



# Istanbul Impact Story

## Shifting Urban Planning Paradigms for Co-produced Resilience



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**Tomorrow's  
CITIES**  
Urban Risk in Transition

# Summary

**In Istanbul, Tomorrow's Cities has influenced key policy documents, such as Büyükçekmece's 5-year strategic plan and Istanbul's Provincial Disaster Risk Reduction Plan.**

Istanbul, Türkiye's largest city, was selected as a learning city of the Tomorrow's Cities project due to its precarious position at the intersection of natural hazards, rapid urbanisation, and socio-economic inequality.

Straddling the North Anatolian Fault, the city is highly **vulnerable to earthquakes**, with the potential for a catastrophic event looming over its dense population of over 15 million. Compounding this seismic risk is Istanbul's rapid, unregulated urban growth—where 70% of the city's buildings were constructed in the last 40 years, often without earthquake-resistant designs. Gentrification and displacement deepen inequalities, placing low-income communities at even greater risk.

Tomorrow's Cities sought to break this cycle of risk creation by pioneering the implementation of the Tomorrow's Cities Decision Support Environment (TCDSE) in Istanbul. The initiative introduced a science-based, community-driven approach to urban planning, shifting the focus from reactive disaster response to proactive, risk-informed development.

Istanbul became a testing ground for new methodologies such as Future Visioning, which brought together municipal leaders,

scientists, and marginalised communities to collaboratively envision and design a more resilient urban future.

The outcomes of the Tomorrow's Cities project in Istanbul are far-reaching. The adoption of the TCDSE by local authorities has influenced key policy documents, such as **Büyükçekmece's 5-year strategic plan** and **Istanbul's Provincial Disaster Risk Reduction Plan**, embedding risk reduction into the city's long-term development goals.

The project also significantly raised community awareness about disaster risks, engaging **over 30,000 residents through workshops**, focus groups, and exhibitions. Moreover, it fostered stronger connections between local governments and previously marginalised communities, ensuring that urban planning reflects the voices of those most at risk.

Looking ahead, the project's success in Istanbul has laid the groundwork for broader impact across the Marmara region and beyond. Collaborations with international organisations, including the World Bank and United Cities & Local Governments, aim to scale up the TCDSE across Türkiye, transforming how cities plan for and mitigate disaster risks. By placing community needs and scientific insights at the heart of urban development, Tomorrow's Cities is helping Istanbul—and similar cities—build a more inclusive, resilient, and sustainable future.



# 99

Participants of Tomorrow's Cities TCDSE workshops.

# 30 000

Attendees of Tomorrow's Cities Exhibition in Istanbul.



▲ Future Visioning activities with women in Istanbul

▲ Tomorrow's Cities Exhibition in Istanbul

# Introduction

Istanbul, the largest city in Türkiye and the most populous in Europe, lies just north of the North Anatolian Fault, a highly active seismic zone. This fault was responsible for the 1999 Izmit Earthquake (magnitude 7.4), which caused over 17,000 deaths and displaced more than 250,000 people.

In less than a century, the city's population skyrocketed from 1 million in 1950 to over 15 million in 2024, with 80% of buildings constructed after 1980. Many of these structures were built without proper consideration of the city's seismic context, significantly heightening the potential for a disaster in the event of an earthquake.

**Current estimates indicate that a magnitude 7.5 earthquake could lead to at least 40,000 buildings suffering moderate to severe damage.** This risk is particularly concerning given the city's economic challenges, which could hinder recovery efforts and exacerbate social and infrastructural impacts.

Additionally, climate change has intensified the city's exposure to other hazards. Heavy rainfall events have led to urban floods, such as those in 2009 that claimed 31 lives and caused an estimated \$70 million in damages.



Common building typology in Istanbul

Over the years, efforts to enhance Istanbul's earthquake resilience have centred on urban regeneration, resulting in the construction of high-rise buildings in traditionally low-rise areas. This shift has triggered gentrification, displacing low-income residents to the suburbs, disrupting social diversity, and eroding the identity of established neighbourhoods. These changes have also heightened tensions between communities and public institutions.

## Istanbul



**5 461 sq. km**  
metropolitan area



**80% built**  
after 1980



**15 655 924**  
population in 2023



**2.5% pop increase**  
in the last 25 years

# Challenges

## 1

### Earthquake Risk

Positioned near the North Anatolian Fault, Istanbul is at high risk for major earthquakes, similar to the destructive 1999 Izmit quake.

## 2

### Vulnerable Infrastructure

With 80% of its buildings constructed in the past 40 years without seismic-resistant designs, Istanbul's infrastructure is highly vulnerable. Issues like lax building code enforcement, rapid informal construction, and inadequate disaster preparedness have been noted by sources such as UN-Habitat, the World Bank, and Turkish media.

## 3

### Over-population

Driven by rural-to-urban migration, many people have moved to Istanbul in the last 50 years, seeking better economic prospects. As a result, Istanbul is currently hosting approximately 20% of the entire population of Türkiye.

## 4

### Low-income Population

Türkiye hosts one of the largest migrant populations globally, with 3.9 million registered migrants, including over 500,000 Syrian refugees living in Istanbul. This adds to the city's social and economic challenges.

## 5

### Gentrification

Gentrification has emerged as a consequence of urban regeneration efforts aimed at improving Istanbul's earthquake resilience. This process has displaced many low-income residents to the city's peripheries, weakening social diversity and community bonds. As a result, tensions between local communities and public institutions have grown, while the cultural identity of these neighbourhoods has been gradually eroded.

In this challenging context, Tomorrow's Cities **is dedicated to pinpointing the urban risks tied to multi-hazard scenarios and lay the groundwork for a community-based, science-backed approach** offering a more inclusive, versatile strategy that ensures local needs and resilience are at the forefront of development efforts.





▲ Social contrasts in Fikirtepe neighborhood, Büyükçekmece ►

The Fikirtepe neighbourhood, on the Anatolian side of Istanbul, has undergone drastic transformation after being designated for urban regeneration. This project became one of the most controversial urban interventions in Turkish history. Thousands of households were displaced, and hundreds were left homeless due to contractor bankruptcies. The area was subsequently transformed into an extremely dense, high-rise zone, now regarded as a cautionary example of how urban regeneration should not be conducted.



# Büyükçekmece District

**Büyükçekmece, Istanbul's rapidly growing district, stands at the forefront of Tomorrow's Cities testing ground.**

Nestled on the European side of the Bosphorus Strait, with the Sea of Marmara as its backdrop, Büyükçekmece is a **rapidly developing district** within Greater Istanbul. With a current population of over 14,000 residents, the area is undergoing **significant expansion**, as municipal authorities have allocated nearly 500 hectares for urban development. Projections suggest the population will exceed 30,000 within the next 30 years.

However, the district's geological attributes render it particularly **susceptible to landslides and liquefaction**, especially in the event of an earthquake. Furthermore, its coastal location adds to its vulnerability with the potential for **tsunamis as a considerable threat**.

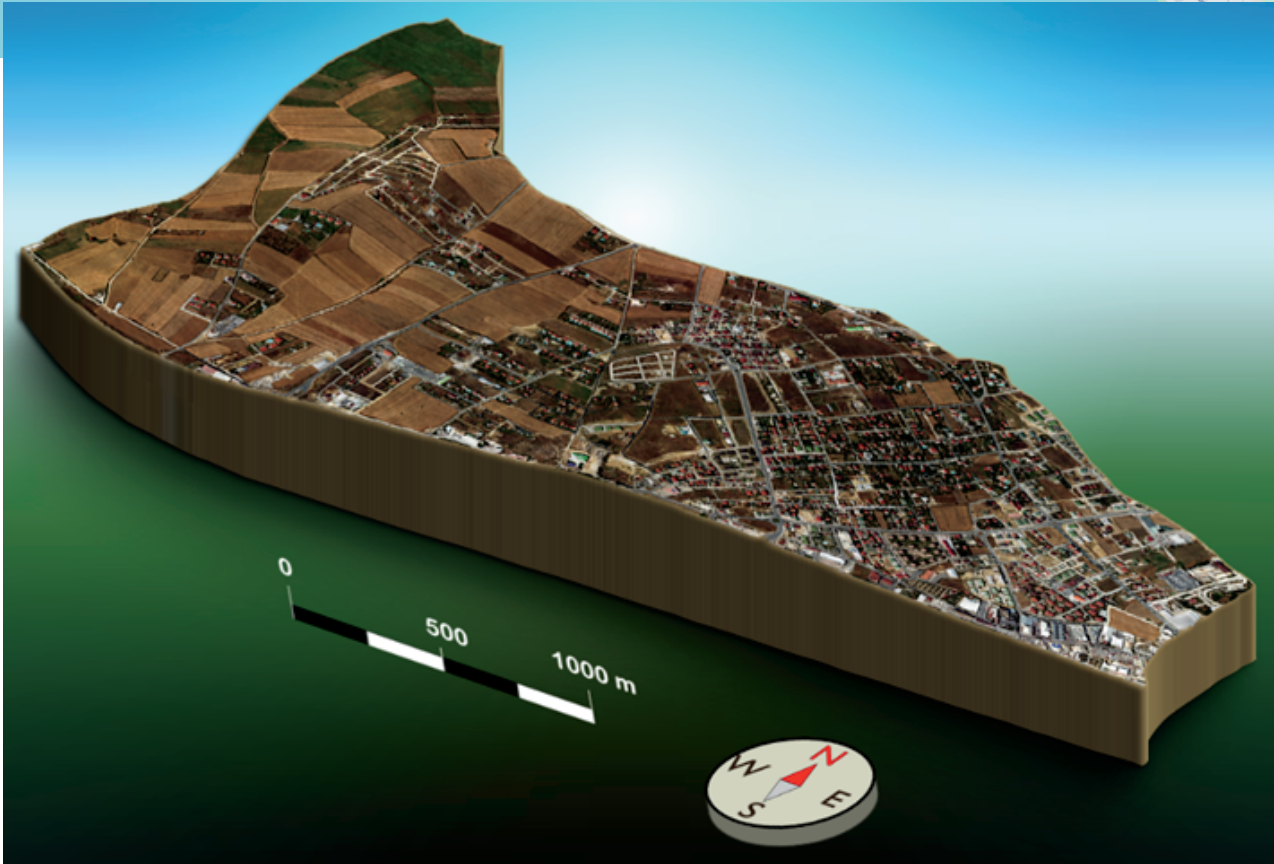
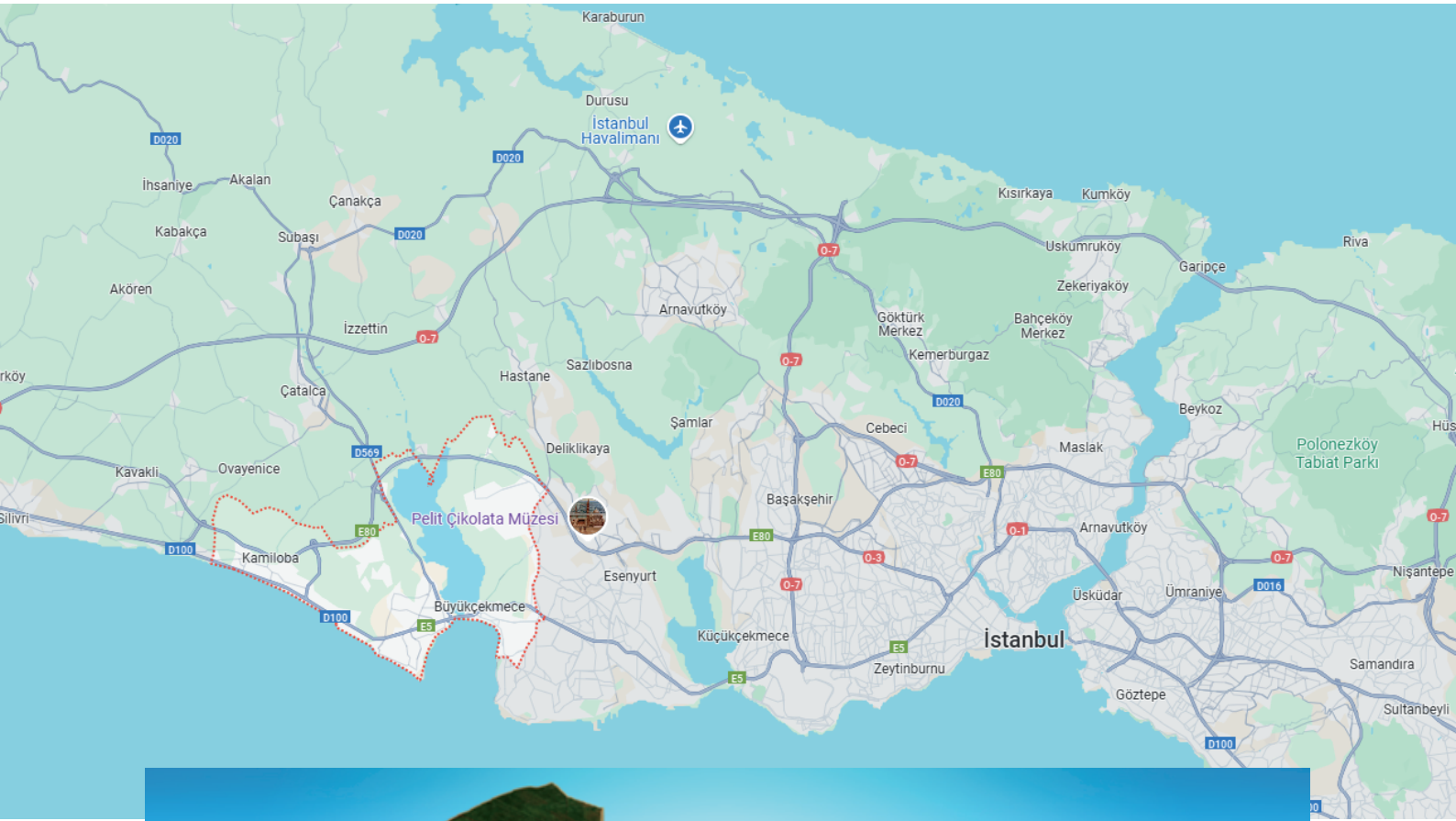
With its earlier participation in the 2050 Büyükçekmece Vision initiative, designed to assess the region's present condition and shape its future via participatory planning approaches involving diverse interest groups, the district emerged as a **prime candidate** for piloting Tomorrow's Cities Decision Support Environment (TCDSE).

***"Büyükçekmece, a district on Istanbul's western edge, seamlessly blends its ancient history with contemporary living. Known for its stunning coastline along the Marmara Sea, historic landmarks like the Kanuni Sultan Süleyman Köprüsü, and vibrant cultural scene, Büyükçekmece offers visitors a unique mix of natural beauty, historical depth, and modern amenities."***

Büyükçekmece, description by Türkiye's tourism authorities



▲ Artistic rendition of the future Büyükçekmece



▲ Büyükçekmece area that was chosen as Tomorrow's Cities testing ground

# TCDSE Implementation

The Tomorrow's Cities work in Istanbul played a pivotal role in the development of the TCDSE.

The Tomorrow's Cities work in Istanbul played a **pivotal role** in the development of the TCDSE.

As one of the first partner cities of Tomorrow's Cities (often referred to as 'learning cities'), many of the methodologies of the TCDSE were initially tested and refined in Istanbul before being implemented elsewhere. The city's approach was also groundbreaking for the region, serving as one of the few examples of participatory urban planning that incorporated disaster risk sensitivity and future-oriented exposure models into its urban planning frameworks.

The implementation of Tomorrow's Cities framework in Istanbul can be divided into three stages.

## Stage 1: Learning & Scoping (2019-2021)

From 2019 to 2021, the Learning & Scoping Stage focused on understanding the city's risk landscape, considering both natural hazards and the socio-urban dynamics exacerbating vulnerability. This research aimed to identify how urban regeneration has deepened inequality and heightened both physical and social risks.

### 0. City Scoping

Diverse community groups imagine, discuss, and propose ideas (visions) for their future resilient city.



### 1. Future Visioning



### 2. Urban Scenarios

Each Vision becomes an Urban Scenario composed of Land Use Plans and Policies.

Urban Scenarios are tested against hazards. The social and physical impacts of those hazards are quantified.



### 3. Hazard & Impact Modelling



### 4. Risk Agreement

Community groups and decision makers gather to learn about the impacts of their urban planning and policy decisions.

Institutional stakeholders representing multiple sectors and levels of government gather to discuss how to implement learnings to reduce risk.



### 5. Implementation Pathways

Key studies were conducted in several areas:

- Urban regeneration: Focused on Fikirtepe, where regeneration projects had led to social displacement and increased inequalities.
- Social vulnerability: Targeted Sancaktepe, a district known for its socially vulnerable population, to explore the factors contributing to higher vulnerability within these communities.
- Seismic code performance: **Assessed** the structural resilience of newly built tunnel-form buildings.
- **Transportation resilience**: Examined overpass durability and transportation functionality in the event of an earthquake.

### Stage 2: Transition (2021-2022)

During the Transition Phase, the focus shifted towards implementing the TCDSE where the primary objective was to integrate the TCDSE into the urban planning agenda of Büyükçekmece District Municipality. This partnership guided the municipality in shifting its focus from traditional disaster management to proactive risk reduction, using a scientific, participatory approach embedded in urban planning practices.

### Stage 3: Implementation (2022-2024)

In the final two years of implementing the TCDSE, the impact strategy centred on bringing traditionally excluded people and community groups into the urban planning decision-making process.

TC's local team aimed to create spaces where residents could make informed decisions, articulate their needs and demands based on scientific insights, and fully exercise their right to participate in shaping their urban environment.

This approach ensured that the planning process was more inclusive and reflective of the broader community's concerns and aspirations.

### Stakeholder Engagement

While Büyükçekmece Municipality had made some initial efforts at participatory planning, Tomorrow's Cities took these efforts to the next level with a more scientific and structured approach. The local team identified and engaged a diverse range of community groups, holding **12 focus group discussions** with mukhtars\*, NGOs, and marginalised or disadvantaged groups who are typically excluded from urban planning processes. **A total of 99 people** participated in three workshops, where they engaged in discussions about earthquake risks and had the opportunity to clarify any misconceptions.



▲ Tomorrow's Cities meeting with Büyükçekmece Vice Mayor

Municipal representatives attended all workshops and were gradually integrated into discussions, fostering mutual understanding between the community and decision-makers. The workshops allowed the municipality to explain some of their decisions, helping participants understand the trade-offs involved in urban planning and the legitimate reasons behind unfulfilled demands.

The focus group discussions laid the foundation for the TCDSE by identifying the key stakeholder groups for implementation. Among these groups, women, youth, disabled individuals, the elderly, and social assistance beneficiaries were selected as primary stakeholders for the Büyükçekmece.



▲ Tomorrow's Cities workshops in Istanbul

# Research

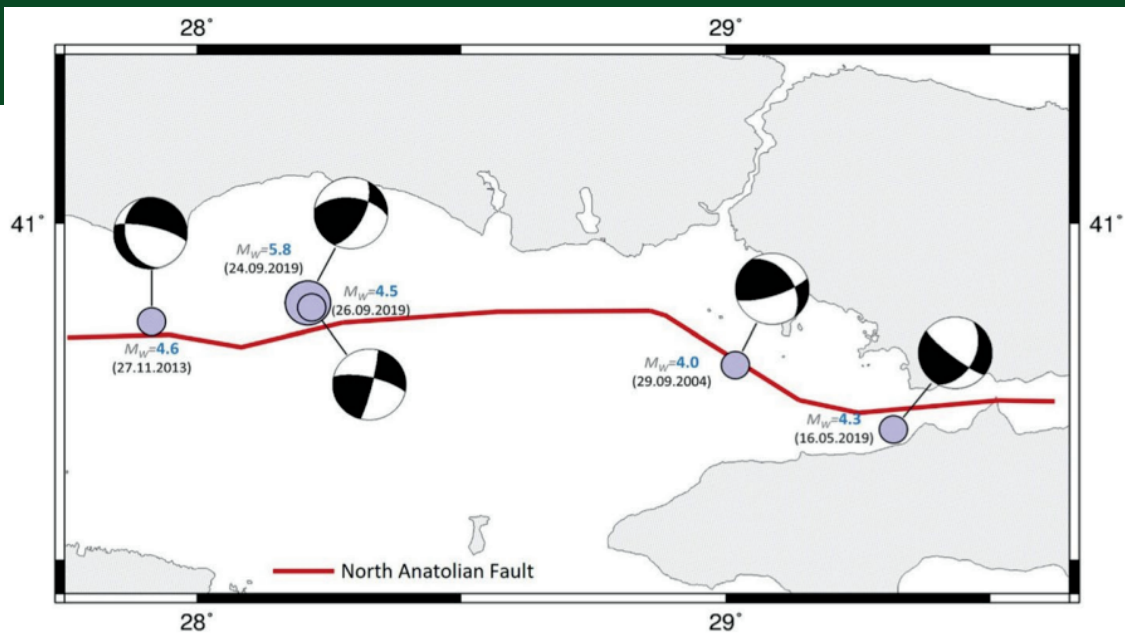
## Assessing seismic hazard and uncertainty in Büyükçekmece

Research conducted as part of Tomorrow's Cities by Boğaziçi University aimed to forecast the impact of medium to large-magnitude earthquakes, evaluating how local ground conditions and fault characteristics could influence shaking.

The study used a site-specific approach, incorporating local geological factors to simulate 50 earthquake scenarios. By modelling variations in earthquake magnitude, stress levels, and the location of the quake's hypocentre, researchers were able to pinpoint the uncertainties that could affect future seismic events. Findings revealed significant ground motion variability, with softer soils and shallow bedrock amplifying the seismic waves, increasing the risk of damage. The study also highlighted the uncertainty caused by stress and hypocentre variations, which could drastically alter the predicted impact of an earthquake.



This research emphasises the importance of localised planning to mitigate seismic risks. With Istanbul facing potential major earthquakes, the study provides valuable insights for policymakers, urban planners, and local authorities to strengthen the city's resilience.



▲ The five earthquakes selected for the validation study, their magnitudes, and the dates of their occurrence (Süleyman and Çaktı 2020, 2022)



## An analysis of social vulnerability in Sancaktepe, Istanbul

Working in Sancaktepe, a rapidly urbanising district in Istanbul with a large population of low-income families, tenants, and marginalised groups highly exposed to natural hazards, Tomorrow's Cities researchers highlighted the social vulnerabilities of its residents. Through interviews, they examined the socio-economic challenges, housing issues, and perceptions of disaster risk among the community. The findings reveal that urban renewal processes have often worsened these vulnerabilities, displaced tenants, and placing low-income homeowners in precarious conditions. The study concluded that current disaster risk reduction policies fail to address the needs of these vulnerable communities. To mitigate this, the research recommends prioritising the voices of marginalised groups in disaster risk reduction planning, and ensuring that future urban renewal projects are more inclusive and supportive of at-risk populations.



# Impact

**The Tomorrow's Cities approach strengthened participatory urban planning in Büyükçekmece, shaping local policy and empowering marginalised communities. This success is now driving the expansion of the approach to other municipalities and regions.**

The Tomorrow's Cities local team in Istanbul encountered significant challenges in influencing urban planning in Büyükçekmece, largely due to Turkey's rigid planning procedures and the highly politicised nature of the sector. Nevertheless, the project introduced a groundbreaking approach to participatory urban planning, actively involving marginalised and disadvantaged groups. By working closely with the municipality, the team made a lasting impact, helping to shape their urban regeneration agenda—an area previously lacking a clear strategy. This collaboration not only refined the TCDSE methodology but also delivered meaningful results, with the potential to transform urbanisation across the region.

## **Policy Influence**

The findings have been shared with the Büyükçekmece Municipality, and key recommendations have already been integrated into their 5-year strategic plan. This ensures that, over the next five years, the municipality will actively work to implement the action points derived from



View of Büyükçekmece

extensive qualitative and quantitative research conducted over the past two years in the district. Additionally, the process is underway to have the TCDSE formally endorsed as a baseline methodology in both the municipality's strategic plan and the Provincial Risk Reduction Plan. If successful, TCDSE could be applied across the entirety of Büyükçekmece and potentially in greater Istanbul.

## **Outreach to Other Municipalities**

A workshop will soon showcase the collaboration with Büyükçekmece Municipality to other municipalities in the Marmara Region, aiming to expand stakeholder engagement and upscale the TCDSE's application across the region.

## **Increased Community Awareness**

Through workshops, focus groups, and an exhibition that reached over 30,000 visitors,

the project significantly raised community awareness around disaster risks, particularly earthquakes. The team also proposed the formation of civil initiative committees to bridge the gap between community groups and local government, fostering ongoing communication and collaboration.

### **National and International Collaboration**

The project initiated discussions with key national and international bodies, including the World Bank and United Cities and Local Governments - Middel East and West Africa, to scale up the TCDSE methodology for adoption across Turkey, further extending the project's reach and influence.

### **Enhanced Scientific Understanding**

The project advanced the scientific knowledge of multi-hazard risks in Istanbul, particularly seismic vulnerabilities. This included in-depth studies on the resilience of newly built infrastructure and assessments of vulnerable areas like Fikirtepe and Sancaktepe, ensuring that future urban development is informed by science-based risk assessments.

**This shift from traditional, reactive disaster management to a proactive, risk-informed urban planning approach marks a major step forward for Istanbul and other cities at risk of natural hazards.**



***One of our biggest challenges was navigating Türkiye's deeply structured governance, where policy-making depends on multiple institutions.***

***Collaborating at the local level alone is rarely enough to drive significant changes in urbanisation policies.***

***Yet, despite these obstacles, we succeeded in influencing strategy documents and even the Provincial Risk Reduction Plan—a notable achievement in such a complex environment.***

Ekin Ekici, Tomorrow's Cities Istanbul Hub



▲ Meeting with UCLG-MEWA



*Everyone has a responsibility when it comes to disaster preparedness, and throughout this process, I truly felt heard. Thanks to you, I now feel I can reach out to authorities. You valued my input, and even now, you're reaching out to ask for more of my opinions.*

Social assistance beneficiaries' group



▲ Tomorrow's Cities workshops.



*We learned that it's not just about knowing the basics of earthquakes or picking up a few new facts. There are nuances, sensitivities, and specific measures to take. We also have responsibilities—things that both we and local or central governments need to do. I can truly say we've been enlightened.*

Disabled group



*We're just regular people without an academic background in these subjects, yet you cared about our opinions and took the time to listen to us.*

Women's group

# 2

## Locations

SALT Beyoğlu Gallery  
Istanbul Metropolitan  
Municipality

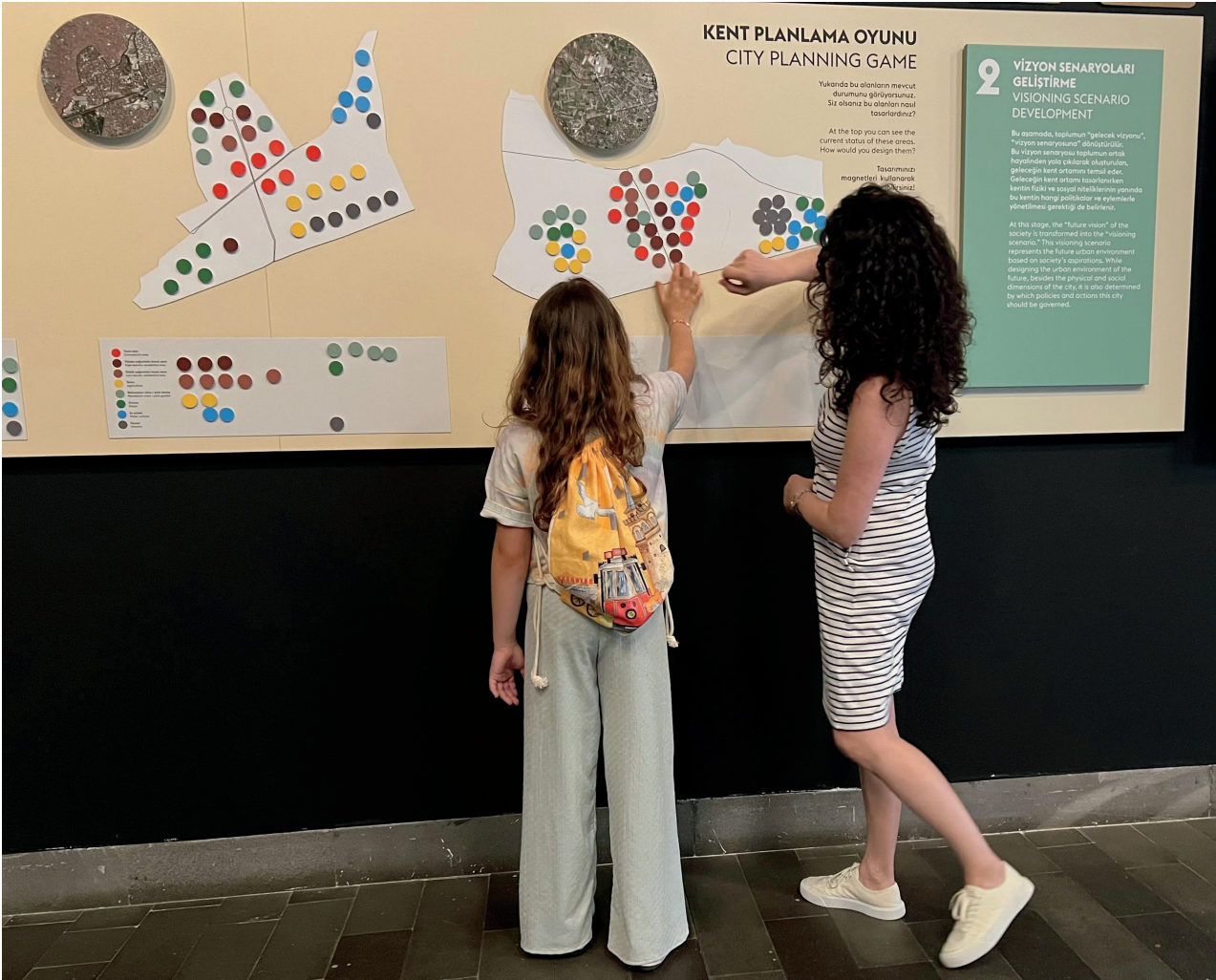
# 30,000

## Visitors

from various ages,  
neighbourhoods, and  
backgrounds



# Tomorrow's Earthquake-Resilient Cities Exhibition



In the summer of 2023, the Tomorrow's Cities Istanbul City Team hosted a groundbreaking exhibition aimed at **raising public awareness** around earthquake resilience and risk. Initially conceived as part of a broader risk communication strategy, preparations for the exhibition began in early 2022. However, it was after the devastating Türkiye-Syria earthquakes in February 2023 that the exhibition's relevance became even more striking, providing a timely platform for education and engagement.

The exhibition was held at SALT Beyoğlu gallery, located on the bustling İstiklal Street in Taksim—one of Istanbul's most iconic streets. It was designed in collaboration with the world-renowned architecture firm Pattu Mimarlık.

Unlike traditional disaster displays that focus on the tragic aftermath, this exhibition took a scientific approach, aiming to **inform rather than alarm**. The content explored the risks of urbanisation in seismic zones, providing valuable insight into how cities like Istanbul can better prepare for future disasters. Alongside the display, the exhibition featured several panel discussions, engaging experts and the public in dialogue. In just two months, the exhibition drew approximately **25,000 visitors**.

The success of the event caught the attention of the Istanbul Metropolitan Municipality, which requested to host the exhibition in its own space and invested in redesigning some elements. IMM hosted the exhibition for an additional 45 days, attracting **5,000 more visitors**, including university students and public decision-makers.

**The exhibition was a highly successful effort to communicate earthquake risks and resilience actions to a broad audience in the heart of Istanbul. Through engaging tools like videos and gamified platforms, complex scientific concepts were made accessible and relatable to people of all ages and backgrounds.**



# In short

**Tomorrow's Cities redefined urban planning in Büyükçekmece, shifting from reactive disaster response to proactive, inclusive, and resilient development.**

In a city vulnerable to both seismic and climate-related hazards, and working closely with local authorities, Tomorrow's Cities pioneered a shift from reactive disaster response to proactive, risk-informed urban development that includes the voices of marginalised communities. Key outcomes include the influencing of the official city planning documents, such as Büyükçekmece's 5-year strategic plan and Istanbul's Provincial Disaster Risk Reduction Plan. This development signals a commitment to long-term resilience, ensuring that disaster risk reduction is central to future growth.

Community engagement was another significant achievement, with thousands of residents participating in discussions and awareness-building activities. This engagement fostered stronger links between local authorities and marginalised groups, giving these communities a voice in shaping their future.

Additionally, the project's collaboration with international bodies like the World Bank and UCLG – MEWA lays the groundwork for expanding these practices across Turkey.

Ultimately, Tomorrow's Cities has set a new standard for risk-informed urban planning, ensuring that Istanbul is better prepared to face future hazards while promoting inclusive and resilient urban development for its citizens.



▲ Tomorrow's Cities workshops

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**2024**

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**UK Research  
and Innovation**



**GCRF**  
Global Challenges  
Research Fund

Up to September 2024, Tomorrow's Cities was an interdisciplinary Urban Risk Hub funded by the UK Research and Innovation (UKRI) Global Challenges Research Fund (GCRF). From 2024 onwards, Tomorrow's Cities functions as a Global Community of Practice for equitable disaster risk reduction.