

Evaluation of Sustainable Urban Development In Mashhad city, Iran

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Abstract

Mashhad is the capital city of Khorasan Razavi province in Iran country. In the recent years, its urban and economic development policy followed the growth pole theory. In order to, the aim of this paper is evaluation of sustainable urban development in Mashhad city. Applied methodology is based on descriptive-analytical approach. We have used documental method to collect information about case study region. Results show that overall population growth in this period (1951- 2013) is equal to 14.5%. Average growth in the statistical areas is 7.4%. Minimum annual population growth is -2%. Also mixed land use issues in Mashhad have a special status and it need to accurate programing in short, mid and long time. Correlation between the two variables of income inequality ($R^2 = 0.0516$) and educational inequality was ($R^2 = 0.0561$). In the end of this presented some solve ways.

Keywords: development policy, growth theory, urban development, Mashhad city

1. Introduction

Framed by issues of housing and exponential population growth, the phrase ‘sustainable urban development’ contains a redundancy. While it is clear that much of the development occurring in urbanized areas of the world is unsustainable – in the literal sense of representing patterns of growth that cannot be replicated continuously across the remainder of human time without bringing about its own end- it is arguable that there can be no truly sustainable development, in the same literal sense, that is not also urban development (Callender, 2013 & James, 2013). Bentivegna et al (2002) began to outline the principles, under-lying concepts, model, vision and methodology of an integrated sustainable urban development (SUD).

We proposed some of the most important ones with the purpose of considering the regional and parochial inequalities in the course of growth and development. The proponents of Neo-Keynesian theory or economic foundation divided the economic activities of the region theory into two parts: the base part (exports) and the non-base part. According to export theory, revenue is understood to be primary engine of growth and the driving force of the region’s economy (Sabagh Kermani, 2001). As such, regional growth and development of depends almost wholly on export. Export revenue is recognized as the only variable that whose relative amount determines the growth and development of a region and is considered as the sole driving force in regional economy growth (Saraf, 1999). Peter hall also believes that the most important purpose of regional economic pol-icy for reducing its inequalities is providing employment in order to reduce unemployment and emigration in the region, and consequently, this will increase its growth and development (Hall, 1992). This drew attention to the framework BEQUEST has developed for such an understanding of SUD and went on to set out the protocol the network argues should be followed when carrying out an environmental assessment (Deakin & Reid, 2013). In this regard it was argued:

1. SUD’s goal is to improve the quality of life for an increasingly urban population;
2. actions aiming to improve the quality of life need a simple, clear framework for analyzing the sustainability of urban development (Fanni & Heydari, 2013);
3. this framework for analysis requires providing a vision and methodology capable of bringing such

concerns into the scope of actions targeting improvements in the quality of life;

4. Within this vision and methodology, protocols provide a middle ground between the environmental assessment methods avail-able to evaluate SUD and bring about improvements in the quality of life;

5. Such evaluations of SUD must transcend purely environmental factors and embed themselves securely in more integrated environmental, economic and social assessments (Jorge, 2009).

6. A community of academic and professional advisers is emerging, willing and able to use new information technology as a means of supporting multi-scalar assessments and making the evaluations they produce available to local, regional, national and international agencies (Murakami, Kawakubo, Asami & kaga, 2011).

In the recent years, Iran’s development policy followed the growth pole theory. In this strategy, the development of cities becomes a priority with the goal of their economic and social development spreading to rural villages. As well, this theory posits that the economic growth of cities stimulate the agricultural production of their neighboring regions. The evidence shows that with the implementation of “the growth pole” policy, cities could not provide the necessary services that the theory had suggested they would, and this caused rural–urban migration (Hamsi, 1981).For understanding the spatial structure of regions and predicting the changes and evolutions of development, Freidman proposes the central- peripheral paradigm. Freedman says “every system of geography includes two spatial subsystems: one of them is the center that is the pioneering heart and dynamism of the system and another one is the peripheral that can be considered as the rest of the system and is in the state of dependency or accepting sovereignty toward the center” (Hilhorst, 1967). The relationship of the center-periphery maybe considered as akin to a colonial relationship. Generally, the polarization of structure is toward the center from the periphery by replacing internal factors. According to the proposed theoretical framework, the common aspect or factor of all is to paying attention to regional inequalities and also to the growth and development of less developed areas. Based on the proposed theories, namely the growth pole and center-periphery theories, the main cause of the existing inequalities among the regions is the internal factors. This is to say, while the basic

economic theory emphasizes on seeking the root cause of the lack of development factors over the foreign factors, and the foreign factors play the primary and determining role in making inequalities among the regions (Rahnama & Abbaszadeh, 2008).

2. Sustainable urban development

A city as a complex and dynamic organism is always changed and transformed, it's a place that forms human's ideals and experiences and has a serious role in providing its resident's welfare, health and relaxation. Our today's urbanization is a product of ideas, thoughts, experiences and actions that has been obtained by different generations at historical period (Habibi, 1996). By appearing the effects of current changes and their contradictions; actions to solve problems of new urbanism became necessary, this paradigm rose from the United States of America and was the end of city dispersion and a movement to substitute mechanical life and a return to traditional designing. Through the first two decades of 20th century, cities of America improved as compact neighborhood with mixed uses but this matter began to change on the basis of zoning necessities and modern architecture and increasing cars and after the second world war, a new development system was formed in America based on displacing neighborhood's together with serious land use isolating and often know as an development or CDS (Zali & Qanbari, 2012).

Spatial planning is a professional area of complex interaction between social and technical expertise. It is action-oriented and practice-bound, therefore strongly influenced by cultural and political processes. Out of 150 institutions of higher education with planning

programmers in Europe, 36 belong in the so called 'transitional countries' of Central and Eastern Europe (CEE) (UNHABITAT, 2009). In the dynamic political and sociocultural context of the region since 1990s they have all faced similar as well as diverse challenges on the SD path the former more often discussed than the latter ones, which seem still far from fully conceptualized and adequately addressed by strategic action (Dimitrova, 2013).

In the view of Couch and Dennemann (2012) while economic Development may be a legitimate policy goal, to be sustainable it must be achieved within the context of reducing the ecological footprint. The central value of sustainable development can be boiled down to a balance among the three 'E's: environment, economy, and equity. As illustrated in Gods chalk, sustainable development seeks to reconcile the conflicts among economic development, ecological preservation, and intergenerational equity; three conflicts exist among sustainable development value (Tavakoli & Heydari, 2012). The 'property conflict' between economic growth and equitable sharing of opportunities arises from competing claims on uses of property as both a private resource and a public good; the 'resource conflict' between economic and ecological utility arises from competing claims on the consumption of natural resources and the preservation of their ability to reproduce; the 'development conflict' between social equity and environmental preservation arises from competing needs to improve a lot of poor people through economic growth while protecting the environment through growth management (Rahnama & Heydari, 2013).



Fig. 1. A Sample of sustainability in different regions of Mashhad city
Resource: Authors adopted Haghghi & Parsina, 2013.

The argument that sustainable development is necessarily urban development is not immediately obvious. In fact, sustainability and the 'green architecture' movement have utilized an implicit but persistent connection to rural imagery (open spaces, wind farms, plant materials for shading and food, and temporary or easy-to-recycle construction techniques) that belies the importance of urbanization to the emergence, and continuation of civilization. While there are philosophical reasons to be deeply suspicious of any call for a return to nature or some earlier form of settlement – for example, eco-village life or the reformation of hunter gatherer societies the practical consequences of this implicit ruralize undermine sustainability at its roots, particularly the most often

ignored aspect of sustainability and sustainable development can be summed up in a slogan, Place matters. The Pantheon had been despised, if citizens of Rome throughout history had found the building to be an affront to the Vitruvian ideals of firmness, commodity, and delight, the Pantheon would have suffered the fate of many of antiquities most monumental constructions: it would have been significantly renovated or, more likely, disassembled for the construction of other buildings and thus entered the recycling cycle, diminishing its sustainability in a very literal sense. insofar as it inspires a retreat from urbanism (Yong & Hydonis, 2010). Finally can say that population grows the urbanization of society is inevitable. Urbanization leads to an increased impact on the environment; the 'ecological footprint' of cities is spreading. The impact of growth on all areas of society must be acknowledged. Sustainable growth requires an evolution in the way urban areas carry out

their activities such as resource use and the movement of people and goods (Backer, 1997).

Table 1
The most important approaches in sustainable urban development in Mashhad:

Approaches of sustainable development	Economic Role	Geography subjects	Environment	policies	Urban society indicators
Ideal model of SD	- complete attention to human right. - attention to human needs.	- attention to urban and regional. Planning as Largely local self-sufficient.	- limited development. - The conservation of biodiversity.	- the Intersectional entire of integrity.	- social structure from below to high
Abusive Model Development	- strong regular market.	Recognize self-sufficient.	- Environmental management. - Clean technology	- Policy with attention	-Anticipating the future of urban development
Strength Sustainable Development	- Typical growth	- Global market. - Global economic	- change in urban institute.	- change of resource with capital.	- moving to sectorial urban development.
Weak Sustainable Development	- urban policy change according to consumption pattern	- environmental urban management.	- improvement of urban market power	- social justice in urban areas.	- Decentralization policy.

Resource: Authors adopted Ebrahimzadeh & et al (2010), 2013.

The physical infrastructure in addition to social and economic processes must evolve to acknowledge the challenges of growth. Sustainable development has been defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs (xang, 2011). However, sustainable urban development implies a process by which sustainability can be attained, emphasizing improvement, progress and positive change, incorporating both environmental and social dimensions. Sustainable urban development highlights the need for reform of market mechanisms to achieve environmental goals and the achievement of a balance with social and economic considerations (Yan Ping Liu, 2009; World Commission on Environment and Development, 1987).

3. Case study region

Mashhad is the capital city of Khorasan Razavi province in the North East of Iran. The city has witnessed rapid growth in the last two decades, mostly because of its economic, social and religious attractions. It has an area of 148 km² and its current population is 2.8 million. It has witnessed rapid growth in the last three decades, mostly because of its economic, social and religious attractions. Since 1987, its population has grown 3.6 times while its extent at the same time period has doubled (Rafiee, 2007). Mashhad has become the second Iran country's second metropolitan in recent decades (Census center of Iran, 2011). Mashhad as other shrine cities in the world has different potential's in the field of attraction urban tourism. In this between, advertising as a powerful tool has a key role in exacerbated of this process (Tavakoli & Heydari, 2012).

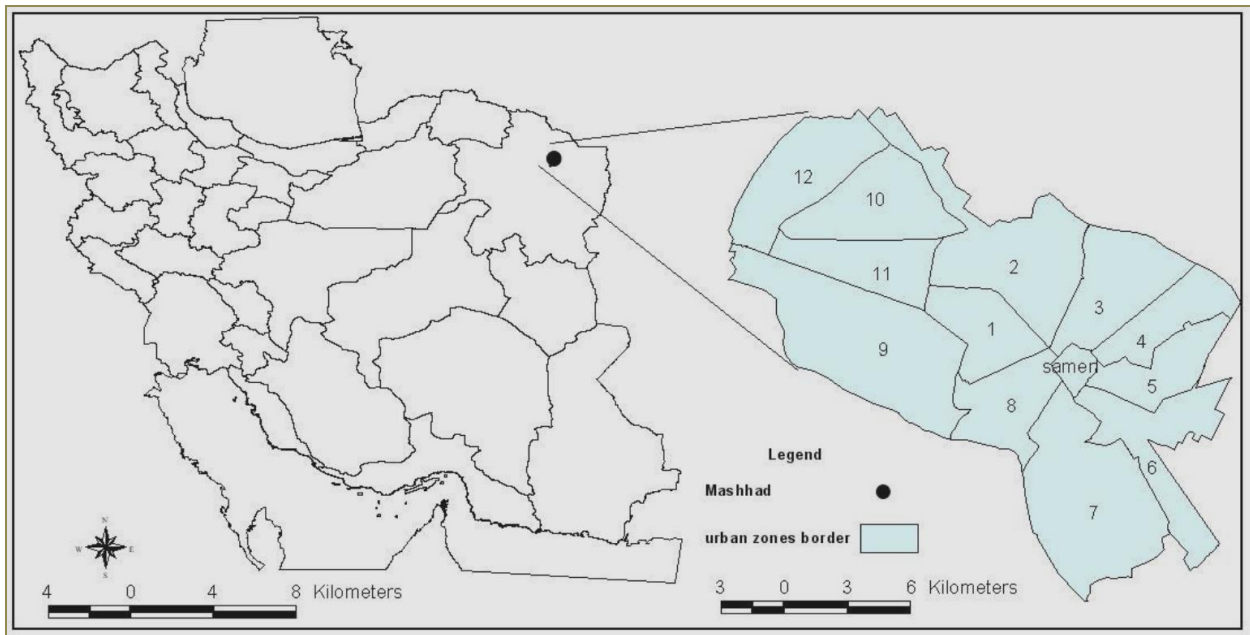


Fig. 2. Map of case study region.

Resource: Authors adopted of Zanganeh & et al, 2013.

4. Material and Methodology

The research method we have used is based on the descriptive-analytical approach. We have used a documental method to collect information in order to determine the development degree of the studied

counties of this province. According to the importance of indices and our limitations in having access to them, 10 variables were collected in the form of mixed land use, education, population density and etc indices.

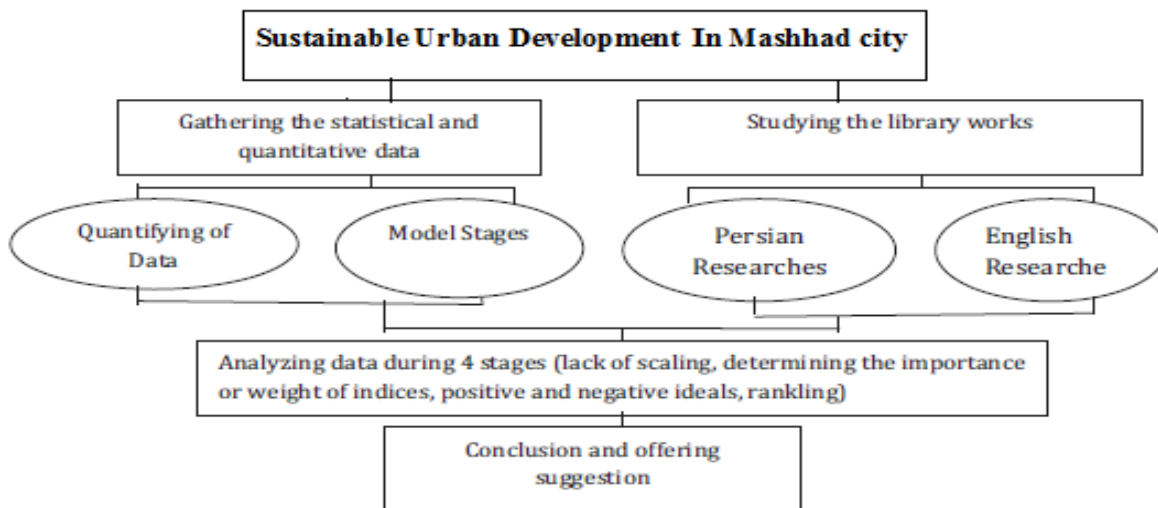


Fig. 3. The conceptual diagram of research plan.

5. Results

5.1. Mixed Land use in Mashhad city

Mixed land use accommodate more than one type of land use functions like residential, commercial, recreational, office etc. in a specific area. Land use balance can be achieved through mixed zoning rather than segregated zoning as advocated after industrial revolution. The zoning should endorse housing, retail, workplace and leisure hub to exit in close proximity. According to bell, mixed use development in Mashhad is gaining importance due to three reasons as: a) public

policies and norms promote the stakeholders to adopt mixed use to safeguard the pressure on infrastructure, b) sense of belonging, interaction and community living increases in these development, c) it facilitate the use of non-motorized travel mode and reduces the trip length. Mixed land use is influenced by the factors like the density, type of mixing, prevailing socio-economic condition of the community, availability of the various transportation mode, etc. Change in these factors can have a positive or negative impact on the mixed land use in Mashhad city. Thus, there is a need to evaluate the impacts of these factors.

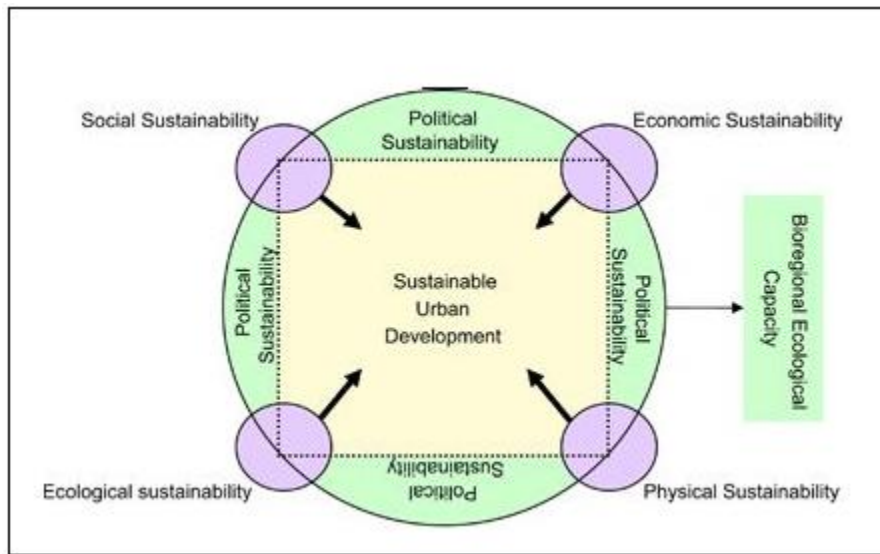


Fig. 4. Principles of Sustainable Urban Development in Mashhad city
Resource: Authors, 2013.

In Mashhad city development and its factors are very different with other countries and other regions of Iran, for example some part of Iran country such Kurdistan, Hamedan and etc. places had a new urban context in belong of their old buildings or in separate of them but in case study region both of old and new urban context are

mixed with each other and it isn't possible to separate of each other and they need to regeneration. In order to the mixed land use issue in Mashhad have a special status and it need to accurate programing in short, mid and long time.



Fig. 5. Type of mix land use in Mashhad city
Resource: Authors, 2013.

With attention what we said in above the best pattern for best sustainable urban development in case study region is moving to new approaches of urban growth such smart growth, compact city and car free city of the future that with attention to equation (1) we will have:
Equation (1): $R = ((p_{0+1} - P_0) / p_0) \cdot 100$

P_{0+1} =Final year, p_0 =Initial year
Then, calculated the relationship between distance from city center and socio-economic variables to nature (quantities) of variables and research hypothesis, the relationship between variables have been done by SPSS and ARC.GIS software's.

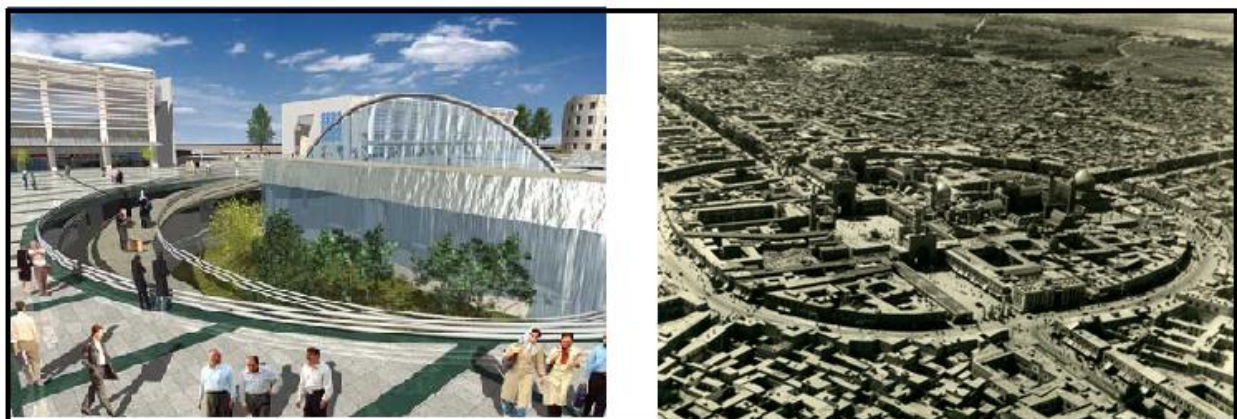


Fig. 6. A view of Mashhad city in different periods
Resource: Authors, 2013.

Equation (2): $Y = c + a(x_1) + b(x_2) + \dots + n(X_n)$

Which in this equation:

Y=Dependent variable,
 c=Constant,
 a and b=coefficient,
 x_1, x_2 and x_n =Independent variable.
 Also with adding above formulation to below relation (equation 3), the significantly meaning rate is 2.476.

(3) These amounts measured for the mentioned matrix as: $d+1=0/288, d+2= 0/308, d+3= 0/210, d+4= 0/239, d+5= 142, d+6=0/273, d+7= 0/210, d+8= 0/307, d+9= 0/338, d+10= 0/267, d-1=0/067, d-2= 0/067, d-3= 0/211, d-4= 0/222, d-5= 0/229, d-6=0/133, d-7= 0/241, d-8= 0/069, d-9= 0/054, d-10= 2.476.$

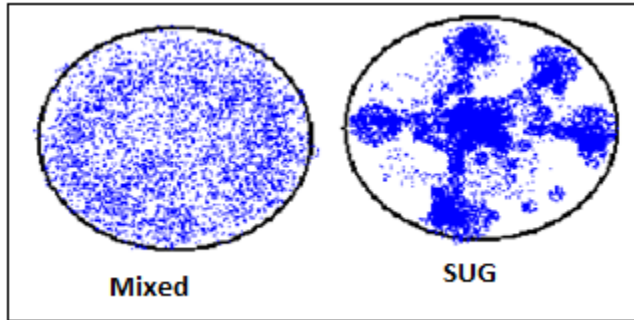


Fig. 7. Suggest pattern to SD in Mashhad city
 Resource: Authors, 2013.

5.2. Population density change and SUD in Mashhad city

Mashhad's population has increased from 241998 in 1951 to 3732456 people in 2013. Overall population growth in this period is equal to 14.5%. Average growth

in the statistical areas is 7.4%. Minimum annual population growth is -2% (5 statistic areas), and maximum equal to 78%. Following figure shows the results. As it can be clearly seen in the map, positive changes of population have occurred on the edge map.

Table 1
 Population density and its change in different zones of Mashhad city in 2012:

Mashhad Regions	Total population	Male to female ratio	Mean age (years)	Family size	Population density (thousand sq.m)
1	176104	94.8	35.3	3.2	11.76
2	485833	98.8	28.7	3.2	14.98
3	322018	100.3	28.2	3.4	93.929
4	244944	100.2	27.6	3.4	144.107
5	168876	100.1	27.2	3.4	12.03
6	253963	99.9	27.3	3.4	17.32
7	206968	102.2	28.2	3.4	4.24
8	940040	97.8	33.5	3.2	5.84
9	300246	100.4	31.4	3.4	6.77
10	246523	109.7	29.4	3.1	12.2
11	192223	103.6	33	3.6	12.2
12	39636	97.1	26.6	3.5	1.84
Samen region	16884	106.7	32.3	3.4	4.72

Resource: Authors, 2013.

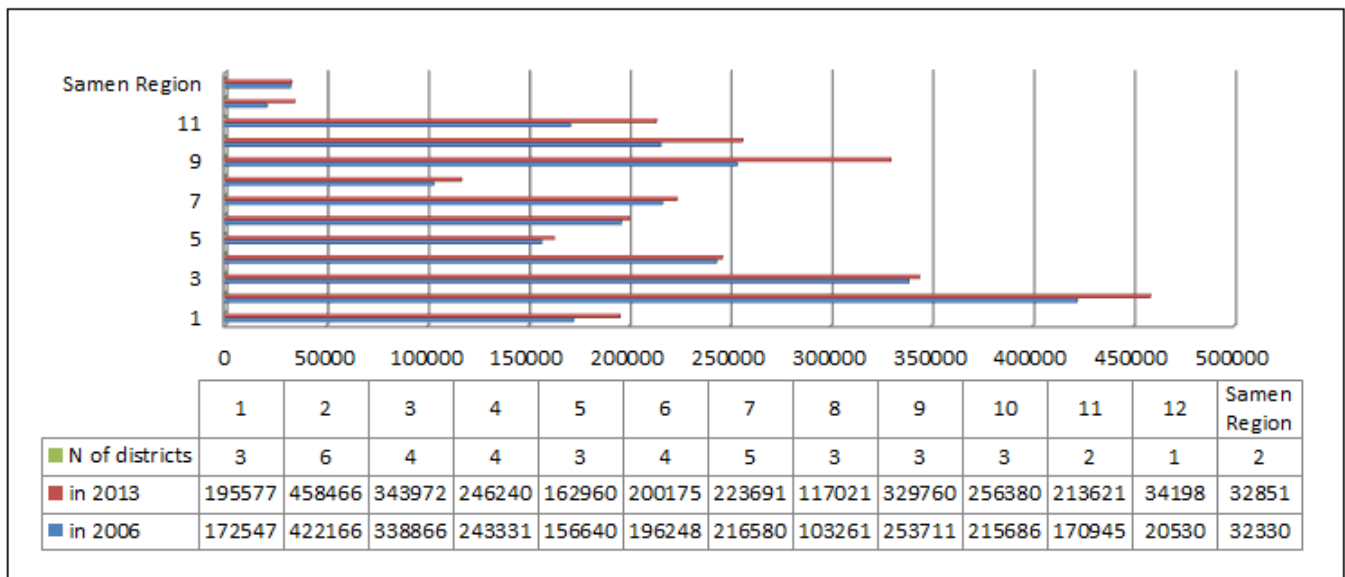


Fig. 8. Comparison of population & districts changes in Mashhad city between 2006 and 2013.
 Resource: Authors, 2013.

5.3. Education factor and income for SUD in Mashhad city

In Mashhad education for sustainable development allows every human being to acquire the knowledge,

skills, attitudes and values necessary to shape a sustainable future. Education for sustainable development in case study region means including key sustainable development issues into teaching and

learning; for example, climate change, disaster risk reduction, biodiversity, poverty reduction, and sustainable consumption. It also requires participatory teaching and learning methods that motivate and empower learners to change their behavior and take action for sustainable urban development. Education for Sustainable urban Development consequently promotes competencies like critical thinking, imagining future scenarios and making decisions in a collaborative way. In order to assessment of the importance of educational factor and family income dial in sustainable urban development in Mashhad city, we have used of Pearson coefficient to access this purpose. Results show that

correlation coefficient couples of variables in Mashhad city in equal situation was 0.672 that means the correlation between household income and education in different regions of Mashhad are vary. Also the ratio of capital income to restricted educational inequality was equal to -0.61. Correlation between the two variables of income inequality and educational inequality was 0.317. With attention to fig (9), we understand that region 4 has a suitable status rather anther region of Mashhad city. Also average education Gini coefficient in highest level is equal to 0.0561 ($R^2 = 0.0561$) and income Gini coefficient in lowest level is 0.0516 ($R^2 = 0.0516$).

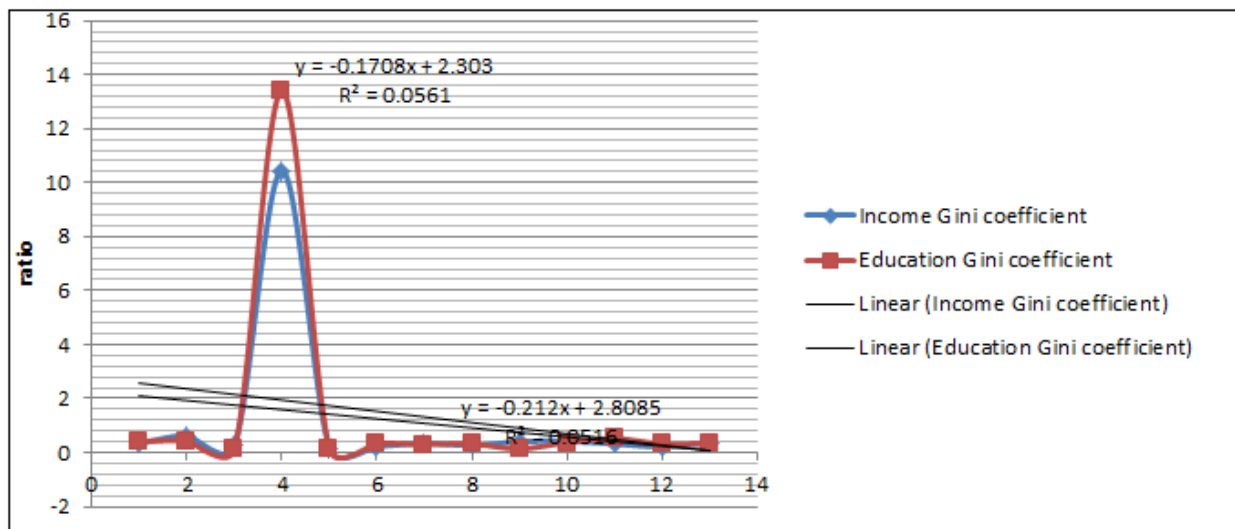


Fig. 9. Comparison of income Gini coefficient and education Gini coefficient in Mashhad city
Resource: Authors, 2013.

6. Conclusion and Suggestion

Mashhad city, the second most populous metropolitan area of Iran suffers from different challenges in sustainable urban development. Sustainable development is necessarily urban development is not immediately obvious. In fact, sustainability and the 'green architecture' movement have utilized an implicit but persistent connection to rural imagery (open spaces, wind farms, plant materials for shading and food, and temporary or easy-to-recycle construction techniques) that belies the importance of urbanization to the emergence, and continuation of civilization. Some of these challenges consist of:

1. Multipolar urban management in Mashhad city has been make different problems for this city (Astan Quds, Municipality, military organizations and Legal rules Islamic religious).
2. Collusion between the various institutions which involved in the urban management is another factor of inefficient systems of urban development in Mashhad city.
3. Non- cooperative urban management in Mashhad city especially in marginal areas has created serious problems for sustainable urban development.

Also in study region physical infrastructure in addition to social and economic processes must evolve to acknowledge the challenges of growth. Sustainable development has been defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. However, sustainable urban development implies a process by which sustainability can be attained, emphasizing improvement, progress and positive change, incorporating both environmental and social dimensions. Sustainable urban development highlights the need for reform of market mechanisms to achieve environmental goals and the achievement of a balance with social and economic considerations. Also we can present some solve ways as below:

1. Moving towards strategic urban planning in Mashhad metropolis management;
2. Decentralization of urban management institutions and attention to citizen's cooperation in the municipal autonomy of Mashhad city;
3. using the experiences of other countries on sustainable urban development;

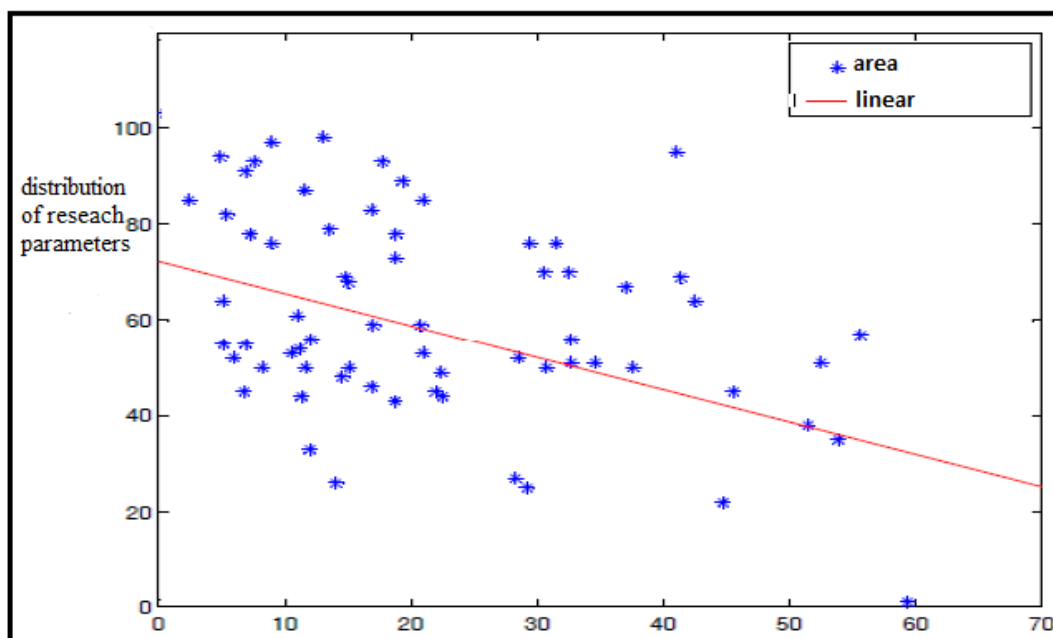


Fig. 10. Distribution of research parameters in Mashhad city
Resource: Authors, 2013.

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