The Role of Urban Inhabitants in the move towards low carbon cities

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1.Introduction

Today, more than 69 percent of Iran's population are living in urban areas. There are various stages of transition from traditional state to modernity in Iran. Many of the cities are currently the fossil-fuel consumers, land-devours and waste producers. Urban pollution at the outset of the third millennium relentlessly threaten humanity's very existence. Consequently, fighting the deleterious effects of economic and industrial actions on the environment and seeking ways to compensate for these damages comprise an important part of governmental dialogue.

Carbon monoxide with the chemical formula CO, is a major atmospheric pollutant in urban areas. It is a colorless, odorless and tasteless, yet highly toxic gas. Carbon monoxide is chiefly from exhaust of internal combustion engines (including vehicles, portable and back-up generators, lawn mowers, power washers, etc.), but also from improper burning of various other fuels (including wood, coal, charcoal, oil, kerosene, propane, natural gas, and trash). The carbon monoxide is a major industrial gas that has many applications in bulk manufacturing.

Article 50 of the Constitution of the Islamic Republic of Iran, is considered a public duty to protect the environment where the present and future generations are to have a thriving social life. Thus, any form of activities, whether economic or otherwise, that causes pollution of or irreparable damage to the environment is prohibited.

Moving toward low carbon city is a major contribution to better urban management and planning for both citizens and the environment. The basic problem in managing environmental resources is the problem of incentives. The functions of living environment are strongly influenced by inhabitants' ideas or their social agreement. The requirements among inhabitants for planning have become complicated and also become difficult to built consensus among them.

Environmental resources are often such that it is not in the best interest of individual to act in a way that is a best for the society at large. The basic objective of environmental policy is to create an economic environment in witch the incentives are correct, that is, to create an organization in which it be in the best interest of individuals, households, local communities, and, etc..

Iran's government has played an important facilitating role in promoting the reform process. It has assisted local governments to cooperate with people in different field specially in protecting the living environment. This activity is a means to achieve environmental protection, such as

moving toward low carbon society. Shiraz city in the south of Iran has special significance for its culture and traditions. It is one of such cities that need to move toward low carbon society.

This study is based on concept of people's participation. This study is directed to find the willingness of inhabitants to participate in moving toward low carbon city. To accomplish this purpose, this paper is organized as follows; after the introductory in Section I, the case study is introduced in Section II. This is followed by explaining the methodology in section III. The result of the study is shown in Section IV, and finally the conclusions are presented in Section V.

2. The case study:

Shiraz lies in a pleasant green valley of temperate climate surrounded by mountains, and has a sufficiency of running water and underground streams, and not many arid and uncultivated areas can be seen around Shiraz. The climate of Shiraz is extremely agreeable and generally temperate. The Shiraz spring and autumn, especially from the beginning of February until May, and the months of October and November are most delightful and exhilarating, and poetically inspiring, and few tourists, travelers in the east, and poets, whether Persian or foreign, who have visited Shiraz, have failed to be impressed by the spring and autumn climate and scenery there.

Shiraz is situated between the 29th and 38th degrees of longitude, and between the 40th and 52nd degrees of latitude, and is 1500 feet above the sea. The population of the town according to a recent census(2006) was about 1263244 people, and this figure is increasing year by year. Shiraz city is continuing to grow in size and economy, with increase demand for energy, food, mobility, & trading.

Nearly 68 percent of Shiraz carbon Monoxide emissions come from vehicles. The average age of its vehicles is 13.5 years which 34.6 percent of the vehicle's age are more than 20 years. Table one shows source of CO emissions from different kind of vehicles in Shiraz in 2003.

Table 1: Source of CO emissions from different vehicles in Shiraz 2003 (Percent)

Source	**CO**
Privat Car	35
Taxi	46
Motorcycle	9
Van	10
Total	100

Source : DoE Annual Report (2005)

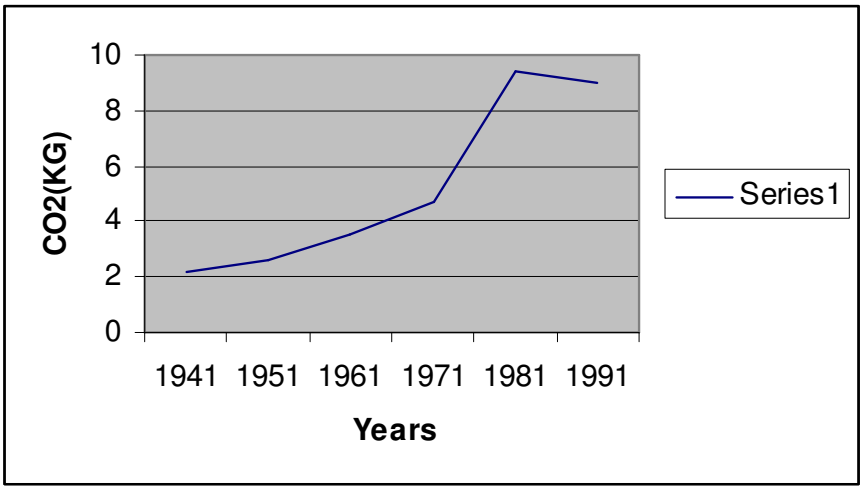
The report of the department of environment (DoE) in Shiraz shows that the emissions of carbon Monoxide decreased by 11 % per inhabitant from 2001 to 2003. Table two shows carbon Monoxide emissions per inhabitant from 2001 to 2003.

Table 1: Carbon Monoxide emissions per inhabitant from 2001 to 2003 in Shiraz(KG)

Year	CO
2001	174.2
2002	165.8
2003	155

Source : DoE Annual Report (2005)

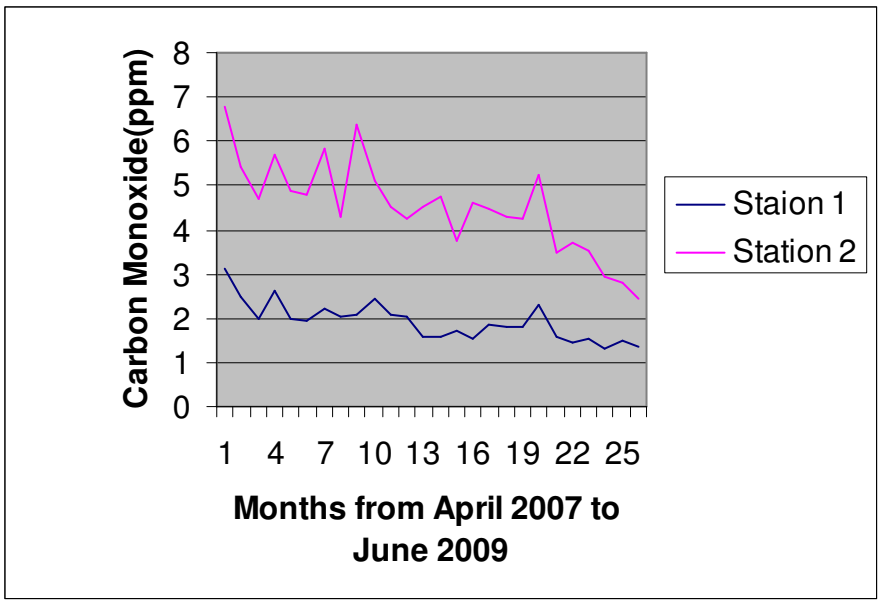
Dr Ebtegar has estimate the trend of Carbon Dioxide emissions per inhabitant from 1941 to 1991(Ebtegar, 1994) in Shiraz. The result is presented in figure one.



Source Ebtegar, 1994

Fig. 1. Trend of Carbon Dioxide emissions per inhabitant from 1941 to 1991 in Shiraz

Figure 2 shows Carbon Monoxide in two important stations in Shiraz from April 2007 to June 2009.



Source : DoE Annual Report

Fig. 2. Trend of Carbon Monoxide in two important stations in Shiraz

In 1998 the Shiraz Department of Environment formed a “Participation Bureau” to assist environmental non-governmental organizations (NGOs). The bureau provides legal counseling and logistical support for NGOs. The establishment of this bureau is in the direction of government policies to promote public participation in environmental affairs. Besides one of the most important responsibilities of this deputy is to promote public participation, which is some of the major activities, can be summarized as follows:

Providing legal and financial counseling for non-governmental Organizations.

Initiation of interactive relations with environmental NGOs;

obtaining their views and suggestions through reciprocal dialogue as well as supporting them and encouraging the establishment of new NGOs covering a wider range of interests.

3.Study Methodology

At the beginning of the last decade of the Twentieth Century, there was much talk of the role for people participation in different activities. The questions regarding people roles in low carbon is, " What is the effective policy in influencing efforts to create conditions that foster greater popular participation in the move toward low carbon city?".

What respondents say in the questionnaire is also what they believe as well as what they have experienced. When investigating about the move towards low carbon cities, what the officers working related to urban development is very important.

Data reported for this study were collected using questionnaire surveys. The design of the survey questions and methods for conducting this research closely follow Dillman's Total Design Method (Dillman 1999). This methodology involved designing a survey that is relatively easy to complete. The population of interest in this study included officers of the housing and urban development office and Shiraz municipality and Shiraz Department of Environment. The sample was obtained through a random Survey Sampling.

By using the questionnaire data, the role of people on moving toward Low-Carbon cities were identified. The questionnaire carried out in this study consisted of 15. The questions were presented in either a short answer or multiple-choice format. 30 officers. were asked to answer the survey questionnaire. The questionnaire survey carried out from 20th of February; 2009; until the 28th of February; 2009. The questionnaire method was the direct interviewing method.

The following questions are some of the questions were asked:

Do activities related to the move towards low carbon cities have improved in last 5 years?

If we are to put Shiraz city on a lower carbon path, what kind of the actions will form part of the solution?

What will cause peoples' support and active participation in the move toward low carbon city?

What are the practical methods in this regard?

What kind of organizations can be suggested to increase people's participation?

What is the government's role?

Does level of price affect behavior acceptable toward low carbon society?

How to make sure that the activities toward low carbon city can satisfy people?

What are their recommendations on moving toward low carbon city?

Are Shiraz inhabitants familiar with the activities related to low carbon society?

In order to analysis the questionnaire. The questionnaire was assessed to see; what is the best way for moving toward Low-Carbon cities. The statistical analysis of the questionnaire is carried out using the EXCEL program.

4. Result of the Study

This section is devoted to the results of the questionnaire. The results which are presented are about the beliefs of respondents. Statistics and information on results focus on the beliefs of respondents**.**

More than 80% of respondents believe that activities related to the move towards low carbon cities have improved in last 5 years. Significantly more respondents believe it is due to people cooperation (88.1%) than of government activities(70.4.4%). (Chi-square = 9.49, sig. at .002).

Significantly more respondents believe that establish of NGO can increase people cooperation on moving toward low carbon society (73.8%) participate in the meeting than of no (chi square = 24.3, sig. at .001).

The information collected concerning opinions about the move towards low carbon cities is influenced by the degree to which urban inhabitants are familiar with it. Question 6 assessed inhabitants' familiarity with the move towards low carbon cities. The results indicate that inhabitants of members in NGO were significantly more familiar than nonmembers (chi square = 4.36, sig. at .03).

A very small number of respondents (5%) were not satisfied with the move towards low carbon cities.

More than 95% of respondents believe that level of price affect behavior acceptable toward low carbon society.

Most of respondents believe that moving towards low carbon cities for Sustainable Development needs social, cultural and value change at an individual and systemic level. It will encourage self-motivation, and will be pro-active rather than reactive.

Some recommendation that obtain from questionnaire is:

Urban inhabitants should be encouraged to be actively involved in the creation of a low-carbon society by reducing carbon emissions.

Because 34.6 percent of the vehicle's age are more than 20 years, most of the respondents believe changing the carburetor of old car will reduce carbon emissions.

Some respondents belive because the job of the catalytic converter is to convert harmful pollutants into less harmful emissions, using catalytic convertor in old car will reduse carbon emissions.

By decreasing electricity consumption, the amount of fossil fuels burnt in power stations, will be decreased. So one of the role of inhabitants can be in reducing the consumption of electrical energy.

Role of inhabitants can be in increasing the use of public city transport

Role of inhabitants can be in changing their gasoline vehicle into CNG vehicle.

Role of inhabitants can be in expanding CNG bus operation

In educational institutions from elementary, junior-high to senior-high schools, environmental education is important toward low carbon society. In this case elementary school is much more important.

However, all types of media including TV broadcasting, radio and newspapers always provide knowledge for establishing a low carbon lifestyle, but in this case TV is much more useful.

5. Conclusions

The study has showed that:

The important roles can be played by urban inhabitants in the move towards low carbon cities and the environmental protection activities. Changing living environment, were upon the cooperation of the urban inhabitant. Cooperation is necessary between the people, the government offices and the professional groups.

Urban inhabitants all radically, are responsible for most of the carbon emissions.They therefore have the power to reduce emissions significantly by making low-carbon choices and decarbonising the way they live.

The pattern described above hopes to challenge assumptions about inhabitant's love of the environment and demonstrate that the people living there will enjoy a far higher quality of life.

Some conclusion and recommendation can be written as Follows:

To move toward low carbon city through planning we must underline the importance of people participation.

The urban inhabitants need to be concerned not only with enhancing the value of living environment but also with the restoration of preserved living environment.

Government agencies should take leading role in adopting low-carbon approaches to solve social and environmental problems.

Enhancing social responsibility of individual contributions toward low-carbon society

For reduction of CO2 emissions from transportation, improving the Public transportation and also traffic congestion management is very important.

Using of natural gas instead of fuel oil.

People should fully understand the advantages of low carbon city, so promotion of low-carbon lifestyle and culture is very important.

Based on the vision of the move towards low carbon cities for Sustainable Development and its role in developing a sustainable society, four broad goals are identified:

To disseminate the knowledge, know-how and skills needed to move towards low carbon cities, thereby contributing to sustainable production and consumption patterns;

To change values, ethics, attitudes, behaviors and lifestyles so as to move towards low carbon cities.

To ensure an informed public – including individuals and groups in the private and public sectors – which will support actions emerging from different sectors aimed at the moving towards low carbon cities.

To ensure an informed policy and decision-making directorate which will take a lead role on the carbon issues, and which will interact with the public to develop and maintain sustainable practices;

References:

Derrick Sewell W.R., public participation in planning, Jojn Wiley Ltd, 1977

Dillman, Don A, The Tailored Design Method, 2nd Edition, Wiley publisher, 1999

Ebtekar, Taqi, "The pattern of thermal energy counsumtion in Iran and its environment impact", 26th intersociety energy conversion engineering conference, Boston, Massachusetts, USA, 1994

Fishbein Martin and Ajzen Icek, belief, attitude, intention and behavior, Addison-Wesley publishing company, 1975

Jenks, M.,Burton, E., and Wiliams, K., The Compact City, A Sustainable Urban Form?, E & FN Spon, London, 1996

Movahed Khosro, a study on the village living environment in the Corbal Region, Unpublished Ph.D dissertation, Graduate School of Environmental Science, Hokkaido University, 1994

Roseland, Mark, Eco-City Dimensions: Healthy Communities, Healthy Planet, New Society Publishers, Gabriola Island, 1997

Winpenny, James, Values for the Environment, Londin, HMSO, 1991

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