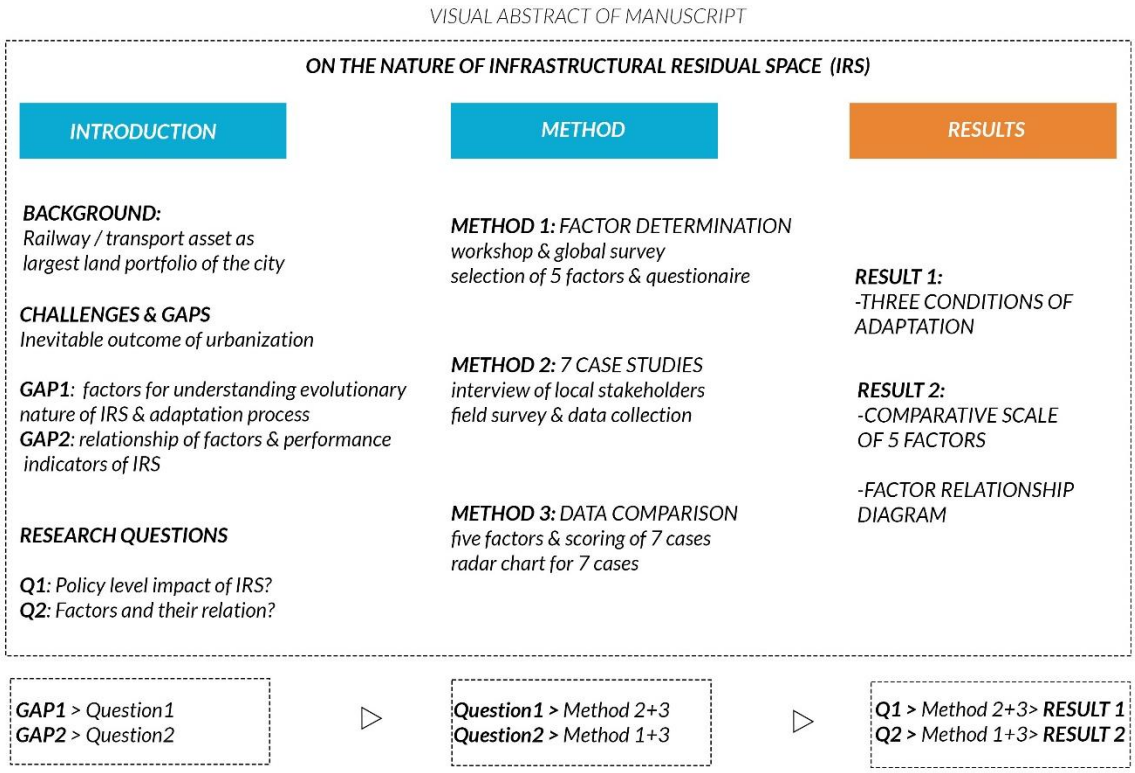
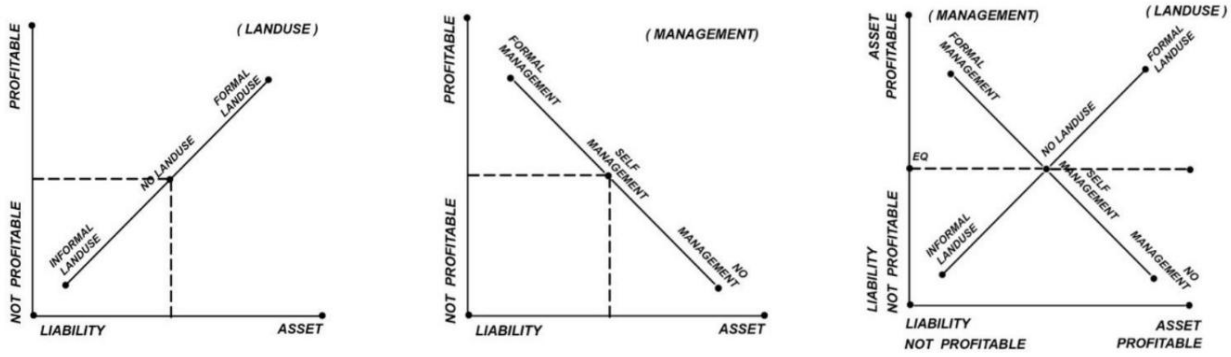
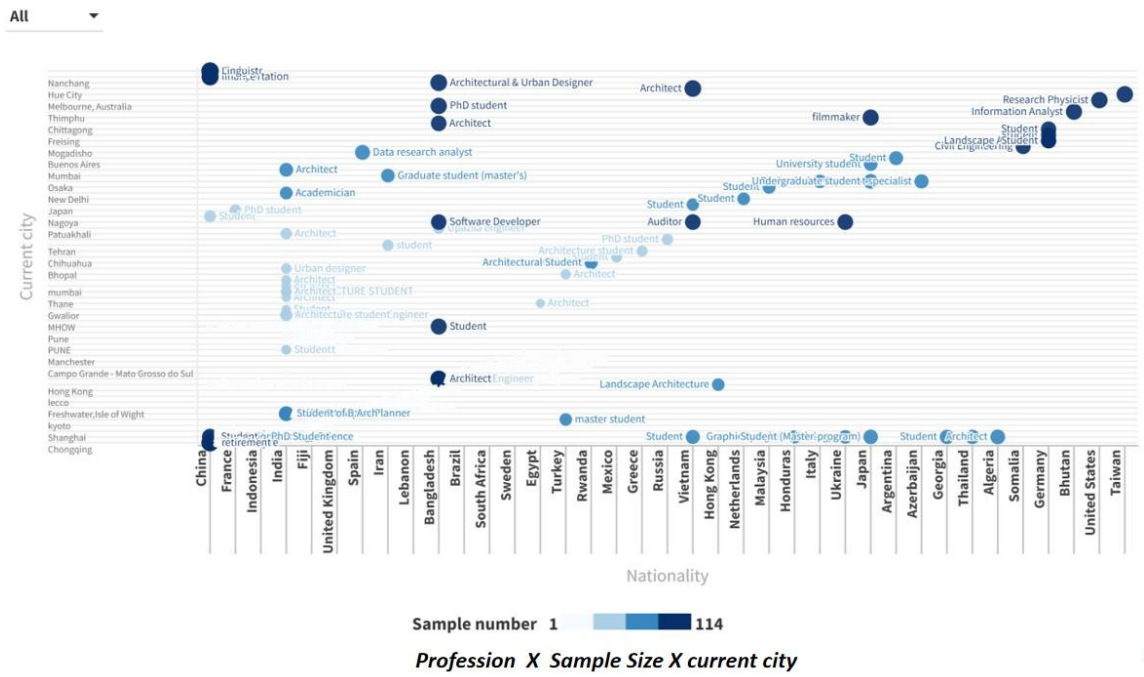
Article visual abstract



Supplementary figures and charts



Supplementary Figure 01: Relationship Between Land Use, Management, and Asset-Liability in IRS: Supplementary figure 01 illustrates how land use and management type independently and collectively influence perceptions of profitability and asset-liability within infrastructural residual spaces (IRS). The first two diagrams separately highlight land use and management correlations, while the third diagram synthesizes both dimensions, clearly indicating that a shift towards formalized land use and management enhances asset valuation and profitability, whereas informal or absent management increases liability and decreases profitability.



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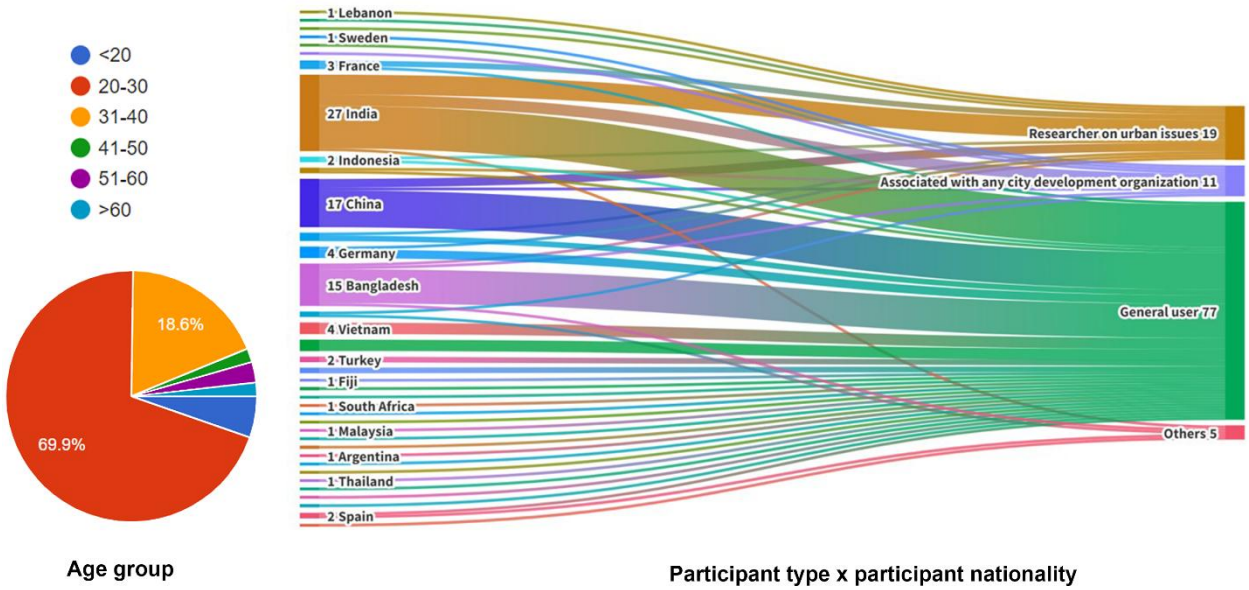
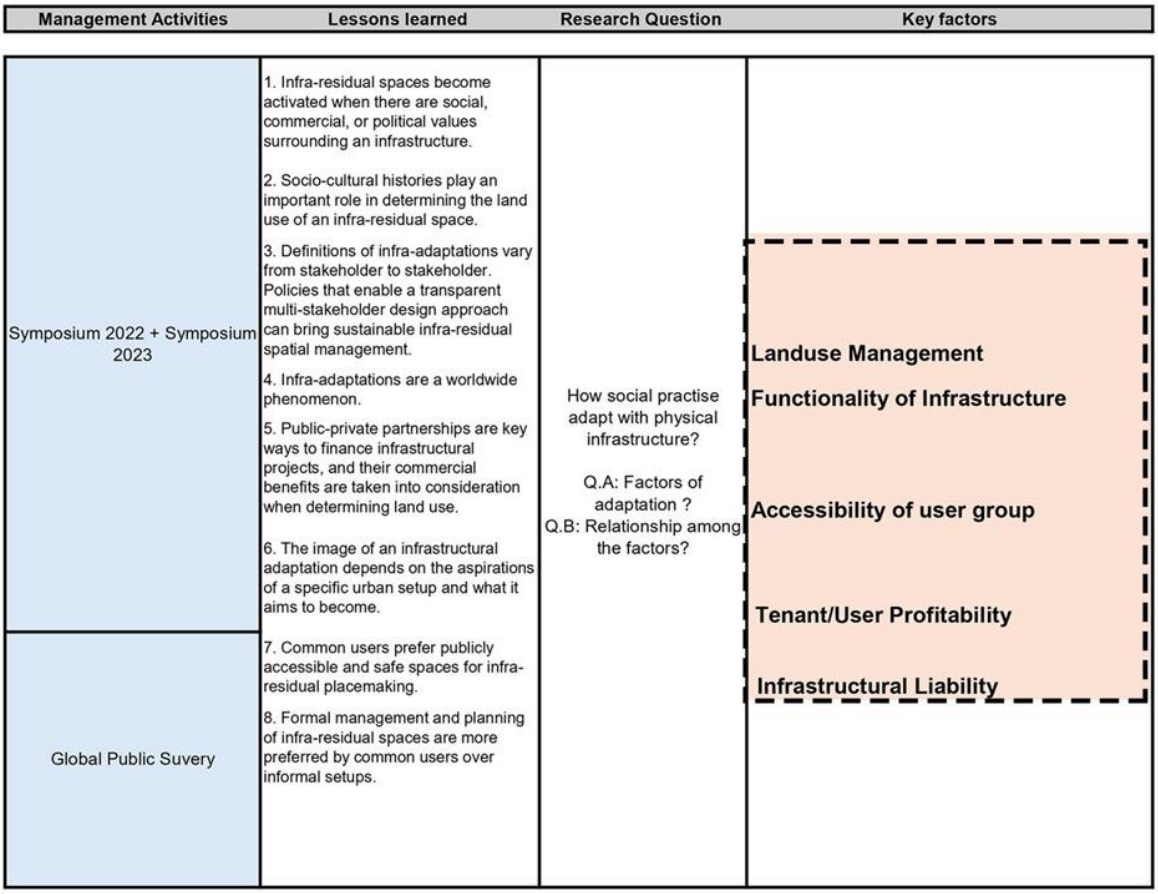
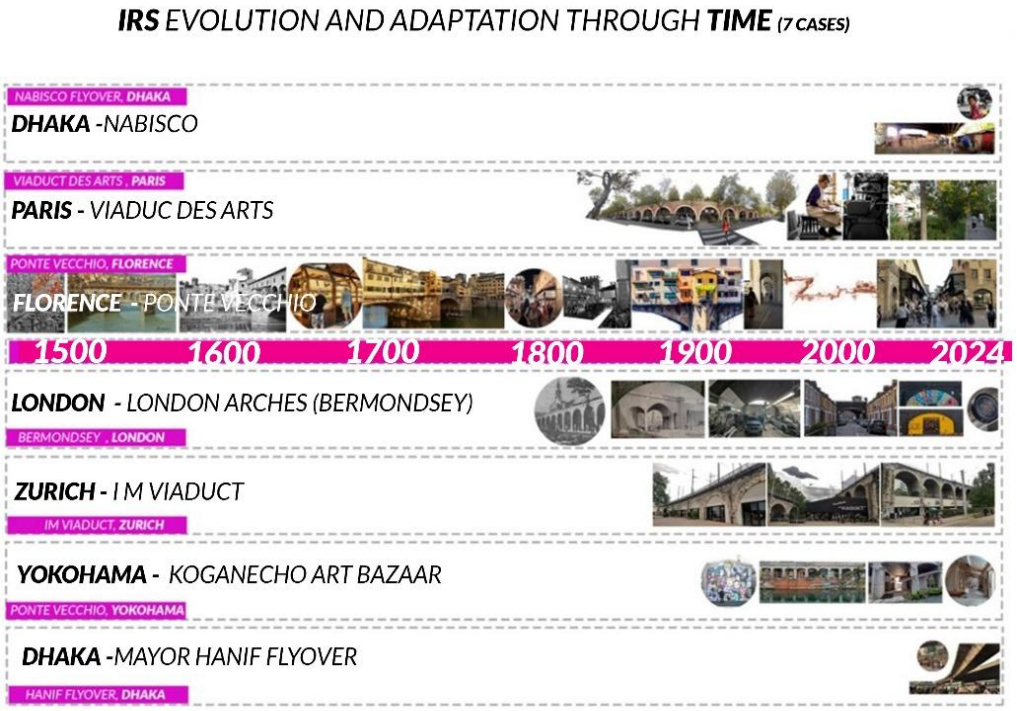


Supplementary Figure 02 a: profession x sample size x current city, participant age group x nationality

This figure illustrates the demographic and professional diversity of the global survey respondents (n=115) across 37 countries. (a) shows a cross-tabulation of participants' professions, current cities, and nationalities, highlighting significant representation from architecture, planning, and research backgrounds. (b) combines age distribution and participant type with nationality, revealing that 69.9% of respondents were under 30, and the majority identified as general users, followed by researchers and professionals associated with urban development. These insights emphasize the broad geographic and disciplinary scope underpinning the study's public perception data.

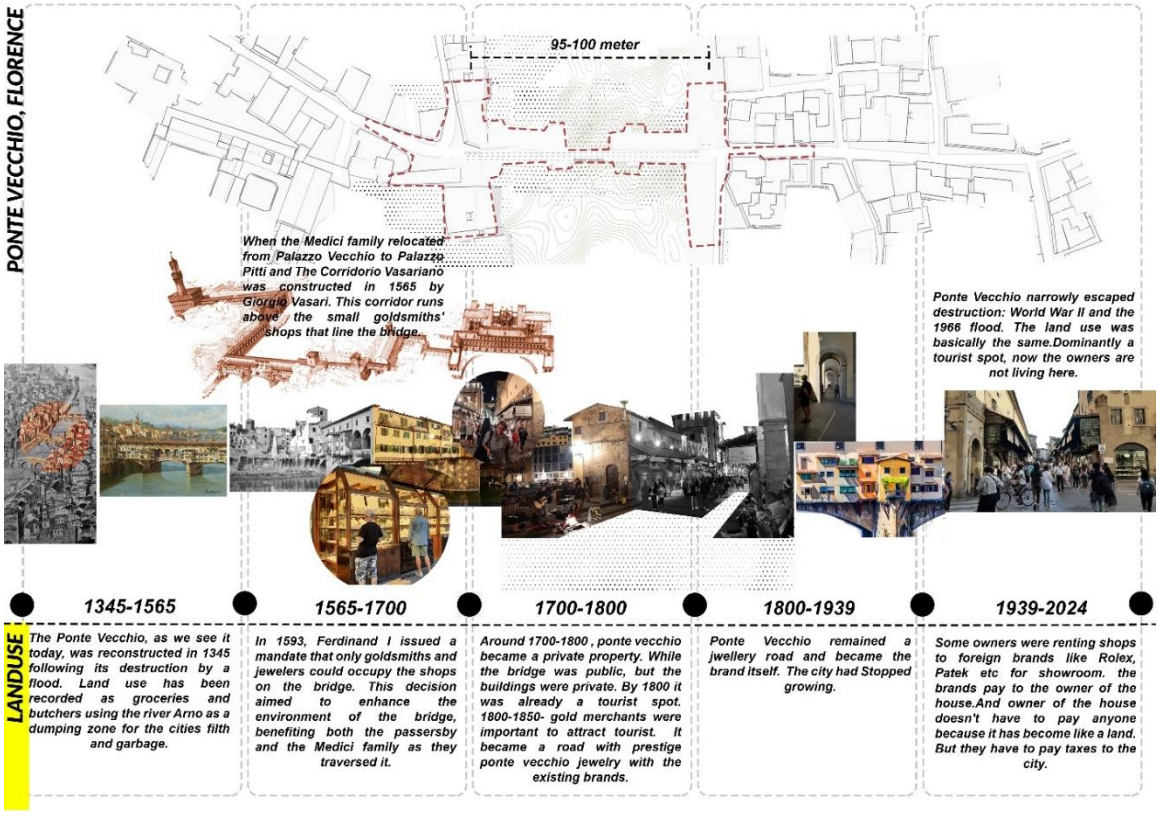


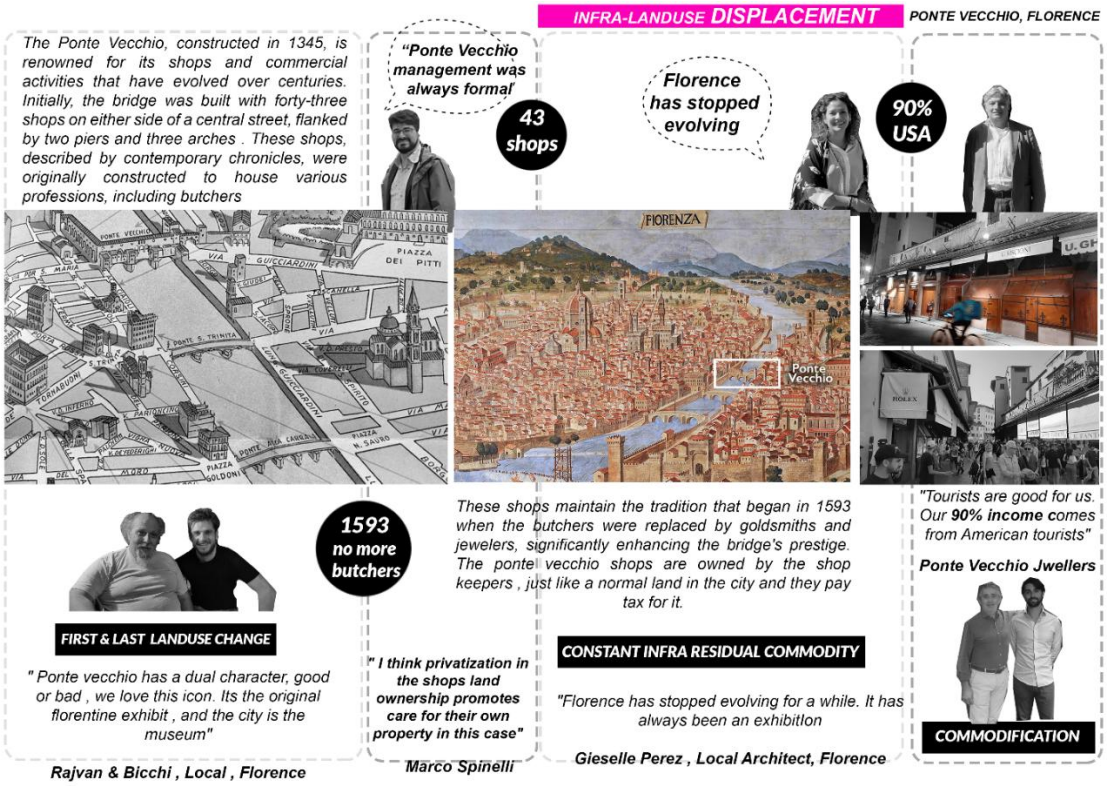
Supplementary Figure 02 b: Derivation of Key IRS Adaptation Factors from Participatory Activities This diagram summarizes insights from two key data sources: international symposiums (2022–2023) and a global public survey. Lessons learned from multi-stakeholder dialogues and public preferences informed the development of five core parameters for evaluating the adaptation of Infrastructural Residual Spaces (IRS): Land Use Management, Functionality of Infrastructure, Accessibility of User Group, Tenant/User Profitability, and Infrastructural Liability. These factors are used to answer the central research question: *How does social practice adapt to physical infrastructure?*, and inform the comparative evaluation framework used throughout the study.



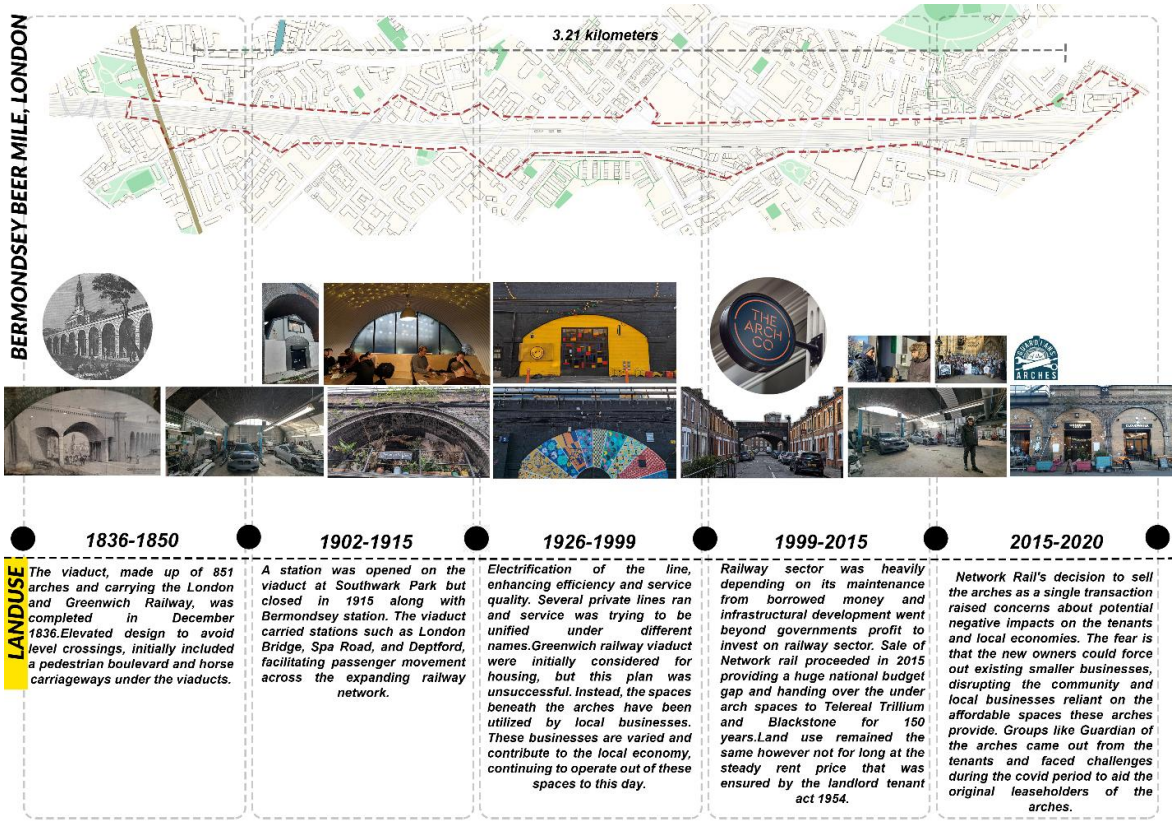
Supplementary Figure 03. Timeline of IRS Adaptation Across Seven Global Cities

This figure presents a comparative timeline of infrastructural-residual space (IRS) adaptation across seven global cities—Florence, London, Zurich, Paris, Yokohama, Dhaka, and, observationally, Kyoto. Each city represents a distinct historical phase in the evolution and continued use of IRS, ranging from the earliest examples of under-infrastructure spaces to their ongoing adaptation in contemporary urban contexts.

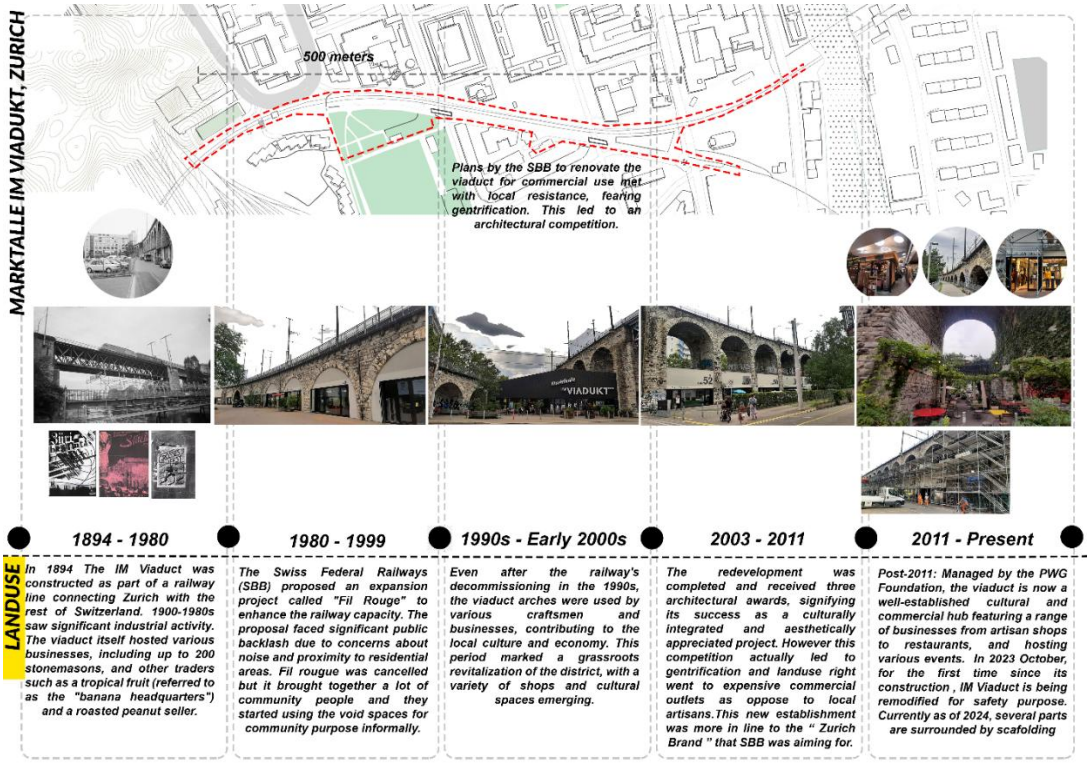




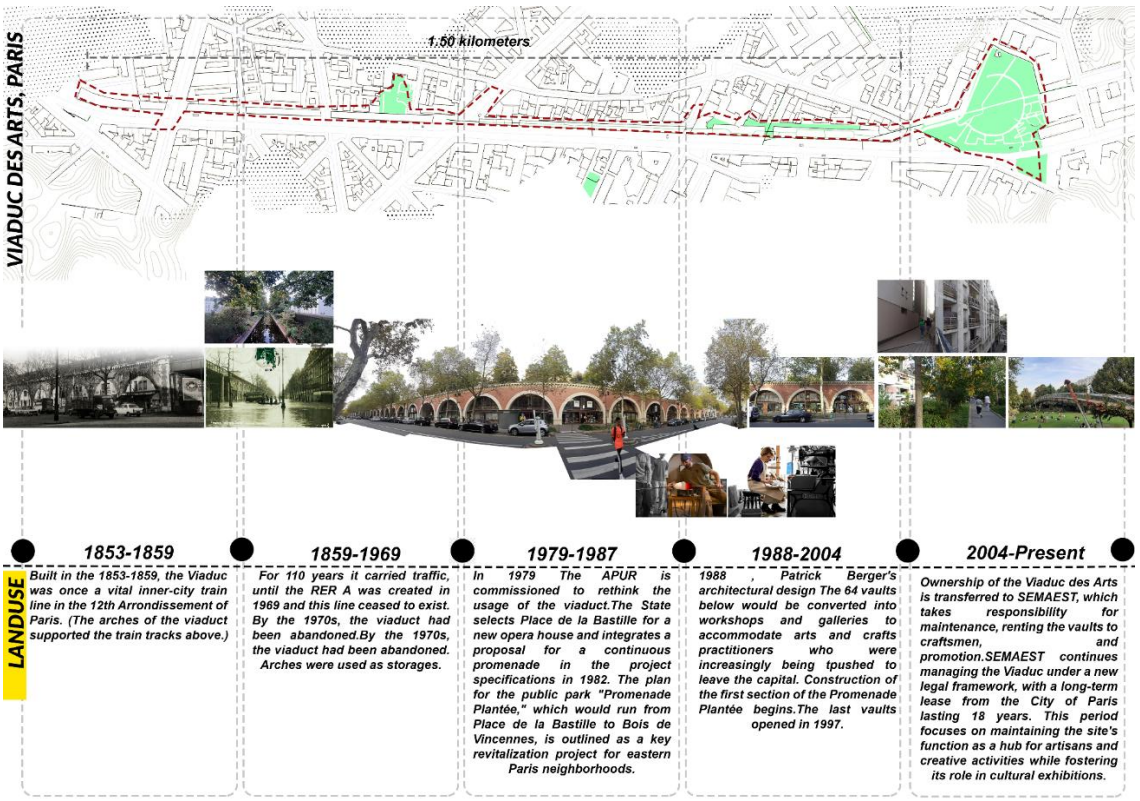
Supplementary Figure 04: **Land use evolution in IRS** of **Ponte Vecchio, Florence**, Transcribed Interviews are available upon request.



Supplementary Figure 05: **Land use evolution in IRS** of **London Railway Arches**, Transcribed Interviews are available upon request.



Supplementary Figure 06: **Land use evolution in IRS** of **IM Viaduc Zurich**, Transcribed Interviews are available upon request.



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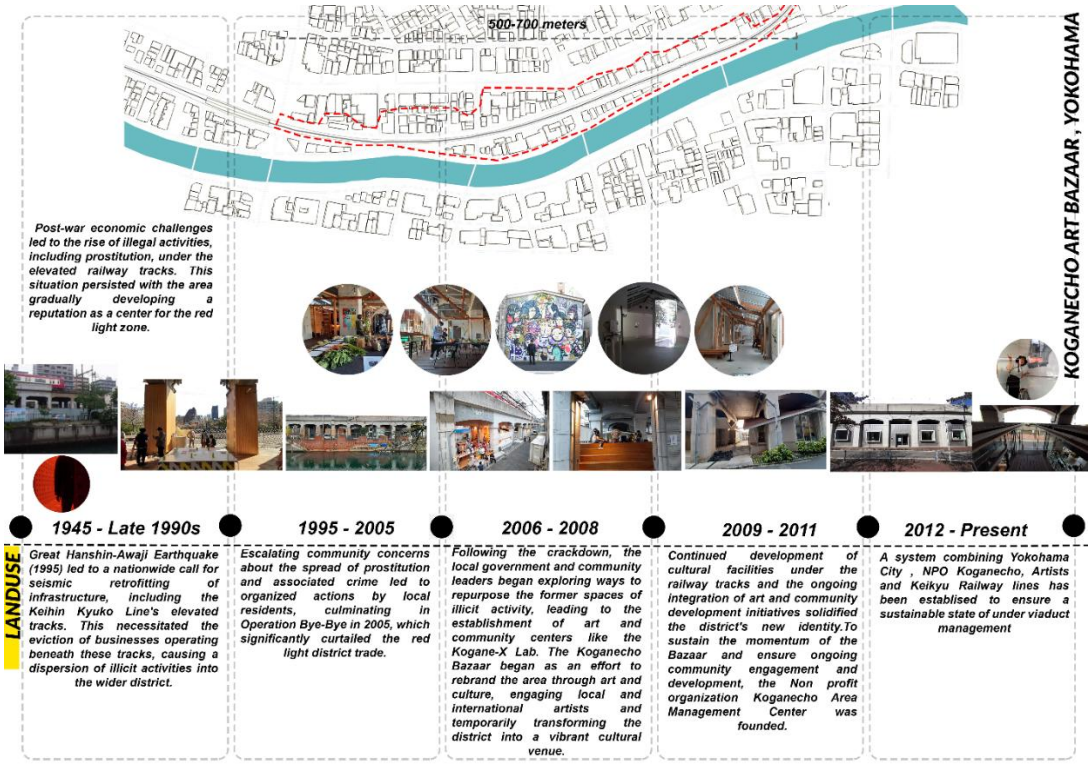
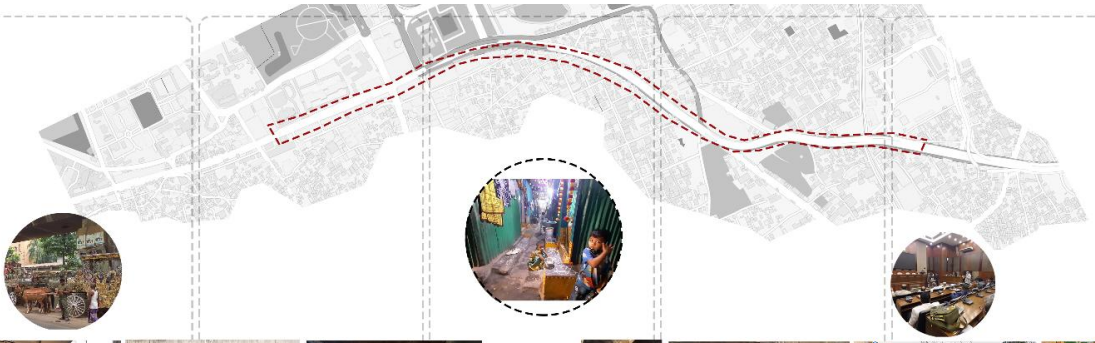
60 **Supplementary Figure 07**: **Land use evolution in IRS** of **Viaduc Des Arts, Paris**, Transcribed Interviews are
61 available upon request.



Supplementary Figure 08: **Land use evolution in IRS** of **Kogane Cho Area Management center under Keikyu line Yokohama**, Transcribed Interviews are available upon request.

MAYOR HANIF FLYOVER, DHAKA



1971 -1998

LANDUSE

The Gulistan area housed several bus depots that served as major transit points, connecting different parts of Dhaka and nearby areas. Buses serving various routes started or passed through the depots near Gulistan. The bus depot areas were lively with commercial activities.

1998-2013

The 11.7-km long flyover project was initiated in 1998. It was expected to help people as well as businesses by providing a free-flow movement to traffic coming and going out of National Capital.The flyover was inaugurated in 2013.

2016-2017

A spontaneous "bazar" and housing emerged next to the depots, where street vendors sold a variety of goods from food items like sugarcane juice to miscellaneous merchandise.The depots were surrounded by roadside eateries and photographers, adding to the bustling atmosphere as they catered to the needs of commuters and passersby.

First initiation of under flyover development project. Because of the complex informal system involving multiple stakeholders ,the project was considered really difficult to execute due to impractical traffic congestion around the Dhaka city. Street hawkers and informal shops and establishments grew on the median of the flyover.

2022-2023

No planning or policies resulted in high yearly accident rates. Management was largely informal and illegal. in 2022 Mayor Hanif flyover beautification project is initiated from the city corporation and Next Door Consultants are given the duty of designing the under flyover spaces for the purpose of beautification. Several proposals are submitted to the Dhaka South City Corporation.

2023-Present

Currently some proposals are under consideration and design work is still underway.

67

TEJGAON NABISCO FLYOVER, DHAKA

1971- 2007

LANDUSE

Since the birth of the country in 1971 , railway property has been considered as public property and place to have a temporary shelter for the homeless and migrants coming to dhaka city.In 1987, The Roads and Highway Department of Bangladesh first recommended construction of grade separated flyovers at four congested rail-crossings. Around 2007 there was no existence of a road and only commercial buildings were dominant in the area.

2007-2008

Demolition of 44 illegal structures on the planned link road began as part of the initial construction efforts.

2008-2010

Construction and inauguration of the flyover . The new under flyover road becomes a spot for the local informal markets and squatters.

2014-2015

Under flyover school "Deyalkotha"initiative is executed. It changes the slum community by providing new landuse under the flyover. The project gets media coverage and patronage from various Non profit and Non government organizations. Self management concept is initiated among the squatter communities. A soft gentrification has happened without displacing the existing communities.

2015-Present

The under flyover school provided donations from the NGO's . By this time the squatter condition remained unchanged and population grew around the under flyover squatter. Under flyover elements interacted with the community for various social practise. Energy were supplied to the squatter shacks by illegal means and there were no facilities for water or sanitation. The squatter was managed very informally and mostly self managed by the occupants.

68

Supplementary Figure 09: **Land use evolution in IRS** of **Dhaka Based Flyover- 1. Mayor Hanif Flyover and 2. Tejgaon Nabisco Flyover, Dhaka**

Supplementary video 01 link - https://www.youtube.com/watch?v=z9aywDSGFPI

Supplementary video 02 link -
https://drive.google.com/file/d/1Hv2OFXrSb9cVjlOiA_AdKbWyepAZw1dN/view

Supplementary Audio interviews 1-25 are available on request.