

Collaborative planning to achieve a low carbon city in Tehran metropolis

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Introduction

Urban areas as an important factor in enhancing energy consumption and CO₂ emissions are the main sources of greenhouse gas emissions which are occurring in most cities all over the globe. (Herring, 2012), (Zubelzu & Fernandez, 2016). Cities consume 67 to 76 percent of energy and 71 to 76 percent of CO₂, and this amount will increase significantly by 2050. (Van der Heijden, 2016), (Lehmann, 2014) 90 percent of urban population growth occurs in developing countries. Therefore, developing countries are more exposed to climate change. (Feliciano & Prospero, 2011), (Colenbrander, 2015) Carbon footprint in cities depends specifically on factors such as living standards and income, socio-economic development, urban spatial structure and transportation systems, energy technology and local climate change factors. (Feliciano & Prospero, 2011), (Huang and atel, 2016), (Colenbrander, 2015)

The collaborative process builds trust, new relationships, and interpersonal networks, and ultimately strengthens a higher degree of social, intellectual, and political capital among the actors who are being involved. The collaborative planning process creates new and more flexible institutions for the development of the low-carbon city (Agger & Löfgren, 2008). Considering the advantages of collaborative planning including promoting citizen participation, increasing transparency in the decision-making system and employing experts and specialists related to urban areas, this planning was considered by the researcher so that it could be used by the participation and cooperation of all stakeholders in the city in order to move toward integrated management. Tehran is one of the most polluted cities in the world. According to the annual reports of air quality in Tehran (Tehran Air Quality Control Company (AQCC)), it has been declared unhealthy for more than one third of the year during the last two decades. (Shahbazi and at el, 2019)

In this research, we use the requirements of cooperative planning in Tehran due to achieve a low carbon city. Related to the political, financial, environmental and social situations of Tehran metropolis and its potentials to achieve a low carbon city, this city has been selected as a research case. Due to its political aspect, Tehran is the capital of Iran and all political and planning activities are carried out in it. As a result of this fact, this city always examines urban plans in the higher levels of the city, and in fact it is ruled by a top-down planning system. As a result, it has always paid less attention to participatory issues. From an environmental point of view, air pollution in Tehran, which is measured with a particle size of less than ten microns, is almost four times that of Los Angeles. It should be noted that some of these pollutions were due to tougher sanctions in 2010 due to Iran's inability to import higher quality additives used to produce car cleaning fuel. (Tahbaz, 2016).

Data and Method

In this research, at the first stage, after analysing the quantitative indicators of the research and evaluating them, the research uncertainties will be identified. For this purpose, Micmac software is used to identify uncertainties; on the second stage, with the help of the uncertainty-impact matrix, the critical uncertainties of the research are introduced. These critical uncertainties should be used in the process of low-carbon Tehran development. In the continuation of the research process, variables for these critical uncertainties are defined and entered in the Scenario Wizard software to obtain possible scenarios. With the help of the scenarios which will be obtained from the software, the scenario writing process begins. In order to achieve a better portrayal in Tehran in the long run, the DPSIR model will also be used.

Results and Discussion

The phenomena of global warming and climate change, on a scale beyond the city of Tehran, is in fact a matter of concern on a global scale. paying attention to these changes and controlling global temperature requires long-term and sustainable planning. As a result, segment and short-term measures cannot reduce the adverse effects of climate change alone. Since addressing climate change is a global issue, it requires holistic attitudes and cooperation with other global cities. Therefore, Tehran was chosen as the capital of Iran for this study. Because according to global statistics, Tehran is the sixth most polluted city in the world, and this highlights the importance to address the issue of low-carbon cities.

Conclusion

By institutional and organizational cooperation as well as the real participation of citizens, it is possible to move towards advancing Tehran's low-carbon goals. It is hoped that by using the principles of participation and strategies to achieve a low-carbon city, Tehran could play a small role in controlling climate change and in fact reducing urban pollutants.

Finally, by implementing the strategies which are mentioned in the article, we can move towards a low-carbon Tehran. In this regard, urban institutions should participate and cooperate with each other and citizens should play an active role in urban decision-making. In general, the following suggestions are made in various financial, social, environmental and physical sectors:

In the financial sector, the growth of start-ups and microeconomic sectors with the support of the government and private organizations

In the social sector, creating spaces in urban parks in order to gather people and present their opinions on urban day topics.

In the environmental sector, allocating municipal budgets for the construction of solar panels in public organizations and requiring urban industries to plant various green species around factories and urban workshops.

In the physical part, the supervision of Tehran Municipality on preventing dispersal and development of urban disorder

It is hoped that by using this research, a step could be taken towards a low-carbon Tehran.

Key Words: Low Carbon City, Collaborative Planning, Sustainable Urban Development, Tehran Metropolis

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