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## Investigating Energy Consumption Optimization Policies in Iranian Buildings (with emphasis on topic 19)

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### Abstract:

Despite efforts in the field of energy efficiency management in Iran, there is still a long way to go. The energy management policy-making process will likely require review and pathology. Due to the extent of this issue, the only main purpose of this study is to find the main obstacles to the implementation of energy efficiency policies in the field of housing. The main foundations of the theoretical literature of this article are the discovery of the relationship between two groups of studies of policy thinkers on implementation research and documentation of the experiences of mayors as energy activists in the field of housing. The research method of the article is quantitative and data and information were extracted from the mayors of Tehran province with the help of a questionnaire; In the next step, with the help of SPSS software, the importance of implementation barriers was prioritized. Findings from comparing the experiences of mayors with theoretical studies show that 5 of the obstacles extracted are the most important. These barriers include poor monitoring and evaluation of implementation; Lack of popular culture and beliefs and unprepared bed; Inefficient manpower; Lack of incentive and punishment policies; And ignore scientific and technical foundations or technical difficulties and are considered independent variables. The implementation of energy efficiency policies in the field of housing is a dependent variable of this research.

**Keywords:** Energy, Policy Implementation, Housing, Research Implementation, Pathology

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### Introduction

The intensity of Iran's energy consumption is very high compared to the global average and industrialized countries. Therefore, this factor can be one of the main obstacles to Iran's

joining one of the developed countries; And always deprive the world of competitive power. Statistics show that the situation of energy consumption in construction also has

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many weaknesses. Countries around the world have become increasingly aware of the importance of building energy efficiency in the face of energy storage; Following that, Iran has also paid serious attention to this sector by setting regulations in the field of construction. Although laws, including Article 19 of the National Building Code, were approved and promulgated by the Council of Ministers in 1991 as the most important law on improving the energy efficiency of the construction sector; Efforts to promote public culture regarding the need to save energy have been and continue to be made. But after three decades of implementation of this law, many buildings still do not meet the required standards and there is a significant waste of energy in this area. It seems that the incorrect implementation of topic 19 is the main factor in this issue.

Economics and scientific and technical principles seem to be the main focus of research in solving this problem and less attention has been paid to the issue of political economy. Of course, research has been done in this area. Mehran Amir Moeini has studied energy consumption policies in Iran and has highlighted the lack of a comprehensive law or binding legal framework for energy conservation as a major obstacle to energy waste. He proposes an organization or integrated energy policy model to formulate a comprehensive law. On the other hand, Akbar Nematollahi and Mehrdad Mousavi also consider the proposed structure of the Ministry of Energy to be ineffective; Instead, they have recommended the formation of a council for legal relations between organizations.

Does the present study seek to address the issue of why the provisions of Article 19 of the National Building Code are not fully implemented? And which of the following is the most important obstacle to the non-implementation of Article 19?

### Theoretical Foundations

Implementation is one of the most important stages of the public policy cycle, and implementation research is one of the ways to examine the implementation and realization of government programs and goals. (Ashtarian, 2015: p. 2). In this way, the social situation will improve. (Lester and Gogin, 1998). Proper implementation can lead to results such as the development of the country, public satisfaction of citizens, increasing the level of welfare and power of the country. Also, the lack of proper implementation of policies can lead to public dissatisfaction, reduced welfare, and backwardness of the country. (Monavarian, 2015: p. 70). Since the implementation of public policies is a sign of their effectiveness, if the tools are implemented correctly, the policies will be implemented and otherwise, it will be fruitless and ineffective. (Alwani, 2008: p. 1)

Many factors have been cited in foreign research as obstacles to policy implementation. Discuss the inability or lack of commitment and support of executives in implementing policies; Lack of readiness of citizens and bureaucrats at the street level; Financial, administrative, cultural barriers, and the inflexibility and mechanization of organizational structures against change are among the barriers that have been raised so far. (Monavarian, 2015: p. 184)

Of course, many researchers and experts have offered different categories in explaining the obstacles to public policy in general and its non-implementation in particular. The majority of them believe that the problems of implementing public policy are different according to the local conditions of each community and require different solutions. (Makinde, 2005: p. 63) The different policies and challenges of each IAEA member state are examples of this claim. (Implementing Ener-

gy Efficiency Policieciea 2009) Developing countries should pay attention to socio-cultural, economic, and political variables when designing and implementing policies, and pay attention to the second and third generations in designing and implementing them. (Heydenrych, 2016: p. 10) But in general, it can be said that energy management in countries follows a general pattern or system. (Qayyumi, 2009: p. 5)

However, researchers also cite some common factors as performance bottlenecks. In 1990, Gogin et al. Identified three generations of performance studies. Their research revealed that by the end of the 1960s, political rulings were perceived to be clear, and executives believed that policies should be implemented by the intentions of policymakers. After that, the change from policy to action received more attention because of a kind of exhaustion and delay in meeting political expectations. (Ashtarian et al., 2017: p. 85)

The first generation of performance studies, which became more prevalent in the 1970s, was accompanied by a bit of pessimism about the performance process. This pessimism was reinforced by many case studies that clearly showed performance failure. The most famous studies are Dardick (1972), Pressman, Wildausky (1973), and Bardach (1977). Although at this time awareness of the subject of implementation increased in most of the research community and among the general public; But making theories about performance barriers was not at the heart of the first generation of performance studies.

The second generation began a full range of theoretical frameworks and hypotheses. This period was shaped by discussions between what would be the future in top-down and bottom-up methods. Classic top-down authors include Pressman and Wildausky (1973), Van Meter and Van Heeren (1975),

Bardach (1977), and Sabatier and Mazmanian (1979); And bottom-up theory also emerged as a critical response to the top-down school. Proponents of this view are known as Lipsky (1971), Injarmi (1977), Elmer (1980), or Hejermi and Hall (1982).

The common denominator of all top-down thinkers is those policy goals are set by central decision-makers. They follow a prescriptive method that government leaders prepare guidelines for bureaucrats to implement, in which policies are seen as input and implementation as output. Accordingly, top-down models have a kind of self-aggrandizement focused on the imposition of policies or programs through power and do not give many roles to decision-makers at the bottom. Thus, the whole focus of top-down theorists is to identify barriers to the implementation of politicians' decisions. These are Lack of resources, lack of transparency of goals, lack of adequate oversight of implementers, lack of coherence between organizations and institutions, lack of appropriate economic-political conditions, and lack of a causal theory to support the policy.

The bottom-up (critical) model considers disregard for local bureaucrats as a major obstacle to implementation and suggests that they influence the implementation phase as well as other policy processes. (DeGraff and Cargo, 2009) In this view, the impossibility of commenting at the policy delivery stage is considered an important obstacle. In the face of real problems, they argue, local bureaucrats are closer to policymakers. (Palzi and Tarib, 2007: p. 92) And the bureaucrats' demands should be given priority in implementation, non-implementation, or program change.

They believe in the inevitable changes and reforms that bureaucrats make during the implementation process. (Joseph and Canton,

2007). An incomplete understanding of the central government of problems and issues is removed as an obstacle. (Elmore, 1980) Although the bottom-up model seems to be closer to reality, the main drawback of the bottom-up model is that it plays a minor role for the central government in implementing programs, while in return giving a lot of leeway to low-level bureaucrats. They magnified the power of operational-level bureaucrats as if central policymakers had no power to carry out their goals and policies.

Of course, after a debate between top-down and bottom-up researchers, the two sides agreed that implementation is a chain between central leadership and independence or local autonomy. They agreed that the advantages of low-level bureaucrats and negotiations within executive networks should be considered in defining centralized policy goals and hierarchical control. That execution is nothing more than the technical execution of political orders from above, in which policies are re-formed and redefined, and perhaps completely obliterated.

Thus, the third generation of performance studies, known as hybrid theory, sought to bridge the gap between the top-down and bottom-up methods through the insights it introduced into the models. Dissatisfaction with the controversy surrounding top-down and bottom-up methods led researchers such as Elmore (1985), Sabatier (1986), and Gwyn et al (1990) to try to combine the two methods. The new model proposed by these researchers combined elements from both sides to prevent perceptual weaknesses. (Joseph and Canton, 2007)

In hybrid theory, programs can be modified and re-executed even during execution. Policy evaluation can be done during policy implementation and has a corrective function on policy implementation. In other words,

with the help of this method, we find a kind of balance in the cooperation between the imposed structure and the creativity of individuals and groups in society. In this model, we look at the socio-political contexts, inter-governmental relations, and stakeholder strife for mutual benefits, and with this in mind, the implementation process is constantly changing and reforming. In the hybrid model, governments take on the role of coordinator and guide and formulate policies in collaboration with organized groups and executives. Policy implementation can be done with the help of executives and organized groups that intervene and participate in policy formulation, while at the same time their activities are under the control of governments. Organized groups, on the other hand, can evaluate ongoing policies if there is an appropriate information system. (Ashtarian et al., 2017: p. 119)

The hybrid model tries to adapt to the new conditions of today's societies; And emphasizes the role of democratic methods of implementing and identifying the broader goals of intellectuals, citizen participation, and social consensus; At the same time, it recognizes the regulatory power of the government in the implementation process.

By analyzing three generations of implementation, it can be repeated that each country has its style and method of implementation. Understanding the conflicting regions of implementation in different countries is more relevant to the study of national, regional, and local comparisons. Accordingly, most studies seek to examine the impact of specific characteristics and features of each nation, region, local on the implementation process. By examining these features, programs can be easily executed successfully at any level. The argument here is the role of balancing the implementation process, that is, adapting to the environment in which the program or

goals are to be implemented. (Ashtarian et al., 2017: p. 127)

### Methodology

The statistical population studied in this study consists of all mayors of Tehran province. The researcher selects all available mayors of Tehran province to collect information from a non-random method (selective) and within the sample size, without distinguishing between them. Second, they all have the same attribute of expertise - the level of urban management - in the subject matter. (Hafiz Nia, 1397: p. 163). Due to the homogeneity of the statistical community consisting of an expert and specialized opinions of 38 mayors in Tehran province.

The information required for this research was collected to analyze the data and obtain the results of testing the hypotheses, using the Delphi technique, which is a field method and an open questionnaire. The sampling method of this research is Purposeful Sampling in which the cases that have rich information in terms of research purpose have been selected.

Accordingly, after explaining the concepts and goals, and objectives of the question, what are the most important obstacles and problems in the implementation of national building regulations (Article 19)? Questionnaires were delivered in person and directly to 38 mayors of Tehran province, and after

that, the answers were collected by making regular and flexible calls within the deadline for collecting the questionnaire.

After collecting the questionnaires, the researcher merged the closely related titles into a more general title to summarize and compress the answers, thus reducing the number of data to a minimum. Based on this, the researcher in the first stage was able to categorize 24 obstacles in the way of implementing national building regulations.

In the second stage, the second round questionnaires were obtained by organizing the data collected from the first questionnaire; And again delivered in person and directly to the respondent to determine the importance of each obstacle in a range of five options: very low, low, medium, high and very high. After that, the answers were collected again by making regular and flexible calls within the deadline for collecting the questionnaire. Then, using SPSS software, statistical data analysis was performed and the priority and importance of each barrier were determined.

The sampling method of this research was Purposeful Sampling in which the cases that contained rich information in terms of the purpose of the research were selected.

### Findings

The data of this study were analyzed by SPSS software version 25. (Tables 1, 2, and 3)

**Table 1.**

***Obstacles and problems in the implementation of national building regulations Topic 19***

Obstacle 1	60% of the respondents very much agree with the fact that the complete ignorance and lack of awareness of builders, engineers, and those involved in the construction industry are necessary to comply with Article 19; Which is considered as an obstacle to complying with the standards in safety and prevention of energy loss.
Obstacle 2	73.3% of the respondents very much agree with the fact that the lack of knowledge of buyers about the topic 19 and the lack of attention to the equipment used in the building when buying is considered as an obstacle.
Obstacle 3	80% of the respondents very much agree that the idea that the implementation of

	Article 19 of the National Building Code is costly compared to the traditional methods and has no economic justification is considered as an obstacle.
Obstacle 4	73.3% of the respondents very much agree with the fact that some people live in deprived areas and these materials are expensive; They are not willing to implement it and this is considered as an obstacle.
Obstacle 5	73.3% of respondents very much agree with the fact that; Owners and mass builders are reluctant to implement Article 19 due to low housing prices in the cities of Tehran province and lack of financial efficiency, and this is considered as an obstacle.
Obstacle 6	66.7% of the respondents very much agree with the fact that the supervising engineers do not take effective action in creating a culture and enforcing the provisions of Article 19; And despite the rules of the engineering system, they do not have strict supervision, and this is considered as an obstacle.
Obstacle 7	66.7% of respondents very much agree with the fact that; The presence of non-standard construction materials in the market is considered as an obstacle due to the lack of companies with the necessary standards due to the lack of support for producers of standard construction materials that make them interested.
Obstacle 8	66.7% of the respondents agree to a great extent that the lack of specialists and skilled labor in the implementation phase and compliance with standards is considered an obstacle.
Obstacle 9	86.7% of the respondents agree to a large extent that the non-institutionalization of the use of insulation or equipment to reduce energy consumption through public media such as television is a barrier.
Obstacle 10	60% of the respondents very much agree with the fact that the lack of necessary communication between the supervising engineer and the installation engineer and the contractor is considered as an obstacle.
Obstacle 11	53.3% of the respondents very much agree with the fact that the lack of modern technology in the country is considered an obstacle.
Obstacle 12	60% of the respondents agree to a large extent that the lack of a technical certificate of the building is considered an obstacle.
Obstacle 13	46.6% of the respondents very much agree with the fact that migration to Tehran province and as a result the construction of an illegal building is considered as an obstacle to the implementation of Article 19.
Obstacle 14	86.6% of the respondents very much agree with the fact that the lack of sufficient supervision over the implementation of the provisions of Article 19 is considered as an obstacle.
Obstacle 15	53.3% of the respondents very much agree with the fact that; Construction that indigenous and low-income people do in the dilapidated fabric of the city with the help of foundations and avoid retrofitting the building is considered as an obstacle.
Obstacle 16	26.7% of the respondents very much agree with the fact that; Prosperous people are constructing villa buildings in the city on lands with ownership documents and receiving bank facilities, and as a result, they do not comply with Article 19, which is considered as an obstacle.
Obstacle 17	33.3% of the respondents agree with the fact that the weakness and ignoring the regional and geographical classification and use of the building in the design and architecture of the cities of Tehran province is considered as an obstacle.
Obstacle 18	53.3% of the respondents very much agree with the fact that; Educational facilities in education, higher education levels to educate people about the cost-effectiveness of the

	implementation of topic 19 in the construction process is considered as an obstacle.
Obstacle 19	26.6% of the respondents very much agree with the fact that the region is far from the market of products and as a result, the high price of quality materials is considered as an obstacle.
Obstacle 20	60% of respondents, to a large extent, agree that the lack of incentive policies is a barrier.
Obstacle 21	80% of the respondents agree with the fact that profitable activities in the construction sector and their lack of attention to technical points are considered as obstacles.
Obstacle 22	53.4% of the respondents very much agree with the fact that not mentioning the architectural criteria in topic 19 is considered an obstacle.
Obstacle 23	60% of respondents very much agree with this point; In some cities of Tehran province that have mountainous weather conditions in winter and autumn due to lower temperatures and non-compliance with Article 19, more energy is consumed, which is considered as a barrier.
Obstacle 24	66.6% of the respondents very much agree that the lack of cooperation of the employer is considered an obstacle due to the lack of full knowledge of the benefits of implementing Article 19.

**Table 2.**

*Analysis of data related to obstacles and problems of implementation of national building regulations, topic 19 using SPSS technique*

Row	Obstacle title	Very low	Low	average	High Very	high
1	Ignorance of those involved in the construction industry that it is necessary to comply with Article 19	0	20%	20%	26.7%	33.3%
2	Buyers' ignorance and lack of attention to equipment related to energy consumption in the building.	20%	6.7%	0	33.3%	40%
3	Lack of economic justification of Article 19 in people's thinking and its high cost compared to existing traditional methods.	13.3%	6.7%	0	46.7%	33.3%
4	People fleeing areas deprived of expensive materials and materials Topic 19.	6.7%	13.3%	6.7%	13.3%	60%
5	Owners and mass builders are reluctant to comply with Article 19 due to low housing prices in the cities of Tehran province.	13.3%	13.3%	0	33.3%	40%
6	Supervising engineers do not take effective action to enforce Article 19 and do not have strict supervision despite the engineering system.	6.7%	0	6.7%	6.7%	60%
7	Existence of non-standard construction materials due to lack of support for manufacturers of standard materials.	0	6.7%	6.7%	46.7%	20%
8	Lack of specialists and lack of skilled	6.7%	20%	6.7%	46.7%	20%

	labor in compliance with standards.					
9	Non-institutionalization of the use of insulation or energy-reducing equipment through public media such as television.	13.3%	0	0	46.7%	40%
10	Lack of necessary communication between the supervising engineer and the installation engineer with the contractor.	0	20%	20%	40%	20%
11	Lack of modern technology in the country.	20%	0	6.7%	33.3%	20%
12	Failure to prepare a technical certificate of the building.	6.7%	0	6.7%	40%	20%
13	Immigration to Tehran province and as a result the construction of an unauthorized building as problems in the implementation of Article 19.	20%	0	33%	13.3%	33.3%
14	Lack of adequate oversight of the implementation of the provisions of Article 19.	6.7%	6.7%	0	33.3%	33.3%
15	Construction that indigenous and low-income people do in the dilapidated fabric of the city with the help of foundations and avoid retrofitting the building.	13.3%	20%	13.3%	20%	33.3%
16	Because affluent people use their villa buildings less in the winter, they do not comply with Article 19.	26.7%	40%	6.7%	26.7%	0
17	Weakness and neglect of regional and geographical classification and use of buildings in the design and architecture of cities in Tehran province.	6.7%	20%	40%	33.3%	0
18	Educational facilities in education and higher education to familiarize people with the cost-effectiveness of the implementation of Article 19 in the construction process.	33.3%	0	13.3%	33.3%	20%
19	The remoteness of the region from the market of products and consequently the high cost of quality materials.	20%	20%	33.3%	13.3%	13.3%
20	Lack of incentive policies.	20%	0	20%	13.3%	46.7%
21	Profitable activities in the construction sector and their lack of attention to technical points.	13.3%	0	6.7%	40%	40%
22	Not to mention the architectural criteria in topic 19.	20%	0	26.7%	46.7%	6.7%
23	In some cities of Tehran province that have mountainous weather conditions, energy consumption increases in winter and autumn due to lower temperatures and non-	0	6.7%	33.3%	40%	20%



compliance with Article 19.						
24	Lack of cooperation of the employer due to lack of full knowledge of the benefits of implementing the topic 19.	0	13.3%	20%	33.3%	33.3%

**Table3.**  
*Ranking of obstacles and problems in the implementation of national building regulations (Topic 19) in descending order*

Rank	Points earned	Obstacles and problems	Rank	Points earned	Obstacles and problems
1	4.2	Fourteen	8	3.67	Two
2	4.13	Six	8	3.67	Twenty
3	4.07	Four	9	3.6	Ten
4	4	Nine	10	3.53	Eight
5	3.8	Three	11	3.5	Eighteen
5	3.8	Seven	12	3.4	Thirteen
5	3.8	Twenty-one	12	3.4	Fifteen
5	3.8	Twenty-four	13	3.33	Eleven
6	3.73	One	14	3.2	Twenty-two
6	3.73	Five	15	3	Seventeen
6	3.73	Twenty-three	16	2.8	Nineteen
7	3.71	Twelve	17	2.33	Sixteen

The opinion of the statistical sample of this research has the highest frequency as follows:

- 1- Absence and non-development of an appropriate model for monitoring and inspection of construction facilities, which should be said until the organization of the engineering system approves and implements this model; We cannot expect high efficiency of construction facilities.
2. Supervising engineers do not take effective action in the field of culture-building and enforcing the provisions of Article 19, and despite the rules of the engineering system, they do not have strict supervision in this regard.
- 3- Expensive materials in deprived logic cause some people to not have the necessary financial ability and to refuse to implement national building regulations.
- 4- Non-institutionalization of the culture of using insulation or equipment to reduce energy consumption through mass media.
5. The perception of the people is that the implementation of Article 19 of the National Building Code is more expensive than the traditional methods and has no economic justification for them.
- 6- Existence of non-standard construction materials in the market, which can be due to the lack of companies with sufficient standards or industries to support the producers of construction materials.
- 7- Profitable activities in the construction sector and their lack of attention to technical points.

- 8- Lack of cooperation of the employer due to lack of complete knowledge of the benefits of implementing Article 19.

Classification and compatibility of the most important barriers of topic 19 with performance studies:

Among the 24 important obstacles and problems in the implementation of national building regulations (Topic 19), 8 of the most important problems that according to the statistical sample of this study have the highest frequency are as follows:

1- Absence and non-development of a suitable model for monitoring and inspection of construction facilities, which should be said that until the engineering system organization approves and implements this model, we cannot expect high efficiency of construction facilities.

Consistency of theoretical foundations: Weakness in monitoring and evaluation of implementation. (Ashtarian et al., 2017: p. 140)

2. Supervising engineers do not take effective action in the field of culture-building and enforcing the provisions of Article 19, and despite the rules of the engineering system, they do not have strict supervision in this regard.

Consistency of theoretical foundations: weakness in monitoring and evaluation of implementation (Ashtarian et al., 2017: p. 140)

3- Expensive materials in deprived logic cause some people to not have the necessary financial ability and to refuse to implement national building regulations.

Theoretical Consistency: Alness and Worth, 1973, Lack of an Appropriate and Comprehensive Strategy for the Promotion of the Public Interest. Scott, 2004 Lack of determination of how policies affect different

stakeholders. Brinard, 2005, Lack of Citizen Support - Samuel. Staly, 2006, Relying on the role of the market and the economic mechanisms by which officials dominate market forces. Pressman and Wildauski, 1973, selecting the inappropriate tool to implement the policy, including mandatory tools such as rules and regulations; Voluntary tools such as culture and platform building, combined tools such as subsidies. (Monavarian, 2017: p. 187) (General category: lack of incentive and punishment policies)

4- Non-institutionalization of the culture of using insulation or equipment to reduce energy consumption through mass media.

Theoretical compliance: Inadequate administrative structure. (Ashtarian et al., 2017: p. 146). Anderson, 1982, Zamour, 1980 Lack of necessary and timely training to inform the presenters. (General category: Lack of popular culture and beliefs and unprepared bed)

5. The perception of the people is that the implementation of Article 19 of the National Building Code is more expensive than the traditional methods and has no economic justification for them.

Theoretical Consistency: Sabatier and Mazmanian 1996. Garcia Zamour 1980 Insufficient knowledge and skills. Makindeh 2005 Lack of citizen support. Sabatir and Mazmanian 1996 Lack of a Fixer and Understander. Garcia Zamour 1980 Lack of popular culture and beliefs and unprepared bed. Anderson, 1982, Sabatir and Mazmanian, 1996, Manvarian 1394, p. 178 unwillingness to accept the policy. Howlett & Ramesh 1995 Lack of proper use of advanced technology and new technology. (Ashtarian et al., 2017: pp. 181-183) Lack of clear and correct information about the policy implementation process. (General category: Lack of popular culture and beliefs and a suitable substrate)

6- Existence of non-standard construction materials in the market, which can be due to the lack of companies with sufficient standards or industries to support the producers of construction materials.

Theoretical Consonance: Howlett, Lack of Public Support. Khoza 2003, Insufficient coordination in policy implementation. Samuel Stallie 2006, Lack of Necessary Political Support. Howlett and Ramesh, not using the correct methods of policy implementation. Howlett & Ramesh 1995, lack of proper use of advanced technology and new technology. (General Category: Technical Difficulties: Ignoring Scientific and Technical Basics)

7- Profitable activities in the construction sector and their lack of attention to technical points.

Theoretical harmony: corruption (Ashtarian et al., 1396: p. 139). American Public Administration Association in collaboration with the Public Administration Unit 2002, Opposition from Professional Stakeholders. (General Category: Lack of Incentive and Punitive Policies)

8- Lack of cooperation of the employer due to lack of complete knowledge of the benefits of implementing Article 19

Theoretical Consistency: Lack of familiarity of presenters with the program (Ashtarian et al., 2017: 139). Brinard 2005, Lack of coordination mechanisms. (General Category: Inefficient Manpower)

## Results

Energy is one of the main inputs for the economic development of any country and its reform will not be possible without new revisions and changes in old ways and will not answer new problems. Economic growth and industrial development, which are themselves the main foundations of technological

progress in achieving political power, national independence, and cultural prosperity, depend to a large extent on the rational use of energy. This study sought to address the fundamental issue of what are the barriers to the incorrect implementation of national building regulations regarding building energy efficiency? The results of the present study, which was performed using the Delphi technique method among a sample of Iranian mayors, indicate that; The following are the most important obstacles to the implementation of energy efficiency policies in the field of housing.

Weakness in monitoring and evaluation of implementation.

Inefficient manpower.

Ignoring scientific and technical principles or technical difficulties.

Lack of incentive and punishment policies.

Lack of popular culture and beliefs and unprepared bed.

This result was found in the suggestions of the mayors of Tehran province as key experts and implementers in the field of housing and its application to implementation studies by thinkers.

Looking at the proposed model, it can be seen that evaluation is one of the most important stages of the public policy cycle, which unfortunately has not been addressed as it should be in Iran. Currently, the main challenge of Iran and many countries is the lack of capable manpower and lack of knowledge, science, and knowledge of resource use. On the other hand, a structure that designs good financial and credit guarantees incentive and punitive policies and overcomes technical difficulties with a correct management understanding is one of the shortcomings found in this research. As we have reached in the present study, cultural issues also have a

great role in solving this problem, and paying attention to it in all policies leads the society to consume less. It seems that energy policy in the housing sector can be effective by focusing on the obstacles found.

**Policy recommendation:** The obstacles found were the result of the pathology of energy management policy in the field of housing in Iran from the point of view of mayors. It is recommended that this research be conducted in the Engineering System Organization, the Ministry of Energy, the Ministry of Housing and Urban Development, and the Ministry of Oil. Identifying all obstacles to housing energy efficiency policies in implementation can provide a complete database of policymakers in the housing sector in Iran.

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