*Int. J. Environ. Res., 9(3):853-864, Summer 2015*
*ISSN: 1735-6865*

# Iranian Energy and Climate Policies Adaptation to the Kyoto Protocol

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Received 2 Oct. 2014; Revised 22 Dec. 2014; Accepted 23 Dec. 2014

**ABSTRACT:** The aim of this paper is to assess the adaptation of Iran's energy policies to the Kyoto Protocol. In the past two decades, Iran has experienced a considerable increase in greenhouse gas (GHG) emissions; in 2013 it was the world's ninth largest emitter. Although adapting to this protocol in Iran's energy and climate policies seems vital and urgent, its recent status is not promising. This paper develops a model to critically assess Iran's energy policy performance during the last 15 years after the Protocol. In this regard, a composite index is defined as a proxy of adaptation to the Kyoto Protocol targets. The proposed index is based on several indicators such as energy intensity, energy consumption growth rate, energy consumption per capita, amount of $CO_2$ emissions, and share of the renewable energies in total primary energy supply. The indicators have been selected by expert judgment. The assessment of this composite index for 16 selected countries is discussed. The results indicate that Iran has the lowest adaptation to the Kyoto Protocol among the selected countries. Also, energy intensity and $CO_2$ emission indicators are the most important factors in realizing the adaptation to the Kyoto Protocol targets.

**Key words:**Kyoto Protocol, Energy Policy, Adaptation, GHGs

## INTRODUCTION

The Kyoto Protocol was ratified in 1997, and was extended until 2020 at the Doha Climate Change Conference. To cope with the rising problem about climate change, the United Nations issued the United Nations Framework Convention on Climate Change (UNFCCC) in 1992 (Von Stein, 2008). The Kyoto Protocol is a product of the UNFCCC. The Kyoto Protocol is the world's first international treaty on how to undertake climate change. It is an important tool that world's governments have used since it was globally informed on 11 December 1997 (Breidenich and Magraw, 1998). The Convention divides countries into three main groups according to the degree of commitment:

Annex I Parties include the industrialized nations that were members of the Organization for Economic collaboration and Development (OECD) and also countries with economies in transition (the EIT Parties) in 1992.

Annex II Parties consist of the OECD members of Annex I, but not the EIT parties. They are required to support financial requirements to enable developing countries to take on emission reduction activities under the protocol. In addition, they have to "take all practicable steps" to advance the development and transfer of environmentally friendly technologies to EIT Parties as well as developing countries.

Non-Annex I Parties are mostly developing countries. Certain groups of developing countries are renowned by the Convention as being mainly vulnerable to the adverse impacts of climate change. The Convention emphasizes activities that promise to answer the special needs and concerns of these vulnerable countries, such as investment, insurance and technology transfer (Von Stein, 2008).

The Kyoto Protocol is adopted to facilitate the implementation of the convention. It establishes emission reduction commitments for 37 industrial

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countries from annex I and annex II groups. It also encourages developing countries to formulate possible and cost-effective national projects to improve the quality of local emission factors. These projects are funded by developed countries (Breidenich and Magraw, 1998).

Well-known as a unified commitment by the nations of the world to stop global warming, member countries received specific emission targets. These targets are commitments for stabilizing GHG emissions which take addressing climate change a big step further than just encouraging nations to deal with the problem. This issue has attracted great attention from researchers and policy makers. Not considering of how successful the Kyoto Protocol is in the end, as first step, it was vital to bring the world's nations together to tackle climate change (Ghezloun *et al.*, 2013).

While the first period of commitments of the Kyoto Protocol ended in 2012, it has been extended until 2020 at Doha climate change conference. The international pressures on developing countries such as China and India to mitigate their emissions are growing (Hu and Monroy., 2012). Furthermore, GHG emissions reduction in Iran's mega cities is now a national policy concern. The evidence suggests that Iran has to commit to mitigate its GHG emissions in the near future, and join a newly legal binding global GHG emissions reduction scheme between 2018 and 2020. Thus, it is reasonable to pose two questions: to what extent Iran has adapted with the Kyoto Protocol, and with respect to this, what is Iran's position internationally?

This paper aims to shed light on these questions. Energy sector provides the largest share of GHG emissions among the other human activities (Fig. 1). Therefore, Iran's energy policies has been analysed in this study. In adition, by comparing Iran's adaptation index with selected countries, Iran's performance in achieving its commitments to the Kyoto Protocol has been evaluated critically.

The adaptation to climate change and abatement of GHG emissions (mitigation) are both set out in the Kyoto Protocol as responses to anthropogenic climate change (Breidenich and Magraw, 1998). Adaptation is a crucial and realistic response option, along with mitigation. The relationship between adaptation and mitigation is such that, in theory, the more mitigation that takes place, the less adaptation will be needed, and vice versa (Lisa and Schipper, 2006).

The issue of adaptation to climate change has become a priority topic on energy policy agenda

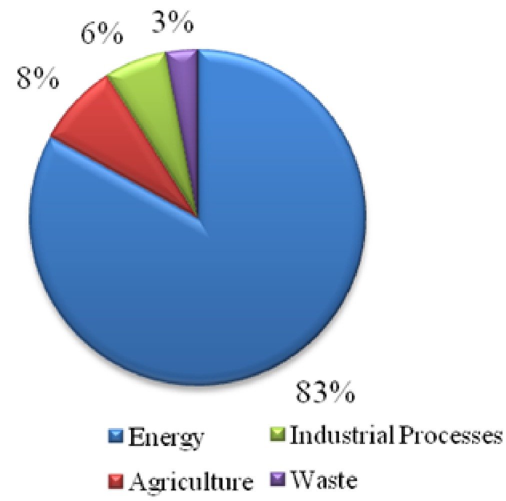


**Fig. 1. Shares of anthropogenic GHG emissions in Annex I countries, 2013**
**Source: (IEA (International Energy Agency), 2013)**

worldwide, specially after the UNFCCC and Kyoto Protocol since 1997. It represents policy-driven adjustments such as energy policies regarding changes in climate, particularly in developing countries, and is a standard element in development work program of agencies. Economic growth, beside energy policies are drivers of climate change as the main resources of GHG. Population growth, per capita energy consumption, and the "energy mix" in future supplies are assumptions that have been taken into account to creation emission scenarios (Burton *et al.,* 2002).

The paper has been organized as follows: Initially, some related works are summarized. Since then, Iran's energy policies regarding adaptation to the climate change convention and the Kyoto Protocol are mentioned. Finally, using selected indicators Iran's adaptation status is investigated and the main results of the paper as well as suggestions for the future associated with the paper findings are highlighted.

The emission binding commitments of the Kyoto Protocol have significant economic consequences. In some studies (Babiker *et al.,* 2000; Felder and Rutherford, 1993), both annex I and non-annex I countries have been taken into account to investigate the economic impacts of the commitments. Some studies have investigated the impacts of the Kyoto Protocol on special groups of countries such as OPEC countries (Golusin and Ivanovic, 2011) or emerging economies such as China and India (Hu and Monroy, 2012). The implementation of the Kyoto Protocol is another challenging issue that has been addressed (Barnett *et al.,* 2004). The energy sector, which is responsible for the greatest share of the emissions, has been studied in relation to the energy intensity or energy consumption (Narayan and Smyth, 2008; Ozturk and Acaravci, 2010; Zhang and Cheng, 2009). Energy security is another related concept that has been addressed in the context of climate change and the Kyoto Protocol (Huntington and Brown, 2004; Turton and Barreto, 2006). In addition, some authors have investigated national energy policies with respect to climate change and the Kyoto Protocol (Duić *et al.,* 2005; Hu and Monroy, 2012).

Many studies have been conducted to assess the impacts of the UNFCCC and Kyoto Protocol on the economies, energy security, energy intensity, and energy consumption of various countries. However, the convergence of Iran's energy policies with the goals of the UNFCCC and Kyoto Protocol has not been mentioned. To the best of our knowledge, this issue has been addressed for the first time in this paper.

Iran is one of the non-annex I countries that has ratified the UNFCCC and Kyoto Protocol. In addition, Iran is one of the biggest GHG emitters in the world, with 521 million tons of $CO_2$ emissions in 2011. Iran was the fourth largest GHG emitter of the developing countries (after China) and the ninth largest emitter in the world in 2011 (IEA, 2013).

Under the United Nations Development Assistance Framework (UNDAF) outcome, the two relevant expected outcomes are as follows:

- Mitigating and adapting to climate change and providing energy for sustainable development; and
- Global environmental commitments to be integrated into development planning and implementation capacity developed.

The above–mentioned goals have been considered in Iran's climate policies. There is increasing attention to climate change in the Iranian government's climate policy. More concern is being shown in the areas of energy efficiency, air pollution, renewable energy and GHG emission.

Unfortunately, climate policies do not necessarily match energy policies. Energy and climate policies have been made in different contexts. Several organizations under government administration are responsible for energy policies, such as the Ministry of Energy, the Ministry of Petroleum, the Energy Efficiency Organization and the Renewable Energies Organization. On the other hand, the Department of Environment is responsible for climate policies. Therefore, for achieving national and international climate and energy targets, the Ministry of Petroleum, the Ministry of Energy and other agencies should cooperate more closely with the Department of Environment.

In Iran, Kyoto-type energy policies are treated as energy laws under the governmental Five Year Development Plans. Capturing associated gas was addressed in the third FYDP for the first time (Valadkhani, 2001). Energy-saving law, reduction in energy intensity, decline in the energy consumption growth rate, and financing of the new technologies in the energy sector are discussed in the fourth FYDP (Amuzegar, 2010).

The principal policies pursue clean and efficient power generation, environmentally friendly refineries, improved public transport and energy efficiency (Valadkhani, 2001).

Although the allocation of subsidies to regulate the energy market and increase the share of renewable energies in the total primary energy supply has been addressed, the renewable energy production is still low. Iran has an abundant supply of fossil fuel resources with 9% of the world's oil reserves and 15% of its natural gas reserves, which tends to discourage the pursuit of alternative renewable energy sources (Mostafaeipour and Mostafaeipour, 2009). However, the government plans to generate more than 5,000 MW of electricity from renewable energy resources by 2015 (Abbaszadeh *et al.,* 2013). In the fourth FYDP, a special energy management act has been developed, which includes a targeted energy subsidies program and a fuel-switching program from gasoline in light vehicles to Compressed Natural Gas (CNG) (Amuzegar, 2010).

Finally, the 138$^{th}$ article of the fifth FYPD addresses and develops Clean Development Mechanism (CDM) projects (Alizadeh *et al.,* 2014). Therefore, it can be seen that there is a lot of policy documents have been established in Iran's Five-year development plans.

## MATERIAL & METHODS

This study was designed to implement in four phases as (1) background research including literature review and clarifying the research problem, (2) developing a framework for indices, (3) data gathering and calculation of indicators (4) results of comparative analysis and discussions (Fig. 2).

In order to assess the adaptation of energy policies to the UNFCCC and Kyoto Protocol a range of indicators was required. By conducting comprehensive interviews with academic and industrial experts in the energy and environment fields, five groups of indicators have been identified:

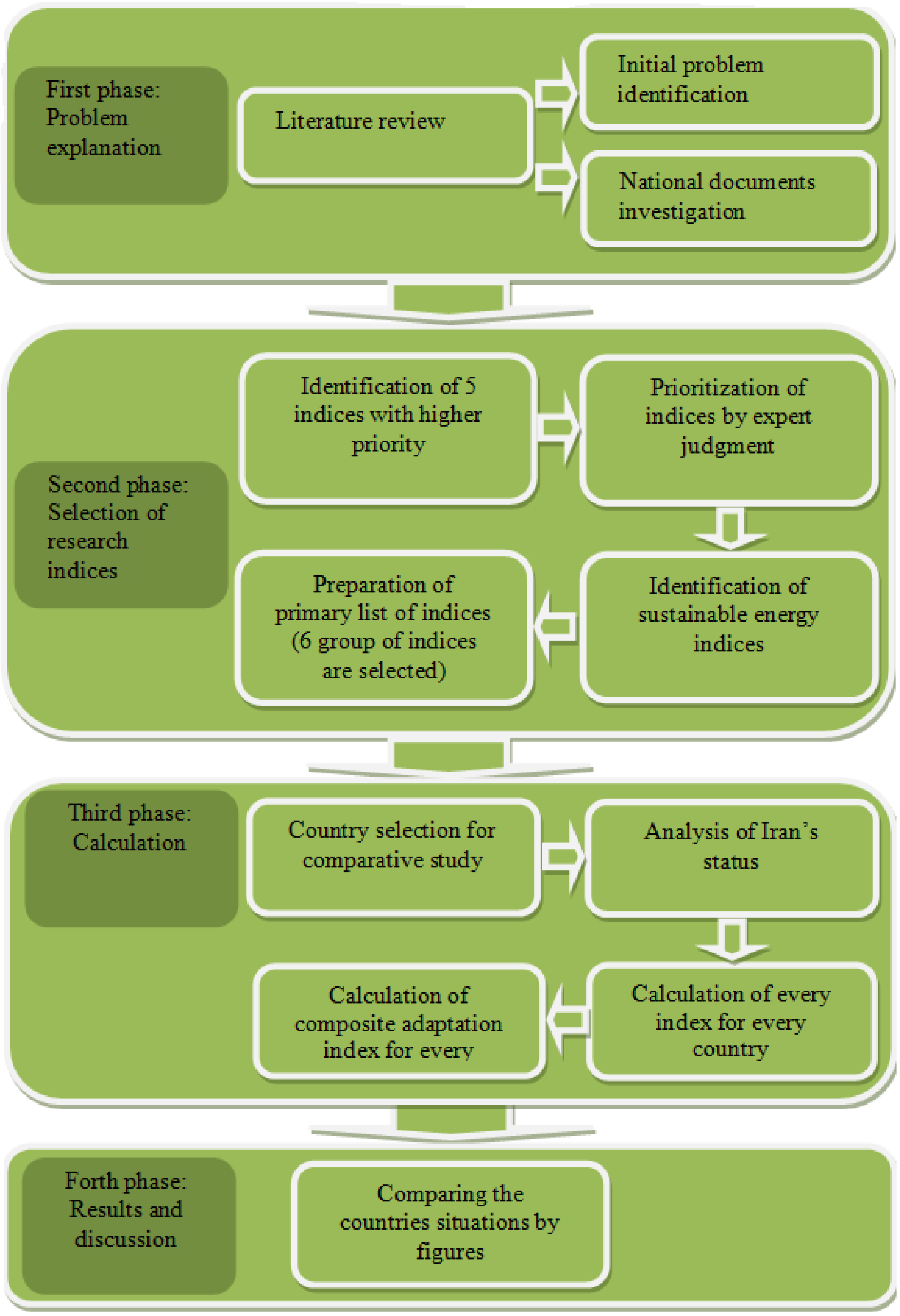


**Fig. 2. The research process and the conceptual framework of the study**

energy sustainability indices of the World Energy Council (WEC) (WEC, 2013), Environmental Performance Index (EPI) (Emerson, *et al.*, 2010), Commission on Sustainable Development (CSD) indicators (CSD, 2007), sustainable energy indicators of Helio (Spalding-Fecher, 2003), and IEA indicators (IEA, 1997) (see Table 1).

After collecting related indicators, an expert panel was established. This panel included nine experts (see Table 2). We asked our experts to prioritize these indicators by grading them from 1 to 10. For this purpose we created a questionnaire with 34 questions and sent them to the experts. Then the data from questionnaires was collected and the mean value of the grades was calculated. Any indicator which has a mean value between 7 and 10 was selected.

I1: World energy council energy sustainability indicators, I2: Environmental performance framework indicator, I3: Sustainable development indicators, I4: Sustainable energy indicators of Helio, I5: International energy agency indicators, I6: Iran's sustainable development committee.

**Table 1. Collection of indicators gathering from five different sustainable energy indicator categories**

| Indicator | WEC | EPI | CSD | HELIO | EIA |
|---|---|---|---|---|---|
| Consumption of ozone-depleting substances | * | | | | |
| Air pollution | * | | | | |
| Annual energy consumption | * | | | | |
| GHG emissions | * | | | | |
| Share of renewable energy in total energy supply | * | | | | |
| $SO_2$ emissions | | * | | | |
| $No_2$ emissions | | * | | | |
| CFC emissions | | * | | | |
| Out of rate ozone formation | | * | | | |
| GHG emissions per capita | | * | | | |
| Carbone per capita in power generating units | | * | | | |
| Industrial Carbone per capita | | * | | | |
| Power generating variety | | | * | | |
| Energy export variety and dependence | | | * | | |
| Energy consumption per capita | | | * | | |
| Climate impact | | | * | | |
| Power generation efficiency | | | * | | |
| Gasoline affordability | | | * | | |
| Family electricity affordability | | | * | | |
| Access to electricity | | | | * | |
| Investment in clean energies | | | | * | |
| Vulnerability | | | | * | |
| Quality of information | | | | * | |
| Common property | | | | * | |
| Economic growth rate | | | | | * |
| Energy consumption rate | * | | | | * |
| Population growth | | | | | * |
| Innovation and technology progress | | | | | * |
| Oil price | | | | | * |
| Energy intensity | * | | | * | * |
| Energy consumption per capita | * | | | | |
| Co2 emissions | * | * | | * | * |
| Energy efficiency | | * | | * | |
| Private sector investment | | | | * | |

**Table 2. Background information of experts**

| **Category** | **Classification** | **No.** |
|---|---|---|
| Working in background | Energy systems engineering | 3 |
| | Environmental Engineering | 3 |
| | Energy policy | 3 |
| Education Level | Bachelor | 0 |
| | Master | 4 |
| | Ph.D. | 5 |
| Sex | Male | 6 |
| | Female | 3 |

Accordingly, we selected five indicators in terms of the mean value. These indicators are as follows:

1. Energy intensity ($X_1$)

For a given country, $X_1$ defined as:

$X_1 = \frac{TPES}{GDP}$ (Where TPES is the total primary energy supply and GDP is the gross domestic product).

2. Energy consumption growth rate ($X_2$)

This indicator defined as the 5 year average of the energy consumption growth rate.

3. Energy consumption per capita ($X_3$)

$X_3$ is defined as a function of "final energy consumption ratio to population".

$X_3 = \frac{FEC}{Population}$ (Where FEC is the final energy consumption)

4. $CO_2$ emission rate ($X_4$)

This indicator is calculated as total $CO_2$ emissions from fuel combustion (Mt of $CO_2$)

5. The share of the renewable energies in the total primary energy supply ($X_5$)

This component of the index is estimated from the "renewable energy supply ratio to TPES".

$X_5 = \frac{TPES\ (Renewable)}{TPES\ (Total)}$

To compare Iran's status with other countries in terms of adaptation to the Kyoto Protocol, we selected 16 countries according to the following criteria:

We focused on non-annex I countries that do not have any commitment to mitigate GHG emissions, but must have formulated feasible, cost- effective national programs to improve the quality of local emission factors where relevant (UNFCCC, 1992). Based on the Annual Global Competitiveness report published by the World Economic Forum (WEF) (WEF, 2013), we then selected countries that are at the similar stage of economic development as Iran. The selected countries are Azerbaijan, Algeria, Brunei, Botswana, Bolivia, Kuwait, Qatar, Egypt, Saudi Arabia, Sri Lanka, Philippines, Gabon, Honduras, Libya, Mongolia, and Venezuela.

We defined the composite index of adaptation as the mean of the five selected indicators. Since the indices have different units, we need to standardize them. So the relative indicator related to $X_i$ for country j calculated as follows:

$$I_{i,j} = \frac{Max_i - X_{i,j}}{Max_i - Min_i}, \text{ for } i \in \{1,2,3,4\} \quad (1)$$

$$I_{i,j} = \frac{X_{i,j} - Min_i}{Max_i - Min_i}, \text{ for } i = 5 \quad (2)$$

That indicator results in projection of $X_{ij}$ in the interval [0,1]. A low value of $I_{ij}$ means that the country j has a low-adaptation compared to the set of countries under consideration. The composite index is computed as the root mean square of the five relative indicators:

$$I = \sqrt{\frac{\sum_{i=1}^{5} I_i^2}{5}} \quad (3)$$

Therefore, the composite index and its five relative indicators have defined as the Euclidean Distance to the worst adaptation case represented by the zero point. We use these Euclidian Distances to compare the selected countries.

## RESULTS & DISCUSSION

The proposed adaptation index (I) was estimated based on data from the year 2010 (the base year after the ratification of the Kyoto Protocol) and for year 1996 (the base year before the Kyoto's approval) for the selected countries.

Notwithstanding the ED was estimated in both systems, i.e. the ($I_1, I_2, \ldots, I_5$) system and the principal components ($X_1, X_2, \ldots, X_5$) one. The results were exactly the same. Collected data for adaption indicators have been depicted in Table 3. in ($X_1, X_2, \ldots, X_5$) system.

The adaption relative indicators were calculated for the selected countries in the ($I_1, I_2, \ldots, I_5$) system. Gabon and Azerbaijan have the highest and the lowest adaptation in terms of the energy intensity in 1996, respectively. On the other hand, Botswana and Iran have the highest and the lowest adaptation, in 2010, respectively (Fig. 3).

In relation to the energy intensity in Iran, some points are noteworthy, as follows:

First, energy intensity in Iran is increasing rapidly. Due to low fuel prices and the lack of equipment efficiency, it is much higher than that found in other countries.

Second, energy intensity is higher in countries that produce energy than in other countries, such as Botswana, Gabon, Sri Lanka and the Philippines, which are not energy producers or exporters. Therefore, they use energy more efficiently. Low energy prices in countries that produce energy are the main reason for such inefficient energy consumption.

Iran has a higher energy consumption growth rate than other energy producing countries in 2010 (Fig. 4). This might be due to its high level of economic

**Table 3. Values of the adaptation indicators for the selected countries**

| | Indicator | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | $X_1$ | | $X_2$ | | $X_3$ | | $X_4$ | | $X_5$ | |
| Year<br>Country | 1996 | 2010 | 1996 | 2010 | 1996 | 2010 | 1996 | 2010 | 1996 | 2010 |
| Algeria | 13095 | 15834 | -0.73 | 5.56 | 32.54 | 53.8 | 56.02 | 112.2 | 0.376 | 0.16 |
| Azerbaijan | 92065 | 25308 | -6.78 | 1.77 | 59.92 | 82.6 | 28.93 | 34.6 | 2.019 | 2.28 |
| Bolivia | 22619 | 22120 | 3.61 | 6.24 | 21.43 | 26.0 | 6.71 | 13.6 | 30.845 | 5.1 |
| Botswana | 9921 | 5802 | 3.81 | -0.61 | 35.32 | 29.9 | 3.04 | 3.8 | 4.393 | 6.3 |
| Brunei | 10714 | 12897 | 9.84 | 6.59 | 302.39 | 324.4 | 4.71 | 7.2 | 0.000 | 0 |
| Egypt | 24207 | 28385 | -0.45 | 5.96 | 23.41 | 42.9 | 87.55 | 189.5 | 9.868 | 3.7 |
| Gabon | 6746 | 5811 | 3.32 | 5.20 | 50.00 | 29.9 | 1.42 | 4.6 | 71.365 | 14 |
| Honduras | 16270 | 12108 | 2.39 | 4.13 | 19.84 | 17.4 | 3.48 | 8.1 | 63.805 | 12.5 |
| Iran | 30159 | 43010 | 5.69 | 5.35 | 63.89 | 118.7 | 258.61 | 548.9 | 1.056 | 0.17 |
| Kuwait | 11508 | 13422 | 46.09 | 1.85 | 356.75 | 462.3 | 35.21 | 83.7 | 0.000 | 0 |
| Libya | 17064 | 14990 | 6.88 | 0.19 | 121.43 | 123.4 | 36.98 | 55.0 | 1.555 | 0.83 |
| Mongolia | 54763 | 31399 | -9.91 | 7.06 | 38.89 | 30.9 | 8.50 | 8.0 | 2.826 | 2.3 |
| Philippines | 18651 | 10271 | 4.85 | -0.20 | 19.44 | 12.2 | 61.80 | 72.9 | 34.891 | 10.6 |
| Qatar | 19445 | 11620 | 3.60 | 4.98 | 670.25 | 1229.6 | 19.72 | 63.6 | 0.000 | 0 |
| Saudi Arabia | 15476 | 22513 | 5.14 | 4.94 | 196.43 | 309.3 | 216.7\4 | 438.2 | 0.304 | 0 |
| Sri Lanka | 16270 | 7143 | 4.30 | 0.06 | 14.68 | 10.3 | 8.09 | 12.7 | 0.757 | 14 |
| Venezuela | 17857 | 18182 | 4.01 | 2.53 | 103.97 | 118.7 | 125.14 | 159.0 | 0.000 | 12 |
| Min | 6746 | 5802 | -9.91 | -0.61 | 14.68 | 10.3 | 1.42 | 3.8 | 0.000 | 0 |
| Max | 92065 | 43010 | 46.09 | 7.06 | 670.25 | 1229.6 | 258.61 | 548.9 | 71.365 | 14 |

**Source: (IEA, 2014)**

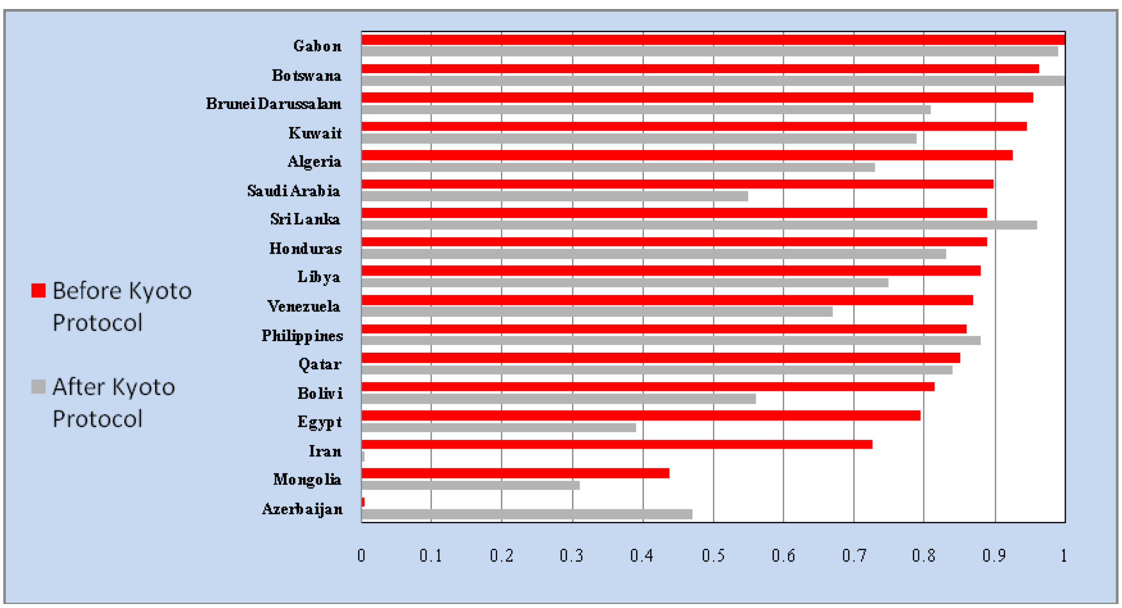


**Fig. 3. Values of the energy intensity relative indicator for the selected countries, before and after the Kyoto Protocol**

growth. However, considering Iran's high energy intensity, the result might be that the growth of Iran's energy consumption has not led to the economic growth.

Qatar has the lowest value of the per capita energy consumption relative indicator. Iran's per capita energy consumption is not very high in comparison to the other countries (Fig. 5).

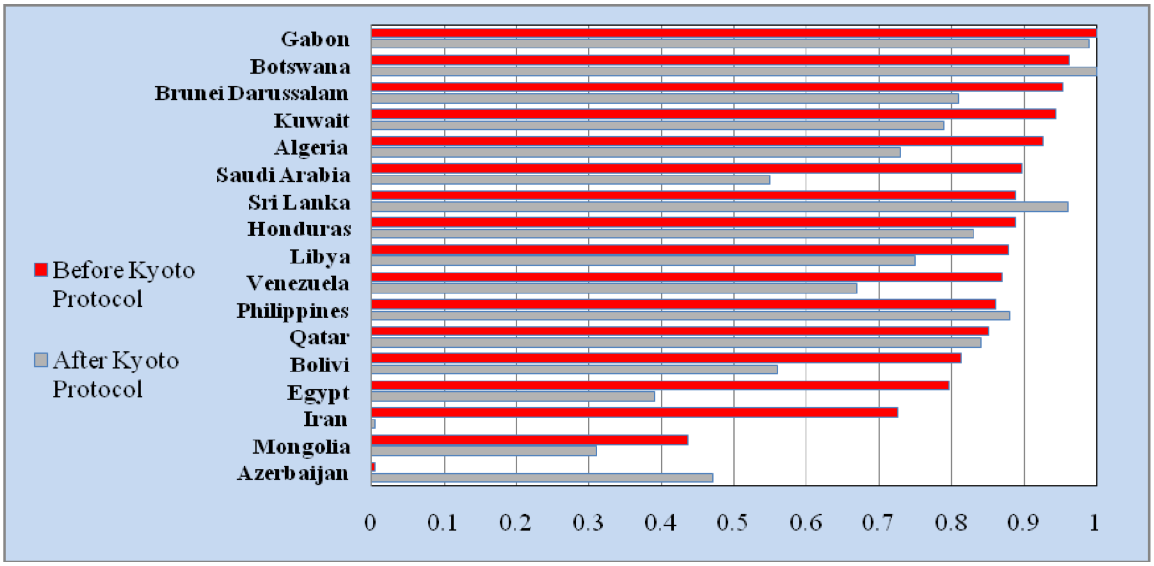


**Fig. 4. Values of the energy consumption growth rate relative indicator for the selected countries, before and after the Kyoto Protocol**

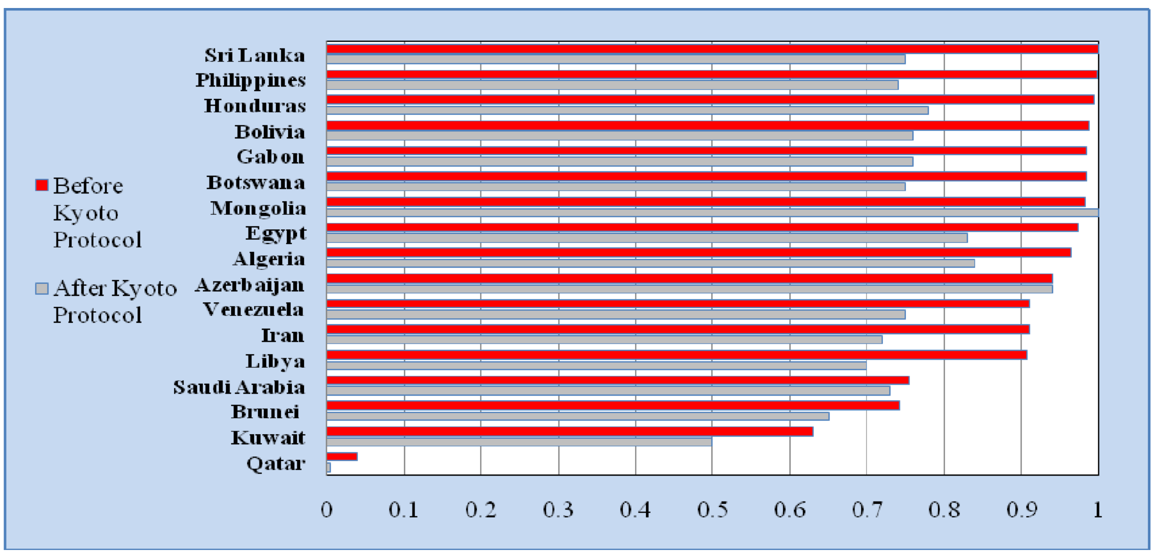


**Fig. 5. Values of the energy consumption per capita relative indicator for the selected countries, before and after the Kyoto Protocol**

Iran has the lowest value in the relative indicator of $CO_2$ emission both before and after the Kyoto Protocol (Fig. 6). Saudi Arabia is the second largest $CO_2$ emitter among the selected countries. In addition to the oil production industry, the transportation sector and power plants, other energy-intensive industries such as cement, steel and glass in Iran, and the desalination and petrochemical industries in Saudi Arabia, cause $CO_2$ emissions.

Like most of the oil-exporting countries, Iran is experiencing ever-increasing domestic energy consumption and $CO_2$ emissions, mostly due to its price control policy.

In 1996, its final energy consumption was 97,635 Million Ton of Oil Equivalent (MTOE), but by 2011 it reached 212 MTOE (Fig. 7). In other words, the Iranian economy is experiencing, on average, a 7.73% increase in energy consumption per year over the past four decades. There is a similar pattern for $CO_2$ emissions: they rose 5.61% annually over the same period, from 0.32 Billion Ton (BT) in 1996 to 0.49 BT in 2011 (World Bank, 2014).

Oil producer countries are not successful in raising the share of renewable energies in their total primary energy consumption (Fig. 8).

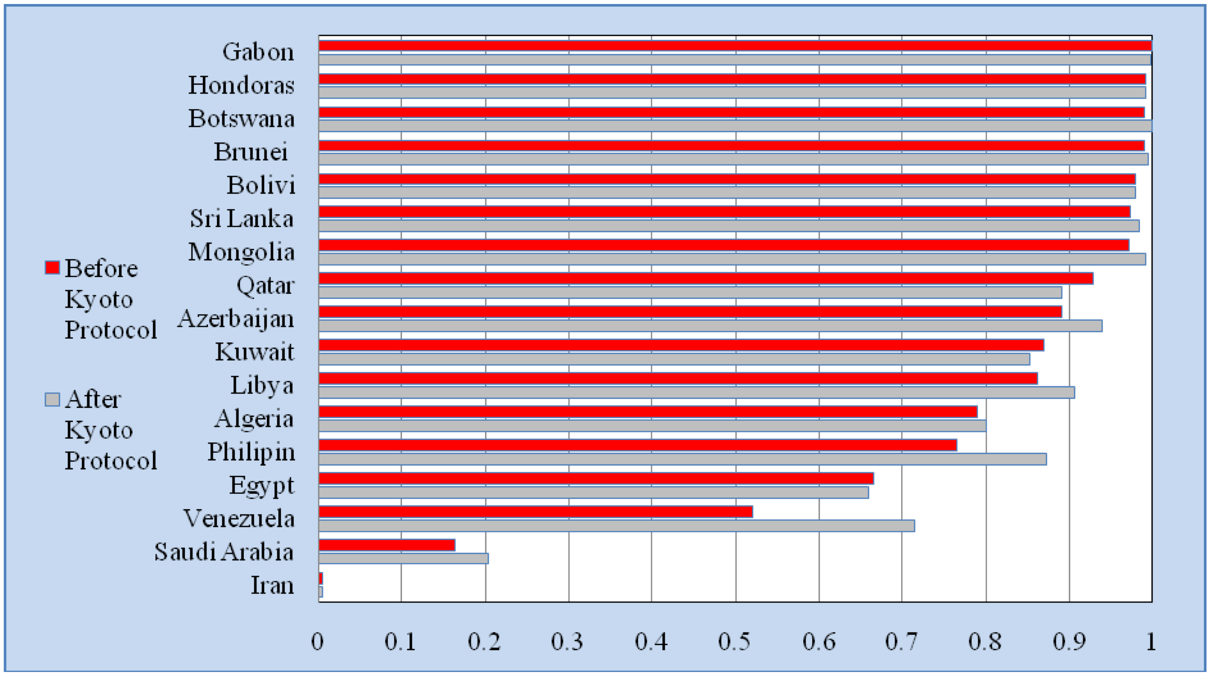


**Fig. 6. Values of the $CO_2$ emission relative indicator for the selected countries, before and after the Kyoto Protocol**

Currently, Iran's renewable energy consumption is low. With 9% of the world's oil reserves and 15% of its natural gas reserves (80% of which have not been developed), Iran has an abundant supply of fossil fuel resources, which tends to discourage the pursuit of alternative, renewable energy sources (Mostafaeipour and Mostafaeipour, 2009).

Saudi Arabia, Qatar, and Kuwait have managed to increase their share of renewable energies in their TPES. They are among the top 40 countries based on the Ernst & Young institute's Renewable Energy Country Attractiveness Index (RECAI) (RECAI, 2013). However, they do not have a desirable status in this indicator because of their enormous share of the fossil fuels in TPES.

In order to illustrate the concept of adaptation proposed in this article and to point out its limits, an adaptation profile of six selected has been created (Fig. 9).

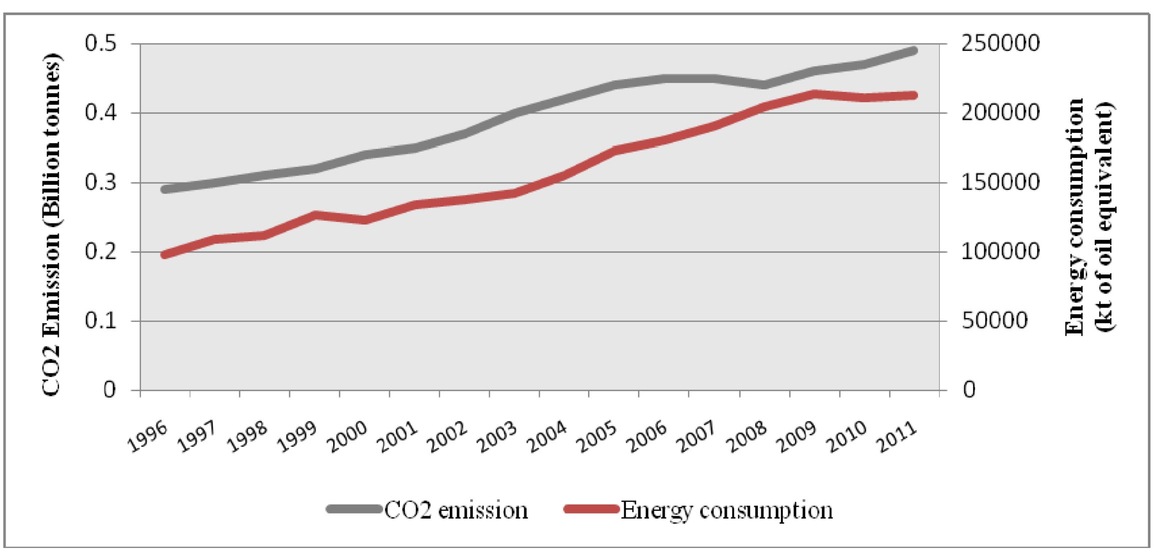


**Fig. 7. The trend in final energy consumption and $CO_2$ emissions in Iran (1996-2011)**

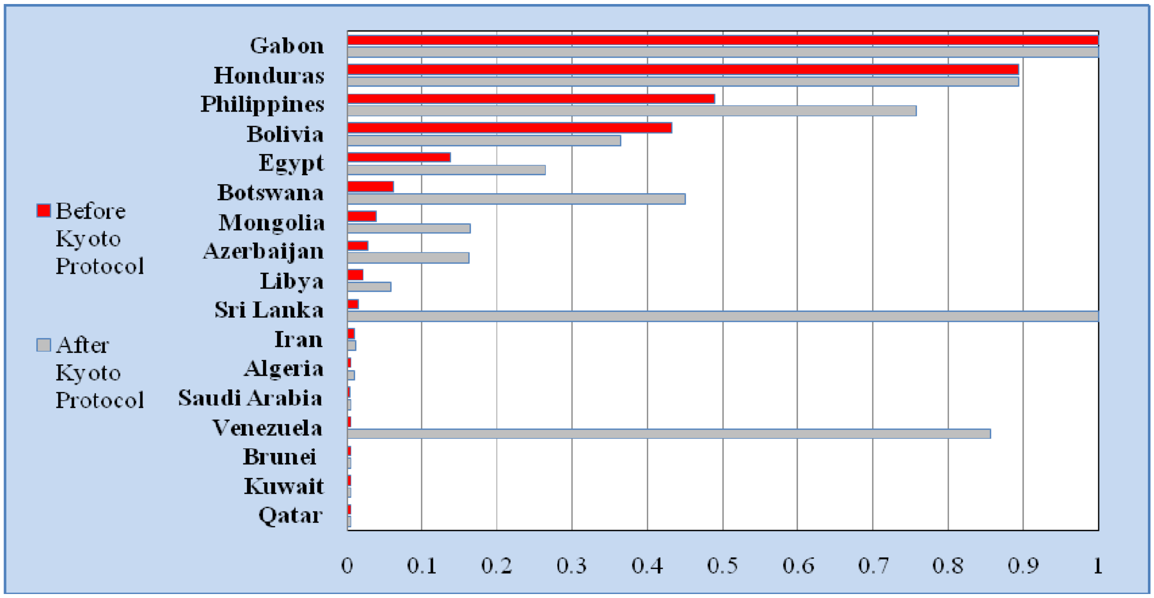


**Fig. 8. Values of the share of the renewable energies in TPES relative indicator for the selected countries, before and after the Kyoto Protocol**

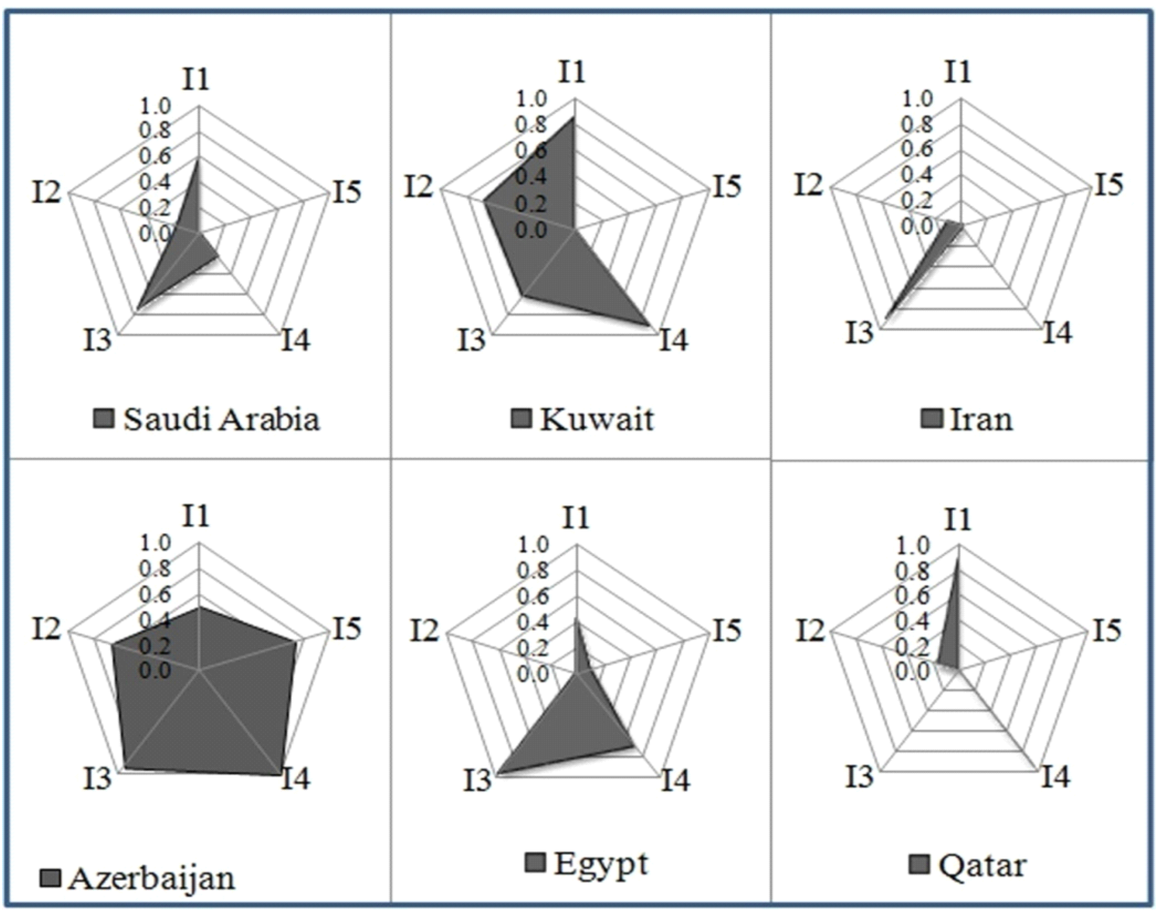


**Fig. 9. Adaptation profile of the selected countries**
**($I_1$: Energy Intensity, $I_2$: Energy Consumption Growth Rate, $I_3$: Energy Consumption Per Capita, $I_4$: $CO_2$ Emission, $I_5$: Share of the renewable energies in TPES)**

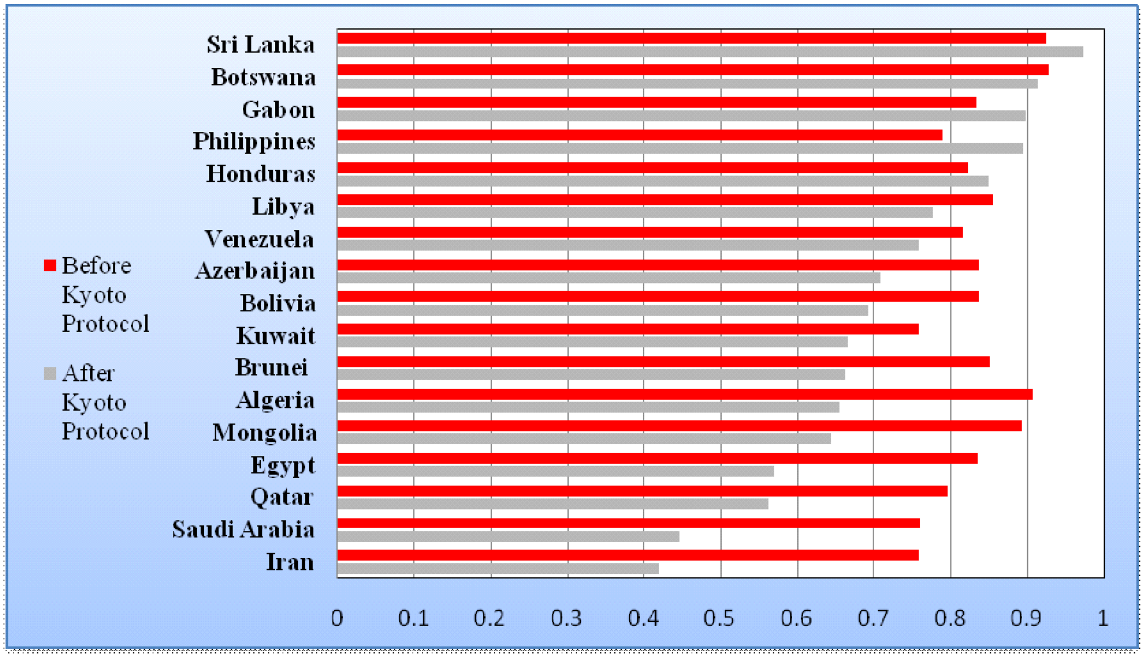


**Fig. 10. Values of the composite index of adaptation for the selected countries, before and after the Kyoto Protocol**

Iran has the lowest value of the composite adaptation index among both before and after the Kyoto Protocol (Fig. 10). The mean value and standard deviation of the composite adaptation index were 0.74 and 0.098, respectively. Sri Lanka has the highest adaptation value in 2010.

## CONCLUTIONS

Iranian energy policy documents such as Five Year Development Plans have considered the UNFCCC and Kyoto Protocol issues. This paper assessed how Iranian energy policy has adaptated to the goals outlined in the UNFCCC and Kyoto Protocol. Assessing this adaptation is not straightforward, as it is a multi-dimensional and somewhat qualitative concept. Therefore, we have developed a composite index based on a literature review and expert judgments to compare Iran's current status with that of other countries.

The index defined as an Euclidian measures the distance between the countries, and scores them on various dimensions.

The results indicate that high energy intensity and high $CO_2$ emissions have the most impact on a low adaptation to the Kyoto Protocol. Iran placed at the end of the list of selected countries in the energy intensity and $CO_2$ emission indicators and, consequently, in the composite adaptation index. Numerous articles in FYDPs show that Iran has tried to mitigate climate change by establishing and reforming its climate policies. While achieving low-carbon development is a national interest, the results depict that the country still has a long way to go to reach this goal. Iran needs to strengthen its collaborations with international organizations on climate change issues. In this regard, mechanisms such as CDM provide opportunities to tackle GHG emissions. National energy policies in Iran should focus on reducing energy intensity. Future research should investigate opportunities provided by CDM to reduce the energy intensity in Iran.

## ACKNOWLEDGMENTS

I am indebted to Dr. Khosrov Dabbagh Sadeghipour, and Dr. Roghayeyeh Alizadeh for their generous assistance in this project.

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