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## The Effect of Social Capital on the Realization of Energy Consumption Optimization Policies in the Islamic Republic of Iran

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### Abstract

Today, in all societies, the excessive consumption of energy and the concerns caused by its lack, especially for the future generations, are very important. In times of crisis, social capital can be used as one of the important components to solve problems and improve existing processes. Most important of these problems are the inappropriate way and lack of attention to optimal energy consumption in different dimensions. One of the prerequisites for correct and optimal consumption of energy is huge social capital. Unfortunately, some statistics show inappropriate patterns of consumption of goods and energy in our country. The per capita consumption rate of Iranians is outside the standards of global and logical standards. Iranian people are consumer oriented in all areas of consumption, including food and energy, more than people in other parts of the world. The study of consumerism in new societies is of special importance because consumerism is not only a problem for consumers, but producers and distributors of goods and services need to understand its characteristics. For this purpose, in social sciences, sociologists, economists and contemporary policy makers analyze it comprehensively, and every expert pays attention to it from a specific angle. Modern consumerism is a social damage in an indiscriminate way that requires scientific knowledge and then basic treatment, or in other words, planning. In this article, first, the characteristics and definitions of social capital have been examined from the point of view of different experts, and its role in the optimization of energy consumption policies has been examined, and at the end, planning for the modification of consumption patterns has been discussed with an emphasis on strengthening social capital.

Keywords: Social capital, Optimization of energy consumption, Politics, Consumerism

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## Introduction

The difference between capital and consumer goods is that consumer goods are not productive and do not turn into goods, while capital either reproduces itself or is considered a means of production. Capital can be divided into four types: 1- physical capital; 2- financial capital; 3- human capital; 4- Social capital. In general, the amount of social capital in any group or society shows the amount of trust people have in each other. Social capital is considered as a resource for "collective action". The results of social capital within the network include a set of collective actions in different forms and sizes. The existence of an acceptable amount of social capital facilitates social actions, so that in times of crisis, social capital can be used to solve problems as one of the most important components of solving problems and improving existing processes. One of the most important problems is improper consumption patterns and lack of optimal consumption of energy in its various dimensions. Correct and optimal consumption requires having a huge social capital. Consumption does not only include the purchase of material goods, but also includes services. In modern societies, consumerism has become a main social activity (Lahsaiezadeh, 1998, p. 23).

Experts on social issues carefully study this phenomenon, on the one hand, consumption as a new phenomenon in our modern life, and on the other hand, they refer to its dark and unusual part as "consumerism". The intensification of the shopping phenomenon among Iranian families and the consumption of all

kinds of unnecessary goods in daily life indicates the formation of this unconventional practice in our social life. A procedure that, in the social dimension, by taking advantage of unpleasant habits such as comparative and competitive views in buying goods, moves the central view of the purchase phenomenon from the sphere of need to the stage of pretentious consumption. Awareness of the effects of consumerism, the existence of motivation in society to seek this type of knowledge, public trust in each other for optimal energy consumption, trust in public and government institutions in order to preserve resources for future generations without the strong support of social capital. it's impossible. In today's era, we need social capital for development more than we need economic, physical and human capital, because without this capital, the use of other capitals will not be done optimally. In a society that lacks desirable social capital, other capitals are less considered and wasted.

Therefore, the issue of social capital is considered as a basic principle for achieving sustainable development, and governments and statesmen are considered successful if they can achieve the production and development of social capital by adopting the necessary policies and providing appropriate solutions in relation to the society. If the amount of social capital is low in a society, the risk of that society falling into a social trap situation is very high. Social trap means low social capital, lack of trust and confidence in each other among people, the spread of economic-administrative corruption. If every person in the society comes to believe that turning off an extra lamp makes the light of a house in a remote village

stay on and considers this his concern, we can be sure of having a huge amount of social capital. As a result, optimal consumption does not mean reducing consumption. Observing the pattern of consumption and commitment to doing this is due to the sense of responsibility that each of us will have towards our fellows. If the sense of duty to protect the country's capital is created in each member of the society, they will also play an important role in preserving the national resources and this will be a factor in creating a suitable pattern of consumption for future generations.

The present research was conducted using the content analysis method. For this purpose, semi-structured interviews with specialists and experts in the field of government accounting and budget were summarized, classified and reported using content analysis techniques. MAXQDA version 10 software was used to code the data in this research, and the codes extracted from the texts were analyzed in Excel version 2013. From the results of the research, it appears that the impact of social capital on the realization of fuel consumption optimization policies are: increasing economic growth and development; increasing social welfare; increasing investment in energy consumption optimization plans; People's compliance and support for energy consumption optimization policies; Changing the culture of consumerism in the field of energy and reducing environmental pollution.

### **Social Capital**

Besides the government, both national and local, there are two actors or partners called "civil society" and "private sector". These three actors should work together to solve the

complex challenges of society and development. In this regard, the private sector includes small, medium and large companies, trade and investment unions and associations, and even multinational organizations. Civil society also includes institutions such as non-governmental organizations, local groups and communities, voluntary people's organizations, academic and research institutions, mass media, religious groups and civil organizations. Each of the partners must own funds. Government capital, political power, and private sector capital, financial power, and civil society capital is the same as social capital (Imani, 2002, p. 98). The concept of social capital is very developed in social sciences and considerable attention has been paid to this concept in other disciplines such as economics and political science, so that the number of scientific articles related to social capital reached 20 articles before 1981, 109 articles from 1991 to 1995, and 1003 articles from 1996 to March 1999. In 2000, social capital accounted for a quarter of the citations (Field, 2007, p. 11). Many researchers have adapted this concept and used it in various ways.

With thousands of definitions out there, it is difficult to understand what social capital actually means, to the extent that even the question of whether or not it is still a useful concept is questioned (Bionskoff and Sondrescu 2013). However, when we compare its most well-known conceptualizations found by Bourdieu (1980), Coleman (1988) and Putnam (1993, 2000), it becomes clear that the main pillars of social capital are around Three axes: 1. Trust, 2. Networks and norms of mutual influence, and 3. Reliability, and each author puts more emphasis on one or the other. Most of the researches about social capital emphasize one of these three dimensions, in which

publicized trust measures are one of the most used variables (Portella et al., 2013, p. 495). According to Bourdieu, social capital is the product of individual or collective investment, conscious or unconscious, that seeks to stabilize or reproduce those social relations that can be used directly in the short or long term (Bourdieu, 1968, p. 256). Coleman was the first researcher to empirically examine the concept of social capital and operationalize it. Instead of defining social capital according to its nature and content in general, Coleman pays attention to its function. According to his belief, social capital is a part of the social structure that allows the actor to use it to get his resources. This dimension of social structure includes tasks and expectations, information networks, norms and enforcement guarantee that encourage or prevent certain types of behavior. If person A has done something for person B and trusts that person B will repay this work in the future, this creates a kind of expectation in person A and a kind of duty for person B (Coleman, 1988, p. 27).

"Social capital is not a separate element, but a collection of different elements that have two common characteristics: all these elements have some aspects of the social structure. In addition, they facilitate some actions of individuals located within the structure. (Coleman, 1988, p. 89). Coleman considers the existence of social capital in trust, information and effective executive guarantees, relationships based on authority and the number of assignments in the group. Putnam is more interested in the impact of social capital at the national level; What effect does social capital have on democratic institutions and ultimately on economic development? He is influenced by Coleman. Putnam writes: "Trust, norms,

and networks that facilitate cooperation and cooperation to achieve mutual benefit."

According to Putnam, civil partnership networks (such as associations formed in the neighborhood system, cooperatives, sports clubs, etc.) are considered to be one of the basic forms of social capital. These networks strengthen the norms of like-for-like transactions in the society. Putnam broadly defined social capital. "Features of social organization... that facilitate cooperation and coordination for mutual benefits" (Putnam, 1993, pp. 35-36) which are embodied in networks and civil partnership. Using this definition, social capital can be measured with variables such as normative behaviors, participation in voluntary associations, especially trust (Nak and Kiefer, 1997, p. 76). These features of social capital are generally measured at the individual, household or local level, and hence it can be called civil social capital.

The concept of social capital also includes the aggregation of institutional quality at higher levels, which can be widely measured by democratic systems in terms of the level of accountability or the degree of corruption in the political system. Some features of social capital are closely related to the performance of public institutions and their relationship with the general public, and it can be called "public social capital". Another related concept is social divergence, which indicates social barriers to communication between individuals and groups (Grafton and et al, 2004, p. 12). Stone classifies the indicators of social capital into distant and close indicators. The closest indicators of social capital are the results of social capital, which include components such as trust, mutual action, and social networks. Civil

activities as a representative of social networks are an example of a close representative of social capital. This approach was popularized in Putnam's (1995) analysis of declining civic participation in America. Distant indicators are outcomes of social capital that are not directly related to key components. Examples of remote indicators are life expectancy, health status, suicide rates, teenage pregnancy, crime rate, unemployment rate, income, family and divorce (Spielberg, 1997, pp. 43-44).

A number of studies consider social capital as an independent variable and discuss how social capital affects other variables, such as the impact of social capital on child well-being and community development. In other studies,

social capital is viewed as a dependent variable, and the question arises as to what helps to reduce or increase social capital. Others consider social capital both as an independent variable and as a dependent variable in their model. The question they raise is what makes social capital and what effect does social capital itself have on certain results. Therefore, it can be said that social capital is a multidimensional concept that includes social networks, norms of trust and norms of reciprocity (Stone, 2001, p. 6). The measurable components of social capital are mentioned in the following table:

#### The main dimensions of social capital

A) The structure of social relations: networks	B) Quality of social relations: norms
<p><b>Types of networks:</b> informal/official</p> <p><b>Size/Capacity:</b> Limited/Unlimited</p> <p><b>Distance:</b> Local/Global</p> <p><b>Structure:</b> open/close Dense/dispersed Congruent/incongruent</p> <p><b>Relationships:</b> horizontal/vertical</p>	<p><b>Norm of trust</b></p> <p>Social trust +</p> <p>Personal/acquaintances -</p> <p><b>Generalized -</b></p> <p>Trust institutions/civilian +</p> <p><b>Norms of reciprocity</b></p> <p>Direct/indirect -</p> <p>Urgent/delayed -</p>

A) The structure of social relations: networks

Types of networks

In any social capital research, the types of networks should be specified. Putnam distinguished two types of networks, informal and formal (or what he calls civic commitment) (Putnam, vi: 1998, p. 64). Informal ties include ties that exist between family, relatives, friends, and

neighbors, while Formal includes links that exist in voluntary communities. Informal networks are divided into two parts, intra-family networks and extra-family networks (Finch and Mason, 1993, p. 18). Informal extra-family and kinship communities include relationships It is friendly and intimate as well as ties between neighbors. The table below shows the types of informal and formal networks:

**Types of official and unofficial networks:**

Unofficial networks	Official networks of social relations
*Family	*Relationships based on
*Relatives	groups/communities
*Friends	Taking care of the child
*Neighbors	Educational
	Sports/leisure
	-Music/art
	-Religious
	Charity
	Voluntarily
	*Work-based relationships
	-Partners
	-companies
	*Institutional
	-Government

The size of networks:

Recent researches have distinguished between intra-group, inter-group and bonding social capital (Putnam, 1998: Narayan, 1999:

Woolcock, 2000). Different types of social capital are related to network characteristics. The first network characteristic is the network size. The size of social networks affects the reserves of social capital. Individuals and

families with a large number of social ties have access to large reserves of social capital, and with less social ties, they have little access or opportunities to invest in social capital. For example, (Onyx and Bolen, 2000, 1997) gave examples for this case:

- How many phone conversations have you had with your friends in the last week?
- How many people did you talk to yesterday?
- In the past holidays, have you had lunch or dinner with people outside the family? (Onyx and Bolen: 2000, p. 113)

But these types of questions give us less information about social relations. Therefore, the second approach in measuring the size of the social network is focused on the existence of social relationships. The following questions study qualitative social capital:

- If you need a job, do you go looking for a job?
- If you are troubled and anxious and need someone's help and support, where do you go? (Stewart and Richardson: 1998, p. 132)

#### Local/Global networks

A number of studies have studied family-based social capital, but most social capital researches have focused on neighborhood relationships and local communities, and little attention has been paid to the interpersonal relationships of these communities (Stone: 2001, p. 18). Social capital studies at the local community level measure the participation of the neighborhood and local communities or

compare the participation in one area with other areas. Onyx and Bolen (2000). A good example of this approach has been provided by:

#### \* Participation in the local community

- Do you volunteer to help the local group?
  - Are you an active member of a local organization (sports club, etc.)?
  - Have you worked part of the local community project in the last three years?

#### \* Neighborhood communication

- Did you get help from your friends when you needed it?
  - If you need to go out, do you get help from the neighbor to take care of the child?
  - Have you helped a sick neighbor in the last 6 months? (Onyx and Bullen 2000, pp. 112-113)

#### Congruent/incongruent networks:

The heterogeneity of groups or social networks affects the level of trust within the networks. Krishna and Shrader (1999) have directly measured the congruence of networks with the following questions:

- Are they often of the same religion?
- Are they often of the same sex?
- Are they often from the same occupation?

Are they of the same age group?

\_ Do they often have the same level of education? (Krishna and Shrader, 1999, p. 67)

#### B) Quality of social relations: norms

##### Norm of trust:

The norm of trust is a key component of social capital. Social capital theories emphasize trust because of its influence on civil society and democracy (Eslaner, 1999). There are three types of trust:

1. Trust in acquaintances, which is personal trust or social trust of families.
2. Generalized trust

This trust includes trusting strangers.

3. Civil and institutional trust, this trust includes trust in official government institutions. Institutional trust is different from civil trust. Institutional trust is related to specialized systems (for example, transportation system, etc.) (Hoggs, Black, 1990, Giddens, 2000), while civic trust is related to social relationships that exist between people and citizens, customers and vendors. (Stone, 2001, pp. 25-26).

##### **Norm of reciprocity:**

Reciprocity is an exchange process within social relations by which the goods and services given to the parties are repeated by the party who received the primary goods and services. To measure the norm of reciprocity, questions such as:

- In the past year, how many times have you and your neighbors helped each other in small tasks such as grocery shopping, etc. (Stone, 2001, p. 31).

- Have you helped a sick neighbor in the last six months? (Bolen and Onyx, 2000)

- Have you helped your neighbor or friend in the following activities in the past year?

- Listening to the problems of friends and neighbors

- Lending household items to friends and neighbors

- Taking care of family-friends and neighbors when they are not present.

- Lending money to friends and neighbors (Baum et al., 1998) (cited by Nir Pira Hari)

In the end, it should be said that each of the above definitions deals with an aspect of social capital and in the expansion and explanation of that aspect of social capital. It can be said that social capital is considered as a source to facilitate relationships between people. This source includes institutions, norms, trust, awareness and many other things that govern the relationships and interactions between people and can have different consequences and results on the performance of people and societies.

##### **Energy policy**

The set of targeted actions followed by an actor or a set of actors in the face of a specific problem or issue is called policymaking. This definition focuses on what is done, so it is different from what it intends to do. Public

policymaking is a goal-oriented behavior rather than a random behavior. Public policies are developed by government institutions and officials during the political or policy-making process. They are the result of the legitimate authoritative action of a political system. Policy-making is not only the decision to approve the law, but also includes the results of actions related to the implementation, interpretation and application of the law. Policymaking is what governments do to control inflation, clean up the environment, or redistribute income, not what they say they want to do. Positive policymaking is done when the government takes action to influence a specific problem. Negative policymaking occurs when the government decides not to enter an area that requires government action. Public policy is based on law and is authoritative.

Since the beginning of the 20th century, most governments have comprehensively intervened in the exploration, extraction, refining and distribution of energy. The existence of market failure is usually presented as a justification for government intervention in a particular market. Energy policy is a framework of written and unwritten rules and attitudes that are generally built over decades. In this framework, all government levels in a country as well as the private sector are involved. The effects of economic, social and political aspects of society, which are not necessarily related to energy at first sight, are discussed in interaction with energy. Energy policy tries to improve the ways of production or consumption of energy resources.

**The main goals of energy policy are:**

- Participation in understanding individual, social, national and international issues related to energy
- Development of suitable researches, analysis tools and methods
- Generating the required information

Until now, energy has only been looked at from an engineering point of view and sometimes from an economic and technological point of view. And in this passage, concepts such as optimization, efficiency, and balance were more prominent and decision-making was based on this. Is Recent advances in political science, social psychology, sociology, development economics, and environmental economics have given new dimensions to energy policy. The characteristics of finite energies are:

- Finite and fossil energy sources cannot be renewed in a short period of time
- Still, the main human needs for energy are dependent on finite energies
- Political sensitivity towards oil is more than other energy carriers
- Renewable energies are sensitive sectors in terms of long-term investments
- Renewable energies require large-scale research and development
- They have significant consequences, especially in the climate of the world.

Energy policy overlaps with other policy areas; especially with economic policy, national security, employment and industries, environment, science and technology, social

policy and transportation. But the importance of these sectors in energy policy depends on time and place.

In energy policy, a dynamic approach is considered instead of a static approach because policy variables are changing rapidly. Four factors are mentioned for the superiority of the dynamic approach:

- Energy resources are limited, but they cannot be assumed constant at any time;
- Technological progress is a fact, but saving energy in the short term does not mean it in the long term;
- environmental issues are not fixed; For example, our perception of climate change changes rapidly;
- the increasing speed of oil and gas consumption in India and China is changing the global energy system. (Maleki, 2011, p. 6)

#### **National energy policy:**

In a basic energy policy, the government raises and presents issues related to energy, including production, distribution and consumption. Energy policy can include legislation, investment incentives, guidelines for energy conservation, taxes, international treaties and general policies. Energy policy requires the definition of goals, the determination of a strategy to achieve it, the institutional framework in which the government determines the priorities, the evaluation of policies, and also a tool for the implementation of this strategy. In the regulation of energy policy, governments seek to solve problems, and the national

energy policy is the basis for formulating and implementing a set of measures overseeing the activities of the energy sector. Since different sub-sectors of energy affect each other, therefore, in order to make integrated decisions in the energy sector, the national energy policy is formulated so that the predetermined goals can be achieved. In this approach, governments do not intervene in the market only by establishing laws and regulations and regulating relations, and every government must establish a balance between energy security, economic growth and environmental protection, including the national energy policy. It is decisive and all laws and regulations are formulated and regulated based on this. (Maleki, 2011, p. 23)

#### **Energy Management:**

Among the topics that can control the entire cycle of energy production, distribution and consumption and use these precious resources in the best possible way is "energy management", which is the most important tool today to face the excessive increase in consumption and prevent wastage. As its establishment and use implies the optimization of consumption and means choosing the correct and practical model of correct policies in energy consumption, which, in addition to being a guarantee for the continuation of economic growth, reduces the destruction of energy resources and also reduces the harmful effects of its incorrect use on environment and society. In other words, energy optimization means the use of the most advanced technologies and the use of modern management sciences that guarantee the highest efficiency or the lowest amount of energy consumption, and in other words, energy optimization, increasing awareness,

creating the right culture and, as a result, the right management of resources and costs. Also, the purpose of implementing a management system based on energy consumption in productive economic enterprises is to empower those organizations to create the necessary systems and processes to improve energy performance, including efficiency, use and energy consumption, which can finally be said that the implementation of this system will reduce greenhouse gas emissions. Greenhouse, energy cost and other environmental related consequences through systematic energy management.

The most basic foundation of development is energy, and one of the most important issues of today's human societies is energy and how to meet its needs. The energy sector is one of the most important components of the technical and economic infrastructure of society, and the continuation of activities in the production and service sector and the improvement of people's living standards require the provision of various forms of energy in sufficient quantity. With economic development and progress, the importance of energy will increase. Energy is a subset of the economic and social system that has a major impact on the economic development process. The economic importance of the energy sector is due to the creation of employment, the increase in income from energy trade, its major role in the production and service sectors, and the creation of extensive economic, political and... interactions. Energy management is a set of methods and actions that are carried out in different systems with the aim of using energy correctly and maximizing benefits or minimizing costs without reducing the quality of products or services.

Energy management is also responsible for monitoring the implementation and management activities of rational energy consumption. Consumption management is also referred to as a set of methods and strategies used to optimize consumption. These methods are usually divided into three groups:

- The first group: There are methods that do not cost money, such as the correct use of equipment and devices, as well as their care and maintenance.
- The second group: There are methods that have costs, but these costs are not very high, such as equipment maintenance and repair, measuring the amount of energy consumption in different devices of a factory and monitoring the change in consumption of each device, insulating pipes and channels, implementing training programs regarding methods Energy reduction.
- The third group: expensive methods. In these methods, fundamental changes should be made to improve energy consumption in devices, facilities and buildings. For example, if it is an old factory, if it is necessary and possible to save energy, its devices should be replaced with new devices or additional devices should be installed in order to prevent energy loss.

In fact, energy consumption management in the concept includes all forms and types of energy, however, due to the range of energy use in human life, which is caused by its many benefits, the main part of consumption management processes is related to energy consumption management. "Saving" and "Efficiency" of energy are two important indicators of energy systems. What is raised in the public

mind, the term energy saving means to consume better, not just to consume less. According to experts, saving means increasing energy efficiency, which leads to energy saving. Energy saving and energy efficiency are two different topics, but their concepts are related to each other. Energy savings are created when growth in energy consumption is reduced, as measured by physical metrics.

Therefore, saving energy will be the result of various processes, including increasing productivity or technological progress. On the other hand, energy efficiency is achieved when energy intensity is reduced in a product, process or specific area of production or consumption, without negatively affecting output or utility. Increasing efficiency or energy efficiency has been effective in saving it, therefore, it forms an important part of policies to increase energy saving. From the point of view of industries, increasing energy efficiency leads to reducing energy costs, increasing the level of competition, increasing productivity, improving quality and increasing profitability. From a national point of view, it also reduces energy imports, avoids pollution reduction costs, saves limited energy resources and improves energy security. Also, from a global point of view, it increases energy efficiency, reduces global pollutants, and brings environmental sustainability.

### **The Importance and Necessity of Energy Consumption Management:**

Improving efficiency or optimizing energy consumption means choosing patterns and adopting methods and policies in energy consumption that are favorable from the point of

view of the national economy. In this framework, determining the share of different forms of energy in the energy portfolio of each society according to the long-term possibilities of that society, as well as applying the most efficient way of using them, which implies reducing the destruction of energy sources and also reducing the harmful effects of the incorrect use of energy on the factors of life and movement, it is considered. Managing or optimizing energy consumption and improving energy efficiency, which means setting up a program and creating a suitable structure and organization to control and constantly monitor the way energy resources are used, as well as regular and continuous review in determining the share of different forms of energy for consumption, upgrading the level of technology and applying the necessary levers. It is inevitable to increase efficiency and effectiveness and achieve higher efficiency in energy consumption.

The meaning of energy management is to reduce the consumption of energy carriers and energy costs according to the geographical location, technical, economic and environmental parameters in the final consumer such as buildings, construction complexes or administrative, educational, etc. The first stage of building energy management is knowing the existing situation and the current structure of energy consumption in the building, which is known as energy audit and consists of different stages. Energy audit is the heart of energy management and analysis of current energy consumption, identification of energy consumption bottlenecks and their complications, providing solutions and treatment of building energy consumption complications are done at this stage. After identifying the solutions, the

implementation plan of the solutions is completed and based on the technical and economic criteria, the considered solutions are implemented, which is the second stage of energy management. In the third stage, the evaluation of the effects of the solutions, their durability and effectiveness on the building's energy consumption situation is done using common methods of evaluation, validation and verification, which in fact, this stage determines the success rate of the building's energy management in the short and long term. States. Terms such as energy management, energy optimization and energy saving are often used interchangeably with the same meanings. If these concepts are different from each other and energy management is like an umbrella that covers the following concepts:

- Energy optimization: using the most efficient technologies in order to achieve a certain result, which in most cases leads to a reduction in energy consumption.
- Energy saving: It means reducing energy consumption by performing a specific action (for example, turning off the light when lighting is not needed).
- Determining the energy tariff: that is, determining the most economical source of energy according to the type of activity.
- Choosing the right type of energy: it means using the most economical source of energy according to the type of activity.

Although energy management can be considered as one of the most essential cores of an organization's management, it is not very important in Iran due to various reasons such as the low price of energy carriers, the government nature of large organizations and the lack

of technical knowledge, expertise and skills. has not done. The meaning of energy management unit is a unit in industrial establishments that is in charge of the operational set including knowing the amount and manner of consumption of energy carriers, recording the relevant information and determining and implementing the necessary solutions for the optimal use of energy.

### **Research methodology:**

In this section, we will examine how to conduct the current research in order to answer the problem and the research question. In this regard, the society and research sample, data collection tools, research method and data analysis method are discussed. The sections have been chosen in such a way that they are in line and consistent in reaching the goal of the research.

Statistical population and statistical sample of the research:

The statistical population of this research consists of academic experts in the field of political science, sociology and energy management and active people in the field of energy consumption management and policy making. In order to answer the research question, a sample of five university professors who, in addition to their teaching and research experience in the field of energy management, have experience in the energy consumption management department of government organizations, have been selected from among the community, and four people from Sociologists and political science experts were selected by snowball method. In this method, the interviewees were introduced to experts for

subsequent interviews, and the interviews continued until theoretical saturation.

### Data collection tool

The data collection tool in this research is semi-structured interviews with specialists and experts in the field of energy management, political science and sociology in Iran. The conducted interviews were fully recorded and their text was implemented in the form of a text file. Then, in order to code the data in this research, MAXQDA software version 10 was used and then the codes extracted from the texts were analyzed in Excel software version 2013.

### Research Methods

The present research will be done using the content analysis method. In this method, the intention is to study the interviews and summarize, classify and report them using content

analysis techniques. According to the nature of the work, semantic content analysis will be used. In this way, signs are classified according to their meaning, regardless of the word used for it. Among the types of semantic content analysis, the topic analysis will be considered, in this method, the frequency and trend of specific topics will be discussed. Among the different techniques of content analysis, many techniques, clustering and text classification will be used. It is expected that the techniques and procedures used in this study will help clarify the impact of social capital on the realization of energy consumption optimization policies in Iran.

### The results of the research

In order to carry out this research, nine experts and activists in the field of energy policy, sociology and political science were interviewed. Table 1 presents the descriptive statistics of the interviewees.

The number of people	Interviewees by service location
5	University Professors with experience in the public sector
4	Senior managers working in the public sector and fuel consumption optimization company

Table 1- Descriptive statistics of the interviewees

As mentioned in the previous sections, the current research community consists of academic experts in the field of energy policy and active people in the field of sociology and political science. Five university professors who,

in addition to teaching and research in the field of energy policy, have experience working in the management departments of government organizations, and four experts in sociology and political science of the country were

selected from among the mentioned community. The data collection tool was semi-structured interviews and the conducted interviews were fully recorded and their text was implemented in the form of a text file. Then, MAXQDA software version 10 was used to code the data in this research. By using the content analysis method, the conducted interviews were studied and summarized,

classified and reported using the content analysis techniques and with the help of an Excel spreadsheet. One hundred and fifty codes were extracted from the interviews that were placed in six general categories. The mentioned categories are presented under the title "Social capital effect on the realization of energy consumption optimization policies" in index 1.

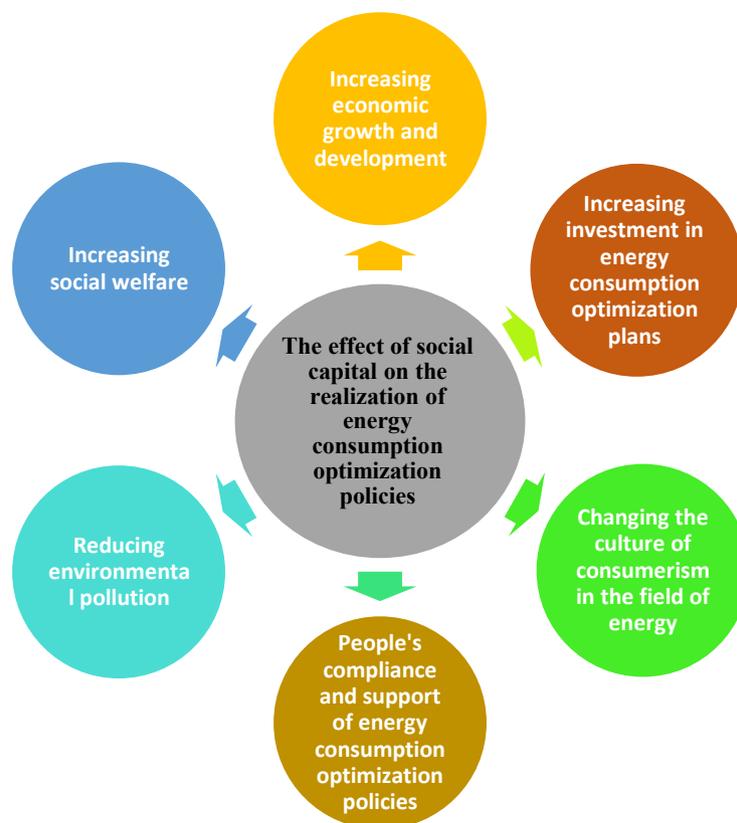


Fig. 1. The effect of social capital on the realization of energy consumption optimization policies

In this section, the effects of social capital on the realization of energy consumption

optimization are presented in the order of their frequency in the conducted interviews:

- (1) increasing economic growth and development;
- (2) increasing social welfare;
- (3) increasing investment in energy consumption optimization plans;
- (4) People's compliance and support of energy consumption optimization policies;
- (5) changing the culture of consumerism in the field of energy;
- (6) Reducing environmental pollution.

#### Increasing economic growth and development

Based on the conducted interviews, experts in the field of energy policy believe that increasing economic growth and prosperity requires high social capital.

One of the interviewees explains in this regard:

"Economic growth is the increase in what the economy can produce if it uses all its scarce resources. The increase in the production potential of the economy can be shown by the outward movement of the production possibilities curve (PPF) of that economy. "The easiest way to show economic growth is to divide all goods into two main categories, "consumer goods" and "capital goods." An outward shift of the production possibilities curve means that the economy's capacity to produce has increased."

The impact of social capital on the efficiency and productivity of agents is one of the most

important effects of this capital. In today's world, a complete contract that can include all aspects and costs of a contract is impossible or very difficult and expensive. It is in this situation that trust and social capital come to the aid of individuals and groups, and by reducing opportunism, it compensates for the weaknesses in incomplete contracts, and while creating economic prosperity, it can increase the efficiency of contracts and relationships, or to other speech, to cause the efficiency and productivity of the production factors and in this way affect the economic growth. (Rahmani et al., 2007, p. 34)

Another direction through which social capital can affect economic growth is to facilitate innovation and creativity. Social capital, while facilitating information about technology, comes with the help of property rights, and it makes people turn to creativity and innovation by being sure that their invention and creativity will not be stolen and that they can receive its benefits. On the other hand, social capital by expanding communication and interactions between different companies and groups encourages them to make joint investments and provides the basis for increasing innovation and inventions, and it is clear that with the advancement of technology and the increase of innovations The productivity of the production factors also increases and causes an increase in production and economic growth. (Rahmani et al., 2007, p. 36)

Another channel that is expressed for the impact of social capital on economic growth is a general and macro perspective. As its title suggests, social capital is not an individual's property, but actually belongs to a society. Social capital can expand people's trust in each other

in society and increase people's trust in institutions and their performance. One of the most important institutions is the government. By increasing institutional trust, social capital can play a significant role in the performance of the government and their future decisions. Extensive studies indicate that there is a positive and significant relationship between social capital and civil society. By increasing people's trust in the government and its decisions, while supporting the government, for example, by participating in elections and paying taxes, they increase the efficiency of the government and thus the economic system, which can have a significant role and impact on economic growth. have (Rahmani et al., 2007, p. 42)

In addition to the mentioned factors, social capital can affect economic performance in various ways, which can be mentioned as the following factors:

- The impact of social capital on information circulation and preventing market failure
- The effect of social capital on financial development
- The effect of social capital on inequality and income distribution
- The effect of social capital on the security level of society
- The effect of social capital on society's collective consumption
- Many other factors, each of which can affect economic performance and economic growth with the influence of social capital. (Rahmani et al., 2007, p. 43)

Social capital serves economic development by reducing transaction costs, overcoming the problem of free riding, affecting human capital, facilitating marketing, legalism, reducing crime and social deviations, etc. (Ghasemi et al., 2010, p. 87)

#### Increasing social welfare

Social welfare is one of the most important concerns of policymakers in today's world and is considered an important element in progress and development. Today, the discussion of social welfare, which is mostly known as a synonym for happiness, is often measured by the income level of people, which can be explained as a synonym for economic, social, environmental status, health and peace, and besides individual factors; Inequality, justice and social solidarity are emphasized on promoting social welfare. Therefore, the main axis of social welfare is the same social capital, and in other words, more social capital brings individual and public health, life expectancy, sense of health, well-being and satisfaction. Due to the fact that social welfare is one of the important aspects of human life and since human needs are constantly expanding, social welfare is a social product that is meaningful in the context of social capital. That is, social capital can affect social well-being.

In this regard, one of the experts in the field of sociology states:

"Governments pursue goals with their policies. The most important category of the government in today's era is the social welfare of the citizens, which means that people with their social and political participation and the appointment of statesmen and representatives

are looking for it, which is a natural and social gift. benefit their country. The social well-being of citizens in general and individually has two objective and subjective dimensions. In the objective dimension, the expansion of infrastructure, reduction of pollution and increase in income are considered by the citizens, but in the subjective dimension, good governance, health, hygiene and... it is considered. People participate in political and social affairs so that their votes and opinions are effective in their lives. In the same direction, the government intends to provide a minimum level of welfare for the less privileged citizens by giving subsidies. Social welfare is the result of good governance and this governance is realized on the basis of social capital.

Since energy, as an important production factor, can play an effective role in economic growth and development, it is very important to analyze the impact of related decisions and policies on various economic sectors and factors. One of the policies implemented in this sector is the subsidy paid to energy carriers. The purpose of paying the energy subsidy is to help the low-income sections of the society to use the minimum welfare facilities. For this reason, the government has allocated a high percentage of the country's income to energy subsidies, which has led to a decrease in the government's investment power in different parts of the country (Ghaderi et al., 2005).

In addition to the direct costs of energy subsidies, the low price of energy has caused the consumer to not observe its optimal consumption. Because it does not pay the real price of energy carriers. It is natural that with the continuation of such flow and access to the low price of fuel and energy carriers, the producer

no longer feels the need to take advantage of new and energy-reducing technology, and as a result of the severe drop in productivity, the possibility of product competition It will be lost in global markets. Therefore, in order to ensure the increasing consumption of energy, there is a need for efficient investment and policy making in the energy sector.

- ❖ Increasing investment in energy consumption optimization plans

According to many economic researchers, trust as one of the pillars of social capital plays an important role in economic business and leads to the reduction of transaction costs and speeds up transactions. (Naghdi et al., 2010) According to the definitions presented earlier regarding social capital, it can be said that if the public sector pays attention to strengthening social capital, it can attract private sector capital much more easily. One of the interviewees, who is one of the senior managers of the fuel consumption optimization company, admits:

"The fuel consumption optimization company does not directly generate much income for the oil ministries, but it does generate income indirectly, and this issue implies that policies in the field of energy consumption optimization will continue, such as the plans in Article 12 of the Law on Removing Obstacles to Competitive Production that the benefits resulting from the implementation of these projects from the point of saving gasoline and diesel are very impressive and include the state of the government, but unfortunately the necessary infrastructure for the implementation of these projects is weak and the private sector

investors due to lack of confidence in recycling their capital from The public sector is not willing to invest in these projects."

- ❖ People's compliance and support of energy consumption optimization policies

If the government has the support of social capital and the public trust of the people, of course it will face minimal risks and challenges in formulating and implementing energy consumption optimization policies, and the society will have better company with the government. The opinion of one of the interviewees is as follows:

"We see a clear example of good social capital regarding the payment of taxes in some European countries, in such a way that people pay taxes easily and with the confidence of receiving favorable services from the government, which shows that the basis of social capital should be "service-oriented". When the government has the support of the society, especially in fuel consumption optimization plans, people will easily follow the government's policies, for example, when the air is polluted, if there is good social capital, people will follow the government's policies or for example, when a certain product is introduced to the people by the government and through the media, people will respond positively."

Another interviewee states:

"People as social capital are the driving forces of the government's policies and this happens if they see their own benefit in formulating the government's policies and the fact is confirmed to them that they have a key role in the

decisions and policies formulated by the government and from this way to trust the legislative body. This will lead to their support and support for the policies of the rulers. Especially in the energy sector, we need the people's support and support because it is the people who make the policy come true by saving energy consumption. optimization of energy consumption in the country."

- ❖ Reducing environmental pollution

Environmental issues are considered a comprehensive and global challenge, and many experts and environmentalists believe that in order to find guidelines to reduce these issues, we should move towards the teachings of behavioral sciences and not pay attention to environmental issues that have short- and long-term effects. It's been a long time so that no one can claim that issues such as global warming, climate change, air pollution and ecosystem change are specific to underdeveloped countries.

One of the interviewees explains:

"Today's situation of environmental issues in Iran is not very satisfactory, so that according to the environmental performance index (2012), Iran is ranked 114th in the world among 132 countries with a drop of 36 places compared to 2010. It can be said that in recent decades, Iran has faced many environmental issues such as water pollution and water shortage crisis, air pollution and fine dust problem, soil erosion and desertification, reduction of fossil fuel reserves, excessive energy consumption, etc. and the existence of such issues leaves no room for doubt in considering the country's environmental conditions as

unfavorable, although many of these issues may not be unrelated to the environmental behavior of the people of Iran. Each of these cases and many other cases Environments have a social organization that occurs gradually and is rooted in human decisions and social structures. Environmental sociologists claim that such issues are inextricably linked to social issues such as inequality, democracy, and the economy. "

A number of environmental sociologists such as Dunlap, Yearly, Beck, Moll, etc., believe that environmental issues are social issues and have focused on the social dimensions of the environment. An important part of the fluctuations of people's behavior towards the social environment, such as the environment, is related to their social capital. Since one of the most important dimensions of social capital is social participation, and the realization of energy consumption optimization policies to reduce environmental pollution is achieved through the social participation of people.

❖ Changing the culture of consumerism in the field of energy

Today, one of the most important challenges facing our country is changing the culture of consumerism, especially in the field of energy. Changing the behavior of different social groups can lead to optimal energy consumption. From the point of view of many thinkers, including Putnam (1955), Coleman (1990) and Bourdieu (1986), social capital is one of the sources of social action; Therefore, the strengthening of social capital can lead to the expansion of desirable social actions such as optimal energy consumption.

In this regard, one of the university professors has mentioned that:

"In the past two hundred years, the country's economic policies have focused on creating needs, and this has strengthened the culture of consumerism, that is, our development programs, as they are not production-oriented, are basically consumer-oriented and need-creating, and this is one of the issues that fuel the culture Consumerism has become incorrect. In the past forty years and during the sacred defense, policymakers were able to control consumption, but from the third plan onwards, in development debates and privatization models, the need for society was created and people craved consumerism have turned."

According to the opinions of the respondents, consumerism in the field of energy is dependent on the level of social capital reserves, and social capital is capable of culturally by creating solidarity and moral commitment, economically by reducing costs, and policy-wise by attracting public participation. lead to optimal energy consumption.

In addition, proper education from low educational levels and proper culture in the field of energy saving were among the other issues raised by the interviewees.

#### Discussion and Conclusion

As mentioned in this article, in today's world, the rapid increase in demand for energy and the dependence of countries on its use shows that one of the important issues raised in the future, in the countries of the world, will be the discussion of energy. In this regard, policy making for optimal energy consumption is an

important issue for the country. Before the oil crisis of the 1970s, economic growth theories were focused on capital and labor as factors of production. But after that, energy was also mentioned as a factor of production along with capital and labor. Excessive consumption of energy and concerns about it lack are of great concern, especially for future generations. In times of crisis, social capital can be used as one of the important components to solve problems and improve existing processes. Social capital does not mean real estate, personal assets or money. It means something that makes these tangible objects count more in people's daily lives; It means goodwill, friendship, sympathy and social relations between a group of people or families that form a social unit. If a person communicates with his neighbor and they also communicate with other neighbors, there will be an accumulation of social capital that meets their personal needs and can even significantly improve the quality of life in the community as a whole, while the whole society benefits from the cooperation of its parts, and individuals will also benefit from benefits such as assistance, sympathy and friendship with neighbors. Social capital describes the qualitative situation that prevails in society and relationships between individuals and groups. The existence of this space facilitates relationships between people and improves trust between them.

This research seeks the impact of social capital on the implementation of energy consumption optimization policies in the country. For this purpose and in order to understand the aforementioned effects, interviews were conducted with university experts in the field of sociology and political science and active people in the field of energy management, and by studying the results of the interviews using the technique of semantic content analysis, the impact of social capital on policy making were extracted and summarized. As seen in the previous sections, the mentioned items include increasing economic growth and development; increasing social welfare; increasing investment in energy consumption optimization plans; People's compliance and support for energy consumption optimization policies; Changing the culture of consumerism in the field of energy and reducing environmental pollution. Deep and detailed attention to the mentioned cases, each of which has different components, will help the officials and those involved in this field to be able to solve all or even some of the existing issues and problems, a step in the direction of using capital benefits as best as possible. Social in line with the realization of the country's energy consumption optimization policies. It is hoped that such measures can be useful in increasing the effectiveness of the country's social capital and in order to achieve the government's energy consumption optimization plans as fully as possible.

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