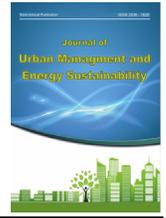


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CASE STUDY

Participatory Planning in Sustainable Urban Development (Case Study: Tehran City)

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ABSTRACT

Nowadays, with the increase in population and complexity of urban management and planning, it is necessary to benefit from the potential of people to participate in planning and executive affairs. The need to achieve participatory space in urban planning has become evident to planners and stakeholders. Modern approaches to sustainable development invite cities to create cleaner and more environmentally friendly spaces. It is desirable to use the potential of citizens in this winding path to overcome the challenges ahead and increase the efficiency and productivity of urban spaces. This study aimed to measure the relationship between the dimensions of sustainable development and citizen participation. It attempts to explain the main priorities of practical solutions in the context of Tehran. Tehran has a population of 13 million, and 395 questionnaires were randomly distributed among citizens using Cochran's formula. The results obtained by the statistical software SPSS indicated the need to pay attention to the culture, development, and expansion of cultural and participatory spaces, such as mosques in Tehran. The research was applied, and data fitting in the quantitative method and analytical-descriptive in the qualitative section reported the need to pay attention to the cultural foundations of Tehran citizens. However, their priority is the development and expansion of the religious and cultural space of mosques, which is effective and prominent.

Running Title: Participatory Planning in Sustainable Urban Development



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INTRODUCTION

The Currently, informed participation based on sustainable development approaches to achieve desirable cities is evident. Attention to the economic, social, cultural, and environmental aspects can help prepare modern cities for upcoming challenges. Cities have undergone significant changes due to increasing environmental pollution, leading citizens to reconsider their urban development. The multitude of issues and problems has made decision-making complex and diverse(Sutcuoglu & Onac, 2022). City managers lack the capacity to deal with this massive volume of decisions, as observations have shown their limitations. These challenges can be addressed by entrusting citizens with their responsibilities and decisions. However, the selection, definition of responsibilities, and prioritization of decision-making also matter(Mushtaq et al., 2022). Managers must know which tasks to delegate to citizens and collaboratively plan. Therefore, understanding the behavioral patterns and culture of each community can play a fundamental role in this matter. Citizens believe that city managers are responsible for providing urban services(Galdeman et al., 2021). Citizens require accelerated processes and services to enhance their quality of life. Both citizens and managers must consider various aspects of society and the environment in order to achieve their goals. Striking a balance between these needs without harming the environment is of paramount importance(De Weger et al., 2022). To maintain this balance, modern society requires innovation. Participatory planning is a fundamental principle of urban planning in city management. Citizens have the rights and demands that managers are responsible for. Developing social structures and considering the dominant culture can play an essential role in preserving nature and the human environment. Managers strive to develop cities and citizens play a crucial role in this development(D'Amico et al., 2020).

In this study, we evaluated the concepts of participatory planning and sustainable development as two new approaches to the interaction between humans and the environment in cities. Participatory planning is a community-

oriented method that involves individuals in the decision making and implementation of urban plans. Sustainable development is a multidimensional approach that seeks to balance the economy, society, and the environment. The goal of these two approaches is to increase quality of life, transparency, justice, and social cohesion within a society. The informed participation of citizens can enhance social capital(Schreurs et al., 2018). A comprehensive, community-based, and economic approach is required. Cultural foundations can lead to stronger interpersonal relationships and create ideal environments. Establishing a balance between needs that do not harm the environment is therefore important. To achieve this balance, the modern society requires new capabilities. Participatory planning is a fundamental principle in urban planning(Leask et al., 2019). Citizens have the rights and demands that managers are responsible for. Developing social structures and considering the dominant culture can play an essential role in preserving nature and the human environment(Bruzzese et al., 2022). Tehran, one of the oldest habitation centers, has undergone significant changes over the years. Cultural transformations, economic activities, social foundations, and growing and changing environments have had various effects on cities and their citizens. Tehran, with its economic and income diversity across 22 districts and numerous neighborhoods with shared and distinct languages and dialects, has created extensive biodiversity. Various interests, tastes, desires, and needs arise from ethnic and religious differences. Establishing citizen-centric urban management, commensurate with the desires and needs of citizens, is a priority for the macro-management of any country. Paying attention to the foundations of sustainable development concurrently with innovative decision making and decision-making methods can lead to the desirable growth and development of Tehran. Participatory planning can bridge this balance gap(Borhani et al., 2022; Habibi Mohraz et al., 2016).

MATERIALS AND METHODS

Participatory Planning

Participatory planning is a model of

urban planning that emphasizes community involvement in societal planning. This approach has evolved into an influential framework in traditional urban planning and international community development. In this approach, technical expertise is combined with the preferences and knowledge of community members, giving high importance to group consensus and decision-making. Furthermore, participatory planning acknowledges the groups that have traditionally been excluded from the planning process and involves them in the participation process (Assembly, 1993; Mansyur et al., 2016). Participatory planning has emerged as a response to centralized and top-down approaches initially defined in the conventional definition of urban planning. This model has evolved into an influential framework for traditional urban planning and international community development (Dias & Gama, 2014).

Theoretical Foundations

Participatory planning theories are responsive to centralized and reductionist approaches in urban and rural planning. These theories emphasize that planning should be more than a technical and rational activity; it should incorporate technical expertise into the preferences, knowledge, and needs of the community members. In this context, group consensus and decision-making are highlighted along with the involvement and participation of various individuals and groups in community-related decision-making processes (Araos, 2023; Kammer-Kerwick et al., 2022).

Some of the most important participatory planning theories are as follows:

1. John Turner's Theory: This theory categorizes participation into four types based on the government's response to participation. These categories include anti-participation, non-participation, participation, and partnership. In each of these approaches, the roles of the government and people in the planning process vary (Breen & O'Connor, 2014).

2. Sherry Arnstein's Theory: This theory offers a taxonomy of different levels of citizen participation in municipal planning programs. These levels include non-participation, tokenism,

informing, consultation, placation, partnership, delegated power, and citizen control (Orbey & Sahin, 2023).

3. Jacobs's theory: This theory challenges one-dimensional and top-down sustainability models of participation and emphasizes the blending of technical expertise with community members' knowledge and preferences (Alhanoush Alkhalaf, 2023).

4. Paul Davidoff's Theory: This theory argues that urban planning is a political activity that deals with conflicting interests and values in society. It emphasizes that urban planners should act as advocates for marginalized and disadvantaged groups in society and help increase the awareness and power of these groups by providing different options and analyzing their consequences (Manouchehrifar, 2023).

5. John Friedmann's Theory: This theory believes that urban planning is a transformative activity aimed at analyzing the power structure in society, achieving desirable and sustainable changes. This suggests that urban planners should act as creative radicals and enhance human capabilities in society through innovative initiatives and organizational transformations. Additionally, this theory focuses on changing environmental and political variables, and recommends making appropriate decisions by considering these changes (Kirshner & Omukuti, 2023).

6. Eugene Bardach's Theory: This theory argues that urban planning is a learning activity that seeks to gain new knowledge and improve performance by analyzing urban phenomena. Urban planners should act as active learners and conduct qualitative and quantitative research to assess urban needs, problems, and opportunities. This theory also emphasizes the interactive and pluralistic nature of the learning process and enhances analytical, creative, and innovative capabilities by involving various stakeholders in the learning process (Bardach & Patashnik, 2023).

These theories and various approaches in the field of participatory planning and urban planning contribute to promoting community participation in the planning and urban development processes. These goals include combining technical expertise with local knowledge, developing programs and

projects based on people's needs and preferences, and encouraging collective decision making in urban planning and city development.

Sustainable Development

Sustainable development aims to balance the economic, social, and environmental dimensions in pursuit of purposeful development. This concept is based on intermediate principles that address our present-day needs, while ensuring that future generations are not disadvantaged in meeting their own needs. Sustainable development comprises four fundamental dimensions: economic, social, cultural, and environmental. These four dimensions interact with each other and require cooperation and coordination to achieve positive outcomes (Demir, 2023).

To achieve sustainable development, the United Nations established 17 Sustainable Development Goals (SDGs) in 2015. These goals cover a wide range of topics including eradicating poverty, combating hunger, promoting health, advancing education, addressing climate change, and promoting peace and justice. These goals serve as practical guidelines for countries, organizations, and individuals interested in sustainable development. The roots of these goals are embedded in four dimensions: economic, social, cultural, and environmental (Sugiawan, Kurniawan, & Managi, 2023).

Theories of Sustainable Development

The theories of sustainable development are a set of theories and approaches that aim to achieve a balance between economic, social, and environmental dimensions in the process of development. These theories attempt to analyze and evaluate the various processes and effects arising in different societies from factors such as modernization, industrialization, urbanization, population growth, and climate change. Furthermore, these theories provide recommendations for areas such as the conservation of natural resources, preservation of culture and biodiversity, facilitation of social and gender justice, promotion of transparency and accountability, encouragement of innovation and creativity, and improvement of the quality of life of individuals. In addition, the text introduces and describes some of the key theories of sustainable

development, such as modernization theory, human-centered development theory, and post-modern development theory (Tao & Lin, 2023).

Related Research

1. The research study titled "Enhancing Community Participation for Sustainable Development" (Smith, 2022) aims to explore the crucial role of community participation in fostering sustainable development. This study highlights the increasing importance of community engagement in addressing environmental and social challenges. The Methods and Methodology section outlines a mixed-methods approach that combines surveys and qualitative interviews to assess the level and quality of community involvement in sustainability initiatives. The findings reveal that active participation from local communities significantly contributes to the sustainability of development projects by promoting ownership, long-term commitment, and innovative problem solving. This study underscores the necessity of inclusive and meaningful community participation as a cornerstone of achieving sustainable outcomes in various domains (Smith, 2020).

2. A research project titled "Community Engagement in Sustainable Development: A Case Study" (Johnson, 2020) examined community engagement in sustainable development through a case study. This introduction highlights the importance of community participation in sustainable development. Qualitative methods were used to gather data through interviews and content analyses. The results demonstrate that community engagement in decision making related to sustainable development has a positive impact and leads to significant improvements in the implementation of development projects (Johnson, 2020).

3. A research project titled "Citizen Participation and Sustainable Urban Growth" (Davis, 2018) explores citizen participation in sustainable urban growth. This underscores the importance of citizen involvement in urban development. The research methodology used in this study included surveys and interviews. The findings reveal that citizen participation positively contributes to sustainable urban growth and leads to improved urban planning

and development outcomes (Davis, 2018).

4. Research titled “The Impact of Community Involvement on Sustainable Development Goals” (Clark, 2021) examines the influence of community engagement on Sustainable Development Goals (SDGs). The introduction highlights the significance of community involvement in achieving SDGs. This study employed a mixed-methods approach, including surveys and case studies. The results indicate a strong correlation between community engagement and the successful implementation of SDGs, leading to positive sustainable development outcomes (Clark, 2021).

5. Another study titled “Participatory Planning for Sustainable Cities: Lessons from Global Practices” (Anderson, 2017) explored participatory planning for sustainable urban development, drawing insights from global practices. This underscores the importance of community engagement in urban planning. This study employed a comparative analysis of case studies from various cities. These findings highlight the successful strategies and lessons learned to achieve sustainable urban development through participatory planning processes (Anderson, 2017).

6. The research article titled “Community Engagement Strategies for Sustainable Urbanization” (Williams, 2019) This article discusses community engagement strategies aimed at promoting sustainable urbanization. This introduction underscores the significance of community involvement in urban development. The research methodology involves analyzing case studies and best practices. The results emphasize effective strategies and outcomes related to sustainable urbanization through community engagement (Williams, 2019).

7. The research study titled “Citizen Participation and Sustainable Housing Development” (Brown, 2018) explores the relationship between citizen participation and sustainable housing development. This introduction highlights the importance of citizen involvement in housing development. The research methodology involved the analysis of case studies and data. These results underscore the positive impact of citizen participation in

achieving sustainable housing development goals (Brown, 2018).

8. A research study titled “Participation in Planning and Governance: Closing the Gap Between Citizen Expectations and Satisfaction” (Weymouth & Hartz-Karp, 2019) conducted two case studies on genuine and operational planning in London and Helsinki. This study employed qualitative analysis to collect and analyze the data. The findings of this study suggest that genuine planning should be in harmony with operational planning, and that there is a need for improvement in participatory activities. This highlights the significant role of participation in the sustainable development of London and Helsinki (Weymouth & Hartz-Karp, 2019).

These studies explored the pivotal role of community participation in achieving development goals across various domains. They emphasized the positive impact of citizen engagement on sustainability outcomes, highlighting the need for inclusive and meaningful community involvement in planning and decision-making processes. These studies employed diverse methodologies, including surveys, interviews, case studies, and comparative analysis, to draw insights and lessons for fostering sustainability through community engagement.

Methodology

This research is applied and development-oriented in terms of its objectives and uses a descriptive-analytical method. The study population included all citizens of Tehran, with a total population of 13 million. A sample size of 395 individuals was selected based on the Cochran's formula. The research tool consists of an 84-question questionnaire covering four variables: economic, social, cultural, and environmental. The validity of the questionnaire was confirmed through formal and structural methods, and its reliability, based on Cronbach's alpha, was verified as 0.96 (Table 1) (Lenzi et al., 2020). (Tab.1 and 2)

The collected data were analyzed using the statistical software SPSS version 27, with tests such as the Kolmogorov-Smirnov test, as well as structural equation modeling (SEM) analysis using Smart-PLS software for model fit assessment and path analysis. (Tab. 3)

Table 1: Reliability Statistics (Source: Authors, 2023)

Cronbach's Alpha	N of Items
.960	395

Table 2: Research Variable Items (Source: Authors, 2023)

Number of Questions	Variables
13	Economic
14	Social
9	Cultural
12	Environmental

Furthermore, the validation and reliability assessment of questionnaires or measurement tools, such as Cronbach's alpha and confirmatory factor analysis validity using R and modified R, have been approved.

Table 3: Validation and Reliability Assessment (Source: Authors, 2023)

	R-square	R-square adjusted
Cultural	0.7	0.7
Environmental	0.694	0.693
Economic	0.664	0.663
Social	0.638	0.637

Table 3 indicates that, in order, each of the cultural, environmental, economic, and social dimensions is 70%, 69%, 66%, and 63%, respectively. This signifies a strong relationship between culture and participation in other criteria.

Tehran is one of the oldest and largest cities in Iran, and is located in the north of the country at the foot of the Alborz Mountains. Tehran has been the capital of Iran since 1165 AH and is considered the political, cultural, economic, and social center of the country. It is the largest city in Western Asia and the fourteenth most populous city in the world (Estebnsari et al., 2021).

Tehran is a rectangular city bordered by the Alborz Mountains to the north and is limited by a desert to the south. The main axis of the city is a line that runs from west to east. The secondary axis of the city is the Qom Road, which runs from south to north. These two axes intersect at the Bazaar Intersection. Tehran's regional division is based on 22 districts and 124 sub-districts

(Barooti et al., 2014). (Fig. 1)



Figure 1: Map of Tehran City

DISCUSSION AND FINDING

In this study, based on the sample population of Tehran city and considering a 5% annual population growth rate (as reported by the Statistical Center of Iran, 2021) (Mansouri Daneshvar, Ebrahimi, & Nejadsoleymani, 2019) and the opinion of the Tehran Provincial Governor (Zand, Heir, & Khodaei, 2022), the estimated sample size was determined to be 395 individuals using the Cochran formula. Random sampling was performed using the snowball sampling method. Among the 395 respondents, 154 (39.2%) were male and 241 (60.8%) were female. (Fig. 2)

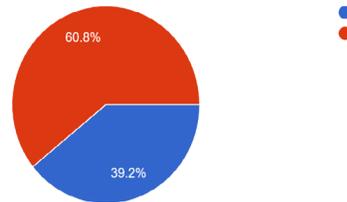


Figure 2: Gender Distribution among Respondents (Source: Authors, 2023)

Marital Status

Among the 395 respondents, 132 (33.3%) were married, and 263 (66.7%) were single. (Fig. 3)

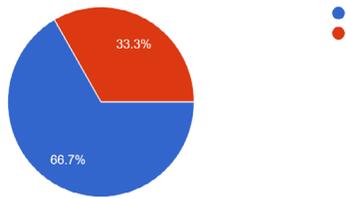


Figure 3: Marital Status Distribution among Respondents (Source: Authors, 2023)

Age of Individuals

Among the demographic characteristics of the study population, respondents' ages were categorized into four groups: 20-30 years, 31-40 years, 41-50 years, and 50 years and above. After conducting the necessary assessments, the distribution of the respondents' age groups was as follows. (Fig. 4)

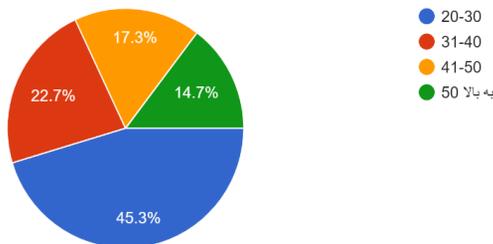


Figure 4: Age Distribution of Individuals (Source: Authors, 2023)

Educational Attainment

The educational attainment of the respondents was diverse, with 21.3% holding a master's degree or higher, 44% having a bachelor's degree, 8% possessing an associate degree, and 24% holding a high school diploma. The remaining participants had educational levels below a high school diploma. This distribution is visually represented in Figure 5. (Fig. 5)

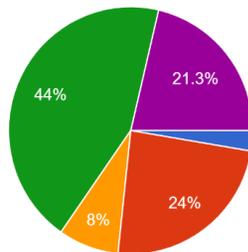


Figure 5: Educational Attainment Distribution (Source: Authors, 2023)

Employment Status

The respondents' employment status was categorized into different categories, as shown in Figure 6. Of the respondents, 16% were unemployed, 18.7% were employees, 14.7% were self-employed, 25.3% worked in healthcare, and 20% had other employment statuses. (Fig. 6)

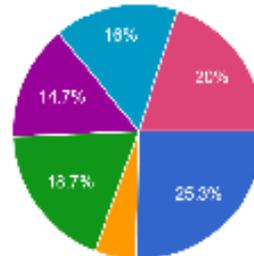


Figure 6: Employment Status Distribution (Source: Authors, 2023)

The mean and standard deviation of each variable were used to investigate the level of responsiveness and response to each variable. According to the table above, the social trust variable had the highest mean, whereas the payment variable had the lowest mean.

This table provides descriptive statistics for the four dimensions. These statistics provide information about the mean, median, minimum, and maximum observed, standard deviation, excess kurtosis, skewness, and number of responses used for each construct. It also includes the "Cramér-von Mises" test and its p-value, which indicates that the data do not follow a normal distribution. Therefore, partial least-squares fitting and residual least-squares fitting were used for the assessment. (Tab. 4)

To investigate the normality assumption, a one-sample Kolmogorov-Smirnov test was used for the study variables. The results indicated that the normality assumption could be rejected for all the variables ($p < 0.05$). Structural equation modeling (SEM) software was used owing to the non-normality of the variables. The SEM results are listed in Table 4. The relationships between the variables in the form of structural equations are shown in Figure 2 and were fitted. The strength of the relationship between latent variables with observable loads and the strength of the relationship between latent variables with

Table 4: Mean and Standard Deviation of Research Variables (pls) (Source: Authors, 2023)

	Mean	Median	Observed min	Observed max	Standard deviation	Excess kurtosis	Skewness	Number of observations used	Cramér-von Mises test statistic	Cramér-von Mises p value
Social	0	-0.22	-1.332	3.393	1	0.969	0.906	395	0.833	0
Economic	0	-0.068	-1.328	2.72	1	0.479	0.833	395	0.902	0
Cultural	0	0.083	-1.708	2.808	1	-0.028	0.215	395	0.231	0.002
Environmental	0	0.002	-1.438	2.722	1	0.468	0.7	395	0.583	0

regression coefficients are displayed. Out of 84 questionnaire items, 73 were assessed using fitting in Smart-PLS software.

It is better that the factor loadings are higher than 0.4, and in all relationships, they are higher than 0.7, indicating the desirability of the model. Moreover, the regression coefficients indicated a significant relationship between the dimensions. Among them, the cultural dimension had the highest coefficient.

Various indices exist for evaluating structural equation models. As shown in Table 5, all indices were within an acceptable range (Monte Carlo p-Value, =.000), confirming the model. These indices include. (Tab. 5)

The Standardized Root Mean Square Residual (SRMR) index was 0.085.

The model's goodness-of-fit indices d_ULS and d_G were 3.36.

The Normed Fit Index (NFI) is 0.4539.

The Chi-square (Chi²) value was 6634.304.

The root-mean-square theta (RMS_theta) was 0.551.

Table 5: Model Fit Assessment Results with Fit Indices (pls) (Source: Authors, 2023)

	Saturated model	Estimated model
SRMR	0.085	0.109
d_ULS	3.36	4.512
d_G	4.539	4.764
Chi-square	6634.304	6838.862
NFI	0.951	0.937

The results in Table 6 show that the relationship between participatory planning and the cultural dimension, with a statistic of 49.383, plays a

more influential role than other dimensions, and all dimensions are statistically significant in relation to participatory planning. Environmental concern, with a statistic of 49.095, ranks second, followed by local economic development with a statistic of 44.123, and the social dimension with a statistic of 43.437, ranking fourth. It can be argued that the sustainability of cultural,

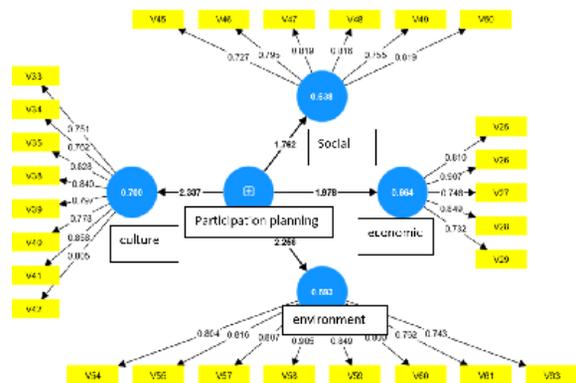


Figure 6: Standardized Regression Coefficients and Factor Loadings of the Model (pls) Source: Authors, 2023

Table 6: Path Correlations; Statistics and Significance Level, Standard Deviation, and Mean Source: Authors, 2023

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O /STDEV)	P values
Participatory Planning -> Social	0.799	0.799	0.018	43.437	0
Participatory Planning -> Economic	0.815	0.816	0.018	44.123	0
Participatory Planning -> Cultural	0.837	0.838	0.017	49.383	0
Participatory Planning -> Environmental	0.833	0.833	0.017	49.095	0

economic, and environmental structures can strengthen the social foundations and establish social sustainability.

RESULT AND CONCLUSION

The results indicate that urban planning plays a coordinating role by strengthening the economic capabilities of the local community and preserving independence and self-sufficiency in the production of goods and services. This leads to increased income, entrepreneurship, innovation, and competitiveness in the local community. Additionally, conserving natural resources and reducing dependence on imports contributes to the achievement of sustainable development goals. Participation can take various forms of interaction, including holding public meetings, providing opinions and suggestions, participating in important decision-making processes, and even implementing economic plans and programs. This highlights the importance of mutual interaction between municipal authorities and the local community to ensure economic and financial development. This type of participation ensures that the needs and preferences of citizens are considered in economic development and financial decision-making. Furthermore, encouraging entrepreneurship and creating job opportunities in innovative and creative sectors are important, and fair and sustainable economic development is essential in urban planning. It is also important to consider the development of social infrastructure, reducing income disparities, and promoting social justice. In this process, attention to the development of social infrastructure, such as health, education, housing, and recreation is essential. Urban policies and plans should prioritize areas that help improve and develop the health, education, and economic conditions of individuals. Additionally, solving social problems such as unemployment, violence, and gender discrimination; promoting citizen security; cultural and social diversity; developing healthcare systems; improving educational infrastructure; and creating employment opportunities are all crucial and should be considered in urban policies and plans. In this context, citizens have the right to express their opinions and criticisms in the process of social

planning. In formulating social policies and programs, citizens should be actively involved in providing feedback and criticism. Participation can take various forms and demonstrate the important role of people in social decision-making.

In urban cultural planning, the role of citizens as guardians of a city's history and culture is emphasized. Local residents take actions to preserve and promote the cultural and historical identity of the city. Additionally, creating public cultural spaces, such as mosques and religious centers, to meet the needs of the religious community is considered.

Promoting visual arts, theaters, and music is also crucial in urban planning. Promoting the visual arts, conducting theaters, and music performances are among the main objectives of urban development.

The provision of educational and cultural opportunities for citizens is also considered in urban planning. Creating independent and sustainable opportunities for education and culture will enable citizens to progress.

It is also essential to provide cultural and artistic spaces to the local community. Creating spaces for cultural and artistic activities in the local community allows people to use these spaces and engage in creative activities.

In urban planning, attention is focused on improving environmental quality and preserving biodiversity as the primary objectives. Measures have been taken in urban design and development to improve the environment and preserve biodiversity.

Urban environmental programs are also considered for managing waste and reducing environmental pollution. In addition, informing and educating citizens about environmental issues is emphasized to increase awareness in this regard.

Promoting renewable energy sources and optimizing energy resource utilization are also highlighted in urban planning to preserve the environment and reduce the negative effects of energy production from non-clean sources.

Programs aimed at preserving natural resources, reducing pollution, and protecting biodiversity have also been implemented.

Additionally, the creation of green spaces, parks, and public gardens to improve environmental quality and to create a healthy and beautiful urban environment is important.

Promoting biodiversity conservation and waste management are also part of the objectives of urban planning, which aims to preserve biodiversity and sustainably manage natural resources.

Participation in urban planning has become an opportunity for citizens to achieve their desires and goals. They benefit from participating in urban decision-making processes to achieve their personal goals and improve their own situation.

In conclusion, participatory planning seeks to achieve sustainability and improve the quality of life in cities by combining and harmonizing these four components with the complexities and diversities of urban planning. This requires collective efforts, collaboration, and coordination among various segments of society, managers, experts, and citizens to achieve dynamic and effective participatory urban planning and guide cities toward sustainable development.

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