

Using Current Condition of Cities to Change them to Dynamic Cities – Case Study of Rasht, Guilan, Iran

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1 ABSTRACT

Today, due to increasing importance of preserving energy resources and using alternative energies, employing potentialities of cities to change them to dynamic cities is one of the major challenges in the modern world. Finding these potentialities and suitable usage of them helps us not only in preserving more non-renewable energies but also lets us have more clean air and meet our public needs by using clean energies. Rasht is one of the cities in north of Iran, surrounded by mountain and sea, has a moderate climate and fertile farm-lands.

This article examines the possibility of changing Rasht in to a dynamic city considering its current condition and geographical location. The overall aim of the research is to offer a model for a dynamic city which includes major characteristics such as supplying its heat, electricity, and even food with the least damage to natural environment and preserving its non-renewable energies.

2 INTRODUCTION

Cities in traditional societies especially in Iran were built according to sustainable and dynamic patterns. Variety of cities' structures show the complete adaptability to their surrounding environment. The main core of traditional cities was built around traditional markets. Beside such traditional markets, there were some other places called districts which were the place people used for social interactions and economic transactions, so districts played a major role in cities vitality and freshness. Due to several changes in cities throughout ages and as people-oriented cities replaced by machine-oriented cities, life-style underwent some changes as well. Constructing streets which had been adapted to different sizes of vehicles and new definitions of modern life from political, social, economic and cultural aspects resulted in dramatic changes in cities. However, unfortunately, what was ignored in constructing new cities was the importance of natural environment: huge constructions, big communication networks, mechanization, and environmental pollutions brought severe damages to the world during the last century. Irreversible fuels consumption and ecosystem demolition made city planners offer new patterns to rescue cities.

Sustainable theory is one of the most universally acknowledged theories today. World Natural Environment and Development Committee definition is as such:

"Meeting the current needs of people without jeopardizing the abilities of future generations for satisfying their demands." (Jin kim and Rigdon, 1998)

This article aims at analysing the concept of a dynamic city. Indeed, it should be noted that dynamism is more than sustainability. In other words, apart from sustainability, dynamism includes climate condition and ecosystem. The inhabitants of a dynamic city have continuous social and economic activities and employ the whole city potential to develop such vitality and dynamism. The concept of dynamism can be recognised when food production and citizens' participation would be considered from all aspects.

One of the metropolitan cities in north of Iran is Rasht. Due to its climate condition and geographical location, Rasht has extraordinary potentials. So, the major attempt in this article is to focus on Rasht potentials in order to change it into a dynamic city, and then, a suitable plan will be offered to save its natural environment, to satisfy its habitants and to meet their daily needs.

3 DYNAMIC CITY

Population explosion, climate changes, excessive consumption of irreversible fuel recourses and environmental pollution are one of the biggest and most challenging problems in metropolitan cities in the world.

According to one estimation, 90% of the world population growth is in cities (Denig, 2010). Also, it is said that 75% of world energies is consumed in the cities of which 40% is used in buildings (Stampfl, 2010). Despite the fact that cities occupy less than 1% of the earth, they are the major reason for climate changes and water consumption (60%) (Denig, 2010). Nevertheless, the overall policies of a city should be in line with its improvement or even change to bring social and economic welfare to a society.

3.1 Characteristic of a dynamic city

A dynamic city is a kind of city which employs the most un-destructive of its minimum potentials. In other words, a dynamic city provides its habitants with best social services such as social welfare, supports their financial interests, and consumes the minimum amount of its energy resources by co-operation between its people and government and improving its infrastructure. One of the main features of a dynamic city is its productivity. For example, supplying food is one of the most important goals in cities. These products are transported from villages or countryside. For example, in highly populated countries like China and India, which enjoy urban life, the demand for food increases constantly. Then, unsurprisingly, a city is dynamic when it would be independent in its food industry and sustainable in its food chain. Habitants of a dynamic city are the producers of their own food, produce the minimum amount of waste, and the minimum waste of energy. Besides, the future development of a dynamic city should be efficient and in accordance with its dynamism plans in a way that its habitants ought to be able to adapt to the unexpected conditions. All districts are equipped with intelligent building systems in a dynamic city which are controlled by municipality.

Indeed, such coordinated system can manage all the district and regional crisis, such as traffic, in emergency situation. According to the given definition, a dynamic city is build based on the pattern of districts of traditional cities employing modern information and communication technology. One of the advantages of such a city is the interaction between its inhabitants and policy makers.

In fact, such intelligent systems can satisfy all basic needs of districts, and manage traffics and emergency situations.

Overall, the major goals of a dynamic city are:

- (1) Preserving and developing green nature in a city (i.e. in parks, districts, green buildings, etc.).
- (2) Optimizing energy consumption (a minimum consumption of irreversible energies, a maximum consumption of reversible energies).
- (3) Consuming water in a sustainable cycle and its recycling
- (4) Minimizing industrial and household waste
- (5) Managing transport system in a suitable way especially according to reversible energies.
- (6) Preserving natural environment and reducing destructive effects.
- (7) Producing food in cities and using fertile farm lands.
- (8) Employing intelligent information and communication technologies for optimum functioning of cities.

3.2 Samples of sustainable cities which can be changed to dynamic cities

Some countries have taken some measures to change their cities to sustainable cities. As mentioned above, some of the characteristics of a dynamic city are its productivity, adaptability to nature, capability for optimum improvement and development which if they will be applied to a sustainable city it can be changed into a dynamic city.

For example, Australia has taken some measures in order to build some cities based on a green environment and to meet its social and economic needs (URL 1). Similarly, Germany, Sweden and Holland have taken some approaches towards their future cities such as suitable consumption of energy resources, clean transport system, healthy productions, reducing green-house emissions, some national TV and radio programmes to make people save energy and preserve their natural environment and developing open air spaces (Peric and Furundzic, 2010), also the Caofeidian city in Tangshan in China, Luadian town in Shanghai, and Hammarby sjostad in Sweden are Eco cities which are supposed to be built based on suitable natural environment and sustainable development patterns (URL 2).

3.3 Which cities can be changed to dynamic cities?

Historically speaking, a good city is built according to its vernacular, cultural and historical features. Furthermore, those cities which have suitable structures make a balance between traditional characteristics and environmental goals. These ever-lasting cities are typically protected (Mahmoudi and Fanaei, 2009).

As a matter of fact, even if all necessary potentials such as climate condition, suitable natural environment, and energy resources are not available, high social interactions and cultural levels of habitants in accordance with determined policies will enhance the dynamism of a city. In a sense, finding some ways to adapt with surrounding environment is part and parcel of a dynamic city. So, if the aforementioned features are available in a city, it will have more efficiency. Generally speaking, it is possible that each city to be changed into a dynamic city. To do so, recognizing its potentialities and infrastructure planning are essential. Such various conditions are possible in many cities in Iran.

Rasht, the capital city of Guilan province in north of Iran, has the potentiality to be changed into a dynamic city thanks to its suitable climate condition, and natural environment. Obviously, if such potentials will be recognized based on sophisticated studies and policies, the city can fulfill the objectives of a dynamic city.

4 RASHT LOCATION

Rasht is the capital city of Guilan province in north of Iran. Rasht is located in 49° and 36' by east, 37° and 16' by north GMT near to Caspian Sea. (Fig.1)



Fig. 1: Rasht location

Rasht lies on a steady slope from south to north and is surrounded by two rivers called Siahrud and Goharrud both of which flow down into to Anzali lagoon. Because Rasht is located along Alborz Mountains from south, Caspian Sea from north, prairies on the east and west, has special climate condition. To be more precise, because of Rasht's Mediterranean changing temperature, and humidity the difference between night and day temperatures is insignificant. Also, the amount of precipitation is 2000mm in Rasht (Taheri, 1996).

5 RASHT: PROCESS OF BUILDING

It is said that Rasht was a big village surrounded by a jungle. While visiting Rasht in King Safavid time(1637), Adam Olearius¹ describes that the houses are hidden behind trees in a way that when one steps in the village it is as if s/he enters a jungle. Jacque Demorgan² says that city is lost amidst its branches and leaves (Taheri, 1996).

The first residential areas were randomly located in gardens and farmlands and mostly built around religious places in Rasht. Later with the city economic and market development the districts which were separated by

¹ A German scholar, mathematician, geographer and librarian.

² A French mining engineer, geologist and archaeologist.

small rivers disappeared and replaced by residential areas. Generally, the city has a main core shaped like spider web where all road networks lead to the main core.

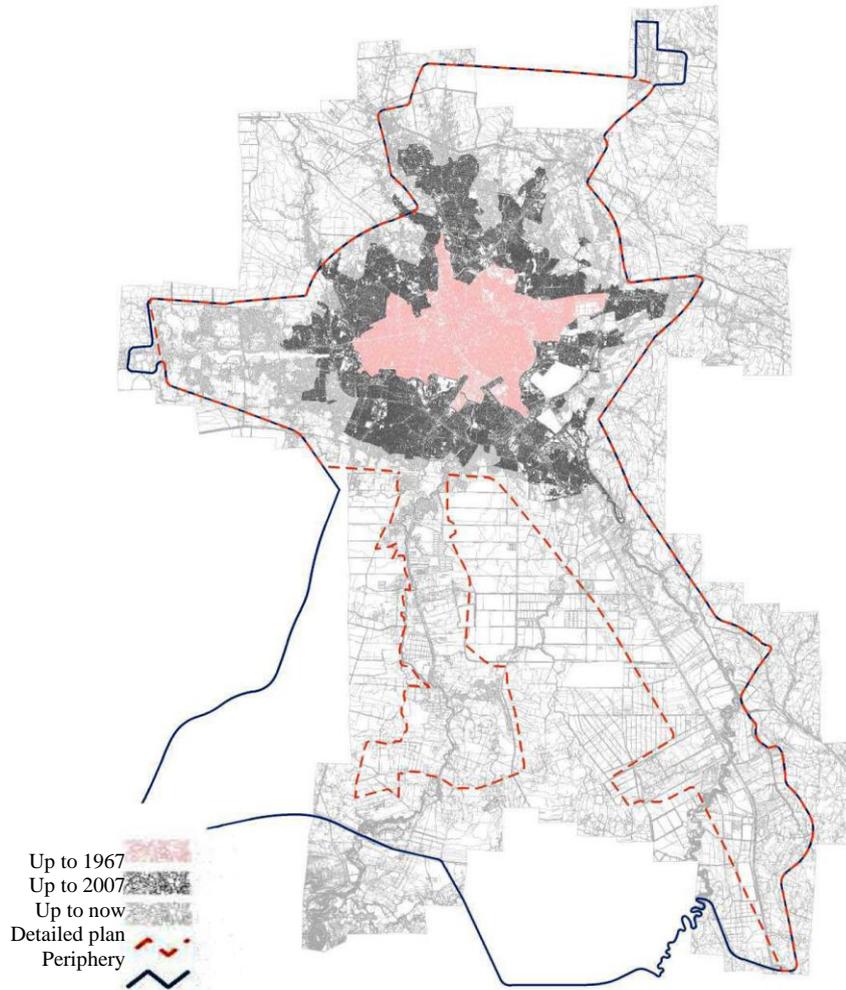


Fig. 2: The process of Rasht development (Rasht master plan, 2008)

Rasht municipality building was built in 1863 and it was considered as the city centre since all main streets led to it. One of the city's first greenery was City Park with 144000 km² beside Guharrud River and Sabze Meidan (Green Square) park with 15000 km² which were nearly located at city centre.

6 CURRENT SITUATION OF RASHT

According to Statistical Centre of Iran the number of population in the city in 2006 was 633940. In comparison to its total land area, Rasht has high population density due to its suitable climate condition and consequently organising the population led to spreading of the city (URL4). The growing population has destructive effects on natural environment such as farmlands and gardens and they are replaced by consuming buildings. In the same way, the current green environments do not play any major role in its urban space. Figure 3 shows the current green nature condition in Rasht.

It is needless to say that overall development of Rasht during recent years led to constructing many streets and avenues, which due to lack of suitable infrastructure for public transport system, result in using private vehicles, heavy traffic congestion and pollution. As it was mentioned earlier Rasht was located between two rivers which had clean and fresh water. However, because of urban development two rivers flow through the city now and since there are no suitable sewerage systems all waste are charged in these rivers and as a result they are highly contaminated.

Overall, the most important problems of the city are:

- (1) Natural environment pollution especially of surface water and ground water pollution.
- (2) Wide-spread urbanization, immigration, and marginalization.

- (3) High rate of unemployment.
- (4) Lack of public transport infrastructure.
- (5) Ineffective traffic rules.
- (6) Old public transport systems.
- (7) Uneven distribution of water for agricultural, industrial and domestic consumption.
- (8) Lack of implementation of urban sewerage and waste recycling.

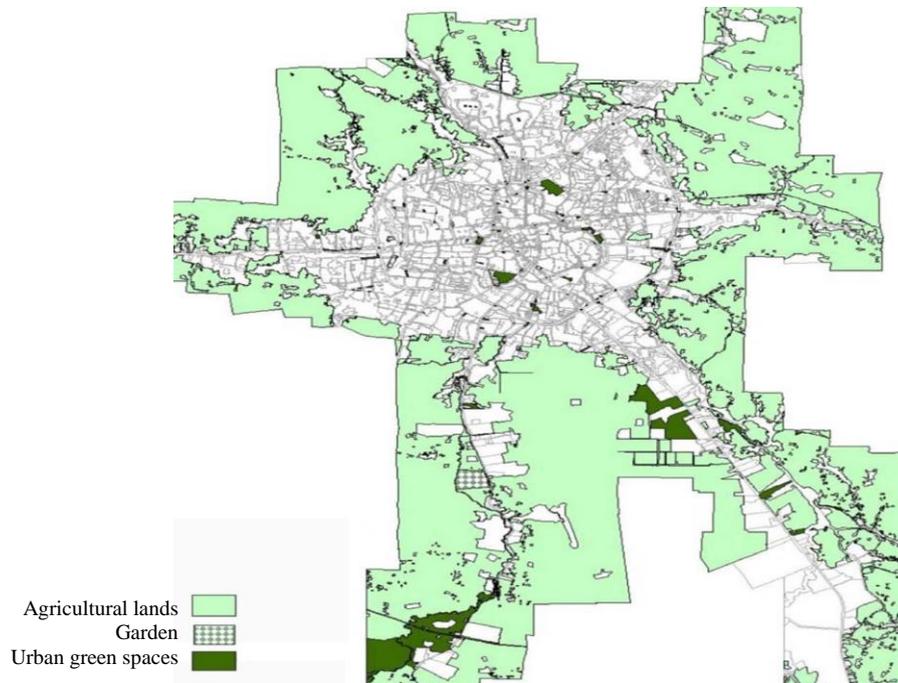


Fig.3: Current urban green nature condition in Rasht (Rasht master plan, 2008)

7 ANALYSING RASHT POTENTIALITIES IN ACCORDANCE WITH ITS DYNAMISM

Rasht enjoys a suitable climate condition and geographical location such as fair weather, fresh water, and rich soil. For instance, if there will be a barren land because of regular seasonal raining some plants grow naturally. As a result, with efficient planning, these lands can be used effectively in order to provide the inhabitants with new jobs. Economy of the city is based on agriculture and since Rasht is the capital city of Guilan province, offering services play an effective role on its economy. However, the sole reliance on agriculture makes organizing agriculture industry necessary (Nikouye,2008). Being located next to sea, variety of animal and plant species are part of those suitable features which apt Rasht to reach objectives of a dynamic city. It is clear that rivers are important factors in a city. If they would be cleaned and used effectively they can play a major role in food production (aqua-culture). Similarly, rivers can be the best spot for tourist attraction which can bring prosperity to the city from economic point of view.

During recent years separation of urban sewerage from surface water, gathered from rainfall precipitation, has been finalized. If such plans would be fully implemented it should be said that some primary measures have been taken for improvement of current situation. One of the strong points which improves the current situation of the city and changes it into a dynamic city is the co-operation of all inhabitants. Fortunately, the historical, cultural, social, and scientific backgrounds of its inhabitants show that they welcome such plans. In comparison to other cities, people from Guilan are well known for their social and cultural activities and people interactions have continuously improved in different issues.

8 SUGGESTIONS AND SOLUTIONS TO CHANGE RASHT INTO A DYNAMIC CITY

As far as Rasht has the most potentialities for dynamism, a sophisticated investigation, proper aims, basic planning, and applicable efforts can be considered as features which can change the city into a dynamic city with clean air and natural environment. For so doing, some suggestions can be made:

- (1) Trying to preserve the green environment of the city: green nature apart from its growth and dynamism can trigger the sense of vitality and freshness in a society. Consequently, preserving and developing urban green environment is the first step for building a dynamic city.
- (2) Monitoring different districts by using information technology: providing social security to all inhabitants with suitable quality and updating necessary information.
- (3) Using green buildings in the city which gives a significant outlook to the city and its dynamism:
Green roofs and terraces can be good places for neighbours' interactions. They also can be suitable places for planting vegetables and fruits. Green walls can function as a heat and noise insulator, so they can reduce energy consumption, add to urban space beauty, and help to dynamic and live context of the city.
- (4) Cultural programmes to encourage inhabitants to preserve fruit trees and vegetables.
- (5) The minimum use of irreversible energies (using light absorbing windows and supplying building energy by photo-voltaic system, and etc.).
- (6) Using recyclable materials and reducing poisonous materials in different industries.
- (7) Equipping buildings with collecting rain water system and using it for watering green nature: regarding annual rainfall in Rasht, it is a main resource for life. Collecting and keeping rain water and re-using it in agriculture industry and flash tanks are necessary.
- (8) Separating, packaging, and recycling urban waste: to do so, the separation process should be started in houses and special places should be considered in each district.
- (9) Managing water consumption, water purification, and recycling for urban consumption (irrigation, and etc.).
- (10) Developing public transport system using reversible energy resources in order to reduce using private vehicles, air pollution, and traffic congestion.
- (11) Cleaning rivers in Rasht and enhancing aquaculture. Building parks next to rivers so such ecosystem can establish a peaceful relationship between inhabitants and different kinds of animal species: apart from beauty, such plans can encourage healthy activities and exercises. Moreover, the polluted rivers can be for the economic purposes. . Cleaning river plan is carried out by two organisations, Municipality Organisation and Department of Environment. Avoiding sewage to flow to rivers, cleaning rivers, and landscaping plan along rivers will help preservation of ecosystem.

9 CONCLUSION

Inhabitants of metropolitan cities spend most of their time in closed official or residential spaces. While passing the streets pedestrians just see high-rise buildings or even have no time to take a glance at all. Inhabitants are not satisfied with such life style. Consequently, despite scientific progress and technology, such cities are not dynamic. This is why decision makers, policy makers and politicians are seeking new ways to overcome those problems especially in big cities. Indeed, the major applicable items discussed in this article can play a major role in healthy life of human being. The experience of traditional cities is best examples of peaceful relationship between human being and nature in all over the world. So, combinations of traditional patterns with new technologies are of great help. In this regard, paying attention to cultural aspects is of highest importance. Moreover, taking suitable cultural measures and spreading the culture of building dynamic cities make the public participation possible in order to achieve goals.

10 REFERENCES

- 1 Deelstra, Tjeerd.and Girardet, Herbert: Urban Agriculture and Sustainable Cities, Publisher: Deutsche Stiftung, 2000.
- 2 Denig, Stefan: sustainable Cities.In: REAL CORP 2010, pp.1283-1289.Vienna, 2010.
- 3 Jin kim, Jon.and Rigdon, Brenda: Sustainable Architecture Module: Introduction to Sustainable Design.The University of Michigan, 1998.
- 4 Mahmoudi.Anahita.and Fanaei, Kamyar: Finding New Patterns to Design Sustainable Cities by Use Traditional Urban Patterns.In: REAL CORP 2009, pp 693-703.Sitges, 2009.
- 5 Ministry of Roads and Urban Development: Rasht Master Plan.Rasht, 2008,in Persian .
- 6 Newman, Peter: Sustainable cities of the Future, the Behavior Change Driver.In: Sustainable Development in the Urban Environment, Vol.11, Issue 1, 2010.
- 7 Nikouye,Mahmoud: Rasht Rain City,Nashr-e Farhang-e Ilia,2008,Iran.

- 8 Peric, Ana.and Furundzic, Dailo: Strategies for Sustainable Cities: ClimateChanges as a Generate of Development Planning Policies-Belgar Example.In: REAL CORP 2010, pp.675-681.Vienna, 2010.
- 9 Stampfl, Brend: Green Building for Sustainable Cities, In: REAL CORP 2010, pp.1107-1108.Vienna, 2010.
- 10 Taheri, Ali: Tourist Guide in Guilan, Vol.1, Pouyandeh Tehran Publisher, 1996,in Persian.
- 11 Unsal Gulmez, Nilay.and Ulusu Uraz, Turkan: Vernacular Urban Fabric AS a Source of Inspiration for Contemporary Sustainable Urban Environments: Mardin and the Case of Mungan House. In: International Conference, Rotterdam, 2007.
- 12 URL1:www.aph.gov.au, Sustainable Cities 2025: A Blue Printfor the Future, House of Representatives StandingCommittee on Environment and Heritage.
- 13 URL2: www.swecogroup.com, Sustainable City Development, SWECO Sustainable Engineering and Design.
- 14 URL3- www.unep.org, Melbourn Principles for Sustainable Cities,United Nations Environment Programme,Devision of Technology.Industry and Economics,International Environmental Technology Center.
- 15 URL4- www.amar.org.ir