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SCIENCE FOR POLICY BRIEF

The Future of Cities Series

Inclusive cities fit for crises and long-term challenges

HIGHLIGHTS

- → Cities face several crises and challenges that often disproportionately affect vulnerable communities. This policy brief stresses the need for an inclusive approach to crisis response, to ensure that all citizens have a fair chance to weather the literal and figurative storms that lie ahead.
- → Building resilient cities is an ambitious and complex undertaking that encompasses many different elements, including financial and political ones. It is important though to consider resilience not as a static attribute but as a dynamic concept that evolves over time in response to changing decisions, plans and policies.
- → Crises and long-term challenges in cities, such as energy poverty and poor access to local services cannot be seen in isolation to other issues. These vulnerabilities should rather be addressed in their cumulative nature and in conjunction with other urban priorities.
- → Compared to national governments, local city governments are closer to people and can more easily address challenges and associated inequalities by directly affecting the built environment, and carefully managing the transformation of urban spaces through planning instruments.

Joint Research Centre

INTRODUCTION

It is always the same: when there's a new crisis, it's always the people already in a difficult position that suffer more than anybody else. Very often in politics [...] the immediate crisis drives out the long-term challenge. This is a luxury we can't afford.

Frans Timmermans at the Mission for Climate-Neutral and Smart Cities conference, 2023

In a time defined by high urbanisation rates and looming or existing crises (e.g. Covid-19 pandemic, energy crisis, climate change), it is critical to understand how cities can turn into places of resilience and strength, rather than become centres of vulnerabilities. But what does resilience and preparedness mean for cities?

Cities face several challenges today, starting from the unpredictability of climate change. The COVID-19 pandemic showed how the magnitude and duration of disruptions are difficult to predict, challenging traditional risk-based management approaches to cope with crises. In this respect, resilience science has been taken up as it highlights the intricate, complex, and interdependent nature of urban systems. While a strict universal definition of resilience is lacking, it generally refers to the capacity to anticipate, withstand, adapt to and recover from shocks and stresses, such as natural disasters, economic downturns, public health crises, and social turmoil.

In the '2020 Strategic Foresight Report'[1], resilience is proposed as a new compass for EU policies and defined as the ability not only to withstand and cope with challenges but also to undergo transitions, in a sustainable, fair, and democratic manner. Stressing an inclusive approach to crises response is crucial since they often disproportionately affect vulnerable communities (e.g. low-income households, people with disabilities, immigrants, minority groups)[2].

The multi-faceted nature of resilience is represented by various characteristics, such as flexibility, adaptiveness, and redundancy [1]. However, the practical implications of such characteristics remain vague from an urban planning perspective. While these principles are translated into planning responses in some cases, their implementation varies across different cities.

It is important though to consider resilience not as a static attribute but as a dynamic concept that evolves over time in response to changing decisions, plans and policies. This includes the actions taken by cities to increase resilience in more dimensions, which could inadvertently compromise the other system's ability to respond to crises.

Moreover, common approaches of policymaking tend to frame city-related challenges as isolated issues related to the economy (e.g., imposing a city tax for services, offering subsidies for transitions related to energy or mobility) or improving accessibility to trade and labour markets (e.g., direct public transit routes to business districts). Although some of these policies are effective in the short-term, after monitoring their impacts over longer periods of time, they are now under scrutiny [5].

Aim of the brief

Very often, novel crises and emergencies tend to highlight and reveal long existing, underlying problems. To increase resilience in an all-encompassing way, cities should focus on the deep-seated structural issues that hinder their capacity to adapt and thrive, such as inequality. In many urban areas, socioeconomic disparities are ingrained, with marginalised communities suffering most from crises.

This policy brief is aimed at urban/local policy makers and stresses the need to consider inclusiveness in urban resilience. It discusses two (of the many) urban challenges that are periodically highlighted and exacerbated by new crises, such as energy poverty and service accessibility. The brief also offers some practical suggestions to develop an inclusive approach to a wider array of challenges, derived from the program *Inclusive Climate Action Rotterdam.*

This brief includes three case studies from the Netherlands. We hope they can offer valuable insights for other European cities on long-term urban challenges and potential approaches to build resilience and preparedness in urban areas. Given the multicultural background of the residents of these cities and the collaborative governance structures, these examples also show how inclusive stakeholder engagement can be promoted.

1 *https://commission.europa.eu/strategy-and-policy/strategic-planning/strategic-foresight/2020-strategic-foresight-report_en*

2 See this example related to climate justice: *https://publications.jrc.ec.europa.eu/repository/handle/JRC135612*

Energy poverty

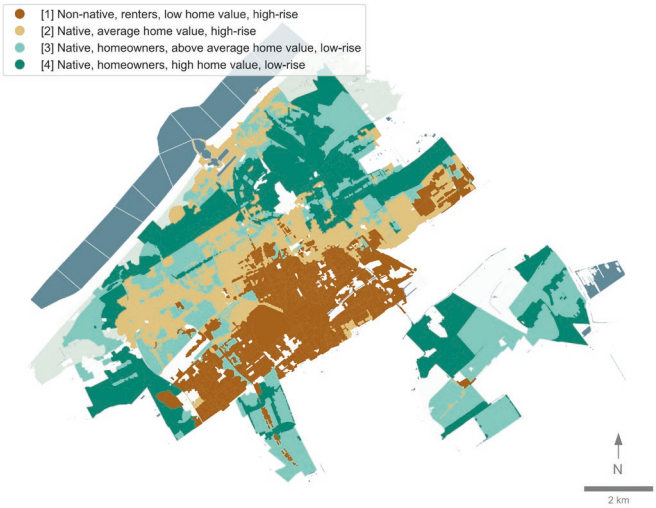
Energy poverty indicates a condition in which people are unable to access or afford sufficient domestic energy services to ensure their well-being and meaningful participation to society. Although it has been historically associated with developing countries, the number of people suffering from energy poverty has been lately increasing across Europe. In 2022, over 40 million Europeans were unable to keep their homes warm, also due to the extreme financial fluctuation in energy prices related to the war of aggression in Ukraine.

Energy poverty is a multi-dimensional phenomenon, emerging from a combination of low income, high energy expenses, and poor energy efficiency in buildings. It can impact on public health issues, social isolation, and gender inequalities [2, 3]. Addressing energy poverty in cities intersects with energy transition and renovation interventions. In line with the key principles on energy of the European Green Deal[3], most European countries promote the adoption of renewable energy through subsidies and tax breaks. These mechanisms often require not only a significant up-front investment but also a high-level financial proficiency. As a result, these mechanisms may not work for a large share of the population, who would remain vulnerable to increasing energy prices especially if they live in energy inefficient housing.

In this respect, energy poverty in the Netherlands has been analysed through the lenses of spatial justice. Spatial justice helps to understand a) where injustices emerge in cities, b) which part(s) of the society is ignored and excluded, and c) which processes exist to include the ignored to reveal and reduce such inequality [4]. For example, recent studies suggest that vulnerability to energy poverty is cumulative, exposing households to several vulnerability factors simultaneously. Furthermore, energy poverty vulnerabilities appear to be concentrated in areas already affected by other problems.

In The Hague (Figure 1), a comprehensive study reveals that the transition to solar energy has been highly unequal, reinforcing exiting inequalities [5]. A socio-spatial analysis at postcode level reveals that households with low income, non-Western background, and who rent an apartment in a large building have the lowest solar adoption rates in the city.

Figure 1 – Spatial distribution of the four access groups across The Hague per detailed postcode level.



Indicator	Cluster 1	Cluster 2	Cluster 3	Cluster 4	*The Hague Average*
Home value (€)	169 000	237 000	339 000	640 000	*269 000*
% with native background	21.8	58.5	60.9	62.7	*44.3*
% of owner-occupied homes	28.9	46.1	63.9	73.5	*44.1*
% of apartment buildings	63.8	77.5	24.7	25.9	*58.0*
Adoption rate (%)	3.78	3.94	10.71	9.99	*7.99*

Source: Kraaijvanger et al. (2023). Spatial distribution of the four access groups across The Hague per PC5 zone. A short description of the characteristics of each group/cluster is provided in the legend presented in the top left of the figure. The table provides the mean values of the clusters for each of the indicators, compared with the average values for the respective indicator observed in the city. The adoption rate (%) is defined as the percentage of residential buildings with solar PV systems.

Accounting for about 38% of the population in the city, these households become more vulnerable to energy poverty with increasing energy prices. In contrast, households with high income, Western background, and who own their single-family house have the highest adoption rates in The Hague, accounting for only 9% of the population.

These results thus reveal that current policies fail to provide equitable access to solar energy across households leading to inequalities in adoption rates and leaving a large part of the city vulnerable to energy poverty. While emergency funds have been established to sustain low-income households in paying their energy bills, such instruments do not improve the quality of housing and household independence in the longer term. Overall, these results indicate that energy poverty measures should address these vulnerabilities in their cumulative nature, demanding a cross-sectoral integration of energy, renovation, welfare, and public health policies.

3 *https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/energy-and-green-deal_en*

Local accessibility to essential services

Urban accessibility is the result of a complex multi-layered process where several components of the built environment, political choices, and socio-economic dynamics (like segregation, gentrification, and migration) intersect in the urban space. Such process might lead to reinforce socio-spatial inequality for some people and places in cities. For example, infrastructural improvement to minimise congestion by building road infrastructure to reduce travel time to central business districts might also result in the displacement of communities. In other words, improved accessibility to essential and leisure services for many can come at the unfair cost of economic, social, and environmental marginalisation of others, with (further) spatial segregation, and increased noise and air pollution.

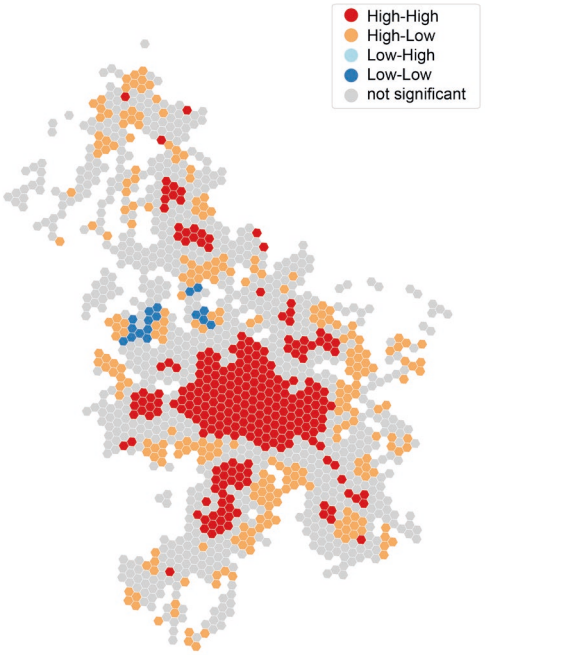
Local access to several essential services (schools, hospitals, groceries etc.) is crucial in cities, both from an environmental and social perspective. Uneven access to amenities can impact citizens' daily routine significantly [6], possibly forcing them to move across the city for basic daily needs.

The relevance of the local scale and the emphasis on vitality, walkability and liveability in cities has recently regained momentum, with the concept of 'the 15 Minute City' [7]. Moreover, local accessibility is particularly relevant for groups experiencing limited mobility or mobility poverty. However, evidence in literature shows that disadvantaged people generally have lower access to urban amenities [8]. For example, the Cityaccessmap[4] (an interactive open-source tool measuring accessibility to various amenities in urban areas globally) highlights how population living in urban areas of lower accessibility also tend be racial minorities, elderly, people with disabilities. Some cities are also spatially segregated by highly skilled migrants inhabiting areas of higher land value with peripheries full of those considered less skilled (stratified by educational attainment) or vice versa.

Existing spatial disparities were further exacerbated by the pandemic crisis, showcasing serious accessibility issues to essential services. The lack of local access to an adequate diversity of urban amenities may lead to (a further increased) marginalisation of residents in certain places in the city [9].

To improve local accessibility to essential services, it is important to understand who can access what [10], so to support and put in place urban policies prioritising investments where those are needed the most. In this regard, a socio-spatial analysis is performed in Amsterdam (Figure 2) to identify any underserved areas for senior residents (> 65 y/o) living in the city.

Figure 2 – Spatial distribution of the essential services for elderly in Amsterdam.



Source: Sulis et al. (forthcoming). Figure illustrates the co-occurrence between where senior residents live and which services they can access at local scale. In red are the areas with a high concentration of senior residents and a high variety of essential services available. Yellow areas are places where many senior citizens reside but that are underserved in terms of different amenities accessible at the local scale.

The analysis evaluates the geographic co-occurrence between places where senior residents live and the variety of urban functions in Amsterdam. The analysis considers services accessible within walking distance for seniors, and the availability of multiple services (health, groceries, greenery) at the local scale. It is expected that proximity and diversity contribute to a good quality of life.

Results reveal that local access to essential services for senior citizens differs across the city. Places where most senior residents live (the north and south-west part) show different patterns: northern areas appear mostly under-served (with few well-served islands), whereas the south-west part seems to provide better availability and accessibility to services for its residents. A large area that mostly covers the city centre has a higher variety of

4 *https://www.cityaccessmap.com*

amenities than other areas, and houses a high share of citizens over 65 years old.

Similar to energy poverty, (poor) access to local services cannot be seen in isolation to other issues such as housing affordability. Furthermore, lower access to services can also foster social isolation. Thus, keeping in mind how the COVID-19 pandemic has further exacerbated inequalities in access to essential services, it becomes imperative to plan for improving local accessibility in conjunction with other urban priorities.

Stressing an inclusive approach to crises response is crucial since they often disproportionately affect vulnerable communities

Social inclusion in cities

Rotterdam is one of the most diverse cities in the Netherlands, featuring over 175 different nationalities. With a population exceeding 650 000, it holds the position of the second-largest city in the country. Besides its vibrant atmosphere, rich history, culture, and architecture, Rotterdam encounters the challenge of being both the unhealthiest and poorest city in the Netherlands, with 18.5 % of its residents living below the poverty line.

As a low-lying delta city, Rotterdam faces the impacts of climate change and extreme weather events, including excessive rainfall, heatwaves, periods of drought, and flood risks. To maintain livability for all residents, and to secure its status as a secure port city, it is important to invest in climate mitigation and climate adaptation. Climate change poses a significant threat to the well-being and equality of the residents of Rotterdam. The impact of extreme weather events exacerbates existing social equalities, with vulnerable and marginalized communities disproportionately affected.

The **'Inclusive Climate Action Rotterdam' (ICAR)** is a new movement within the Municipality of Rotterdam and is linked to Rotterdam Weather Wise. ICAR advocates for a socially oriented approach of the climate crisis and strives for climate justice. Climate justice means that everyone in Rotterdam has access to climate policies and a realistic and fair option to protect themselves from the negative effects of climate change.

ICAR divides the term 'climate justice' into 4 principles:

1. Information and communication

Ensuring that individuals are aware of measures to adapt and protect themselves and their surroundings from the impacts of climate change is crucial. However, access to information in Rotterdam is not uniform. Addressing language barriers, low literacy levels, illiteracy, and visual impairments is imperative to ensure consistent availability of information for all residents of Rotterdam.

2. Impact on well-being

The residents of Rotterdam are affected by climate change and extreme weather events. Depending on personal circumstances and characteristics, such as income and health, one individual may experience significantly more inconvenience than another. It is essential to acknowledge and address the disparities in the impact on individuals under similar circumstances by giving more attention to this matter.

3. Perspective for action

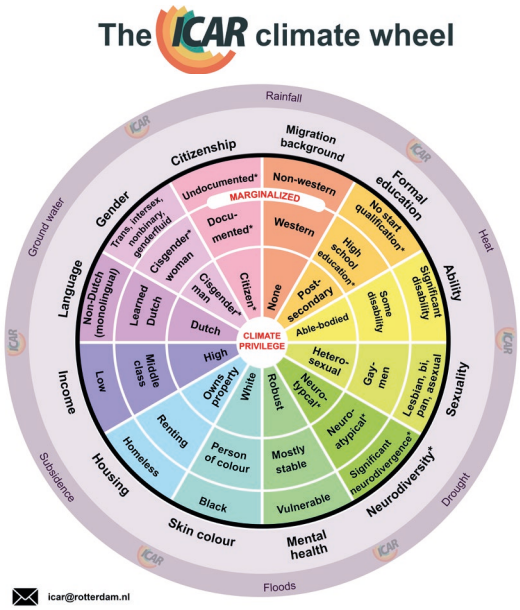
The ability to adapt to climate-related circumstances varies for each person. What individuals can and may do, differs among them. ICAR emphasizes that climate strategies must guarantee equal opportunities for everyone to adapt themselves and their living environments.

4. Social exclusion and discrimination

It is an undeniable reality that individuals may face social exclusion and discrimination in Rotterdam. Those experiencing such challenges may nurture distrust towards society and governmental organizations. ICAR asserts that only together, in a social and just society, all Rotterdam residents will have the ability to adapt to climate change and extreme weather. In certain situations, this might require above-average attention or alternative forms of engagement and collaboration.

These four principles are consistently considered and applied during ICAR's activities, which focuses on six overarching themes: housing and houses, neighbourhood and surroundings, health and wellbeing, travel and transportation, work and education, exercise and leisure.

Figure 3 – The ICAR Climate Wheel.



Source: ICAR Rotterdam.

ICAR's approach identifies six main activities to work towards climate justice:

1. *Reflecting* on your own privileges and try to recognise them. Think about how these privileges have affected your life and how they might impact your perspective of others. Utilise tools (see Figure 3) for assistance in this self-reflection.
2. *Creating awareness* identifying the different forms of privilege associated with climate change. Recognise that privileges may be invisible to those who have them and yet they can significantly impact an individual's experiences in society.
3. *Educating* about the historical structures contributing to inequality and privilege. Spread awareness and education within communities about privilege.
4. *Centring empathy* for individuals experiencing less privilege. Understand the challenges others face resulting from climate change and extreme weather.
5. *Facilitating open dialogue* listening to the experiences of individuals with less privilege and be open to learning different perspectives.
6. *Translate awareness* into actions. Support initiatives and organisations striving to reduce inequality, promote inclusivity and advocate for initiatives and organisations working on climate change, extreme weather, and social justice.

One of the tools employed by ICAR is the 'ICAR Climate Wheel' (Figure 3). Based on Sylvia Duckworth's 'wheel of power/privilege', it visually explains the concept of marginalisation. The further a category is from the centre of the wheel (climate privilege), the less it conforms to created societal 'standards'. When moving through the different categories, it will be clear that marginalisation and privilege vary each category. Someone can have privilege in one category and be marginalised in other categories. Combining these categories is an example of intersectional thinking.

The ICAR Climate Wheel can provide insights into the diversity of a project team or identify missing perspectives. It also assists in considering perspectives that might not be typically considered. However, it does not imply that every perspective must be included in every project; rather, it suggests that decisions regarding perspectives should be well-considered instead of becoming blind spots. Like a society, the ICAR Climate Wheel is dynamic and constantly subject to change, based on new insights.

THE WAY FORWARD

How data and scientific evidence can support policy for an inclusive approach to urban resilience

Although operating on a national level, the EU resilience dashboards[5] offer a holistic assessment of resilience and the ability to make progress towards policy challenges. The dashboards include indicators related to the social and economic, green, digital, and geopolitical dimension, complemented by synthetic resilience indices. Following these indicators, countries can assess their relative strengths and weaknesses, helping to identify areas for further analysis and potential policy actions. Furthermore, a selection of indicators show: **1)** Capacities – enablers and/or opportunities to navigate the transitions and face future shocks, **2)** Vulnerabilities – obstacles or aspects that can worsen the negative impact of the challenges related to the green, digital, and fair transitions. Together the dashboards can aid in navigating societal transformations towards a more sustainable development trajectory. Accordingly, they provide an important step towards an integrated approach for measuring people's well-being beyond GDP.

5 *https://commission.europa.eu/strategy-and-policy/strategic-planning/strategic-foresight/2020-strategic-foresight-report/resilience-dashboards_en*

Compared to national governments, local city governments are closer to people and can more easily address challenges and associated inequalities by directly affecting the built environment, and carefully managing the transformation of urban spaces through planning instruments.

Large amounts of data are continuously collected and produced in cities, making them an experimental setup to deal with the multidimensional problems previously illustrated. Scholars have exploited such data to study urban geographies of inequalities investigating housing ownership, accessibility to opportunities, distribution of resources, energy poverty, disparities in Internet use and digitisation, and the analysis of policies for inclusive urban development. Scientific evidence suggests that more and more urban geographies of distribution are becoming interrelated with issues of social injustices where resources and opportunities are not equitably distributed.

Current data-driven approaches have predominantly focused on extracting urban growth and land use patterns, with less emphasis on addressing environmental and socio-economic urban challenges [11]. To bridge this gap, there is a growing interest in advancing data-driven methodologies prioritising the interconnected dynamics among urban environmental infrastructure, socio-economic factors, and land use. This is particularly crucial for evidence-based sustainability and urban resilience policy development [12]. While data-driven models are often excellent in unravelling relationships, they can be limited in predicting events and crises for which historical data are not available. However, their potential shines when it comes to identifying resilience patterns within historical and socio-spatial data, for example understanding how cities responded during previous disruptions, and what can be learned to recover from similar crises effectively. These are insights that data-driven models can provide for achieving city resilience.

However, currently urban planning regulations, procedures, and political pressures can constrain recovery efforts to merely restoring the status quo, rather than fostering opportunities for a more resilient and improved future. Therefore, to ensure resilience in urban systems, decision-makers and urban planners must try to recognise and address temporal trade-offs and trade-offs between the resilience principles, while always keeping an eye out for the most vulnerable groups [1, 13].

Building resilient cities is an ambitious and complex undertaking that encompasses many different elements, including financial and political ones. However, by focusing on some of the key structural issues that underlay the most urgent consequences of past crises, a reflection can be made about the foundation that is required to help building cities that are ready to face crises. In that respect, this policy brief stresses the need for an inclusive approach to crisis response, to ensure that all citizens have a fair chance to weather the literal and figurative storms that lie ahead.

Figure 4 – Synthetic indices illustrating resilience capacities.

EU social and economic dimension

Social and economic capacities index

Source: EU Resilience dashboard, 2023 (https://commission.europa.eu/strategy-and-policy/strategic-planning/strategic-foresight/2020-strategic-foresight-report/resilience-dashboards_en).

REFERENCES

[1] Krishnan, S., Aydin, N. Y., & Comes, T. (2023). RISE-UP: Resilience in urban planning for climate uncertainty-empirical insights and theoretical reflections from case studies in Amsterdam and Mumbai. Cities, 141, 104464.

[2] Sovacool, B. K., Burke, M., Baker, L., Kotikalapudi, C. K., & Wlokas, H. (2017). New frontiers and conceptual frameworks for energy justice. *Energy Policy,* 105, 677-691.

[3] Robinson, C., Lindley, S., & Bouzarovski, S. (2019). The spatially varying components of vulnerability to energy poverty. *Annals of the American Association of Geographers,* 109(4), 1188-1207.

[4] Jenkins, K., McCauley, D., Heffron, R., Stephan, H., & Rehner, R. (2016). Energy justice: A conceptual review. *Energy Research & Social Science,* 11, 174-182.

[5] Kraaijvanger, C. W., Verma, T., Doorn, N., & Goncalves, J. E. (2023). Does the sun shine for all? Revealing socio-spatial inequalities in the transition to solar energy in The Hague, The Netherlands. *Energy Research & Social Science,* 104, 103245.

[6] Alessandretti, L., Aslak, U. & Lehmann, S. (2020). The scales of human mobility. *Nature* 587, 402–407

[7] Moreno, C.; Allam, Z.; Chabaud, D.; Gall, C.; Pratlong, F. (2021). Introducing the '15-Minute City': Sustainability, Resilience and Place Identity in Future Post-Pandemic Cities. *Smart Cities,* 4, 93-111.

[8] Nicoletti, L., Sirenko, M., & Verma, T. (2023). Disadvantaged communities have lower access to urban infrastructure. *Environment and Planning B: Urban Analytics and City Science,* 50(3), 831-849.

[9] Calafiore, A., Dunning, R., Nurse, A., & Singleton, A. (2022). The 20-minute city: An equity analysis of Liverpool City Region. *Transportation Research Part D: Transport and Environment,* 102, 103111.

[10] Sulis, P. and Proietti, P. (forthcoming). Who can access what? Uncovering urban inequality in access to service for senior citizens. *Environment and Planning B: Urban Analytics and City Science.*

[11] Jafino, B. A., Kwakkel, J. H., & Taebi, B. (2021). Enabling assessment of distributive justice through models for climate change planning: A review of recent advances and a research agenda. *Wiley Interdisciplinary Reviews: Climate Change,* 12(4), e721.

[12] Casali, Y., Aydin, N. Y., & Comes, T. (2022). Machine learning for spatial analyses in urban areas: A scoping review. Sustainable Cities and Society, 85, 104050.

[13] Chelleri, L., Waters, J. J., Olazabal, M., & Minucci, G. (2015). Resilience trade-offs: addressing multiple scales and temporal aspects of urban resilience. Environment and Urbanization, 27(1), 181-198.

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