

The Conceptual Framework to Integrate Sustainability in Urban Regeneration Initiatives

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Abstract

Urban regeneration has become an essential spatial strategy to resolve urban decay issues in many countries and regions which is in line with the '2030 Agenda for Sustainable Development to build sustainable cities and communities worldwide. Although urban regeneration is the desired solution for deprived cities, not all are successful in following the sustainable development path as more emphasis is on economic objectives over the environment and social sustainability. Thus, this study presents the conceptual framework that integrates sustainable development aspirations in the urban regeneration practice as the way forward. A qualitative method (content analysis approach) is adopted in this study by reviewing current and past studies on sustainable urban regeneration, using Mendeley as the search engine and *ATLAS.ti* for analysing. Findings from the literature review identified fundamental criteria and indicators of sustainable urban regeneration according to the three dimensions of sustainable development. A strategic approach to achieving sustainable urban regeneration is also identified which indicates that planning and social sub-systems are the crucial components or the enablers that integrate sustainability in urban regeneration initiatives. This study concluded that urban regeneration could be the solution to resolve urban decay and build sustainable cities if the town planning and social sub-system are incorporated appropriately within the sustainable urban regeneration framework.

Keywords: Conceptual Framework, Sustainable Development, Town Planning, Urban Regeneration, Urban Renewal.

1.0 INTRODUCTION

Cities are the centres of a nation's economic growth with complex and dynamic systems; and like any other living organism, cities become old over time. Most old cities face multi-faceted issues from the pressures of market forces that dictate the need to adapt as well as the internal pressures within urban areas that precipitate growth (Roberts & Sykes, 2000). Land shortage combined with severe deterioration of the city centres (Xu, Shen, Liu & Martek, 2019) such as derelict and abandoned buildings, decaying urban infrastructure and services, inefficient water supply, sanitation, waste management, transportation problems as well as worsening environmental conditions (Rosly & Rashid, 2013), are amongst the issues face in old cities. Dilapidated buildings not only ruin the townscape but also risk the health and safety of the community as a whole (Yau & Chan, 2008). As highlighted by Yu and Kwon (2011), old cities are lagging in development due to the changes in social and industrial structure, lifestyle changes, and also due to new town urban expansion. Uncontrolled urbanisation and the need to compete globally are causing some old cities to be left in dilapidated conditions, as sprawling and expansion of cities in valuable

greenfield areas continues. Thus, the need for old cities to be transformed to adapt to the change and current needs of the evolving market demand, housing needs, and life, styles (Rosly & Rashid, 2013).

Urban regeneration emerged as the sensible solution to address urban decay problems (Ercan, 2011; Lee & Chan, 2008) by pursuing long-term improvements in the economic, physical, social, and environmental conditions (Roberts & Sykes, 2000; Ercan, 2011; Adams & Hastings, 2001); promoting land value (Menchawy, 2008; Chan & Yung, 2004); improving the condition of dilapidated historical areas (Said, Aksah & Ismail, 2013); improve its infrastructure and foster its natural functions (Yu & Kwon, 2011); as well as fulfilling various socio-economic objectives (Lee & Chan, 2008) such as enhancing existing social networks and the inclusion of vulnerable groups (Chan & Yung, 2004). Began as a concerted phase in North America and Europe in the late 1940s (after World War II), the urban regeneration concept has advanced from merely demolition and reconstruction to a more comprehensive approach to building sustainable cities.

However, there are shortcomings in the implementation of the concept as many studies show that environmental and social problems are often side-lined (Couch, 2003; Fraser, Couch & Percy, 2003; Raco, 2003). Most urban regeneration practices put too much emphasis on achieving economic objectives and overlook the environmental and social needs of the community (Lee and Chan, 2008). Despite their emergence as corresponding aspects in urban policy, there is a lack of coordination and disproportion in action between urban regeneration and sustainable development (Couch & Dennemann, 2000); which is conflicting with the global movement to promote sustainable development in urban areas. This indicates the need for a more strategic approach to the urban regeneration process that incorporates both spatial (town planning sub-system) and people (social sub-system) which are the main components of a city (Zheng, Shen & Wang, 2014). Thus, this study presents the conceptual framework that integrates sustainable development aspirations in the urban regeneration practice as the way forward to transforming old cities in a more sustainable manner.

2.0 LINKING SUSTAINABLE DEVELOPMENT AND URBAN REGENERATION

Since the formation of Inner Urban Areas Act 1978, various definitions of urban regeneration have emerged in the planning literature (Couch, Sykes, & Börstinghaus, 2011; Korkmaz and Balaban, 2020); where the urban regeneration terminology is often used interchangeably with ‘urban renewal’, ‘redevelopment’, ‘revitalization’ and ‘rehabilitation’ in the literature (Rosly & Rashid, 2013). Nonetheless, the persistent description applied to explain urban regeneration is the process to bring back investment, and employment and enhance the quality of life within an urban area (Couch, 1990). Roberts, Sykes and Granger (2017: 18) defined urban regeneration as, “comprehensive and integrated vision and action which seeks to resolve urban problems and bring about a lasting improvement in the economic, physical, social and environmental condition of an area that has been subject to change or offers opportunities for improvement”. People living in deprived neighbourhoods could gain positive outcomes and create sustainable communities from the transformation brought by urban regeneration with the upgrading of the economic, physical, social and environmental conditions of an area (Ercan, 2011). According to Raco (2003), the notion of implementing large-scale urban regeneration initiatives is to transform slum areas in the city centre into ideal urban spaces by restructuring and establishing spatial requirements at the global level. Urban regeneration promotes the ‘return to the city’ concept by revitalising the city centre, re-establish activity to be competitive in the global context, and improve the quality of the environment (Rosly & Rashid, 2013), which in general would support sustainable development. Brundtland Report provides the classic and frequently quoted definition of sustainable development which is “the development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs” (WCED, 1987: 43). The sustainable development concept comprises of three key pillars or dimension which are economic, social and environmental sustainability. Any development must integrate the qualities associated with the interactions and overlapping of these three dimensions, to be considered as sustainable. According to Tanguay, Rajaonson, Lefebvre and Lanoie (2010), development must be equitable (interaction between the economic and social dimension); liveable (balance between environment and social needs, which can

refer to the concept of quality of life); and viable (economic development must abide by the ecosystems' capacity where reduction of non-renewable resources must be avoided).

Reviewing current and past studies, Bromley, Tallon and Thomas (2005) noted that the term 'sustainable development' is only used in the context of urban regeneration policy commencing from the 1990's, even though the term dated back to the 1970s'. Urban regeneration is currently recognised as a pertinent mechanism for building sustainable cities (Rosly & Rashid, 2013) even at the most basic level as it uses the already developed areas in the most efficient way, while making them a more attractive place to live and work in. The 'recycling of derelict land and building' approach, reduces the demand for peripheral development and also facilitates the development of more compact cities. Urban regeneration can play a major role in delivering the goals of sustainable development if planned carefully, as it will result in successful, viable, vibrant and sustainable communities besides improving the physical elements (Davidson & Lees, 2005). As noted by Huang, Zheng, Hong, Liu and Liu (2020), urban regeneration provides opportunities to address the immense challenges facing cities and contributes to the accomplishment of sustainable development. However, most urban regeneration policies disregard the environmental and social aspects as emphasis are given to achieving economic regeneration (Chan & Lee, 2008 ; Couch & Dennemann, 2000; Ng, Cook & Chui, 2001; Chan (2002).

Therefore, the sustainability concept which takes into account the economic, environmental and social objectives is suggested to be included when designing and executing urban regeneration initiatives (Fung 2001; Chan & Lee 2006) in Lee and Chan (2008). A strategic approach is required to integrate sustainability goals into the dynamics of any project and is supported by a majority of the project stakeholders, incorporating holistic, interdisciplinary participative and evaluative approaches (Pérez & Rey, 2013). There are many aspects to be considered, not only in relation to the inhabitants' quality of life but also to the environment and the economy (Ercan, 2011). At present, assimilating the ambitions for sustainability in urban regeneration initiatives has turned out to be a worldwide tendency (Chan & Lee, 2006; Berke, 2002; Shutkin, 2000), as the various needs of the current population are fulfilled without foregoing the resources for the future generations. According to Chahardowli, Sajadzadeh, Aram and Mosavi (2020), sustainable urban regeneration is amongst the vital approaches in the development of historical inner cities, as it incorporates all aspects of sustainability. Successful urban regeneration embraces the criteria of sustainability that include the concerns on economic contribution, environmental impact and community benefit (Jones & Gripaos, 2000). Urban regeneration can influence sustainable development meaningfully, should it follow a sustainable path. Although the process of linking sustainable development and urban regeneration is complex, integrating both concepts does provide a direction for sustainable cities in the future and should be linked together as recommended by Zheng et al. (2014).

3.0 METHODOLOGY

The primary approach in developing the conceptual framework is by reviewing current and past studies on urban regeneration in terms of its link with sustainable development, the criteria of sustainable urban regeneration as well as the strategic approach to integrate sustainability in urban regeneration initiatives. Figure 1 illustrates the methodological framework of this study.

3.1 Data Collection

Relevant articles are retrieved using *Mendeley* as the search engine and the keywords used in the literature search are 'urban regeneration', 'urban renewal', 'urban redevelopment', 'urban revitalisation', 'sustainable development' and 'sustainability'. The search string applied for the process was ("urban regeneration" OR "urban renewal" OR "urban redevelopment" OR "urban revitalisation") AND ("sustainable development" OR "sustainability"). This process resulted in 163 articles; however, after scrutinising the abstract of each article to exclude articles that are insignificant and irrelevant, only 71 remained and proceeded with analysis.

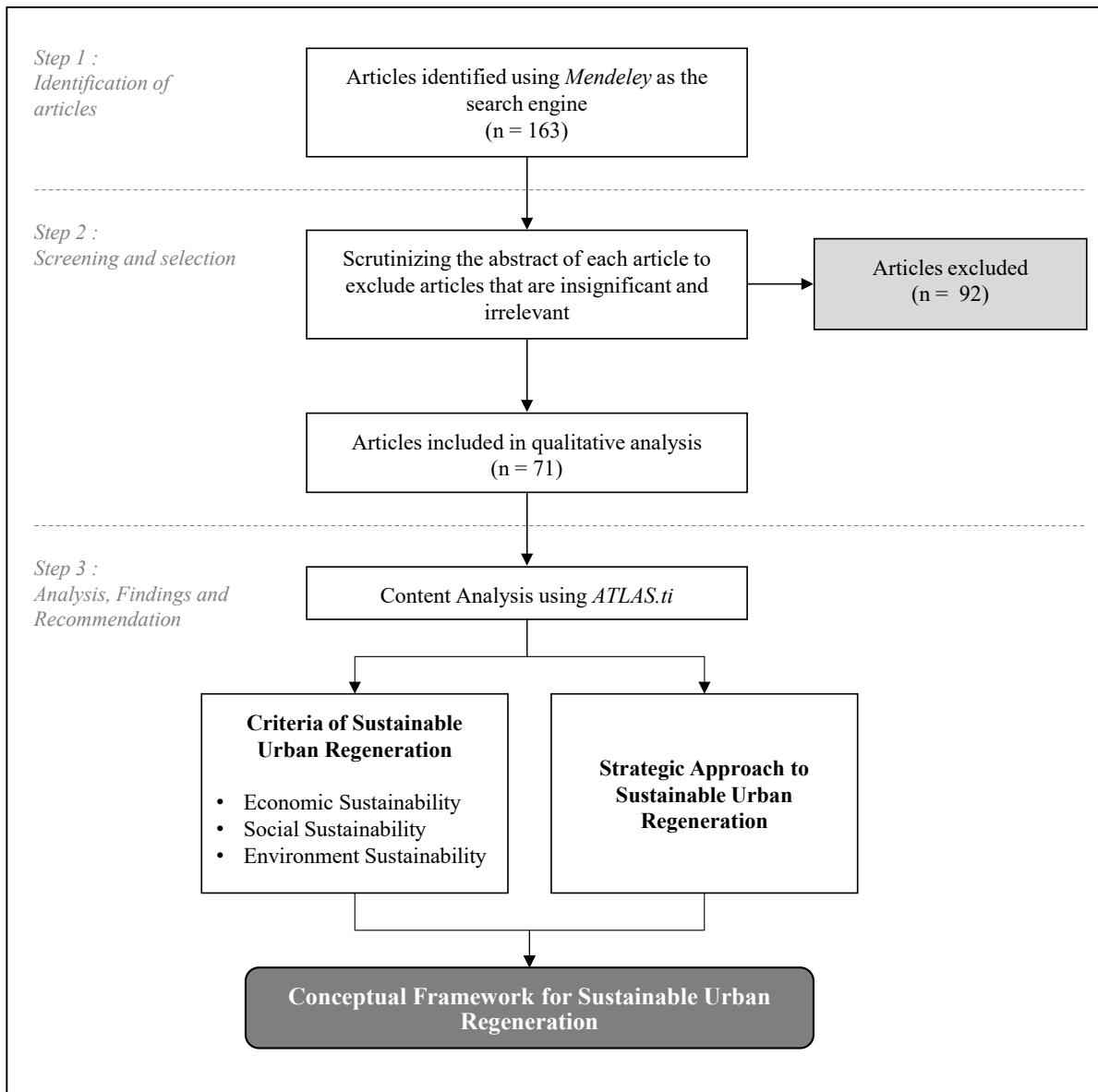


Figure 1. Methodological Framework

3.2 Data Analysis

The content of each article is reviewed and analysed using *ATLAS.ti* where coding can be done simultaneously while reading the articles. The codes are formed based on the two main aspects studied which are; (i) criteria of sustainable urban regeneration according to the three dimensions of sustainable development (economic sustainability, social sustainability, environment sustainability); and (ii) the strategic approach to sustainable urban regeneration. Using the content analysis approach, the coded quotations are then analysed and summarised to develop the list of criteria and indicators of sustainable urban regenerations, as well as the strategic approach for sustainable urban regeneration initiatives. Results from the analysis are then synthesised and formulated as the conceptual framework.

4.0 RESULTS

4.1 Sustainable Urban Regeneration Criteria and Indicator

4.1.1 Economic Sustainability

Studies on economic sustainability in terms of the local communities' economic security and growth are scarce as economic growth is interpreted in terms of the city's overall economic performance. As people are the main subject or focus in sustainable development, this study focused on the economic security and growth of the local communities. From the literature search, economic sustainability in the regenerated area is indicated by two fundamental criteria or groups of indicators; namely (i) Business Activity; and (ii) Jobs Availability.

(i) Business Activity

The existence of a 'friendly' neighbourhood consisting of local shops and social services businesses can be a real asset for an urban area as it contributed to the vitality of an area (Turcu, 2012). As suggested by Hemphill et al. (2004), to claim as successful sustainable urban regeneration, close to 100 percent of the original local businesses should still be operating after the 3-years period of the urban regeneration scheme. The ability of local businesses to sustain despite the emergence of big supermarkets in the area indicates that the urban regeneration is sustainable (Turcu, 2012). Ayoub and Elseragy (2018) opined that the transformation in urban activities or the introduction of new uses influences the sustainability of urban regeneration in the historical inner cities by creating 'functional diversity'. The establishment of new and diverse businesses brought through the urban regeneration, enhances the vitality of the regenerated areas as the new developments stimulated residents to reuse the areas as well as invite new visitors. The needs of the community living in the area could be fulfilled as different business activities such as supermarkets, retail shops and cafes are provided to support their daily life operations and provide gathering places for various social groups.

(ii) Jobs Availability

New developments brought by the urban regeneration should produce significant amounts of job opportunities for the neighbourhood and its community (Chan & Lee, 2008) as employment contributes to the social well-being by generating incomes and providing a working place as an area for social contact and interaction (Omann & Spangenberg, 2002). Moreover, as emphasised by Stiglitz (2001), increasing the employment rate diminish poverty, social exclusion, welfare dependence, family problem and social disorder. Stiglitz (2001) also highlighted that divorce and suicide rates, and the frequency of alcoholism is much higher in the community with a high rate of unemployment. According to Hemphill et al. (2004), even though urban regeneration creates high quality jobs that are desirable, this needs to be balanced by the number of lower-value jobs.

4.1.2 Social Sustainability

Social sustainability refers to the maintenance and improvement of the current and future generations' well-being (Chiu, 2003); where a socially sustainable project creates a harmonious living environment, reduces social inequality and cleavages, and improves the quality of life in general (Enyedi, 2002). From the literature search, social sustainability is indicated by five fundamental criteria or groups of indicators; which are (i) Housing and Living Environment; (ii) Community Benefits; (iii) Psychological Needs; (iv) Empowerment and Governance; and (iv) Townscape Design.

(i) Housing and Living Environment

Adequate affordable housing is among the vital component of sustainable urban regeneration as stressed by Ho (2001); many undesirable social problems are led by unstable property (housing) values. Adair et al. (1995: 112) emphasised that "meaningful and sustainable urban regeneration" requires the provision of affordable housing to attract people back into city centres. Raco (2003) stressed that the rising cost of housing with the limited supply of affordable housing creates social exclusion in the regenerated areas due to the increased house prices and land values (Razzu, 2004; Groves et al., 2003; Roessner, 2000; Turok, 1992). In order to ensure adequate housing besides the long-term constraints on land supply, the provision of affordable housing for households needs to be increased. Buildings as well as neighbouring areas should be properly designed and well-maintained to retain and improve the residents' standard of living in the regenerated area as well as create a harmonious living environment

(Chan & Lee, 2008). People are more satisfied when the visual appearance is pleasant and the building configurations in terms of density, height, mass and layout are properly designed (Lee, 2003; Li & Brown, 1980; Vandell et al., 1989) in Chan and Lee (2008). The moving pattern in the regenerated area is also crucial criteria for sustainable urban regeneration, as area gentrification indicates that the low-income local residents move out of the area due to the lack of affordable housing and increased cost of living (Turcu, 2012).

(ii) Community Benefits

Adequate and accessible public facilities such as schools and hospitals are essential to fulfil the basic needs of the people (Rothenberg, 1969) as well as offer places for social and leisure activities such as sports facilities and community centres. Increased living space per person as well as the strategic location of a residential area which is located within walking distance to community facilities are favourable to residents (Chan & Yung, 2004). Accessibility to these facilities and public open spaces / green areas are essential in improving social sustainability as people seek to live, work and have leisure and cultural activities within close vicinity (Smith, 2000). The provision of open spaces and green areas are also essential to provide a place for social gathering and public interaction besides functioning as buffer zones in crowded areas (Chiu, 2003; Corbett & Corbett, 2000; Cuthbert & Dimitriou, 1992). According to Rydin (2011), quality public places with active pedestrian movement, could also foster social capital and enhance the local environmental quality. Chan and Lee (2008) emphasized the importance of providing accessible and well-designed public spaces within the neighbourhood in order to achieve sustainable urban regeneration. Accessibility could be enhanced by providing safe and efficient public transportation systems which are integrated with pedestrian and cycling facilities. Besides that, special facilities for vulnerable groups such as the disabled, elderly and children within a community should also be provided (Chan & Lee, 2008) within the regenerated area to create inclusive development.

(iii) Psychological Needs

People living in deteriorating urban areas more often than not, suffer from social problems due to the appalling condition that they are living in. Thus, it is crucial to ensure that the transformation brought by the urban regeneration not only improves the physical condition of the area but also the psychological wellbeing of the citizens in order to achieve sustainable urban regeneration. The regenerated area should fulfil the psychological needs of the people living and working in the area such as to feel a sense of belonging, safe and secure, as well as equitability. Lomas, Ayodeji and Brown (2021) identified three super-ordinate themes which are 'feelings of control', 'social and community relations', and 'understandings and definitions of place' which are related to the residents' psychological wellbeing and place attachment. Studies show that urban regeneration initiatives that are sustainable promote more communication among different resident groups, thus, improving neighbourhoods with poor community cohesion (Audit Commission, 2008; SDC, 2007).

A sense of community and belonging to an area can be strengthened by having more formal places (community and sports centres, schools) as well as informal meeting places such as streets and public open spaces (Appleyard & Gerson, 1981; Gehl, 1971) where the community can meet and socialise. Hirschfield & Bowers (1997) highlighted that neighbourhood with a high level of community cohesion has lower crime rates; thus, increasing the sense of security to live in the neighbourhood which is also an essential psychological need of any human being. As highlighted by Corbett and Corbett (2000), people favour to living in a safe and secure place. Through good urban design, the public should be able to observe the public areas around their dwellings; which keep their neighbourhood under public surveillance. Reduced crime levels in areas of urban regeneration are seen as a prerequisite for successful urban regeneration (Coleman, 2004; SEU, 2001). An equitable community consists of a well-balanced mixture of ethnic, income and home-ownership tenure. Higher income households, in particular, could contribute to the improvement in standards of an area by coercing local authorities for improved services as well as facilitating social interaction across different backgrounds (Silverman et al., 2006; Tunstall & Fenton, 2006). Balanced tenure in home-ownership has also been seen as a precondition of successful regeneration delivery and sustainable communities (Audit Commission, 2006; Shelter, 2009) in Turcu (2012).

(iv) Empowerment and Governance

Empowering the local community in the decision-making process through public participation and local partnerships has been considered important in shaping local governance structures (Kotecha, Graham & Cebulla, 2008). As noted by Hay (2008), public participation in urban areas builds up local networks, knowledge and understanding of the local area and increases residents' self-reliance and teamwork. According to Ray, Hudson, Campbell-Barr and Shutes (2008) regeneration areas with high levels of public participation tend to have a stronger sense of belonging which is fostered as the residents are involved directly in the designing of their communities; where the finalised design proposal is very likely to meet their needs and desires (Ng et al., 2001). However, Skidmore et al. (2006) raised the concern that public participation can be dominated by a small group of insiders, which are the 'usual suspects' who benefited from the social capital building, with no guarantee that the wider community benefits further beyond them.

Thus, the importance of good governance as the key element for enabling sustainable development is emphasised by Samsudin (2011). Though governance is interpreted differently according to the people, it has broadly been defined as the intersection of power, politics and institutions (Leach, Scoones & Stirling, 2010) or a complex set of institutions and actors that are drawn from but also beyond government (Stoker, 1998). As noted by Turcu (2012), local partnerships and 'delegated power' between key stakeholders in urban regeneration schemes can sustain and increase community activity which is an important aspect of area sustainability. Recent urban regeneration initiatives have incorporated 'joined-up' or 'multi-agency' partnerships which have been seen as one of the strengths (Audit Commission, 2009; Cole, 2008; Shelter, 2009) compared to former practices which did not develop local partnerships; resulting in an administrative dispute between local authority and community, lack of consideration on the local needs and repeated problems (Foster, 1999; Robson et al., 1994). Local partnership structure, in general, consists of local public authorities (local councils and social landowners), local businesses and service providers, residents or community-based organisations. The local authority has a crucial role in the governance in terms of leadership by creating a vision and building consensus, translating the vision into workable objectives, coordinating the public, private and voluntary sectors, maximise resources and encouraging private investment; where the type and quality of local authority services is an important indication for the area's governance outlook (Turcu, 2012).

(v) Townscape Design

Sustainable urban regeneration should have good townscape design comprising of good quality urban design as well as preservation of the heritage elements and local culture distinctiveness. Townscape design is one of the vital criteria in social sustainability as it relates to how people perceive the place they live, work or play as well as interact within the place. Poor townscape design destruct the uniqueness of places and hinders the sense of belonging among the residents (Chan & Lee, 2008). It is an important indicator of the quality of the built environment not only in terms of aesthetics but also as part of the urban heritage (Shamsuddin, 2011). Good urban design improves the visual images and encourages outdoor social interaction among the residents through pedestrian-oriented streetscapes (Oktay, 2004) consisting of street furniture and pavement as well as interconnected street layout. Residents are more comfortable and pleased living in a neighbourhood that has a nice ambience with properly designed building configurations (Lee, 2003; Vandell et al., 1989; Li & Brown, 1980) in Chan and Lee (2008); which overall impacted the social sustainability of an area. The new development which is inevitable during the urban regeneration process has to be well integrated and complement the existing image and features in the area. New signs and landmarks, for instance, can be designed to emphasise the identity of the area, and new structures have to be mixed well with the existing ones (Lee & Chan, 2008). Urban regeneration typically involves 'matured' urban areas, which are rich in heritage and culture elements that are worthy to be preserved. As emphasised by Fung (2004), historical elements should be preserved appropriately as they witness the changes in time and are left by former generations for future generations' gratification and appreciation of their past.

Apart from preserving historical elements, sustainable urban regeneration also preserves the local

characteristics or distinctiveness of an area and its existing community network. As emphasised by Evans (2003), urban regeneration that values local cultural distinctiveness such as the cultural heritage and place identity, gains more attention from the locals and visitors. Local communities' past accomplishments, daily activities, traditions, way of life and their interaction with one another should be preserved and improved through townscape design (Chan & Lee, 2008) to preserve the unique positive identity of a regenerated area.

4.1.3 Environment Sustainability

Environmental sustainability which considers both natural and built environment is one of the goals of urban regeneration programmes, as demand for better environmental quality is increasing in order to attract inward investment (Percy, 2003). The concept of environmental sustainability is characterised by minimal use of non-renewable resources, protection of the natural environment, economic vitality and diversity, community independancy, individual wellbeing as well as the satisfaction of basic human needs (Choguill, 1996) as cited in Al-Akkam (2012). From the literature search, environment sustainability in the regenerated area is indicated by three fundamental criteria or groups of indicators; namely (i) Resource Use; (ii) Building and Land Use; and (iii) Transportation.

(i) Resource Use

Efficient use of resources such as energy, water and existing environmental features could secure generational equity, protect the natural environment, minimize the use of non-renewable resources, increase economic vitality and diversity, encourage community self-reliance, improve individual wellbeing, as well as satisfy the basic human needs (Choguill, 1996). Achieving environmental sustainability requires a dramatic change in the ways that biodiversity is managed and the processes of production and consumption (Melnick et al., 2005); which means carefully balancing human development activities while maintaining a stable environment that predictably and regularly provides resources. Proper building orientation and facade design, installations of environmentally friendly furnishings, and provisions of pollution control measures could conserve natural resources and provide high quality and pollution-free environment for the present and future generations' enjoyment (Chan & Lee, 2008). Besides that, as addressed by Mell (2009), planning for green infrastructure promotes human integration, ecological sustainability and economic regeneration. Green hubs were discussed as having the potential to enhance community sustainability, cohesion and engagement (Burrage, 2011).

(ii) Building and Land Use

Another crucial indicator of environment sustainability is the building and land use which describes the "relationship forged with the physical resources and land use planning component of urban regeneration", as suggested by Hemphill et al. (2004 : 733). Land which is regarded as a non-renewable resource is the main resource for any development. The efficient use of land resources is crucial as emphasised by Rosly and Rashid (2013 : 3), "Considering that land is a scarce resource, it is thus essential that land especially urban land needs to be properly, efficiently, profitably, feasibly and professionally invested, developed, administered and managed". Sustainable land use is an important component of sustainable urban regeneration through better use of urban space and efficient land use (Chan & Yung, 2004) as basically, urban regeneration is a form of resource reuse. As compared to demolition, urban regeneration is a much cheaper, faster and less disruptive option that also has the potential to meet the demand for land resources (Turcu, 2012). In order to establish a vibrant living, business and leisure environment, the type of land use should be mixed with a wide range of uses including office, residence, retail, entertainment, etc. A vibrant area can generate pedestrian activities, facilitate social interactions and stimulate the local economy by attracting citizens to visit frequently and stay for a longer period during each visit (Lee & Chan, 2008).

Local development patterns can also be a major attribute to sustainability in the environment context as noted by Chan and Yung (2004) even though the environment is subjected to the climate and regional activities. Sustainable land resource management can be taken to mean the well-organised use

and development of land and its related resources. Thus, proper planning, implementation, administration, control and monitoring are crucial to ensure the successful use of a land resource (Anuar, 2004). Amongst the recurring discussion theme in the urban regeneration literature is demolition versus renovation of repairable properties. Most Western European countries substituted the demolition approach during the slum clearance and replacement policy (after WWII) with renovation and renewal by the 1960's (Couch, 2003; Fraser, 2003) in recognition of the older building stock value as well as acknowledged the problems associated with replacing inner city housing with suburban high-rise development move towards more environmentally sustainable regeneration. Transforming existing abandoned and dilapidated buildings with new functions could limit the exploration of new land (Ferretti & Grosso, 2019), as recommended by Winston (2010), more emphasis on rehabilitation rather than demolition should be incorporated into sustainable urban regeneration policy. Nonetheless, many local authorities continue to engage in demolition programmes due to some reasons, including dissatisfaction amongst the residents with some renovated stock, low demand, falling values and abandonment in extreme cases (Couch & Fraser, 2003: 178).

(iii) Transportation

As transportation play a crucial role in connecting people and places, the implementation should be more sustainable; for example, develop an efficient public transportation system as opposed to private transport which is more hazardous to the environment as well as creates more pedestrian walkway and cycling to encourage people to walk and cycle, as opposed to building more roads that creates congestion in the city centre. As suggested by Chan and Yung (2004) efficient transport planning and land use planning are vital to ensure that the community is well served. Different uses in a regenerated area should be linked with safe, comfortable and convenient pedestrian walkways, and the area should be connected to other regions with streets, and convenient and efficient vehicular access. Large-scale public infrastructures such as carriageways, bridges and public transport terminals in the regenerated area are ideal but may not be feasible. Thus, the common way to increase the accessibility of the regenerated area from and to other districts is by connecting internal streets with the main road outside the renewed area, and providing parking spaces, bus or mini-bus stops, taxi stands, various lay-bys or direct access to mass transit (Lee & Chan, 2008).

The results of the literature review on sustainable urban regeneration criteria and their indicators are summarised in Table 1, according to economic, social and environment sustainability dimensions.

Table 1: Sustainable Urban Regeneration Criteria and Indicators According to Sustainability Dimension

Sustainability Dimension	Criteria	Indicator
Economic Sustainability	Business Activity	Resiliency of local businesses (existing)
		Establishment of new and mix business activities
		Training and up-skilling initiatives
	Jobs Availability	Availability of local employment
		Quality of jobs created
		Housing and Living Environment
Social Sustainability	Community Benefits	Housing Affordability
		Quality of housing
		Quality of living environment
	Psychological Needs	Provision and access to public facilities (education, religion, sports, etc.)
		Provision and access to retail facilities
		Provision and access to open / green area
		Provision of facilities for special groups
	Empowerment	Sense of belongings
		Safety and security
		Social equitability
		Public participation

	and Governance	Quality of Local Authority services Partnership	
	Townscape Design	Quality of urban design Preservation of historical elements Preservation of local culture distinctiveness	
Environment Sustainability	Resource Use	Energy and water use efficiency Waste minimisation / recycling Reclamation of building materials Provision to control pollution	
		Development Form	Efficient use of land Rehabilitation of existing buildings Residential density levels
			Transportation

These fundamental criteria and indicators provide insights into the comprehensiveness and inclusiveness of sustainable urban regeneration; which indicate that the path to accomplish sustainable urban regeneration is complex and challenging. A strategic approach which involves a comprehensive and integrated vision and action is essential to resolve the multifaceted problems in the old cities and improve the economic, physical, social and environmental conditions perpetually.

4.2 Strategic Approach to Sustainable Urban Regeneration

Urban regeneration has evolved through time from the mere approach of slum clearance and reconstruction towards a more complex place-making approach that adopts strategic approach to support sustainable development aspirations. The era of regeneration basically transformed since the 1990's, to prioritise the diversity of activities and emphasise more sustainable development (Barber & Eastaway, 2010). According to Turok and Shutt (1994), most urban policies in the 1980's, lacked strategic vision and longer-term perspective, where the approach to urban regeneration does not consider a wider spectrum; concentrated more on small areas, discrete projects and output-related funding. As emphasised by Hausner (1993 : 526), "short-term, fragmented, *ad hoc* and project-based without an overall strategic framework for city-wide development" are the inherent weaknesses of urban regeneration approaches. The consequences are problems being addressed in a piecemeal manner, where the associations between different aspects of regeneration have not been developed.

The concerns with the 'piecemeal' urban regeneration approach have incited the need for a strategic approach to implementing urban regeneration (Hausner, 1993). Roberts and Sykes (2000 : 38) concur that "the strategic context for urban regeneration has not been well developed in the past". Thus, the previous urban policy framework is re-evaluated and restructured towards a more comprehensive approach that accentuates more of integrating physical, social, economic and environmental strategies (Tsenkova, 2002; Couch et al., 2011). Strategic planning is an important tool for enabling communities to identify advantages in relation to the external factors which allows the urban regeneration process to incorporate a wide range of organisations and individuals from the public, private, voluntary and community sectors. Evidently, the partnership approach is a critical element in adopting a strategic approach to urban regeneration. Successful urban regeneration requires a multifaceted strategic approach incorporating both local and regional regulations, developed through multi-sector and multi-agency partnerships (Yi, Liu, Lang, Shrestha & Martek, 2017). A critical review by Zheng et al. (2014) recommended that the approach to achieve sustainable urban regeneration is by properly addressing the two large sub-systems involved in the urban regeneration process; which are town planning and social sub-system as outlined by Ristea, Ioan-Franc, Stegaroiu and Croitoru (2010 : 103),

"Considering the city a spatial-constructural and social system, we may outline two large sub-systems: town planning and social sub-system. While the town-planning sub-system includes all material elements of a city, including environmental factors that form the territorial structure, the social sub-system consists of the number of inhabitants as beneficiaries of the whole system".

Figure 2 summarised the results of the literature review on a strategic approach to sustainable urban regeneration.

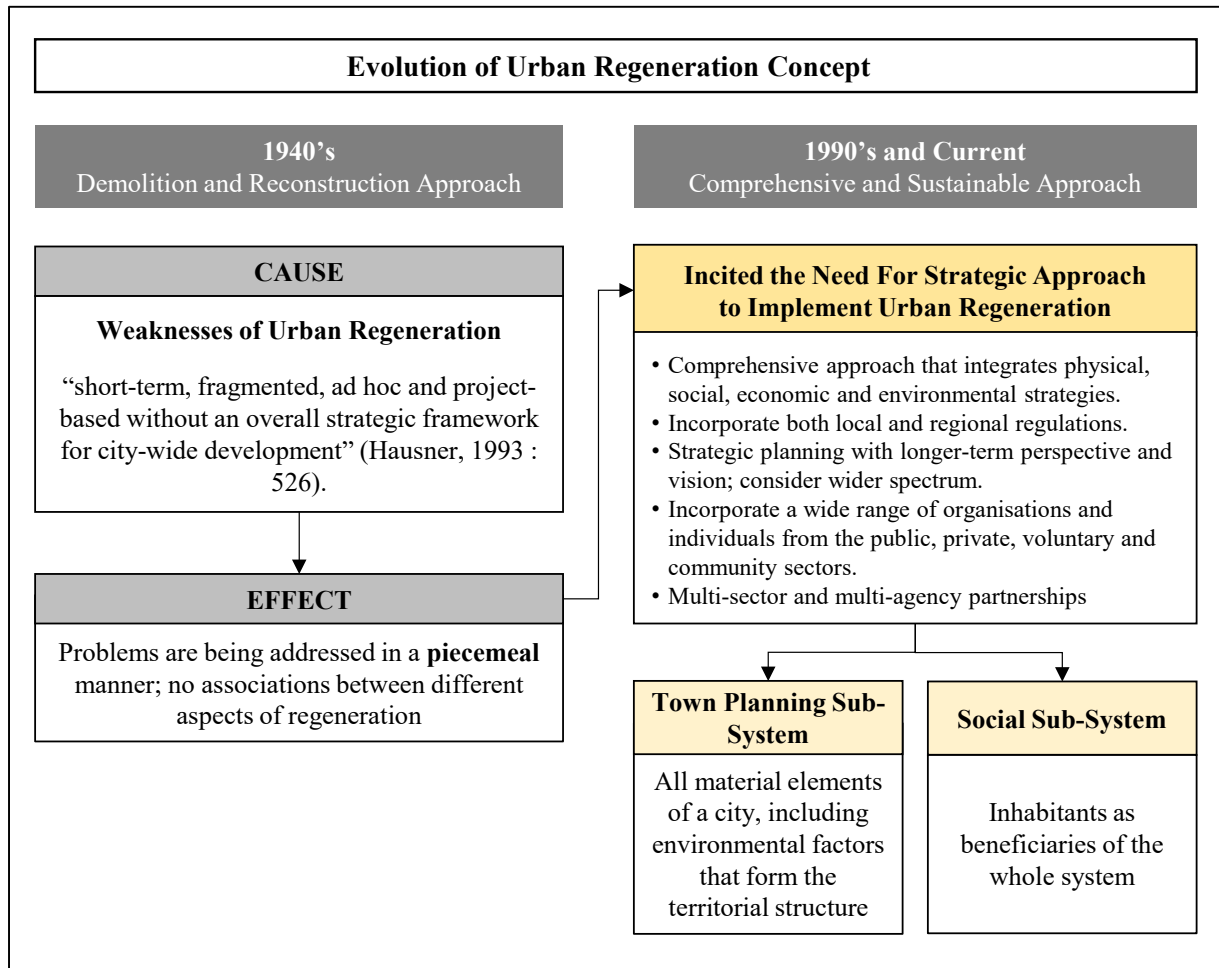


Figure 2: Strategic Approach to Sustainable Urban Regeneration

4.2.1 Town Planning Sub-System

Town planning system regulates the use of land and controls development for the benefit of the people and environment. It is necessary not only to prevent the loss of valued elements, such as environmental resources, heritage buildings, streets, and the local culture but also to control the undesirable side effects of development, such as waste, noise, pollution, and congestion (Rydin, 2011). Zheng et al. (2014), categorised the planning sub-system in urban regeneration into four main elements which are land, housing, infrastructure and heritage with urban design to assist in addressing these complex issues; as urban regeneration involves changes in the physical and functional aspects of cities. Land which is the basic resource for any development is amongst the crucial element in natural systems, where insufficient land supply is the never-ending issue encountered in cities, due to its particular characteristics (Zheng et al., 2014).

Policy implementation in the town planning sub-system plays a crucial role (Samsudin, 2011; Hui & Ho, 2003) in enabling sustainable development. Thus, the discussions on town planning sub-system for this research will be focusing on; (i) the legislative framework which consists of law, policy and guidelines related to urban regeneration as well as; (ii) the process and procedures involve in the implementation of urban regeneration initiatives. Town planning sub-system shall be able to support the accomplishment of the fundamental criteria for sustainable urban regeneration which concern not only the four elements as suggested by Zheng et al. (2014) but much more as discussed earlier. Town planning legislation framework is developed to control development and support sustainable development which includes town planning law as the main and other associated laws such as environment and heritage laws

to complement. There are also policies formulated as a guide or supporting documents within the town planning legal framework such as urban design guidelines. Town planning legislation creates the procedures by which development control may be exercised over the use of land and operations that take place on, over or under the land. Audit Commission (1992: 23) defined development control as, “A process by which society, represented by locally elected councils, regulates changes in the use and appearance of the environment”. In general, development is divided into three main stages which are; (i) planning phase; (ii) pre-construction; and (iii) post-construction phase. Regenerating old cities involves a complex process which is an “inherent multi-attribute and multi-stakeholder problem” (Ferretti & Grosso, 2019: 1), thus proper planning system is needed to regulate the process, to ensure that it complies with subsequent policies and is developed in the interests of the local community (Beswick, 2001).

4.2.2 Social Sub-System

Roberts and Sykes (2000: 19) emphasised that the “task of ensuring the effective regeneration of an urban area is of fundamental importance to a wide range of actors and stakeholders, including local communities, city and national government, poverty owners and investors, economic activities of all kinds, and environmental organisations at all levels from the global to the local”. There are various stakeholders involved in urban regeneration initiatives including local, state, and national officials, private sectors who seek to place capital, reduce risks, gain profits and enhance their reputation; as well as the public living in the area and close proximity given the possible impact on their health and quality of life (Zheng et al., 2014). Stakeholders’ involvement in the urban regeneration process is crucial as they are the implementers, providers, controllers, builders, basically the players that run the process. A review by Chahardowli, Sajadzadeh, Aram and Mosavi (2020) on various studies, discovers that 70% of the studies emphasised the importance of stakeholders’ roles in the regeneration of historical inner cities. Thus, it is crucial to identify the different categories of stakeholders with certain roles and needs. Zheng et al. (2014) categorised the stakeholders into three main categories which are; (i) local, state and national governments; (ii) private sectors (developers, investors); and (iii) public. Ahmad et al. (2018) also noted that the stakeholders in the urban regeneration process basically include the public sector (government bodies) who play the crucial role as the administrator in the urban regeneration process, the private sector (investors and developers) who are the major source of funding to execute the initiatives, the public consisting of communities living in the neighbourhood, buildings owners and other local citizens whose quality of lives will be affected by the urban regeneration initiatives in their living or working area, and lastly the Non-Governmental Organizations (NGOs) which aim to protect the society and work for the public welfare.

Sustainability means different things to different stakeholders and members of the public (Kriese & Scholz, 2011; Zheng et al., 2014). Stakeholders’ involvement and contribution to sustainability depend on how they interpret the concept and guide sustainability in different situations (Pérez & Rey, 2013). Under some circumstances, planners take a lead while under others it may be the developers. The urban regeneration policy, process and project implementation are greatly influenced by the relationship between these different stakeholders, the characteristics of different partnership modes, as well as the power, mechanism, and operation of different agents (Zheng et al., 2014). Thus, due consideration of the various needs and expectations of different stakeholders is required to ensure that the level of sustainability of urban regeneration projects can be significantly enhanced (Chan & Lee, 2008).

Based on the review done, it is comprehended that these two sub-systems are closely interrelated with each other and play a crucial role in the urban regeneration process, as the enablers to achieving sustainable urban regeneration. Thus, unravelling the complexity and issues within this interaction is crucial and needs to be considered within the sustainable urban regeneration conceptual framework.

5.0 SUSTAINABLE URBAN REGENERATION CONCEPTUAL FRAMEWORK

There are two essential components identified in formulating the conceptual framework for sustainable urban regeneration which are; (i) the fundamental criteria of sustainable urban regeneration and; (ii) the two main sub-systems of urban regeneration. The urban regeneration process deals with various planning issues and involves various stakeholders; where the interaction between the two sub-

systems complicates the process. Findings from the literature review revealed that only by scrutinising the complexity of this interaction, solutions and strategies for sustainable urban regeneration being proposed can be examined. Town planning and social sub-system play important roles in the implementation mechanism to achieve sustainable urban regeneration. They are recognised as the enablers in achieving sustainable urban regeneration by ensuring that the development follows the sustainable path. These two sub-systems coexist and have an interconnected relationship in the urban regeneration scheme. The town planning sub-system comprises the ‘tools’ applied to achieve sustainable urban regeneration. The social sub-system being the key player will be using the ‘tools’ as illustrated in Figure 3 below.

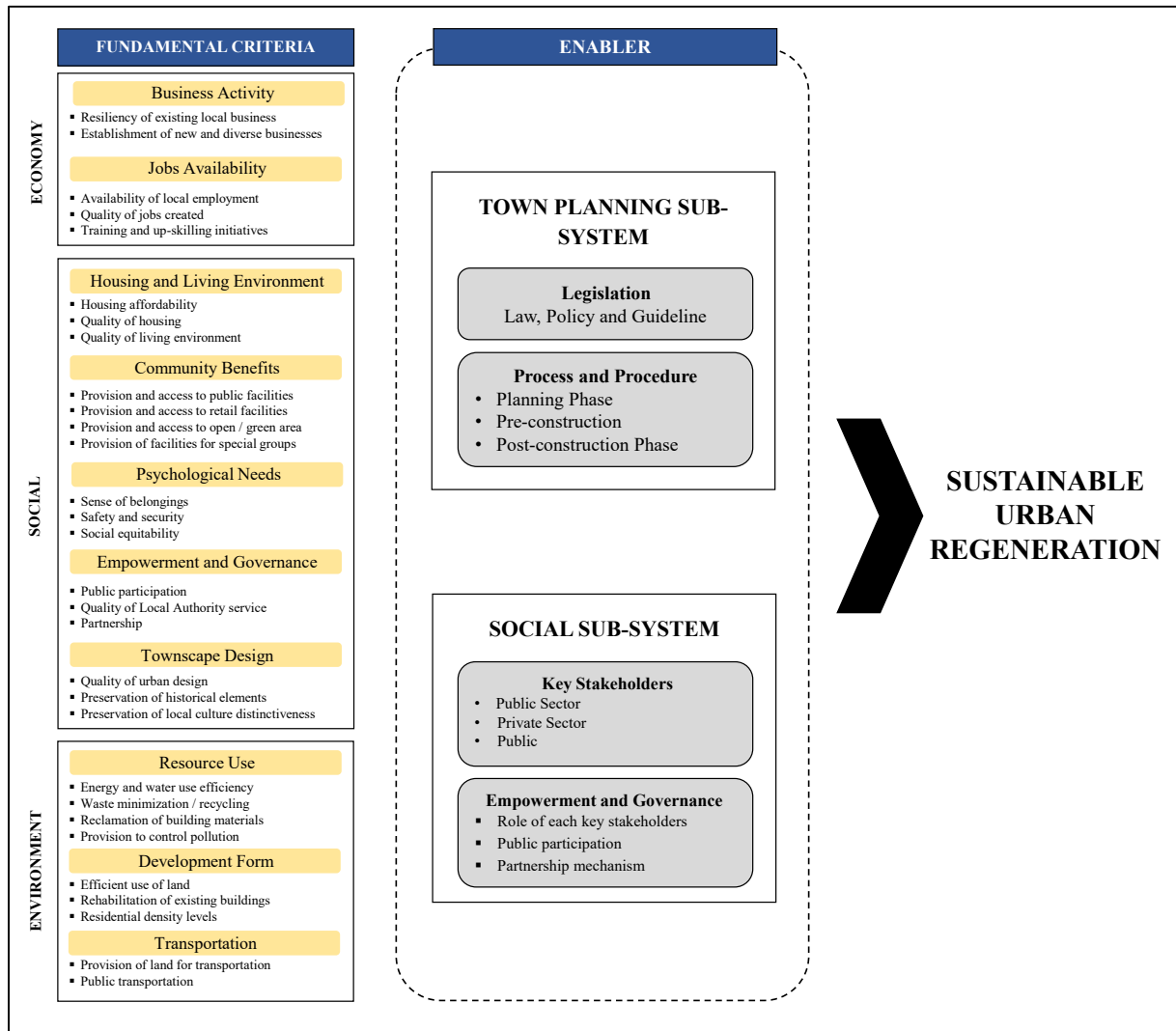


Figure 3: Conceptual Framework for Sustainable Urban Regeneration

6.0 CONCLUSION

Findings based on the extensive referred studies in the literature search suggest that there is a gap of knowledge in terms of interpreting and linking the town planning and social sub-system as the enabler to achieve sustainable urban regeneration. While some studies manage to identify the two sub-systems in urban regeneration, the fundamental criteria of sustainable urban regeneration have not been studied in an interrelated context. The fragmented information in the literature is linked together and illustrated in the conceptual framework which pave way for future study; i.e. the current implementation mechanism of urban regeneration applied in the local context, and relates the findings with the sustainability performance of the regenerated area (case study). In conclusion, the link between urban regeneration and sustainable development is correlated as one element affects the other. Urban regeneration can

significantly contribute to sustainable urban development if it follows a sustainable path. Positive results are anticipated from the urban regeneration initiatives by incorporating sustainability aspirations such as economic development, improved quality of the natural and built environment as well as increased social well-being. Thus, urban regeneration and sustainability should be combined together as sustainable development corresponds to urban regeneration in terms of social, economic and environmental sustainability. By incorporating the fundamental criteria within the town planning and social sub-system appropriately as the key enablers, sustainable urban regeneration could be achieved and resolve urban decay and build sustainable cities.

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