



Resilient Housing Ecosystem Assessment Tool (RHEAT) for Türkiye

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Executive Summary

- 1- Preventive work: with a total stock of 12M buildings, 30% of which are deemed structurally at risk. Total need is estimated at USD 500 billion.
- 2- Reconstruction: 90% of the population and 70% of industrial facilities are in seismically active areas. There is an earthquake of magnitude 6 to 7 every year and an earthquake of magnitude greater than 7 every 10 years.
- 3- The scoring system is from 1 to 4. The Turkey scores are mainly 2s and 3s: solutions exist in almost all domains but with a limited system and process understanding. The focus for Build Change is not to create new solutions but rather to improve and optimize existing solutions and work within the system and process.
- 4- The team ran 3 scenarios and the current approach of owner-centered + municipality came as the best positioning. Influencing public policies and regulations can only be a long-term objective, if ever.



Needs Assessment Recommendations and Pathways

- 1- House owner involvement:** Current preventive work is mostly state driven. There is a need to better understand homeowner needs, motivations and means.
- 2- Retrofitting awareness:** Regulation focuses on renewal and not retrofitting. There is more latitude to conduct retrofitting and there is a need for a better communication of its value proposition. The economic crisis will favor retrofitting solutions.
- 3- Funding:** The economic crisis is strong and likely to last a few more years. Organizations can positively impact and influence the housing sector with relatively modest funding. The international funding ecosystem is unique: they do not have entry to Turkey, and no other actors in Turkey can access them.
- 4- Quality workforce:** Turkey has a vibrant construction and engineering workforce, eager to work. The economic downturn is an opportunity to recruit a high quality team.
- 5- Risk awareness:** Limited understanding of risk at all levels. Opportunities to work with homeowners, municipalities, professional chambers, businesses to better understand risk and risk management options.



RHEAT Methodology & Approach

Same scoring system as other RHEATs and same criteria.

Teamwork of Erdem Ergin + Pierre Paya + Oluwaseun Okusanya, led by Louise Foulkes. Cross read from the Turkish team: Alper Altuntop + Şeyma Ertürk + Ferzan Özyaşar and consultation of academicians and professionals.

Dual approach of retrofitting (preventatively) vs reconstruction (post-earthquake) taken into account.

Scoring was done for national level and city level (based on Adana). Scores are similar for national and Adana, although they may differ in other cities.

The team ran 3 scenarios, simulating if all resources and efforts went towards: (1) public policy and central authorities, (2) municipality or (3) homeowners.

Key Findings



Key Findings - Summary

		NATIONAL	ADANA
	PEOPLE/POLICY	2.5	2.6
P1	Policy & Legal Framework for Risk & Resilience	2.9	2.9
P2	Understanding and Framing of Risk	1.8	2.0
P3	Enabling Environment for Effective Building Codes & Standards	3.6	3.6
P4	Implementation Framework: Resilient Building Programs	2.7	2.7
P5	Implementation Framework: Building Permitting	1.8	1.8
P6	Implementation Framework: Construction Monitoring	2.3	2.3
P7	Enabling Environment for Construction Workforce	3.3	3.3
P8	Building Owner Perception & Participation	2.0	2.0
	MONEY	2.3	2.3
M1	Budget Allocations for Resilient Building Policy & Technology	2.4	2.1
M2	Supply of Resilient Buildings	2.8	2.8
M3	Government Supply of Finance for Resilient Buildings	2.1	2.1
M4	Private Sector Supply of Finance for Resilient Buildings	2.2	2.2
M5	Building Owner Participation and Demand for Resilient Buildings	2.0	2.5
	TECHNOLOGY	2.2	2.2
T1	Technical Content and Quality of Building Codes & Standards	2.8	2.8
T2	Risk Data & Mapping	2.3	2.3
T3	Technical Capacity of Construction Workforce	2.8	2.8
T4	Digital Technology	3.0	3.0
T5	Building Owner Perception & Participation	2.5	2.5

- 1- Strong foundations for resilient housing in regulations. But enforcement and execution need improvement.
- 2- Highly qualified workforce. But limited involvement and underuse of professional chambers.
- 3- Strong public and private sector presence in construction. Politicized sector, challenging environment.
- 4- Digital technology in use.
- 5- Limited understanding of risk at all levels.
- 6- Limited involvement of homeowners, centralized and inefficient construction planning process.



Key Findings – “P”

		NATIONAL	Scenario 1		ADANA	Scenario 2	Scenario 3
	PEOPLE/POLICY	2.5	3.2		2.6	3.3	3.2
P1	Policy & Legal Framework for Risk & Resilience	2.9	3.1		2.9	3.4	3.4
P2	Understanding and Framing of Risk	1.8	3.0		2.0	3.0	2.6
P3	Enabling Environment for Effective Building Codes & Standards	3.6	3.6		3.6	3.8	3.8
P4	Implementation Framework: Resilient Building Programs	2.7	3.0		2.7	3.3	3.3
P5	Implementation Framework: Building Permitting	1.8	2.6		1.8	2.8	2.8
P6	Implementation Framework: Construction Monitoring	2.3	3.0		2.3	3.0	3.0
P7	Enabling Environment for Construction Workforce	3.3	3.3		3.3	4.0	4.0
P8	Building Owner Perception & Participation	2.0	3.8		2.0	2.8	3.0

- 1- Gains from 3 scenarios are similar, 25%, 27% and 26% respectively.
- 2- Strong regulations and politicized regulatory process. With occurrence of amnesties and ill thought regulations. High risk of corruption.
- 3- Strong central authority involvement because lucrative sector. Limited involvement of homeowner. Homeowner centered approach favored by bilaterals such as AFD.
- 4- Regulation inclined towards renewal and limited on retrofitting. There is more room for maneuver and retrofitting also favored by bilaterals such as AFD.
- 5- Limited understanding of risk among all stakeholders.

Next Steps:

- 1- Understand the motivations and dynamics/challenges of different stakeholders, particularly house owners.
- 2- Build an ecosystem. First layer professional groups + universities. second layer municipalities, IFIs. Third layer central institutions.
- 3- Control mechanisms: look into it and improve it where possible.



Key Findings – “M”

		NATIONAL	Scenario 1		ADANA	Scenario 2	Scenario 3
	MONEY	2.3	2.7		2.3	2.6	2.6
M1	Budget Allocations for Resilient Building Policy & Technology	2.4	2.7		2.1	2.7	2.9
M2	Supply of Resilient Buildings	2.8	2.8		2.8	2.8	2.5
M3	Government Supply of Finance for Resilient Buildings	2.1	2.9		2.1	2.9	2.9
M4	Private Sector Supply of Finance for Resilient Buildings	2.2	2.8		2.2	2.2	2.2
M5	Building Owner Participation and Demand for Resilient Buildings	2.0	2.3		2.5	2.5	2.5

- 1- Housing sector is the largest employer and housing is seen as a commodity, a primary investment alternative. as such, there is a vibrant private sector ecosystem. But housing finance and resilience finance is weak across the board, from state to homeowner.
- 2- The current economic crisis has resulted in high rate of inflation (100% annual inflation) and high rates of interest (3,5% monthly interest). This has distorted the housing market prices, led to inaccessible housing credits and stopped urban renewal operations due to higher costs of operations.
- 3- The state is actively looking for financial resources for both reconstruction and urban renewal. The reconstruction of the affected areas move very slowly, the state is covering a limited amount of reconstruction needs with the large majority to be covered by the owners.
- 4- Strong insurance tools exist but penetration is limited. While the total damage and loss of the 2023 EQs is estimated at 100B \$, only 6B\$ is insurance covered. Compared to 25-30% in more developed economies.
- 5- Retrofitting vs renewal contains a strong financial component: home owners pay none to little during renewal but front the entire cost during retrofitting.

Next Steps:

- 1- Gain from 3 scenarios different: 17%, 11% and 10% respectively.
- 2- raise awareness on the value of retrofitting.
- 3- Mobilize funding through IFIs and bilaterals: no need for financial mechanisms or solutions, they exist. but the crisis reduced the amount of money available.
- 4- Build trust among IFIs and bilateral donors and engage with central authorities at arm's length.



Key Findings – “T”

		NATIONAL	Scenario 1		ADANA	Scenario 2	Scenario 3
	TECHNOLOGY	2.2	3.3		2.2	3.1	3.1
T1	Technical Content and Quality of Building Codes & Standards	2.8	3.3		2.8	3.5	3.5
T2	Risk Data & Mapping	2.3	3.8		2.3	2.8	3.0
T3	Technical Capacity of Construction Workforce	2.8	3.0		2.8	3.0	3.0
T4	Digital Technology	3.0	4.0		3.0	3.0	3.0
T5	Building Owner Perception & Participation	2.5	2.5		2.5	3.0	3.0

- 1- There is a strong code, focused on life safety and not immediate use.
- 2- There is a good construction workforce quality, but there is limited oversight.
- 3- Digital tools exist and there is an appetite for them.
- 4- Risk information is limited (on hazards rather than vulnerability and on seismic rather on climatic) and there is limited diffusion of the existing information.

Next Steps:

- 1- Gains from 3 scenarios different: 25%, 15%, and 17% respectively.
- 2- Provide engineering services to both house owners and municipalities.
- 3- Develop tools for understanding of risk and make it accessible for various stakeholders.
- 4- Work on new technological solutions or improve existing ones, expand their use.