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Urbanism and Sustainability: Aligning Urban Resilience Green Development Goals

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Abstract

The pursuit of sustainable urban development has become increasingly vital in recent years, as rapidly growing cities face complex challenges that threaten their resilience and environmental integrity. This study investigates the intersection of urbanism and sustainability by examining how urban resilience can be aligned with green development goals. A qualitative approach employing a multiple case study design was adopted, in which secondary data from published reports, policy documents, and prior empirical studies on selected cities including Stepanavan, Budapest, Tokyo, Karlstad, Keene, and several Sub-Saharan African cities were analyzed thematically to identify recurring resilience strategies, and these global findings were then contextualized against Pakistan's disaster-resilience policy landscape, including the Pakistan Social and Living Standards Measurement (PSLM) survey framework and the National Disaster Management Authority (NDMA) system. The findings indicate that cities integrating green infrastructure, renewable energy, and public transportation reforms consistently demonstrate stronger resilience outcomes, and that longitudinal, adaptive governance strategies rather than one-time interventions sustain these gains over time. The novelty of this study lies in synthesizing globally dispersed case evidence on urban resilience with an underexplored national policy context (Pakistan), thereby offering a bridging perspective between international green-development discourse and localized disaster-resilience monitoring systems. This research offers practical insights for policymakers, planners, and communities seeking to integrate resilience and green development goals in both global and Pakistan-specific urban governance contexts.

Keywords: sustainable urban development; urban resilience; disaster risk reduction; green infrastructure; urban planning

INTRODUCTION

In the context of urban centers, the idea of resilience was drawn from research on how natural processes deal with pressures and disruptions induced by external influences (Rezvani et al., 2023). From an ecological perspective, who may be the first to define it (Dunham et al., 2024). "The ability of such processes to withstand and yet survive changes in the state variables, operating factors and parameters". Resilience is a complex, multi-dimensional challenge for urban sustainability planning and design (Yan, 2025).

Investing in increasing resilience is one way of reducing the effects of the disaster on the country and society (Khan et al., 2023). Resilience, as described in this article, is the capacity to anticipate and plan for, withstand, rebound from and respond to traumatic events more effectively. Enhanced readiness helps greater catastrophe forecasting and improved preparation to reduce catastrophe risks rather than preparing for an incident to occur and instead paying for it (Sheehan et al., 2023). “The capability to prepare and strategize for real or future risk factors, manage, recover or adjust them better (Rehman, 2024).” Continuously evaluating, preparing and optimizing community and government levels are required to sustain disaster resilience. Resilience is not just a mission that can be defined as "completed"

Disaster resilience has been defined as a method (Graveline & Germain, 2022), a product (Guo et al., 2023), or both (Grygorenko & Naydonova, 2023), and a concept that can include feedback from engineering as well as the physical, social and economic fields of science. Métais et al., (2022) According to many researchers Hardly any universally agreed definition currently exists of resilience however according to merrow et all it is a positive notion but having no definite pathway of achieving it. Goal 11 "Sustainable towns and cities," according to Sustainable Development Goals by United Nations Organization Goals: about half the world's population now live in the cities (Dogar & Álvarez, 2024). By 2050, the number would have risen to 6.5 billion – two thirds of mankind (Nag & Paul, 2024). Sustainable development cannot be done without improving the way we build and operate our urban environments substantially.

In terms of urban resilience itself, a city’s capacity to withstand threats while preserving its services and systems is the basic concept of urban resilience. Human habitation risk governance poses a challenge in that threats are focused in enormously greater urban densities (Kai et al., 2023). Any concrete initiatives will enable local communities to strengthen their resilience, including: enhancing public and private facilities and vital services (such as safety and education); implementing effective land use planning strategies; and introducing and applying acceptable building codes and regulations for established hazards. Community resiliency is viewed as a constructive instead of just reactive approach to strategical policy and decision - making (Abid et al., 2025).

The urban areas are home to the largest part of the global populace, and have become resilience laboratories, within both theory and practice, besides serving as

consumption of resources and innovation sites. There are contradictory and poorly developed interpretations with respect to combining core ideas, both in philosophy and in the urban context. In its report, a 'resistant city' was defined, produced from the Global Forum on Urban Resilience and Adaptation, as one that "would resist and rebound against any trauma and stress while still maintaining its fundamental roles, systems and identities while adapting and successfully changing constantly" (Rudenko et al., 2026). Such concepts stress the importance of building capacities and adaptability in terms of resilience growth.

Urbanization also highlights risk to more externally challenged urban centers, (e.g., climate change), which leads to inherited causes (e.g., GHG emissions). Resilience building is therefore an integral part of planning for sustainable development. A "Resilient Community" is ready to withstand and rebound from any trauma and strain while retaining and adapting its fundamental roles, systems and identities in the face of continuous change. This calls for evidentiary, long-term, integrated systems strategies which minimize the risk of susceptibility, while improving adaptive capacity in line with the Sustainable Development Goals (SDGs).

Regarding the role of urban planning in building resilience, at the core of urban development and survival are infrastructure networks and utilities like transport systems, sanitation, waste disposal, electricity supply, and communications. To handle concurrently population development and imminent impacts of climate change, cities are urged to integrate adaptation thinking about current and future development decision making and investment opportunities. (ICLEI, 2015) Disasters as well as other catastrophes will disturb the operational capability of these flows, endangering the city's synergy and entire functionality.

Temperatures recorded in cities often are numerous degrees warmer than in their rural equivalents a trend which would be intensified by climate change in some areas. Quite few architectural and green / blue infrastructure approaches to reduce the impact of the Urban Heat Island (UHI) were identified. Those include basic techniques, such as painting white rooftops to improve reflectivity (albedo), ecosystem-based solutions, such as directing waterways through urban centers and tree plantation, and more complex building design and materials regulations.

As the UHI effect exacerbates, cities that consider more innovative ways such as turning waste heat into electricity, or urban zoning as per the energy consumption (i.e., designing multi - unit residential housing next to hospitals for energy sharing / reuse) from space heating and cooling. Land use is regarded by "total measures, actions, and variables for producing, modifying or maintaining some certain type of land cover (a set of natural processes)" (FAO / UNEP, 1999). In the context of the economic and social purposes by which property is used (e.g., hunting, timber production and preservation), the word "land use" can also be used.

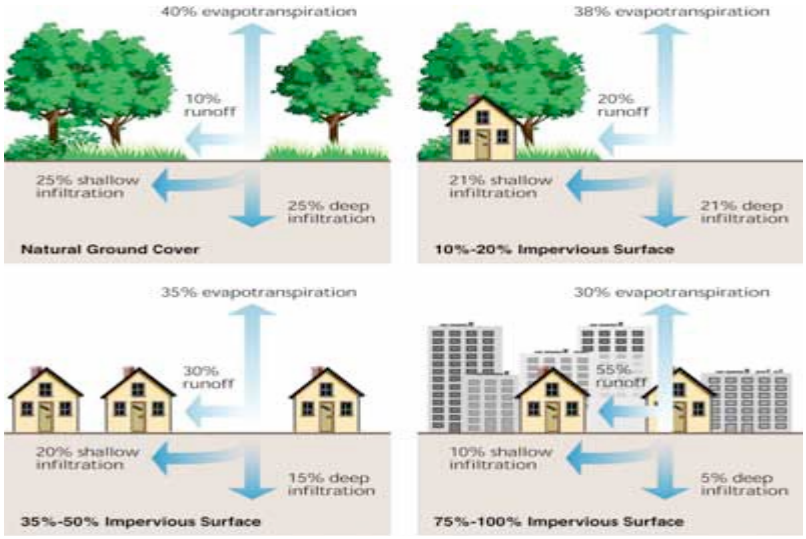
With respect to resilience and human settlements, the role of a planner varies according to context, but he / she must provide appropriate knowledge and relevant

skills in all circumstances in order to improve land growth and use programs and plans (Randolph, 2004). Balancing eco-system with human settlements may save cities from large-scale investments in obsolete projects, in changing risk scenarios. Climate change can augment the existing urban risk, such as floods. Urban planning goes beyond risk mitigation measures (flexible & dynamic in building resilience). By making changes in the urban landscapes or investing in new infrastructure can defend and build resilience in urban settlements. (spending) Resilience lies on repetition of risk management activities/policies etc., or having alternatives for resilience.

Land use planning has been considered a principle of urban resilience. Risk mitigation is a part of the resilience approach. Land use planning is low-cost approach for resilience risk management, for small areas that make up large cities. Planning is a way that is least damaging for the society. Mostly urban areas are located near high-risk zones e.g., near rivers, flood threats, agricultural lands, highland landslide threats, earthquake fault lines. High density population increase the vulnerability of the areas in catastrophic events. Land use planning informs about the risk areas and compatibility of land use with the type of area, it spatially directs projected growths in safer zones.

As a result, unintended changes frequently arise as informal settlements in dangerous areas, raising the risk in hazards. Increasing imperishable surfaces and resultant water runoff can, for example, increase the risk of flood risk by trying to extend housing out the front of existing flood defenses. Urbanization, specifically in flood-prone areas, changes the direction of natural waterways, enhances impermeable surfaces that minimize the absorption of rainwater and raise overland flows beyond flood risk-driven drainage networks. In most cities in developed countries, inadequate sanitation and solid waste disposal aggravate health threats in the event of flooding.

Figure 1. Cities and flooding in the 21st century. Policy research working paper 5648(The World Bank 2011)



Source: The World Bank 2011

The penetration of the urban recharge through sewage drains is also proved by microbial groundwater contamination, especially near drains. Poor municipal planning and industrial development lead to problems with public service provision, with water one of the worst hits. On the other hand, the recharge has been lowered as a considerable plot of land has now become impenetrable. Turning to Pakistan's current conditions and challenges, marginalized communities live in insecure homes and have no shock and stress reserves to manage.

They also lack the voice to hold the government to account. Currently, increased pressures like inflation and unemployment continue to limit households' ability to respond to disasters. Migrators are more vulnerable to catastrophic events, too. Human migration, which affects up to half the people of Pakistan, is a basic demographic, social and economic characteristic of Pakistan. The good news is that since the 2005 earthquake, our disaster relief and immediate responses have improved.

The key to reducing losses are multi-dangerous early warning systems. Latest weather-based warnings have been sent to Urdu by the National Disaster Management Authority to outline step to reduce risks through SMS. The catastrophe risk prevention, preparedness and recovery are poor though we are improving relief and response. Poor governance is one of the main factors which makes a danger a disaster. The major issues related to land and urban planning like poor maintenance of land records and, regulatory framework have impeded the economic growth of cities and towns. Conversion of agricultural and forest lands into other uses etc. has triggered food security issues. These have retarded effective utilization of both human and natural resources.

The major initiatives taken in this regard are establishment of dedicated urban planning units at provincial level; digitization of land records; promoting vertical growth of buildings; rationalization of plot sizes, integrated planning at the district level; revision of Building Bye Laws and Town Planning Regulations as well as incorporation of DRR checklist in PC-I and PCII for development projects related to infrastructure, production and social sectors. Challenges of accelerated urbanization include aggravating urban city; eroding live ability, productivity and efficiency of urban areas and degrading urban ecology. Eradication of urban poverty is another challenge.

With regard to climate trends, Pakistan lies in a temperate zone and its climate is as varied as the country's topography generally dry and hot near the coast and along the lowland plans of the Indus River, and becoming progressively cooler in the northern uplands and Himalayas. Four seasons are recognized: 1) a cool, dry winter from December to February; 2) a hot, dry spring from March through May; 3) the summer rainy season, also known as the southwest monsoon period, occurring from June to September; and 4) the retreating monsoons from October to November. The most devastating effects of climate change are heavy flooding and drainage problems on the one hand and drought and urban heat island phenomenon on the other. It also effects.

Pakistan lies in a temperate region and its climate is as diverse as the topography of the country usually warm and hot along the coast and along the lowland planes of the Indus Valley, then slowly becoming cooler in the northern uplands then Himalayas. Four seasons are acknowledged: 1) cool, dry winter from December to February; 2) hot, dry spring from March to May; 3) summer rainy season, also known as the southwestern monsoon season from June to September; and 4) slowly fading monsoons from October through November. Most of the country receives hardly any precipitation, with the exception of the northern areas where monsoons can bring up more than 200 millimeters (mm) per month from July to September.

Inter-annual rainfall rates differ widely, often contributing to sequential flood and drought cycles. Droughts are associated with El Niño events in some situations, which can cause considerable harm to crops which livelihoods, as in the successive droughts of 1999 and 2000, which culminated in crop failure and widespread starvation in Pakistan. The unusually high rainfall from the monsoon of 2010 caused the most devastating floods in the history of Pakistan, floods one-fifth of the region. Recent evidence suggests that glaciers in the Indus valley region may be expanding over the last 40 years due to increased winter precipitation across the Himalayan region. By comparison, the high rainfall levels on the coast and the Indus Delta (10-15 percent lower over the past 40 years) tend to significantly weaken the wetland and mangrove habitats in the country7. This trend, coupled with population growth an additional 200 million people are projected over the next 50 years8 will likely put

further tension on urban centers now also battling with sewerage infrastructure failures. 9 of the 25 severest rains ever reported took place between July and August 2010, in Pakistan.

In terms of challenges in urban areas, Pakistan's urban population is increasing rapidly, placing great strain on beleaguered infrastructure and services. One third of Karachi's residents live in poor neighborhoods, without safe drinking water, sanitation, and health services. The existing water system in Pakistan has not only limited capacity but insufficient effectiveness in its sanitation services as well. Studies show a fall in access to clean drinking water, from 68% in 1989 to 60% in 1997. To ease existing pressures, public awareness on water conservation measures is needed. The National Communication calls for a comprehensive review of best practices for water supply systems, followed by the development and implementation of new economic and structural policies addressing measures to conserve water quality.

Pakistan's strong agricultural dependence makes it especially susceptible to the impacts of climate change. In addition, Pakistan does not have appropriate forecasting facilities to forecast natural disasters or weather patterns changes and conditions, thereby making it highly difficult to establish short-term intervention or disaster reduction strategies. Adaptation strategies are equally difficult to formulate, except if detailed vulnerability studies and impact assessments are carried out. Looking further at international plans, policies, and frameworks for resilient communities, particularly the international use of the term resilience for disaster management, as more and more people are being affected by natural hazards, governments and organizations are increasingly recognizing that building resilient communities and reducing the risk of disasters is a fundamental initiative.

The usage of the word goes back to several years ago according to its generic sense in numerous fields of analysis. Resilience is a term of many dimensions that can be applied to various applications and situations but in specific ways. After the earthquake in the town of Shimada in Japan in 1854 (Alexander, 2013), Alexander recently traced the usage of the word resilience from Seneca the Elder, by Francis Bacon, to its first use in conjunction with Tomes' disaster recovery. Most scholars attribute the first modern resilience adoption to Holing (1973, 1986), who studied ecological systems stability that showed rebounding qualities through sustaining tension. But it was the weakness of the tragedy rather than the durability that took the limelight during the 1990s.

The concept is now embedded in international discourse and plays a key role in international, domestic, and local development policy. It underpins the United Nations Sendai Framework for Disaster Risk Reduction (UNDRR, 2015), the Paris Agreement on Climate Change (UN, 2015), and the Sustainable Development Goals (UN,2015). Forty-five OECD countries have adopted national resilience strategies1 and international development is undergoing a 'resilience revolution.'2 More than

100 world cities are on the 100 Resilient Cities network3; more than 1000 participate in the 'Making Cities Resilient Campaign' (UNISDR, 2012) to make their cities resilient to disasters; and there are many local/community projects. Resilience quotes in Web of Science publications grew from nearly zero in 1997 to almost 30,000 in 2015. (Parker, 2020).

Approximately years back, became benchmarks in determining how the planet should react to crises, climate change and the mission of economic, equitable growth across the next twenty years. Urban areas and resilience were recognized as key components of these responses. The resulting global mechanisms establish a shared purpose for raising the standard of living and set a tone for adoption of the New Urban Agenda at the 2016 Habitat III Conference. Urban resilience has evolved from a common concern to a niche. Cities are progressing quickly from preparation to delivery, with some leaders evaluating and documenting achievements and shortcomings to enhance and broaden activities both locally and internationally (e.g., City of Copenhagen); Nevertheless, adoption is hampered by a shortage of financial and technological tools. As a consequence, new players, partnerships and tools have arisen at all rates to ramp up measures towards urban resilience.

UN Secretary-General Ban Ki-moon called a UN climate summit in September 2014 to catalyze progress ahead of the 21st Conference of the Parties (COP21) to the 2015 UN Framework Convention on Climate Change (UNFCCC) in Paris. The findings covered the Resilient Cities Accelerator Program, the Cities Climate Finance Leadership Group and the Mayors' Compact. The Compact is an agreement between city networks (ICLEI, C40, UCLG) and its members to commit to reducing local emissions of greenhouse gases, enhancing climate resilience and publicly tracking their progress. More than 175 cities participate a year later to become compliant. To facilitate vertical integration and mobilize support for local action, the data are shared with the UNFCCC Non-State Actor Zone for Climate Action (NAZCA).

At the Third UN World Conference on Disaster Risk Reduction (DRR), countries signed the Sendai Framework for Disaster Risk Reduction 2015-2030, in March 2015. With recommendations for encouraging local authorities and populations to establish effective DRR policies, the system establishes national goals for significant catastrophe risk reductions. In response, the UNISDR Making Cities Resilient Campaign was updated with the "New Ten Essentials for Making Cities Resilient," a 10-point checklist for local governments to assess the progress of their DRRs. Through multi-stakeholder partnerships such as the UNISDR Private Sector Alliance for Disaster Resilient Societies (ARISE), UNISDR is also developing new tools, indicators and knowledge sharing platforms for local DRR. Urban resilience is receiving adequate via projects and ideologies such as the United Nations Sustainable Development Goals, Rockefellers 100 Resilient Cities initiative, at a socio-economic and environmental level. (2016 in Soofi). Some of the major

international frameworks/policies and initiatives focusing on resilience and urban planning.

Among these international frameworks, the Sendai Disaster Risk Management Mechanism 2015-2030 (Sendai Framework) was the first significant agreement on the post-2015 growth agenda and includes practical measures for Member States to safeguard development progress from catastrophe danger. The Sendai Framework works in conjunction with the other 2030 Agenda Agreements, such as the Paris Climate Change Agreement, the Addis Ababa Development Financing Action Agenda, the New Urban Agenda and, ultimately, the Sustainable Development Goals. It was strongly supported by the UN General Assembly following the 3rd UN World Conference on Disaster Risk Reduction (WCDRR) in 2015 and advocates for: a significant decrease in disaster risk and loss in lifestyles, livelihood opportunities and wellness and in the economic, physical, social, cultural and environmental assets of individuals, businesses, communities and countries. It acknowledges that the System has the predominant role in mitigating the probability of disasters but the obligation should be balanced with other actors including local government, the private sector and other actors.

The Sendai Framework helped pave the way for six months later Sustainable Development Goals (SDGs), including Goal 11: inclusive, secure, resilient, and prosperous cities and human settlements. SDG 11 provides concrete goals to minimize risk and the degradation of hazards while increasing public infrastructure and community stability and adaptive capability by 2030 (Ionescu et al., 2024). The 2030 Sustainable Development Agenda includes 17 Sustainable Development Goals (SDGs), with the 11th target being of particular relevance to cities. SDG 11 commits the world to "making cities and human settlements inclusive, secure, resilient and prosperous." Building on the SDGs, the New Urban Agenda (NUA) agreed at the 2016 Habitat III Conference in Quito, Ecuador, sets out a 20-year route map for sustainable development in the cities and municipalities.

The Medellin Urban Resilience Collaboration (MCUR) debuted in April 2014 at the proceedings of the 7th World Urban Forum held in Medellín, Colombia. The goal of the partnership is to promote the transfer of information and financial capital required to efficiently help cities becoming more responsive to climate change disruption, natural danger hazards and other multi - system upheavals and stress and pressure, such as the socio-economic difficulties brought on by rapid urbanization. Members are UNISDR, C40, Inhabitant, ICLEI, the World Bank, GFDRR, the Inter-American Development Bank (IDB), the Rockefeller Fund, 100 Resilient Cities and the Cities Alliance.

Following introduction of the Sendai Disaster Risk Management System, UNISDR has updated the Ten Basics for Rendering Cities Safe. The Latest Ten Essentials strive to strengthen the cities' financial, economic, and social capacity for resilience and are now being broadly adopted by cities like the Metropolitan

Municipality of Istanbul, Turkey, and the City of Karlstad, Sweden. Integrating disaster risk management (DRR) into community development is challenging for many metropolitan communities because of either a lack of knowledge, funds, capacity or cogency between regional and local strategies.

The new Framework and Ten Essentials, together with support from regional stakeholders and local policy networks, seek to provide communities with the tools necessary to introduce effective DRR initiatives and strengthen resilience building activities. The World Council on City Data (WCCD) incorporated the latest ISO 37120, the world's first ISO standard to recognize performance indicators for directing and quantifying the delivery of city service and living standards. The WCCD leads the introduction of the global ISO 37120, and launched the Accessible City Data Portal in May 2015. An eventual benchmark for the Resilient Cities is also under growth, ISO 37121.

The Making Cities Resilient Campaign is a campaign launched in May 2010 by United Nations office for disaster risk reduction (UNDRR) mainly under the theme of sustainable development addressing issues of local governance and urban risks. It incorporates and partners with local governments globally raising awareness for disaster risk reduction, and there are appreciation patterns to exemplify to other communities for the best outcome. The initiative shows how municipal agencies and municipalities will integrate catastrophe risk management by globally applicable common practices and guiding standards into the planning phase. The initiative highlights the role of local councils and representatives in sustainable growth.

As UN Secretary-General Ban Ki-moon stated at the Incheon Conference 'Building an Alliance of Disaster Risk Reduction Local Governments' (August 9, 2009), "I advocate on global leaders to address climate change and the reduction of the consequences of hazards and world leaders need to involve mayors, townships and city members." It indicates that implementing innovative strategies and resources to integrate catastrophe risk management into planning processes will help local councils benefit from urban readiness and meet growth targets that will effectively draw private expenditure, build fresh economic prospects and provide greater social prosperity and well-being in a sustainable environment. City jurisdictions have authority over law enforcement, and they are in crucial roles to incorporate catastrophe recovery into systems of economic planning, because they are at the nearest administrative level to residents and neighborhoods..

How this makes a city resilient to disasters could be seen, on the one hand, as a conjunction of resilience amassed through the urban development and planning phase, and, but at the other, as the result of technical actions to lessen the effects of disasters by actors involved. National governments, local government associations, international / regional / non-governmental organizations, community associations, donors, the private sector, academia and citizens can all be involved in the urban

disaster risk management process, where specific steps are required to recognize, organize and reduce the influences of natural and human-induced hazards.

The campaign's objectives can be summarized as follows: Know More: raise understanding of the advantages of significantly reducing risk amongst governments and citizens at all levels in urban centers; invest properly: recognize resource allocation for investment in disaster risk reduction pursuits inside local authority funding plans; and building safer: Provide hazard risk management on participatory sustainable growth plans and essential infrastructure safety. Turning to Pakistan's national policies, frameworks, and plans, the culture of disaster risk reduction started in Pakistan after it was hit by a major catastrophic event of 2005 earthquake. International agencies and donors diverted attention of government and national agencies, and collaborated to form non-structural measures.

Pakistan has documented frameworks, policies, byelaws and codes that can contribute in disaster risk reduction. Some of them discussed below. These include the National disaster management ordinance 2007, the DRR policy, the Pakistan Building Code (2007), the Planning commission checklist for Disaster risk reduction, the Urban Resilience Framework for Urban Disaster Management, and the Sustainable Building and Cities Action Plan. Other than these Pakistan is a part of international agencies and agendas that have global standards and frameworks for disaster risk reduction.

Regarding the National Disaster Management Ordinance 2007, the UN International Strategy for Disaster Reduction (UNISDR) introduced the radical shift from a reactive to a pro - active approach in the context of the Hyogo Framework of Action (2005-2015), which includes 168 countries like Pakistan. The Government of Pakistan released the National Disaster Management Ordinance in 2007 to establish a robust National Disaster Management System in the country to meet the foreign duties as well as address the challenges that emerged in the repercussion of the October 2005 earthquake. The Ordinance became the Law in December 2010, which was called the National Disaster Management Law. With the emergency response program, the Act introduces three layers: state, regional, and community levels.

The National Disaster Management Commission (NDMC) was formed at the state level under the Act and has the responsibility to develop guidelines and policies for the State Plan's disaster risk management and sanction. Consequently, the National Disaster Management Authority (NDMA) was established in 2007 in accordance with the Act, and assists as the national organization for the implementation, coordination and monitoring of disaster risk management. In March 2007, the NDMA approved the National Disaster Risk Management Framework (NDRMF), in accordance with the Ordinance (now Act). The NDRMF served as a holistic catastrophe risk reduction system at the regional, local, and district levels. In March 2010, the NDMA outlined the National Disaster Response Plan (NDRP), which identified specific roles and tasks of the key crisis response

stakeholders including Standard Operating Procedures (SOPs). Establishment of NDMA and NDRMF & NDRP formulation proved to be a landmark in Pakistan's disaster management sector.

The Pakistan Building Code (2007) was first issued in 1986 by Housing and Works Department, Govt. From Pakistan (Raza et al., 2025). It was used by the engineers as a reference; but it was not applied as a necessary condition. Following the earthquake of 8 October 2005, Pakistan's Ministry of Housing and Works decided to update and modify the Building Code. Focus was given to the prepping of requirements for seismic design of buildings inside the overall growth framework of the Building Code. As a consequence, the Seismic Building Code of Pakistan 2007 (SBC-07) was established by carrying out two main objectives: seismic hazard analysis, and the specification of design criteria and seismic design requirements for structures.

The chapters on different aspects of seismic architecture were compiled with several aims in mind: covering all widely used building forms in Pakistan; ensuring that the specifications could also be found in international codes and standards presently being used informally by many of the country's structural engineers; keeping the code knowledgeable and oriented to emerging trends and practices in developing countries, so that it provides a foundation from which future revisions and adjustments can make it into a genuine, state-of-the-art code specific to Pakistan; and making the text self-contained to the extent possible, requiring minimal reliance on other sources. SBC–07 sets down minimum structural protection criteria for structures. In accordance with the crucial understanding of the reasons of structural, geotechnical and earthquake engineering, it must be applied and used by engineers. The designer is ultimately responsible for the safety and economy of the design of the buildings. Countrywide SBC–07 implementation will go a long way toward reducing seismic risk in Pakistan.

Under the framework established by the Planning Commission of Pakistan, it was finally agreed that in the long term all new projects requiring government approval should give careful consideration to threat from natural and human-induced catastrophes and integrate disaster risk mitigation measures at the design, planning and implementation phases of the project. Accordingly, the outline (Infrastructure, Development and Social Sectors) is provided, and may be found in pc£/ & PC-II for consideration by the qualified platform. Whilst also Pakistan has articulated a government - driven system for the DRR, it needs better financial aid, democratic will and hard work syncing across emergency management bodies. Most of the accent is on response and rescue. With respect to the Urban Resilience Framework for Urban Disaster Management, in order to mainstream disaster risk reduction strategies, the World Bank funded project, "Punjab Cities Governance Improvement Project" which is designed to improve governance in the five large cities of Punjab, includes a component for enhancing cities' capacity to respond to

emergency and crisis (be it a man-made hazard or a natural calamity) promptly and effectively.

The challenges that the disaster mitigation and response agencies face are weak mechanisms, lack of coordination, capacity deficiencies, poor implementation, etc. In order to address these issues, the Urban Unit has to formulate an Urban Resilience Framework (URF). This framework will provide a practical and holistic approach geared to address the problems faced by Punjab such as the need to define boundaries that identify the responsibilities for each governing agency, develop mechanisms to facilitate coordination among stakeholders (governmental and nongovernmental institutions), to improve capacity building in human resource, finance etc., and to effectively implement action plans. The framework will stress on the need to not only develop contingent emergency response plans but also to test and update the plans regularly.

Finally, the main objectives of the action plan for sustainable buildings and cities include enhancing the capacity of relevant institutions for sustainable, smart and green cities planning and management; and developing the policy, legal framework, and governance for integrated waste management. The plan presents time frame, relevant lead agency, cost11 and addresses prioritized SCP relevant SDG targets. The action plan focuses on preparing strategies, plans and regulatory frameworks for implementation of national policies such as National Housing Policy 2001, National Katchi Abadie's 2001, National Sanitation Policy 2006 etc. and development of master plans of cities (Abadis, 2025).

Despite the extensive literature on urban resilience and green development reviewed above, two gaps remain insufficiently addressed. First, prior studies Lombardía & Gómez-Villarino, (2023) have tended to treat urban resilience and green development goals as parallel rather than integrated agendas, with limited empirical synthesis of how cities operationalize both simultaneously. Second, national-level disaster-resilience monitoring systems in developing countries such as Pakistan's PSLM survey framework and NDMA policy architecture have rarely been examined in relation to the global green-development discourse, leaving a disconnect between international resilience frameworks and localized statistical monitoring practice.

This study addresses these gaps by offering a synthesis of globally dispersed urban resilience case evidence and situating it against Pakistan's national disaster-resilience policy context, a combination that, to the authors' knowledge, has not been previously undertaken; this constitutes the novelty of the present study. Accordingly, the objectives of this research are: (1) to identify recurring strategies through which cities align urban resilience with green development goals, drawing on case evidence from multiple regions; (2) to examine how Pakistan's national disaster-resilience monitoring and policy frameworks relate to these global strategies; and (3) to derive practical and policy implications for integrating

resilience and green development agendas, particularly in developing-country contexts. The findings of this study are expected to benefit urban planners, policymakers, and disaster-management institutions seeking evidence-based guidance on aligning resilience-building with sustainability goals.

RESEARCH METHOD

The methodology for examining the intersection of urbanism and sustainability begins with a qualitative approach. First, researchers gather in-depth data by conducting comprehensive interviews with urban planners, policymakers, environmentalists, and local residents. These interviews aim to uncover diverse perspectives on urban resilience and green development goals. Additionally, researchers analyze policy documents, strategic plans, and sustainability reports from various cities worldwide. Through thematic analysis, researchers identify common themes and patterns across cases. Next, researchers employ participatory observation by attending city planning meetings, workshops, and environmental forums.

Furthermore, case studies serve as a vital component of this methodology. Researchers select diverse cities demonstrating varying levels of urban resilience and green development success. Each case study highlights specific challenges, innovative solutions, and lessons learned. To ensure depth and context, researchers conduct semi-structured interviews in these case studies, allowing participants to express their experiences freely. Finally, researchers analyze the collected qualitative data using interpretative techniques. This analysis involves identifying underlying motivations, power dynamics, and cultural factors shaping urban resilience initiatives. The ultimate goal is to generate rich, contextual insights into how cities align their development goals with sustainability principles.

RESULT AND DISCUSSION

Case studies resilience in urban planning

In the northwest of Lori, a region in Armenia is locate the city of Stepanavan. The population of the city is around 17,000 approx. City has faced major hazards in the past including pollution, floods, earthquakes, landslides and forest fires. The city has joined Campaign of Making Cities Resilient 2014 in its effort to achieve resilience. Steps followed included preparation and planning for disaster, risk assessment, an action plan to achieve resilience, implementation of plan and finally monitoring of the plan. Early indicators of success included mobilization of stakeholders, regular trainings, conduction of risk assessments. Also inculcating resilience in institutions. Capitalizing on the capacities of the locals to build resilience into those and enhance the capabilities. Another important achievement is nomination of the city of Stepanavan by UNISDR as role model city.

Most of Africa's fast urban development is taking place in cities and peripheral towns that are accelerating change in society economically as well as socially. These peripheral towns, particularly those situated along the shore, are struggling to cope with this explosive development, with many settlers heading to squatter settlements which are vulnerable to a number of natural and man-made hazards. Sustainable development in these urban centers is crucial to obtain state-level strategic goals, as these cities form a connection among remote regions and metropolitan areas, and between conventional and emerging economies. The case study provides 11 key lessons that world can learn from. Sustainable interventions allow the urban centers to achieve their ultimate development goals progressively.

Well documented base line data is required to carry out preliminary assessments. Eco system-based approach to alleviate poverty and reduction of vulnerability of poor can be carried out. In developmental frameworks resilience is incorporated to carve out long term resilient development objectives. Some of the population along coastal ridge are highly vulnerable to hazards. Any sort of long-term intervention will be a failure so the ultimate solution is sorted out to communicate and convince that very population to relocate.

Key Findings of case studies

The Community of Budapest and the City County councils have established a relationship with Suburban Public Place Cleaning Business, Metropolitan Gardening Business, civil service departments, hospitals, medical clinics, shopping areas and department stores. Sidewalk structures are maintained every day in order to minimize urban temperature. Health care knowledge on warmth and water intake is propagated through the networks of public entities. Practical measures to minimize health effects include the delivery of clean water, the installation of taps and sprinklers in parks, and encouraging people to use public air-conditioned buildings and cool off throughout the day.

When these steps were introduced in the summer of 2011, there had been a substantial drop in the number of outpatients on particularly hot days. The rainiest climate in June and July 2007 has flooded multiple cities since British records started to swell across the world. Heavy tension, depression and other psychological issues, respiratory problems triggered by sensitivity to the fungus in dwellings that are destroyed by flooding and vomiting and diarrhea were all reporter-reported health consequences. All this is happening despite the well-established facilities and emergence systems that indicate that they are not sufficiently secured against severe weather in the UK and in possibly several states (Gambhir et al., 2025).

Green walls will efficiently raise the sum of foliage in dense urban environments, while decreasing the land area usable for development. Except for being a stunning sight, green walls moisturize the climate, growing the ambient temperature. Green buildings often influence the building's thermal efficiency.

Outdoor green walls have seldom been seen in Sweden because there is a shortage of evidence on their construction. There is still a scarcity of information regarding their effect on constructing the power conservation and humidity quality of exteriors. Recent advancements in modeling tools for heat balancing of buildings demonstrate the desire for sufficient input information from environmentally friendly wall systems to measure the impact on regional city climate. At present, simulations do not correctly handle green walls.

This project would involve a biotechnological strategy to both scaling plants and vertical greening components. Solar-powered irrigation and storm-water condenser coil would be evaluated. Regulations for the use of ground, wild species and landscape structures and quality - practice for deployment and Maintenance is going to be made. The study would define crucial measures during the design and completion of the environmentally friendly wall / built environment. Precise information will result in improved city a move-climate models and energy density planning in a climate change in the future.

The Tokyo Metropolitan Council has been discussing UHI in its ecological long-term plan since 2002 (Lau et al., 2025). Approaches require increasing the movement of breeze through the area, the construction of sidewalks that trap heat and hold water, landscape planting trees, and improved forestation of walls and ceiling. In Slovakia, land registration uses design principles (2009) provide guidelines on the development of open fields and green areas (Slobodníková & Tóth, 2025). The criteria not just to define areas related to the quantum of green spaces and public or in a specific growth, but also involve attributes concerning the nature and characterization of green fields, including the ratio of enclosed surfaces, the ratio of forest area and connectivity. This extensive collection of criteria draws on instances from several other European cities, including Berlin, Graz and Malmö.

Keene is a small town with a population of around 22,000 in the region of New Hampshire, situated in the north-eastern region of the United States. In 2004 Keene developed and implemented a national action plan to mitigate and adapt to changing climate of the region. In subsequent decades, the effects of global warming have dramatically risen within the region and nearby regions, as in numerous other cities in the US and across the globe. After completion of the risk evaluation, the city categorized the future impacts into three sectors: the urban environment, the natural ecosystem and the social climate. The urban environment covers houses, utilities and electricity networks, which is primarily influenced by earthquakes.

That next field is environmental resources including forests, farmland and rivers, which may also have a detrimental impact on the tourism industry (ice water and ice climbing) as well as woodland and cultivation. Eventually, the socioeconomic climate covers the community and enterprises, public wellbeing and emergency treatment. This indicates that global warming has had an effect on many areas of the world, most of them with detrimental consequences, resulting in challenges for both

local officials and residents. To counter these rapid developments and challenges, the City of Keene had made a number of attempts to improve the stability of the town and its residents. It included a step-by-step approach to conduct a climate action plan and its whole life cycle including monitoring, evaluating and deplaning.

Karlstad is a town situated in the central of Sweden and adjacent to country's largest inland lake, Vanern. A wholesome of around 87000 residents are constituting Karlstad. In 2010 Karlstad was declared a resilient city by UNISDR. The software utilizes the expression durability in terms of mitigation and control Municipal crises. While it relies primarily on events triggered by anthropogenic global warming effects, the initiative also reflects on where and how policymakers should strive to seize environmental resources such as economic expenditure via development enhancements and changes, energy conservation and protection enhancements, community development and reconstruction, renewable electricity, and urban revitalization. Karlstad is highly prone to flooding as it is closely located near to water bodies such as the largest inland lake. This has consequently resulted in the legislature development in favor of disaster risk reduction based on Hyogo Framework. They have come up with a Flood Risk Management Program.

The correlation between resilience indicators and SDGs

The propose of sustainability theory makes the urban sustainability assessment frameworks (USAFs) emerge in an endless stream (Saraswat et al., 2025), which targets include risk assessment and potential risk impact assessment (Sinclair et al., 2022). Sustainability assessment is currently designed to fit into relevant decision context, depending on the objectives, the scale and the scope, namely, it acknowledges the importance of pluralism. While its long evaluation period, strong normative nature, and lack of feedback mechanism have become obstructions that hinder the promotion of sustainable evaluation.

The resilience assessment model combines the merits of sustainability assessment by taking some SDGs into consideration, which is a refinement of the common ideals of global sustainable development, and also a concrete way and innovative practice to achieve this goal. Taking the SDG 11 (Sustainable cities and communities), for example, sub-target SDG 11.3.1 states the Ratio of land consumption rate to population growth rate for assessing the urban planning and management in all countries. And in total, SDG 11 focuses on all residents' satisfaction with urban function (transportation, health care, etc.) or environment (air, water and soil). So, SDG 11 is consistent with S2 and E4 in both the indicator layer and the target layer.

Local adaptation: A case of Pakistan

A crucial role of policies meant to boost national resilience is to take a long-term view of community resilience and help avoid short-term expediencies that may

decrease resiliency. You cannot gain enhanced stability by merely applying a superficial layer of regulation or action to a fragile group. Long-term changes in functional strategies (new technology, techniques, resources and building systems) and cultural solutions (people, organizational practices, administrative structures and legislation) are essential to improve collective resilience.

PSLM and Sustainable Development Goals (SDGs)

UN launched a new post-2015 tracking action strategy called Sustainable Development Goals (SDGs). There are 17 priorities under SDGs, 169 objectives and 232 indices. The SDGs plan is quite detailed and designed to address the people rather than the families so that incentives will go up to individual level. There are national, regional, and sub-regional priorities to resolve the problems. The United Nations Statistics Division has entrusted the role of tracking and recording SDGs worldwide to the National Statistical Organizations, making Pakistan's Statistics Bureau (PBS) the main statistical agency for tracking SDGs with a web of 34 regional / field offices throughout Pakistan. Therefore, since the PSLM questionnaire was not updated during the life of the project, taking into account the changing ground realities & implementation of Sustainable Development Goals (SDGs), the technical team was created to evaluate all PSLM (District & Provincial level) questionnaires. There were four Sub-Committees on:

1. Poverty Labor & Employment
2. Education
3. Health
4. Water & Sanitation infrastructure-

PSLM Surveys important in supervising SDGs. Here it is worth mentioning that 29 indices of SDGs will be tracked by PSLM Surveys after detailed work on mapping of SDGs. The data generated through surveys was used to assist the government in formulating the poverty reduction strategy as well as development plans at district level for the rapid assessment of programs in the overall context of Millennium Development Goals (MDGs). As such this survey was one of the main mechanisms for the monitoring of MDGs indicator as out of 16 targets and 37 indicators adopted by Pakistan, 6 targets and 15 indicators were monitored through PSLM Surveys (Waheed, 2022), which were conducted at district level and at Provincial level respectively at alternate years.

CONCLUSION

Integrating urbanism with sustainability has become imperative to meet contemporary challenges. Cities must embody resilience by adapting to climate change, population growth, and resource scarcity. Conversely, green development goals foster environmentally friendly practices that reduce pollution and conserve ecosystems. Importantly, this alignment supports not only ecological health but also social well-being. Governments, urban planners, and communities must collaborate actively to implement innovative strategies. For instance, investing in renewable energy sources significantly cuts down carbon footprints within urban settings.

Furthermore, promoting public transportation and walkable neighborhoods diminishes reliance on private vehicles, thereby decreasing greenhouse emissions. In addition, urban design that emphasizes green spaces enhances air quality and provides recreational areas for residents. Notably, integrating smart technology enables cities to optimize resource management efficiently. Cities that prioritize resilience and sustainability can withstand future shocks while improving residents' quality of life. Therefore, fostering such an integrated approach is crucial for creating sustainable, resilient, and livable urban environments.

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