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Urban green spaces as a component of an ecosystem. Functions, services, users, community involvement, initiatives and actions

Espacios verdes urbanos como componente de un ecosistema. Funciones, servicios, usuarios, participación de la comunidad, iniciativas y acciones

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Abstract

This paper aims to the review the existing literature on some important features of urban green spaces such as the components, functions, services, community involvement, initiatives and actions from an ecosystem perspective. The analysis begins from the assumption that urban green spaces are ecosystems of vital importance in enhancing the quality of life in an urban environment and supplying ecosystem services such as biodiversity and climate regulation. Thus, the urban green space is an important component of an ecosystem in any community development. Meeting the needs of users is related with the functions and services that urban green spaces provide to communities. Community involvement, engagement and development require mechanisms to ensure meeting the needs and aspirations of local users in the community. The methods employed in this analysis are the literature and documents review, and analysis of existing data on uses and users. As conclusions, the paper suggests environmental, economic and social initiatives for local authorities and communities that can be applied to all represented and involved stakeholders.

Keywords: Community, ecosystem, green urban spaces.

Resumen

Este trabajo entrega una revisión crítica respecto de la literatura especializada existente acerca de algunas características importantes de los espacios verdes urbanos, como los componentes, funciones, servicios, participación comunitaria, iniciativas y acciones desde una perspectiva eco sistémica. El análisis parte del supuesto de que los espacios verdes urbanos son ecosistemas de vital importancia para mejorar la calidad de vida en un entorno urbano y para proporcionar servicios ecosistémicos, como la biodiversidad y la regulación del clima. Por lo tanto, el espacio verde urbano es un componente esencial de un ecosistema en cualquier desarrollo comunitario. Satisfacer las necesidades de los usuarios está relacionado con las funciones y servicios que los espacios verdes urbanos proporcionan a las comunidades. La participación, el compromiso y el desarrollo de la comunidad requieren mecanismos para asegurar el cumplimiento de las necesidades y aspiraciones de los usuarios locales en la comunidad. Los métodos empleados en este análisis son la revisión de literatura y de documentos secundarios, el análisis de datos existentes acerca de usos y usuarios, y entrevistas con autoridades. Como conclusiones, el documento sugiere iniciativas ambientales, económicas y sociales para las autoridades locales y las comunidades que se pueden aplicar a todas las partes interesadas representadas e involucradas.

Palabras claves: comunidad, ecosistema, espacios urbanos verdes.

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Introduction

The history of life on earth is one of the living things surrounded by a natural environment which supplies water, fresh air, minerals, plants, vegetation, animals and all the fruits of nature, and so on to enjoy everyday life. However, these natural and environmental resources are not lasting forever and ever, must of them are contested spaced being either polluted jeopardized of being extinguished. Urban populations are facing ecologically vital threats from over urbanization, such as they are water and air pollution, agricultural and forest lands are urbanized with vegetation removal and ground water overdraft. The ecological dimension of urban green spaces considers the objective and subjective components of a place providing a supportive habitat of biological diversity.

The preservation, revitalization and expansion of urban green spaces considering the fast demographic growth of cities and agglomerations should be accompanied by citizens' participation on environmental, social, cultural and economic actions and objectives to promote bio economy in urban biodiversity and sustainable development. Citizens should be informed and motivated to participate in environmental, cultural and educational activities and become active in designing and planning of urban green spaces. However, public support and political involvement of citizens for urban green space development needs different actions. Public urban green spaces are accessible to and used by all the citizens. Arrangements of public activities and action on planned urban green spaces raise awareness amongst citizens of the city. For example, a public event can have the purpose to make users aware and educate them through experiencing and enjoying different activities organized in urban green spaces.

With growing urbanization, the pressure on urban green spaces will most likely increase. In 2014, 54 percent of the world's population were living in urban settings and it is projected to reach 70 percent by 2050 (United Nations Department of Economic and Social Affairs – Population Division 2014) By the year 2020, around 62 percent of world's population will live in urban areas covering 2% of world land space and consuming 75 percent of nature resources. By the year 2030, two thirds of urban area that will exist has to be built in sustainable urban environments (United Nations Department of Economic and Social Affairs – Population Division, 2014).

In 1953, the seminal Report on Park Life carried out in twelve local authorities in Britain, recognized urban green spaces as a vital component of urban environment and their role in social renewal (Comedia and Demos 1995). The Urban Parks Programme was launched by the Heritage Lottery Fund and marked the attitudinal turnaround to create policy initiatives such as the Urban White Paper (Department of the Environment, 1996).

Components of urban green spaces

Urban green spaces are classified in different categories by size, spatial characteristics, geographic locations, uses, functions (Byrne & Sipe, 2010) service purposes, facilities, and property. According to our own interpretation urban green spaces can be classified in:

1. By the type of facilities and degree of naturalness, urban green spaces can be urban parks, nature parks, pocket parks, district parks, community parks, neighborhood parks, sporting fields, urban forests
2. By the activities occurring, urban green spaces can be cricket oval, skateboard park,
3. Bowling green.
4. By the agency managing the park can be national park, state park, city park
5. By the history of the park can be heritage rose garden
6. By the condition of the park, the land use history of the area, street-corner neighborhood park
7. By the types of users, landscaping and embellishments can be dog park, bike park or Chinese garden
8. By the philosophy behind can be recreation reserve or civic square. (Authors own interpretation).

Urban green spaces are important components in any community development, be it adjacent to housing, business, leisure areas, etc. Components of urban green areas are vegetation, water, accessibility, services of shelters, toilets, seating, playgrounds and sport areas, events and activities, environmental quality conditions and resources such as lighting, safety, litter bins, friendly staff, artistic features and artifacts such as sculptures, etc. The quality assessment of green spaces is measured

by some factors such as infrastructure, vegetation, accessibility, security, equipment. Conditions that favor the use of urban green spaces are the distance walking time (Herzele & Wiedeman, 2003), location and distribution, easy access, proximity. Environmental enhancement makes urban green spaces of more quality and attractive by promoting inward investments, increasing the land value and economic stimulation of the community.

Urban green spaces are urban areas which were natural or semi natural ecosystems that were converted on urban spaces by human influence (Bilgili & Gökyer, 2012). Urban green spaces are public and private open spaces in urban areas primarily covered by vegetation, which are active or passive recreation or indirectly positive influence on the urban environment available for the users (Tuzin, Leeuwen, Rodenburg & Peter, 2002). Urban green spaces provide sustainable diverse places where, according to the classic report Park Life: "people will find a sense of continuity, of relief from the pressure of urban living, places to be in touch with the natural cycle of the seasons and of wildlife and also places to meet and celebrate with others" (Comedia and Demos, 1995, p. 20).

Various types of urban green spaces can be found. The mixed community green space for instance is defined as the mix of overall community-level green spaces that significantly affect land surface temperature. However, there is inequitable distribution of heat and thermal discomfort (Huang, Zhou & Cadenasso, 2011). Mixed neighborhood green space is a mixed area of grass, trees and vegetation.

Urban green spaces have different forms and types of open spaces, community parks and gardens, landscapes areas. Some types of urban green spaces are formal green space, informal green space, natural green space, children's space, public participation, active sports space, recreation activities, and further land management policies. Urban green spaces exist in a variety of types, structures and shapes. Urban green spaces include public parks, reserves, sporting fields, streams, river banks and other riparian areas, greenways, walkways and trails, community shared gardens, street trees and bushes, nature conservation areas, and less conventional spaces such as green walls, green alleyways and cemeteries (Roy, Byrne & Pickering, 2012).

The broader notion of green space connotes turf grass-related residential, commercial and institutional surfaces and public facilities such as parks and playing fields. Turf grass is associated with the notion of green space that connotes turf-related surfaces as residential, commercial and institutional lawns and turf surfaces.

Urban green spaces connect the urban and the nature while caring for the environment, social and economic elements. Public forests and green roofs in public and community buildings, and vacant and derelict land also provide ecosystem services. Productive land use ensures long-term regeneration initiative to use properly if green spaces for economic revenue by implementing sustainable urban initiatives such as drainage schemes. Green spaces include wilder, woodland-type and untamed elements.

Urban green space is of high value for communities. They can be considered as a continuum without fences, hierarchies and horizontally maintained at the same level community oriented service and use-oriented approach. Green spaces are the spirit of the community. Urban green spaces are a focal point for communities (Greenspace 2007). Urban green spaces contribute to build a sense of community among residents being more likely to enjoy strong social ties. Green spaces promote interaction between people; develop social ties and community cohesion. Greenness in neighborhood is one of the most important predictor of neighborhood satisfaction (Van Herzele & de Vries, 2011).

1. Literature review: Ecosystems functions of urban green spaces and services for citizens

As explained above, urban green spaces consist of a variety of components. This part will offer a profound insight into two aspects regarding the functionality of urban green spaces: firstly, ecosystems services will be explored; secondly, the manifold roles provided by urban green spaces for citizens will be scrutinized.

1.1 Ecosystem functions of urban green spaces

All types of green space are associated with heat stress, urban heat islands and air pollution reductions. Green space density as the relative tree cover affects the relationship between green space and the mitigation of air pollution (Baik, Kwak, Park & Ryu, 2012; Tsiros, Dimopoulos, Chronopoulos & Chronopoulos, 2009).

Community green spaces are associated to lower exposure of air pollution at the household level (Dadvand et al. 2012). Greening have different impacts on heat and air pollution (Alonso et al., 2011; Nowak et al., 2014), on individual and household-level exposure to air pollution (Dadvand et al., 2012; Maher, Ahmed, Davison, Karloukovski & Clarke, 2013). Reductions of air pollution from green space are insignificant relative to urban-based emissions. Wind increases heat and air pollution mitigating effects of green spaces.

Urban green spaces are ecosystems of vital importance in enhancing the quality of life in an urban environment. Urban green spaces supply ecosystem services such as biodiversity, climate regulation. Urban green spaces are essential for the quality of life, health and well-being of citizens. Urban green spaces are critical for protecting wildlife, watersheds, meads vegetation; provide air quality for a dense urban environment and recreational activities. Cool islands in dense urban areas can be provided between spaced green spaces. Dense green space is more effective in preventing nitrogen run-off, untreated human and industrial waste, toxic materials, and debris. Urban green spaces provide ecosystem services that can improve conditions of environment, pollution and congestion of metropolitan areas.

Green spatial connectivity and density are associated to the cooling and pollution-mitigating capacity of the diversity of urban green space types and connected green path corridors. Green space density is described as the tree canopy cover (Feyisa, Dons & Meilby, 2014); the relative percentage of vegetation (Ng, Chen, Wang & Yuan, 2012). Green spaces-cover patterns, densities and balance affect the urban heat island (Dobrovolný, 2013; Kong, Yin, James, Hutyra & He, 2014; Lin, Wu, Zhang, & Yu, 2011). Density and size of green space are highly interrelated and multi-scale dependent with configuration. Greener spaces are cooler than non-green and contribute to lower ambient temperatures (Srivanit & Hokao, 2013).

There is a significant association between increased density and cooling effects of green spaces (Dobrovolný, 2013; Feyisa et al., 2014; Hart & Sailor, 2009; Ng et al., 2012; Perini & Magliocco, 2014; Vidrih & Medved, 2013; Weber, Haase, & Franck, 2014; Zhang, Lv & Pan, 2013). The cooling range of green spaces into surroundings is influenced by the building density, arrangements and heights (Li, Zhou, Ouyang, Xu & Zheng, 2012; Zoulia, Santamouris & Dimoudi, 2009). Urban greening density is suggested to become optimal at 50 or more percent coverage (Ng et al., 2012). Urban greening initiatives are insufficient for achieving air quality and climate. Greening reduces heat stress and related illness (Bassil et al., 2010).

Urban green spaces can be linked as wildlife corridors to facilitate the movement of fauna preventing fragmentation and isolation of wildlife (Hale et al., 2012; Rouquette et al., 2013). Urban green spaces are the home of many species including those that are rare and threatened and the habitat for pollinators. More urban green spaces sustain more wildlife and biodiversity providing a more favorable habitat, therefore requiring more protection from human interference (Cornelis & Hermy, 2004; Fuller, Tratalos, & Gaston, 2009; Schwartz, Jurjavcic, & O'Brien, 2002; Baldock et al., 2015). Creation, protection and development of urban green spaces is a relevant element of sustainable urban development.

Urban green spaces have an impact on human thermal comfort and air quality in human health (Cohen, Potchter & Matzarakis, 2012; Nowak, Hirabayashi, Bodine & Greenfield, 2014; Weber et al., 2014). Comparisons of the impact of green space types and scales air quality and heat show that larger predominance of trees mitigates urban heat islands, provides thermal comfort and improves air quality. Green spaces reduce urban heat islands and air pollution improving air quality in urban settings (Bowler, Buyung-Ali, Knight & Pullin, 2010). Community-level air quality depends on tree population (Morani, Nowak, Hirabayashi & Calfapietra, 2011).

Communities green spaces are associated with reduced household pollution material exposure (Dadvand et al., 2012). Vegetation density in green spaces is associated with pollution mitigation (Escobedo & Nowak, 2009; Nowak et al., 2014; Nowak, Greenfield, Hoehn & Lapoint, 2013; Tallis, Taylor, Sinnett & Freer-Smith, 2011; Tiwary et al., 2009; Tsiros et al., 2009; Yin, Shen, Zhou, Zou, Che & Wang, 2011). Bushes instead of trees may retain more pollution particles and reduce concentrations (Wania, Bruse, Blond & Weber, 2012). Diversity of tree species of evergreen, conifer and deciduous tree species has complementary air-pollution

uptake patterns and provide maximum air-quality improvements (Manes et al., 2012). Trees and shrubs are more effective in removing pollutants than herbaceous perennials (Rowe, 2011).

A diversity of evergreen and conifers tree species provides complementary air-pollution mitigation. Coniferous trees are the best for capturing pollutant material (Tallis et al., 2011; Tiwary et al., 2009) and the evergreen more than deciduous trees in green spaces provide more cooling and below the neutral comfort conditions in winter (Cohen et al., 2012; Zhang et al., 2013). Evergreen and deciduous tree remove more atmospheric 03 (Alonso et al., 2011) than coniferous.

The cooling capacity of green spaces is affected by multiple variables such as density, size and shape associated to increase of air quality. Urban green spaces reduce heat, ozone and ultraviolet (UV) radiation and improve air quality (Bowler et al., 2010; Konijnendijk, Annerstedt, Nielsen & Maruthaveeran, 2013; Roy et al., 2012). Absorbing pollutants improve air quality. Research based on modeling has weak evidence that capturing pollutants and particles by urban green spaces improve air quality (Konijnendijk et al., 2013). Wong, Greenhalgh, Westhorp, Buckingham and Pawson (2013) reviewed the evidence of the relationship between green spaces, heat and air quality considering variables such as green space type, climate, method, etc. Building orientation and heights affect cooling and air quality from green spaces.

Urban green spaces reduce the UHI effect by cooling the air on average 1oC and providing shade. Cooling is influenced by plant type, green patch size and density, temperature and wind (Armson, Stringer & Ennos, 2012; Cao, Onishi, Chen & Imura, 2010; Feyisa et al., 2014; Fintikakis et al., 2011; Fröhlich & Matzarakis, 2013; Gaitani et al., 2011; Konijnendijk et al., 2013; Lafortezza, Carrus, Sanesi, & Davies, 2009; Oliveira, Andrade & Vaz, 2011; Onishi, Cao, Ito, Shi & Imura, 2010; Vidrih & Medved, 2013). Many characteristics of green spaces affect the cooling capacity such as size, cover, shape, density, spacing, etc.

Green space scale is the area or size of green space including a single and multiple sites. The green area impact scale is including the site and the adjacent non-green areas. The percent covered green space (PLAND) equals the sum of the areas (m2) of a specific land-cover class divided by total landscape area, multiplied by 100 (Herold, Liu, & Clarke, 2003). There is a strong association between the size of green space and the cooling effects (Cao et al., 2010; Chen, Yao, Sun & Chen, 2014; Feyisa et al., 2014; Hart & Sailor, 2009; Li et al., 2012; Onishi et al., 2010; Susca, Gaffin & Dell'Osso, 2011; Weber et al., 2014). Size of the green space affects the urban cooling island because the cool air built up and emitted from the center (Vidrih & Medved, 2013) and it is stronger during the summer (Chen et al., 2014; Li et al., 2012; Onishi et al., 2010; Susca et al., 2011).

Increased community green space is related with lower surface and air temperatures and reduced air pollution. Studies are consistent in finding low temperature and reduce air temperature in urban green spaces (Bowler et al., 2010). Average temperatures are lower inside the urban green spaces confirming their impact on urban heat (Yu & Hien 2005). Mature trees remain relatively cool on urban climate in contrast to non-green impervious surfaces by providing shade, thermal comfort, reduction of air temperature and relief from heat island effects (Hwang, Lin & Matzarakis, 2011; Lynn et al., 2009; Meier & Scherer, 2012; Park, Hagishima, Tanimoto & Narita, 2012; Roy et al., 2012; Shashua-Bar, Tsiros & Hoffman, 2012).

Temperature differences between green and non-green spaces are greater during the hot periods of the day (Doick, Peace & Hutchings, 2014; Hamada, Tanaka & Ohta, 2013). The cooling effects are greater during the hottest temperature time (Bowler et al., 2010; Cao et al., 2010; Cohen et al., 2012; Hamada & Ohta, 2010; Hwang et al., 2011; Meier & Scherer, 2012; Oliveira et al., 2011; Park et al., 2012; Sung, 2013; Zhang et al., 2013).

Changes in surface temperatures from green space are related with urban heat islands but are not indicators of thermal comfort improvement and heat stress reduction. Higher land surface temperature is significantly associated with lower income communities with larger ethnic minorities and older adults (Huang et al., 2011). Increased green spaces increase energy flows while decreasing land surface temperatures (Li et al., 2012; Zhou, Huang & Cadenasso, 2011).

Air temperatures in warm humid climates are significantly cooler within the urban green spaces (Oliveira et al., 2011) when compared to non-green areas (Armson et al., 2012; Vidrih & Medved, 2013). Humidity tends to be higher in urban green areas than in inhabited

zones. Tight inhabited areas without green spaces usually have inadequate climate. Green spaces mitigate the effect of climate warming by providing shade. Replacing paved yards with urban green spaces reduce the heat-island effect during the summer by moderating temperatures expected with climate change. Increased cover of community-level green spaces is associated with reduced air temperatures. Configuration and patch area of a community green space have a relationship with personal exposure to air pollution at the household level, with cooler air temperatures and reduced urban heat island effects (Li et al., 2012; Steeneveld, Koopmans, Heusinkveld, Van Hove & Holtslag, 2011).

The role and behavior of urban green spaces and gardens on improving climate and reducing air pollution. Pollution in urban areas distributes on the type of architecture and proximity to green spaces. An avenue with a green space is less polluted because dispersion is better, while narrow streets tend to be more polluted. Walkways with large green spaces are more protected from pollution (Ingegärd, 2000). Planting more trees on street canyons may not be a good prescription where may increase concentration of pollutants (Escobedo & Nowak 2009; McPherson, Simpson, Xiao & Wu, 2011).

Predominance of trees have the greatest cooling effects, provide thermal comfort and heat stress relief (Chen et al., 2014; Cohen et al., 2012; Perini & Magliocco, 2014; Zhang et al., 2013). Different scales and types of green spaces have diverse cooling effects on heat-mitigating. Comparison of green space types and scales may overlap the effects. Green space scales have differential scales (Cohen et al., 2012). Green spaces with trees provide greater cooling than spaces with grass (Chen et al., 2014). Higher concentrations of green spaces are associated with greater cooling (Rinner & Hussain, 2011). Connectivity between urban green spaces maximizes cooling effects (Doick et al., 2014).

Other different types of green spaces are the green buildings that have a vegetated roof or wall serving for pollution, heat stress and urban heat islands mitigation. Green roofs and walls provide heat island and pollution mitigation services.

Green roof is a roof of a building covered with vegetation planted over a growing medium and a waterproof dispositive. Green roofs combined with insulation provides heat mitigation (Coutts, Daly, Beringer & Tapper, 2013) and well-irrigated provides cooling (Zinzi & Agnoli, 2012). Green roofs on air quality by removal of air pollution are comparable to mitigation effects of urban forests (Baik et al., 2012; Speak, Rothwell, Lindley & Smith, 2012). Green roofs provide cooling effects and reduce the heat island in the urban environment (Smith & Roebber 2011; Susca et al., 2011). Green roofs and walls are an alternative in high-density urban areas for cooling and pollution mitigation. Green roofs maximize air-quality by plant selection such as creeping bent grass and red fescue that have higher level of particle capture (Speak et al., 2012).

Green roofs do not affect at the street level temperature but decrease cooling load of buildings (Perini & Magliocco, 2014). Green spaces with trees are more effective than grass surfacing and green roofs planted with grass to reduce temperatures and improve thermal comfort (Ng et al., 2012). Green roofs reduce storm water runoff (Mackey, Lee & Smith, 2012). Green roofs for heat mitigation cost more (Coutts et al., 2013; Mackey et al., 2012; Smith & Roebber, 2011; Zinzi & Agnoli, 2012). The impact of wind on pollution mitigating effects of urban green spaces is complex but in the case of green roofs located downwind with prevailing winds have significant mitigation effects (Baik et al., 2012; Speak et al., 2012). Wind increases the cooling and pollution-mitigating effects of green space.

Green walls have cooling effects (Baik et al., 2012; Speak et al., 2012). Green walls have positive cooling effects and mitigate urban heat islands effects through evapotranspiration of plants (Smith & Roebber 2011; Susca et al., 2011). The cooling capacity of green walls is increased with increased temperatures (Hamada & Ohta, 2010; Koyama, Yoshinga, Hayashi, Maeda & Yamauchi, 2013). Green walls with low wind speeds reduce air pollution in the street canyon (Amorim, Rodrigues, Tavares, Valente & Borrego, 2013). Green walls are more effective than green roofs for mitigating in-canyon air pollution (Amorim et al., 2013; Buccolieri et al., 2011; Koyama et al., 2013).

Trees in urban green infrastructure capture and sequester carbon mitigating the negative effects of emissions. Carbon sequestration is the removal of the greenhouse gas carbon dioxide and its incorporation into plants. Any green spaces balance carbon taking more than return to the atmosphere (Nowak et al., 2013;

Nowak, & Crane, 2002). A forest in a green space maximizes carbon sequestration (Strohbach, Arnold & Haase, 2012).

1.2 Services for citizens offered by urban green spaces

The reasons of visiting urban green spaces are mostly for enjoying a wide range of environmental elements like flowers, trees, nature, fresh air, wildlife, watching cascades, educational opportunities, social activities, taking children to play, social interaction, to meet friends, picnics, meeting people, getting away from it all, passive walking and activities, shelter and sitting, etc. Shared parks and gardens may be setting up to facilitate social links, collective participatory projects and collective cultural interventions, well-being recreational areas and walkways connecting attractions and facilities.

Other reasons people visit urban green spaces is for the purpose of walking a dog, walking by the lake, river or creek, walking socially as part of a group, hanging out, passive enjoyment, sitting either on grass or seats, photography, messing about on swings, watching sport, readings, watching life go, smoking, sunbathing, an informal pursuit such as flying kites, fishing, etc. Walk able green spaces in urban areas are associated with healthy environment and increasing green exercise. Walk able green spaces influence the longevity of urban senior citizens (Wolf, 2010).

Urban green spaces have a beneficial physical, psychological and health effects through physical activities, green exercises. Environmental determinants affect the use of green spaces, physical activities and leisure. The amount of green spaces available to users in the living environment correlates with socioeconomic, demographic, and self-perceived health. Higher levels of greenness have been positively associated with lower stroke mortality. Perceived neighborhood greenness is associated with physical and mental health. Socioeconomic and cross-cultural variations may result of unequal distribution of green spaces.

An important reason to visit urban green spaces is combined with the use of facilities such as cafes, restaurants environmental centers, libraries, museums. Moreover they offer different types of sports like football, tennis, etc., biking, skateboarding, cycling and other forms of active enjoyment. Events are likewise important motivations to visit urban green spaces like group music performance, concerts, Christmas carol concerts, orchestral performance, craft fairs, fun fairs, opera, circus, firework displays, bands playing, dance up, etc.

Making citizens aware of the urban green spaces existence and use values contributing to urban citizen lives in a more balanced quality of life, lifestyle, encouraging physical and mental fitness, reduces tensions and conflicts, relieving the harshness of the urban environment, providing places for social and cultural interaction in informal contacts and more formal participation in social events, social inclusion, recreation, aesthetic pleasure and wildlife and fostering community development.

Urban green spaces are natural meeting points for local citizens facilitating social inclusion and integration, community cohesion, social capital, civic society, supported by an increasing sense of identity and belonging (Abraham, Sommerhalder & Abel, 2010; Konijnendijk et al., 2013). By providing a meeting place for social interaction and integration between community users, green spaces influence social capital. Citizens living near urban green spaces reduce health inequalities and have lower circulatory diseases (Mitchell & Popham, 2008). Inequitable distribution of green spaces is correlated with distribution of disadvantaged citizens.

In addition, passive activities are the main reason why users visit urban green spaces like passive or informal enjoying of the environment, social activities and attending events, getting away from it all, walking activities including dog walking, active enjoyment including sport and specific activities. Surveys have shown that people are less stressful, communicate well and make sensible decisions by the earth surrounded by green spaces.

2. Methodological approach

Urban green spaces reflect the need for natural and landscapes areas within the cities. Cities have different types of land uses such as residential areas, industrial areas, forest and agricultural areas, but mostly man-made environment such as built-up area and urban green

areas; and water. Large cities have lost natural resources and invest more than medium cities having more natural green areas (Tuzin et al., 2002). Urban green spaces have a critical value for planning and developing sustainable eco-cities. In cities with higher rate of population density growth, urban green spaces ten to be reduced at the expense of the urbanization process.

In general, community involvement, engagement and development require methodologies to ensure that local authorities meet the needs and aspirations of local users in the community. Some of these methods employed are the literature review, survey of local authorities and review of their documents and analysis of existing data on uses and users.

An analysis of urban green spaces deals with the physical and quantitative, functional, ecological, environmental, economic and quality aspects. Economic aspects are the expenses of development, costs of maintenance, financing and budget sources. The quality of urban green space experience requires to be studied from an interdisciplinary perspective drawing from both natural and social sciences. Some of the physical quantitative indicators are the supply and distribution of natural and landscapes resources of public green as percentage if the city area, the m2 per capita, structural and morphological characteristics. Quantitative evaluation of the relationship between urban population and urban green spaces takes into account functionality, green space ratio, green space coverage and green space area per capita (Xiao-Jun, 2009). The quality aspects of urban green spaces are the suitability and quality of site structure, design and provision, quality conditions.

However, finding meaningful information on uses and users of urban green spaces is hampered by inconsistencies of information from local authorities. The use of model surveys to collect information from users of green spaces regarding satisfaction of needs and aspirations need to be developed through pilot studies and consultation by researchers and local authorities. Consultation and involvement on environmental issues identify the community needs. Also, results of research finds evidence on differentiation of needs of having green space close to the living place as opposed to where they work (Greenspace, 2007).

User's perceptions on urban green areas matter for the community´s image and deciding to make use. Perceptions on image of urban green spaces affect uses and user aspirations and value creation of the community in designing, meeting the needs and sustainable managing. The more related issues to designing are the variety, activities, spaces, sensory stimulation, vegetation, water, birds and animals, etc.

Levels of satisfaction on uses of urban green spaces are related with provisions for safety, cleanliness and tidiness, well kept, peace and quiet, not noisy, fresh air, flowers, lakes, well signposted, wildlife, catering and bar facilities, toilets, historic setting, pageantry, trees and greenery, playgrounds, visitor center, route marking and signposting, reduction of traffic, drinking fountains, etc.

A sound basis on collection and analysis of data is the mean to find out the priorities. A pool of data should be collected and analyzed to find out priorities in terms if type, quantity and quality, location, accessibility. Quantity of green space is reduced by the trend towards more compact urban environment (Burton 2003). The observed current trends on urban green spaces suggest an increasing degradation and without support it is not likely to reverse the process. An already available expert study may help to compare and checking the planning context and legislation.

3. Users of urban green spaces

Which are important factors for users of urban green spaces? This part will offer insight into various requirements towards the space and also different groups of users and their reasons to use urban green spaces.

3.1. Reasons and needs of users

Meeting the needs of users is related with issues of awareness of needs, the nature of facilities and its conditions, opportunities for activities, events and playing, provisions of comforts like toilets, shelters, seating, refreshments. Users of urban green areas develop some patters of use of informal and passive activities, with peaks in the afternoons, weekends and holidays on a daily basis. Involvement in urban green spaces leads to create facilities to meet the needs of users with quality use and experience. Facilities of urban green spaces must meet environmental, socioeconomic and psychological of user needs and attitudes (Balram &

Dragicevic, 2005). To meet the users' needs at local environmental, social and economic levels require the development of local standards, such as provision of urban green space per head.

In one research, users of urban green spaces manifested psychological reasons (Dunnett, Swanwick & Woolley, 2002). It was found significant relationship between the use of green spaces and levels of stress (Grahn & Stigsdotter, 2003). Green spaces in the living environments also positively affect stress and quality of life. Urban green spaces reduce stresses for users and provide them a pleasant positive distraction (Ulrich, Quan & Zimring, 2010). Use if green spaces are associated with less stress. Viewing nature and urban green spaces ameliorates stress (Ulrich, 2002).

Natural green environments have restorative effects and pleasing stimuli promoting 'soft fascination' (Forest Research, 2010). Also users are happier and have higher well-being when they live in an urban area with large green spaces (White, Alcock, Wheeler & Depledge, 2013). The evidence between green space and physical activity is strong although it has been reported beneficial links between urban green spaces and emotional, psychological and mental health and well-being the evidences are weak. Large urban green spaces contribute to physical and mental health and well-being of users.

To meet the user´s needs of urban green areas are relevant factors the nature of activities conditions of facilities, opportunities for playing and equipment designed to develop creativity, social skills and confidence, provision of activities for young people, provision of comforts such as toilets, suitable seating, shelters, drinking fountains, café, etc., accessibility to clean toilets with baby changing facilities, shelters for disable, elderly and youngers, and provision of affordable café or restaurant and refreshments, picnic and barbecue areas, etc.

There appears also to be seasonal patterns affected by the weather. Other reasons for users of urban green spaces are for walking and including dog walking passive an active enjoying the environment and sports, social encounters and activities.

Accessibility to urban green spaces are more related to ease of access by proximity and no physical barriers, transportation, open fences an early hour, accessibility to disable people, information on cues and way-finding features, maps, information on entrance, path junctions, slopes and cambers, inadequate parking, gravel car park surfaces, heavy gates, attendance for those with disabilities, visual impairment. Improving safety issues requires changes in use of fencing, lighting, staff or rangers, removal of cars, restriction of cycling, roller-skating and roller-blading, etc. Urban green areas are safer gathering places for children and young people, at least more than they being at the street.

User determinants such as gender, age, etc., affect accessibility and quality of urban green spaces as well as other environmental factors. Access to green spaces facilitates use of it and increases the levels of physical activities. Accessibility to green spaces has an impact on urban socioeconomic health inequalities. There are links between access to urban green spaces and social integration among older adults (Forest Research 2010). Availability of green spaces is associated with increased survival of elderly people.

3.2. Distribution of urban green spaces

Unequal distribution of green spaces and less access to green environments is related to health inequalities, increasing pollution and intense heat (Alberti & Marzluff, 2004; Cohen et al., 2012; Girardet, 1996; Gregg, Jones & Dawson, 2003; Grimm et al., 2008; Hough, 2004; Moore, Gould & Keary, 2003; Newman & Jennings, 2008). Deprivation levels are linked to access to green spaces. Distance from the green spaces is related to physical activity, thus users living nearby report higher physical activities although there is no correlation between accessibility to green spaces. Proximity to green spaces is associated with self-reported health.

Increasing green spaces and optimizing spatial configuration mitigates urban heat (Choi, Lee & Byun, 2012; Rinner & Hussain, 2011). Ratio between urban heat area and urban cooling area increases with distance from the urban green space (Choi et al., 2012). There is a negative correlation between the percentage cover of urban green spaces with land surface temperature in relation to the distance where the closer is the stronger cool island effects. Modifying variables that affect the relationship green spaces and heat are such as density, distance, wind, temperature/season, the surrounding built environment and precipitation, etc.

Urban green space distribution inequities and neighborhood quality affect urban health inequalities.

Inequalities in green space quality may affect urban health inequalities. There are evidences on the relationships between green space, heat, air pollution and health (Lachowycz & Jones, 2011; Lee & Maheswaran, 2011). Heat and air-pollution related health inequalities associated with green spaces. Urban green space distribution is related to health inequalities. There is evidence in the relationship between air pollution and heat mitigation from green space on human health. Disparities and inequalities in distribution lead to pollution "hot spots" and green deserts (Escobedo & Nowak, 2009; Huang et al., 2011; Jesdale, Morello-Frosch & Cushing, 2013; Su, Jerrett, de Nazelle & Wolch, 2011).

Unequal distribution green spaces are related to health inequalities derived from heat and air-pollution (Escobedo & Nowak, 2009; Huang et al., 2011; Jesdale et al., 2013; Su et al., 2011). The uneven distribution and quality of green spaces related to mitigation of heat and air pollution is associated with health inequalities. Green spaces have differential scales on health impacts associated with reductions in air pollution and heat (Bowler et al., 2010; Roy et al., 2012). It has been identified a relationship between urban green spaces, air pollution and health inequality (Su et al., 2011). Pollution and heat mitigation from green space have direct health impacts (Nowak et al., 2014).

Access to urban green spaces for elderly, disabled, children, women and minority ethnic group's concerns issues such as ease entrance, proximity, social inclusion, provision for the visually impaired, public transport, parking, moving safely and surfaces design. Awareness and understanding for social inclusion in urban green areas is recognition of the particular social and cultural needs and aspirations of users that are most likely to be excluded in society.

3.3. Factors keeping users from going to urban green spaces

Some users of urban green areas are concerned about environmental quality issues such as litter, dog mess, graffiti and vandalism, lack of rubbish bins; rubbish and items like condoms, food put out for birds, left lying around; smash bottles and broken glass. Psychological issues related to the use of urban green areas prevent users of not going alone for the feeling of vulnerability, fears, safety concerns, laziness, loneliness, lack of confidence, inertia, etc.

Negative impacts identified with green space are the increased green density that increases street canyon air pollution detrimental to health (Amorim et al., 2013; Morani et al., 2011). Also, other negative impact of green space is the tree emissions of biogenic volatile organic compounds that increase levels of ground-level ozone (Escobedo & Nowak, 2009; Roy et al., 2012). Green spaces with high BVOC-emitting tree species sink for ground-level ozone. Some negative impacts and trade-offs of green space are the exposure to pollen and physical injuries.

Some personal issues that deter from using urban green spaces are factors such as not having enough time, working unsocial hours, poor health and mobility, preferences for visiting other places, issues related to the location of urban green spaces, accessibility, user experience, environmental quality. Other personal issues can deter users of going to urban green spaces such as preferences of visit other places, having own park, health problems, changing circumstances, family and parental restrictions. To increase parental responsibility, training sports sessions of children and young, encourage active participation of parents. Users of urban green spaces are deterred by lack or deficient facilities, low environmental quality, the influence of undesirable people, safety issues and psychological concerns, dog mess, litter, graffiti, vandalism.

Deterrent effects of "other people" users are related to conflicts between children and young people, teenagers, with adults, drug users, undesirable characters, users drinking alcohol, verbal abuse, gay men, bikes and skateboards, gamblers, noisy people, crowded, etc. The study of urban environment combines the sound levels, biodiversity and green spaces. The results of this study confirms that planning and designing of urban green spaces is enhanced by the ecological quality in issues such as noise levels of livable and sustainable communities (Girardet 2004; Williams, Burton & Jenks, 2000). The soundscapes of green urban spaces have been less well-studied.

The declining quality of urban green spaces contributing to a decline of urban quality of life has been studied by Irvine, Devine-Wrightb, Payneb, Fullerc, Painter, and Gaston, (2009). Dog mess is a critical

concern in urban green space and required special attention like dog free areas and the dog areas, good positions of dog bins in suitable locations, dogs on the lead and controlled, dog toilets, proper use of fines, etc.

The most relevant emerging barriers are the resource issues more than personal concerns lack of facilities, lack of maintenance, including play opportunities for children; not enough to do, the negative influence of other green space users; dog mess and not being leaded; physical safety and other psychological concerns like fears and environmental quality including litter, vandalism and graffiti, accessibility, poor public transport, distance, a lack of, or poor facilities, neglect of spaces and facilities, conditions of play areas and play equipment, lack of playing opportunities, inefficient staffing, poor conditions or lack of toilets, seating, poor lighting, lack of provisions on spaces for children, elderly, women,

Some barriers that prevent users from using urban green spaces are lack of or deficient facilities, lack of events and activities, poor physical and psychological safety, lack of information boards or center, poor maintenance, the presence of undesirable users, dogs and other poor environmental conditions such as vandalism, lick of litter bins, unease accessibility, lack of toilets, lack of other services like café, lack of play areas for children, elderly and disable users, etc. Elderly and disable people have concerns to ease of access and moving around urban green spaces safely.

Barriers to use urban green spaces are dog mess, vandalism and graffiti, poor maintenance, psychological and safety fears, poor quality of facilities, environmental issues, more vegetation, litter, not enough things to do and working unsociable hours, poor provision of sports areas and lack of events such as fairs. Other factor preventing to use are gangs, tramps, drug addicts, behavior of younger and older children, lack of personal safety and security, staff, poor lighting, lack of or poor facilities, lack of toilets, nowhere to park, heavy traffic and inappropriate vehicles including bicycles and skateboards, other preferences, poor health and mobility problems, lack of other facilities like café and play areas. Regarding wheeled activities in urban green spaces are excluded such as bicycles, cycling and roller-skating.

Non-users of urban green spaces are people who have used once in the last year or never. Infrequent users are those who use these spaces only once in the last six months. Non users and infrequent users have less experience of using urban green spaces. Some of the reasons for non-use and infrequent use of urban green spaces are public drinking, vandalism and policies of care in the community, dog mess, perception of unsafe environment, concern for personal safety and security, fear of violence, fear of bullying and racist attacks, dark passages, lack of lighting, poor lit paths, emergency assistance and telephones, predominance of playing fields, lack of attractive activities and facilities, failure to provide activities and experiences demanded by users, lack of character of many parks, unfamiliarity with landscapes and open space cultures, an uncomfortable feeling of 'otherness' (DETR, 1996; MacFarlane, Fuller & Jeffries, 2000; McAllister, 2000; Thomas, 1999).

4. Factors of successful community involvement in urban green spaces

4.1. Creating partnerships urban green spaces provide opportunities

These opportunities are for all kinds of people to meet, no matter what their cultural, religious, ethnic origin, or political ideology, might be. Urban green spaces can be regarded as sites for community spirit, although different types of user groups have different levels of involvement and engagement when it comes to creating, operating, shaping and maintaining urban green spaces. These might range from adversarial attitudes towards the green space and/or related activities up to existing partnerships for specific green spaces.

The responsibility and ownership of urban green spaces should not be fragmented between different authorities and different structures to achieve more innovation, efficiency and community involvement. Local authorities develop approaches to engage and involve users through discussion groups, consultations, artistic events, sport activities, ethnic minority background activities, leisure programs, environmental and horticultural activities, community gardens, organic food growing projects, etc.

As a result –ideally– of a consultative process, local authorities committed to supporting partnerships should consider actively supporting community groups and residents to get involved in specific initiatives and to take

responsibility for related tasks in the urban green spaces. In fact, a large number of citizens are willing to volunteer and engage in green space activities. In return the citizens are offered unique collaborative experiences.

Creating partnerships for urban green spaces offers opportunities for coordination of environmental regeneration programs at potential low financial cost. For this purpose, a priority proposal is to establish a user community group to include local members as volunteers in the designated urban green space partnership.

Different models of partnerships between urban green spaces and communities require a cultural change to move the emphasis on community involvement and sense of ownership which results in caring, resourcing, involvement, creativity and innovation. Some factors contributing to a successful involvement are the institutional culture of local authorities, community groups and users, resources and capabilities, sense of funding, investing and ownership, voluntary commitment and communication between stakeholders.

Community involvement and engagement in urban green spaces leads to enhancing the quality of experiences and uses meeting the needs of users and long term sustainability. In return this might give access to additional funding and expertise.

User groups are encouraged to set up priorities for urban green spaces in order to create tangible results. Groups should be enacted to complement the capabilities of local authorities. In One way to motivate and increase the participation is to provide grants for specific projects urban green spaces available for all groups.

Urban green spaces are a catalyst for community projects because they resolve around the most relevant community issues and their potential for environmental, social and economic change. Nevertheless, the aspect of funding and managing resources is of importance.

Friends and user groups' development need to be managed by requiring commitment from local authorities but also from community moving from the concept of the local authority's duty to provide services because they already tax for. Urban green spaces well managed have an impact on the urban fabric in benefiting urban environment and wildlife, promoting healthier lifestyles, increasing urban attractiveness and urban value of land and infrastructure. Nature have beneficial effects on health and wellbeing and mood improvement (Hull & Michaels, 1995; Irvine and Warber, 2002; Kaplan & Kaplan, 1989), reducing stress (Ulrich, 1981), managing mental fatigue (Hartig, Mang & Evans, 1991) and opportunities for reflection (Fuller et al., 2007; Kuo, 2001).

Creative and innovative approaches to funding and resourcing of urban green spaces require if designing the appropriate arrangement to make the best with the available resources. An innovative process is not exempt of conflicts. Conflicts arise between users and community organizations and groups who set up the trust. More innovative and creative local authorities are able to achieve more and better resources with less financial investment and spending. There are different methods of allocating, administering and using the funding to be spent according to creative approaches aimed to enhance quality of life.

4.2. Creating a shared vision and goals

A sense of ownership should be provided by local groups of the community incrementing their capacity building a jointly with partnering agencies. This would occasionally also mean to take risks for local authorities when grants are provided without being certain a specific goal or outcome can be met. Nevertheless, it in both the communities and the local authorities interested in maintaining the focus on long term regeneration and renewal objectives.

This vision must be agreed and shared with all the users and stakeholders and local authorities. A vision can develop and protect the quality standards of using urban green spaces, in healthy and pleasant environment and improve new kinds of use and ensuring sustainability with high ecological and environmental value for healthy living, offering well designed and maintained green space meeting the demands of users, ensuring participative action and accessibility, stimulating socioeconomic development and quality of lifestyle in the community, contributing to the spatial identity. The concept of economic development linked with environment is one of the principles.

Local authorities should ensure that the backgrounds, culture and environmental resources, new expertise, skills and interests brought together are in harmony in order to develop the potential is self-fulfilled without

leaving aside the commitment and voluntary efforts of traditional users. Urban green spaces are central for community volunteer groups to achieve change providing facilities and activities to local users and involving and engaging other users. Activities developed by community groups in urban green space are most essentially voluntary in actions such as conservation and maintenance tasks, although volunteer maintenance is coordinated by rangers and the feeling of ownership upkeep is the responsibility of local authority.

Volunteers and trainees can be in charge of maintenance. Usually voluntary community groups get involved on some routine operations and maintenance such as planting, grass cutting, cleaning, etc. Volunteering activities are more common in business groups conducted through staff initiatives. More active volunteers in the community need to be more motivated and negativity managed to achieve more active involvement, engagement and collaboration in a task-orientation approach with local authorities. A green space watch scheme run by volunteers can be set in partnership with the police. Some relevant factors to be improved by volunteers and the community for the use of urban green areas are improved safety, better maintenance, upgraded facilities, events and activities, easier access to sites, provision of more seating, play areas, lower planting near paths. In addition, an information center and information boards, displays boards, braille signs, maps signing posts with directions, etc., can enhance the user-friendliness of urban green spaces.

These arrangements help to improve the facilities, infrastructure, maintenance, etc. However, after the initial investments, it is difficult to sustain the pace of change.

In addition to recreational uses of urban green spaces as described above, the usability for economic ventures, e.g. innovative businesses in a bio economic scheme could be considered in urban green spaces. This could provide additional richness to urban areas in the form of resources in terms of economic activity and/or knowledge transfer.

Urban green space service delivery from environmental authorities may have a more holistic approach of policy and budget implementation. Available resources to local authorities and their efficient use make better provision of quality service delivery. One of the main problems facing the urban green spaces is the capital and financial resources and budget decline in real terms by the spending per head of population for funding urban green space projects spending per head not necessarily takes into account the area of green space. Comparison can be made on the spending per head and per hectare of green space, despite that there is not a consistent methodology. Urban green space officers must have expertise in community involvement and engagement, environmental training.

Community engagement and involvement occurs with a change of institutional culture of local government and changes in users' culture.

Determining the economic value of urban green spaces is considering their natural resources. Some economic factors of urban green spaces provide production of wood, supply of fruits, economic value of the area, jobs creation, tourism attraction, etc. Urban green spaces are ecological based value (Bilgili & Gökyer, 2012) (that has become a necessity together with aesthetic and recreational values. Evidence on the value of green ecological networks on wildlife is limited, although have become an element of urban planning (Tzoulas et al., 2007). Ecological and environmental aspects are the biodiversity and ecological values, urban climate and natural corridors.

The spatial concept of urban green space incorporates of green in the urban structure is related to the concept of a green system, network of corridor. A spatial concept for urban green space development describes and incorporates green issues, interconnects the existing urban spaces and the future desired network and their relationships with the entire city. Green spaces are in relationship and connected with green networks and green corridors defining preservation, improvement and development areas, neighboring countryside, regional green network, and pedestrian and cycling paths, etc.

The quality standard measures the amount of urban green spaces per citizen for each type based on providing appropriate sizes for different activities, security and protection, distance and accessibility based on the travel time and the willingness to walk. Regulations and standards ensure the quality standards of accessibility of users to urban green spaces. Guidelines and standards

for the provision of quality services delivery are set out. Some standards related to urban green spaces are recreation near residential areas, for larger recreation areas with multifunctional uses, protection for open spaces, nature protection, local climate, land use and soil sealing (Stadt Leipzig, 2003). Combining various factors result in rendering a standardized method of classifying urban green spaces virtually impossible.

Community activities as outlined above provide support for specific user groups. For example, designated community activities for children and young people could be developed in urban green spaces providing gathering places and support for educational activities. Urban green areas can provide countryside activities and educational activities to children outside school hours and to adults through training programs, workshop and cultural events on urban regeneration initiatives ranging from horticulture, maintenance, school education visits on nature, art activities, lectures and training on environmental education, vocational qualifications in horticulture, animal husbandry a four-week summer play scheme.

Also school children supported by their schools in some activities related with environment, ecology, tree planting, etc., as for example, providing an eLearning module to increase awareness and knowledge. Educational institutions can get advantages by making use of urban green spaces for educational, sporting programs and community-based education activities for children young and adult people. Urban green spaces offer children the development of social environment to improve cognitive and motor skills, higher levels of creative play, socialization, more collaboration, and emotional resilience (Forest Research, 2010).

A partnership structure that enables a crosscutting integration of community groups initiatives with officers of local authorities and the urban green space in a network to coordinate responsibilities developing action plans and activities to developing biodiversity, improve the environment. The action plan describes the specific tasks for implementing and achieving each type and each issue, actions, timescale, potential funding sources, partners. Local authorities of urban green spaces working closely with an attitude of acting as the eyes and ears with the friends and user's groups are positive to work on partnership shaped by a community orientation. Unintended consequences of urban green spaces are avoided with community-based decision-making (Jesdale et al. 2013; Su et al., 2011). Partnerships raise the quality of urban green space.

4.3. Sustaining funding for urban green spaces

Partnerships with business, agencies and communities with local authorities bring available base-line funding to achieve higher and better added value far more than can achieve a local authority alone. Effective partnerships between local government, business, agencies, neighborhood organizations and community groups can add financial and quality values to the green spaces. The identification of spatial, organizational and financial problems on the planning and managing of urban green spaces, such as distribution, changing use, green corridors and networks. Among the organizational problems are the communication and cooperation problems. Financial problems are related with funding. Other important arrangements to increase and make more efficient financial resources are among others, partnerships with gran making foundations, private financial initiatives, community and business groups, targeted grant funding and creative initiatives to increase revenue spending.

External funding and resources from external funded capital programs amount a small proportion of the budget required to maintain quality standards, although they are essentially crucial for capital works. Other forms of external funding are the so call landfill tax credit scheme and private and business sponsorship that enable creation and operation of facilities and a wide range of financial private initiatives as a means of injecting private capitals. Partnering to achieve external funding and expertise from community and business involvement is a form to lift quality standards. An active sports program of events can attract funding to be able to be financially self-supporting.

Creative and innovative approaches for external funding from community and business groups are usually selective in their applications such as tackling deprivation. Local authorities have to change radically to find and make use of the best opportunities available for external funding through partnerships. Other relevant factors important for the success are the political support and networking support. Some factors contributing to

external funding are the political will of the local authorities to match funding to urban green spaces by embracing an entrepreneurial culture and creativity of external funding officers to investigate sources and resources through partnership opportunities. Voluntary activities enable volunteers with creative, innovative and entrepreneurial capabilities and skills to contribute to urban renewal by pursuing personal development. Bringing the necessary external resources to the urban green spaces by managing change through the involvement and engagement of residents requires professional input expertise to discuss and accept the evolving structure.

Private sponsorship should make more significant contributions in budgeting and enabling more facilities. The management of the urban green space could for instance be transferred by contract to a private contractor but retaining accountability and quality monitoring roles essentially through consultation mechanisms and to ensure public accountability and quality of service delivery.

Financial values result in increasing the land prices, attracting more inward investments, economic growth and development, community economic spin-offs, etc.

Urban green space is one of the main drives to attracting investments and multinational corporations that usually choose to build facilities taking into consideration the urban environment and landscape (Baycan-Levent and Nijkamp, 2009; Wuqiang, Song & Wei, 2012).

Urban green space-based groups counting on right individuals involved, have potential to have spin-off effects in the community. Quality values are more intangible and may result in community strengthening and environmental quality. These programs and projects can be in partnerships with local business, industry, companies, and financial organizations in a continuing involvement with local schools, universities, research centers, museums, heritage organizations, local authorities, local community, neighborhoods and people, green and environmental societies and organizations, etc.

Partnerships between local authorities, funding agencies and institutions, community groups and business can contribute time and resources to adding value and quality. Partnerships can be of voluntary sector support, voluntary sector led-managed, environmental-regeneration projects and finally partnerships around a hub. Ground work trusts are partnerships locally-based committed to national organizations as an area-wide player as a network with local operators, although sometimes have difficulties to secure the long-term commitment and leave the community with aspirations to continue the project.

Trusts are an alternative for recreation and amenity facilities, environmental and wildlife, potential new business and urban opportunities. Urban green spaces have the capacity to be attractive to local, national and international leisure visitors while playing a beneficial role for the brand of the city. Thus, indirectly plays a role in location business decisions. Research has found a positive correlation between urban green spaces and businesses' location decisions (Woolley and Rose –undated– for CABE), although there is little reliable evidence on the effect of green spaces on the decision to locate on certain area and on economic growth and investments (Forest Research, 2010). Trusts and private finance initiatives are a kind of partnerships with communities in different situations, with different role of partners, with appropriate safeguards. Trust partnerships provide assistance at the level of friends groups.

Value-added benefits that essentially are coming from community involvement and engagement are contradicted by the costs and problems derived from involving groups not participative because requires capacity building and development. Costs in urban green spaces for local authorities include all kinds of resources such as human capital, financial and investments, material, knowledge, etc. Other costs are conflicting demands. Communities face the costs of responsibilities, skills balance in services, commitment of volunteers, etc.

Some costs associated to involvement of local authorities in community development are lack of long term vision, the increase on workload without a complimentary resource, major demand on resources, greater expectations, motivation and maintaining moment in capacity and supporting groups, over-reliance on volunteers and jealousy, identification of good leaders and representativeness in the community, lack of appropriate capabilities and skills, a hard learning process, volunteers commitment and responsibility, community development and maintenance, managing

demands that conflicts and contradicts constructive engagement, extending and delaying the process, job security, successful community development may be seen as a substitution of budgeting and investment. Volunteers receive training and are hired when there is funding, thus building capacities and promoting employment and ensuring commitment to the project.

Conclusions: Public initiatives and actions

Urban green spaces are wider initiatives of local authorities and communities with environmental, social and economic objectives that can justify any funding for all represented and involved stakeholders. The institutional structure framework of urban green spaces is a design concern of local authorities in response to provide services for satisfaction of user's needs. Urban green spaces must be large enough to satisfy the urban users' needs and aspirations and distributed throughout the total urban area in such a way can sustain better relationships with the environment

Therefore, usually is a political issue of high priority and commitment for local authorities promoting cooperation relationships through networks between urban green spaces and community groups. Some driving forces of urban green space initiatives behind the community development are to improve and maintain design, access, and infrastructure/facilities to generate employment and sustain the quality of life.

Public initiatives and actions supported by local authorities addressed to citizens to urban green spaces, parks and gardens in public spaces should demonstrate their attachment to sustainable development and the environment. Grass roots initiatives usually form community groups to work towards achieving better provision of services. Local and community initiatives in a green space develop because of inadequate provision for users' needs and aspirations from the local authorities, or had not been developed because of lack of resources.

There is also beyond this, an economic stimulation with the regeneration of the community. Urban green space stimulates social and economic regeneration of communities in a multi-agency area, beyond landscaping. There is a link between environmental regeneration and economic stimulation. Usually policymakers underestimate the role of urban green spaces beyond landscaping in urban regeneration to reinvigorate communities and neighborhoods, by increasing the lifestyles, making them more pleasant and attractive, increasing the land value, strengthening the community spirit and social networks, economic stimulation, etc. Urban green spaces play a relevant environmental, economic, social and cultural role.

Green objectives must be integrated into spatial planning. Planning for distances between urban green spaces is required to provide climate cooling to communities and neighborhoods (Doick et al., 2014). Designing, planning and sustainable managing should address the resources for improving urban green areas focusing on meeting the user's needs in location, access and environmental quality. Urban green spaces should be accessible, well distributed, optimal in quality and quantity and large enough to accommodate the citizens' needs (Haq, 2011), sustainable and livable. These features should be considered at the stages of designing, managing, maintaining and protecting.

Designing of urban green spaces may result in good quality and variety of activities in open spacious areas, trees and spaces, exit points, quiet areas, good network of paths, meadows, water, formal areas, meeting places, monuments, hills and mazes, etc. Design play areas with the community engagement provide opportunities for skill developments and major satisfaction of final users. External experts in design and mediation are very welcome to the task.

Designing and planning of urban green spaces must move from traditional park railings and webs interconnected to planning land uses for multiple purposes, that is, recreational and conservation uses with other uses such as wildlife corridors beside streams and roads, public gardens on top of buildings, reservoirs and waterparks; flood prevention, hides and ornithological habitats. Conservation planning of urban green spaces should ensure natural flora, fauna, landforms, water, air, soil, etc. and protect them from other land uses. Urban green spaces comprise habitats supporting a wide range of species some of them with a conservation concern (Park & Lee, 2000; Mörtberg & Wallentinus, 2000).

Urban green spaces should provide facilities for pedestrian and cycle routes to promote well-being and health and encourage physical activities such as walking,

jogging, trim trails, running, cycling. Other offers are to promote healthy living by providing safe routes to school or business, facilitating journeys between home, the school and the community. A green space surrounding schools lowers the levels if traffic-related pollution (Dadvand et al., 2015). Also, it is recommended to promote healthy lifestyles through growing vegetables and fruits in community urban green spaces.

Creating a sense of shared ownership for all users and stakeholders is crucial for communities using urban green spaces may result in innovativeness, creativity, resourcing, funding and care. Maintenance of facilities such as cafés involving community engagement recognizes the value of the services provided. The focus is on innovative and creative approaches to delivering urban green space services in the local communities. Innovation lies in applying principles in a more holistic approach to the urban green space as part of a wider network to meet the needs and aspirations of urban users. A green network improves environmental quality and safety by providing green routes and adjacent buildings can be business units, chapels, youth and children facilities and diversification of activities beyond to take advantage of further funding opportunities. There is no correlation between innovation practices and levels of spending.

This approach sets the framework for a greater potential for a range of creativity and innovation with the sense of empowerment and ownership steaming from the partnership collaboration between the local authorities and the users. To investigate creativity and innovation in creating alternative models and developing funding partnerships may increase budgeting, the use and spending of resources. On a plot scheme, green spaces can be adopted by groups or individuals, residents and tenant's associations in agreements with local authorities. Any plot can be of any size across to a large area of green space, taking over bits of a street by the participant of the program adopt a plot, for example, and who have responsibilities for clearing the site and maintenance. Despite that resident's upkeep the green area, however, local authorities have the responsibility of the bulk of planting and landscaping and the community may use it for public events

Urban green spaces can also be created on formerly built up areas be it residential or commercial uses (Pallagst, Fleschurz & Trapp, 2017). These areas might offer the necessary infrastructure to create additional bio economic uses such as food production (urban farming) or energy-related uses (biomass power plants).

Urban green space renewal action plans require political attention and have a wide range of environmental, economic and social regeneration, an increase in resources and investment and educational benefits, contributes to improve the urban landscape and its use for recreation and enjoyment. Planned activities in urban green spaces for development operations may include: Plant trails, biological corridors, botanical gardens, shared gardens, play areas for recreational uses, etc.

Urban spaces that could potentially receive biodiversity should be inventoried, including open spaces, abandoned, wastelands, etc. Regarding water as an element of urban green spaces should include fountains and waterfalls with sound, water for children's play, ponds with wildlife, rivers, streams, boating lakes, etc. The provision of a skate park, wheelchair activities, a graffiti wall, outdoor chess and draughts and a community fishing space

Sport facilities in urban green spaces requires changing facilities in good conditions, dress correctly, free areas for football pitches, access to bowling greens, tennis, basketball courts, facilities for organized clubs and for casual teams and the option to join in activities without being a member. Programs involving the elderly, children, women, etc., like playing bowl contributes to more social cohesion, as it is football for youngers.

Spaces for musical group's performance provide opportunities for more cultural awareness in the community, such as active event programs of musical performance, theatre, fairs, bandstand, etc.

An inventory of resources, maintenance and building facilities will further support the urban green spaces. Finding new ways of reducing costs of maintenance without a loss of green assets such as clover fields, or using woodland spaces for recreation and protection from climatic conditions are also relevant activities. Also, involving the agricultural and agroecology use of urban green spaces and afforest derelict land green spaces is a means of reducing costs while creating economic possibilities.

Thus, further research is needed to fill the gap in the empirical literature, including lack of data in green spaces on the optimal size, characteristics, distribution and the influence on health effects (Bowler et al., 2010). Research on inequalities in urban greener environments is necessary to improve health equity. However, there is little research on the effects of green areas on carbon capture, although research on green spaces and pollution looks at the link carbon capture in green spaces capacity for pollution and absorption of particles. Research on urban green spaces on the impact on air pollution has been limited showing moderate evidences that mitigate SOx, NOx, CO and particulate matter (Konijnendijk et al., 2013; Yin et al., 2011). Urban green infrastructure contributes to carbon capture by building up soil carbon reserves (Forest Research, 2010).

Green barriers are useful in protecting from traffic emissions but require further research to clarify the effects green street canyon geometries, wind speeds, air pollutants velocity, types of vegetation, etc. However, there is research gap reported by Bowler et al. (2010) on the cooling effect on adjacent non-green areas to urban green spaces. The impact of small green urban areas on heat have been less explored (Bowler et al., 2010; Oliveira et al., 2011).

A gap in the research on urban green space is the reduction of habitat to one independent variable such as levels of vegetation (Kuo et al., 1998a; 1998b), overlooking the structural complexity of biodiversity patterns interact with social and psychological benefits and bypassing the intangible benefits associated with socioeconomic factors (Hope et al., 2003; Kinzig, Paige, Martin, Hope & Katti, 2005; Martin, Warren & Kinzig, 2004; Pickett et al., 2001)

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