Social Sustainability of High-Rise Living: A Literature Review

Saurav Mitra, Lecturer

Adelaide University, Dept. of Architecture and Built Envt, Australia

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ABSTRACT

This systematic literature review examines the evolution of definitions of sustainability since its inception and the theoretical constructs underlying these definitions. It then discusses and analyses the three types of sustainability, the tripartite, namely Environmental, Economic and Social, and establishes that Economic and Environmental sustainability have dominated the sustainability debate since its beginning. Social Sustainability still lags behind in research activities and is the most neglected among the tripartite. The study then relates sustainability to high-rise apartments and again finds that both environmental sustainability, in terms of energy use, and economic sustainability, in terms of the cost implications of high-rise apartments, have been sought-after research topics.

The paper further investigates Sustainability and Social Sustainability in detail, examining various aspects of a social system, such as Trust, Diversity, Capacity for Learning, Self-Organisation, and Common Meaning. It reviews the various types of social sustainability from the literature. It then establishes a link between Social Sustainability and the Built Environment. This literature review also strikingly finds that certain factors, called the Moderating Factors, are associated with differences in social outcomes, but not in a causal sense, such as residents' personal circumstances, like income, religion, life-cycle stage and neighbourhood. The research eventually integrates existing research on social sustainability and postulates a definition of social sustainability for high-rise living. It also highlights gaps in the existing literature for future research.

Keywords: Sustainability, Social Sustainability, High-Rise Living, Trust, Diversity, Social Cohesion

INTRODUCTION

The research examines social sustainability and its relationship to high-rise living. It examines sustainability, including social sustainability, in the context of the built environment, especially in relation to high-rise living. There is currently a substantial body of literature on sustainability. In attempting to grasp social issues related to the sustainability of high-rise residential buildings, this research presents a broad-ranging literature review from two major perspectives. The first perspective addresses the origination and need for sustainability and subsequent types of sustainability. The second perspective consists of concepts and theories related to social sustainability. Based on the above two views, this paper postulates a definition of Social Sustainability in relation to high-rise apartments. Grounded on a rigorous analysis of theoretical sustainability studies, the final section of this paper presents the research gaps identified in the existing literature.

Purpose Of the Research

The objective of this research paper is to delineate the concept of social sustainability in high-rise living and to analyse the factors influencing it. This paper initially investigates the definition of sustainability, originating from the United Nations' Brundtland Report of 1987, and subsequently examines its various interpretations. It then explores the categories of sustainability documented in the existing literature, namely Environmental Sustainability, Economic Sustainability, and Social Sustainability. Additionally, this literature review establishes a connection between social sustainability and the built environment, culminating in a comprehensive definition of the social sustainability of high-rise living. It further identifies the factors that impact social sustainability, both directly and indirectly, within the context of the built environment. This

refined definition of social sustainability in high-rise living will facilitate future research to identify and understand the determinants of social well-being in high-rise residential environments.

METHODOLOGY

A qualitative review of the existing literature was conducted in this study. The approach moves from a broad concept of sustainability to more specific concepts, such as social sustainability, and then narrows further to the relationship with the built environment, particularly high-rise living. This study systematically examines how sustainability is defined in the existing literature. It then distils these definitions into their most basic and rational form. Throughout this process, the study finds that sustainability rests on three main pillars: Environmental, Economic, and Social Sustainability. It also reveals that social sustainability is the least researched area within sustainability studies. The research further explores the link between sustainability and high-rise apartments, thereby advancing understanding of social sustainability. To fully comprehend social sustainability, the study underscores the importance of a comprehensive understanding of the human social system. Consequently, a theoretical model of Social Sustainability is developed and mapped.

After mapping the various aspects of Social Sustainability, a further comprehensive analysis of the definitions of Social Sustainability in the urban planning context is presented. It examines the types of social sustainability and again relates them to the three basic pillars of sustainability. It then further identifies a relationship between social sustainability, the built environment and the quality of Social life. Thus, after integrating and dis-integrating, a definition of Social Sustainability of high-rise living is reached.

INTRODUCTION TO SUSTAINABILITY

The concept of Sustainability emerged from growing awareness of mounting global environmental problems, socio-economic issues concerning poverty and inequality, and concerns about a healthy future for humanity (Hopwood et al., 2005). Although environmental issues and forms of environmental concern have a long history, awareness of the environmental consequences of economic development became prominent in the 1960s (Young, 1990; Doyle, 2000; Chang, 2016). In 1972, intellectual groups, such as the Club of Rome, published accounts that reflected the potential depletion of Earth's resources due to indiscriminate economic growth (Doyle, 2000). International agencies, including the United Nations Environment Programme, began holding international conferences and promoting detailed studies of environmental issues as part of an effort to understand more coordinated and effective responses to increasing global environmental problems (Doyle, 2000).

The word "Sustainability" became widely known after a formal, comprehensive definition of Sustainability was proposed by the United Nations' Brundtland Commission in 1987.

The United Nations Commission on Environment and Development (UNCED), commonly known as the Brundtland Report, emphasised the need for holistic development towards a shared future. The Brundtland Report (1987) is widely regarded as a stepping stone to understanding Sustainable Development (Missimer, Robert, & Broman, 2017). The report defines Sustainable Development as '*Development that meets the needs of the present without compromising the ability of future generations to meet their own needs*' (World Commission on Environment and Development (WCED) 1987, p. 40).

However, scholars and commentators agree that the definition of sustainability in the Brundtland Report obscured the underlying complexities of sustainability (Dobson, 1999; Vallance, Perkins & Dixon, 2011). The vagueness of the concept, combined with its growing importance in national and international policymaking, has led to extensive debate and a range of definitions of sustainability. In the years since the publication of the Brundtland Report, there has been a profusion of literature devoted to the general topic of sustainability or sustainable development, but arguably with a blurred focus (Vallance et al., 2011). According to Chang (2016) and Johnston et al. (2007), there are approximately 300 definitions of "sustainability" put forward either directly or indirectly using the word "sustainability" (Chang, 2016). Some representative definitions are summarised in Table 1. These definitions are representative because each is grounded in a strong theoretical

construct. The common thread linking these definitions is that they all define sustainability by linking the environment or economics to human well-being.

Table 1: Representative Definitions of Sustainability

Definitions	Source	Theoretical Construct
Sustainability is precisely not a matter of a return to some mythical pristine past, nor even an attempt to approach such a condition. Rather it is a process of evolution that is incorporating humans and their institutions into a larger ecological system.	Allen & Hoekstra 1993, p.107	Human evolution is inclusive of the ecological system.
Sustainability demands ways of living, working, and being that enable all people of the world to lead healthy, fulfilling, and economically secure lives without destroying the environment and without endangering the future welfare of people and the planet.	Santillo 2007, p.62	Economic security without disturbing the environment.
Sustainable development describes process in which the natural resource base is not allowed to deteriorate. It emphasizes the hitherto unappreciated role of environmental quality and environmental inputs in the process of raising real income and the quality of life.	Pearce & Warford 1993, p.8	The human quality of life is about preserving natural resources and the environment.
Sustainability is a relationship between dynamic human economic systems and larger, dynamic, but normally slower-changing ecological systems, such that human life can continue indefinitely, human individuals can flourish, and human cultures can develop—but also a relationship in which the effects of human activities remain within bounds so as not to destroy the health and integrity of self-organizing systems that provide the environmental context for these activities.	Norton 1992, p.25	The dynamic relationship between economics and the environment is for humans to flourish.
Sustainability is by default taken to mean 'the existence of the ecological conditions necessary to support human life at a specified level of well-being through future generations'.	Lele 1991, p.609	Human well-being is dependent on necessary ecological conditions.

Source: Developed by the Author

All these various definitions address sustainability, representing a broad spectrum of issues such as economic growth, housing, water conservation, land management, energy, waste recycling, and transportation, and illustrate their interconnectedness (Al-Kodmany, 2018). In essence, Sustainability offers an inclusive framework represented in its three conceptual pillars or 'triple bottom line' (the environmental, the economic, and the social) or the '3Ps" of people, profit, and the planet, where:

- "Planet" represents the conservation of the environment;
- "Profit" represents economic vitality; and

- "People" represents community, social well-being, and equity (Al-Kodmany, 2018).

This expression of 'triple bottom line' was developed by environmentalist and economist John Elkington in 1999 within a business context (McKenzie, 2004; Elkington, 1999). Elkington (1999) harps on the equal importance of the '3Ps' wherein the "people" or "social" factor is often overlooked by businesses and organisations.

According to Al-Kodmany (2018), the concept of sustainability balances these three dimensions across geographic scales, from individual habitats to neighbourhood, community, city, region, country, continent, and the planet at large, and across both short- and long-term goals. Therefore, the term Sustainability captures a broad spectrum of different agendas and issues – "environmental", "social", and "economic"- which all share the common thread of reducing harmful impact on the environment while delivering economically viable, healthy, and comfortable human habitats (Al-Kodmany, 2018).

Few contemporary studies on sustainability consider ecological and social systems perspectives to define Sustainability. 'Sustainability is about the elimination of the basic mechanisms of systematic degradation of essential aspects of both the ecological and the social system' (Missimer et al., 2017, p. 35). As Broman and Robert (2017) argue, the definition of sustainability is not about 'trying to find a recipe for utopia'; it is about stopping the systematic decline of ecological and social systems, which are the foundation of human civilisation (Broman & Robert, 2017, p. 5). Similarly, Missimer et al. (2017, p. 35) suggest that 'the definition of sustainability is not about a flourishing of human life or all needs being met, but about the basic conditions that are necessary for the ecological and social systems to not systematically degrade'.

This minimalist definition of Sustainability implies that humans may require numerous compromises to achieve sustainability. It is undoubtedly not about unfettered growth and wishes fulfilled.

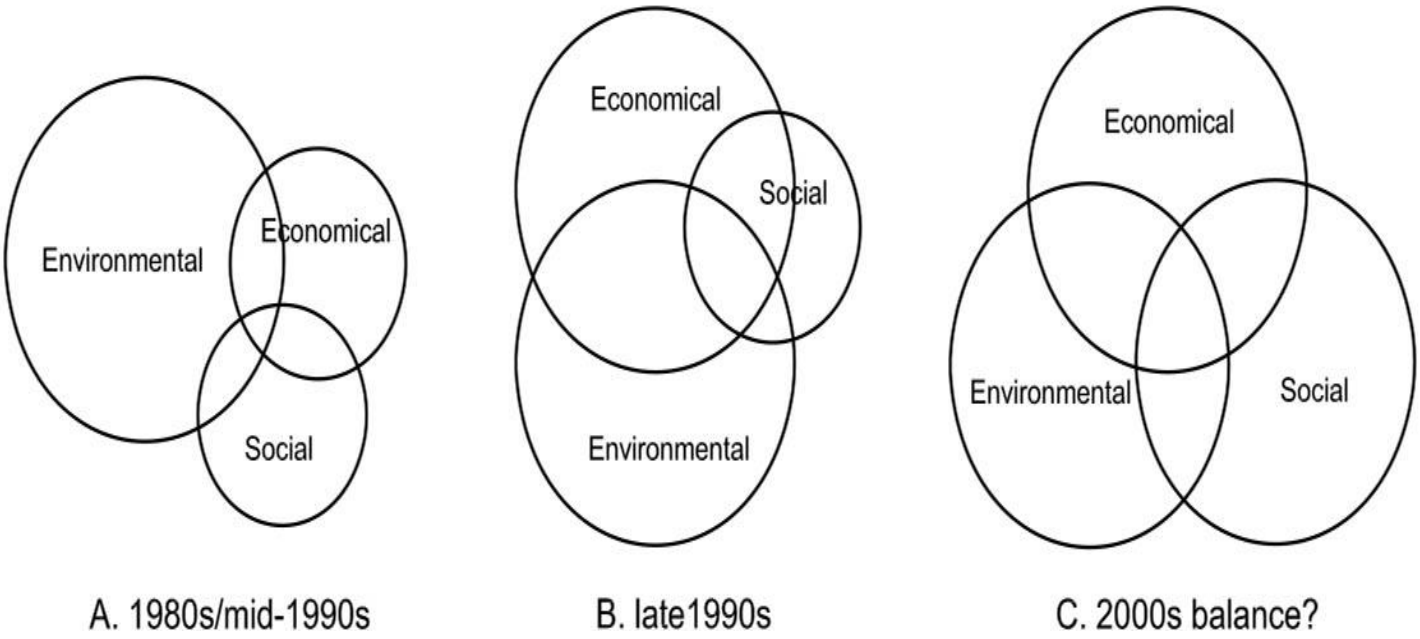

Figure 1. Different dimensions of sustainability and their relative importance through time;

A. Importance of Environmental Aspect (the 1980s/mid-1990s),

B. Importance of Economic and Environmental Aspects (Late 1990s), C. Balanced Importance of all three Aspects (2000s)

Source: Colantino 2010

Colantino (2010) reiterates that the Environmental and Economic pillars have dominated the sustainability debates since their beginning. However, in the late 1990s and 2000s, the United Nations considered social issues within the sustainability agenda (Figure 1). McKenzie (2004) reiterates that even though, in principle, the 'overlapping circles' model reflects that social sustainability has come at par with environmental and economic sustainability, in practice, this has not been the case. McKenzie (2004) further argues that Social Sustainability still lags in research activity because it is more difficult to quantify than economic growth or environmental impact and, consequently, is the most neglected element of the tripartite (Elkington, 1999; McKenzie, 2004).

Sustainability of high-rise apartments

The above discussion on sustainability highlights the three essential pillars, known as the triple bottom line, also represented by the "3Es" of equality, economics, and ecology. It is now well established that, globally, the construction of high-rise apartments has far outpaced that of other types of high-rise buildings over the past two decades (Mitra, 2026). This construction boom has coincided with a global acknowledgement of the need to reduce anthropogenic greenhouse gas emissions, as climate change has arguably become the greatest challenge of the modern era. Consequently, attention has shifted towards the environmental impacts of high-rise apartments, which many commentators consider inherently unsustainable due to their typically high energy consumption, dependence on artificial lighting and air-conditioning, and substantial embodied energies resulting from the extensive use of concrete and steel (Gehl, 2013; Roaf, Crichton & Nicol, 2009). The importance of ensuring the sustainability of high-rise apartments is therefore undeniable, and a significant portion of research has been, and continues to be, dedicated to enhancing their environmental sustainability (Oldfield 2019).

The literature reveals that, among the tripartite, environmental and economic sustainability of high-rise apartments attracted more research activity and attention, in the form of Life Cycle Assessment and Life Cycle Costing of high-rise buildings. Numerous studies have been done in the field of Life Cycle Assessment of high-rise apartments to assess and study the total energy consumption during construction, operation and embodied energies of various optional building materials of high-rise apartments (Nasab et al., 2020; Teshnizi et al., 2018; Bawden & Williams, 2015; Oldfield, 2019; Utama & Gheewala, 2009).

The economic sustainability of high-rise apartments has been researched to study the impacts of energy use in heating, ventilation and air conditioning (HVAC), the high cost of pumping water, and the cost implications with traditional materials such as concrete and steel.

While the energy-use issue is significant and contested, the literature also presents broader arguments about high-rise apartments. Yuen & Yeh (2011) argue that, with increasing urban populations, there is an urgent need to conserve land. Many urban analysts have promoted more compact urban living (for example, Clark 2005; De Roo & Miller, 2000; Hall, 1997). Reducing urban sprawl and encouraging compact city policies are common development strategies in both developed and developing countries (Jenks et al., 2000; Salet, 2005). A compact urban form is viewed as a sustainable solution that can control urban sprawl, protect the environment, and provide the necessary population density to support public transport (Newman & Kenworthy, 1989). High-rise apartments meet most criteria for high-density, compact living. Yeh (2018) suggests that high-rise apartments can help mitigate some negative effects of high density. Urban density refers to the number of people living in an area, often measured by persons per square kilometre (Yuen & Yeh, 2011). Building density is the percentage of land occupied by buildings. It has been argued that overcrowding or congestion, the primary issues of high-density living, are more related to building density and living space. With a fixed density, reducing building density can be achieved by constructing taller buildings to increase shared space, thereby alleviating crowding in the environment while maintaining the same amount of living space per flat (refer to Figure 2).

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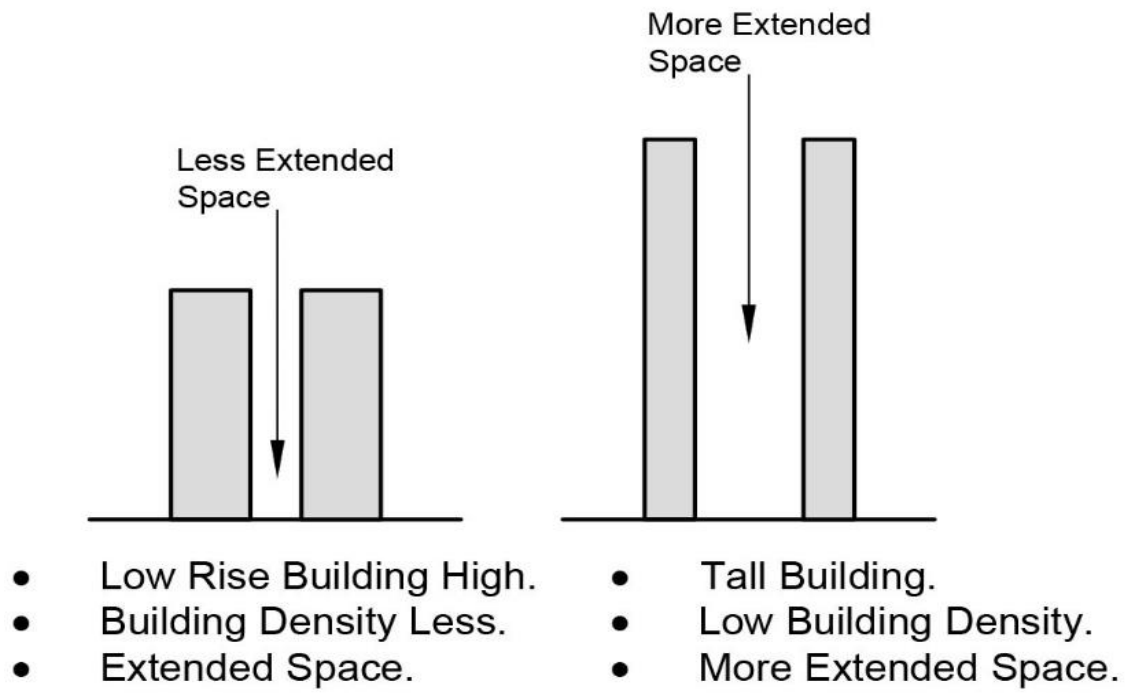

Figure 2. Building Height and Building Density with the same population density

Source: (Yeh & Yuen 2011), compiled by the author

Professor Deo Prasad, director of the Centre for Sustainable Built Environments, suggests that *"even with the energy downsides of high-rise, urban sprawl is a far worse option. Transport problems have enormous social and health effects. People who travel long distances to work spend less time with their families, and their health is impacted* (Blundell, 2013, p.3).

To complete the tripartite, the social aspect of the sustainability of high-rise apartments is equally important, along with environmental and economic factors. Investigating the social issues related to high-rise living is important because it directly affects people and their experiences. The purpose of this paper is to focus on Social Sustainability whilst highlighting how the idea connects with broader environmental challenges. This relationship with environmental sustainability is more evident when the types of social sustainability are discussed under the sub-heading 'Types of Social Sustainability' in this paper.

Sustainability and Social Sustainability

The Brundtland definition (World Commission on Environment and Development, 1987) addresses meeting human needs, now and in the future. The fundamental approach of the Brundtland definition started with 'human' as the focal point of the sustainable development debate (Missimer et al., 2017). On a basic level, all human beings have needs they aim to satisfy (Missimer et al., 2017). Most human beings have the desire and some innate capacity to meet their own needs by themselves or by taking help from the social system on which they depend- other people, organisations or larger societal structures (the economic system, political system). Simultaneously, it is noticeable that many needs, such as participation, affection, or communication, can only be satisfied in a community with others. So, by default, humans are a social species (Missimer et al., 2017). Maturana and Varela (1980) argue that individuals can meet their own needs but depend on ecological and social systems to do so. For example, the construction of high-rise apartments requires land to build on, water to mix concrete, timber to make furniture, and fenestrations as building materials. At the social system level, it needs the cooperation of the local people and the local government to acquire land for construction, and so on.

Therefore, according to contemporary research by Missimer et al. (2017), the human social system and its essential aspects need to be understood in detail to understand social sustainability.

Social System as a Complex Adaptive System

Social scientists believe that, like all living beings, human social systems can be considered not only complex but also Complex Adaptive Systems (Clayton & Radcliffe, 1996). Human social relationships are complex and adaptive to unpredictable change. Castellani and Hafferty (2009) argue that in human society, various groups and sub-groups form constellations and interact with each other in a system. These include larger global systems to smaller, more specific social systems such as nations, communities, institutions, companies and families (Castellani & Hafferty, 2009). Clark et al. (1995) explain that when a system evolves, the complexity increases, which means not only the number of the participating components of the system increases, but also the pattern of inter-relationships among these components also becomes more elaborate- i.e. their number and type increase. Adaptive capacity is the critical feature that allows such systems to function and evolve despite unpredictable changes.

Essential aspects of Complex Adaptive System

According to Missimer et al. (2017), understanding the concept of Social Sustainability is based on the different aspects of a Complex Adaptive System. Contemporary research on the Complex Adaptive System describes this system as consisting of three key aspects: Adaptability, Resilience and Transformation (Berkes et al., 2008; Folke et al., 2005; Nelson et al., 2007). Complex Adaptive Systems are characterised by uncertainty, change and surprise, which require flexibility to accept and adapt in dealing with the system (Berkes et al., 2008; Folke et al., 2005; Nelson et al., 2007). Adaptability can be conceived as the ability to absorb and withstand a change in the existing system. Resilience is originally defined as the "*capacity of a system to absorb disturbance or change and reorganise while undergoing change so as to still retain essentially the same function, structure, identity and feedback*" (Walker et al., 2004, p. 36). Resilience is essentially focused on the ability to withstand change and the capacity for renewal (Folke et al., 2005; Folke, 2006; Nelson et al., 2007). Transformation is the ability of a system to shape change (Missimer et al., 2017). In the context of high-rise development in most developing countries in Asia, it is a relatively new type of development. It has gained ground in the last two decades since the year 2000. The people of these Asian cities had to 'adapt' to this new form of housing development, accept the change and 'transform' themselves to acclimate to vertical community living. All three aspects of Adaptability, Resilience and Transformation are needed to embrace high-rise living from traditional dwelling. In the West, in the UK and North America in the 1960s and 70s, the transformation process did not work; as a result, high-rise living became a social stigma (Sutcliffe, 1974; Kearns et al., 2012).

The literature reveals that there are five essential aspects of Adaptive capacity:

Trust (social capital), Diversity, Capacity for Learning, Self-organisation, and Common meaning (Missimer et al. 2017, Norberg & Cumming 2013, & Folke et al. 2002). The following is a detailed discussion of the five aspects of Adaptive Capacity in a sustainable system.

Trust

Trust is a major aspect of a Complex Adaptive System and is considered Social Capital. Woolcock (2000) formally defines social capital as "the norms and networks that enable people to act collectively" (Woolcock, 2000, p. 3). Social capital is recognised as a key aspect of a Complex Adaptive System, necessary to coordinate the system's adaptation and to enable collective action (Olsson et al., 2004; Folke et al., 2005; Walker et al., 2006; Osbahr et al., 2010). Experts claim that social capital increases the flexibility of management in organisations and institutions (Folke et al., 2005). Trust is a form of social capital that coordinates the system's adaptation process, enables collective action, and connects society (Luhmann, 2000; Potter, 2002; Caldwell & Clapham, 2003). Trust plays a vital role in relation to a Complex Adaptive System. One or a few individuals can't understand or completely control the entire system they are part of; therefore, with greater complexity, one must rely on others to make decisions and choose viable alternatives for collective adaptation (Meijboom et al., 2006; Missimer et al., 2017). So, for effective adaptation, trust between individuals and between their institutions in a community or society is needed.

Folke et al. (2005) state that "trust makes social life predictable, it creates a sense of community, and it makes it easier for people to work together" (Folke et al., 2005, p. 451). Trust also presupposes an element of risk only if we are willing to waive the associated advantages (Luhmann, 2000). For example, Luhmann (2000) illustrates that "you may or may not hire a babysitter for the evening and leave him or her unsupervised in your apartment…" (Luhmann, 2000, p. 98). Social scientists conceive 'Trust' as the fabric which binds society together (Hollis, 1998; Luhmann, 2000; Potter, 2002; Cadwell & Clapham, 2003). In a high-rise living environment, trust plays a crucial role in the day-to-day activities of its residents. Sharing one building with multiple families calls for trust in each other's conduct in everyday life. For example, this includes respecting each other's privacy, maintaining an acceptable level of cleanliness in the common-use areas, and keeping noise within acceptable limits in personal space, and so on.

Diversity

Diversity has been consistently recognised as a crucial element of social sustainability by various social researchers (Folke et al. 2002; Norberg & Cumming 2013; Walker et al. 2006; Chapin et al. 2010). Diversity in the form of different personalities, talents, fields of expertise, cultural mindsets, religions, genders, ages, etc., creates options. Such diversity among individuals, especially when trust exists between them, enables efficient cooperation and leads to greater flexibility in responding to unpredictable change.

Folke et al. (2002) state that diversity protects against uncertainty and surprise. It helps to cope with constant change and 'facilitates redevelopment and innovations following disturbance and crisis' (Folke et al., 2002, p. 7). Many commentators have reiterated that diversity fosters a culture of adaptation to new situations and challenges in an environment of constant change and uncertainty (Folke et al., 2002; Burger et al., 2001). Since it is not exactly known what will be needed to accommodate a change, having as many options as possible is the best strategy for resilience in the long run. In a high-rise setting, diversity is inevitable. People from different walks of life share a building. In organising any collective civic activities within a high-rise community, such as annual celebrations and festivals, diversity plays an important role in the social lives of residents. Most members (residents) contribute their time and effort according to their abilities and skills to showcase cultural events.

Also, during medical emergencies, residents with medical or health backgrounds sometimes save lives by performing essential emergency procedures.

Sometimes, senior residents with vast experience handle emergencies with maturity and poise - such as in the event of fire or earthquake or security concerns like vandalism and bullying within the premises of an apartment building, seniors with vast life experience handle the situations with maturity and poise without being panicked and direct other residents to solve or overcome the crisis.

Capacity for Learning

Many social scientists stress the need for flexibility and learning to deal with complexity and constant change (Gunderson, 2001; Folke et al., 2002, 2004; Chapin et al., 2010). Learning in this context means the ability to sense changes and respond effectively. The literature also reveals that learning focuses on social and institutional learning, including the capacity to learn from experience (Mcintosh, 2000; Folke et al., 2002). For example, over the last two decades, India's metropolitan cities have witnessed a significant surge in the construction of high-rise apartments due to various political and social factors (Mitra, 2026). For the residents of these cities, this introduction to a new type of housing and the adaptation from traditional houses required resilience, flexibility, and the capacity to learn to embrace change.

Self Organisation

Complex adaptive systems are usually self-organised (Clark et al., 1995; Westley, 2002; Walker et al., 2006). As Walker et al. (2004) explain, self-organisation means that while the system is "dominated by individual human actors who do exhibit intent, the system as a whole does not (as in the case of a market)" (Walker et al., 2004, p. 39). Experts suggest that self-organisation is especially important when confronted with a sudden

change in the situation or environment (Olsson et al., 2004; Folke et al., 2005; Folke, 2006). For instance, an apartment community is a self-organised system consisting of a managing body whose members are elected residents from diverse backgrounds. The managing body is responsible for the general security, management, and maintenance of the apartment, and also assists residents in emergencies such as storms or fires. This requires the high-rise community to draw on its diversity to create stores of alternatives and keep them in circulation when needed.

Common Meaning (social capital)

Finally, like trust, sharing a common meaning also unites a social system. With a strong sense of shared understanding, people can endure difficult times for a long period and support each other. According to Missimer et al. (2017), common meaning is a fundamental human trait; it drives people to seek a clear purpose. Social scientists agree that humans are a species that creates and searches for meaning (Marsen, 2008; Park, 2010; Park, 2011). The idea that humans constantly pursue meaning and purpose in life is also recognised in other fields such as sociology, anthropology, and management studies (Kurzman, 2008). It is well documented that to survive and thrive, social systems (whether companies, nations, or communities) require a clear purpose (Stoller, 2009). Kurzman (2008) suggests that *"the recognition of human suffering, for example, may be interpreted in terms of inequality or stratification, exploitation or ability, responsibility or inevitability, and so on. It may lead to collective action to reduce suffering, or not, and the actions to reduce suffering may take any number of forms, depending on the meanings associated with the phenomenon"* (Kurzman, 2008, p. 6).

Giddens (1984) suggests that individuals' interpretations or meanings to make sense of their experiences are important elements of the social system.

From the point of view of social capital, common meaning also helps uphold integrity in a community or society at large (Mayer et al., 1995). Similarly, upholding its residents' integrity in the context of high-rise living helps improve the quality of life.

Thus, the five essential aspects of a complex adaptive system pave the way to the consolidation of the understanding of social sustainability, which is meant to be general in that it applies to any group, organisation or community and yet concrete enough to guide planning, innovation and action to support a system (Missimer et al. 2017 & Kurzman 2008).

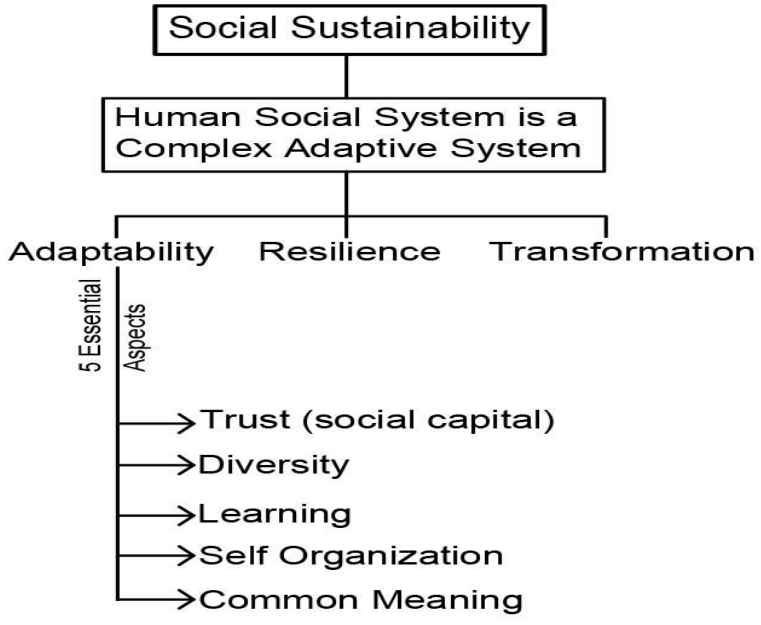

Figure 3. Social Sustainability

Source: (Missimer et al., 2017) & (Broman & Robert, 2017), compiled by the author

Persistent Empirical Challenges of Social Sustainability in High-Rise Living

Persistent empirical challenges of social sustainability in high-rise living have been highlighted in the comparative study of high-rise and low-rise living in Kolkata by Mitra (2026). The study demonstrates that the level of trust among residents is higher in low-rise, middle-income group apartments than in high-rise, high-income group apartments. It also reiterates that religious diversity and social cohesion do not complement each other in either high-rise or low-rise living environments. Overall, social cohesion is higher among low-rise residents than in high-rise apartments. In Kolkata, embracing new housing types and shifting away from traditional houses, especially over the last two decades, required resilience, flexibility, and the capacity to learn and adapt to the new built environment of high-rise housing. The Kolkata case study also demonstrates that the concept of self-organisation is challenged in high-rise living compared to low-rise cooperative housing. The sense of self-organisation and ownership is much more evident among low-rise residents than among high-rise residents. Similarly, the study shows that, due to the nature of cooperative society low-rise housing, the sense of 'common meaning' and the upholding of integrity in a community are also stronger in low-rise middle-income cooperative apartments compared to high-rise high-income residents in Kolkata. Thus, this empirical study by Mitra (2026) demonstrates that Social Sustainability in high-rise living in Kolkata is challenged across five aspects of the Complex Adaptive System.

Theoretical Framework for the Definition of Social Sustainability

Scholars believe that, regarding the social aspect of sustainability, there are still uncertainties in the definition, criteria, and measurement systems (Landorf, 2011; Bramley et al., 2009; Bostrom, 2012; Michael & Peacock, 2011; Laguna, 2014). There needs to be greater consensus amongst scholars on the definition of social sustainability, and various definitions have been proposed across different theoretical frameworks. Table 2 presents various definitions of social sustainability across different frameworks.

Table 2. Social Sustainability Definitions in the Urban Planning Context

Theoretical Framework	Researchers	Urban Social Sustainability Definitions	Context
Condition Framework	Chiu 2002	Social sustainability refers to social norms and conditions in that any environmental or economic decision must not exceed the economy's tolerance for change.	Hong Kong
	Laguna 2014	A condition where an extended set of basic needs are met for all residents regardless of their race/ethnicity, age, religion, gender, socioeconomic status and/or level of ability and the highest possible level of social inclusion and participation in community life is promoted.	Vancouver, Seattle, and Portland, USA
Measurement Framework	Colantino 2010	Traditional hard social sustainability themes such as employment and poverty alleviation are increasingly being complemented or replaced by the emerging "soft" and less measurable concepts such as happiness, social mixing and sense of place.	Canada
	Barron & Gauntlett 2002	Socially sustainable communities are equitable, diverse, connected and democratic and provide a good quality of life.	Western Australia

Future Focus Framework	Chiu 2003	Social sustainability is the maintenance and improvement of well being of current and future generations.	Hong Kong
	Magis & Shinn 2009	Social Sustainability concerns the ability of human beings of every generation to not merely survive, but to thrive.	USA and Australia
Process Framework	Mckenzie 2004	Social sustainability is life-enhancing condition within communities, and a process within communities that can achieve that condition.	Melbourne, Australia
	Holden 2012	A process of urban development, supported by policies and institutions that ensure harmonious social relations, enhance social integration and improve living conditions for all groups.	Vancouver, Canada

(Source: adapted from Mehan & Soflaei 2017)

Experts who worked on these concepts of social sustainability using an urban planning lens sought to theorise and link the concept of Social Sustainability to society, people and the Built Environment (Woodcraft et al., 2011). The table above also shows that most of these studies on Social Sustainability have been carried out in urban and rural contexts in developed nations such as Canada, the USA and Australia.

Types of Social Sustainability

This section explores the types of Social Sustainability, highlighting the intrinsic relationship and interdependence of social and environmental sustainability. Vallance et al. (2011) suggest that there have been several previous efforts to bring order to the diverse body of work related to 'social sustainability' in various ways. These contemporary studies identified three types of social sustainability based on social needs, ecological limits, and equity (Vallance, Perkins and Dixon 2011; Godschalk, 2004; Chiu, 2003).

According to Vallance, Perkins and Dixon (2011), social sustainability includes a 'threefold schema' or three types of Social Sustainability, namely - (a) 'Development Social Sustainability' which addresses basic needs such as social capital, justice, and equity; (b) 'Bridge Social Sustainability' which focuses on environmental awareness to connect people with the physical environment; (c) 'Maintenance Social Sustainability' which involves preserving and maintaining socio-cultural characteristics amid change, as well as how people actively accept or resist those changes.

In essence, these three types of social sustainability essentially mirror the tripartite theory of sustainability, where Development Social Sustainability emphasises economic stability and affordability, Bridge Social Sustainability highlights the vital link between the environment and people, and Maintenance Social Sustainability focuses on preserving social and socio-cultural identities and habitats.

Development Social Sustainability

Development Social Sustainability originates from the original Brundtland Report's definition of Sustainable Development, emphasising the 'Social' aspect within the process. It is founded on the idea that reconciling people's needs with bio-physical environmental management goals can be achieved through economic development (Vallance, Perkins and Dixon, 2011).

The Brundtland report *"captures the essence of a much larger concept that attempts to address both tangible and less tangible necessities of life, which in turn, was seen to depend on reviving growth; changing the quality of growth; meeting the essential needs for jobs, food, energy, water and sanitation; ensuring a sustainable level of population; conserving and enhancing the resource base; reorienting technology; merging*

the environment and economics in decision-making; and reorienting international economic relations" (WCED 1987, p. 49).

Recent scholarship has highlighted how practice associated with the concept of sustainable development, as articulated in the Brundtland Report, has failed to substantially improve the condition of the poor (Vallance, Perkins and Dixon, 2011). The literature indicates that the concept of 'development' has polarised scholars into two distinct schools of thought. One school holds that sustainable development is relevant to developing or less developed countries (Bhatti & Dixon, 2003; Nahapiet & Ghosal, 1998; Chiu, 2003). This raises questions about how much sustainability as social development is considered relevant to those living in the so-called 'First World'. For example, Bramley and Power (2009) argue that, in this context, social sustainability is often equated with social capital, social cohesion and social exclusion. This suggests that basic development issues, such as access to necessary goods and services, have already been addressed successfully, and that we should focus on what might be called 'higher-order' needs (Bramley & Power, 2009).

Another school of thought has questioned whether this is indeed the case. Macnaghten and Jacobs (1997), Redclift (2005), and Modarres and Boone (2006) have argued that the rhetoric and practice of sustainability in developed countries have yet to resolve significant issues such as poverty, malnutrition, poor health, and inadequate housing. Their work indicates that meeting people's basic needs 'everywhere' is essential to broader developmental objectives.

One of the social concerns driving sustainable development (as outlined in the Brundtland Report) is that only when people's basic needs are met can they actively address environmental issues. This view is supported by the literature on the social sustainability of housing (Vallance, Perkins and Dixon 2011). Crabtree (2005), for example, has shown how poverty acts as a barrier to adopting green technologies, such as solar panels and other methods of generating electricity or on-site waste disposal (Vallance et al., 2011). Similarly, Burningham and Thrush (2003) focused on energy efficiency as a sustainable practice. Their research found that while energy-efficient houses are ideal, it is almost impossible to save enough over time to build such a home or even purchase energy-efficient appliances when faced with more immediate needs such as food, thermal comfort, or essential medication.

Goodland (1995) states that the environment is a major constraint on human progress. He reiterates that environmental sustainability, or the maintenance of a life-support system, is a prerequisite for social sustainability. Redclift (1993) argues that poverty reduction is the primary goal of sustainable development, even before environmental quality can be fully addressed.

Development Social Sustainability emphasises that, although human welfare is interconnected with environmental sustainability, social welfare takes priority over environmental needs. In the context of high-rise living, affordability, in terms of residents' financial situation, plays a crucial role in Social Sustainability.

Bridge Social Sustainability

Bridge social sustainability promotes 'eco-friendly' behaviour and stronger environmental ethics (Hobson, 2003; Bhatti & Church, 2004; Frame, 2004; Vlek & Steg, 2007). Its goal is "to build better bridges, or connections, between people and the bio-physical environment" (Vallance et al., 2011, p. 344). Bridge social sustainability is the social aspect of sustainability that connects people with the bio-physical environment (Foladori, 2005; Vallance et al., 2011). It aims to harness human potential to achieve improved environmental outcomes (Chiu, 2003). The literature highlights two types of Bridge social sustainability – non-transformative and transformative (Demeritt, 2002; Robinson, 2004). The transformative approach involves radical ideas about people's relationship with the environment, criticising human activities as 'distanced' from nature and non-complementary to it. For example, Cairns (2003) advocates the notion of materialphilia and bio-philia. Cairns (2003) argues that the pursuit of greater material possessions—materialphilia—is unsustainable on a planet with finite resources. However, practising biophilia, the innate emotional connection humans have to other living organisms, increases natural capital (Cairns, 2003).

Similarly, Carolan (2007) advocates the idea of 'tactile space'. Carolan (2007) suggests that tactile space helps to instil within individuals a greater sense of relationality with others and the environment, leading to long-lasting attitudinal and behavioural changes (compared to superficial changes provided by, say, 'financial dis/incentives').

Non-transformative bridge social sustainability, on the other hand, encourages people to do things differently without requiring fundamental changes to the flow of life. Vallance et al. (2011) explain that the non-transformative type of bridge social sustainability often involves adopting technological innovations rather than altering lifestyles or belief systems, such as adopting solar energy or purchasing hybrid vehicles, thereby contributing to the connection between humans and the physical environment.

Maintenance Social Sustainability

According to Vallance, Perkins and Dixon (2011), this third aspect of social sustainability has recently emerged and is evolving. Maintenance social sustainability concerns preserving or improving the preferred way of life, including habits and preferences. Examples might include low-density housing, suburban single-storey homes with a backyard, personal car ownership, and green landscapes around the homes, whether the plants are native or non-native species (Vallance, Perkins and Dixon, 2011). Maintenance social sustainability focuses on how members of a society or community develop habits or preferences over the years that, when changed—politically or socially—threaten broader development, as manifested through protests or movements on local or global scales (Vallance, Perkins and Dixon, 2011). For instance, the northern suburbs of Kolkata city (India) are the old and traditional part of Kolkata, where residents have established patterns of living aligned with their traditional homes and environment (Mitra, 2026). The successful introduction and acceptance of high-rise living in this traditional setting, while maintaining the social fabric of the high-rise residents, exemplify Maintenance Social Sustainability.

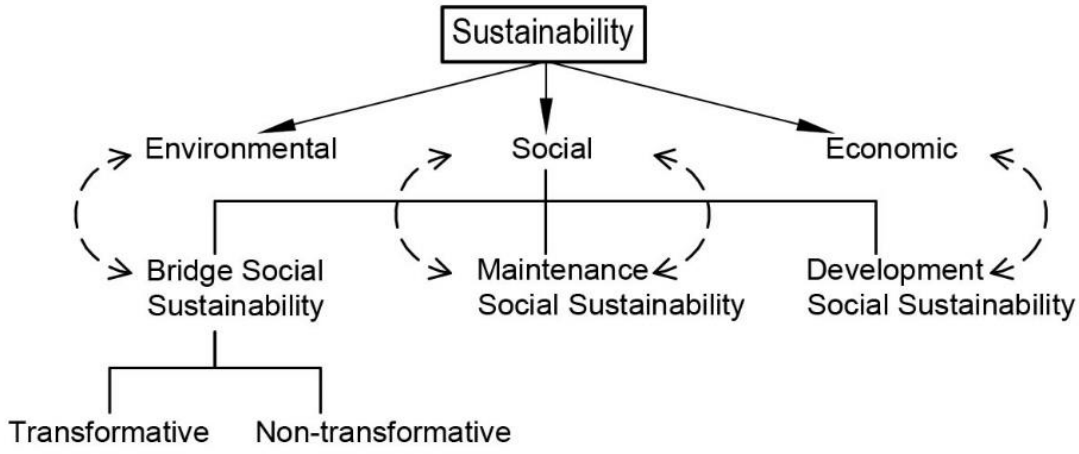

Figure 4. Threefold Scheme of 'social sustainability'

(Source: Vallance, Perkins & Dixon 2011, developed by the Author)

Essentially, when looking at the bigger picture, Development Social Sustainability is related to Economic Sustainability, Bridge Social Sustainability connects to Environmental Sustainability, and Maintenance Social Sustainability directly links to and merges with the concept of Social Sustainability (Figure 4).

Social Sustainability in the Built Environment

Turning to the core topic of Social Sustainability within the built environment, Bramley et al. (2009) explain that it comprises two main dimensions: Social Equity and Sustainability of Communities. Social Equity in high-rise apartments includes access to services such as lifts, staircases, common corridors, publicly accessible rooftop terraces, waste removal, and open spaces. Conversely, the Sustainability of Communities encompasses sub-dimensions such as attachment to the neighbourhood, social interaction and safety within the

neighbourhood, perceived quality of the local environment, satisfaction with the home, and participation in collective civic activities.

Along with these two main dimensions, commentators such as Dempsey et al. (2011) suggest that the interpretation of the social aspects of sustainability in relation to the built environment is multi-layered, complex, and can sometimes diverge from its people-centred agenda towards broader, overlapping factors such as social cohesion, social capital, and social exclusion and inclusion. While these factors are broader in scope, as they consider society rather than individuals, they still relate to people.

Dave (2011) suggests that the above dimensions of social sustainability concerning the built environment together influence the quality of life.

The terms such as Social Cohesion, Social Equity, and the Sustainability of Community have been discussed in detail in the next section to elucidate the relationship between social sustainability and the built environment.

Social Cohesion

The discussion on social sustainability necessitates a comprehensive review of literature on social cohesion, which will aid in understanding social sustainability. The classical foundation of research on social cohesion by Moreno and Jennings (1937, p. 371) defined social cohesion as "the forces holding the individuals within the groupings in which they are". Similarly, Festinger et al. (1950, p. 164) described cohesion as "the total field of forces which act on members to remain in the group." Festinger (1950, p. 274) further redefined social cohesion from a causal perspective to an outcome focus, stating it as "the resultant of all forces acting on the members of a group to remain in the group." Back (1951, p. 9) also describes social cohesiveness as "the resultant forces which are acting on the members to stay in a group." Friedkin (2004) suggests that although membership continuity and turnover continue to be central themes, Festinger's (1950) original definition of social cohesion as a "field of forces" influenced by conditions and their direct and indirect effects on individuals remains valid. Friedkin (2004) also emphasises that this perspective should include the mechanisms through which group members influence their environment. The classical approach to social cohesion can be understood through the development of an account of individuals' membership attitudes and behaviours—positive or negative—towards a group or community (Friedkin, 2004). Friedkin (2004) proposes that social cohesion functions as the causal system shaping individuals' attitudes and behaviours towards their group or community. In high-rise apartments, social sustainability is recognised as a dynamic concept subject to change over time within a particular place (Dempsey, 2009). Such changes in social sustainability may result from external influences; for instance, social cohesion and interaction may increase due to modifications in local facilities and amenities—such as the threat of airport expansion or the erection of a mobile tower (Dempsey, 2009).

This discussion raises an important question. Consider a situation in which social cohesion is strengthened by threats such as phone masts or poor environmental conditions, yet diversity is seen as a strength in facing change. Does this suggest that diversity and social cohesion are mutually exclusive and oppose each other, or can they coexist? Is it possible for a community or society to be both diverse and socially cohesive? The empirical findings in the recent research paper by Mitra (2026) demonstrate that social cohesion and religious or regional diversity do not complement each other in the context of high-rise living in Kolkata.

Social Equity

The concept of social equity is rooted in social justice, or 'fairness in the distribution of resources', and in equal access to facilities and services (Burton 2000, p. 1970). It emphasises how social equity is embedded in definitions of sustainable development, which aim to satisfy the needs of both current and future generations (WCED 1987). Dempsey et al. (2009) describe social equity as a situation in which no 'exclusionary' or discriminatory practices prevent individuals in a community from participating economically, socially, and politically (Pierson, 2003; Ratcliffe, 2000). Such discriminatory practices can include social exclusion, such as ageism or racism (Kellaher et al., 2004; Randolph, 2006). Conversely, social exclusion and inequity can manifest as deprivation and seclusion, which may lead to poorer living conditions and limited access to

services and facilities for residents of high-rise apartments (Lyndhurst, 2004; Macintyre et al., 1993). The literature indicates that the most essential measure of social equity is access to key services and facilities in a given area, as it fosters a sense of social freedom and acceptance (Dempsey et al., 2009). Critical aspects of daily life requiring equitable access for residents of high-rise apartments include functioning lifts, waste disposal, reliable water pressure, efficient heating, ventilation and air conditioning (HVAC), and clean, safe stairways and communal areas.

From the broader perspective of Social Sustainability in the Built Environment, the literature review shows that access to education and training, public services, social infrastructure, green spaces, culture, and recreation also play a crucial role (Dempsey et al., 2009). However, these aspects of social equity and equitable access to various facilities will vary depending on specific geographical locations and cultures.

Sustainability of Community

In the literature, social interaction and community spirit overlapped under two concepts of social sustainability: social capital and social cohesion (Forrest & Kearns, 2001). In theory and policy, social cohesion and inclusion are claimed to contribute to robust, fair and just societies for present and future communities (Lister, 2000). Social interaction and community spirit are considered essential for the sustainability of a community and social cohesion. The sustainability of a community is the society's ability to manifest itself as a local community and to sustain itself at an acceptable level of functioning (Dempsey et al., 2009). This acceptable level of functioning is associated with concepts like ‘social capital’ and ‘social cohesion’, which encompass social networks and features of social organisation (Coleman, 1988). Dempsey et al. (2009) describe the sustainability of a community as a collective aspect of social life. From the social sustainability of tall buildings perspective, there are three dimensions of the Sustainability of Community, namely:

- **Social interaction and social networks** between the residents of a community. Social interaction and social networks have been described as integral aspects of social capital (Forrest & Kerns, 2001). Social interaction and social networks act as social support systems because when people know each other and are comfortable interacting, other aspects of life, such as feelings of safety and a sense of well-being, emerge. For example, in an apartment setting, if residents know their neighbours, they can approach one another for help during emergencies, thus reinforcing a sense of social well-being.
- **Pride and sense of belonging** to a community. A positive sense of attachment to a place is considered a dimension of social sustainability because it is an integral component of people’s enjoyment of the neighbourhood where they live (Nash & Christie, 2003). For example, in an apartment, if the residents have a sense of pride and attachment to their building, they tend to keep their common areas like corridors, stairways, open spaces, and shared gardens neat and tidy. On the contrary, in an apartment, if the residents lack the sense of pride and attachment with their building and care less about the maintenance of their common areas, the sense of attachment with their place of residence further reduces and has negative impacts such as the feeling of insecurity, which in turn reduce levels of social interaction.
- **Safety and security** are one of the fundamental dimensions of the social sustainability of a community. It is an antecedent of any positive social activity in the neighbourhood (Burton et al., 2003; Shaftoe & Walker, 2000). Providing security and a feeling of safety in a neighbourhood is closely related to the other dimensions of community sustainability. In an apartment complex free from crime and disorder, residents can feel secure in their social interactions with other residents. Such a feeling of safety will enhance trust and reciprocity between residents and contribute to a sense of community.

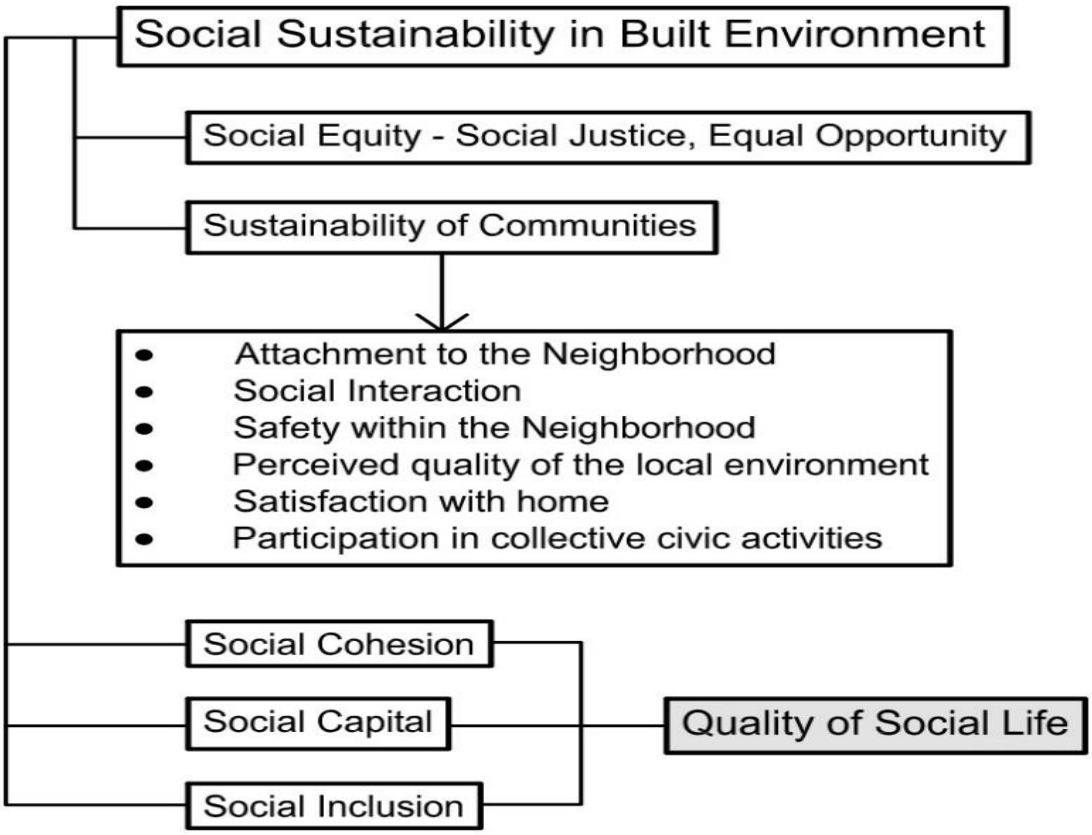

Figure 5. Social Sustainability in Built Environment

Source: (Bramley et al., 2009) & (Dave, 2011), compiled by the Author

Significance of Social Sustainability in high-rise living

To understand the significance of Social Sustainability concerning high-rise living, it is essential to understand the relationship between high-rise apartments and their residents.

In this context, Gifford (2007) suggests that the pros and cons of living in a high-rise apartment are socially charged. Based on empirical data, Gifford (2007) discusses six negative social aspects of living in a high-rise. The first is that residents fear that they or a neighbour will fall or jump from a high window (Lees & Baxter 2011). Lees and Baxter (2011) discuss this fear among high-rise residents in the context of inner London. Second, some residents fear being trapped inside during a fire; it usually takes longer to reach the street from a high-rise dwelling than from dwellings of a few storeys (Kobes et al. 2008). Third, residents of high-rises in earthquake-prone regions worry about the entire building falling because of an earthquake. For example, a study cites the 2008 Wenchuan earthquake in China to demonstrate this constant fear of living at heights among high-rise residents in Wenchuan city, triggered after the earthquake (Deng, Gan & Hernandez 2015). Fourth, in the post-9/11 era, residents cannot help worrying that their building might be attacked (e.g. Archibald et al. 2002; Shields, Boyce & Mcconnell 2009). Fifth, sharing one big residence with strangers triggers insecurity (Lees & Baxter 2011). Especially the semi-public areas like lifts and corridors raise fear of crime. Gifford (2007) makes the important point that the very fact that many high-rise apartments have key-locked entrances and guards proves that there exists a fear, even if no strangers manage to enter. Sixth, people living in one building may increase the fear of becoming ill from contagious diseases. For example, air- and touch-borne flu and colds spread more easily when residents share corridors, lifts and door handles.

Again, Gifford discusses a few advantages of living in a high-rise apartment. High-rise apartments have smaller footprints than an equivalent number of low-rise housing units and may therefore occupy less land, leaving more room for parks and green space (Broyer, 2002); however, these open spaces have often proved dangerous and antisocial around residential high-rises. High-rise apartments offer great views, at least for upper-level residents, unless another high-rise apartment obstructs them. Those living on upper storeys

experience less noise and cleaner air. Compared to single-family houses, apartments require less maintenance and have no yards. Controlled entrances reduce the fear of crime.

Gifford (2007) remarks that the above statements, so far, convey conventional wisdom and intelligent speculation, a list of complaints and benefits one might hear as 'common sense'. The majority of these positive or negative claims are seldom supported by empirical research. According to Frankenberg (1972), the height of the building has little direct causal effect. As one of the early studies concluded, different buildings probably have different advantages and disadvantages for diverse residents (Sinnett et al. 1972). Furthermore, Gifford stresses that social outcomes or consequences of living in a high-rise depend on various 'non-building' factors, namely, characteristics and qualities of the residents themselves and the surrounding physical context. These factors are called moderating factors, which moderate the relation between living in a high-rise and the outcomes of living in one (Gifford 2007). Sociologists like Catton (1988) have recognised the importance of moderators in determining the impacts of vertical housing. The question of social equity arises with moderating factors such as a person's age, marital status, race, and whether a family is dual- or single-income.

Moderating Factors

Gifford (1997) suggests that moderating factors are those that are associated with differences in outcomes without causing them.

Evans and Lepore (1997) argue that moderating factors or variables are part of the causal link between the environment and the outcomes. Moderators can be broadly categorised into two groups, those associated with residents (their characteristics and social relations) and those associated with context (the environment and neighbourhood) (Gifford 1997; Evans & Lepore 1997).

Gifford states that there are eight factors, independent of high-rise architecture, that can moderate residents' outcomes. The first four factors are economic status, choice of building type (e.g., high-rise, low-rise, or independent, stand-alone houses; a building located within the urban fabric), and population density. For example, if it is assumed that high-rise residents (a) are not poor, (b) choose to live in a high-rise despite having other building-type options, (c) the high-rise is located in a good neighbourhood, and (d) its dwelling-unit population density is low, the above factors suggest that residents are likely to avoid most negative outcomes and experience many positive outcomes. This appears to be an ideal case, for example, with high-rises on the edge of Central Park in Manhattan, which are expensive, usually spacious, and in a highly sought-after neighbourhood (Gifford 2007).

However, suppose one of the four moderating factors listed above, for example, the building location, is changed to a crime-prone locality. This would affect the relationship between high-rise living and exposure to crime. A recent study in the Netherlands shows that the location of residential buildings exposed to crime or fear of crime affects the social lives of their residents (Heibrink, 2021). Research shows that building location plays a role in a resident's exposure to crime, independent of building form (Luedtke, 1970; Molumby, 1976). For example, an earlier study by Brill (1972) in the context of New York City found that crime is more frequent when buildings are placed near easy escape routes. Another earlier study in Tallahassee, Florida, USA, illustrates that crime in the form of burglary, theft, etc., becomes prevalent in dark and dingy city corners (Brantingham & Brantingham, 1975).

Further, Gifford suggests that another four moderators affecting residents' outcomes of living in a high-rise apartment are life-cycle stage, gender, cultural background and dwelling design. That means high-rise living could generally be more suitable for some stages of life than others, for one gender more than others, for some cultures more than others, and for some arrangements of indoor or outdoor space within the building more than others.

Thus, high-rise apartments have both positive and negative effects on those who live in them, depending not on building height alone (the defining characteristic of high-rise apartments) but on other factors, known as moderating factors.

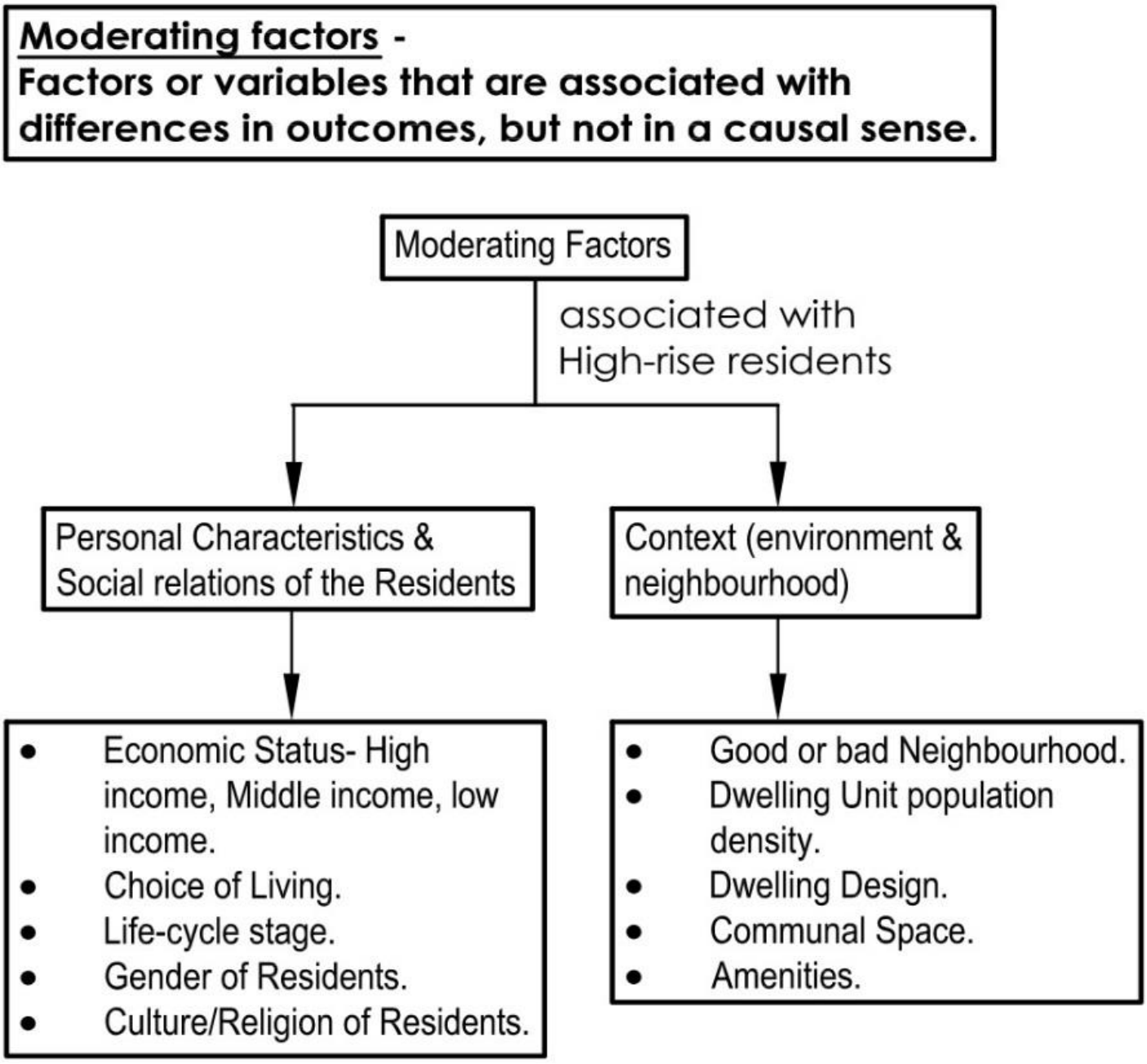

Figure 6. Moderating Factors Associated with high-rise residents

Source: (Bramley et al., 2009), (Dave, 2011) & (Gifford, 2007), compiled by the Author

Definition of Social Sustainability of high-rise apartments

Based on the literature review, the following is a proposed definition of the Social Sustainability of high-rise apartments: Social Sustainability in a high-rise apartment may be seen as a situation where its residents live amicably in their respective units or flats, sharing a single vertical building, with a sense of freedom and access to shared facilities, without any discrimination. Further, it is that social state where there exists diversity, social interaction, social networks, social inclusion, a feeling of security and social cohesion, with an element of trust between the residents, irrespective of their personal characteristics such as age group, income group, gender, or culture, and also irrespective of the context of the neighbourhood, such as an old-established suburb or a new and upcoming suburb.

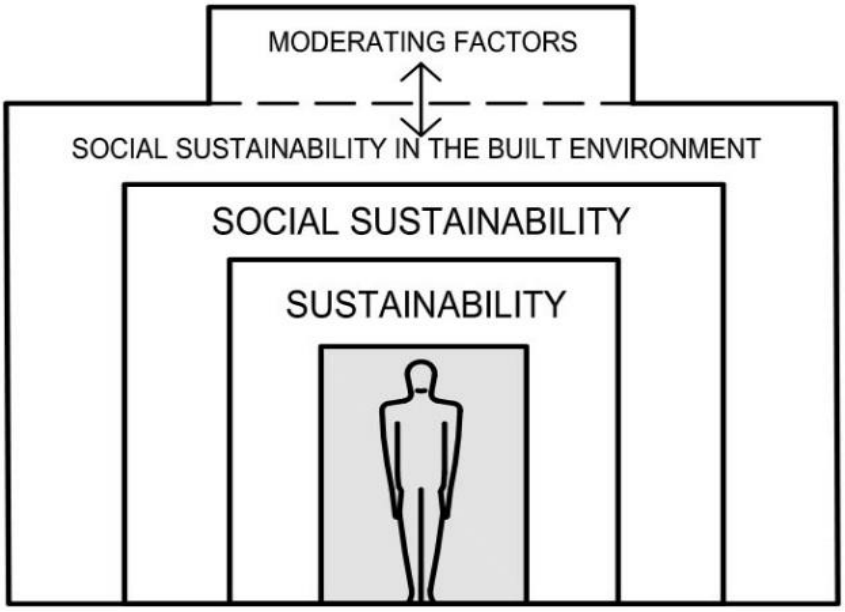

Figure 7. The concept of Social Sustainability of high-rise living as a conglomeration of Sustainability, Social Sustainability, Social Sustainability in the Built Environment along with Moderating Factors with Human at the Centre

*(*Source: Developed by the Author)

Thus, this definition reiterates two primary dimensions of social sustainability within a high-rise residential setting: social equity and Sustainability of communities. The definition covers the various aspects of a complex adaptive system, including diversity, trust, social inclusion, and social cohesion, which are vital for fostering social sustainability in such communities. Furthermore, it considers moderating factors such as income group, age group, culture, and neighbourhood context that influence social sustainability in high-rise living environments, as exemplified by the empirical study conducted by Mitra (2026) in Kolkata.

Gaps in the Research

From the results of this literature review, a few gaps are identified within the existing literature on sustainability studies:

Social aspect of Sustainability

The literature review indicates a necessity for additional research to precisely define social sustainability within the context of high-rise apartments (Bramley et al., 2006). Scholars and commentators agree that, despite the anthropocentric roots of the broad definition of sustainability articulated by Brundtland in 1987, the social component of sustainability studies has been comparatively overlooked relative to environmental and economic sustainability, thus warranting further investigation (Missimer et al., 2010; Missimer et al., 2016; Dempsey et al., 2011; Bramley et al., 2006). For instance, Bharne (2011) discusses the humanisation of high-rise urbanism from a global perspective; however, this discussion lacks an explicit connection to social sustainability issues. The research predominantly concentrates on the forms, shapes, and massing of high-rise structures. Similarly, Modi (2014) explores the social sustainability of high-rise buildings through the lens of architectural design of interaction spaces. These studies indicate that architectural design elements such as interaction spaces, high-rise massing, and shapes can improve the spatial experience within high-rise living environment, yet they fail to empirically emphasize the social dimensions of residing in a high-rise apartment.

Therefore, this research paper explicitly concentrates on Social Sustainability by examining it thoroughly and establishing a formal definition of Social Sustainability specific to high-rise residential buildings.

Theoretical Concepts and ideas

This study indicates that most of the existing literature on social sustainability is based on theoretical concepts and ideas. There is a gap in the literature on social sustainability, with a lack of empirical research that tests these concepts, such as Social Equity, Social Cohesion, Social Capital, Trust, and Social Inclusion. There is a need for empirical research that tests these concepts in the context of the majority world.

Existing Literature on Developed World Context

Another gap in the current literature is the lack of research on the social sustainability of high-rise apartments in the context of the developing or majority world. Most past studies on social sustainability have been conducted in the developed or minority world, such as the UK, the United States, Australia, or Europe. The literature references in Table 2 show that, in the past, social sustainability studies focused mainly on first-world nations such as Canada, the USA, and Australia. The literature on the social sustainability of high-rise living in the developing world is sparse and warrants greater attention.

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