

Role of Green space, perspective in the urban and natural environment

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ABSTRACT

Green belt is one of the main instruments of planning to elevate the quality of environment and the urban life and city dwellers in a way that expansion and the development of the green belt has a fundamental role in creating a healthy atmosphere in cities. Green space influences the current problems of cities such as air pollution, sound pollution, urban climate, and so forth. In the present essay besides introducing various kinds of urban green spaces it is attempted to get into the role and the significance of green belt in the urban life and public participations in the development of the urban green space. Also, some approaches will be presented to confront the environmental aftereffects of urban development with an aim of achieving sustainable development.

KEYWORDS: Greenbelt, Quality elevation, environment, urban life, sustainable development

INTRODUCTION

Quickened pace of urbanization and the dominance of industry based on the modern technology and the inclination toward the machine life have become synchronized with the aftereffects of destroying the natural resources and the vegetation, convert the farmlands and gardens into construction establishments besides population growth and the environmental pollution and the imbalance in the ecological system and well-being power and on the other hand with an increase in the earnings, improvement of transportation, increase in vehicle ownership, increase in leisure time, and the significance of parks, vacation resorts, and the green space.[1]

It is noteworthy to mention that the excessive artificialization of the ecosystems has left some negative ecological effects on the perspectives, and the biodiversity. The phenomenon of substituting the monotonous concrete buildings has led to some negative effects on the health of city dwellers either physically or mentally. [2] Deficiency of diversity in addition to its mal-effects on city dwellers, influences the diversity of regional flora and leads to overgrowth of weeds.[3]

To compensate for this phenomenon development of green roofs in order to create a proper view in the urban area can to some extent compensate for this missed diversity.[4]

In this manner, green space as a part and parcel of the unified body of cities has a key role in their metabolism which its deficiency can inflict serious disruptions on the life of cities. Paying attention to the green space in general as the lungs of cities isn't an exaggerated definition of its functions, but this comparison is indicative of its minimum functions in the ecological sense of the cities.[5]

Green space which constitutes part of the appearance of cities is considered as one of the real phenomena which men have always been and will be in contact with it. This category bears environmental, cultural, economic, and so on aspects. Also, the low green spacepercapita due to population growth and the industrialization of cities bear significance.[1]

Since the significance of urban green space in the life of a city and its duration and its physical and natural and social impacts in the urban systems is undeniable, due to this the use of the urban green space and its per capita is one of the fundamental issues in the urban planning and management.

From among the cases which add to the significance of the use of green space in cities we can refer to the subject of multi-purposeness (i.e. natural, aesthetic, social, and so on)of green spaces. This use adds to the significance of getting into this subject in the area of urban stories.

Systematic thinking which is appeared today sin the concept of sustainable development specifically in the area of megacities assesses their quality in the framework of an ecological series without exaggeration.[6]

Getting the concept of sustainable development is ordained in the four corners of the world for a continuous resolution of the crisis in a condition that the process of inattention to the patterns of production and consumption and creation of wastes have severely threatened the limited capacity of natural resources and the share of oncoming generation.[7]

Use of green belt apart from its significance in the cities as part of the nature of human living area can be sign of human's inclination toward nature and/or human power in presenting a self-willed nature which is according to its will.[6]

Urban green space

Green belt can be classified into "urban green belt" and "non-urban green belt". In addition to this, urban green belts are divided into three groups: public green space, semi-public green space, and street green space.

Public green spaces

They are urban green spaces which are the unit of social output such as designed green spaces, bench, illumination, drinking fountain, and so on.

Semi-public green spaces:

They are green spaces which bear ecological output such as hospital areas, garrisons, and so on.

Street green spaces are kinds of urban green spaces which are generally appear in a narrow edge of roads, between the pavement and the motorway such as the suburban lands of express ways.[8]

Urban green space means a level and type of land use with a man-made vegetation which is both a unit of "social output" and a unit of "ecological output". Urban green spaces from the view point of urban development contain a part of a city's appearance which is made up of various kinds of vegetation and as a live and vital factor beside the dead body of a city determines the morphologic construct of a city.[5]

Non-urban green spaces are spaces which bear urban functions, although due to the urban development are located within the urban context. But, since their function is not peculiar to the urban centers, they are placed in the class of non-urban green spaces. These spaces are either natural such as natural forests or are artificial like artificial gardens and forests.[8]

Urban green spaces are the key factors in the sustenance of the urban environment.

Existence of urban green spaces is one of the factors of quality for the environment of each city. Expansion of cities leads to the intensification of the after effects in irregular and sustainable manner which intensification of air pollution is the main aftereffect of it. Importance of the urban green space is to the extent that today existence of this use is viewed as one of the indices of the development of societies. Green spaces in addition to influencing the resistance of the environment create safe urban spaces, sense of vivacity, and peace of mind in interaction and conversation. [1]Environmental resistance involves continuous consumption by a fixed population. [9] Importance of this issue is to the extent that today paying attention to the urban city spaces is the main function of urban organizations.[10]

Continuous green space

According to the systemic thought, continuous green space is a green space which bears the maximal efficiency in the long run with minimal negative after effects on its environment. Therefore, noting the importance of green space in the city life its design should be in a way that it bears the minimal efficiency with the least cost. Of course, resistance doesn't mean stagnation and stability, but it means system dynamicity in the course of time with the least destructive after effects on environment. Thus, equilibrium in the open systems is of a dynamic one and is time-dependent which requires controllers and negative feedbacks. Equilibrium in green space is the establishment of equilibrium between the costs and functions of green space, equilibrium between intelligence and cultural data and the native culture of the society and also its ecological balance with its environment. Paying attention to these points besides efficient management leads to the permanence of green space. Thus, having a positive attitude toward green space is one of the key pillars in the formation of a sustainable green space and its demand is bearing an effective management until the project doesn't get out of systematic balance and be in alignment with actualizing the ecological health and health of its users. Thus, towards a permanent design one of the key points is identifying the existing system and the environment and the native culture and accommodate it with the objectives of the project to establish a balance between personal and general needs until it can be effectual toward the elevation of its social performance to the best of its ability. Due to this and by noting the concerns which exist on the quality of environment and a need to the ability of longevity in the urban areas, a sustainable principled and dynamic planning should be taken into consideration until in the present time we will be able contrary to the classical and traditional plans which were mainly centred around designing the green spaces in an static and short-term, to make use of a modern structural model in management and planning to study the a dynamic shape of the biological environment of cities by noting the occurred interactions in various places and times. Concerning the urban green spaces it can be said that these spaces are part of a greater system called city. Thus, the relation between the section green spaces with other sections of a city should be under the framework of its goals which consists of ecological, psychic, and constitutional. Creation of green space in the urban areas faces some limitations such as economic, physical, and social limitations. Thus, an ecological space should be in a way that in addition to taking the whole factors and limitations of designing and creating a green space into consideration, it follows the climatic and biological conditions of the region. In establishing the ecological green spaces observation, factors such

as studying the ecological conditions, soil and climate of the region, preventing the cultivation of high water-use plants, selection of aboriginal herbs which are fitting in with environmental conditions and are at the same time attractive, and so on should be considered.[11]

To study and realize the status quo of a part of a land which is devoted to green space, it is necessary to consider the influential factors and forces in the process of planning in four areas as follows:

1-Recognize the ecological structure of the region.

2-Recognize the quality of environment.

3-Recognize the social and economic environment of the region.

4-Recognize the structure and features of the appearance of the region.[12]

Necessity of existence of green space:

The main influence of green space on cities is its environmental influences which gives meaning to cities as the environment of human society and encounters the ill effects of extending industry and the malfunction of technology, leads to the augmentation of quality of urban life. Urban green space has also achieved necessity as part of the context of a city and as part of city services as well which can't be separated from requirements of the urban society. Due to this, green space should be proportionate to the physical volume of a society (i.e. buildings, streets, and roads) and its requirements (i.e. in terms of mental, recreational, and hygiene needs) by noting the ecological needs of a city and its upcoming trend of expansion until it can have an incessant environmental output as an active green space. [10]

Role and significance of green space in the urban life

Green space which constitutes part of the city's appearance is considered as one of the real phenomenon which human being has always been and will be in contact with it. This issue has several environmental, social, cultural, economic, and constitutional aspects.

Growth of industry and the population growth in cities have led to multiple constructions which these constructions attach no significance to the hygiene issues and supplying the minimal amount of light and air in the densely-populated areas of cities. On the other hand, the necessity of creating new urban used to respond to the ever-increasing needs and settle the population steadily lead to the reduction of the share of urban green space and urban gardens and as a result leads to the pollution of the environment. Nowadays, urban climate is influenced by the procedures of congestion and the concentration of urban activities.

Impressions which are left on the urban ecology through reduction of urban green space specifically in the areas of climate, air, soil, underground water, and society is so harsh which totally changes the urban environment. Green space reduces the environmental pollutions like a natural filter and relatively guarantees the personal and social health of city dwellers and the environmental comfort of it. [7]

To sum up, we can conclude the effects of the green space as follows:

Reduce air pollution:

The ever-increasing trend of air pollutants on the one hand and the augmentation of the per capita consumption of energy from energy resources specifically fossil fuel on the other hand are the source of producing multiple pollutions in the air of cities and the industrial regions.

Polluted air leads to a negative effect on the general health and the life of humans, animals, and plants.

One of the key factors of mortality among humans in the urban areas is the air pollution which most of mega cities and the industrial cities are tussled with it.

Mortality due to cancer for individuals who breathe the air of the most polluted areas is fifty per cent more than individuals who their residential area bears the least amount of air pollution. From among the main pollutants we can refer to carbon dioxide, sulphuric compounds, compounds bearing nitrogen, hydrocarbons, aldehydes, suspended particles in air, ozone, etc.

Meanwhile, the key solution is to magnify the role of green spaces and the unique features of plants as the most effective and the cheapest way to balance the air pollutions.

In relation to this issue plants not only through reduction of temperature and as a result through reduction of energy consumption can prevent the discharge of pollutants into the atmosphere, but they can directly absorb the pollutants.

Due to this, green space and the parks in cities are considered as one of the factors in preventing the air pollutions specifically in relation to air pollution and pollutions due to dust particles urban green spaces are considered as lungs of cities. Thus, the green space experts in the industrial and mega cities recommend a green space per capita of twelve to forty square meters.

In general, the main influence of green space in cities in addition to its aesthetic attractions and bestow animation upon the lifeless and harsh matter of city as a key part in reducing various kinds of air pollutants, controlling the flood waters and the runoff, modification of microclimates, and also reducing the energy

consumption of buildings. Thus, if the green space achieves necessity as part of the urban context and also part of city services, can't be separate from urban requirements.

Plants during the process of photosynthesis through absorbing carbon dioxide and turn it into oxygen naturally absorb the surplus carbon in the air and aid the air refinery. Also, during the photosynthesis process, leaves send other chemical matters such as nitrogen oxides, ammonia which is produced in air, part of sulphur dioxide, and the ozone out of the environment. Leaves by absorbing and keeping the dusts and other suspended particles in the air until the time of wash and rain reduce the suspended particles in the air by %75 and have an outstanding influence on the improvement of the air quality. In some studies it has become identified that during a year around 40 tons of dusts sediment in one hectare of forests. Green space particularly in the form of green spaces which prevail trees can reduce chemical pollution in the air very effective.[6]

Produce oxygen and absorb carbon dioxide

Trees, with both these function plays an important role in improving environmental conditions. Although large-scale oxygen balance in terms of the role of trees and green space can be significant, but in small-scale of the city it can't be overlooked.

Beech tree with persistency average three times the size of two double rooms can clean up carbon dioxide from the air and while the 40-30 square meters of trees can provide the oxygen needed one.[6]

Modification of urban climate

Trees in several ways can moderate the climate:

- 1-Reduce solar radiations through creating a shade over buildings and surfaces.
- 2-Reduce the influence of dry and hot (humid) weather through vaporization and transpiration.
- 3-Influencing the speed and direction of winds.

Reduce the consuming energy of buildings

Research data and results indicate that the creation of shades by trees in the tropical climates leads to the reduction of the consumed energy of buildings to cool the environment. Planting trees as wind breaker can through reducing the air interchange, for instance by reducing the air inflow or outflow in the house lead to the reduction of thermal energy consumption. Thus, reducing trees to control wind in the windy areas and in areas with severe winter and thermal energy saving be completely effectual. Even the reduction of rate amount of wind by %50 to %90 can be accessible during summer and be accessible through branches of deciduous trees in winter. Also, studies indicate that a vegetation of broad-leaved trees despite creating limitation for penetration of sunlight in comparison with open areas has influenced the reduction of consumed thermal energy by %8. [6]

Reduction in wind speed and as a result reduction in the air exchange and airflow has a significant role in cooling the environment specifically in tropical areas. Deol and Hissler (1988), found that the reduction in the speed of warm winds can be effectual to the same extent to avoid preventing flows of soft winds and gentle cool breezes and natural ventilation in summer can be effective in the level of energy consumption in order to reduce the extent of the environmental indoor domestic temperature. [6]

Development of urban areas leads to an increase in the impenetrable levels of water. For instance, an increase in the levels of the whole parking areas, roads, streets, and buildings don't indicate an increase in the areas of the impenetrable lands in comparison with the shrub-covered areas. In these conditions water absorption by the soil falls and as a result rains the showers lead to floods and other problems and in this relation quality is worth studying. Augmentation of urban flora in cities and their suburbs can eminently influence the hydrologic issues which are arising out of urban development.[6]

Plants by means of absorption, saving, and consuming water play an influential role in the water cycle. Showered water can be taken by crown of plants and finally produces a mild flow which in this situation plants and the water in their litter on the soil surface can effectively control the water flow and prevent soil erosion and as a result improve the quality of runoff.[6]

Influence of vegetation in controlling erosion and water quality is of significance. Silvan and natural areas which are close to human communities have always been considered as natural filters for flood waters and the runoff since plants bring about absorption of minerals from soil, settlement of sedimentations, and also water penetration into the soil and feeding the underground water beds.[6]

Reduction of Urban noise pollution

Noise pollution is one of the fundamental problems of current densely-populated cities. Airplane, train, and autos usually produce sounds which reach beyond 100 decibel that this amount is two times more than the proper sound limit for human. Wind, temperature, and the features of various surfaces are among the factors which can influence the quantity of sound.[6]

According to experts, plants act more effectually in comparison with various kinds of factors in controlling sounds of specific frequencies. Vibrations of sound waves are absorbed by leaves and branches of trees and factors such as size of foliage (in the broad-leaved plants) and branch condensation, height of trees, porous walls, flexibility,

congestion and concentration, leathery foliage, and pliability of branches, age of plants, thickness of the trunk, and the quantity of gum in acicular plants are effectual in the amount of sound absorption.[13]

Also, plants can effectively reduce the intensity of sounds though reflection, deviation, and absorption of sounds and are today at the centre of attention as one of the main elements in reducing the intensity of sounds. Since the improper levels of sounds can have a harsh effect on the mental health of individuals, therefore some scientists classify this feature of trees under the social functions and values.[6]

Mental health of citizens

Individuals under environmental conditions and abominable personal factors lose their mental balance and comfort and undergo problems such as stress and anxiety, violence and aggression, depression and disappointment and so on. Each one of the above-said items are symptoms of mental illness.[6]

Although, most of citizens are unaware of indirect privileges and impacts of green spaces on their lives, but the existence of this influence and interaction among enjoying green spaces and being deprived of them has been proven through several studies. For instance, this point is inserted among writs of Islamic scientists and the Islamic narrations and in Quran. From the whole Quranic verses and the Islamic narrations it is deduced that looking at green spaces reduces man's dejections, gives him/her solace and rejoices them.[14]

Enjoying green space removes the feelings of disappointment and despair from human and produces and sustains hope and bliss in humans.

Green space has an outstanding influence in treating mental and psychic illnesses in a way that these problems will be resolved by watching green areas and spaces and walking and sauntering and breathing in green spaces.

Having relation with green space leads to alacrity and motivation to move toward elevation and excellency.[14]

Urban beautification and the development of green spaces resolve not only depression, but augment the sense of joy and high-spiritedness.

In addition to the psychic and mental effects and solace out of being in the nature and watching the green space, we can refer to one point from scientific viewpoint and it's the production of Phytoncides. Trees such as walnut and pine emit a matter called phytoncide which has a rejoicing effect on human in a way that this matter can establish a balance between the two hemispheres of the brain and bestows a feeling of solace.[6]

Role and significance of urban parks

Urban parks and green spaces are of outstanding strategic significance to improve living conditions in the current urban societies. Existence of such places in the urban area besides bearing an environmental function leads to the augmentation of social and psychological conditions of city dwellers as well. Walking in parks leads to the reduction of mental pressures and the augmentation of mental powers of individuals and at the same time causes bliss and an extra activity for citizens and contributes to their solace and behavioural balance. Urban parks bear social, economic, and ecological roles which bear privileges as treating mental illnesses, a proper environment to bring up children, social solidarity, preserving solace, and also a criterion to elevate the quality of the residential area and develop the society.[15]

Role of public participation in developing urban green spaces

Public participation is one of the best ways to develop the urban green space. Resources Development experts hold that in addition to conventional resources such as capital, amenities, and physical products, a new product under the name of human is so influential in the process of development. From among the scientific approaches to increase public participation to preserve and develop urban green spaces we can refer to resolve the existing drawbacks in the codes of green space which involves a fundamental revision concerning correction of existing codes and ratify codes which in one way or another effectual in preserving the green space of Iran. Also, protectors of green spaces by establishing local and regional associations and exploiting the existing physical and material capacities, it is possible to bestow some responsibilities to them in the process of preserving and developing green space through legal channels. Making use of mass media can also play an important part in informing, stimulate people's involvement, and activate them. Participation of people all over the world in the management of green space has led to its on-going development.

16-Conclusion:

Population profusion, urban development, birth of mega cities, and coming out of traditional and natural urban context have constantly caused that urban scientist, engineers, and authorities to be in search of reviving the vital needs of cities such as green space and natural vistas until throughout this change the noise-filled atmosphere of cities into a proper and calm space for citizens. In fact, creating a proper green space is a solution for multiple severe urban problems which are influential in aesthetics issues and understanding the identities in addition to augmenting the quality of urban vista which can prevent the economic and physical destruction, fall of living quality, pollution, congestion, and migration of the middle class from city centre and bring vivacity to downtown areas and their

suburbs and encourage people to attend voluntarily. Therefore, parks and the urban green spaces by noting the specific features and functions constitute part of the city's appearance and as one of the real phenomena which humans are and will always be in contact with it and should be considered as one of the key factors in the durability of natural and human life in urbanization. One of the main problems which endanger the physical and social environment due to confusion is the lack or insufficiency of green space and open public spaces. This subject on the one hand increases the environmental pollution and on the other hand severely limits the possibility of spending the free time for common people in green spaces. Thus, creating green spaces in cities has attracted the attention of authorities, planners, and city managers.

A fundamental movement in the subject of green space will be successful when its real position as part and parcel of an urban system and the necessity of its existence for a proper current of life become properly identified and these spaces get designed and become executed by noting their size and function and taking the natural and ecological conditions of each city into consideration by making use of national experiences and findings under the framework of a comprehensive strategy for the green space and its following projects.

Legalization of the activities which are relevant to land possession, constructing installations, providing plant shoots, and the machinery and so forth is another point which naturally contributes to the formation of a powerful and organized management in this context. Quality augmentation brings about alacrity for urban environments and an improvement in their efficiency. The legal position of these approaches can be coordinated under the framework of urban and regional development projects in relation with other formational-spatial sections of a city and be innately formulated in an exhaustive manner.

Also, we know that nowadays settlement in mega cities and air pollution is the current issue and the existence of green spaces in cities and their suburbs have achieved a specific necessity. Creating green spaces has turned into a necessity for the life of people and today the expansion of cities advances with a back-breaking speed but before the occurrence of an improper expansion act on creating a green urban space in the intended areas. Thus, it is necessary to take steps toward reducing the environmental pollutions in cities specifically in megacities of countries such as Iran in which the ever-increasing expansion of them has led to the intensification of its negative effects and pollutions. In order to make stable city with clean air expansion of green space at any region is indispensable. From the time which the subject of green space is being presented as part of the frame of a city, planning, designing, and the management of such a place seem to be vital issues. Urban green space has constantly been considered and is still being considered as an element to bring order and coordinate various uses within the frame of a city and a factor in beautifying the environment and making the living area more rejoicing in a way that in many cases the concept of green space apart from its environmental role, represents the recreational and the welfare-generating role of it for citizens as well. In fact we should take a more durable way for urban development until millions of people all over the world will be able to achieve conditions of living in clean air and supplying us with green technologies which are based on smart, living systems give us the greatest chance to achieve this goal. Thus, the underlying installations which support cities should be redesigned and be viewed in a new way.

Recommendations

- Present plans to create a green space which is proportionate to the environmental conditions of a city.
- Present plans to win the interest of private sector to invest in green spaces.
- Develop the requisite substructures to create and expand the urban green spaces.
- Do applied studies in the area of various private and public urban green spaces.
- Cooperation and the relation between research and academic centres with city offices and organizations in the area of creating urban green spaces.
- Lay the groundwork for hastening the creation of urban green spaces legally and executively.
- Do advertisements and illuminating the urban community for the acquaintance with and cooperation of citizens.
- Training in day nurseries: Day nursery trainers should be asked to take children out for sauntering in green space, park, and the beach (of the living place) and teach them the benefits of the green space and the how of preserving plants and so on until they institutionalize them in children from that time and build a culture about it.
- Take sufficient resources and budget into consideration to buy lands in order to expand green space and its requisite equipment.
- Prevent the destruction of private gardens and changing the use of farm lands through issuing certificates for them and supporting the owners of gardens to prevent transforming them into a barren lot and in case of observation, take legal actions toward it.
- Control the urban development and paying attention to horizontal development.
- Creating proper amenities and facilities in parks and green spaces of cities.
- Presenting appropriate and different training for informing the necessity of preserving plants and elevating the public culture toward the green space.

- In designing and building green spaces agreement between the demographic requirements of regions should be considered and some green spaces and parks should be created proportionate to the needs of each region of a city.
- Putting emphasis on the safety of the existing parks until doing so, it will be possible to create a healthy environment for families and people from all walks of life.
- Making use of experts to choose proper plant species according to the type, size, and the shape of trees and the ratio of their sensitivity toward various climates.
- Enlighten the city managers about the environmental issues and paying attention to the quality of urban life.
- Planning for reducing the inappropriate uses which are adjacent to the regional parks.
- Making use of plants with high pollutant absorption capability to refine the polluted soil and hybridize them with the green level plants and so on which in addition to refining creates a cute landscapes.
- Making use of noise pollution-resistant plants until we will be able to reduce sound pollutions in the urban areas though the least rate of intervention in the environment and by using environmental features.
- Increase the green spaces throughout the cities to create clean air and making use of pollution-resistance plants in polluted and industrial areas: resolve and reduce air pollution which is achieved through planting trees and preserving a mass series of urban trees are far more than its maintenance costs. These trees include road-side trees, trees inside the parks, inside the flower bed of homes, and the green urban passage ways.
- Expand the urban green spaces in order to reduce thermal islands and equilibrate the city temperature and reduce the heat.
- Reduce the rate of planting herbs in various urban areas to prevent the radiation of disrupting rays and the reflection of bothering lights. For instance, it is possible to plant herbs in motorways which prevent the annoying rays and radiations and prevent the reflection of car light into the asphalt.

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