

# Urban Regeneration - Developing strong sustainable urban design perspectives

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**ABSTRACT:** Contemporary Urban Regeneration (UR), as a comprehensive and integrated vision and action that looks for the long-lasting socioeconomic and environmental dynamism of the target areas, can offer the possibility to regenerate cities while simultaneously tackling sustainable urban development (SUD). This investigation explores achieving higher levels of sustainability through an UR that focuses on a balanced set of sustainable and resilient urban design patterns. This investigation firstly addresses the concepts behind UR, while briefly accounting for its evolution. Secondly, it compares development strategies that procure higher levels of sustainability and resilience. Thirdly, with a shift from analysis to critical thinking, a framework for UR that focuses on achieving higher levels of sustainability is proposed. This investigation concludes that UR can strongly benefit from promoting higher levels of sustainability while addressing the capacity of urban environments to absorb recurrent disturbances, though retaining essential structures, processes and feedbacks, i.e., while promoting resilience.

## 1 INTRODUCTION

Modern-day cities have become the convenor pole of human activity, as the natural habitat of modern societies (Rogers, 1997, pp.2–24), reflecting the different behaviours and attitudes of human beings. Nevertheless, the growth of cities has been much greater than their societies' ability to reconvene urban environments (Abiko et al., 1995, p.44), while responding to new urban problems (Rogers, 1997, pp.2–24). Thus, contemporary UR is a *comprehensive and integrated vision and action for the resolution of urban problems and long-lasting improvement* (Governa et al., 2004, cit. in Ferreira, 2008, p.28) *in the economic, physical, social and environmental conditions of the target areas* (Roberts and Sykes, 2000, pp.17–20), which can help to create attractive places (Jones and Evans, 2008, p.1), while tackling sustainability and resilience issues and while responding to the needs of new economies and societies.

Contemporary UR has been identified as a crucial tool to promote SUD (Ferreira, 2008, pp.49–53; Roberts and Sykes, 2000, pp.17–20). Consequently, this investigation explores reaching higher levels of sustainability through UR strategies that focus on introducing sustainable and resilient urban design patterns. This investigation first addresses the conceptual framework behind UR strategies, while briefly accounting for the evolution of urban planning that led to their rise. Secondly, also based on the prospect of promoting resilience, it accounts for the analysis of development strategies that both procure higher levels of sustainability and resilience. Thirdly, with a shift from analysis to critical thinking this investigation comprises the proposal of a read-dressed framework for UR that focus on achieving higher levels of sustainability and resilience.

Though “*mankind's habitats*” - our cities - are the major destroyer of ecosystems and the greatest threats to human survival (Rogers, 1997, p.14), the twenty-first century is the “*era of the city*” (Tallon, 2009, p.7) and as such a sustained and resilient urban development is inescapable. Thus, one focuses on UR strategies that encourage higher levels of sustainability while promoting the capacity of urban environments to absorb recurrent disturbances and retaining essential structures, processes and feedbacks, i.e., while promoting resilience. Considering an ap-

plication within UR strategies, a simplified support framework that comprises principles for sustainability and resilience enhancement is the main expected result of this investigation. One also concludes that UR can strongly benefit from the promotion of higher levels of sustainability, as these will comprehensively improve the target areas local dynamism and responsiveness.

## 2 PERCEIVING URBAN REGENERATION

Over the last decades, it has become hard to ignore the continual process of development that has characterised many inner city areas (Jones and Evans, 2008, p.1), which is profoundly transforming them, both in terms of their appearance and the ways in which we live and work in them. The current desire of local governments for regenerative interventions and for the “renaissance” of their cities is a defining feature of contemporary urban policy. As a result, UR has been given an increased public profile within many national policy agendas since the late 1990s and is of considerable public interest (Tallon, 2009, p.3; Ferreira, 2008, pp.11–13). The benefits of reinvesting in city spaces made redundant or derelict by years of neglect and abandonment are clear enough, according to Porter and Shaw (2009, p.2). They stress that there are good arguments for UR even in areas that, while still vital, have experienced sustained disinvestment.

UR is a comprehensive strategy (Roberts and Sykes, 2000, pp.17–20), that reinforces positive socioeconomic and environmental outcomes and helps to improve the ability of cities to meet the demands of new creative economies and societies. UR can become a main tool to promote SUD (Ferreira, 2008, pp.49–53; Roberts and Sykes, 2000, pp.17–20), offering an important opportunity to rectify past mistakes and create attractive places (Jones and Evans, 2008, p.1). One of the challenges of studying UR is that to understand its character it is necessary to consider the wider urban context within which it has come to the fore (Jones and Evans, 2008, p.4). As they point out, in the 1970s, cities in the western world suffered from the loss of traditional industries and from the rise of the new economy. Thus, across Europe, early assemblies of UR began as an attempt to ameliorate the negative effects of deindustrialization and enable cities to attract new investment (Jones and Evans, 2008, p.4,162; Tallon, 2009, pp.12–13).

The radical reorientation of urban policy in mid-1970s coincided with the acceleration of deindustrialization, the changing technological paradigm (Lago, 2007, p.64) and the turning point on the common consciousness over socioeconomic development and environmental concerns. The severe economic and oil crises of the 1970s led to an awareness about the environmental limitations of modern societies, which boosted the acceptance of a new paradigm (Pinheiro, 2006, pp.135–146). Two other aspects contributed to this change (Pinho, 2009, pp.38–39): (1) the critical review of the assumptions and results of *Modernism*, generated by theoretical changes and “*on-the-ground*” comparison; and (2) the “*discovery*” of the vital values of the traditional city, which had urbanistically been a “non-object”. Consequently, it was only from the mid-1970s onwards that a real change in favour of the inner city took place (Pinho, 2009, p.95).

Urban planners then started to talk about the rehabilitation of urban areas (Lago, 2007, pp.62–63). From the late 1970s onwards, strategies shifted from “*negative policies*” (neglect, forced relocation and “*cleaning*”) to more “*positive policies*”, based on human rights, focused on individuals and adapted to local realities, such as “*in situ upgrading*” (Pinho, 2009, pp.97–98), “*rehabilitation*” or “*revitalization*”. Urban interventions were redirected to promote the maintenance of existing urban fabrics and non-dominant urban concerns, such as socio-territorial exclusion, the environment and others, became part of the content of new urban policies and interventions (Ferreira, 2008, p.25). These processes began by promoting social, cultural, and economic change (Ferreira, 2008, p.26), while comprehending a widespread “re-imagination” of city centres, which involved physical enhancement and cultural animation processes and the transformation of cities’ images (Short et al. cit. in Tallon, 2009, pp.20–21).

The late 1980s represented another turning point in urban development strategies as SUD began to be seen as a viable way to ensure the handover of contemporary environments, to future generations, while safeguarding their needs. This concept appeared in 1987, in the *Brundtland Report*, prepared by the World Commission on Environment and Development (Brundtland, 1987). This report highlighted the need for humanity to adopt a new model of life based on the interplay of three factors: economy, society and environment (Brundtland, 1987). This assump-

tion paved the way for reconceptualisation of urban policies and interventions. During the 1990s there were more adjustments to the focus and operation of urban policies, recognising new problems and challenges. One of the most profound changes was the finding that urban policies should integrate environmental issues and contribute to SUD (Ferreira, 2008, p.26).

Thus, a new urban policy gained momentum - UR - breaking with previous intervention ideas (Cunha, 1999). UR does not sanctify all urban environments by the fact that they exist, but takes into account the given socioeconomic and environmental structure and shape of the city and the social fabric of socio-physical activities that such structures support and reflect, being sensitive to the symptoms of change in trends. Moreover, during the 2000s, three approaches to UR became apparent (Turok, 2005, cit. in Tallon, 2009, p.7). The “*urban renaissance*” agenda, subsumed within SUD, is concerned with physical and environmental conditions, promoting high quality urban design, mixed-use environments and sustainable cities (Tallon, 2009, p.7). The “*social inclusion*” agenda focuses on social conditions within deprived areas, encouraging the development of social capital and community participation (see Putnam, 2000; Kearns, 2003; Taylor, 2003, cit. in Tallon, 2009, p.7). The “*economic competitiveness*” agenda is concerned with improving economic performance and employment by increasing output, productivity and innovation (see Boddy and Parkinson, 2004; Buck et al., 2005, cit. in Tallon, 2009, p.7).

UR has become conventional wisdom within many governments and regeneration policies are being rolled out to catalyse the revalorisation of urban environments (Porter and Shaw, 2009, p.1). Given the scale of these challenges, it is easy to understand why UR has assumed such importance in the political agenda (Jones and Evans, 2008, p.162). Roberts and Sykes (2000, p.17) defined UR as “*a comprehensive and integrated vision and action which leads to the resolution of urban problems and which seeks to bring about a lasting improvement in the economic, physical, social and environmental conditions of an area that has been subject to change*”. UR further constitutes a physical and a symbolic transformation in which, part and parcel of the process, is to reinvent the city for a new generation (Jones and Evans, 2008, p.4).

Roberts and Sykes (2000, pp.17–23) further define UR as an interventionist activity, that straddles public, private, voluntary and community sectors and is likely to experience considerable changes in its frameworks in response to socioeconomic, environmental, and political circumstances. Tallon (2009, p.8) has summarised the concerns of UR into five main subthemes: *physical environment* - it attempts to improve the built environment, through SUD concerns; *quality of life*: it seeks to improve the physical living conditions, cultural activities or facilities; *social welfare* - it endeavours the provision of basic social services; *economic prospects* - it seeks to enhance employment prospects, while attempting to recover the lost “economic flame”; and *governance* – it favours partnership, community engagement and multiple stakeholders.

Contemporary UR has been developed as a holistic concept for the socioeconomic and environmental transformation of affected urban areas, according to Jones & Evans (2008, p.4). They add that another key element of UR comprises the importance of changing a city’s image. UR thus constitutes a physical and a symbolic transformation, as part and parcel of rebuilding a city lies on its reinvention city for a new generation. They further add that the focus of UR is not only on new environments, but rather on reforms to the existing ones, which part of making life better for people, while improving urban societies and communities (Jones et al. 2008:14).

### 3 SUPPORT FRAMEWORKS FOR URBAN REGENERATION

Urban environments have always played a crucial role to its inhabitants, users and visitors, given that the quality of life of urban citizens is directly influenced by the state of the environments they live in (Ferreira, 2008, p.50). According to the author, economic and population growth, as well as the elevated concentration of people and activities in urban areas, have created externalities, resulting in a set of environmental, social and economic issues. As such, most contemporary cities are confronted by common nuclei of problems not only of physical-ecological nature, but also of socio-cultural and economic nature. These issues are particularly complex since their causes are interconnected. The analysis of global urban development in the last decades has also been greatly influenced by the “*sustainability debate*” (focused upon the interplay between the environment and socioeconomic development) and the increasing recognition that urban societies are all part of one eco-system (Rogers, 1997, pp.25–63).

Thus, UR has arisen as a new way to tackle the problem of urban development and planning. Nevertheless, traditional UR has somewhat proven not to be sufficient to fully achieve sustainable and resilient environments (Tallon, 2009, pp.159–163). Thus, in the final decades of the last century, a strong argument has grown up stressing the need for a more “*sustainable*” approach to urban development (Blowers and Pain, 1999, Polese and Stren, 2000, cit. in Thorns, 2002, p.204). To achieve “*sustainable*” UR and development, principles of sustainability must be incorporated in design (Tallon, 2009, p.166). This argument has led to the proliferation of several theoretical approaches that move towards the definition of balanced patterns of sustainability and resilience in urban environments, including *Sustainable Urbanism*, *Green Urbanism* and *Resilient Urbanism* (commonly denominated *Resilient Cities*), amongst others, which can further add insights to the contemporary framework of UR. These procedures for achieving higher levels of sustainability and resilience are discussed below.

### 3.1 Sustainable Urbanism

*Sustainable Urbanism* (SU) is a recent term prevalent in urban design and planning; within contemporary urban environments, it is rooted in the study of sustainability and urban design (Adhya et al., 2010, p.1). SU is a term and theory based on closing the loop on resources (Volkman, 2010, pp.257–258) and bring everything into the city. Sustainable Urbanism is about increasing the quality of life by bringing more resources within a short distance and increasing the quality of products that are offered. SU has recently been defined as “*walkable and transit-served urbanism integrated with high performance buildings and high-performance infrastructure*” (Farr, 2008, p.42). *Compactness* (density) and *biophilia* (human access to nature) are considered as the core values of SU (Farr, 2008, p.42; Adhya et al., 2010, p.2).

The defining elements of SU are: (1) *compactness* – it promotes compact development, minimum development densities, increased population density, people's willingness to walk and use and seeks to integrate infrastructure design increase with density; (2) *biophilia* – it promotes the connection between humans and nature, linking open spaces, sustainable food production and agricultural practices with human concerns; (3) *sustainable corridors* – it promotes corridors that connect one area to another efficiently, provide biodiversity and wildlife support and allow people to travel in a sustainable manner; (4) *high performance buildings* – it encourages energy efficiency, clean energy resources, improved indoor environments, source reduction, pollution prevention, recycling, multifunctionality, component optimisation and integrated design within buildings; and (5) *high performance infrastructure* (street, sidewalk, utilities and infrastructures, landscapes, and streetscape elements) – it endorses component optimization (maximised performance, minimised environmental impact, efficient use of materials and extended lifecycle), multifunctional optimization (minimized conflicts among parts and promotion of synergies) and integrated design (systems-oriented design focused on the entire urban infrastructure).

### 3.2 Green Urbanism

*Green Urbanism* (GU) is a conceptual model for zero-emission and zero-waste urban design, which arose in the 1990s, promoting compact energy-efficient urban development, seeking to transform and re-engineer existing urban areas and regenerate post-industrial city centres (Lehmann, 2010, p.1). According to Beatley (2000, pp.6–9), the vision of GU promotes cities that: (1) strive to live within their ecological limits, reduce their ecological footprints, and acknowledge their connections with and impacts on other environments; (2) are green and designed in ways analogous to nature; (3) strive to achieve a circular metabolism; (4) endeavour local and regional self-sufficiency; (5) facilitate and encourage sustainable, healthful lifestyles; and (6) emphasize a high quality of life and the creation of highly liveable communities.

Lehmann (2010) has summarised the defining elements of GU: (1) *climate and context* – it enhances the opportunities offered by local climate and context; (2) *renewable energy* – it promotes renewable energy sources; (3) *zero waste* – it endorses zero-waste planning; (4) *water* – it encourages water efficiency, rainwater collection, waste water recycling and storm water harvesting; (5) *landscape, gardens and biodiversity* – it endorses green spaces preservation and enhancement and farming/agriculture; (6) *sustainable transport and good public space* – it promotes compact and poly-centric cities with sustainable transports and bicycle or pedestrian-

friendly environments; (7) *local and sustainable materials* – it encourages using regional and local materials, with less embodied energy and pre-fabricated modular systems; (8) *density and retrofitting of existing districts* – it promotes retrofitted districts, urban infill, and densification strategies; (9) *green buildings and districts* – it encourages passive and green design principles; (10) *liveability, healthy communities and mixed-use programmes* – it encourages affordable housing, mixed-use programmes and healthy communities; (11) *local food and short supply chains* – it promotes high food security and urban agriculture; (12) *cultural heritage, identity and sense of place* – it promotes sustainable cities with resilient communities, public space networks and modern facilities; (13) *urban governance, leadership and best practices* – it promotes best practices for good urban governance; and (14) *education, research and knowledge* – it sponsors technical training, up-skilling, research, exchange of experiences and knowledge dissemination (the 15<sup>th</sup> element reports to urban strategies in developing countries).

### 3.3 Resilient Urbanism

*Resilient Urbanism* (RU) is, in simple terms, a type of urbanism that promotes Resilient Cities (RCs). A RC is one that has developed capacities to help absorb future shocks and stresses to its social, economic, and technical systems and infrastructures so as to still be able to maintain essentially the same functions, structures, systems, and identity (Applegath et al., 2013). Applegath et al. (2013) further propose the following as an overarching set of principles for endorsing urban resilience: (1) *diversity* – increase the multiplicity of urban systems that, encouraging the ability to thrive, survive and bounce back from external shocks and stresses; (2) *redundancy* – increase redundancy of key urban components; (3) *modularity and independence* – promote system components independence and modularity; (4) *feedback sensitivity* – encourage the detection and response to changes in system constituent parts; (5) *capacity for adaptation* – promote the adaptability of key urban components; (6) *environmental responsiveness and integration* – promote responsiveness and integration of components and functions with built environments, services and resources.

Applegath et al. (2013) also put forward the defining elements of RU: (1) *density, diversity and mix* – it embraces density, diversity and mix of uses, users, building types and public spaces; (2) *pedestrian priority* – it prioritizes walking as the preferred mode of travel; (3) *transit supportive* – it is transit supportive, promoting the shift from car oriented to transit oriented urban patterns and developments; (4) *place-making* – it focuses on conserving, enhancing, and creating strong, vibrant places, which are significant components of the city's structure and of the community's identity; (5) *complete communities* – it promotes resilient, pedestrian-friendly environments with reduced carbon footprint; (6) *integrated natural systems* – it promotes conserving and enhancing the health of natural systems, while managing the impacts of climate change; (7) *integrated technical and industrial systems* – it enhances the effectiveness, efficiency and safety of technical and industrial systems and processes to increase energy efficiency and reduce environmental footprint; (8) *local sources* – it promotes growing and producing the resources needed, in close proximity (200 km radius); (9) *engaged communities* – it requires the active participation of community members; (10) *redundant and durable life safety and critical infrastructure systems* – it plans and designs for redundancy and durability of their life safety and critical infrastructure systems; and (11) *resilient operations* – it develops building types and urban forms with reduced servicing costs, and reduced environmental footprints.

These procedures - *SU*, *GU*, *RU* - are neither disjoint nor completely overlapped. They are complementary. UR, as a comprehensive strategy, vision and intervention for urban improvement should take into consideration all three approaches, in order to promote sustainable and resilient urban environments. Thus, the following section of this investigation comprises the proposal of a readdressed support framework for UR. This framework does not necessarily cover all the common subjects and issues of UR, given that its main purpose is to support and extend existing UR frameworks. Moreover, this framework is based exclusively on the three procedures studied. As such, this framework should be interpreted as an on-going project, of which this article and the presented framework are a preliminary version.

## 4 A SUSTAINABLE SUPPORT FRAMEWORK FOR RESILIENT URBAN REGENERATION

“*Cities are the defining ecological phenomenon of the twenty-first century*” (Newman and Jennings, 2008, p.2). They have become the main engines of economic growth and the places where humanity dwells. Thus, based on the previous analysis and impending concepts of sections 2 and 3, one has readdressed and designed a support framework for UR, whose ultimate goal is to tackle this urban phenomenon by promoting higher levels of sustainability and resilience - *Sustainable support framework for resilient Urban Regeneration (SFUR)*.

SFUR comprehends two main principles: (1) “*urban sistematology*” and (2) “*urban resilience*”. Consequently, SFUR firstly implies understanding (1) *the city as an ecosystem* (“*urban sistematology*”). Here, the *ecosystem viewpoint* is an inclusive one that sees humans as part of local socio-ecological systems, from bioregions to the biosphere, in which the focus is on connections and practices that support life in its numerous forms (Newman and Jennings, 2008, p.4). Moreover, based on Beatley’s (2000, pp.6–9) principles of “*green cities*”, one further defines three sub-conditions of (1) “*urban sistematology*”: (1.1) a circular urban metabolism; (1.2) urban ecological limits that reduce ecological footprints and acknowledge urban connections with and impacts on other environments; and (1.3) local and/or regional self-sufficiency.

Table 1. Sustainable support framework for Resilient Urban Regeneration (SFUR)

area	criteria	measures and actions
physical environmental enhancement	compactness (1)	promote compact development, minimum development densities, increased population density, pedestrian-friendly environments and infrastructure density;
	biophilia (2)	sponsor the connection between humans and nature - linking open spaces, encouraging green urban environments, designed in ways analogous to nature, endorsing green spaces preservation and enhancing the health of natural systems;
	energy (3)	promote renewable energy sources and energy efficiency within the urban system, through a circular metabolism perspective;
	water (4)	encourage water efficiency, rainwater collection, waste water recycling and storm water harvesting within the urban system, through a circular metabolism perspective;
	local sources (5)	boost the usage of regional and local resources, with less embodied energy and promote growing and producing the resources needed, in close proximity;
	waste (6)	endorse zero-waste planning, integrated recycling and natural waste disposal processes;
quality of the milieu	place-making (7)	safeguard and enhance cultural heritage, identity and sense of place, promote public space networks and modern facilities and focus on conserving, enhancing, and creating strong, vibrant places, which are significant components of the city and the community; encourage enhancing the opportunities offered by local climate and context, energy efficiency, clean energy resources, improved indoor environments, source reduction, pollution prevention, recycling, multifunctionality, reduced servicing costs, component optimisation and integrated design within buildings and urban districts;
	high performance buildings (8)	promote component optimization, multifunctional optimization, integrated design and infrastructure (9)
	high performance infrastructure (9)	endorse component optimization, multifunctional optimization, integrated design and infrastructure (9)
social welfare	community enhancement (10)	improve the provision of basic social services while emphasising a high quality of life, creating highly liveable communities and encouraging sustainable, healthful lifestyles;
	friendly communities (11)	promote compact and poly-centric cities with sustainable transports and bicycle or pedestrian-friendly environments with corridors that connect one area to another efficiently, provide biodiversity and wildlife support and allow people to travel efficiently;
economic prospects	diversity and mix (12)	encourages different types of housing, mixed-use programmes and environments, and mix of users, building types and public spaces;
	integrated systems (13)	integrated technical and industrial systems – it enhances the effectiveness, efficiency and safety of technical and industrial systems and processes to increase energy efficiency and reduce environmental footprint;
	education (14)	sponsor technical training, up-skilling, research, exchange of experiences and knowledge dissemination;
urban governance	governance (15)	promote best practices for good urban governance;
	participation (16)	encourage the active participation of community members.

Furthermore, to fully secure (2) “*urban resilience*”, and *effectively promote resilient urban environments*, the following factors, as suggested by Applegath et al. (2013), are present and implicit throughout the application of SFUR: (2.1) *diversity* – increased multiplicity of urban systems (2.2) *redundancy* – increased overlapping of key components; (2.3) *modularity and independence* –

promote components independence and modularity; (2.4) *feedback sensitivity* – encourage the detection and response to changes in the system; (2.5) *adaptability* – promote the capacity for adaptation of key components; (2.6) *responsiveness and integration* – promote responsiveness and integration with environments, services and resources. The following table resumes SFUR and systematises the relationships between the areas, criteria, measures and actions of the framework.

SFUR furthermore comprehends five main areas, following Tallon's (2009, p.8) approach (*physical environmental enhancement, quality of the milieu, social welfare, economic prospects and governance*), which are then sub-divided into specific criteria (*compactness, biophilia, energy, water, local sources, waste, place-making, high performance buildings, high performance infrastructure, community enhancement, friendly communities, diversity, education, integrated systems, urban governance and community participation*).

The five proposed areas of SFUR are not mutually exclusive, but interconnected, as successful UR strategies should recognise the linked nature of socioeconomic and environmental problems in the context of local geographies (Tallon, 2009, p.5). There are inherent weaknesses to approaches to UR that are “short term, fragmented, ad hoc and project-based without an overall strategic framework for city-wide development” (Hausner, 1993, cit. in Tallon, 2009, p.5). Due to its nature and practice (Tallon, 2009, p.5), UR is far from being a completely fixed set of guiding procedures and practices. Thus, this investigation has tried to contribute to the UR agenda, by providing a new set of guiding principles that procure higher performance levels.

In this context, the aforementioned procedures and more specifically this SFUR can provide an additional set of guiding principles that can complement existing UR framework(s). Theoretical approaches that move towards the definition of balanced order patterns in urban environments, that promote higher levels of sustainability and resilience, can provide the bases for conceiving new holistic and comprehensive interventional procedures, thus providing a broader theoretical support to the overall panorama of UR. Moreover, procedures such as this SFUR, should be thought of as on-going interventional support for UR and, therefore, should be redefined and adjusted according to local, regional, and national contexts, therefore providing an integrated and adapted set of guiding principles.

## 5 CONCLUSION

UR has been given an increased public profile within national agendas and has become of considerable public interest. It has been identified as a fundamental tool to promote SUD. UR is understood as a comprehensive and integrated vision and action that seeks to bring about a long-lasting improvement in the socioeconomic, physical and environmental dynamism of the target areas. UR should promote an effective SUD, offering the opportunity to rectify past mistakes and create attractive places that further sustain higher levels of sustainability and resilience. Nevertheless, traditional UR has proven not be sufficient to fully achieve sustainable and resilient environments. However, the proliferation of several theoretical approaches that move towards the definition of balanced patterns of sustainability and resilience in urban environments, including Sustainable Urbanism, Green Urbanism and Resilient Urbanism, has offered the possibility to readdress UR in order to achieve higher performance levels.

This investigation has addressed and compared the theoretical approaches mentioned above and established a basis for a SFUR. These procedures are neither disjoint nor completely overlapped, but complementary. As such the proposed SFUR is based on their complementarity. The proposed SFUR does not cover all the common subjects and issues of UR, given that its main purpose is to support and extend existing UR frameworks and is a first attempt in doing so and an on-going project. The developed SFUR comprehends two essential principles: (1) “*urban systematology*” and (2) “*urban resilience*” and four main areas, sub-divided into sixteen criteria. It was designed according to an ecosystem viewpoint approach, which sees humans as part of local socio-ecological systems and focuses on the relationships and processes that support life in its myriad forms, and allow the development of higher levels of sustainability.

In this context, the aforementioned procedures and more specifically this SFUR can provide an additional set of guiding principles that can complement existing UR framework(s). Theoretical approaches that move towards the definition of balanced order patterns in urban envi-

ronments, that promote higher levels of sustainability and resilience, can provide the bases for conceiving new holistic and comprehensive interventional procedures, thus providing a broader theoretical support to the overall panorama of UR. UR can strongly benefit from the promotion of higher levels of sustainability, as these will comprehensively improve the target areas local dynamism and further enhance their ability to withstand future stresses or changes, while maintaining a coherent and comprehensive path towards sustainability.

## 6 ACKNOWLEDGEMENTS

The authors would like to acknowledge that this paper is part of the corresponding author's PhD research, which is supported by FCT - Fundação para a Ciência e a Tecnologia (scholarship reference: SFRH / BD / 80445 / 2011).

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