentless economic growth, in favour of well-being oriented economies.[9]

In this report, we look at the post-disaster recycling economy in southern Türkiye from a One Health perspective, highlighting the unevenly distributed public and environmental health consequences of uncoordinated and profit-driven rubble disposal.

**First**, taking the example of the steel recycling industry near Iskenderun, Hatay province, we show how the earthquake immediately boosted local informal and formal recycling economies. By retracing the flow of scrap metal from destroyed buildings to the production of iron bars for the consumption in newly rising

[8] OHHLEP (2023). "The One Health Definition and Principles Developed by OHHLEP." *WHO*, 3 July, www.who.int/publications/m/item/one-health-definitions-and-principles.

[9] Scientific Advice Mechanism to the European Commission (2024). "SAPEA evidence review report One Health governance in the European Union." *Scientific Advice Mechanism to the European Commission*, 15 Nov, scientificadvice.eu/scientific-outputs/one-health-governance-evidence-review-report.

apartment blocks, we follow the interlocking of different formal and informal economic actors who benefit from these new business opportunities.

**Second**, such "disaster economies" exacerbate existing inequality. We compare emergency shelter and working conditions in rubble removal for Turkish citizens and Syrian refugees, highlighting that Syrian refugees, along with Türkiye's rural poor — particularly the elderly and women — face greater risks of informal, hazardous labour and substandard living conditions.

**Third**, we show that in the earthquake-affected areas, social inequalities intersect with added environmental destruction: rubble, contaminated with asbestos, is transported from city centres to landfills in rural areas, at times close to natural reserves and the north-eastern coast of the Mediterranean Sea. If they remain unaddressed, air and groundwater pollution will have long-term health consequences for local inhabitants, rubble removal workers, and the environment.

In closing, we visualise two possible disaster responses: the Turkish government's current "post-disaster approach" that prioritises rapid reconstruction, at the detriment of social relations, local histories, and the environment; and an alternative "inter-disaster approach" that integrates One Health principles into bottom-up, socially inclusive and environmentally conscious planning to strengthen people's and the environment's resilience in the face of recurrent human-environment shocks.

### Methodology

Data for this report were collected during two rounds of week-long fieldwork and key stakeholder interviews in April and August 2024 in Hatay and Gaziantep provinces in southern Türkiye. We spoke with Turkish and Syrian earthquake victims, workers on landfills and construction sites, as well as representatives of municipalities and experts from the Turkish disaster response agency AFAD. We also conducted site visits to four landfills in İskenderun, Belen, Antakya, and Samandağ where earthquake rubble was stored and sorted, and a steel recycling factory close to Iskenderun where scrap metal from destroyed buildings was moulded into iron bars for new apartment blocks. In addition, we conducted a desk review of existing reports.

# 2 An opportunity for the recycling economy

Compared to other disasters, the 2023 earthquake produced an enormous amount of rubble, and the Turkish government's priority was to clear heavily affected areas quickly, so urban rehabilitation and reconstruction could begin. To this purpose, the government subcontracted companies that would transport debris to landfills in rural areas. In exchange, they were allowed to sell any valuable materials. At the time of our research, there were 26 such landfills in Hatay province where iron, scrap metal, door frames, clothes, and sponges were recovered.

One key finding of our research is that the earthquake did not only disrupt economic activities – it also boosted certain types of formal and informal economies. Take the example of scrap metal recycling: earthquake rubble is moved out of cities. The earthquake rubble was removed from demolition sites and was generally recycled in rural areas outside the cities by contracted companies in exchange for the extracted iron scrap. That is, the state institutions did not pay the contracted companies; instead, the companies accepted the task of removing the rubble in exchange for the extracted iron. In addition to

*Scrap metal from destroyed buildings at a steel mill, Iskenderun industrial area (August 2024)*

iron scrap, aluminum, electronic parts, and plastic were also collected during the recycling process. By summer 2024, most scrap metal had already been recovered and recycled; there were no such plans for concrete, which for the time being was simply stored in landfills.

Along the recycling chain, there are a series of economic actors, including subcontractors that remove and sort the rubble, intermediaries that buy metal and sell it to steel factories, and steel recycling factories. Around Iskenderun, steel recycling factories normally import around 95% of scrap metal from abroad. After the earthquake, the share of domestically sourced scrap metal increased to 10%, as it was readily available and around 10-15% cheaper than foreign imports from EU, Russia, and the U.S.. While local steel mills had already produced iron bars at their maximum capacity before the earthquake, since 2023, 50% of their output (compared to 10% before 2023) has reached domestic markets, fuelling the reconstruction boom in southern Türkiye. Before scrap metal from war zones was banned in 2007 because it often contained unexploded shells, the same steel recycling factories had imported materials from Iraq. This highlights that the 2023 earthquake is far from the first, but rather the last in a series of human-made and natural disasters in the region that have benefited globalised disaster economies.

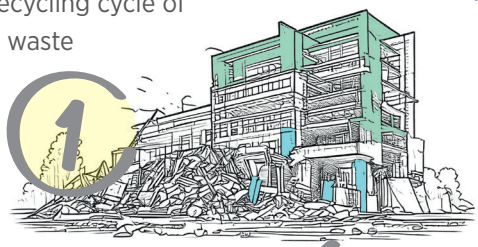
***Case study*** *Scrap metal extraction at a landfill in Belen*

➔ *Through interviews with Turkish and Syrian workers on a landfill near Belen (Hatay province) in April 2024, we managed to map the different formal and informal actors involved in scrap metal recycling. On this particular landfill, there was rubble from 6,000 flats, with an average of 1.6 tons of iron per flat. In April 2024, the price of one kilogram of iron scrap (excluding aluminium) was around 9-10 Turkish Lira (28-31 US cent).*[10] *While the company that had won the tender for this area initially estimated to retrieve 9,600 tons of iron scrap, the local supervisor told us that only 4,000 tons of scrap iron had been extracted within a six-month period. Throughout the processing of the rubble, various informal stakeholders had also extracted scrap metal, including the original owners of the buildings – often working with local scrap metal traders and intermediaries – and excavator operators and workers inside cities, and later at landfills.*

[10] 1 USD = 32,43 TL (August 2024)

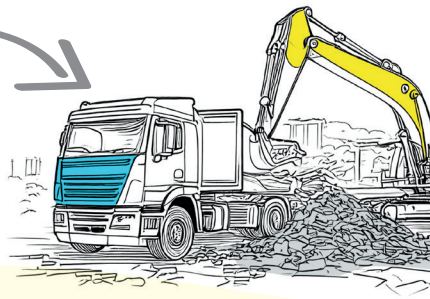
**Figure 2.** Recycling cycle of earthquake waste

# From earthquake construction ruins to reconstruction...



## Earthquake rubble

The 6 February 2023 Kahramanmaraş earthquakes produced between 350 and 580 million tons of rubble, including 1.5 million tons of hazardous waste and 935 thousand tons of scrap iron.



## Construction of new housing

Iron bars are used in construction projects providing new flats to earthquake victims.

recovery

After the Earthquake

intervention

EARTHQUAKE

## Transport of iron bars

Lorries transported iron bars to construction sites in earthquake-affected areas.

## Recycling of scrap metal

Steel recycling factories moulded scrap metal, which is considered high quality and cheap, into iron bars for new construction.

2

## Demolition of damaged buildings

Heavily damaged buildings were demolished and debris was removed. Building foundations were dismantled on site.

3

## Transport of debris

Lorries transported debris from destroyed buildings to landfills outside city centres.

decrease

Before the Earthquake

preparedness

4

## Extraction of scrap metal

Subcontracted companies transported debris to landfills in exchange for being allowed to extract and sell scrap metal. They hired Syrian and Turkish workers and excavator operators to sort the debris. Occasional scrap collectors, often the elderly and women, also removed scrap metal from landfills and sold it to intermediaries.

5

## Transport of scrap metal

Lorries transported scrap metal from landfills to steel recycling factories.

*Abandoned landfill in Belen, Hatay province (April 2024)*

## Policy Recommendations

**Target:** *Municipalities, private economic actors, academic researchers*

- **Local authorities should consult with local communities about long-term plans for abandoned landfills.** *For example, these could be converted into public parks with social amenities, including playgrounds, recreational areas, sports facilities, and other community services that improve quality of life.*
- **Local authorities, private companies, and university researchers should explore innovative recycling solutions.** *For example, at the time of fieldwork, there was no plan for the long-term disposal of abandoned, or damaged, containers. According to AFAD, by summer 2024, there were 500 empty containers in Hatay province, some of them damaged and not fit to be inhabited. By 2025, there will be an estimated 100,000 empty containers.*

# 3 Invisible informal labour

As rubble travels further away from cities, it is handled by different groups of workers. In the aftermath of the earthquake, local authorities prioritized clearing the debris for reconstruction, to the extent of overlooking the well-being of the workers involved. Informal labour has become invisibilised because of the relocation of rubble outside of cities, and because of convoluted supply chains with multiple economic actors and intermediaries. For example, in August 2023, one steel recycling factory close to Iskenderun received twenty trucks of scrap metal from the earthquake each day. It was bought from a small number of intermediaries that are monitored by the Turkish Ministry of Environment, Urbanisation and Climate Change, to ensure that the metal is not contaminated with radioactive material. However, to our knowledge, there are no similar procedures to monitor that labour regulations are upheld during the extraction of the scrap metal.

Through visits to landfills and interviews with Turkish and Syrian workers, we found that informal labour in the metal recycling industry - without social security nor protective gear - has increased and become more diverse, with Syrian refugees, Turkish women and the elderly at the bottom of the hierarchy. None of the labourers we interviewed wore face masks or other protective gear. As they handle debris that is very likely to be contaminated with asbestos, this puts them at risk of long-term health consequences, especially lung conditions and cancer.

However, jobs in recycling and reconstruction can also be an opportunity for poor workers: a Turkish agricultural intermediary in Erzin, Hatay province, told us that

*Landfill with Syrian and Turkish workers in Belen, Hatay province (April 2024)*

work as scrap collectors (around 900 TL/ day - 28 USD - for gathering 100 kg of scrap metal) and construction (around 1,000 TL/ day - 31 USD -) pays more than agricultural labour (around 600 TL/ day - 18.5 USD -). In addition, construction work is often more long-term, attracting Turkish and Syrian men despite the weak regulations and lack of safety equipment. In İslahiye, a town in Gaziantep province, a Syrian agricultural intermediary reported that well-paid jobs in rubble removal had initially attracted many Syrians, but that they were sent to dismantle heavily damaged buildings and upper floors. A few were killed when the ruins suddenly collapsed. As a consequence, refugees returned to agricultural work.

***Case study*** *Syrian and Turkish workers at a landfill in Belen, Hatay province*

➔ *At a landfill in Belen, a small town in the mountains close to Iskenderun, there were workers with different nationalities, none of them locals. First, five Turkish excavator operators from Sivas in central Turkey were hired with formal contracts, social security coverage and a net monthly salary of 55,000 TL (1,696 USD), with food and accommodation provided by their employer. Before coming to Belen, the operators had first volunteered for two months in the earthquake response in heavily affected Kahramanmaraş. Second, four Syrian workers were assisting with manual tasks, separating material and loading debris by hand. Syrians had to pay a one-off commission fee of 1,000 TL (31 USD) each to the Turkish overseer on site, whom they referred to as a "labour broker". They received daily wages of 1,000 TL, as well as free food, but unlike the Turkish workers, had not signed contracts and had to pay for their own accommodation in nearby Iskenderun (with monthly rents for cheap flats at around 5,000-6,000 TL (154-185 USD) at the time of the research). All men were hired for four months. When we visited the landfill again in August 2024, the extraction of scrap metal had finished and the site had been abandoned. One of the Syrian workers was now employed on a construction site inside Iskenderun, with a higher and, importantly, monthly salary, but still without a formal contract nor social security.*

However, Syrian refugees are not the only vulnerable people involved in sorting earthquake waste. Once companies have finished extracting materials, landfills are handed over to the public. Low-income Turkish people, especially unemployed women and the elderly, look for remaining scrap valuables in the largely cleaned rubble, which they sell to local scrap yards and intermediaries. After hours of collecting iron and aluminum, they loaded them onto motorcycles and donkey carts, with the help of their husbands, and returned home. They work without any protective gear or institutional oversight. By way of illustration, the municipality

*58-year old Turkish woman collecting scrap metal at an abandoned landfill in Samandağ, Hatay province (April 2024)*

of Samandağ granted locals access to the main waste accumulation site in April 2024. We interviewed a 58-year old Turkish grandmother whose house had been destroyed in the earthquake. She was selling aluminium (at 40TL/kg - 1,23 USD -) and scrap metal (at 9TL/kg - 28 US cent -) to a local intermediary, collecting 60 kg of metal a day. On the day of our interview, other elderly people, including a couple with a donkey cart, were also working at the landfill.

## Policy Recommendations

**Target:** *Municipalities, civil society organisations*

- **Local authorities should monitor working conditions at landfills and on construction sites and enforce existing labour regulations.** *Formalising labour in subcontracted supply chains will prevent exploitation, for example the extortion of informal workers by labour brokers charging them commission fees.*
- **Local authorities and civil society organisations should provide training to workers, including refugees and migrants, about labour rights, decent wage, and access to health and social security.**

# 4 Worsening inequality

As the Development Workshop has documented elsewhere, civil society and private companies played a crucial role in providing shelter, food, and other forms of assistance after the earthquake, filling gaps in Türkiye's centralised disaster response.[11] After the end of the emergency phase, lack of inclusive, long-term planning at the national and local level has worsened existing social inequities, while adversely affecting the environment. There is a risk that vulnerable populations may descend into a spiral of worsening poverty and ill-health.

Lack of inclusive solutions to shelter affected both Turkish and Syrian earthquake victims. As destruction led to a housing shortage, further exacerbated by the influx of survivors from other areas, and with reconstruction slower than expected, both grappled with a regional real estate market under exceptional strain. Between March 2023 and March 2024, house prices in Hatay increased by 84%, well above the national average, while rents in earthquake-affected areas soared by over 60%, and sometimes as much as doubled or tripled.[12]

Turkish people who had lost their homes complained about the lack of consultation with local communities. In the new apartment blocks, they were assigned flats through an official lottery. Many homeowners resisted the demolition of their houses, as there were lengthy waits for new flats and they could not afford to rent in the meantime. To many families, a demolition decision meant an additional financial burden and the risk of indebtedness.In April 2024, there were around 42,000 court cases in Hatay province, with homeowners trying to have their buildings reclassified as "moderately" (instead of "highly") damaged, and thus eligible for repair work, rather than demolition, in the aim of avoiding extra costs of reconstruction.

An additional source of confusion among municipality workers and homeowners is the Turkish government's declaration of "reserved areas". In November 2023, an amendment to the Law on the Transformation of Areas under Disaster Risk allowed the Ministry of Environment, Urbanisation and Climate Change to seize ownership of houses in heavily destroyed areas and mark them for demolition.

[11] Kimura, Shuhei (2024). "A field report on the '6 Şubat' Earthquake." *Development Workshop,* www.ka.org.tr/dosyalar/file/Yayinlar/Kalkinma-Atolyesi/A-field-report-on-the-6-Subat-Earthquake.pdf.

[12] Hürriyet Daily News (2024). "Housing prices soar in earthquake-hit provinces." *Hürriyet Daily News*, 3 May, www.hurriyetdailynews.com/housing-prices-soar-in-earthquake-hit-provinces-193096#:~:text=Turkish%20citizens%20rebuilding%20their%20lives,faster%20than%20the%20national%20average.

While property owners are supposed to receive compensation, and could pay towards a new flat in the designated areas, the details are yet unclear.[13]

As for those who accepted the demolition of their homes, many bemoaned that they were "buying back their own homes". Owners of buildings classified as "medium" or "heavily" damaged are entitled to interest-free loans. For example, families may receive a 750,000 TL (23,126 USD) grant along with a 750,000 TL loan. However, with average home prices between 1.8 (55,104 USD) and 3 million TL (92,506 USD)[14], they need to raise additional amounts of hundreds of thousands, or even millions, of TL.

***Case study*** *Waiting to move out of a container camp in Iskenderun*

➔ *In Iskenderun, we visited the container of Ayshe [name changed]. On 21 m², she lives with her husband and her three children, aged between 6 and 14. The building in which the family had previously bought an apartment was classified as "heavily" damaged after the earthquake, preventing them from moving back. They were promised a flat in a new tower block, but as of August 2024, one and a half years after the earthquake, construction work had still not begun. Ayshe expected that they might have to wait for their new apartment to be ready in another 18 months, forcing the family to live in the cramped two-room container for a total of three years. Still, Ayshe was lucky: she and her husband held permanent jobs with the municipality. At the time of the fieldwork, camp residents were still receiving water and electricity for free, and were not charged rent. Some vulnerable residents also received "food cards" from AFAD. For families staying in the camp for longer, the lack of expenses became an opportunity to save money for their future homes. In addition, Ayshe had been able to salvage household appliances from her destroyed flat. While containers came equipped with private bathrooms, air conditioner, a boiler, and sometimes a television set, hers also contained the family's original furniture, washing machine, and refrigerator.*

In the waiting lounge of AFAD's centre in Hatay province, we observed how container residents' expectations sometimes clashed with those of aid providers. On the day of our visit in August 2024, the office was crowded with people

[13] Caglayan, Ceyda, & Burcu Karakas (2024). "Shock and confusion as Turkey seizes earthquake survivors' homes." *Reuters*, 18 March, www.reuters.com/world/middle-east/shock-confusion-turkey-seizes-earthquake-survivors-homes-2024-03-18.

[14] Hürriyet Daily News, ibid.

holding tickets, waiting to report complaints and requests. Government officers were bustling around with files in their hands. A 65-year old man expressed his frustration that the air conditioner in his container home had been broken for six months despite his repeated petitions to get it fixed. Disheartened, he added, "Winter is coming, we need to get this sorted, or we'll freeze to death. Where is the state?" After calming him down, an AFAD representative assured him that the issue would be addressed soon. After the man left, the employee said: "Electricity is free, water is free, the washing machine is free, the thermostat is free. You can't expect the state to handle everything. If the air conditioner is broken, find a repairman and get it fixed. Sure, we faced tough times during the earthquake, but this is starting to feel like they are living like a parasite, leeching off the state indefinitely."

Unlike for home owning Turkish camp residents, there was no clear timeline for relatively more deprived Syrian refugees and other migrants regarding access to housing. While many were housed in camps with free containers, electricity,


*Camp for Turkish citizens in Iskenderun, Hatay province (August 2024)*

*Camp for Syrian refugees and other refugees and migrants in Iskenderun, Hatay province (August 2024)*

and water access, they lacked some other services, as observed in one case. For example, we visited a container camp for foreigners, including Syrian, Afghan, and Uzbek refugees and migrants, and spoke with a Syrian family. In this camp, streets were unpaved, and residents had to pay for air conditioners and boilers themselves. With no private bathrooms and ten shared toilets for 200 containers, some had begun to dig their own toilets. Ineligible for the newly built flats, and unable to pay soaring rents outside the camp, refugees and migrants did not know when they would be able to leave the camp. Some had become homeless not during the earthquake, but rather due to secondary displacement in the rental market. By way of illustration, the landlord of a Syrian family of five had increased their monthly rent from 2,000 TL (62 USD) to 7,000 TL (216 USD), forcing the family to relocate to a camp. While some Turkish landlords had reclaimed rental apartments for their personal use, making tenants homeless, many now asked for a one-year deposit that refugees and migrants could not afford.

## Policy Recommendations

**Target:** *National government,civil society organisations, private economic actors*

- **The national government should decentralise disaster management and establish a legal framework allowing municipalities to play an active role in a comprehensive disaster response (pre-and post-disaster).** *The technical expertise and capacities of local municipalities should be increased.*
- **Civil society and private actors should be involved in all phases of the disaster response, including in disaster preparedness.**

# 5 Recycling and environmental destruction

Rubble removal and reconstruction without long-term planning cause negative externalities for human, animal, and environmental health, illustrating the core principles of One Health which recognize the interconnectedness of these three domains. Rubble was dumped in rural areas with no plan for lasting storage, especially for asbestos-contaminated waste. In August 2024, Iskenderun municipality was still waiting for the United Nations Development Programme (UNDP) to propose a long-term plan, while debris had long been distributed to landfills around the city. In Samandağ, a giant landfill was located close to the city centre, right next to the town's famous Mileyha wetlands. In the town where more than half of all buildings were destroyed, the previous municipality had decided to dedicate an open rubble area next to a public gymnasium. By April 2024, companies had finished extracting scrap metal, but most of the rubble was still there, and landward wind pushed the dust into the city and on a nearby football field where children were playing. In many places, earthquake waste mixes with other types of waste. In Samandağ, the landfill was also near the beach, littered with marine plastic waste, including discarded fishing nets and packaging from around the Mediterranean. In a similar vein, rapid construction of new apartment blocks outside existing cities, often in rural areas, threatens biodiversity. Previously undeveloped land which hosts wildlife, natural water sources and agricultural ecosystems is being cleared without prior environmental assessment.[15] This destruction not only displaces animal species but also increases the risk of zoonotic disease spillover. Groundwater contamination has emerged as another critical One Health concern. Temporary housing solutions risk polluting ground water. By way of illustration, the foreigner camp that we visited in Iskenderun was located on both sides of an irrigation canal, in a flood-prone area. As streets were unpaved, and residents were digging private toilets, human waste risked contaminating water sources.

In a nutshell, what we observed were the makings of a syndemic: vulnerable people, including refugees and migrants, as well as Turkish women, the elderly and rural poor, have been disproportionately affected by the loss of housing and livelihoods. As we showed in the example of the recycling industry, disaster economies have boomed through access to these vulnerable workers and rural

[15] Cf. TTB & SES, ibid.

*Waste accumulation site next to Milleyha wetland area of Samandağ, Hatay province (April 2024)*

areas. The long-term environmental and health consequences will extend far beyond the immediate crisis. Long after reconstruction is complete and landfills are overgrown with grass, many of those who worked there and those who still live nearby will continue to suffer from chronic health effects due to exposure to air and groundwater pollution. These include respiratory illnesses from dust and asbestos inhalation, waterborne diseases, and exposure to industrial pollutants. To date, there have been hardly any studies into post-earthquake air pollution in Türkiye through dust, and secondary health effects caused by inadequate waste disposal.[16] As vulnerable people face added health and economic risks, social inequalities are widened. Some may never fully recover from the earthquake, descending into a spiral – and this limits overall ability to prepare for future disasters.

[16] For an exception, see Zanoletti, Alessandra & Elza Bontempi (2024). "The impacts of earthquakes on air pollution and strategies for mitigation: a case study of Turkey." *Environmental Science and Pollution Research* 31 : 24662–24672.

## Policy Recommendations

**Target:** *Metropolitan and district municipalities, engineers' chambers, doctors' associations, academic researchers, civil society organisations, including refugee-led organisations*

- **Stakeholders should pursue integrated long-term solutions that adapt a One Health approach by not only addressing physical reconstruction in the post-disaster era, but also sustainable waste-management, biodiversity protection and safeguarding public health.** *A positive example is a recently opened waste recycling facility initiated by the Governorate of Hatay, with partial funding and in cooperation with the Government of Japan, that separates harmful substances from debris and then grinds it up, so it can be used as filling material for asphalt roads or in the production of paving stones.[17] Novel simulations show that in post-earthquake contexts, the reuse of concrete, in particular, has the potential to decrease greenhouse gas emissions and adverse environmental and public health effects.[18]*
- **All stakeholders should adopt a holistic one health approach.** *Instead of prioritising quick reconstruction, they should be mindful of the risks of widening the social inequity gap, and to intergenerational health. Long-term damage to human and environmental health can only be avoided through inclusive disaster planning (pre- and post-disaster) that considers disaster preparedness a saving, not a cost.*
- **Stakeholders should shift their mindset from a post-disaster response to existing "inter-disaster", i.e. in preparation of the next disaster to come.**

[17] UNDP (2025). "UNDP Hatay'da deprem enkazının geri dönüştürülmesi için kurulan model tesisi tanıttı." *UNDP*, 4 Feb, www.undp.org/tr/turkiye/news/undp-hatayda-deprem-enkazinin-geri-donusturulmesi-icin-kurulan-model-tesisi-tanitti.

[18] Bilgili, Levent & Afşin Yusuf Çetinkaya (2024). "Environmental impact assessment of earthquake-generated construction and demolition waste management: a life cycle perspective in Turkey." *Environment Systems and Decisions* 44: 424–432.

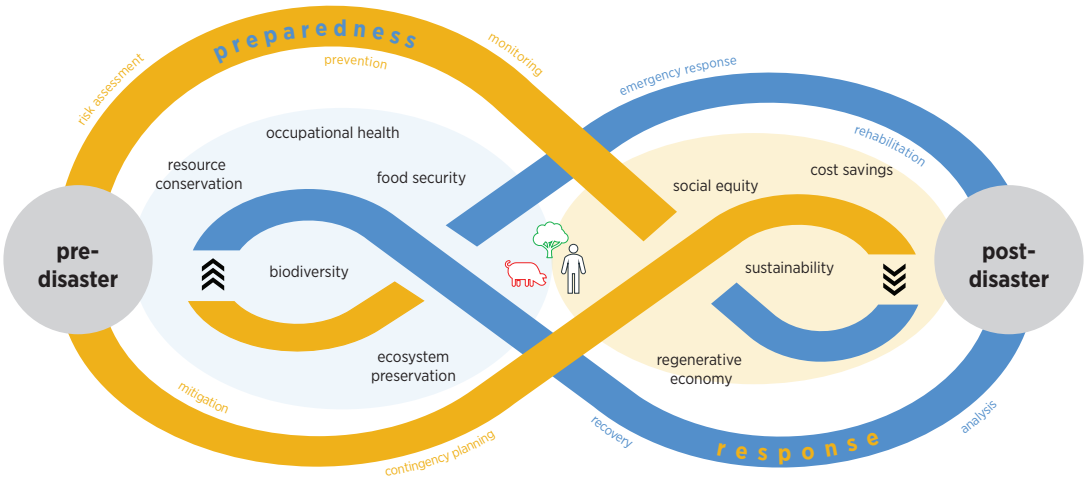



**Figure 3.1**

This graphic represents a continuous cycle of disaster preparedness and response within a One Health framework, integrating human, animal, and environmental health. This holistic model aims to create a sustainable and resilient system that minimizes disaster impact while promoting long-term environmental and societal benefits in favour of a well-being oriented economy.

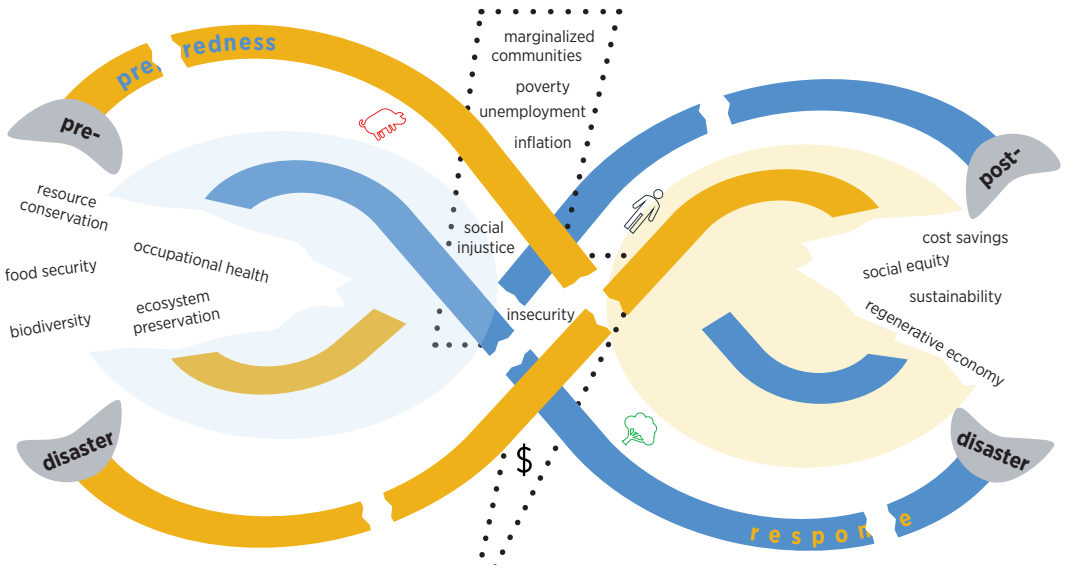



**Figure 3.2**

This graphic depicts a disrupted cycle of disaster preparedness and response, highlighting the consequences of systemic failures. This visualization highlights the risks of neglecting a holistic disaster preparedness and response approach, leading to an exacerbation of existing social inequities. Failure in one phase leads to a cascading negative impact on society, economy, and sustainability resulting in vulnerable populations to descend into a spiral of poverty and ill-health.