Definition of the Criteria and Indices of Neighbourhood Sustainability (with Emphasis on Functional Aspect) Case study: Deteriorated Neighbourhoods in Tehran

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Abstract

Processes of socio-economic restructuring result in reshaping cities and affect all aspects of urban life all over the world. One effect of such processes is urban decline which may be defined as "the relative under-performance of many local urban economies and the resulting mix of economic, social, physical, and environmental exclusion, which often appears to be self-sustaining in the absence of external intervention". The urban decline, because of spatial concentration, leads to the creation, continuation, and intensification of deteriorated neighbourhoods. In Iran, deterioration of some urban neighbourhoods can be considered as the consequence of contemporary socio-economic transitions. The consequences of urban deterioration are the disequilibrium of main functions in the neighbourhood, the concentration of unstable buildings, lack of public services, and unbalance between driving paths and pavements. The result is the lack of equilibrium, balance, and sustainability in the deteriorated neighbourhoods.

The issue of neighbourhood sustainability can be considered from physical, functional, environmental, and social aspects. This paper put an emphasis on the equilibrium and balance between different functions and defines the criteria and indices of a sustainable neighbourhood from functional aspect. To this end, the content of literature is reviewed; then, the status quo of the deteriorated neighbourhoods of Tehran (in relation to the defined indices) is analysed; and finally, the required policy readjustments to enhance functional sustainability in these neighbourhoods is proposed.

Keywords

Neighbourhood, neighbourhood deterioration, sustainable neighbourhood, balanced access, stable housing, decent services, participation, diversity, flexibility, vitality.

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Framework of the Research
Definition of the problem and subject of the research

'The rate of urbanisation in recent years is increasing. As Mekvichai (2008) referred, "About 50 years ago, only three out of ten people in the world lived in cities; most of these were in the developed countries. Now about 50% of the world's population live in cities, and by 2030 it is expected that six out of ten people will live in cities. Most of the new urban growth is in the less developed and least developed countries. This means that for the first time in world history, more people now live in cities than in villages. This is through a combination of people moving from the countryside into the cities, and the growth of population within the cities themselves" (Mekvichai, 2008: 15-16). Towns and cities are the primary source of wealth, job, productivity, and growth. Cities bring together people who can benefit each other. Cities promote development of new technologies, cluster of high-educated people, thriving of start-ups, and increase of face-to-face interactions. Wassenberg and Dijken (2011) indicated that "Cities are at the same time a solution and a challenge. They are a challenge because they are places where problems of social exclusion and poverty accumulate; not all human resources are mobilised; cities are very quickly and heavily affected by negative economic trends; and a long-term commitment is needed to improve the deteriorated situations in deprived neighbourhoods. At the same time, cities are the solution because they offer vast possibilities for integration, education, cultural dialogue, innovation, and energy saving. Although cities can increasingly be seen as the engines of the regional, national, and international economy. Therefore, when parts of cities are not faring well, it is important to find out how best to change them, because they exercise negative effects on the city's inhabitants and on the urban economy" (Wassenberg & Dijken, 2011: 11).

The scope of change in many of the world's cities is unprecedented, and as McCarthy (2007) emphasised, "processes of urban restructuring are reshaping cities in ways unforeseen in earlier decades. One effect of such processes is what has come to be known as urban decline which may be defined as the relative under-performance of many local urban economies and the resulting mix of economic, social, physical, and environmental exclusion, which often appears to be self-sustaining in the absence of external intervention. The result is that, without intervention, many urban areas appear to experience a self-sustaining downward spiral of decline in many respects". Decline involves a variety of symptoms at the local level. For instance, "social indicators include increasing income differentials, crime and racial conflict; and economic indicators include de-industrialization, manufacturing decline, increasing unemployment and welfare dependency, and infrastructural decay. These processes often reinforce each other, with the result that the incidence of disadvantage or exclusion becomes increasingly concentrated" (McCarthy, 2007: 7). In investigating urban decline and deterioration, it must be considered that some factors such as place, local area, and neighbourhood have an immense effect on its inhabitants. Pierson (2002) determined that "the conditions of poverty and exclusion interact and reinforce each other in particular geographical locations to create a different set of conditions that make it virtually impossible for individuals or families to escape these negative 'neighbourhood' effects" (Pierson, 2002: 14).

In Iran, urban deterioration is defined as "the inefficiency of a district in relation to other urban districts. In the inner city, this phenomenon is appeared due to the oldness of area; however in the margins of the central parts of cities, lack of development plan and technical control are the main incentives. The consequences of deterioration are a decrease of livability and safety, and physical, social, economic, and infrastructural disorganisation" (Sharan Engineering Consultants, 2005: 6).

The Supreme Council of Architecture and Urban Planning of Iran defined key indices1 of urban deterioration in 2006 and, based on aforementioned indices, "3,268 hectares in Tehran were recognised

as deteriorated" (Fig 1) (Boom Sazgan Engineering Consultants, 2006). Analysis of the distribution of deteriorated areas in the neighbourhoods of Tehran indicates that 196 neighbourhoods2 have at least one deteriorated block3. However, 66%4 of deteriorated areas mainly lie in 56 neighbourhoods in the central parts of the city (Fig. 2); (Hajialiakbari, 2017). Thus, it can be concluded that the deterioration in Tehran has a spatial concentration in the inner city.

One of the consequences of urban deterioration and its spatial concentration is the disequilibrium in the main functions of life in the neighbourhood (residence, public services, business, and recreation). The importance of mentioned equilibrium is that the dominance of a function will restrict the others. For instance, the dominance of residential function and a lack of local business-based functions result in the daily evacuation of the neighbourhood; moreover, the dominance of business can threat the habitation and (nightly) vitality of the neighbourhood. The other consequence of neighbourhood deterioration is the concentration of vulnerable buildings (against natural disasters -especially earthquakes). This problem is – usually- accompanied with surplus difficulties such as a shortage of public services, a lack of equipped urban space, inefficient access road, an unbalance between driving paths and pavements, a lack of public parking, and social disorders. The result is the lack of equilibrium, balance, and sustainability in the deteriorated neighbourhoods.

Research questions and purpose of the study

The main purpose of this research is to identify criteria and indices to attain sustainability and to examine them in the deteriorated neighbourhoods of Tehran. The issue can be considered from diverse aspects. For instance: a neighbourhood must have a legible spatial structure and its spaces and buildings must present a distinct identity; neighbourhood's functions must address the necessities and demands of inhabitants; a neighbourhood must provide an appropriate context for social interactions; and the neighbourhood must play a clear role for generation of individual and collective identity and consolidation of social capital. Due to the diverse aspects of neighbourhood sustainability (environmental, functional, social, and perceptional), this paper emphasises the functional aspect. The purposes and questions of the research are presented in Table 1.

Methodology

Since the research is related to the urban policy domain, it follows the principles of policy research. Policy research refers to "the collection and analysis of information in order to inform the policy process" (Maddison & Denniss, 2009: 218). . The analysis in the paper consists of three phases: identification, examination, and proposition. In the first phase, the most important concepts are reviewed and, based on the existent literature on the sustainability of neighbourhood, the criteria and indices of functionally sustainable neighbourhoods (the conceptual framework) are identified. In the second phase, characteristics of the deteriorated neighbourhoods of Tehran (status quo), in relation to the conceptual framework, is examined. And in

Table 1. The main purposes and questions of the research. Source: author.

The purposes	The questions
identification of criteria and indices of the functional sustainability in a neighbourhood	What are the criteria and indices of the functional sustainability in a neighbourhood?
Examination of identified criteria and indices in the deteriorated neighbourhoods of Tehran	How are the circumstances of identified criteria and indices in the deteriorated neighbourhoods of Tehran?
proposition of necessary policy readjustments to improve functional sustainability in the deteriorated neighbourhoods of Tehran	Which policy readjustments are needed to improve functional sustainability in the deteriorated neighbourhoods of Tehran

the third part, necessary policy readjustments for the realisation of functional sustainability in the deteriorated neighbourhoods of Tehran are proposed.

The main concepts of the research

In this section, the most important concepts of the research are reviewed. The concepts of the research include neighbourhood and community, neighbourhood deterioration, sustainable neighbourhood, and the assessment framework of functional sustainability in a neighbourhood.

Community and neighbourhood

Gottdiener, Budd and Lehtovuori (2005) defined a community "as a group that perceives itself as having strong and lasting bonds, particularly when the group shares a geographic location". They identified the measures of community as: "regular participation by individuals in its activities; the strength of identification among members with the perceived social bond of the group; and the specific physical space and location that is commonly understood as the group's territory. This space provides its own set of material markers to which community members have strong emotional ties" (Gottdiener, Budd & Lehtovuori, 2005: 11). Also, Meegan and Mitchell (2001) pointed out that "a community consists of a population carrying on a collective life through a set of institutional arrangements. Common interests and norms of conduct are provided in this arrangements. The community is a place-orientated process which contributes to the wholeness of local social life. A community is a process of interrelated actions through which residents express their shared interest in the local society" (Meegan & Mitchell, 2001: 2173). Amin and Thrift (2002) believe that there are five main reasons about the importance of community in the urban literature (Amin & Thrift, 2002: 41):

● The history of the community has been bedevilled by the idea of a collective, whose members move together and think as one, in a naturalised codependency;

● The community is usually seen as able to exist

precisely because of the intimacy of face-to-face communication;

● The community is present to itself, in a world where meaning is unmediated;

● The community extends into the past. As a tradition, memory plays a crucial role: the present lies heavy under the weight of its legacy;

● Community is invariably 'local'. Messages pass from hand to hand.

The community is related to the term 'neighbourhood' for which it is sometimes used as a synonym. However, Davies and Herbert (1993) restricted the neighbourhood much more to spatial dimensions and related it to a space around a residence, in which people engage in neighbouring, which is usually viewed as a set of informal, face-to-face interactions based on residential proximity (Davies & Herbert, 1993: 1). The term neighbourhood refers to the distinctive areas within larger spatial units. Meegan and Mitchel (2001) referred that this distinctiveness "stems from different sources whose independent contributions are difficult to assess: geographical boundaries, ethnic or cultural characteristics of the inhabitants, psychological unity among people who feel that they belong together, or concentrated use of an area's facilities" (Meegan & Mitchell, 2001: 2172).

Three significant features of the neighbourhood for Gottdiener, Budd and Lehtovuori (2005) are "a social unit, a spatial unit, and a network of relationships and patterns of use" (Gottdiener, Budd & Lehtovuori, 2005: 93). For Humber and Soomet (2006), "neighbourhood vitality requires a balanced mix of functions –housing, shopping, civic institutions and open space. Pedestrian circulation is encouraged through a mix of streets and open space with conveniently located service centres" (Humber & Soomet, 2006: 715). Truog (2006) highlighted that "In a traditional neighbourhood structure, it is physically possible to walk to stores, schools, and businesses" (Truog, 2006: 684). Also, Humber and Soomet (2006) concentrated on the shared attributes of the roads, verges, parks, lighting, and infrastructure in the local neighbourhood

(Humber & Soomet, 2006: 717).

As Eyles, et. al, (2006) referred, neighbourhood can play different roles (Eyles et al., 2006: 734):

● As a context, the neighbourhood can affect the quality of local services that can be accessed; it is also important in shaping exposure not only to crime and violence and environmental hazards but also to the processes of socialisation in general and whether relationships with broader society might be positive or negative;

● As a community, the neighbourhood is shaped by social interactions, networks and neighbourliness. It can help determine patterns of cohesiveness and participation in institutions and social processes. The importance of neighbourhood is in the need for a localised space that is used as a resource for people marginalised by society. Mothers, children, those that are restricted either financially or because of age or disability, and Minority people that are poor and cannot afford cars need neighbourhoods and close-in access to services.

Kiani (1987) and Pirbabaei&Sajjadzadeh (2001) defined the Iranian neighbourhood based on the cohesion and strong social relations of residents. The structure of these neighbourhoods was impressed by ecological, economic, political, and social conditions. This structure was the result of agglomeration and cohesiveness of inhabitants; as, the bounds of neighbourhood and its centre were distinguished with social relations, ownership, neighbourhood mosque, and bazaar.

In urban planning, the neighbourhood can be defined as a recognisable part of a district which serves necessary functions for residents. The neighbourhood has, also, a social meaning which refers to the social relations among individuals in a place. Abdollahi, Sarafi & Tavakkoli-nia (2009) determined that "the neighbourhood includes diverse buildings, public spaces, and human functions". For them, the main characteristics of a neighbourhood are:

● Balanced mix of activities and functions;

● Proportional physical structure;

● Prioritisation of public spaces.

Based on the content analysis of the literature, the most important functional characteristics of neighbourhood are: a distinct boundary and detaching edges (to prevent non-local traffic); a balanced mix of functions; self-sufficiency on public services; neighbourhood centre (including public open spaces); and the hierarchy of access road and proportion between driving paths and pavements (with an emphasis on walking).

Neighbourhood deterioration (dysfunctional neighbourhood)

"Throughout most of the industrial era, there has been a tendency for the urban unemployed, and others on low incomes, to be concentrated in special neighbourhoods" (Marcuse, 1993 cited in McGregor & McConnachie, 1995). McGregor & McConnachie (1995) implicated that "historically, poor housing conditions and high unemployment have come together in `slum' housing in inner-city areas. One concomitant of these trends is that the residents of these areas are excluded from many of the markets and services vital to their human development and the pursuit of a decent lifestyle" (McGregor & McConnachie, 1995: 1587-1588). Living in deteriorated neighbourhoods leads to the deprivation of basic services such as shops, transport, telephones, and banks, and more exposure to crime, drugs, and racism. As Social Exclusion Unit (2000) emphasised, the most important causes of deprivation and decline in some neighbourhoods are as follows: (Social Exclusion Unit, 2000: 19-24):

● Decline in economic activity due to the economic factors (such as the decline of urban employment and decline in the number of unskilled and manual jobs), demographic factors (increase of poverty in family and difficulty for people to take work), and welfare benefits (compound of job losses by a benefits system which made low-income work unattractive);

● Increasing social problems and reduced social capital (based on the economic decline);

● Pressure on public services, ever-increasing reliance on the State, and decrease of the ability of

the State to help the inhabitants;

The characteristics and circumstances of declined neighbourhoods can be explained based on the 'dysfunction' concept which is seen by Squires and Booth (2015) "as a disruption of normal social relations and, Moreover, enables sociological connection to ideas of class and race at the neighbourhood scale in urban areas". For them dysfunctional neighbourhood concept can be considered as "those neighbourhoods that deviate from a multitude of characteristics, including levels of criminality, educational achievement, the presence of a functioning housing market, cultural deprivation, and socio-economic deterioration". The criteria of the dysfunctional neighbourhood are as follows (Squires & Booth, 2015: 301-309; McGregor & McConnachie, 1995: 1588):

● Weak mix (unbalance of physical, economic and social characteristics);

● Shortage of local jobs;

● Poor transport access to employment opportunities in the wider urban labour market;

● Housing deterioration;

● Low demand and low derived demand (difficulty to let or sell house because there are not enough households in the area looking for homes);

● Inappropriate supply (a restricted choice of low-value and poor-quality mono-tenure housing stock);

● Enduring housing market failure;

● Restricted finance and inappropriate investment;

● Unaffordability (inappropriateness of new-build housing with the economic conditions of households);

● Overcrowding (inappropriateness of household numbers with amenities)

Sustainable community and neighbourhood

Behzadfar and Habibi (2010) defined "social justice, ecological integration, and economic flourishing" as the main components of a sustainable community (Behzadfar & Habibi, 2010: 11). Colantonio and Dixon (2011) believe that "Sustainable communities are places where people want to live and work, now and in the future. They meet the diverse needs

of existing and future residents, are sensitive to their environment, and contribute to a high quality of life. They are safe and inclusive, well planned, built and run, and offer equality of opportunity and good services for all". Eight key characteristics of sustainable communities are as follows (Colantonio & Dixon, 2011: 33):

● Active, inclusive and safe – Fair, tolerant and cohesive with a strong local culture and other shared community activities;

● Well run – with effective and inclusive participation, representation and leadership;

● Environmentally sensitive – providing places for people to live that are considerate of the environment;

● Well designed and built – featuring quality built and natural environment;

● Well connected – with good transport services and communication linking people to jobs, schools, health and other services;

● Thriving – with a flourishing and diverse local economy;

● Well served – with public, private, community and voluntary services that are appropriate to people's needs and accessible to all;

● Fair for everyone – including those in other communities, now and in the future.

'Sustainable urban development' approach impressed the definition of good community and has turned the 'sustainable community' into the most dominant concept on this agenda. As Rogerson, Sadler, and Green (2011) defined, "a community is sustainable where economic vitality, ecological integrity, civic democracy, and social wellbeing are linked in a complementary fashion, thereby fostering a high quality of life and a strong sense of reciprocal obligation among its members" (Rogerson, Sadler & Green, 2011: 8). 'The New Urbanism approach', also, defines the sustainable community. For Grant (2006), "New Urban approaches affirm the appeal of the compact, mixed-use, walkable, and relatively self-contained communities". Instead of car-oriented development, this approach argues for "traditional architecture and building patterns that facilitate

walking and that create strong urban identities". In sum, "in an era when modernism has profoundly affected the shape of the city, new urbanism presents a new image of the good community" (Grant, 2006: 3). The neighbourhood is the basic unit of planning in the New Urbanism. "The neighbourhood has a clear physical extent, boundary, and centre and daily needs are accessible by five minutes walking". The emphasis of the New Urbanism is on "compact development, higher density, human scale, pedestrian-orientation, and public transportation" (Slone, Goldstein & Gowder, 2008: 14). "Sometimes called 'neo-traditional planning', New Urbanism tries to capture the qualities of older towns and encourages narrow streets, public spaces, and all types of conveniences for pedestrians and cyclists; higher densities, mixed land-use, and pedestrian and cycling-friendly designs encourage people to walk or cycle for short trips rather than drive" (Boone & Modarres, 2006: 121,150,182).

The conceptual framework of the research; the criteria of the sustainable neighbourhood

Based on the content analysis of existent literature about neighbourhood sustainability, the most important criteria of a functionally sustainable neighbourhood are presented in Table 2.

Therefore, the criteria of a functionally sustainable neighbourhood, based on the content analysis of Table 2, are as follows:

● Decent housing: access of all residents to stable and affordable housing;

● Sufficient public services: self-containment of neighbourhood in provision of public services and amenities;

● Appropriate access road: diverse alternatives and easy access for cars and pedestrians (with emphasis on walking);

● Functional mix: combination of functions and land-use and prevention from the dominance of a function;

● Attractive urban space: existence of a good-quality public space with the ability of all inhabitants to take

advantage of it;

● Active and effective participation: participation of local community in planning and decision-making processes and periodical revise of plan (with consideration of local circumstances);

The mentioned criteria can be divided to more detailed components. The indices of a functionally sustainable neighbourhood are presented in Table 3.

Analysis of the status quo

In this phase, the current circumstances of the deteriorated neighbourhoods of Tehran is examined based on the identified criteria and indices of a functionally sustainable neighbourhood (the conceptual framework of the research).

Decent housing
● Stable housing

The structural instability of residential buildings against earthquakes is the most important index used for identifying deteriorated areas in Tehran. Based on a survey in 2010, 10% percent of Tehran was occupied by unstable buildings (6,627 hectares). However, the ratio of unstable parcels in the deteriorated neighbourhoods was about 20%; from other side, 59% of unstable buildings of Tehran were concentrated in these neighbourhoods (3,891 hectares). In mentioned neighbourhoods, the ratio of unstable buildings was more than 10% in 159 neighbourhoods; more than 20% in 87 neighbourhoods; and more than 30% in 33 neighbourhoods (Fig. 3) (TMICTO, 2010).

Encouraging housing reconstruction in deteriorated neighbourhoods is the main policy which has been pursued by the public sector since the 2000s (especially since 2008). Low-interest loans for reconstruction and temporary habitation (Parliment of Iran, 2008), grant free construction permissions (Tehran City Council, 2009), and surplus density for new constructions (in addition to the regulations of the comprehensive plan) (Deputy of Urban Planning and Architecture-Tehran Municipality, 2010) are the most important tools adopted by the national government and the municipality of Tehran to

Table 2. the criteria of functionally sustainable neighbourhood. Source: authors.

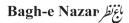| Point of view	Functional criteria	Definition of criteria
Kevin Lynch (Lynch, 1984: 203)	Access	The diversity of things given access to, the equity of access for different groups of the population, and the control of access system
Jane Jacobs (Jacobs, 1961: 150-151)	Mixtures of land-use	Combination of primary and supportive functions to increase diversity
	Short blocks	Frequent opportunities for walking to increase access
	Variety of buildings in age and condition	Fair access to affordable housing for different economic conditions of household to support social mix
	Dense concentration of people	To prepare vitality and social relations
Bentley (Bentley, et. al., 1985: 11)	Permeability	To provide diverse choices for access
	Variety	To maximise the variety of uses
	Robustness	To use a place for many different purposes
Allan Jacobs and Donald Appleyard (Jacobs & Appleyard, 2011: 522-524)	Access to opportunity, imagination, and joy	Access to alternative housing, job choices, and enlightening cultural experience
	An environment for all	Designing good environments for all citizens
	Self-reliance	Self-sustaining in uses of energy and other scarce resources
Francis Tibbalds (Golkar, 2011: 105-106)	Mixed land-use	Combination of different functions
	Human scale	Emphasis on walking
	participation	Participation of community in planning and design
	Responsiveness	Ability of all groups to use the place
	Flexibility	Gradual process of change and the possibility of adaptation
Graham Haughton and Colin Hunter (Haughton & Hunter, 2003: 109-110)	Variety	Multi-functional districts
	Permeability	Connection of people and ability to obtain easy access to each other and to general urban facilities, with respect to the needs for privacy and security
	Appropriate scale	Adaptation of developments with local context and reflect local conditions
	Consultation	Meeting local needs in urban planning and design respecting local traditions, and tapping local resources
	Participation	Involving appropriate, communities of need, interest, experience and geographical proximity in the design
Sherwin Greene (Greene, 1992)	Access	Appropriate and balanced accessibility
	Diversity	Combination of land-use
London Planning Advisory Committee (London Planning Advisory Committee, 1993)	Public spaces	Provision a context for social interactions
	Acceleration of movement	Easiness of movements for cars and pedestrians
The prime minister of Australia's urban design task force (The prime minister urban design task force, 1994: 11-12)	Openness	The possibility of continuing adaptation and change
	Responsiveness	Response to local needs and features
	Forge	Forge connections with the past
Dempsey, Bramley, Power, & Brown (Dempsey, et al., 2011: 293)	Attractive public realm	Existence and the good quality of public spaces to attract residents day and night
	Decent housing	Access of all inhabitants to appropriate housing
	Local environmental quality and amenity	Good quality of environment and access to public services
	Accessibility	Fair access to services, amenities, and business
	Walkable neighbourhood	Access to attractive walking paths
	Mixed tenure	mixed patterns of land use
	Participation and local democracy	The main role of community in planning and decision-making
Koorosh Golkar (Golkar, 2011: 130-131)	Permeability	Human orientation and emphasis on walking
	Diversity	Diversity of functions and land-use
	Inclusiveness	Ability of use for all people
	Quality of public domain	Equipped urban spaces
	Livability and adaptability	Effectiveness, comfort, and adaptability of behavioural quarters
	Flexibility	Adaptation between space and human

Table 3. Indices of functionally sustainable neighbourhoods, conceptual framework. Source: authors.

Criteria	Indices
Decent housing	Stable housing (against natural disasters)
	Adaptation of housing reconstruction and residence pattern
	Diverse methods for renovation (reconstruction, rehabilitation, and repair)
	Affordable housing
Sufficient public services	Self-sufficiency of public services
Appropriate access	Appropriate area and per capita of access roads
	Prevention of transit traffic
	Prioritisation and proposing diverse alternatives for walking
	Public parking
Multi-Functional use	Mixed patterns of land use (to increase diversity)
Attractive urban space	Existence of public space (for social interaction)
	Good quality of public domain
	Possibility of multi-functional uses of space
	Ability of all groups to utilise public environment in all hours
Participation	Participation of local community in planning and decision-making processes
	Adaptation of plan with context, local features, and dynamic environment
	Prevention of sudden transformations and huge-scale interventions
	Valuing traditions and consolidation of connections with the past and the future

encourage housing reconstruction in the deteriorated neighbourhoods. Analysis of the housing reconstruction rate between 2001 and 2015 in mentioned neighbourhoods determines an average annual reconstruction rate of 1.6% (Figure 4) (ROT, 2015).

Adaptation of housing reconstruction and residence pattern

Observation of habitation pattern and interview with residents indicate a special pattern of residence which is different from the dominant patterns of habitation in urban districts. In this pattern which is based on the coexistence of households, families share some spaces (such as kitchen, toilet, and bathroom) and use some spaces independently (such as bedrooms). This pattern allows each family to optimise existent small space and –at the same time- set up an autonomous domain. In some cases, distinct parts of the house (basement or yard) are used as a working place for family members.

Reconstruction of unstable buildings in Tehran is encouraged by economic incentives; therefore, the increase of construction density (to produce more units for investors) is unavoidable. In the process of reconstruction, autonomous houses are replaced by new apartment units and some spaces (yard and basement) become extinct or lose their primary function. Also, based on the official definition of the residential unit in Iran (Office of National Regulations of Construction, 2009: 47-56), the current style of habitation in deteriorated neighbourhoods is not recognised officially. Thus, the official regulations of construction cannot meet the features and conditions of some households; consequently, they prefer to live in unstable houses.

Diverse methods of housing renovation

Enhancement of the stability of a structure can be fulfilled with different methods; for instance, retrofitting current structure or adding a secure structure to (a part of) current structure (without demolition) are some soft methods which can be utilised along with reconstruction. However, utilisation of mentioned solutions faces two distinct barriers: first,

the adopted width of an urban path in the regulations of the comprehensive plan of Tehran is at least 6 metres (Boom Sazgan Engineering Consultants, 2007: 11); thus, widening of current paths during renovation by demolishing current buildings is unavoidable. And second, encouraging policies for housing renovation (such as low-interest loans) do not support other ways except reconstruction.

Affordable housing

One of the consequences of urban decline is the "emergence of dual city" (McCarthy, 2007: 15). In these circumstances, low-income individuals and households who cannot inhabit in ordinary districts, settle in deteriorated neighbourhoods (because of the low cost of properties). Therefore, residence of diverse socio-economic groups cannot be observed in urban neighbourhoods; Tehran follows this common rule. At the same time, the value of properties increases after reconstruction; but as the income of tenants remains stable, these groups are enforced to migrate to less-valued districts of the city. Hence, it can be concluded that housing reconstruction decreases the affordability and diversity of socio-economic groups in the neighbourhoods.

Sufficient public services

Analysis of existent data indicates that the public services in the deteriorated neighbourhoods occupies 4% of neighbourhood and is the half of the city average; also, the per capita of services is about one square metre which is 15% of the city average (Table 4).

Appropriate access
Appropriate area of access roads

The content of Table 4 shows that access roads occupy 23% of the deteriorated neighbourhoods; this ratio is more than the city average which is 18%. However, two reasons lead to the inefficiency of access network in these neighbourhoods: first, low width of the paths has resulted in the inappropriate distribution of access roads; and second, because of a higher population density, the per capita of access

roads is about 40% of the city average (ROT, 2006).

Prevention of transit traffic

Deteriorated neighbourhoods have narrow access roads and –also- because of some physical barriers (such as infrastructure network), local paths cannot be used for transit traffic. But, "permeability is in contrary with access hierarchy" and the increase of permeability leads to reduce of hierarchy (Bentley et al., 1985: 12-14).Thus, as raising permeability of access roads is one of the goals of neighbourhood renewal in Tehran and current paths have been widened in the renovation process, the transit traffic has increased in the neighbourhood.

Prioritisation and proposing diverse alternatives for walking

Equipped and organised pavements do not exist in the deteriorated neighbourhoods (ROT, 2006). However and because of the impermeability of roads for cars, access roads are safe spaces for pedestrians and residents can utilise them as a quasi-public place. But, as renovation facilitate entering cars into roads, pedestrian-based activities in access roads will reduce.

Public parking

Current houses in the deteriorated neighbourhoods have no private parking. The produced parking in reconstructed buildings is less than new units5; therefore, provision of public parking is essential in renovation process and can decrease permeation of cars to all roads. However, analysis of the land-use determines that, except few cases, public parking in the deteriorated neighbourhoods have not been anticipated and implemented (ROT, 2006).

Multi-functional use

Table 4 indicates that residence and access roads are the dominant land uses in the deteriorated neighbourhoods and occupy 85% of the neighbourhoods' area; thus, almost no mixed patterns of land use can be observed. Table 5 approves this conclusion.
Attractive urban space

Table 4. The per capita of land-use in the deteriorated neighbourhoods of Tehran. Source: ROT, 2015.

Land-use	Deteriorated neighbourhoods		Tehran	
	Area (%)	Per capita (m^2)	Area (%)	Per capita (m^2)
Residential	62	16	29	23
Public services	4	1	8	6
Access roads	23	6	18	15

Table 5. The per capita of different land uses in the deteriorated neighbourhoods and Tehran. Source: ROT, 2006.

Land-use	Deteriorated neighbourhoods		Tehran	
	Area (%)	Per capita (m^2)	Area (%)	Per capita (m^2)
Residential	62	16	29	23
Public services	28	7	38	30
Other land-use	10	3	33	27
Total	100	26	100	80

Deteriorated neighbourhoods lack appropriate public spaces (like equipped pavements) (ROT, 2006). In these circumstances, social interactions usually occur in public and semi-public paths. Concentration on housing renovation in renewal process leads to the ignorance of the provision of urban spaces; consequently, the access role of roads for cars increases and the social role of them reduces.

Pakzad (2012) asserted that "high quality and multi-utilisation of public spaces by all groups result in the diversity of users of space; this capability is fulfilled through criteria such as safety, and easiness of access and activity in the space. The groups who are emphasised in the planning process to increase diversity, are children, elderly, disables, women, and youths" (Pakzad, 2012: 145-146). However, a prerequisite for this goal is the existence of public space in the neighbourhood; as the mentioned precondition does not exist, the assessment of the diversity of utilisation of urban spaces in the deteriorated neighbourhoods is not possible.

Participation

ROT6, since 2009, has adopted 'participation-orientation' as the main policy and has established 'facilitation offices' in the deteriorated neighbourhoods to pursue neighbourhood renewal with the participation of different stakeholders (especially local communities). Analysis of the proceeding reports of mentioned offices determines that 'planning' is one of the agendas of offices and the 'neighbourhood renewal plan' is prepared by facilitators, with consideration of local conditions, features, and capabilities, and with the participation of residents; "awareness-rising, building trust, and education and training are the main groundworks to meet these intentions. Also, neighbourhood renewal plan can be readjusted and adapted to the dynamic conditions of the neighbourhood" (Hajialiakbari, et al., 2011: 50). However, as Hajialiakbari (forthcoming) noted, "assessment of prepared plans between 2009 and 2013 indicates two problems: first, inclusiveness of the majority of local community in planning process cannot be approved; on the other words, the participation of local community is restricted to the authority groups (such as official representatives and reliable members) and to the inquiry (without obligation to put viewpoints in the plan). And second, the neighbourhood renewal plan has not an official

position in the urban planning hierarchy in Tehran; so, its proposed projects cannot obligate diverse authorities to collaborate in the renewal process. As a result, most of the projects is not realised" (Hajialiakbari & Forthcoming: 162-173).

Comparison of status quo and the conceptual framework

Analysis of the status quo indicates that, except the indices of stable housing and participation, the other functional dimensions of deteriorated neighbourhoods does not conform the indices of the conceptual framework of the research (Table 6).

Conclusion

Table 6. Comparison of the status quo with the conceptual framework. Source: author.

Criteria	Indices	Status quo
Decent housing	Stable housing	• Housing renovation through reconstruction
	Adaptation	• Neglect of residence style in construction regulations • Extinction of some spaces during reconstruction
	Diverse methods	• Dominance of reconstruction • Ignorance of financial support of other methods (except reconstruction)
	Affordable housing	• Concentration of residence of low-income households • Gentrification and restriction of habitation for tenants
Sufficient public services	Self-containment	• Shortage of area and per capita of public services
Appropriate access	appropriate area of paths	• Inappropriate distribution of paths • Low per capita of paths
	Prevention of transit traffic	• Decrease of access hierarchy and possibility of creation of non-local traffic
	Prioritisation of walking	• Lack of equipped and organised pavements • Threat of walking because of paths' widening
	Public parking	• Non-existent
Multi-Functional use	Mixed patterns of land use	• Non-existent
Attractive urban space	Existence of public space and possibility of multi-utilisation by all groups	• Non-existent
Participation	Participation in planning	• Consideration of the participation of local community in planning process • Non-inclusion of the majority of community members
	Adaptation of plan	• Periodical readjustment of plan • Lack of obligation of realisation
	Prevention of sudden intervention	• Consideration of the main structure of neighbourhood
	consolidation	• Consideration of the local features

Based on the analysis of the deteriorated neighbourhoods of Tehran, the main policy readjustments to make an adaptation between the status quo of neighbourhoods and criteria of the functionally sustainable neighbourhood can be determined in Table 7.

Since the realisation of each criterion without the consideration of other criteria leads to contradictory circumstances, it is important to consider the proposed policy readjustments simultaneously and in an integrative manner. For instance, housing renovation results in an increase in residential units and population in the neighbourhood; this condition, without provision of the necessary public services, can reduce the per capita of public services. Or widening of roads, without anticipating parking, turns current paths into the parking lots for cars and restricts the social function of paths. Therefore, equilibrium is the most important principle in tackling the functional problems of deteriorated neighbourhoods. In other words, intervention in the neighbourhoods must lead to the balanced improvement of the quality of life in all aspects.
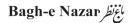
Endnote

Table 7. Policy readjustments to achieve to the criteria of sustainable neighbourhood (functional aspect). Source: authors.

Criteria	Indices	Policy readjustments
Decent housing	Stable housing	• expanding necessary supports from housing renovation to increase renovation rate • indicating necessary mechanisms to increase the quality of construction
	Adaptation	• adopting necessary construction regulations with consideration of residence style • Anticipating necessary spaces to replace demolished spaces
	Diverse methods	• Readjusting the regulations of the minimum width of paths • financial supporting diverse methods of renovation
	Affordable housing	• planning social and public housing
Sufficient public services	Self-containment	• prioritising public service projects (based on the neighbourhood renewal plans) in the programmes of public agencies
Appropriate access	appropriate area of paths	• increasing the area of paths (based on the necessity and the crisis management standards) • proposing soft solutions to optimise current paths
	Prevention of transit traffic	• anticipating access restrictions to prevent non-local traffic
	Prioritisation of walking	• reducing the permeability of cars inside the neighbourhood with locating public parking
	Public parking	• planning to implement public parking by public agencies and private sector
Multi-Functional use	Mixed patterns of land use	• planning for social vitality through anticipation of public services, public spaces, and local businesses
Attractive urban space	Existence of public space	• planning for the implementation of urban spaces
	Good quality of public domain	• equipping, rehabilitating, and maintenance of public spaces
	Possibility of multi-functional uses	• designing flexible spaces for adaptation with different needs and demands
	Ability of all groups to utilise public environment in all hours	• increasing the safety and security of space (with soft and hard instruments) to attract people
Participation	Participation in planning	• assuring from the inclusion of the majority of community members
	Adaptation of plan	• increasing the flexibility of the plan • defining the position of the plan in urban planning hierarchy

1. The indices are vulnerability against earthquakes; low width of access network (lower than 6 metres); and low area of residential parcels (lower than 200 square metres). For more information about the indices of deterioration in Iran, look at: (Boom Sazgan Engineering Consultants, 2006).
2. Tehran has 354 neighbourhoods. / 3. In official documents, a block is defined as an area restricted by roads from all sides (Boom Sazgan Engineering Consultants, 2006). / 4. 2,148 hectares / 5. The ratio of parking provision in new construction in the deteriorated neighbourhoods of Tehran (to the number of produced units) was 0.5 until 2014 (Deputy of Urban Planning and Architecture-Tehran Municipality, 2010). / 6. Renovation Organisation of Tehran was established in 1968 and is the main responsible agency for urban renewal in the municipality of Tehran.

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