



# THE ROLE OF INTERNATIONAL ENERGY AGENCY IN GLOBAL ENERGY GOVERNANCE

HOW CLIMATE CHANGE EFFECTS THE  
ENERGY GOVERNANCE

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## **EXECUTIVE SUMMARY**

The energy sector despite its importance in the economic activity and development of countries, entered the agenda as top issue quite recently, first after a series of oil crisis during the 1970s, and since then has contributed to the creation of a new field, the global energy governance. Global Energy Governance (GEG) is highly fragmented, consists of plethora of for a, institutions, forms of cooperation that engage and give guidance in different aspects of energy. This study attempts to offer a presentation of the nature of the global energy governance and its institutions in the challenging landscape that is the energy sector. Particularly, one of the most important institutions, the International Energy Agency, has been recognized as the closest effort towards creating a single global energy governor is the central point of this presentation. The IEA has been active throughout the decades, starting in the 70s, remaining relevant and adaptable to international developments and events, such as climate change, creating its own policies and tools that shaped the global energy dialogue or assisting in existing forms of cooperation. Climate change issues and the challenges it has created for the existing global governance structure and especially to the International Energy Agency are the conclusion of this article.

**ACRONYMS AND ABBREVIATIONS**

ADB	Asian Development Bank
APEC	Asia-Pacific Economic Cooperation
APEC	Asia Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
AU	African Union
CBE	Committee on Budget and Expenditure
CEF	Climate Ministerial Forum
CEM	Clean Energy Ministerial
CERM	Co-ordinated Emergency Response Mechanism
CERT	Committee on Energy Research and Technology
COP	Conference of Parties
ECG	Energy Coordinating Group
ECT	Energy Charter Treaty
EUROSTAT	European Statistical Office
FCPF	Forest Carbon Partnership Facility
GBEP	Global Bioenergy Partnership
GECF	Gas Exporting Countries
GEG	Global Energy Governance
GHG	Greenhouse gas emission
IEA	INTERNATIONAL ENERGY AGENCY
IPCC	Intergovernmental Panel on Climate Change
IPEEC	International Partnership for Energy Efficiency Cooperation
IRENA	International Renewable Energy Agency
MEF	Major Economies Forum on Energy and Climate Change
NDC	Nationally determined contribution
OAPEC	Organization of Arab Petroleum Exporting Countries

OECD	Organization for Economic Co-operation and Development
OLADE	Latin American Energy Organization
R&D	Research and Development
RES	Renewable energy sources
SEQ	Standing Group on Emergency Questions
SGD	Standing Group on Global Energy Dialogue
SLT	Standing Group on Long-term Cooperation
SOM	Standing Group on the Oil Market
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNSD	United Nations Statistics Division
WEO	World Energy Outlook
WMO	World Meteorological Organization
WTO	World Trade Organization

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## INTRODUCTION

Over the last decades, the field of energy governance has gained increased attention. Most importantly, scholars worldwide have been engaged in understanding how the energy sector and energy governance are connected, specifically by whom the energy sector is governed on international level.

Before the establishment of the “energy governance” as a field of study and the creation of international institutions for collective problem-solving and policymaking, the energy issues on international level have been governed ad-hoc, as responses to occurring problems, crises that involved specific countries or groups of countries (Florini, 2008).

Gradually, as issues surrounding the energy sector have been becoming more and more important and pressing, the energy governance has been enriched with mechanisms and institutions with the aim of addressing international energy developments.

The main objective of this thesis is the presentation of the issue of “energy governance”, and to highlight the most important pillar of its structure. Since there is no single energy governor, to understand what the energy governance is the different forms will be presented, as well as the evolution of the field regarding energy challenges, most essentially the climate change. The approach that we adopt is a contribution of review of the existing literature on the matter, along with some qualitative and quantitative data.

The thesis theme will be unfolded in four parts. First, we will discover the international literature that has approached the issue from different perspectives, and secondly, an analysis of some examples of “energy governors”, institutions and mechanisms, with the aim of a deeper and complex understanding of the structure and characteristics of global energy governance of today.

From all the above, the International Energy Agency has been selected as the organization of our focus, as it constitutes leading actor in the energy sector worldwide. The history behind the creation of IEA, the organization’s growth along with its responsibilities and scope of activity development will be presented in the second chapter that follows.

One of the most important issues that has been at the heart not only of the energy global dialogue but also in general of the global political dialogue in recent years is the climate change. Climate change represents an alarming issue on global scale meaning that it impacts all countries around the world. As an attempt to deal with this issue, changes to global energy architecture, with the creation of new structures

and possibilities of cooperation internationally have been introduced. As follows, the third part of the thesis will focus on the changes as described above.

Finally, the conversation regarding the climate change has led not only to expanding the energy governance architecture but has also contributed to development of existing institutions in order to address the issue of climate change in their activities. Consequently, in the fourth chapter, we will examine how the scope of activities of the International Energy agency has been broaden in the wake of climate change and its impact on the energy sector.

The Thesis concludes with several remarks upon the matter of analysis, with the greater contribution the highlighting of the diverse character of the global energy governance and the need for stronger good governance in the energy sector.

## **1. ENERGY GOVERNANCE**

### **1.1. INTRODUCTION**

The global governance over the last decades has been under certain developments, most essentially the emergence of the so-called global energy governance. In the chapter that follows, the concept of global energy governance will be discussed. The unit begins with the exploration of the term “global energy governance” in international literature as well as the development of the discipline in international literature. Later, some existing institutions of forms of cooperation that currently represent the global governance in the energy sector will be presented.

### **1.2. THE TERM IN INTERNATIONAL LITERATURE**

All around the world, energy related issues, have been of growing concern for governments and the international community. According to Gicquel Renaud and May (2013) energy is considered to be one of the key factors for social and economic development and prosperity, along with capital, labor, and natural resources. The oil crises of 1973 and 1979 lead to the acknowledgment that the energy issues should be part of the global dialogue and cooperation. Along with international developments, the international literature had to reflect that change, and since then has been steadily growing and expanding in order to include deeper conversations and analyses. In this unit, the issue of global governance in the energy sector will be explored, from its beginning. In addition, the different approaches of the term will be presented.

Global energy governance means “international collective action efforts undertaken to manage and distribute energy resources and provide energy services” (Florini and Sovacool, 2009, p.1). Regarding its meaning, scholars have mainly focused on the subjects of the governance on global scale in the energy sector.

Energy governance issues have been approached quite early on, during 70s. Notable examples of literature include the “After Hegemony” (1984) of Keohanne, Kohl’s and Cowhey’s contribution during the 80s and later during the 90s and 00s the work of Kapstein, Florini (energy management, cooperation between states, international organizations in energy market, cooperation during oil crises, energy governance) (Van de Graaf & Colgan, 2016). Nevertheless, the engagement was not systematic and touched merely on the issue of global energy governance.

As a term, global energy governance (GEG) emerged at the same time that the G8 Group during the Gleneagles Summit in 2005 included issues of energy and climate

change into its agenda. At the time, an important crisis was slowly making an appearance and escalated in 2006: the Russia -Ukraine gas conflict that was responsible for a growing concern in the energy market and increase of oil prices and reducing of gas supply in countries such as Germany, Italy (Parfitt, 2006).

The early literature regarding the global energy governance approached the issue from two major sides. Energy Security specialists outlined the wrong and one-sided geopolitical dimension of the energy security, that was based on the idea that in international energy politics energy security is a zero-sum game, where one side loses and the other wins. They suggest that, if examining the energy issues in the context of global governance, the outcome is more representative since structures, players are included, and their impact is highlighted.

In contrast, Van de Graaf & Colgan (2016) identified the opposing side. The other point of view is represented by the global governance specialists, focuses on the fact that energy sector regarding global governance lack of coherent, cooperative, and progressive governance. This happens, as they point out, despite the fact that energy is one of the most crucial fields for human activity, thus it should have better governing structures.

The increasing interest in research over the issue, has happened due to emergence of international crises and burning issues after the 00s that are directly connect to energy. These issues are:

#### 1) Climate change

Climate change is linked with the energy production and consumption. The major step towards combatting climate change is the reduction of GHG emissions, meaning changes of the energy sources that are used. In order to create greater incentives in this effort, governments have been trying to create/participate in new forms of intergovernmental cooperation to deal with the crossing-borders nature of the issue. The correlation between climate change and energy governance will be further discussed in the chapter 3 of this thesis.

#### 2) Price volatility (oil and gas)

According to Van de Graaf, prices have shown different cycles of height. During 2005-2014, the prices were considered high, on the contrary the period 1985-2005 was marked by rather low prices.

To the conversation, the issue of scarcity of the source and its limited geographic distribution, along with new geopolitical threats, such as the piracy and terrorism must be added since they increase threats to the source thus its price, supply and availability.

### 3) Geopolitical transitions

With the end of Cold War, and the collapse of the Soviet Union the world of international relations became more multipolar, and slowly faced the emergence of a new group of countries. The fast developing mostly importing countries such as China, that had a large share in global energy demand, were not represented in the Organization for Economic Cooperation and Development or the International Energy Agency. The new global energy landscape contributed to creation of new forms of expression and cooperation with and of those countries, so that they are included in the global energy governance issues. This shift will be presented in the second chapter with the example of the cooperation and dialogue that the IEA developed with fast developing countries having understood their importance in energy demand (Van de Graaf & Colgan, 2016).

With the above transitions a traditional distinction has been questioned. Traditionally, energy-importing countries in the highly-industrialized and developed world put focus solely on price and security of supply. On the other side, developing countries that were energy exporters emphasized price and continuity of production-exports. At the time, the political, environmental, development side of the conversation was not present, something that has been gradually changing as part of the growth of international governance that was not profit-oriented as were companies and governments, but international-global goals in matters of development, end of energy poverty, climate change, sustainability (Benner, Soares, and Kalinke, 2010).

To conclude, the field of global energy governance has gained growing attention over the last two decades, still is rather unexplored. Interestingly, energy is one of the most important sectors for any country currently, yet to face challenges as described above, that cross international borders and call of collective action, there is need for forms of international cooperation, for good energy governance.

It must be noted that the fragmented nature of the global governance in the energy sector is one of the features of GEG. What are the most important institutions and players that shape the GEG, what were the international circumstances that lead to their creation, and what is their role today in shaping decisions and promoting international energy diplomacy? These are the questions that will be answered in the unit that follows.

### 1.3. INSTITUTIONS OF GLOBAL ENERGY GOVERNANCE

The nature of the structure of energy governance has one significant characteristic: the fragmentation. That simply means that there are many players that engage in the energy field on different levels, are interested in different themes of energy policy and have different activities. There is no one single organization, forum, or any other structure that is completely responsible for the energy governance that will have fully global membership like the United Nations. Within the following lines, we will discover the structure of GEG, get to know several most important players, understand their creation and role in today's challenging energy landscape.

There is a proposed categorization of the existing participants in the global energy governance. In the first place, there are several institutions that are designed to correct any market failures. Most important player that is included in the first category is the International Energy Agency. In this matter, the IEA established a mechanism of oil reserves for its member states so that they could better deal with consequences of oil shocks, supply disruptions etc. Second category includes players, such as the International Energy Forum that aim at reducing of the transaction costs, increase transparency, data gathering and sharing. (There stands the IEA too). Next, there are standards and rules creating players that establish rules and directives for market exchange or the global climate change regime. Here are the most widely known organizations such as the World Trade Organization (WTO), United Nations Framework Convention on Climate Change (UNFCCC). Last but not least, there are the so called "producers clubs", that consist of oil and gas producing countries, such as OPEC, that synchronize their policies for their benefit. There are clubs of energy consuming countries too – the IEA- but in both cases the real representation is small (Mang, 2014).

In this unit we will present some exemplars of participants and shapers of energy governance. Particularly the Group of 8, Energy Charter Treaty (ECT) and the Asian Development Bank (ADB). We will present one forum, one treaty and one development bank respectively, showcasing the variety of "energy governors".

The International Energy Agency, since it is the closest to a world energy organization, it will be the subject of discussion of separate chapter.

#### 1. G8 Group

Despite the lack of a single governing energy institution, the lack of unanimity regarding tackling energy challenges, the Group of 8 the last years has been trying strong to fill the void in global energy governance. In the 70s, with the two oil shocks, the members states of the G8 has to cooperate in order to deal with the economic

crisis. The response was considered effective, since members agreed to limit nationally oil imports (Van de Graaf & Westphal, 2011).

After that period, energy matters were not part of dialogue between member states, and not part of the agenda of the G8. The G8 initiated an interesting structure, the G8 Renewable Energy Task Force, but it did not produce globally important activity.

With the first climate concerns and fear over higher oil prices arose in the early 00s, the G8 was determined to engage in energy discussions. Most notably, in 2005, in the Gleneagles Summit the G8 included energy-climate issues in its agenda and asked the International Energy Agency for its technical support in the discussions. This summit since then has been considered as milestone in the scope of activities of the G8, because since then the energy issues are a firm point in G8 agenda. Since then there have been published declarations, action plans and commitments, such as Gleneagles Plan of Action on Climate Change, Clean Energy and Sustainable Development (2005), St Petersburg Plan of Action on Global Energy Security (2006), establishment of the International Partnership on Energy Efficiency Cooperation (IPEEC) (2008) etc. From 2005, the G8 created strong cooperation ties with the International Energy Agency (as data, analysis, policy recommendations provider) and the World Bank (World creation of plans and frameworks for investment and financing of clean energy). (Van de Graaf & Westphal, 2011)

Besides that, the G8 took initiatives in creating new governance structures, such as the Global Bioenergy Partnership (GBEP) that is responsible for sustainable production and bioenergy issues (Climate Initiatives Platform, n.d.).

Nevertheless again, with the economic crisis of 2008, energy issues were behind the economic and financial ones.

The G8's contribution has been recognized widely. The 77 energy commitments agreed at Gleneagles Summit, and 132 additional a year later at St Petersburg Summit, and the Global Security Principles showcase the ability of the G8 to help its members focus on such an essential sector, and managed to create some coherence and shared principles among its members.

In addition, the G8 has stepped up to treaty energy security and climate change as two sides of the same coin, creating a correlation between the two in policy making.

As mentioned above, the G8 created new forms of cooperation in areas that the group believed there is lack of governance, but also made positive use of the existing initiatives, bringing closer producers (for example OPEC), importers (IEA), banks, forums (IEF) etc. creating more and more added value (Van de Graaf & Westphal, 2011).

Despite the above progress, the G8 has been trying the last two decades to undertake the global energy governance thought actions and ambitious projects, unsuccessfully.

And this happens because of its primary focus on the economic aspects of human activities, and not the energy one. In addition, G8's agenda and activities are formed by the developments and changes in the energy landscape, and the institution has no shaping power or ability to predict future challenges, because it's membership is limited one (has no real global character), and is affected by its member states decisions which in many cases are not binding. There is no monitoring aspect to its initiatives and principles, which means that the progress and compliance cannot be reviewed.

## 2. Energy Charter treaty

The Energy Charter Treaty, signed in December 1994, is a multilateral framework for cooperation in energy sector and has been considered "unique" in international law. In a more interconnected world, where exporters and importers were becoming more interdependent, the treaty was signed based on the idea that multilateral rules and framework can provide more balance and transparency (Energy Charter Secretariat, 2015, p.3).

The ECT focuses on four major areas:

- the protection of foreign investments
- fair and equal conditions for trade in energy materials, products and energy-related equipment, safe cross-border energy transit flows through pipelines, grids and other means of transportation
- dispute resolution of disputes between participating states, and investors
- energy efficiency (reduction of environmental impact of energy production and use) (Energy Charter, n.d.).

As Bonafé (2017, p.3) points out: "The international standards on investment promotion and protection, cross-border trade and transit became enforceable through dispute settlement mechanisms".

It is a legal international agreement, meaning that has legal implications. At the time it was signed, it was the first big step towards creation of a rules-based international energy order, where all players would be applicable to the same rules and principles. and has the ability to be reviewed, amended and improved according to the will of the Contracting Parties. The Treaty approaches the issue holistically, it embraces the whole course of handling energy: from geological prospecting to final consumption in different sectors of the economy (Dowling, 2018). It also provides soft law provisions, recognizing officially the state sovereignty and sovereign rights over energy resources (Bonafé, 2017, p.3).

One thing that must be noted, is that the Energy Charter Treaty, from the beginning was designed to be applicable in any region/area of the world. It is true though that



in the beginning mostly European and Asian countries signed the Treaty (Dowling, 2018).

In May 2015, due to new challenges the Energy Charter Treaty was modernized, with the International Energy Charter.

### 3. Asian Development Bank

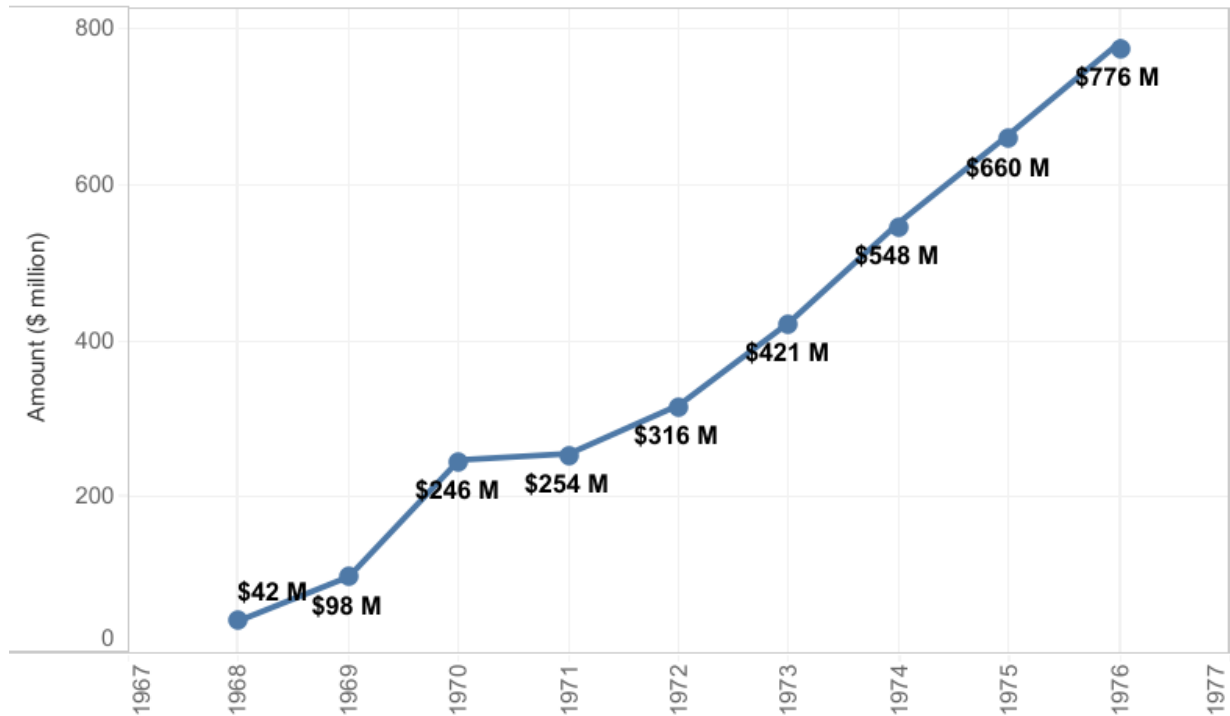
The role of Multilateral Development Banks regarding energy issues is related mostly to economic and technical assistance to its members to facilitate public goods provisions. The assistance that they provide, with loans, technical support, grants and equity investments affects and shapes agendas and policies of countries. The impact is on regional level mostly and has gradually included not only economic and development issues, but also energy policy. Development Banks were created during the 50s and 60s with the aim of boosting economic development in Asia, Africa and South America.

In case of the Asian Development Bank, the promise behind its creation was to familiarize the market and investors with the features of the Asian countries, markets, needs, and to create cooperation in the region (Florini & Sovacool, 2009). The ADB was established in early 60s as a financial institution that would have Asian character and membership. In the beginning the bank focused on the most burning issues at the time in the region, which were food production and rural development.

Early on, the ADB was challenged with energy issues in its agenda. During the 70s the two oil shocks encouraged even more the bank (that had already been engaged in energy issues) to increase support and funding for energy projects that were promoting the development of domestic energy sources (Asian Development Bank, n.d.).

On the Figure 1 that follows, we can observe the increase in funding coming from the Asian Development Bank, during the period 1968-1976.

Figure 1: Total funding of ADB during 1968-1976



Source: Asian Development Bank, (2017)

An important step was taken, when in 1974 the Asian Development fund was created and made possible the provision of funds to the poorest countries of ADB. Since its creation, the ADB has expanded its scope of activities, to include good governance, advice provision, environmental and societal issues (Florini & Sovacool, 2009, p.12).

Today, the Asian Development Bank, has put energy issues as one of its core interests. In 2009, the ADB published its Energy Policy, which aims at helping developing countries to provide safe, reliable, affordable energy in an economically, socially and environmentally sustainable way. The policy has three major pillars:

- Promoting energy efficiency and renewable energy
- Maximizing access to energy for all
- Promoting energy sector reform, capacity building, and governance (Asian Development Bank, n.d.).

These pillars reflect the priorities and the most important challenges that the ADB has identified in the region of Asia and Pacific: transition towards cleaner more sustainable energy, securing access to energy in the world's poorer regions, good governance in energy sector with conducting reforms, and promotion of regional cooperation with the aim of energy security (Asian Development Bank, n.d.).

All in all, the Asian Development Bank, as any other Development Bank, puts focus on the lending strategy, creation of revenue and increase of investments.

To sum up, the energy governance consists of very diverse structures. There is a great range of design possibilities, great variety of institutions that are active in different areas of the spectrum of energy. We can agree that to this day there is no single institution that has truly global representation and that has binding decisions and principles that establish a firm global energy order. Nevertheless, there are several forums, international organizations that are in the frontline regarding energy governance. The Group of 8 is one example, as presented above. But the organization that is considered to be the closest structure to a global energy organization is the International Energy Agency. In the chapter that follows we will take a closer look to the most important non-state actor in the energy sector internationally.

#### **1.4. CONCLUSION**

In conclusion, the development of the field of global energy governance over the last decades was the result of the emergence of three very important international issues such as the climate change, the price volatility of oil and gas and the geopolitical transition. Despite the growing attention over it, GEG is still considered unexplored. The structure of energy governance is crucial for its development and its function and fragmentation is the main characteristic of it, meaning there is not only one organization completely responsible for the GEG. There are several very important institutions like the Group of 8, Energy Charter Treaty and the Asian Development Bank which are active in different areas of the spectrum of energy with great range of possibilities.

## **2. INTERNATIONAL ENERGY AGENCY**

### **2.1. INTRODUCTION**

The International Energy Agency has become a major player in the global energy governance. To better understand the importance of the IEA, first it is of great merit to have a closer look at what is the International Energy Agency, how it is structured and what is the decision-making process that takes place. These questions will be answered in the unit that follows. Furthermore, to understand better the role in energy governance of IEA today, the history and the creation process, along with the development of IEA's role will be presented in the second unit. Finally, in the last unit of this chapter, we will focus on the role of the IEA in the global energy governance with some notable examples of IEA's activities.

### **2.2. WHAT IS THE INTERNATIONAL ENERGY AGENCY?**

Global Energy Governance has become a major field in international literature, steadily expanding throughout the decades giving a broader understanding of how and by who the energy sector is governed on a global scale. As the former director-general of the International Atomic Energy Agency has pointed out that there are World Health Organization, two global food agencies, the Bretton Woods financial institutions and organizations to deal with everything from trade to civil aviation and maritime affairs. Energy, the motor of development and economic growth, is a glaring exception.”(Van de Graaf & Colgan, 2016)

The global order in the context of energy governance includes a plethora of different diverse fora, organizations, as presented in the previous chapter. In this thesis, the center of our focus will be directed towards the International Energy Agency. The International Energy Agency is considered as “the world’s foremost multilateral energy organization” in the energy sector and “the closest we have to a World Energy Organization” (Van de Graaf & Colgan, 2016). Particularly we will explore the objectives of the IEA along with the organization’s structure and voting system to fully understand how the IEA is managed and how the decisions are made.

## Objectives of IEA

The IEA is at the heart of the dialogue regarding energy issues on global scale. The scope of interest for the organization has been evolving since its creation. Today, there are three main areas of activities of the International Energy Agency: energy security, protection of the environment and economic growth. When referring to energy security the IEA puts attention on diversity, efficiency, flexibility and reliability of fuels and energy sources (Hirst & Yang, 2017). In addition, this means that countries members shall develop the ability to respond to energy emergencies in time and with flexibility. In this case, if such need arises, countries can cooperate through the IEA (International Energy Agency, 1993). The IEP and the CERM include the steps that need to be taken for that purpose (Wilson, 2016).

Regarding the protection of the environment, the International Energy Agency gives emphasis on policy suggestions and technological energy solutions in order to boost more environmentally acceptable energy sources and options, and on global dialogue and cooperation in spreading good practices and technologies.

The IEA encourages its members to foster economic growth, to secure affordable and safe energy supply, reduce energy poverty, and at the same time promote energy efficiency.

All the above objectives shall be promoted with global engagement of member and non-member countries, but also the industry and companies worldwide (Wilson, 2016).

The International Energy Agency is an autonomous body created and working within the Organization for Economic Co-operation and Development (OECD). The agency can set its own policy priorities and has independent decision-making structures (Wilson, 2016). The activities of the International Energy Agency can be divided into two main categories: decision-making and policy-making.

## Decision-making

The main body of the IEA is the **Governing Board**, which is responsible for the strategic decisions of the organization. Energy Ministers or their senior representatives from each member country make up the Governing Board and hold three to four meetings annually (at the level of senior civil servants, meaning Director General or higher position). The important feature of these meetings is that the outcomes and the decisions are binding for all the countries members of the IEA. Among other responsibilities, the Governing Board undertakes the approval of the biennial program of work and the budget of the organization. In addition, the

Executive Director, who governs the agency, is nominated by the Governing Board (Wilson, 2016).

The second configuration within the IEA that is involved in decision making is the **IEA Ministerial** which includes all the ministers from all member countries showcasing its global footprint. It is held every two years and expresses broader strategic priorities for the IEA and the Secretariat and provides directions and proposals to the whole organization (Wilson, 2016). These meetings represent a great opportunity to evaluate current progress and outline steps and strategies for future development.

The most recent IEA Ministerial was held in December 2019, in Paris, where global leaders discussed issues regarding global energy security and clean energy transition (International Energy Agency, 2019).

### **Policy-making**

The most pivotal role in the policy making of the IEA has the **Secretariat**, composed from multinational teams. The **Executive Director** leads the Secretariat for four years. The role of the Executive Director is to manage the organization internally, but also represents the International Energy Agency on global level (Wilson, 2016).

The Secretariat has an important role at the IEA Ministerial meetings, during which the Secretariat can develop ideas and proposals regarding new or existing work programs, which are discussed by in IEA committees and are presented and approved by the Governing Board.

Besides, the all the above bodies and positions mentioned above, the International Energy Agency consists of Standing Groups of officials from members states. The **four Standing Groups** are:

1. Standing Group on Emergency Questions (SEQ): responsible for oil emergency preparedness and collective response to supply disruptions.
2. Standing Group on Long-term Cooperation (SLT): promotes cooperation patterns among the member states in the name of energy security, energy efficiency, environmental protection.
3. Standing Group on Global Energy Dialogue (SGD): promotes cooperation dialogue with countries and regions that are not members of the IEA.
4. Standing Group on the Oil Market (SOM): provides the member states monitoring and analysis of developments in oil market on international level, on short and long-term basis, in order to effectively and in time react to energy market changes (International Energy Agency, n.d.).

Besides the Standing Groups, the IEA includes the **Committee on Energy Research and Technology** (CERT) implements projects on new technologies and energy challenges, and supervises IEA publications, Energy Technology Perspectives and

energy technology roadmaps. The activities of CERT are led by three working parties (on energy end-use, fossil fuels and RES technologies) and a committee on fusion power.

Last but not least, the **Committee on Budget and Expenditure** (CBE) provides the Governing Board with resource management and administration (Wilson, 2016).

### **Voting System**

In case of the Governing Board, the voting system that is in effect, is described in Articles 61 and 62 of the IEA constituent document, the International Energy Program or IEP Agreement.

Majority is the voting system that is required for decisions over the IEA program of work, procedural issues and recommendations. Among all member countries voting weights are allocated. The allocation system is based on net imports from 1973 and to date has not been replaced by a modern way of allocation (Wilson, 2016). Additionally, each member state gets 3 unweighted general votes (Hirst & Yang, 2017, p.25). As stated in the Agreement on an International Energy Program (As amended 30 November 2007), n.d.), majority in case of IEA decisions means 60% of general voting weights, and 50% of combined voting weights (general votes and weights allocation based on net oil imports).

Most common way of voting is the one of consensus, which is the norm for the Governing Board's decision taking. Countries usually express their lack of support for a policy, abstain rather than cast a negative vote.

Unanimity is required for IEA decisions regarding major revisions in the IEP Agreement, introducing new tasks and activities for the IEA, changes in votes distribution, and changes in financial contribution (Wilson, 2016).

The table that follows is a presentation of the distribution of voting weights among member states of the IEA, according to each country's net imports of oil from 1973. Total weights account for 178. The distribution hasn't changed since then.

Table 1: Voting weights by country since 1973 (1973)

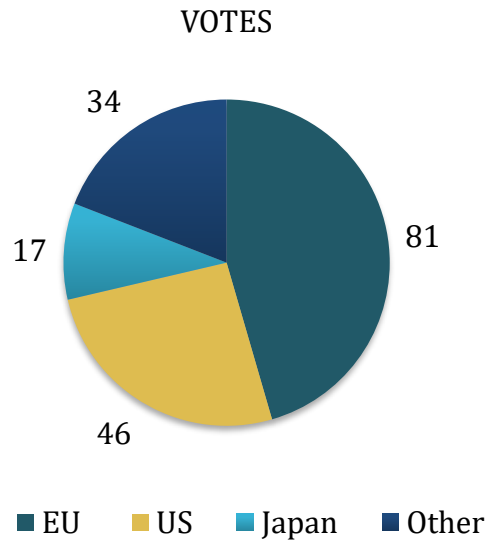
Country	General voting weights	Oil consumption voting weights
Australia	3	1
Austria	3	1
Belgium	3	1
Canada	3	4
Czech Republic	3	1
Denmark	3	1
Finland	3	1
France	3	6
Germany	3	8
Greece	3	0
Hungary	3	1
Ireland	3	0
Italy	3	5
Japan	3	14
Republic of Korea	3	1
Luxembourg	3	0
The Netherlands	3	1
New Zealand	3	0
Portugal	3	0
Slovak Republic	3	0
Spain	3	2
Sweden	3	2
Switzerland	3	1
Turkey	3	1
United Kingdom	3	5
United States	3	43
<b>Total</b>	<b>78</b>	<b>100</b>

Source: Agreement on an International Energy Program (As amended 30 November 2007).



The EU countries hold the majority of the votes, accounting over 45,5 % of total votes. Second come the United States, with almost 26%.

Figure 2: Largest shares of votes by country/region



It is important to understand how the IEA was created, which countries it includes and how the organization alongside its membership expansion grew regarding its activities and its role on the international and global scale. This will be discussed in the chapters that follow.

### 2.3. CREATION AND HISTORY

The establishment of the International Energy Agency was the result of an event that shook the international community. In 1973 the Organization of Arab Petroleum Exporting Countries (OAPEC) imposed oil embargo on the United States and nations that were considered allies of Israel during the ongoing Yom Kippur War with Egypt and Syria. The United States at the time were heavily dependent on imports of crude oil from the Middle East, as well as other importing countries in Western Europe and Japan.

The oil embargo had serious economic implications, shook the existing geopolitical balance, and the hegemony of the United States, and triggered economic recession in an important part of the developed world. In addition, it proved once more, after the Suez Crisis in 1957, and the Six Day War of 1967, that oil (and energy in general) can be used as a political tool from countries in order to influence the international and political landscape.

What exactly was the impact of the oil crisis of 1973 in creating the International Energy Organization? Before answering this question, let's focus on the existing structures in energy governance in this matter during that period. Countries affected by the disruption of oil imports by the OAPEC countries acted in non-coordinated manner despite the existence of several governing structures.

Within the Organization for Economic Cooperation and Development (OECD), the Oil Committee and its sub-group the High-Level Group of Oil wasn't used as a ground for discussion over a collective response and effective plan for dealing with the crisis (Türk, 2014). The Council of the OECD had even adopted emergency plans and measures for apportionment of oil supplies in an emergency in the OECD European area, which was not followed during the 1973 crisis. The goal of the decision, as OECD (1972) points out, was to reaffirm that supplies will be safeguarded, distributed and used in a fair and equitable basis between European member states. These rules were not followed by the member states during the 1973 crisis. Countries were unprepared to deal with the crisis and the price increase.

The New York Times, in the words of Gwertzman (1973), presented the tensions of the time. The deficiency described above was pointed out by Henry Kissinger, the US Secretary of State at the time. In his speech, on December 12, 1973, he proposed that the United States, along with Europe, Canada and Japan, should join forces in order to "attack the world energy problem" by creating an "energy action group".

"The group of senior and prestigious individuals" will have a mandate to "develop within three months an initial action program for collaboration in all areas of the

energy problem". The goals of the energy action group would be to define principles of cooperation, ensure the rational utilization of existing energy supplies, development of new sources, encourage suppliers to increase their production and initiate on international level the effort towards increasing energy efficiency and the introduction of alternative to oil energy sources (Office of the Historian, 1972). As Kissinger stated, the action group should include not only consuming countries but also producers. This led to the creation of the Energy Coordinating Group (ECG) in 1974. The ECG developed a program for energy cooperation in the Western industrialized countries and promoted one common economic approach in dealing with oil crises (in the context of ensuring of oil supplies for future crises and the dealing with the economic impact of any oil crisis) (Türk, 2014). That was the beginning of the International Energy Program, signed in 1974 by several OECD countries with the aim of creation of an International Energy Agency, an autonomous body within the OECD (Wilson, 2016). Wilson (2016, p. 5) states that by 1974, the countries members of OECD represented around 73% of global consumption of oil. Having this in mind, it was clear that an international energy agency for the western part of the world would be created within the OECD that was representing main oil consuming countries. The existing framework within the OECD didn't work in the oil crisis of 1973 and was considered as ineffective regarding cooperation. That is why the solution of creating an additional structure, that of the International Energy Agency, was accepted.

Despite the fact that the IEA was created as a counter force towards OAPEC, for the western world, the organization developed and grew representing more countries and expanding its role and field of interest.

### **Membership**

The IEA was created within the OECD, since it was easier and less time consuming to create an organization within the existing structures, rather than developing a new form of international cooperation from the very beginning. This decision has implications regarding the membership in the organization. In the beginning of the creation of the International Energy Agency, the membership in the IEA was connected to the membership in the Organization for Economic Development and Cooperation. This means that only OECD member countries can become full members of the IEA.

The founding members are Austria, Belgium, Canada, Denmark, Germany, Ireland, Italy, Japan, Luxembourg, The Netherlands, Norway (under a special Agreement), Spain, Sweden, Switzerland, Turkey, United Kingdom, and the United States.

Additional accessions are: Greece (1976), New Zealand (1977), Australia (1979), Portugal (1981), Finland (1992), France (1992), Hungary (1997), Czech Republic (2001), Republic of Korea (2002), Slovak Republic (2007), Poland (2008), Estonia (2014), and Mexico (2018) (International Energy Agency, n.d.).

As for 2020 the International Energy Agency accounts 30 members states, that are depicted on the map that follows.

The obligations that have states in order to participate in the IEA are:

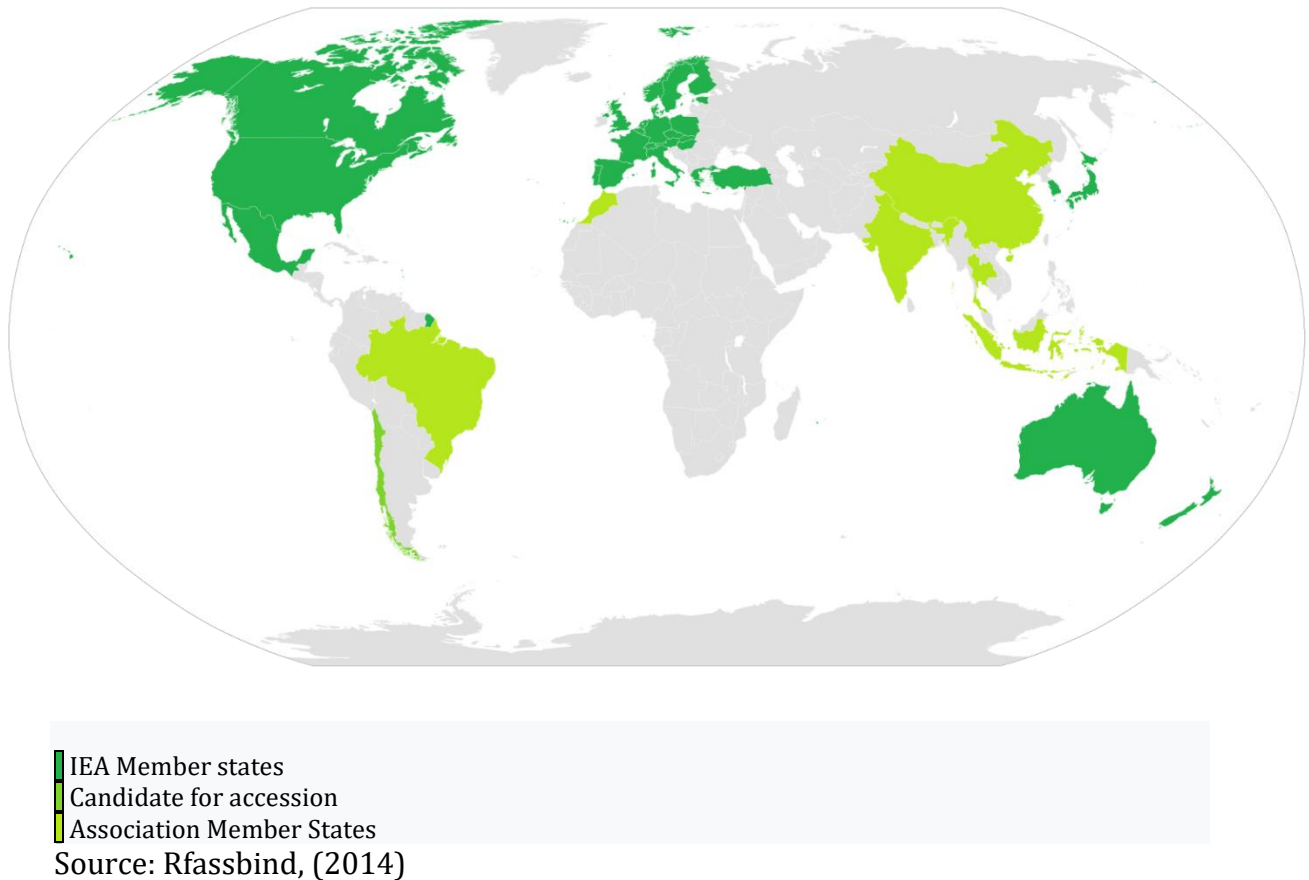
1. Maintenance of emergency reserves equivalent to 90 days average of crude oil/oil products imports in the prior years.
2. Creation of program of contingent oil demand restraint measures in order to decrease energy consumption. Each participating country shall reduce its energy consumption as part of demand restraint measures by an amount equal to 10% of its total consumption during the base period (United Nations, 1977);
3. National legislation and organization aim at the operation of the Co-ordinated Emergency Response Measures (CERM) and legislation that requires from all oil companies to provide and report all necessary information when requested (International Energy Agency, n.d.).
4. It is in the spirit of the organization, that all members states shall cooperate and support IEA collective actions by stock release, demand restraint, fuel switching, fuel sharing or increase of production (Department of Industry, Science, Energy and Resources, n.d.).

In addition, several countries have the status of associate members. The “associate member” status was introduced in 2015, as an effort from the International Energy Agency to include countries non-members of the OECD that have essential impact on the global energy market. This way the associate countries gain some privileges, such as participation in IEA’s meetings, standing groups, committees etc. and can cooperate in matters of energy security, data and statistics, energy policy, trainings and capacity building activities. From 2015 to date Brazil, China, India, Indonesia, Morocco, Singapore and Thailand have been added to the structures of the IEA as associate members (OECD, 2017). With the last addition of India in 2017, the International Energy Agency accounts for around 70% of the global energy consumption (Nakano & Singh, 2017). This indicates that the IEA has been growing since the 70s to become a truly global energy organization.

Finally, there are some countries that are recognized as candidates for accession. The ability of a potential candidate is evaluated based on the criteria mentioned above by the Executive Director, with the cooperation of the Secretariat. The final decision is made by the Governing Board (International Energy Agency, n.d.).

The map that follows is a presentation of the different statuses of the membership of different countries in the IEA as for 2020 and explains the information mentioned above.

Figure 3: Membership status in the IEA (2020)



Having discussed the structure and the creation and development of the International Organization, it is time to take a closer look at the role of the International Energy Agency as part of the global energy governance.

Some examples of the IEA’s activity and response to international events and developments will be presented, proving that the IEA is up-to date with the changing international landscape and the new challenges.

## 2.4. ROLE OF THE INTERNATIONAL ENERGY AGENCY IN GLOBAL ENERGY GOVERNANCE

The International Energy Agency, since its establishment became a center of attention and activity in the global energy governance. In the unit that follows we will have a closer look at the contribution of the IEA in the global dialogue and efforts in the energy sector and the actual role that the IEA has until today in the international energy arena.

In the origins of the IEA, the organization, as described in the International Energy Program treaty was focusing mainly on reporting oil prices, supply and stock positions, as well as overseeing an emergency oil-sharing system among the members countries. According to the Treaty, member states were obliged to maintain oil reserves equivalent to at least 60 days (later increased to 90) of net oil imports and in case of emergency in state of oil supply shocks to follow demand restraint policies and reserve sharing policy (Florini, 2008).

But the global energy market was changing inevitably, requiring more adjustments and development from the IEA. This was particularly notable during the Iranian Revolution and the following oil crisis of 1979. With the Iranian Revolution, anti-Shah strikes began in the oil fields of Iran, leading to decrease of oil production, by around 7% of total world production (Gross, 2019) and subsequent decrease in oil imports. At the time Iran was the fourth largest oil producer (Phillips, 1979) in the world. Other producing countries (Saudi Arabia, Kuwait, Iraq, Nigeria) increased their own production and were able to limit the decrease of total production to around 4% (Oil Squeeze, 1979). The prices of crude oil increased, having as a driving factor the panic of oil importing countries leading to a 150% increase in oil price. The crisis worsened due to increased demand of oil for storage (Yeboah, n.d.).

The IEA mechanisms of oil-sharing and demand restraint were not activated because of the fact that the oil imports of IEA member states did not drop more than 7%, a limit that activates the mechanism (Florini, 2008).

In the wake of another crisis, the IEA did not play a significant role in dealing with the crisis. In order to improve its response towards developments in energy governance, created the Coordinated Emergency Response Mechanism, the so called CERM, in 1984 (Wilson, 2016). The CERM was designed to provide a rapid and more flexible response system to actual or imminent oil supply disruptions, when “no defined trigger for initiation” exists, especially in case of public panic over price increases. The implementation of the guidelines should begin with the positive decision of the

Governing Board of the IEA, after consultations with the member states (Florini, 2008).

The CERM allows members states of the IEA to respond differently to an oil crisis, because it does not require from the member states to release their reserves.

Since its establishment, the CERM has been activated on several occasions:

1. On the eve of the First Gulf War (1991): The combined Iraq/Kuwait production fell due to the ongoing war (World Bank, 2015).
2. After the Hurricanes Katrina and Rita (2005): the damages caused in oil infrastructure in the Gulf of Mexico lead to drop in oil production of the U.S. (Congressional Research Service & The Library of Congress, 2006).
3. To reduce the risk of supply disruptions due to civil war in Libya (2011): This decision of the IEA was met with criticism and was translated into market manipulation. As Libya's production began to fall due to the ongoing war, the IEA decided to release 60 million barrels of oil as a form of prevention, not as an attempt to confront supply shortfall, price increase of any market imbalance (Wilson, 2016).

Since then, the IEA developed its range of activities. The original role of the IEA, as a coordinator of the oil consuming countries for oil shocks response preparedness was becoming less relevant in the international energy governance. Most important factor was the fact that the global energy markets became gradually more stable and less vulnerable to supply shocks and disruptions due to several factors:

- higher level of supply diversification
- domestic production in certain IEA members
- involvement of private companies in energy production

The agency started to get involved in keeping global energy statistics, playing role not only in crude oil but also in natural gas and electricity, energy security and efficiency, and even climate change issues. The latter will be described more broadly in the chapters that follow. The International Energy Agency is considered as the keeper of world's energy statistics and source of information and data regarding energy supply and demand, and energy R&D. Furthermore, the organization provides energy market projections, reviews and outlooks. This is especially important, since the IEA can exert influence on what issues get attention worldwide, and with its recommendations can help set standards and best practices for its members states (Florini & Sovacool, 2009).

Additionally, the organization got more active in promoting global dialogue with other organizations and bodies, and countries non-members (Wilson, 2016).

For example, the increased cooperation between oil consuming and oil producing countries, lead to a rapprochement between the IEA and OPEC, leading to the creation of the International Energy Forum (International Energy Agency, n.d.). In the 90s the creation of several energy related institutions e.g. The Energy Charter Treaty (Van de Graaf, 2013) created more opportunities for cooperation. Its headquarters have been chosen to host several organizations (Clean Energy Ministerial (CEM) Secretariat and the Energy Efficiency Hub). The IEA gets involved in energy works of the Groups of G20, G7 and G8, in Mission Innovation, the Conference of Parties (COP) of the United Nations Framework Convention on Climate Change (UNFCCC) and the International Renewable Energy Agency (IRENA).

Regarding statistics and data analysis, IEA cooperates with APEC, EUROSTAT which is the Statistic Office of the European Communities, the Gas Exporting Countries (GECF), the Latin American Energy Organization (OLADE), and the United Nations Statistics Division (UNSD).

On regional level collaborations include the Asian Development Bank (ADB), the Association of Southeast Asian Nations (ASEAN), the Asia Pacific Economic Cooperation (APEC) forum and the African Union (AU) to promote regional energy co-operation (International Energy Agency, n.d.).

The IEA interacts with several strategic countries, such as China, India and Russia (Van de Graaf, 2013), recognizing the increasing importance of the East in the energy markets and adopting to the changing international environment in order to remain relevant.

Taking everything into account, the IEA is a multi-layered international organization with a limited membership. Despite that it has accomplished getting a notable position in the energy governance matters. Since its creation, the organization grew from limited membership and limited scope of interest and activities to a pivotal player in the energy governance spectrum. The International Energy Agency, created as a result of international developments, remained adaptable to international situation and events, creating its own policies and tools that shaped the global energy dialogue or assisting in existing forms of cooperation. Current themes, the climate change most notably, have reached the top the agenda of the global energy dialogue. Thus, climate change becomes another challenge that the IEA is called to get adapted to remain relevant and serve the international community its knowledge and abilities. The developments in the global energy governance as a result of the increasing importance of climate change issues will be the subject of the chapter that follows. The last chapter will focus solely on the activities and the growth of the IEA in this matter.



## 2.5 CONCLUSION

The serious economic consequences of the oil embargo back in 1973 were an important reason for the creation of International Energy Agency which is a multilayered international organization with a limited membership. IEA with its two main roles in decision and policy making, encourages its members to faster economic growth, secures affordable and safe energy supply, reduces energy poverty and provides energy efficiency. Overall, IEA has three main areas of activities and these are energy security, protection of the environment and economic growth.

### **3. CLIMATE CHANGE AND ENERGY GOVERNANCE**

#### **3.1. INTRODUCTION**

The field of energy governance gained increased attention with the elevation of climate change as an important issue internationally, having an impact on the structure of global energy governance. In this chapter that impact will be discussed in greater detail.

#### **3.2. THE RELATIONSHIP BETWEEN CLIMATE CHANGE AND ENERGY GOVERNANCE**

During the 1990s the environment and especially climate change issues reached the top of the international agenda. Part of the discussion over climate change concerns the need for reduction of Greenhouse gas emissions (GHG) by fuel switching and changing and improving energy production patterns and technologies. This means the use of new energy sources, precisely the renewable sources (RES), such as solar energy, wind, geothermal, biomass and hydroelectric power. This means that, as climate change is largely an energy challenge (energy accounts for around 2/3 of global GHG emissions), the solution must be energy-based, according to Dr Hoesung Lee, Chair of the Intergovernmental Panel on Climate Change, and Dr Fatih Birol, Executive Director of the International Energy Agency (2020).

The gradual transition from energy sources that are high in GHG emissions towards more environmentally friendly sources, creates the need for new structures and bodies as part of the global energy governance. Global energy governance must follow up to the developments regarding climate change and provide international structures for cooperation and dialogue since climate change represents a cross-border problem.

First steps were taken with the Montreal Protocol of 1987. The Montreal Protocol on Substances that Deplete the Ozone Layer was the first agreement on global level that aims at protection of the Earth's ozone layer by restricting the use of chemicals that contribute to its depletion (both production and consumption) (Ozone Secretariat, n.d.). Since 1987, the Protocol has been amended five times, most recently in 2016 (Ozone Secretariat, n.d.), contributing to the reduction of GHGs.

The Montreal Protocol on Substances that Deplete the Ozone Layer was soon followed by a more structured form of intergovernmental cooperation regarding the environmental issues and specifically climate change, the Intergovernmental Panel

on Climate Change. The Intergovernmental Panel on Climate Change (the IPCC) was created in 1988 by the World Meteorological Organization (WMO) and the United Nations Environment Program (UNEP). The role of the new panel was to provide policymakers with regular scientific assessments, reviews and recommendations on the current state of knowledge about climate change, social and economic impact of climate change, potential response strategies and proposals. Since its establishment, the IPCC provided five Assessment Reports, which are considered the most comprehensive scientific reports on the matter of climate change worldwide, methodology reports, special reports and technical papers playing an important role in the international climate policymaking (IPCC, n.d.).

The work of the IPCC, and especially of the First Assessment Report of 1990 led to the creation of the International Negotiating Committee for a Framework Convention on Climate Change and later to the Framework Convention on Climate Change (UNFCCC) in 1992, the key international treaty to reduce global warming and cope with the consequences of climate change (IPCC, n.d.). The goal of the UNFCCC is the “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.” (Article 2 of the UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE) (United Nations, 1992, Art.9). Signatory members shall stabilize the GHS emissions at the 1990s level (United Nations, 1992, p.12) Within this framework, the energy issues were connected to the climate change.

The Convention is the primary framework document that subsequently has been augmented, by the 1997 Kyoto Protocol and the 2015 Paris Agreement.

Further steps were taken with the Kyoto Protocol of 1997, which served as an extension to the UNFCCC. The Kyoto Protocol committed further the parties by adopting this time individual targets to limit and reduce GHG emissions (United Nations Climate Change, n.d.). 192 nations committed to reducing their emissions by an average of 5.2% by 2012 (Earth.org, 2020).

Once the commitment period of the Kyoto Protocol ended, parties of the Protocol, agreed under the Doha Amendment to new targets (reduction of GHG emissions by at least 18% below 1990 levels) (Earth.org, 2020).

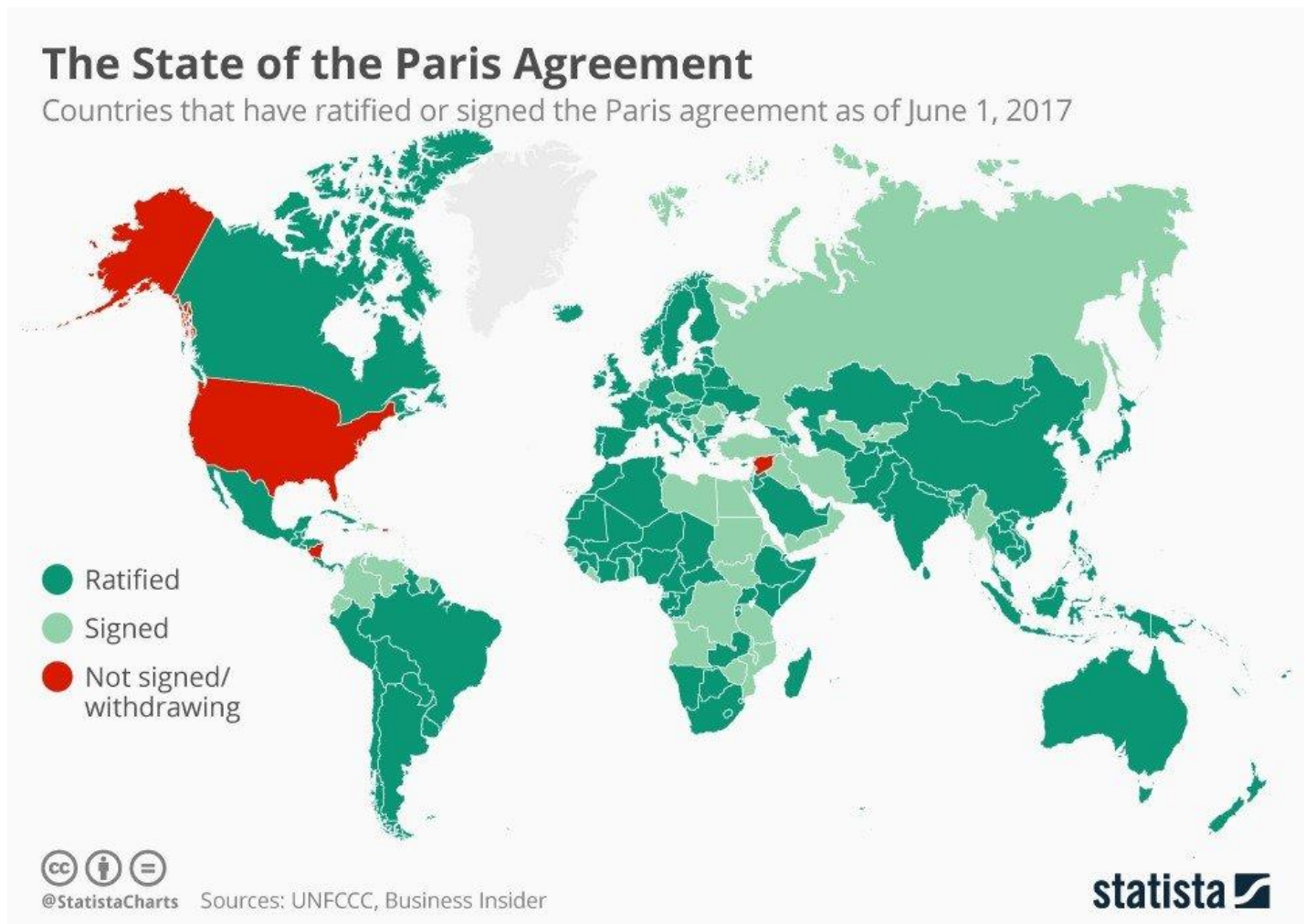
Shortly after, in 2015, UNFCCC participants signed the Paris Agreement. Under the agreement, the parties agreed to reduce GHG emissions to limit the global average rise in temperature to below 2 degrees Celsius and as close as possible to 1.5 degrees Celsius. It became clear that, in order to meet the targets of the agreement, the energy sector must undergo a transition too. This transition should focus on renewable

sources. The share of renewable sources in world's primary energy supply should reach from the current 15% to 65% by 2050 in order to meet the Paris Agreement goals (United Nations Climate Change, 2018).

For Llewelyn Hughes (2019) the Paris Agreement on climate change, represents a new approach regarding international cooperation, since it introduces common obligations, both for developing and developed countries. It is the “first-ever” universal, legally binding global climate change agreement” (European Commission, n.d.). The action is collective, and includes 189 countries worldwide (The U.S., despite ratifying the Agreement, in November 2019 withdraw from it, but reentered in 2021) (United Nations Climate Change, n.d.).

The parties of the Agreement are depicted on the map above.

Figure 4: The state of the Paris Agreement



Source: Area Eco, (2017)

Another important aspect of the Paris Agreement is that it is based on an iterative pledge-and-review process, that is discussed by Flacksland, Kornek, Lamb, and Raiser

(2020) in their article “Is the Paris Agreement effective? A systematic map of the evidence.” The parties of the Agreement submit periodically nationally determined contributions (NDCs) that set their climate action for a certain period of time, which are reviewed along with the implementation of those, in order to achieve the commitments and push towards more ambitious climate actions. The overall goals for all the countries are common, but the NDCs are taking into account domestic factors and are based on solutions that are fitting to each country’s economic and environmental profile.

Other forms of cooperation, outside the UNFCCC, include the United Nations Environmental Programme (UNEP), that has been involved in climate change issues for many years. For example, the UNEP cooperated closely with the UNFCCC, by providing analytical support during the AR4 (Stavins, et al., 2014). Other forums and initiatives, such as the REDD+ Partnership of the Forest Carbon Partnership Facility (FCPF) (with main focus the reduction of emissions from deforestation and forest degradation, forest conservation, sustainable management of forests, enhancement (Forest Carbon Partnership Facility, n.d.)), support the works and mission of UNFCCC.

The International Renewable Energy Agency (IRENA) is of high importance to mention. The International Renewable Energy Agency is an important pillar in the global energy governance regarding climate change. IRENA was created in 2009. Discussions over the creation of an international agency dedicated to renewable energy issues started in the 1980s (International Renewable Energy Agency, n.d.). By the time of creation of the IRENA, the IEA has been engaged in climate change issues and renewables for decades, as it will be presented in the chapter that follows. So, instead of strengthening of the field of work of IEA, it was decided the creation of a new international organization in order to focus primarily on the transformation of the energy sector by focusing on major environmental problems, such as climate change, air pollution and acid rain, and not just on certain energy-related environmental issues (Van de Graaf T., n.d.).

Another interesting forum is the Major Economies Forum on Energy and Climate Change (MEF). Launched in 2009 as a forum to facilitate the international dialogue between developed and developing economies. The 17 major participating economies are: Australia, Brazil, Canada, China, the EU, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Mexico, Russian Federation, South Africa, the UK and the US (IISD, n.d.). The intention of the forum is to create positive leadership and progress in discussions over climate agreements (Presidency of the Council of the European Union / Luxembourg 2015, 2015). This common goal is shared with the Climate Ministerial Forum (CEF), in which besides all the countries mentioned above, participate additionally Chile, Denmark, Finland, Norway, Saudi Arabia, Spain, Sweden and the United Arab Emirates (The Office of International Affairs, n.d.). CEM focuses on four areas: energy efficiency, clean energy supply,

energy systems and integration, and crosscutting support (The Office of International Affairs, n.d.).

The financial part of the conversation regarding climate change and energy sector issues is addressed by the Group of 20 and the Group of 8, commonly known as the G20 and G8. Climate change has gained increased attention of the mentioned fora first, with the withdrawal of the U.S. from the Paris Agreement, and second, due to the efforts of European Union and Japan that have been the driving force for promotion of regulatory framework regarding climate change and green solutions (Rae, 2020).

The analytical support from international organizations is provided by the International Energy Organization, which will be the focus of the chapter that follows, and the Organization for Economic Co-operation and Development. The OECD is an international organization that brings together 27 countries for cooperation over global importance issues (OECD, n.d.). Regarding the climate change, the OECD supports the transition towards greener, low – emissions and climate resilient economies using tools such as policy development, green finance, and investments (OECD, n.d.).

Forms of cooperation and dialogue have been introduced even by international institutions, such as the World Bank and the European Commission (Stavins, et al., 2014).

Part of the global governance for climate issues represents the regional, subnational and transnational levels too. Such initiatives act complementary and supplementary to global actions for climate change mitigation. Particularly, notable coalitions that include governments, civil society, private sector and local actors are:

- The “Climate and Clean Air Coalition”, that aims at reducing climate pollutants and create and share solutions that are sustainable (UN environment programme, n.d.).
- The Cartagena Dialogue for Progressive action is an informal space for dialogue among countries that pursuit low carbon economies and work towards an “ambitious, comprehensive and legally binding regime in the UNFCCC” (IISD, n.d.).

Overall, the energy governance on global scale is fragmented between different fora, forms of cooperation that makes the cooperation and agreements more complex. One common feature of the above forum of forms of cooperation is that they include a small number of countries and are voluntary, which leads to non-binding decisions taken by a not representative, and that they focus on certain topics regarding climate change and the energy sector. On the other hand, some advantages must be underlined. The fact that these forms of cooperation are smaller regarding the structure and the membership gives greater flexibility and maybe even greater determination and progress in the dialogue and negotiation process. Lastly, the

aggregate effect must be considered. A plethora of initiatives can have a stronger impact and produce greater results bringing, at least partially, closer participating countries on different aspects of climate change.

### **3.3. CONCLUSION**

During the last decades, the energy governance drew inevitably increased attention as the climate change became an international issue that reached the top of the global energy dialogue's agenda. The IEA has been a very important part of the energy governance on global scale since its beginning and concerning the climate change, the concept of energy efficiency and the signing of Paris agreement are two notable examples of IEA's contribution in international climate dialogue and action.

## **4. IEA AND CLIMATE CHANGE AND GOVERNANCE**

### **4.1. INTRODUCTION**

The International Energy Agency since the beginning of its creation has been an important part of the energy governance on global scale. The ever-changing global energy environment with the emergence of climate change as a particularly important pillar of the global energy governance has been leading to either creation of new forms of cooperation, for a etc. in order to address the new arising challenges, or the development and expansion of already existing players. Having this in mind, the IEA has been challenged to make adjustments and develop its activities and scope of interests in order to remain relevant and contribute to the global energy governance. The chapter that follows will focus on the role that the International Energy Agency and how the agency contributes to the climate change dialogue on international level.

### **4.2. IEA AND CLIMATE CHANGE AND GOVERNANCE**

When climate change issues gained more focus and importance in the international energy agenda, the International Energy Agency had already several decades of experience in the international scene. The agency was called to take part in the international climate dialogue and negotiations.

Starting with IEA's contribution to the most important climate negotiation forum, the United Nations Framework Convention on Climate Change, we will present some notable examples of IEA's activities. In particular, in 2009, the International Energy Agency prepared its flagship World Energy Outlook (WEO), a document that was substantial during the Copenhagen Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) in 2009 (Florini, 2011). The WEO "lays out the commitments and measures in the energy sector that could underpin a just international agreement on climate change" (International Energy Agency, 2009). It is important to note that the IEA developed its WEO to include issues relevant to climate change, environment and sustainability, reflecting the theme of the time.

The report included among information, data and analysis, a presentation of two possible climate scenarios. In the first one, assumed that there would be no significant change in the existing climate policies. In the second scenario, the possibility of taking measures to stabilize carbon dioxide concentrations at less than 450 parts per million (ppm), with the aim of preserving the total global temperature below the threshold



of two degrees Celsius, was explored. In this scenario the conclusion of the International Energy Agency was that the 450ppm option would require investments in energy efficiency programs and clean energy technologies of \$10,5 trillion over the next 20 years (with 2010 being the start year).

Additionally, the International Energy Agency addressed three major opportunities-policy recommendations:

- 1) If an agreement in Copenhagen would be reached, that would have positive impact by encouraging financial and technological support and aid provision for developing countries, so that they could deal more effectively with the implication of climate change.
- 2) Acceleration of the spread and deployment of clean energy technologies across the countries.
- 3) Developing strategies and ideas with the aim of creating incentives for energy efficient technology solutions

The adoption and implementation of the policy recommendations of the IEA would be critical to reach the goal of the 450ppm scenario. With this work, the International Energy Agency could bring to light an important matter that should be considered by the international community in its fight with climate change, the energy efficiency. According to IEA, by increasing the energy efficiency, there could be a substantial decrease in the emissions (Florini, 2011).

The International Energy Agency not only prepared and made available this comprehensive analysis, and other publications (such as the Energy Technology Roadmaps) but also was one of the participants in the workshops in Copenhagen. In the end, nevertheless the support of data, analysis and recommendations of the IEA, there was no new global agreement. Progress seemed have been made regarding:

- 1) Consensus over improved cooperation mechanisms for climate change cooperation (for example the Clean Development Mechanism of the Kyoto Protocol)
- 2) The Copenhagen Accord that included several points:
  - The political will to reduce carbon emissions, and tackle climate change by limiting the increase of global temperature to no more than 2 degrees Celsius above pre-industrial levels was expressed.
  - Developed countries pledged to fund actions and activities that will from one hand reduce their gas emissions and from the other hand will help the developing countries in dealing with climate change effects.
  - Reporting process of the developing countries' actions and measures.
  - The creation of four new bodies: REDD+, High Level Panel within the COP, the Copenhagen Green Climate Fund, and the Technology Mechanism (United Nations Climate Change, n.d.).

The IEA does not only contribute directly to the UNFCCC negotiations through the working groups and processes but cooperates on regular basis on different levels. Regarding the cooperation with the UNFCCC over climate change issues, the IEA provides all necessary research, information during the side-lines UNFCCC meetings, collaborates with the UNFCCC Secretariat by providing review of developed countries' annual GHG inventories, and with the Technology Executive Committee of the UNFCCC (International Energy Agency, n.d.).

The next notable example is the contribution of the International Energy Agency in the international climate negotiations and dialogue during the 2015 United Nations Climate Change Conference in Paris, which lead to the signing of the Paris Agreement. The Paris Agreement is thought to be an important milestone in the global climate action. The IEA, being the “global energy authority” responsible to promote energy security, economic development and protection of the environment put focus on the problems of emissions, the issue of sustainability and most importantly the steps towards transitioning to clean energy (International Energy Agency, 2020).

During the 2013 United Nations Climate Change Conference in Warsaw, the participating countries agreed to publish their Intended Nationally Determined Contributions (Climate Policy Observer, n.d.), which embody their efforts to reduce national emissions and adapt to the impacts of climate change (United Nations Climate Change, 2018). The INDCs were the basis of the negotiations of the Paris Conference, and the IEA acknowledged their importance in giving new impetus to a low-carbon and more efficient energy system (International Energy Agency, n.d.). The agency published its WOE ahead of the Paris Conference. The new WOE included proposals of measures in the energy sector for advancing in climate goals without harming economic growth, development of technologies that will assist in energy transitions and achieving climate goals, and referred to four key pillars important for the success of the COP21 from the perspective of the energy sector (International Energy Agency, n.d.), as described above:

- 1) Peak in emissions: setting the conditions to achieve an early peak in global emissions that are produced by the energy sector.
- 2) Five-year-revision: the national climate targets should be regularly reviewed.
- 3) Lock-in the vision: the agreed climate goals should be translated into collective long-term emissions goals and short-term targets with long-term vision.
- 4) Track the transition: establishing an effective process for monitoring of the progress (International Energy Agency, n.d.).

According to the IEA, the first pillar is the most critical, as it proposes the so called, Bridge Scenario, meaning five energy sectors measures:

- 1) Increasing energy efficiency in the sectors of industry, buildings and transport.

- 2) Reduction of use of low-efficient coal-based power plants and banning of creation of new.
- 3) Enhancing investment in RES technologies in power sector (up to \$400 billion by 2030)
- 4) Progressive phasing out of fossil fuels subsidies to end-users by 2030.
- 5) Reduction of methane emissions (United Nations Climate Change, n.d.).

The World Energy Outlook was welcomed by the UNFCCC parties during the Conference in Paris in 2015. Christiana Figueres, the Executive Secretary of the UNFCCC mentioned: "This compelling assessment by the IEA confirms that with the right policies, pathways and support for developing countries a new, prosperous, low carbon economy can be created and catalyzed from the UN climate convention conference in Paris this December" (International Energy Agency, 2020).

For the International Energy Agency, climate change and sustainability are interlinked. For the IEA achieving climate goals is served by the clean energy transition that secures access to energy produced from renewable sources and sustainability in the future. As a matter of fact, in some parts of the world there is still problem with the access to electricity. So, for the IEA, the provision of electricity in these areas of the world, thus increase of energy demand shall be executed in a way that will ensure use of clean energy and sustainability (International Energy Agency, 2020). For this purpose the IEA works in close cooperation with the Clean Energy Ministerial Secretariat, an international forum that promotes policies, best practices and programs for clean energy technology, the Energy Efficiency Hub and Biofuture Platform. One notable initiative of the IEA is the Clean Energy Transitions Program (2017). The IEA through different activities, discussions wants to help accelerate the clean transition in major emerging economies, a group of countries that now the IEA has been expanding to include sub-Saharan African countries (International Energy Agency, 2020).

In addition, the International Energy Agency created the Sustainable Development Scenario, that was presented in 2017 World Energy Outlook. The scenario outlines a pragmatic way to meet the Paris Agreement goals (increase of global average temperature below 2 degrees of Celsius above pre-industrial levels) (International Energy Agency, 2020).

In terms of climate adaptation and resilience, the IEA has conducted the Power Systems in Transition Report that tracks the most important challenges to energy security. One of those is the vulnerability of energy sector to climate change effects such as extreme weather events. The IEA proposes measures to make the energy systems more resilient to climate change impacts (International Energy Agency, 2020).

Finally, the IEA remains the global leader regarding energy data and statistics. In this context, the IEA has partnered with the UN Framework Convention on Climate Change (UNFCCC) regarding GHG inventory review process and providing through annual Global Energy Review, analysis and key trends in demand and GHG emissions, energy efficiency and other climate and energy indicators (International Energy Agency, 2020).

Besides the UNFCCC, the International Energy Agency competes over climate issues with the G8 Group. The G8 Group discussed more thoroughly climate change issues (energy efficiency, cleaner fossil fuels, renewable energy etc.) in its agenda in 2005 Gleneagles Summit, it cooperated with the IEA, that provided publications, roadmaps, alternative scenarios (such as the Energy Technology Perspectives: Scenarios and Strategies to 2050), analysis, policy recommendations (Florini and Sovacool, 2009).

At the Hokkaido Toyako G8 Summit, the IEA prepared the report: Towards a Sustainable Energy Future- IEA Programme of Work on Climate Change, Clean Energy and Sustainable Development (2008), that included 25 energy efficiency recommendations and progress reports of major emerging economies efforts to meet the Global Energy Security Principles. The latter was unprecedented in global governance, because members of the G8 were held accountable and reviewed by an international organization. Another example of IEA's impact is the fact that during the summit the G8 countries committed to maximize the implementation of IEA's 25 energy efficiency recommendations. In the next summit, IEA again delivered progress report of the implementation of these recommendations. The agency concluded that no country member "fully or substantially implemented more than 55% of its recommendations". Furthermore, it presented the Global Energy Efficiency Action Initiative, that was accepted during the summit and subsequently paved the way towards the creation of the International Partnership for Energy Efficiency Cooperation (IPEEC) (Florini, 2011).

Lastly, some latest activities of the IEA, in the context of climate actions. The year 2020, was marked by the COVID-19 pandemic. The IEA early on, provided analytical damage assessments of the impacts of the crisis that the energy sector will face, and recovery plans (such as the Sustainable Recovery Plan) that would combine economic growth and emissions decline. Additionally, the agency undertook cooperation and initiated dialogue with governments, forums on matters of sustainability and economic recovery, clean energy investments. This led to the first Clean Energy Transitions Summit held in July 2020, where the participating countries represented 80% of global energy consumption and carbon emissions (International Energy Agency, 2020).

In the next summit of the UNFCCC in Glasgow, in December 2021, the International Energy Agency will be present and active again.

### **4.3. CONCLUSION**

All in all, the moment that the issues related to climate change began to be included and/or were the top the agenda, the International Energy Agency was active to undertake a supporting role for the international negotiations and dialogue, as a policy “consultant”, and by providing accurate and reliable energy statistics, data and analysis, aby pushing via its reports and reviews towards greener solutions and by providing well-documented scenarios for the energy sector that became the basis of international efforts towards tackling the climate change.

## CONCLUSION

Over the last decades, the energy landscape has been subjected to many transformations, changing geopolitical balances, emergence of new actors, state and non-state, new burning issues and threats to energy supply. This inevitably lead to the rise of the energy at the top of the political agenda worldwide. This growing importance has been reflected in the global energy governance. First examples of institutions and forms of cooperation of the international community in the energy matters, go back to the 60s, 70s, without them being very structured. Since then, plenty of organization, fora have been touching upon different aspects of energy, mostly in uncoordinated manner. Despite dealing with globally reaching issues, the cooperation can have from regional to international character, without ever being fully uniting under one institution. To this day, energy governance is fragmented, although there have been initiatives from institutions and international organizations to cooperate and even create new structures to fill the voids in energy governance.

The closest that the international community has come it terms of establishing one global energy governor is the International Energy Agency, that despite its great efforts and initiatives towards approaching more and more countries that are not yet represented, and adding new aspects of activities, the agency still has some limitations. Most importantly, its limited participation that does not include as full members fast developing countries such as China, and secondly the non-binding nature of its decisions, policy recommendations. Good energy governance in that case would mean the promotion and achievement of a widespread participation in an institution that would have the ability to take legally binding decisions, create one common legislation rules and principles that would create a more coherent global energy order, and would accelerate the convergence of different parts of the world. In the case of the International Energy Agency, it is most likely that the agency will remain the first advocate of energy related issues, so countries should support its effort in that direction.

Furthermore, it is essential to recognize the interconnected nature of energy with all of human activities, society, economic development, national and global environment. This approach could be very beneficial in dealing with new and already existing challenges, for example climate change, since it will enable a deeper understanding of the issue thus better communication and common sense of understanding. Climate change is a cross border problem, where a multinational cooperation and coordinated response would benefit the outcome of dialogue, negotiations and eventually making steps towards reducing the phenomenon.

Last but not least, no global energy challenge will not be effectively faced with no good energy governance. This means, that all the burning issues of our times, energy crises, climate change, new threats for the energy security, energy efficiency and

sustainability etc. can be addressed more effectively with international coordination and cooperation, on regional, international and maybe in the future in a more global level. The importance of energy in global governance has developed gradually and considering that energy will remain as relevant as today, several regions of the world might adopt a more holistic approach to the matter.

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