Why do sustainable development policies fail? Evidence from energy efficiency policies in Iran

Abstract:

Overall, the improvement of energy efficiency level is one of the inevitable economic, national, and strategic visions in each society. Energy efficiency improvement can result in energy security, healthy environment, quality of life, and economic growth. Energy efficiency is considered of a particular importance in Islamic Republic of Iran as many other countries and its policy making process experienced many ups and downs until in 2010 and 2011 when serious efforts was put into action in this regard. As a result, regulations and policies regarding this issue were developed, approved, and notified by other organizations. Unfortunately, in question policies haven't revealed much success considering some indexes such as energy consumption per capita, energy consumption intensity, and energy factor which represent a policy failure regarding the predetermined goals. The purpose of this paper is to identify, explain, and prioritize influencing factors explaining failure of Iranian energy efficiency improvement policy using failure analysis framework suggested by McConnell(?). Therefore, a case study of energy efficiency policies in Iran is conducted focusing on "consumption pattern reform policies" and "consumption pattern reform act" as two critical policies of government in the last twenty years. To achieve this, field studies were performed as well as five interviews and a 12-member focus group of experts was formed. 27 factors were determined as influencing factors for failure of energy consumption efficiency policies, using thematic analysis of the data drawn from interviews and focus group. Finally, a questionnaire was developed in order to prioritize the explored factors. Data extracted from 11 questionnaires was collected and analyzed and the important factors were determined by TOPSIS method. Results show that "inappropriate pricing of energy carriers", "lack of decent responsiveness of authorities", "lack of enough clarity about authorities of some sections", and "short-sighted political structure" are of high importance.

Keywords: policy failure; energy consumption efficiency; Iran

1. Introduction

Energy has been considered as one of the most important issues for governments for a long period of time. The production and consumption of energy has always affected different economic sections. It has been turned to be announced as a strategic resource and also a critical tool in achieving industrial development. However, a great deal of energy is being wasted in the world, as the earlier studies in 2000 show that 60% of the primary energy is wasted in the processes of transforming and consuming and also more than 60% is wasted by the ultimate consumer (Nakićenović, Grübler, & McDonald, 1998). The importance of this strategic resource and also the concerns regarding security, economic efficiency, and also the reduction of greenhouse gas emissions resulted in a debate about the efficiency of energy consumption in the world. For instance, Europe union is tracking energy efficiency issues very strongly in their policies. Variety of reports such as "doing more with less energy" (EC, 2005), "an European strategy for reliable, competitive, and sustainable energy supply" (EC, 2006b), "action plan for energy efficiency" (EC, 2006a), and many of the "climate action programmers" (EC, 2008) clearly represent the importance of energy efficiency in european policies.

Investigations of a group of 16 countries which are members of the international energy agency (IEA) reveal that half of increased demand for energy services was fulfilled by more energy consumption and the other half was by energy efficiency since 1990. Only in 2005, energy consumption efficiency resulted in saving 15% of energy and also a decrease of 14% in CO2 emission (IEA, 2008). The result of executive actions in energy consumption efficiency section is that the policies are taken more seriousely with the longer term stratgeic plans.. Stakeholder Forum has issued a report titled " UNIVERSAL SUSTAINABLE DEVELOPMENT GOALS" which is considered in sustainable development issues by United Nations. The United Nations have considered to double global rate of improvement in energy efficiency in 2030 based on the seventh "long-term quality goal" of this report which in turn depicts the importance of energy efficiency (Osborn, Cutter, & Ullah, 2015).

Islamic republic of Iran is one the countries which has the greatest energy resources in the world. However, it doesn't bear a good condition of energy consumption. In other words, although Iran is rich in energy resources, inappropriate consumption and waste of energy can bring about irrecoverable losses for this country. According to the statistics reported in 2002, waste of energy in Iran equals its total construction budget which is 5 billion dollars a year(Afshar, 2009). Ignoring the solutions to stop this trend and continuing on the existing pattern can be risky for Iran's economy and turn it into an net energy importing country from the current exporting state (Van Soest & Bulte, 2001). Considering the report by global energy society, Iran recorded the biggest increase in energy consumption intensity between 1990 and 2006 in the whole world (WEC, 2008). Based on the statistics of energy balance sheet[1] of Iran,

[1] Energy balance sheet is a book which contains information about resources, production, transfer, waste, and energy carriers' consumption of Islamic Republic of Iran. The last copy (27th year of publishing) was published in 2013. This collection is the result of consultation and cooperation of a great deal of managers, experts, and authorities of energy section regarding 57 organizations. Its statistics are provided based on the International Energy Agency

energy consumption per capita is 1.61 times bigger than the average global ultimate consumption per capita which is higher than countries like Turkey, India, Pakistan, Africa, and Venezuela, etc. This happens because of low efficiency, high energy consumption, and using high-energy-consuming goods and services. According to the information provided by the balance sheet in 93, energy consumption intensity[1] in Iran was 1.4 times bigger than the golbal average. Also, energy factor[2] has increased from 1.37 to 1.6 between the time slots 1992-2002 and 2003-2013(Energy Balance, 2013).

Since raw oil, oil products, and natural gas constitutes 98.6% of primary energy in Iran, non-optimal use of energy carriers results in not only a decrease in the life of non-renewable resources of oil and gas but also serious damages to environment, irrecoverable damages to sustainable development path, such as foreign exchange earnings and development of economic infrastructures in Iran(Iran Fuel Conservation Company, 2004). The above mentioned problems reveal the importance of energy efficiency in Iran to a great extent. That is why the researchers believe that correct use of energy would create valuable development chances for Iran which is not conceivable without them(emami meybodi, 2004). Hence, energy consumption efficiency has been considered by Iranian authorities during the last decade and has resulted in developing and establishing regulations and policies of reforming the country's energy consumption. However, as we will explain the issue in section 2-5, these policies are mainly failed.

The current paper investigates "consumption pattern reform policies" and "consumption pattern reform act" in order to identify, explain, and prioritize factors influencing energy policies failure in Iran. To this end, McConnell policy failure framework has been used in order to categurise and interpret the collected data. Then, TOPSIS method is applied in order to prioritize the factors. In addtiotno to the analysis of main factors expalaing failure of energy efficiency policies in Iran , this paper could help the policy makers to fix the main failure points.

The paper includes 5 sections. In the next section, we mention energy efficiency issue in the world (section 2-1). Therefore, we explain the policies for increasing energy efficiency in Iran (section (2-2). Then, policy failure literature (section 2-3) and the framework considered for analyzing failure factors are explained (section 2-4). Section 2-5 explains why these policies have failed in Iran. The research methodology is explained in section 3 and section 4 represents the results and findings of the current research. Conclusions are included in section 5.

2. Literature Review

(IEA), the Organization for Economic Cooperation and Development (OECD) and Statistical Office of the European Communities (Eurostat)'s standards.

[1] Energy intensity is an index to determine the energy efficiency in the level of national economiy of each country which is measured by dividing the ultimate consumption or initial supply by gross domestic production and shows that how much energy is used for producing a determined amount of goods and services on a monetary unit basis.

[2] Energy factor is obtained by dividing growth rate of marginal energy consumption by growth rate of gross domestic production for a given period of time.

2-1- Global issues of energy consumption improvement

Before the first shock in oil prices in 1973, limited discussions were considered around the general policy making toward the energy efficiency. Oil was affluent and cheap in industrial countriest of the west and new discoveries gaurenteed a long-term non-stop supply. However, in the early 1970, the emerging new attitudes towards energy growth as well as oil sanctions imposed on Arabs influenced this trend (Golove & Eto, 1996). In the late 1970s, Lovins referred to alternative energy resources and focused on energy efficiency (Lovins, 1976). This issue and the investigations around inefficient energy consumption in society turned the idea of "energy efficiency" to be a critical issue in general policies. Due to global challenges on energy, the importance of the problem increased gradually and observations show that energy improvement solutions are a decent response to these challenges (IEA, 2007a, 2007b). Therefore, energy efficiency has become an important priority in policy programmes of many countries (Cagno, Worrell, Trianni, & Pugliese, 2013). For example, increasing energy efficiency in Europe is considered as the best method of achieving determined goals by European commission in 2009 which is based on a decrease of 20% in greenhouse gases production and a decrease of 20% in energy consumption (EC, 2009).

Different definitions are presented for the concept of "energy efficiency". Considering the definition by international energy agency report (IEA, 2014) and according to Lawrence Berkeley National Laboratory: "energy efficiency is using less energy to provide same service". The United Nations' environmental programme also determines less dependence on traditional energy resources (such as fossil, etc.) by efficiently using them or the ability of achieving more (or the same) services through energies such as thermal energy, electricity and etc. by consuming less of energy. The financial costs are then defined as energy efficiency in this definition (United Nations Environment Programme, 2007). It is conceivable that energy efficiency policies have a critical role in energy security supply, climate changes and economic goals. In fact, energy efficiency improvement in energy supply and demand is an effective method in providing energy security and climate changes; and supports economic growth as well. Considering the importance of this case, many endeavors have been conducted in this field for many years. As an example, G8 group in Gleneagles conference asked international energy agency to present political advices on improving energy consumption. The agency developed a framework of necessary conditions together with 25 policies in response which covered 7 prioritized sections (Jollands et al., 2010). However, variety of endeavors for improving energy efficiency have usually failed or haven't revealed a desirable result due to inappropriate and insufficient policy making frameworks or due to executing deficient regulations (UN, 2015).

2-2- Policies of energy consumption efficiency in Iran:

The growing trend of energy demand began from the mid solar forties in Iran and continues till now. During the period 1973-1993, this trend showed a decrease of 300% in Iran(Rahim khani, Haji masghati, & Mohammadie, 2007). As a result, energy efficiency improvement issue was considered as the first important issue of policy making in energy section until 1993 and was concluded in Iran's 5-year development programmes and yearly budget regulations(Islamic

Consultative Assembly, 1993). Energy committee started a new cycle of activities under the administration of minister of energy. Also, to manage the energy efficiency, Iranian energy efficiency organization (SABA) was established in 1995 and was supposed to commit its mission in energy management field by conducting studies, research and development, education and awareness, publications, design, consulting and informing, construction and execution management, technical and economic supports, capacity building especially in private sector(the Cabinet of Ministers, 2001). All the efforts continued in Iran until the point that general policies for reforming consumption patterns were communicated by Iran's leader in 2009 and established through the next year as consumption pattern reform act in Islamic parliament. Due to importance of these policies and the mentioned communicated act of law, we refer to its content in the following.

2-2-1- Consumption pattern reform policies

Consumption pattern reform policies were published in 06.07.2010 by the leader of Iran and after consulting the expediency council("Expediency Discernment Council," 2010). These policies include ten cases in which case one to six relates cultural and educational policies of this field, seventh case discusses saving policy in energy consumption, the eighth and ninth cases refer to water and bread related policies and finally the lase case includes efficiency improvement policies. Among these policies, the fourth and seventh cases are directly related to efficiency improvement and so are the main focuses of this research.

Policy number 4: training the principles and methods of consumption improvement in all the general education levels and all the specialized and academic ones

Policy number 7: saving energy by a collection of moderate actions weather price-oriented or not in order to continuously reduce "energy intensity index" to at least two third of the current value until the end of fifth development plan and also at least half of the current value until the end of sixth development plan by focusing on the following policies:

-considering the priority of increasing efficiency in production, transfer, and energy consumption when creating new capacities for energy production

-applying integrated and exhaustive studies about the country's energy system for improving energy supply and demand

-developing national energy efficiency plan and applying incentive policies such as financial support and also financing banking facilities for implementing consumption and energy supply improvement plans and forming public and private institutions for increasing energy efficiency

-measuring the macro indexes related to energy by a decent methodology

-reviewing and establishing regulations and rules for energy supply and demand, developing and applying national compulsory standards for exporting and importing energy-consuming related tools and facilities and strengthening supervising system on their efficient execution and making producers to reform their energy-consuming production processes

-reforming and strengthening the transportation system by focusing on regional and extended regional subways in order to provide easy and cheap transportation means

-increasing the efficiency of powerhouses and also the variety of electricity production supplies and increasing the share of new and non-renewable energies

-expanding the quantity of electricity production from small, sporadic, and high efficient powerhouses and producing electricity and heat simultaneously

-improving the methods of energy conduits transferring such as maximizing the transfer of oil products by pipes and railways (reform act)

2-2-2- Consumption pattern reform act:

After publishing consumption pattern reform policies by Iran's leader, "energy consumption pattern reform" act was published by parliament including 75 acts and 20 notes in 2011(Islamic Consultative Assembly, 2011). According to the definition provided in the law context "all kinds of energies which are produced, imported, and consumed in the country and avoid waste of energy from starting point till the finishing point without reducing social welfare and national production level; and are followed by efficiency and productivity increase, energy economic use, better exploitation, supporting sustainable development, and protecting environment" should be managed and improved based on this law. The law is developed in 12 chapters in which all the chapters are focused in this research especially chapters 3, 4, 5, 6, 8, 9, and 12 which are "organizations and systems chapters", "Subscribers standard energy consumption criteria, energy-consuming facilities and processes", "energy consumers in construction and urbanism sections", "energy consumers in industries", "energy consumers in agriculture", "transportation", and "other rules". 29 ministries, organizations, institutions, and governmental, public, military, and disciplinary organizations are responsible for energy consumption pattern reform act. 45 acts out of 75 are individually or cooperatively related to 5 systems including three ministries i.e. "oil ministry", " power ministry", "industry, mine, and trade ministry", and also energy efficiency organization (SABA), and fuel consumption improvement cooperation(Islamic Parliament Research Center Of IRAN, 2013).

2-3- Political failure

The debate around success and failure classifying and categorizing has been started from 1970s (Pritchett, Woolcock, & Andrews, 2010). Judgment about success and failure can be a catalyst for adjusting a new instruction and reforming a wrong policy. However, there have been debates and many disagreements in politics and general policy making sciences about determining the cases of political success and failure (Grant, 2009). There are differences between understanding what is called success and understanding what is called failure. Some visions like foundationalism and scientific views invites us to see success as a truth (Davidson, 2005) while others such as constructionist and discourse views focus on the importance of the meaning and interpretation (Deborah, 2002; Fischer, 2003). So, success and failure depend on the factors such as values and general players' beliefs of viewer and also the extent to which they are impressed by politics. As these views provide different definitions of failure and

success, one of the researchers defines failure as a case which happens when policy is not able to reach an objective or perceived set of results (Hall, 2011). McConnell is one of the scientists of this field who defines policy failure as the inability to reach the goals which adherents of them have considered for a case as the opponents of a policy bear a failing sense about the policy because of the lack of initial adherence to that policy regardless of the obtained results (McConnell, 2010b). Others believe that policy failure means lack of balance in power, inequality increase, and ignoring the stakeholders in developing the policy goals and evaluating the results (Pawson, 2006; Taylor & Balloch, 2005). According the definitions provided in the relevant literature, this paper defines policy failure as follows: policy failure is the inability to reach to a set of predetermined goals and the failure to solve a dominant part of a problem for which policy has been developed in a way that the problem remains mainly unsolved.

2-4- Policy failure analysis framework

In order to obtain a better understanding of success and failure, we need to recognize the different aspects of policy in a general analysis framework. These aspects may overlap but they can be considered separately for analysis purposes. Each of these aspects may represent a point or place where a failure has taken place. In this regard, Bovens et al. (Bovens, t'Hart, & Peters, 2001) present a framework including both programmed and political aspects. Next, Marsh & McConnell (Marsh & McConnell, 2010) suggested process aspect considering their proposed framework and present a three-dimensional framework. Therefore, this paper investigates the failure of energy consumption improvement policies from three points of view which are process aspect, programmed aspect, and political aspect. These aspects are explained in the following.

Process aspect: process is a main traditional problem of general policy analysts. Process includes the understanding of tool by which societies can and should make public decisions considering public interest. Process has been the case of debates of many researchers for a long period of time; especially the cases related to advisory interaction (Gastil, 2008), policy design (Schneider & Ingram, 1997), disputes settlement (Schon & Rein, 1994), problem solving (Bardach & Patashnik, 2009), and politics cycle (Althaus, Bridgman, & Davis, 2012). Some researchers believe that this aspect is the element which is usually ignored in considering the success and failure of a policy (Marsh & McConnell, 2010). The governments identify the problems and difficulties, evaluate the alternatives, develop the tools, cooperate with the stakeholders, and make decisions. In fact, what government performs includes detecting the problems, investigating the probable policy making alternatives, consultation, and decision making. In this regard, failure means that the policy couldn't go through the steps of policy process successfully and experiences difficulty through its way (Brändström & Kuipers, 2003).

Programmed aspect: "programmers are all the stuff which governments do" (Rose, 1984). In other words programmers are a determined form of proceedings designed to achieve policy goals. Programmes refer to methods for combining different resources and available and existing principle tools such as costs, tax incentives, manpower, and etc. (Howlett, 2010). From this point of view, success means that we should reach our technical planned and principle goals

within approximately predicted costs and estimated effort in an estimated time period (McConnell, 2010a).

Policy aspect: the governments' plans and processes have consequences. They can result in increased political reputation and election outlook, support the path of the regarding policy, expand the governance programmes, and stimulate policy adherence behind the back of all these motions (McConnell, 2013). This aspect is the most complicated factor in recognizing failure and success. So, some analysts prefer not to consider political issues because they assume that as a deviation from the logical form of policy analysis (Davidson, 2005). However, to understand the multi-dimensional nature of policy, it is necessary to take this aspect into account. Policy aspect is the aspect of evaluating policy and policy makers in the field of politics and refers to the effect of a policy on political, election, and party issues (Howlett, 2012).

In this research, causes of energy improvement policy failures are classified and represented considering the above mentioned framework.

2-5- Empirical evidence on failure of energy consumption improvement policies in Iran

As mentioned before, energy consumption pattern reform policies were published in 2010 and energy consumption pattern reform act was established in 2011. In the following, targeting state of policies as well as their failure reasons is discussed. This section proves our statement about the failure of energy consumption improvement policy and provides the context for investigating failure reasons and their explanation. Of course, we should consider that empirical evidences are mostly of programmed aspect failure types and less focus has been exercised about process failure and policy failure in this section. This is because programmed failure is more tangible, measurable, and consensus according to empirical evidences.

International energy agency (IEA) collects the statistics of energy sections of countries and publishes them annually. According to the published statistics by the agency for consequent years, the state of Iran is worse than the global average. Some of the indexes related to this field are included in Table 1. Considering the determined goals of energy consumption reform policy energy intensity[1] should decrease to two third of its value in the act's publishing time until the end of fifth development plan. But as it is shown in the following table, energy consumption intensity has not only decreased but also raised that means the policy has failed.

Table 1: key indexes related to energy consumption improvement based on international statistics

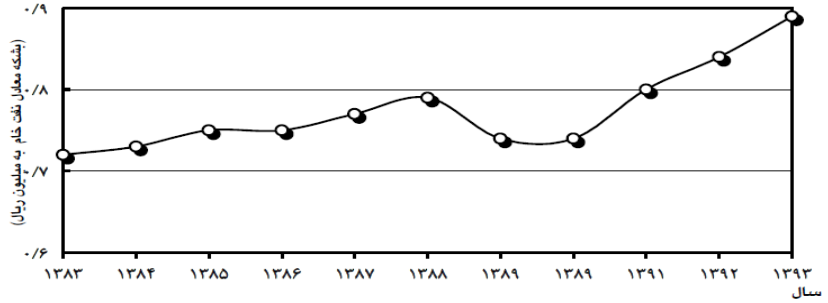
Index		**1995**	**2009**	**2013**	**2014**
	Iran	0.43	0.47	0.5	0.51
	World	0.22	0.2	0.19	0.19

[1] Energy Intensity: Energy intensity is a measure of the energy efficiency of a nation's economy. It is calculated as units of energy per unit of GDP (for example TPES/GDP). High energy intensities indicate a high price or cost of converting energy into GDP. Low energy intensity indicates a lower price or cost of converting energy into GDP

1 Total primary energy supply(TPES): is a term used to indicate the sum of production and imports subtracting exports and storage changes

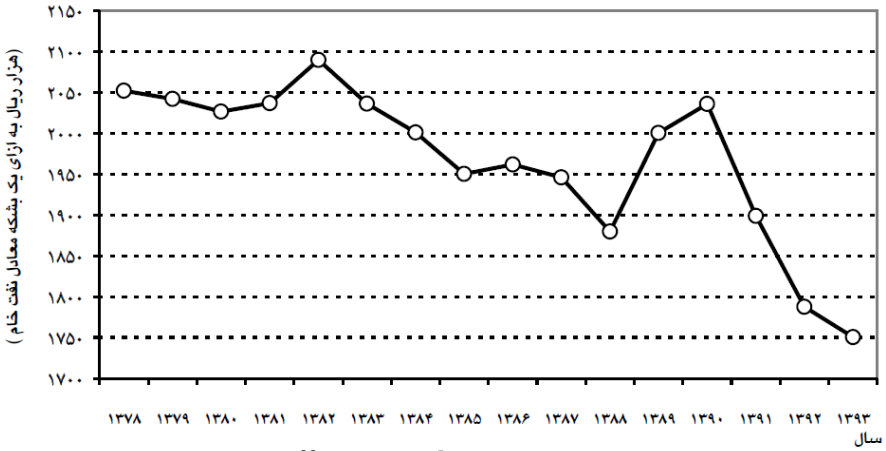
TPES[1]/GDP (tone/thousand 2010 USD)	EU	0.13	0.1	0.09	0.09
TPES/GDP PPP tone/thousand) (2010 USD	Iran	0.16	0.17	0.18	0.19
	World	0.18	0.15	0.14	0.14
	EU	0.13	0.1	0.1	0.09
CO2/Population (t CO2/capita)	Iran	4.05	6.87	6.94	7.12
	World	3.75	4.21	4.49	4.47
	EU	7.89	6.98	6.60	6.22
Reference: the current research based on the statistics of IEA ("IEA - International Energy Agency," 2017)					

Figure 1: energy intensity index increase based on internal statistics in Iran



Energy intensity index 2003-2013
Source: Energy balance of Iran-2013-p103

Also, some indexes such as energy efficiency is declined through years which is conceivable through Figure 2.



Efficiency index 1998-2013
Source: Energy balance of Iran-2013-p133

Also, there remain main problems in achieving the goals of energy consumption reform act. In the following, we discuss some of these problems.

[1] Total primary energy supply(TPES): is a term used to indicate the sum of production and imports subtracting exports and storage changes

Based on the content fifth of act, supreme council of energy is only responsible for energy policy making in the country. According to the reports of the country's inspectorate, this council has held only two meetings without approval in 2001 and 93 from its establishment and no action is taken about the contents like 15, 18, 73, etc. for which supreme energy council was responsible. Delegation of ministers should approve regulations, instructions, and rules for contents 7, 8, 10, 28, 33, 75, and etc. of energy consumption reform act which haven't be provided until the report time. Also, contents 10, 11, 17, 22, 26, and etc. required forming some workgroups which is not achieved. Additionally, contents 12, 14, 25, 45, 74, and etc. include governance requisites such as support and supervision which are provided yet(Islamic Parliament Research Center Of IRAN, 2011, 2013).

The above mentioned statements clearly reveal that both energy consumption reform policy and energy consumption reform act weren't able to meet the issue of energy improvement and approach its goals. The authors try to analyze these failures according to the presented analysis framework in the following.

3. Methodology

The current research is a practical one and its strategy is case study. The study tries to recognize the causes of failure by focusing on a policy failure case study. The central ideas of the research are "energy consumption reform policy" and "energy consumption reform act" and investigate the case between the years 2009 and 2014. The required information has been acquired by field studies, interviewing with experts and observation. Data is collected through interview, focus groups, and questionnaires. The type of sampling is purposive.

The case study is of a quality research type and different tools and methods have been applied for collecting the information. This method is suitable for studies which start with questions "why" and "how" (Dubois & Gibbert, 2010). The outstanding feature of case study may be that in this method both holistic and detailed outlooks are considered for observing a truth or a specific phenomenon (Saei, 2007). This method explains and interprets dedicated and detailed features of a phenomenon based on the context which is located in that as well as the universal and detailed interpretation (Bennett & Elman, 2006). In other words, case study method can be an ideal method for a holistic and deep research.

In order to reach the goals of the research, field studies containing policy failure literature review, energy consumption improvement field investigation, and policy makings were applied at first. Then factors influencing the failure of energy improvement policies were collected and classified in three steps. All the steps included purposive sampling of experts and specialists. In the first step, 5 semi-structured interviews were taken place with energy policy makers in order to identify the failure causes of improvement policies in which their content was analyzed. The purpose of these interviews was to extract the influencing causes for failure of energy improvement policies. The aim was to ask for this field's experts, executive mangers, and policy makers' views and to review and modify the causes. Then a 12-membered focus group was constituted from experts, MPs, and policy makers to totally obtain the causes from executive, operative, legislative, and policy making points of view. Initial results of semi-structured interviews were presented and the subjects were discussed. Next, the meeting file was implemented and analyzed through the strategies of thematic analysis and was also explained in the context of failure analysis framework in section 2-4. Coding was conducted in three steps and was analyzed, revised, and integrated several times to finally locate the causes in the framework. At last, a questionnaire was prepared

in order to verify the factors and prioritize them. The questionnaires were issued among 14 numbers of experts and professors with work experience from which 11 was collected. The factors were prioritize by TOPSIS method and finally, according to the paper's limits, an α-cut 0.75 was selected and used to omit the factors with less importance and discuss the more important factors in the results section.

4. **Results**

As it was explained, the thematic analysis was used in order to extract factors influencing the failure of energy improvement policies at first. Table 2 represents an example of the thematic analysis conducted.

Table 2: an example of thematic analysis

Interviewee	ID	Key notes	Concepts	1st level category	2nd level category
Person A	PA_2	We don't have values and measures. Each machine provides some statistics which sometimes reveal a tremendous disagreement	-lack of exact values and digits -Tremendous disagreement between machines in declaring the statistics	-unreliable statistics-lack of authority in supervising and representing statistics and information	Lack of systematic evaluation and insufficient supervision
Person A	PA_4	Standards are not developed and we were not able to establish appropriate measurement tools	-lack of standards -lack of decent measuring tools	Lack of the evaluation requisites such as standards and measurement tools	Lack of systematic evaluation and insufficient supervision
Person A	PA_6	We still haven't been able to intrigue private sector to invest in this section because there are not enough guarantees and the partnerships are not clear.	Absence of private sectors participation because of the inability to eliminate their participation obstacles	Low participation of private sector	Insufficient governance structure for directing and execution supervising

The categories of 2nd level which include 27 principle themes are extracted and presented in table 3.

Table 3: principle themes extracted from the focus group

Idealistic and unrealistic targeting	Challenge of using banking financial resources	Short-sighted political structure
Weakness in making the prices practical	Inappropriate pricing of energy conduits	Election and party benefits
Unpredictability of government's behavior in supporting and stimulating demand and executing guaranteed commitments	Lack of decent and sufficient activities for cultural purposes	Lack of evaluation tools such as standards and measurement tools
Weakness and delay in developing rules, regulations, and instructions and revising them	Lack of authority for supervising and presenting statistics and information	The extended high range of instructions and regulations
Inappropriate governance structure for execution directing and supervising	Failure in labor division for inter-organizational and intra-organizational purposes	Lack of a decentralized and integrated executive structure unlike the current extended big structure
Lack of decent responsiveness of authorities	Inappropriate structure in executive policy making	Lack of determined scheduling for goals
Lack of suitable technologies to avoid the entrance of highly consumed products to country	Rendering some of the executive policies to commissions and councils unlike they lack the competence of making decisions	Low participation of non-governmental sectors and not using the popular capacities
Micro targeting regardless of the factor such as technology and climate	Inactivity of some commissions and councils of this sector	Lack of economic feasibility for some plans because of their specific legislative requisites
Lack of legislative requisites to avoid importing high-consuming products	Lack of enough clarity about authorities of some sections	Failure in information flow and systems' coordination

In the next step, the extracted factors are disposed to the experts in a questionnaire and then prioritized by TOPSIS method. Table 4 shows the factors which have acquired high ranking considering α-cut 0.75. In fact, 12 factors out of 33 factors which were identified before are approved to bear more importance according to experts' points of view and are depicted in this table.

Table 4: Factors with the weight higher than 0.75

Factor	Proximity ratio	Factor	Proximity ratio
Lack of responsiveness in authorities	0/8482	Inappropriate pricing of energy conduits	0/9364

Short-sighted political structure	0/7999	Lack of enough clarity about authorities of some sections	0/8267
Unpredictability of government's behavior in supporting and stimulating demand and executing of guaranteed commitments	0/7688	Inappropriate governance structure for execution directing and supervising	0/7855
Election and party benefit	0/7505	Weakness and delay in developing rules, regulations, and instructions and revising them	0/7607

In order to achieve of a better understanding of the factors, we classify them according to three process, programmed, and policy aspects based on McConnell framework. Also, each factor is explained in the following.

4-1- Factors of process aspect:

4-1-1- Inappropriate governance structure for execution directing and supervising

Energy supreme council is the most powerful policy maker and coordinator of this field but unlike the ceremonial experts the council has held only two meeting which were not approved between 2001 and 2013. The council hasn't succeeded the direction and coordination and also the regulations for which the council was directly responsible. On the other hand, considering the execution issues, there are lots of authority organizations in the field of energy consumption improvement. As mentioned before, 25 ministry, organization, and institution are responsible for executive tasks. For example, for technological issues, staff is assigned in scientific assistance section (i.e. environment and energy improvement staff), a cooperation for fuel issues (i.e. energy consumption improvement cooperation), and also staff for transportation (i.e. transportation management staff). Also, energy efficiency organization, power ministry, oil ministry, industry, mine, and trade ministry, Iran's industrial research and standard institution, and etc. are assigned. Unfortunately, the variety of organizations has resulted in parallel performance of them and irresponsibility because each organization knows the other as responsible. Additionally, the organizations are not aware of the information and research projects of each other which bring about an information insufficiency.

4-1-2- Lack of enough clarity about authorities of some sections

There is not a specific authority for the actions which should be taken in this section. In some cases, the tasks are assigned to multiple organization and ministry which has resulted in unclear authority for that task and the organization have refused performing the tasks. General inspection office believes that many of the actions are pending or have failed because no determined authority or head is responsible for it. Sometimes, the interference of organizations' tasks and lack of jurisdiction has resulted in postponing the process of executing the regulation.

4-1-3- Lack of responsiveness in authorities

In the realm of energy consumption improvement, multiplicity of organizations is high while responsiveness is very low. Observations show that since organizations do not believe they are responsible, they do not respond. This case has been mentioned in the report of parliament research center's report. This is maybe a weakness point of the act that hasn't identified the authority.

4-1-4- Unpredictability of government's behavior in supporting and stimulating demand and executing of guaranteed commitments

This is one of the principle causes of low participation and interest of private sector in investments related to this section. The behavior of government and better to say all governments differs in the case of supporting and stimulating the demand. The government tries to intrigue the private sector's capital in some intervals but changes its behavior in some other intervals. Also, there are no guaranteed payments or warranties to allow private sector to confidently rely on investing in this section. For example, whenever government should conduct guaranteed purchase or should afford some of the credits from governmental resources, the method of guaranteed purchase is not clear and affording credits mainly experience a difficulty.

4-2- Programmed aspect factors:

4-2-1- Inappropriate pricing of energy conduits:

Pricing energy conduits seems to be a political tool which is able to desirably help the policy achieve its goals without imposing financial costs on government because it's relatively easy to manipulate. But practically, decent pricing system has not been considered for energy conduits. In fact, this tool has encountered serious economic challenges. In the past, affluent energy resources cause Iran's economy to move towards the high-consuming energy industries such as cements, steel, and etc. Unfortunately, the advantage of these industries appears when the production costs are low especially energy related costs. As the price of energy conduits increase, more of the industries lose their competitiveness and profit making advantage. Consequently, firms' closure, deep recession, unemployment, and an increase in importing goods and services would take place. Therefore, government is made to provide energy with extremely low prices. The low prices hinder industries to go through energy consumption improvement. In the society, people follow a consumerism habit as well and waste energy because of its low price.

4-2-2- Weakness and delay in developing rules, regulations, and instructions and revising them

The process of executing an act usually needs developing rules, regulations, and instructions all over the world. The regulations and instructions should have been approved by delegation of ministers which have not been fulfilled yet. On the other hand, the existing laws bear challenges and difficulties which have been revealed recently and not been revised. For example, the assignment of the executive for an act's contents can force the authorities to be responsive and act completely and meticulously. There is no revision and review in this issue unlike its necessity.

4-3- Policy aspect

4-3-1- Short-sighted political structure

It takes a lot of financial resources to perform fundamental long term actions in many field of policy making and its earning are out of the scope of government's action period. Hence, government is not able to exploit them and therefore, pays less attention to them. This vision

towards the fundamental long term actions is labeled as "short-sighted political structure" here. This factor has resulted in the failure of many fundamental actions in many sections such as energy consumption improvement. In fact, the governments are reluctant to invest money purchasing modern facilities for governmental industries especially for sections like oil, gas, petrochemical, renovating governmental industries, and etc. because the costs are high and it takes a great deal of time to earn the achievement. So, many fundamental actions are not considered as time passes.

4-3-2- election and party benefits

Governments consider their election outlook and benefits for tracking the policies and executing rules. They avoid the actions which have resulted in a negative effect on them in the past. Energy improvement regulations and policies affect directly and indirectly the people and that is why it has turned to be very important issue for authorities and also their opponents' abuse. For example the rise in the price of energy conduits can bear some side effects such as an increase in inflation and household costs, inefficient production, factories' closure, and unemployment. Therefore, governments are not willing to take such actions and think they spoil their benefits. This results in pending and inaccurate policies.

5. Conclusions and directions

The results of this research show that "inappropriate pricing of energy conduits", "lack of responsiveness in authorities", "weakness in making the prices practical', and "short-sighted political structure" are the most important factors which result in the failure of energy consumption improvement policies and policy makers should focus on these factors. Additionally, the research indicates that multiple responsible organizations, lack of clarity about each section's authority, and lack of determined and integrated supervising structure are the main sources of challenges in this field. After prioritizing the factors, it appeared that experts pay less attention in actions related to cultural improvements in the society while taking this factor into consideration would bear outstanding consequences in the long term. To concise, the research suggests the integration of key roles to form a power ministry or Islamic republic of Iran's energy department instead of energy supreme council with coordination responsibility along with multiple organizational executions. Also, revising the policies and rules, the field should be directed towards private sector for focusing on policy making, supervising, and guidance, outsourcing, and execution delegate. Besides, the authoritative institutions for contents of acts should be identified and labor division should be healed. Developing specific rules for high consuming energy manufacturers is also one of the actions could be taken in this field. Financing and guaranteeing the contracts are some of the factors which can be fulfilled by creating energy fund and utilizing sustainable resources as well as encouraging the energy service institutions to focus on efficiency oriented contracts. One note about pricing energy conduits (which has revealed to be the most important factor for the failure of energy improvement policies) is that decent energy pricing can results in industries' renovation and a great reduction in energy

consumption. But there have to be enough insights towards its economic and political challenges which are mentioned before. Orienting the country's economic direction from energy consuming industries to other industries is included in the field of economic challenges which should be considered. Energy efficiency policies should be considered as governance rather than governmental issue and the consequent conflicts between political groups and parties should be avoided. Non-governmental organizations should be taken into consideration for environmental challenges and solving political challenges.

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