A Critical Analysis on Disaster Housing in Türkiye: Retrospective and Prospective Perspective

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Introduction

- Although there is no specific definition of disaster housing, it can be stated as a type of housing that can fulfil various housing needs for disaster victims and encompasses various housing characteristics, including physical and psychological, in disaster-prone areas (Abanoz and Vural, 2023; FEMA, 2009).
- Disaster housing could be sheltering, interim, and permanent housing (FEMA, 2009). **This study has focused only on Permanent Housing.**
- The definition of permanent disaster housing could be stated as there is no specific time limit (lifespan) stipulated for the use of houses built after the disaster, these houses are called permanent disaster housing.
- Permanent housing helps individuals resume their lives and is vital to restoring communities (FEMA, 2009).

Introduction

- Over 42% of Türkiye's land surface area is marked as 1st degree of earthquake zone.
- The country frequently encounters devastating disasters including earthquakes, floods, landslides etc., for geological structure, topography, and climatic characteristics.
- More than 60% of life loss is caused by earthquakes.
- Between 1900 and 2023, 269 earthquakes occurred in Türkiye, resulting in huge losses of lives and damage.
- The largest earthquakes in terms of loss of life and heavy damage were the Erzincan (1939 and 1992), Gölcük-Marmara (1999), the Van (2011), and Kahramanmaraş earthquakes (2023).
- **This study mainly focuses on disaster housing after such severe earthquakes.**

Disaster housing: DEMP (AFAD), HDA (TOKİ)

- The Disaster and Emergency Management Presidency (*Afet ve Acil Durum Yönetimi Başkanlığı*- AFAD) is a governmental agency in charge of disaster management, operating under the Ministry of Interior, Türkiye.

- The Housing Development Administration (HDA) (*Toplu Konut İdaresi Başkanlığı*-TOKİ) of the Republic of Türkiye functioning under the Ministry of Urbanisation, Environment, and Climate Change acts as an umbrella organization in the housing sector rather than competing with others and plays an incentive housing policy role targeted at specific groups.

- TOKİ plays a leading role in the planning, construction, and renovation of housing, infrastructure, and public services in areas affected by natural disasters.

Disaster Housing after Erzincan Earthquake 1939

- The magnitude: 7.9 Ms., People died: ~33,000, Buildings destroyed: ~117,000.
- The city was abandoned entirely, and a new settlement needed to be established in the northern part.
- The Turkish government enacted some earthquake regulations.
- Housing was mainly constructed as **pavilions**. However, the construction of prefabricated houses, with features such as being single-story and located in gardens, has added a new understanding to city architecture.
- Housing construction was performed by forming cooperatives.

Disaster Housing after Erzincan Earthquake 1992

- Magnitude: 6.8 Ms., People died: ~650, damaged or destroyed buildings: ~8,000.

- Reconstructing old settlements was not preferred, and new locations close to the city centre were preferred for house building.

- ~3,000 multi-story and ~3,000 rural houses were constructed. Village-type disaster housing with 12-unit apartment blocks was built.

- However, (1) many researchers/reports discussed the urgent need for Compulsory Earthquake Insurance for all residences and (3) the lack of control mechanisms, (3) permanent disaster housing need to be built.

Disaster Housing after Marmara Earthquake 1999

- Magnitude: 7.6 Ms., People died: ~18,000, Damaged: ~285,000 (houses), and ~43,000 (workplaces).
- The fragment settlements were not considered for the site selection process unless necessary.
- Soil stability, geological situation, and free-of-charge areas (such as the treasury and special administrations) were examined first.
- If low-cost areas could not be found, private lands were expropriated.
- Agricultural lands were not preferred, and economic and suitable sites for infrastructure and public facilities were considered.
- Although, in principle, permanent houses should be built primarily on treasury land, but largely built on private lands.

Disaster Housing after Marmara Earthquake 1999

- Permanent housing was built by the state with (a) the Ministry of Public Works and Settlement, external loans, and internal financing, and (b) the Prime Ministry PIU, with World Bank and European Investment Bank loans.

- 43,000 permanent houses were built in the affected areas using external financing and under the state's control.

- The identified beneficiaries were given their houses, but it was not sufficient compared to severely damaged or demolished houses.

Disaster Housing after Van Earthquake 2011

- Magnitude: 7.2 Ms. (23/Oct/2011) and 5.6 Ms. (9/Nov/2011), People died: ~650, Damaged: ~32,000 (houses) and ~9,000 (workplaces).

- The TOKI built ~17,500 permanent housing units, ~300 social facilities, and ~8,500 individual houses in rural neighborhoods within a year.

- However, produced permanent houses did not cover half of the severely damaged or destroyed houses, which caused a housing deficit.

- Tenant victims were not considered, and a housing deficit was even more.

Disaster Housing after Kahramanmaraş-Centered Earthquakes 6/Feb/2023

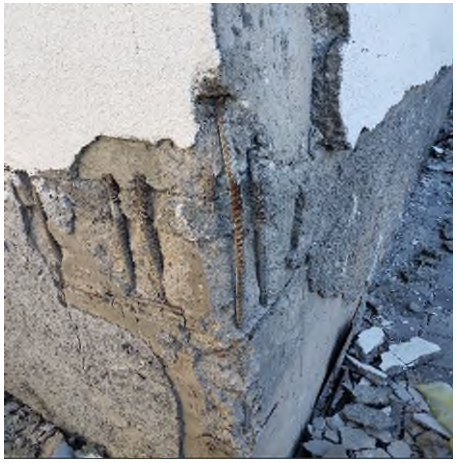
- Magnitude: 7.7 Ms. (in Pazarcık), 7.6 Ms. (in Elbistan), People died: ~54,000 (Türkiye) and ~8,000 (Syria), Homeless: ~1.5 million people, Buildings collapsed: ~85,000.

- In this case, TOKI house became the "safe harbour" of thousands of citizens in Van.

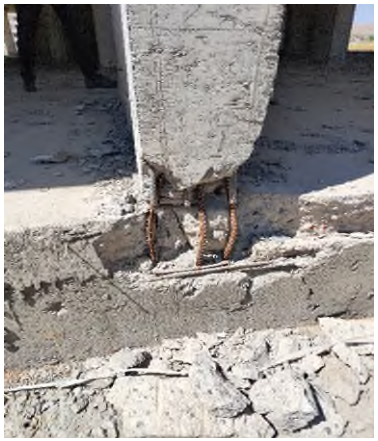
- However, by the beginning of May 2023, 25 decrees and more than 34 decisions had been adopted within the scope of the State of Emergency.

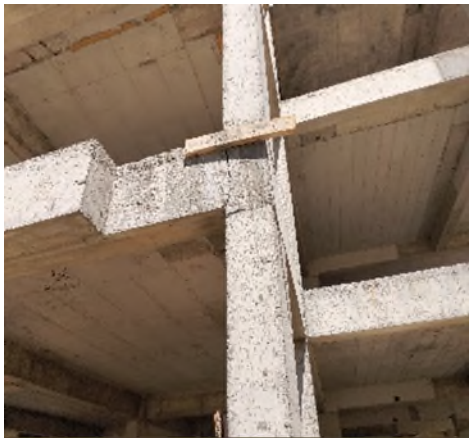
- Law no. 6306 (introduced in 2012) on the 'Law on the Transformation of Areas at Disaster Risk' was amended further to facilitate the administration's intervention in disaster-prone areas.

- Monitoring and evaluation (mainly controlling) of earthquake-resilient housing became one of the major concerns after the earthquakes.



Six- and seven-storied buildings





Photographer: Prof Dr. Mustafa Tombul

Disaster Housing after Kahramanmaraş-Centered Earthquakes 2023

- An interdisciplinary board (academia and practitioners) initiated the National Risk Shield Model, which seems to be a robust move by the government in monitoring and managing the situation after this event.
- TOKİ housing is designed with needed social facilities, considering disaster resilience.
- The housing is planned to be built on raft foundations with a tunnel formwork system, in accordance with the local architecture, with a maximum of 5 stories.
- ~406,000 houses are planned in the earthquake zone and ~83,000 in the village.
- Eligible citizens for disaster housing have been confirmed at a significant discount, with a 2-year grace and a 20-year maturity.

Discussion:
Government policy interventions: A shift from affordability to resilience

Concern	Before Kahramanmaraş earthquake (in 2023)	After Kahramanmaraş earthquake (in 2023)
Major focus	Conventional and Risk minimisation	Risk minimisation with a resilient construction focus National risk shield model (involvement with academia and professionals)
Location	Suitable location	Site and context specific focusing on hilly areas
Buildings	Vertical and horizontal	Horizontal with focusing on a maximum 5 storied
Technique	Conventional also seems to be some sort of earthquake resilience.	The solutions in terms of behaviour against earthquakes such as raft foundation, tunnel formwork carrier system and high concrete strength
Strategy	Urban renewal, affordability and later on transformation	Urban transformation focusing on safe and durable buildings including societal and physical resilience.
Building inspection and maintaining	Poorly followed the standard	Strongly followed the standard
Disaster and climate change	More disaster but less focus on climate change	Disaster and special focus on climate change
Insurance	Disaster preparedness plan	Compulsory Earthquake Insurance should work on large scale
Involvement	Interdisciplinary (weak)	Strong interdisciplinary academic and technical concentration

Discussion:
Government policy interventions

- It has been observed that disaster housing policy implementation dating back from the proclamation of Türkiye in 1923 has taken many decisions, but *experiences from disasters* are either covered up or naturally forgotten soon.

- Community- or neighborhood-based disaster management and planning are still missing.

- A resilient Türkiye is an appreciable movement, but it should address an inclusive framework that includes the environment and urbanisation, transportation, agricultural production, energy, and employment.

- Structural improvements, maintaining building standards and codes, and inspection are vital.

- Preparing a strategy to combat disasters and global climate change, establishing an earthquake and disaster fund, and increasing the scope and effectiveness of Turkish Compulsory Earthquake Insurance are also among the financing options.

Recommendations

- *Urban transformation* projects should be continued rapidly by prioritising high-risk areas.
- The treasury lands could be allocated to low-income people in highly risk disaster-prone areas on such condition that they should live there.
- Sustainability and resilience principles in real estate should be implemented in newly built housing.
- Türkiye's National Earthquake Strategy and Action Plan covers 2012-2023. By aligning with it, the 12th Development Plan, a new strategy and action plan on earthquakes from 2024-2030 could ensure directive policy action.

Thank you all

Q & A

Contact us.

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