



KADIR HAS UNIVERSITY
GRADUATE SCHOOL OF SOCIAL SCIENCES
ENERGY AND SUSTAINABLE DEVELOPMENT DISCIPLINE AREA

**THE ROLE OF IRENA
IN GLOBAL RENEWABLE ENERGY POLICIES**

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MASTER'S THESIS

ISTANBUL, DECEMBER, 2018

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MASTER'S THESIS

Submitted to the Graduate School of Social Sciences of Kadir Has University
in partial fulfillment of the requirements for the degree of Master's/PhD in the
Discipline Area of Energy and Sustainable Development under the Program of
Energy and Sustainable Development.

ISTANBUL, DECEMBER, 2018

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Hereby declare that this Master's Thesis is my own original work and that due references have been appropriately provided on all supporting literature and resources.

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ACKNOWLEDGEMENTS

I would first like to express my gratitude to my supervisor Prof. Dr. Volkan Ş. Ediger who accepted me as a MA student at the Energy and Sustainable Development Master Program of Kadir Has University. I would also like to thank my co-supervisor, Assoc. Prof. Dr. Çağla Gül Yesevi for her guidance and direction since my bachelor studies at İstanbul Kültür University. Without the useful comments, remarks and suggestions of my supervisors, this thesis would not have been successfully completed. They always encouraged me to be my own person in my work, and pushed me towards the right path.

My thesis was also made possible in part by scholarships from the Kadir Has University and Heinrich Böll Stiftung Association, Turkey Representation.

My sincere appreciation also goes to my colleagues at Kadir Has University who stood by me, especially Melike Eken, Gözde Karagöz and Burak Şuşoğlu, whose encouragement and kind support I very much appreciate. I also owe Dr. John W. Bowlus a debt of gratitude for his help for correcting grammar. I would also thank to my dear friends for showing their understanding and love in helping me complete my thesis.

Last but not to least, I would like to thank my parents and brother, Remziye, Hayri and Umut Mengi, who always stand behind me with their best wishes. I finally extend my acknowledgement to my husband, Barbaros Dinçer who is thoughtful, positive and trusting.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	iii
LIST OF ABBREVIATIONS	v
LIST OF TABLES	vii
LIST OF FIGURES	viii
ABSTRACT	ix
ÖZET	x
INTRODUCTION	1
1. THEORETICAL FRAMEWORK OF SOCIAL CONSTRUCTIVISM	8
1.1. A General Overview of Social Constructivism	8
1.2. A Social Constructivist View on International Organizations	11
2. INTERNATIONAL RENEWABLE ENERGY POLICY CONTRIBUTIONS	14
2.1. Before IRENA (1949-2002)	14
2.2. Road to IRENA (POST-2002)	17
3. IRENA: STUCTURE AND ACTIVITIES	26
3.1. Present Identity	26
3.2. Structure	28
3.3. Project Facilitations	29
3.3.1. Global Atlas	29
3.3.2. Project Navigator	31
3.3.3. IRENA /Abu Dhabi Fund for Development Project Facility	32
3.3.4. Sustainable Energy Market Place	34
3.4. Initiatives	34
3.4.1. Clean Energy Corridors	35
3.4.2. Coalition for Action.....	37
3.4.3. Global Geothermal Alliance	38
3.4.4. Parliamentary Work	39
3.4.5. Renewable Energy Roadmap	40
3.4.6. Renewable Readiness Assessment	42
3.4.7 SIDS Lighthouses	43
4. EVALUATING IRENA WITH SOCIAL CONSTRUCTIVISM	45
CONCLUSION	55
SOURCES	59
CURRICULUM VITAE	67

LIST OF ABBREVIATIONS

ACEC	The African Clean Energy Corridor
ADFD	Abu Dhabi Fund for Development
AOSIS	The Alliance of Small Island States
BMU	German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
BP	British Petroleum (oil company)
°C	The degree Celsius
CDU	Christian Democratic Union of Germany
CECCA	The Clean Energy Corridor of Central America
CEM	Clean Energy Ministerial
COP	Conference of the Parties
CSD	United Nations Commission on Sustainable Development
CSU	Christian Social Union in Bavaria
EC	European Commission
ECOWAS	Economic Community of West African States
EU	European Union
EUROSOLAR	The European Association for Renewable Energies
G8	The Group of Eight
G77	The Group of 77
GDP	Gross Domestic Products
GGA	The Global Geothermal Alliance
GHG	Greenhouse Gas
IAEA	International Atomic Energy Agency
IEA	International Energy Agency
IGOs	Intergovernmental Organizations
IISD	International Institute for Sustainable Development
IOs	International Organizations
IPU	the Inter Parliamentary Union
IRECs	International Renewable Energy Conferences
IRENA	International Renewable Energy Agency

ISEA	International Solar Energy agency
JREC	Johannesburg Conference, the Renewable Energy Coalition
MW	Megawatt
MT	Million Tons
NGOs	Non-governmental Organization
OECD	The Organisation for Economic Co-operation and Development
OPEC	The Organization for the Petroleum Exporting Countries
REMAP	Renewable Energy Roadmap
REN21	Renewable Energy Policy Network for the 21 st Century
RRA	The Renewable Readiness Assessment
SDGs	The Sustainable Development Goals
SE4ALL	Sustainable Energy For All
SEM	The Sustainable Energy Marketplace
SIDS	The Small Island Developing States
SPD	The Social Democratic Party of Germany
tCO ₂	Total Carbon Dioxide
UAE	The United Arab Emirates
UK	United Kingdom
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCC	The United Nations Framework Convention on Climate Change
UNSEGED	United Nations Solar Energy Group on Environment and Development
US	The United States
WACEC	West Africa Clean Energy Corridor
WCRE	World Council for Renewable Energy
WSSD	World Summit on Sustainable Development
WWF	World Wildlife Fund

LIST OF TABLES

Table 3.1. IRENA/ ADFD selected projects	33
Table 4.1. The main points of theory and comments	46



LIST OF FIGURES

Figure 1.1. Global primary energy consumption by sources	3
Figure 3.1. The members of IRENA by their membership years	26
Figure 3.2. The Number of IRENA's initiatives per members.....	35
Figure 3.3. Projected primary renewable energy shares until 2030	42
Figure 4.1. Number of countries with power regulatory policies	50



ABSTRACT

MENGI DİNÇER, HAZAL. *THE ROLE OF IRENA IN GLOBAL RENEWABLE ENERGY POLICIES*, MASTER'S THESIS, Istanbul, 2018.

It is widely accepted that renewable energy will make significant contributions to a more sustainable world because of its environmental, sociological and economic advantages. Taking this into account, a transition from a fossil fuel-dominated to a renewable-dominated energy system is inevitable. However, only 10.4% of world primary energy consumption today comes from renewable sources including hydroelectric power. It will therefore take a long time to implement international policy and effective action for renewable energy to become this dominant resource. States are the key actors of the international structure and the main decision-makers on renewable energy policies. At the same time, international organizations can help states to internalize and form new identities by creating norms. Within this perspective, it is expected that the International Renewable Energy Agency (IRENA) will have a voice on international renewable energy policies. This study discusses how IRENA helps shape international renewable energy policy through its interactions with states and its with other international organizations. The study first examines the international community's road to IRENA with efforts to create renewable energy governance around the world. Then, it examines in detail the initiatives of the agency over the last 10 years, from its establishment to today, and the process of norm emergence and identity creation of IRENA on renewable energy through the social constructivism approach. At the end of the study, I argue that, despite its short existence, IRENA's efforts to create norms were successful, but the agency needs to spread its initiatives more equally around the world, without reference to development classification, so that these norms become truly global and universal. Today, nearly every country needs to improve its renewable energy policies. It may only be possible for states to form a common identity on the internalization of norms and on renewable energy only in this way.

Keywords: IRENA, Renewable Energy Governance, Global Renewable Energy Policies, Social Constructivism, Transition into Renewable Energy

ÖZET

MENĞİ DİNÇER, HAZAL IRENA'NIN KÜRESEL YENİLEBİLİR ENERJİ POLİTİKALARINDAKİ ROLÜ, YÜKSEK LİSANS TEZİ, İstanbul, 2018.

Yenilenebilir enerjinin, çevresel, sosyolojik ve ekonomik üstünlükleri nedeniyle daha sürdürülebilir bir dünya oluşumuna önemli katkılar sağlayacağı bilinmektedir. Bu durum göz önüne alındığında fosil kaynakların egemen olduğu enerji sisteminden, yenilenebilir enerji ağırlıklı bir sisteme geçiş kaçınılmazdır. Ancak, günümüzde tüketilen birincil enerji kaynaklarının sadece yüzde 10,4'ü yenilenebilir kaynaklardan –hidroelektrik dahil- sağlanmaktadır. Bu kaynakların dünya enerji sepeti içinde egemen olması için uluslararası politika ve kararlı uygulamalarla uzun bir süreye ihtiyaç duyulmaktadır. Devletler uluslararası yapının temel aktörleridir ve yenilenebilir enerji politikaları konusunda asıl karar vericilerdir. Bunun yanı sıra, uluslararası organizasyonlar da yenilenebilir enerji konusunda yeni normlar oluşturarak devletlerin politikalarında içselleştirmeye ve yeni kimlik oluşturmaya neden olabilmektedirler. Bu çerçeveden bakıldığında, Uluslararası Yenilenebilir Enerji Ajansı'nın (IRENA) küresel çaptaki yenilenebilir enerji politikalarında söz sahibi olması beklenir. Bu çalışma, IRENA'nın yenilenebilir enerji politikalarındaki rolü ile devletler ve diğer uluslararası organizasyonlarla olan etkileşimini incelemektedir. Çalışmada ilk olarak, uluslararası toplumun dünya çapında yenilenebilir enerji yönetimi oluşturma çabaları ile IRENA'ya giden yol incelenmiştir. Daha sonra, Ajans'ın, kuruluşundan günümüze kadar geçen 10 yıllık süre içinde gerçekleştirdikleri girişimler ayrıntılarıyla incelenmiş ve sosyal inşacılık (*social constructivism*) yaklaşımıyla IRENA'nın yenilenebilir enerji konusunda norm ve kimlik oluşturma süreçleri incelenmiştir. Çalışma sonunda kısa süreli varlığına rağmen IRENA'nın norm oluşturma aşamasındaki çabaları başarılı bulunmuştur, ancak oluşturulan normları geniş bölgelere yaymak için girişimlerini herhangi bir gelişmişlik sınıflaması yapmadan tüm dünyada eşit olarak sürdürmesi gerekmektedir. Günümüz dünyasında hemen her ülkenin yenilenebilir enerji politikasını iyileştirmeye ihtiyacı bulunmaktadır. Ancak bu şekilde, normların içselleştirilmesi ve yenilenebilir enerji konusunda devletlerin ortak bir kimlik oluşturmaları mümkün olabilecektir.

Anahtar Sözcükler: IRENA, Yenilenebilir Enerji Yönetimi, Küresel Enerji Politikaları, Sosyal İnşacılık, Yenilenebilir Enerjiye Geçiş

INTRODUCTION

Energy has long been a critical factor in the survival of human beings, almost as important as food, water, and shelter. Thus the quality, intensity, and conversion efficiency of energy have been one of the most prominent aspects of human beings (Smil, 1994). Solar, wind, water, human muscle, biomasses from wood and grass, agricultural residues, animal wastes, and finally fossil fuels such as coal, oil and natural gas have been used as energy sources throughout the history (Solomon and Krishna, 2011).

Energy transitions occur from one dominant energy source to another because human beings prefer more affordable, efficient, higher quality and cleaner energy types as time passes and people gain experience. In hunter-gatherer societies, people generated energy from food, and human muscles were generally used to survive harsh climatic conditions and forces of nature. The only technical development of that time was the invention of fire. After that, as the second transition occurred in agrarian societies, people had to work more. Domesticated animals, as well as water and wind, were used as mechanical energy and for utilizing the activities of agrarian societies. At the same time, biomass, especially firewood and peat, was widely used for heating (Siefert, 2001). Because of the slow and stable technical advancements in agricultural societies, the energy mix did not change appreciably, except for some European societies that extracted small scales of coal in rudimentary ways.

The third and the most crucial transition from biomass to fossil fuels, which started with a transition to coal, and later to oil and finally to natural gas began in the eighteenth century. Fuel-wood supply began to be inadequate because of deforestation and its calorific value. Initially, Britain began using coal in larger amounts, spurring the Industrial Revolution. Coal use then became widespread in the US, Sweden, Germany, Spain, China, India, Japan, and Turkey. The invention of the steam engine and the melting of the iron were the main technological drivers that increased coal use, and coal remained the dominant energy source until the 1970s (Smil, 2010). However, oil had gained importance in the twentieth century. Oil had advantages as it is denser in energy content, easier to transport and cleaner than coal. Oil then gained superiority over coal with the invention of the internal combustion engine, and diesel and petrol engines became the

prime movers (Bradshaw, 2013). Finally, natural gas gained relatively higher importance in the energy mix in the world, first in the US in the 1930s and Europe in 1970s, because it is cleaner as a combustible hydrocarbon for heating, and electricity. In addition to these fossil fuels, some other alternatives emerged in the form of hydroelectric and nuclear power (Smil, 2008, 2016; Bradshaw, 2013).

In the nineteenth and twentieth centuries, fossil fuels were used as dominant energy sources, while wood and hydropower were the dominant non-fossil fuels energies during the previous two centuries. Wood was used for heating, and hydro energy for generation of electricity in the resource-abundant countries. Since the late twentieth century, however, renewable energy gained new attention worldwide, and new policies were implemented to support their use. Nevertheless, the proper support mechanism for the prevalent use of renewable energy needs advanced technology and affordable prices.

At present, there is an expectation that fossil fuels will be replaced by renewable energy sources (Bradshaw, 2013). Energy transitions always occur towards better energy sources, which have a higher calorific value, practicability in use and environmental friendliness. Hence, it can be stated that humans chose coal as the dominant source because it was more efficient than biomass sources and because they tried to stop deforestation. The same can be said about oil and natural gas; oil and natural gas became the dominant sources because they had more calorific value than coal and were cleaner. Nowadays, renewable energy use is predicted to increase because it is the cleanest energy type when compared to other sources.

It is evident that renewable energy offers several advantages over fossil fuels. Firstly, fossil fuels are limited, and the reserves are not abundant equally across the world. So, some countries are import-dependent and vulnerable to price fluctuations in the fossil fuels market, and supply security issues threaten especially the import-dependent countries. Renewable energy could reduce the overdependence on fossil fuel suppliers and could help oil-importing countries to increase their roles in international markets by creating a new source of economy. Secondly, via renewable energy, domestic and local development could be enhanced by local production that could be a solution for rural development, and also create jobs and prevent domestic migration to big cities in developing countries. Above all, because of its cleaner nature, renewable energy is seen as one of the most influential solutions to combat climate change by reducing the

consumption of fossil fuels and replacing it with lower carbon sources (Cruciani, 2013). The transition to renewable energy technologies from hydrocarbons is seen one of the most important solutions to combat climate change and keep down global warming under 2°C and to restrain it 1.5°C above pre-industrial levels parallel with the Paris Climate Agreement (UNFCCC, 2015a).

However, fossil fuels still play an essential role of in the global energy mix (Fig. 1.1). According to BP Statistical Review of World Energy (2018), primary global energy consumption by sources is 57.5% oil and gas/hydrocarbons, 27.6% coal, 4.4% nuclear energy, 6.8% hydropower, and 3.6% modern renewable energies.

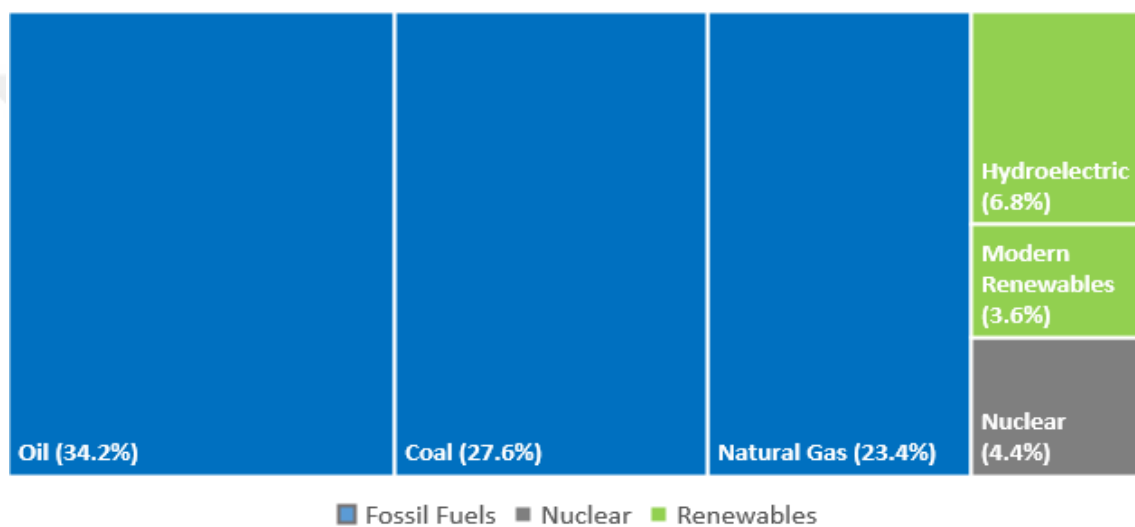


Figure 1.1 Global primary energy consumption by sources

Source: BP, 2018

Renewable energy technology has some problems because of their intermittency, which depends on geography and climate, which are a major barrier to their widespread acceptance. Renewables have a considerably higher price when compared to fossil fuels. Also, there is a lack of awareness that creates problems for the dissemination of renewable energy (Yaqoot et al., 2016). However, the transition to renewable sources is inevitable. In order to fight the challenges derived from the use of fossil fuels, instruments such as technological advancements, new policies, strong markets and reformation of consumer behaviours are required. In order to phase out the use of fossil fuels and make a transition to renewables, coherent and robust governance at all political levels, including global levels, are needed (Karlsson-Vinkhuyzen et al., 2012). Governments are the main actors in creating renewable energy policies that primarily include setting apparent objectives;

creating equal opportunities with fiscal incentives (tax credits, loans, and guarantees); designing portfolio standards, quotas, and feed in-laws or tariff mechanisms; and paying attention on rural development and electrification (El Ashry, 2012).

In order to move from the current unsustainable fossil fuel-dominated system to a sustainable, renewable energy system, civil society, international and regional organizations and partnerships need to make efforts around the world. However, it should be noted that intergovernmental organizations play also significant roles in energy policies (Florini and Sovacool, 2009). For this reason, the foundation of the International Renewable Energy Agency (IRENA) is a breakthrough in attracting the attention of international system actors (Esu and Sindico, 2016).

This thesis will discuss the role of IRENA in supporting global renewable energy policies by promoting the member state policies and fostering international cooperation. It uses social constructivism to evaluate the agency's role across the policy-making process in its member countries. The main research question is "What is the role of IRENA in international renewable energy policies?" The sub-questions are listed below: "What is the importance of renewable energy in contemporary energy transition?"; "what is the importance of international organizations in the transition to renewable energy?"; "what are the differences between IRENA and these organizations?"; "what kind of tools does IRENA use for renewable energy transition?"; and "how are the agency's activities interpreted by social constructivism?".

The establishment of IRENA is defined as a milestone for the future of the world's energy policies (BMU, 2009). In order to understand IRENA's role in global energy policies, it is needed to form a historical background by using reports of international conferences as well as related literature on international institutions. The agency's activities, initiatives and tools are to be the primary source of the information, databases, and analyses on renewable energies and to encourage member countries, especially developing countries, to achieve targets for their energy transitions. For that reason, its activities are detailed by using its own website, social media accounts and official documents, in addition to open source, academic journals, books, newspapers. Studies on social constructivism are examined in detail to understand how IRENA could establish international norms for renewable energy.

In the literature review, firstly previous studies about IRENA are given; however, it should be recognized that the agency was established in 2009 and, because of its short history, there are few studies directly related to it. Existing studies generally make a comparison between IRENA and other international organizations on energy and environmental issues (Wright 2011; Graff, 2013; Urpelainen and Graaf, 2015; Esu and Sindico, 2016; Müller, 2017; Overland and Reischl, 2018). Wright (2011) is the first scholar to study IRENA, focusing on its statute, priorities, and objectives. Wright discusses the reasons behind IRENA's foundation, examines the agency's relations with other major international organizations as the United Nations (UN) and International Energy Agency (IEA), and evaluates the future potential of IRENA. In the end, he emphasizes that IRENA would be seen as a global voice for the transition to renewable energy. Meanwhile, Graaf (2013) focuses on IRENA's role in global energy governance as a new actor rather than being part of an existing institution. Whereas the scope of the other international energy institutions is too broad, Graff commends IRENA for being a specific organization that directly relates to renewable energy. According to Urpelainen and Graaf (2015), the creation of IRENA is a success for institutional innovation; they use data to compare IRENA with other intergovernmental structures. While the establishment and availability of international organizations has slowed in recent decades, IRENA achieved to widen itself with rapid ratification rates. Esu and Sindico (2016) point out the significance of international organizations in the transition to sustainable energy sources. Thus, in the study of the rivalry and partnership of IRENA and IEA were analysed, eventually both organizations became considered as crucial for global energy transition. Müller (2017) identifies IRENA as a global actor and defines predecessor organizations of IRENA, which are dealing with renewable energy and could not identify themselves as global organizations because they were effective only local in scope, allowing IRENA to fill a critical international gap. Most recently, the study of Overland and Reischl (2018) discusses the agency's role in national energy policies by analysing the participation of representatives of member countries in assembly and council meetings. Studying member countries based on their public documents of IRENA and the other organizations as a reference, the study examines the influence of IRENA on member countries, in addition to this, the study compares IEA's and IRENA's reference rates on the national policy documents on specific countries. There are only a

few studies on the policies of specific countries and regions. (Roehrkasten and Westphal, 2012; Yesevi and Tiftikçigil, 2017; Madichie, 2011).

Roehrkasten and Westphal (2012) evaluate the importance of the agency especially in Germany as the second largest financial contributor and pioneer, because the country seeks to phase out nuclear and transition to renewable sources. It focuses on the early years and assesses the agency's aims and activities for the enhancement of the organization. Roehrkasten and Westphal (2013) more comprehensively discuss Germany's foreign policy role in the creation of IRENA. Yesevi and Yavuz Tiftikçigil (2017) evaluate IRENA and Turkey's renewable energy policies. Madichie (2011) also studies the United Arab Emirates' (UAE) initiative on Masdar City as the headquarters of IRENA.

Wouters (2017) mentions IRENA's role in international organizations, but emphasizes the agency's specific activities such as Renewable Energy Readiness Assessment (RRAs), Renewable Energy Roadmap (REmap) and Clean Energy Corridors. In addition to Wouters, some of the studies about IRENA focuses on activities such as Global Atlas, REmap, and Project Navigator and evaluate how effective the agency on the activities (Estima et al., 2013; Roesch et al., 2015; Kempener et al., 2015; Sgouridis et al., 2016; Collins et al., 2018).

These studies are the main references for applying social constructivism in international relations to evaluate IRENA's main activities to encourage global renewable energy policies. For understanding social constructivism, the studies of Onuf (1989, 2013), Wendt (1987, 1992, 1999), Finnmore (1993, 2004), Barnett and Finnemore, (1999); Finnemore and Sikkink (1998), Finnemore and Toope (2001), Baylis et al. (2007) are mainly referred. Social constructivism is used in this study to identify IRENA's role in creating norms in the international system. There are some studies employed social constructivism to analyse environmental policies such as Blackmore (2013) who uses the theory to examine Germany's nuclear phasing out policies. Pettenger (2007) also looks at how constructivism changes environmental policies through economic forces, political governance, and international organizations. There are, however, few studies on renewable energy dissemination as a norm by using social constructivism. For example, Yesevi and Yavuz Tiftikçigil (2017) study IRENA using social constructivism, but their studies are specified to Turkey. This thesis therefore attempts to add to our understanding

of how social constructivism shapes and nourishes international renewable energy policies.

The first part of the thesis – the introduction- illustrates how and why IRENA has been studied. The second part, discusses the social constructivism in international relations. The third part details the history of international contributions for global renewable energy governance, emphasizing the struggles of the UN and the road to IRENA's establishment and the fourth part introduces the main goals and strategies of IRENA, as well as its institutional structure and concrete initiatives, in creating and developing global renewable energy policies. Then, in the fifth part IRENA's activities are evaluated with social constructivism. The final part presents the main findings of the study as well as recommendations for the agency going forward.

CHAPTER 1

THEORETICAL FRAMEWORK OF SOCIAL CONSTRUCTIVISM

This chapter consists of two parts, firstly, how social construction is interpreted in international relations studies will be examined, after that, international organizations, which are an essential part of the global structure, and social construction perspective will be mentioned.

1.1. A GENERAL OVERVIEW OF SOCIAL CONSTRUCTIVISM

Constructivism was discussed to the field of international relations by Nicholas Onuf in his book *World of Our Making* as one of the pioneer study, (Onuf, 1989). Constructivism regards human beings as social, and explains that social relations construct people's attitudes and ideas. People give meaning to the world by speaking and interacting with each other, therefore communication is considered as one of the most influential actions human beings can undertake (Onuf, 2013). "Constructivists focus on the role of ideas, norms, knowledge, culture, and argument in politics" (Finnemore and Sikkink 2001: 393). People and society act in a continuous, mutually reinforcing process. On the one hand, people shape society, and on the other hand, society shapes people.

Onuf emphasizes the two concepts of agents and rules to identify social structure. As main actors, people are the agents in society. The actions of the agents are designed by the requirements and desires of people, and by doing so agents can make their choices in a rational way. Rules offer different options to agents and make the agents active contributors in society. Rules forge a link between people and society. In society, rules guide people about what they should do, and people make preferences among the options to obey or violate the rules. The preferences of people are named as practices and have some outcomes. These rules and unintended outcomes create a structure in society by which this structure affects agents (Onuf, 2013).

Social constructivism is affected from the study of Berger and Luckman (1966), *The Social Construction of Reality*, which argues that knowledge is shaped in society and ordinary life. Besides knowledge, the identities of people are structured in social

discourse. Identities, moreover, can be altered or restructured by relations in society. Advancements of identities for their continuation and creation are realized in a social process, but identities shape social structure at the same time.

Social constructivists are also inspired from Giddens' (1984) structuration theory, whose analysis duality principle defines the links between structures and human agency. Giddens considers human beings as the main agent in his structuration theory and, according to his theory, agents and their daily practices form structures. On the other hand, agents are restrained by structures as well.

Wendt (1987) argues the agent-structure problem in *The Agent-Structure Problem in International Relations Theory*, just as Giddens argued before in his structuration theory in a different way. Wendt interprets the duality principle in the field of international relations and contends that states are the main agents and the structure is the international system. Katzenstein (1996) also argues that states are social actors. In addition to the states, Onuf (2013) regards the officers of international organizations as the secondary agents in international system.

Wendt (1999) grounded social constructivism into two main principles. The first principle is that the structures of social actions depend on shared ideas rather than material things. The second principle is that the interest and identities of intentional actors are not given by nature, but constructed by shared ideas. Accordingly, Wendt asserts that international relations consist of social structures. Therefore, constructivists focus on the power, which is more important than its material meaning, and has ideational meaning. The aim of ideational power is not only to control states' actions, but also create acceptance of ways of thinking and lifestyles (Baylis, et al., 2007).

Wendt (1992) argues and emphasizes the difference between social constructivism and rationalist theories. Rationalist theories such as neorealism and neoliberalism assume that states are dominant actors in the international system, and both of them admit that security is directly related to self-interests; however, their understandings differentiate on the idea of relative and absolute gain. According to these rationalist theories, states can change their behaviours upon their gains, but do not alter their identities and interests. On the contrary to rationalists, constructivists argue that the identities of states can change. Because states have various relationships with other states, all of these relations and interactions need to accord with counter identities. As a constructivist, Katzenstein (1996)

argues that international relations and domestic factors create changes in states identities and Wendt (1999) accepts that the alteration of identities is difficult but it can be possible with variable actors. States identify themselves as distinct from others, but collective identity is possible with the creation of “we”. States make rational choices to be a part of a group, so it can be said that the constructivist approach on the power differentiates it from neorealism theory, which is based on materialist dynamics as economic and military power within international relations (Risse, 2006). States, particularly powerful ones, require their actions to be legitimate in the international system. With that legitimacy, states can more easily convince other states to cooperate in a group for their actions (Baylis et al., 2007).

The collective identity of a group of states may be achieved on bilateral, multilateral and international levels but all actualize in an anarchic world system. These collective identity efforts also can achieve an institutional feature. According to constructivists, international organizations, as having institutional identities, provide the legalization process with norms with international agreements (Finnemore and Toope, 2001)

A group of international relations scholars, especially realists, believes that international institutions affect the prospects for cooperation on a limited scale because states are strong agents in their own way and their relations are shaped in the anarchic world for their interests. Thus, any state cannot rule the others, and there is no institution which is stronger than states in the international system (Grieco, 1988). But it cannot be meant that there is an absence of rules in international relations. If there were no rules, there would be chaos instead of anarchy (Onuf, 2013). Wendt (1999) separates anarchy culture into three types: Hobbesian anarchy based on enmity, Lockean rivalry and Kantian friendship. Anarchic cultures tend to draw the self towards others through violence. Wendt specifically analyses Lockean rivalry rather than the other anarchy cultures. Lockean rivalry accepts that states are the major actors in the international system and give importance to their own benefits in an individualistic manner. States also recognize other states as sovereign and respect their freedom rather than desire to rule over them. International relations, in other words, have common sense despite the individualistic tendencies on states. In rivalry, if a group of states feels danger from the outside, states can cooperate with each other. Locke assumes that states desire security rather than strengthening their power. He states that the pre-condition of membership is based on the

individualistic feature of states and their distribution of interests. So, it can be deduced that states can cooperate with each other if they are required for existence.

States act both as friends and enemies towards other states in power politics. Wendt put the arguments on the difference between classical realist theory and structural realism. On one side are classical realists as Hobbes, Morgenthau and Niebuhr who believe egoism and power politics are derived from human nature and on the other side are the neo-realists, for instance Waltz, who believe that anarchy is the driving power of war and causes competitive politics. However, Wendt (1992) argues that anarchy is ineffective in distinguishing states' enemies and friends because the distinction is determined by knowledge and understanding across states. This anarchic system is shaped by the common approach of states that forms the socio-cultural dynamics of the anarchy. As Rumelili (2014) considers that norms, ideas and rules are features of these socio-cultural dynamics and shape states' behaviour in international politics.

1.2. A SOCIAL CONSTRUCTIVIST VIEW OF INTERNATIONAL ORGANIZATIONS

International regimes are composed of rules and norms. Norms are similar to rules but are differentiated from them by their informality. Norms cannot be considered as a rule until the other agents recognize them (Onuf, 2013). Rules are the main instrument of international system; they guide, suggest and command states as the main actors of international system (Baylis, et al., 2007). Norms also decide the interests of states, which in turn shape states' behaviour in international politics (Finnemore, 2004). Finnemore and Sikkink (1998) divide norms into domestic, regional and international categories, but every kind of norms is interrelated with each other. Domestic norms influence international norms, and international norms are affected by domestic norms. With given identities, actors accept norms as standardized, suitable behaviours. The acceptability of such behaviours are determined with respect to the judgements of societies.

According to constructivist theory, the diffusion of ideas constructs international structure. In the international system, the transformation of ideas and norms embody a specific change in the system (Finnemore and Sikkink, 1998). International relations are conducted by some informal directive rules. States are seen as equal agents in the theory

of international relations, but in reality states are unequal and classified as powerful and weak. At least some rights of states are equal in international politics, when two or more states agree on conventions (e.g., Onuf, 2013). Differently from other international relations theories, constructivists consider the attitudes of international organizations constitutive (Barnett and Finnemore, 1999). Barnett and Finnemore (1999) and Wendt (1999) believe that the identities of states are importantly structured by international society. But some constructivists also pay attention to domestic factors in shaping of states' identities, and domestic systems are regulated by their own laws and norms. On the other hand, the international system has two dominant parameters – the self-interest and coercion of individual states – but the scope of international system is not an influential social structure when we compare with domestic systems. Foreign policies, after all, are mainly shaped by the domestic decisions of states rather than the parameters of the international system (Wendt, 1999). It is obviously seen that international organizations are created by states. However, Barnett and Finnemore (1999) consider that, it does not mean that organizations have no independence. They have own independent policies that influence states.

International organizations have a particular power of enforcement known as the “*boomerang pattern*”: NGOs influence intergovernmental organizations (IGOs) to alter state policies through changing domestic policies. When NGOs' demands are rejected by states, they can bypass the states or focus attention on other states through international organizations or directly to intergovernmental organizations to support their norms. Then, the other states or IGOs creates pressure on the refuser state. In the end, refuser states change their policies through the demands of NGOs (Price, 1998).

For more than half a century, international policymaking organizations have expanded in developed and developing countries. Finnemore (1993) examines how the ‘teaching’ capability of the international policymaking organizations enhances states’ policies and makes them more amenable and likely to reach their objective. The enhancement in thought of states reflects new norms that are provided by international organizations. According to Barnett and Finnemore (1999, p. 699), bureaucracies set up rules and develop social knowledge in the process. Bureaucrats, in other words, are pioneers in establishing new norms in the international structure. It is essential that bureaucrats internalize new norms in order to establish international policies. In that point, the

bureaucrats close the gap between international organization and states (Finnemore and Sikkink, 1998).

CHAPTER 2

INTERNATIONAL RENEWABLE ENERGY POLICY CONTRIBUTIONS

This chapter examines the process of establishing international renewable energy governance, and it is divided into two periods as “before IRENA” between 1945-2002 and “road to IRENA” from 2002 to the present.

2.1. BEFORE IRENA (1949-2002)

Karlsson-Vinkhuyzen (2010) divides the attention of the United Nations on renewable energy into three periods: the post-war period from 1945-1973, the post-oil crisis period from 1973-2000, and the transition period after 2000. The relationship between international society and renewable energy dates to the scientific meeting that was organized in 1949. The UN Conference on the Conservation and Utilization of Resources, articulated the limits of the fossil fuels and expressed substantial optimism about the potential to harness wind and solar power to produce electricity (Aull et al., 1950).

International renewable energy corporation continued after 1949. The first international meeting for energy, the United Nations Conference on New Sources of Energy, was held in Rome in 1961, at which prospective studies on wind, solar and geothermal energy technologies were highlighted (UN, 1981, p. 44). In 1972, the United Nations Conference on the Human Environment was held in Stockholm. The conference ended with a declaration of twenty-six principles, but energy was not given prominence among them (UN, 1972a). Only in the recommendation section energy was mentioned, but renewable energy issues did not receive significant emphasis (UN, 1972b).

The 1973 and 1979 oil crises, though, served as a sort of wake up-call, as it drew attention to the dependency of energy-importing countries on fossil fuels and the devastating effects of high and volatile prices as serious threats to energy-supply security. Meanwhile, global energy demand continued to increase in the late 1970s, and the growing gap between energy supply and demand made renewable energy sources more attractive, particularly to developing countries. In 1981, the United Nations Conference on New and

Renewable Sources of Energy was organized in Nairobi, Kenya, where representative of 125 countries discussed the necessity of new renewable energy sources for economic and social development. While the conference seemed to emphasize a goal of increasing renewable energy capacity worldwide, developing countries were the focal point as they had been shown to be so vulnerable to oil price rise and volatility. The Nairobi Programme for Action was prepared for the purposes of making international collaboration, research and development investments, providing financial flows, training services, and empowering local authorities for an energy transition, emphasizing the transfer of technology and financial resources as well as expertise from Northern to Southern countries. Furthermore, developing countries called for establishment of an international organization for renewable energy for surveillance of the conference's commitments (UN, 1981).

The UN also expressed a need for a global renewable energy institution for renewable energy (UN, 1981), and the Development and Utilization of New and Renewable Sources Committee were established under the UN structure. This committee, however, did not have adequate power to implement its goals. After an attempt to reform its structures and capacities in 1994, it was abandoned altogether four years later (Wright, 2011).

The failure of Nairobi was due, ultimately, to the fact that its commitments were not adequately specific and elaborate and that the oil prices stabilized in the second half of the 1980s and throughout the 1990s. Nonetheless, Nairobi can be considered a turning point for international renewable energy politics (Rowlands, 2005). After that, "Our Common Future" report of the UN became a central component, as the transition from non-renewables to renewables and energy efficiency was deemed imperative for sustainable development (WCED, 1987).

In the 1990s, international society endeavoured to enhance sustainable development policies for the twenty-first century. In 1992, the United Nations Conference on Environment and Development (UNCED), also known as the Earth Summit, was held in Rio de Janeiro. Agenda 21 was created to set certain policies for sustainable development, but energy was not included as one of the 21 major topics. It was addressed in different chapters, but not in detail. It did, however, emphasize the goal of increasing renewable energy capacities, especially wind, solar, bio, hydroelectric, in developing countries, in regional and sub-regional energy plans. The reluctance of energy exporters such as Saudi

Arabia and Kuwait for an energy transition and the relatively stable oil prices in those years caused the stagnation of renewable energy development (UN, 1994; Grubb et al. 1993). In the Earth Summit, the United Nations Commission on Sustainable Development (CSD) was founded as well as the United Nations Framework Convention on Climate Change (UNFCCC) to combat with climate change.

After that, the Kyoto Protocol was adopted in 1997 to set binding commitments for developed countries to limit greenhouse gases (GHGs) emissions. Kyoto did not, however, stimulate renewable energy implementation. In the articles of the protocol, renewable energy was rarely mentioned in non-binding clauses. Kyoto was not regarded as catalysing serious efforts to reduce global warming and climate change, thanks largely to the efforts of the United States and fossil fuel-supporting coalitions (Bruce, 2017; Hirschl, 2009).

At the G8 meeting in 2000 in Okinawa, the “Renewable Energy Task Force” was established to strengthen cooperation between G8 members and developing countries to increase renewable energy capacities, but these measures have yet to be implemented. Nevertheless, as was the case after the greater attention of the UN to renewable energy, the efforts of G8 seemed to be an important development (Kirton and Takase, 2002). A year later, as a special session for energy, the Ninth Meeting of the CSD of the UN was held and concluded that the development on national, regional and international renewable energy policies was vital. Most notably, it stated that domestic efforts in both developing and developed countries to improve renewable energy capacities could help increase the share of renewables in total energy mix (UN, 2001).

This long process culminated at the World Summit on Sustainable Development (WSSD) organized in Johannesburg in 2002, when energy was declared one of the five main issues. It encouraged the discourse that environmentally friendly energy choices could be promoted in developing countries. The members of the European Union, Switzerland, Norway, Iceland, New Zealand, Tuvalu, and Poland, proposed to set certain targets and schedules for renewable energy. Except for the proponent countries, the Group of 77 members and China, the US, Canada, Australia, and Japan objected to imply certain programmes, prioritizing worldwide access to renewable energy and supporting a more flexible approach (IISD, 2002).

2.2. ROAD TO IRENA (POST-2002)

Even the divergence between the EU and the other countries became deadlocked, at the end of the Johannesburg Conference, the Renewable Energy Coalition (JREC) were created under the chair of Moroccan Government and European Commission, along with the representatives of 80 countries who attended the meeting. Then German Chancellor Gerhard Schröder invited representatives of the countries for a prospective international renewable energy conference in his country (EC, n.d., Deutsche Welle, 2002). In 2004, Germany held the Bonn Renewable Energy Conference as a continuation of the JREC, and 154 countries were represented as well as scientists, representatives of private sector and nongovernmental organizations. Finance of public and private sector, research and development, policy plans, economic incentives and deployment of renewable energy were pointed out and led to an immediate call for determining individual countries policy frameworks to support renewable energy considering in the context of local barriers or opportunities (Olesen, 2004; Expert Group on Renewable Energy, 2005). The primary result of the Bonn conference was the announcement of the Renewable Energy Policy Network for the 21st Century (REN21), a multi-stakeholder network on global renewable energy policies. The conference became a sequence within REN21 called International Renewable Energy Conferences (IRECs) in different countries: in Beijing in 2005; in Washington DC in 2008, in Delhi in 2010, in Abu Dhabi in 2013; in South Africa in 2015, in Mexico in 2017 (REN21, 2018). The Johannesburg conference pioneered the Renewable Energy Conference series and REN21.

The EU has supported renewable energy policies for combating global climate change for many years. Meanwhile, other countries increased their use of renewable energy after the oil price volatility of the period from 2003 to 2006. The fourteenth and fifteenth sessions of CSD identified energy for sustainable development, industry, air pollution, and climate change. The EU contended that the UN remained incapable of developing energy for sustainable development because of ideological and political pressures on the policies of the UN. Russia, Azerbaijan, Saudi Arabia, and the US tried to form an alliance on their energy position. However, the disagreements were seen inside the G77 and China: firstly, oil-importing countries supported the continued domination of fossil fuels; secondly, countries such as Algeria, Egypt, South Africa, and Pakistan were eager to

develop nuclear energy technologies; thirdly, the Alliance of Small Island States (AOSIS) favoured renewable energy to combat climate change. There were even major disagreements within the Organization for the Petroleum Exporting Countries (OPEC), and AOSIS, G77 and China did not change its policies (IISD, 2007).

On account of the disagreements at WSSD Johannesburg and the CSD sessions, Germany decided that a new renewable energy coalition, independent from the UN, was needed. The structure of this new coalition was driven by the eagerness of individual states instead of the UN-wide consensus system (Roehrkasten and Westphal, 2013). Herman Scheer, who was the Social Democratic Party in Germany (SPD) member of German Federal Parliament, led these efforts and served as president of the European Association for Renewable Energies (EUROSOLAR) and the World Council for Renewable Energy (WCRE). With the aim of widening the scope of EUROSOLAR and creating a new political institution, he prepared the “Memorandum for the Establishment of an International Solar Energy Agency (ISEA)” in 1990 just before the United Nations Conference on Environment and Development in Rio de Janeiro. ISEA was designed in order to reduce the proportion of hydrocarbons and nuclear in the global energy mix, transfer technologic and scientific knowledge from the North to the South, and improve countries’ self-production capacities. The economic gap between the world countries was also considered. Even though it aimed to improve capacity in all countries, developing countries would reach specific support. Thus, membership fees and contributions were arranged in proportion to the GNPs of member countries. Scheer pointed out that for renewable deployment, ISEA would use the same method that the International Atomic Energy Agency (IAEA) did to create nuclear as a viable alternative to fossil fuels in the 1950s. Scheer introduced his ideas to the UN General Secretariat Pérez de Cuéllar, and the task force “United Nations Solar Energy Group on Environment and Development” (UNSEGED) was developed. Instead of the German government, the Australian government supported to the memorandum and proposed to the UN to attain the goal setting a special agenda for Rio de Janeiro. UNSEGED then made the recommendation to found ISEA, but the preparatory committee did not approve it (IRENA et al., 2009).

Undeterred, Herman Scheer revised the 1990 proposal and prepared the “Memorandum for the Establishment of an International Renewable Energy Agency (IRENA)” in 2001, again just one year before Johannesburg WSSD. Different from the first memorandum,

the new one suggested that IRENA should be established independent of the UN, but the agency was designed to be open to other related organizations, including the sub-instruments of the UN (Graaf, 2013; IRENA et al., 2009). In the same year as the IRENA memorandum, an introductory conference of EUROSOLAR was organized in Berlin for IRENA. This was viewed as the second venture to achieve its goal, but the circumstances of international society were once again inadequate (Scheer, 2007). In the first four years of SPD and Green Party coalition, from 1998 to 2002, the government developed successful policies on renewable energy inside of the Germany. Then, the coalition was reauthorized for their second electoral period in 2002. Scheer from the SPD and Hans Joseph Fell from the Green Party convinced their ruling coalition to include the establishment of a global renewable energy organization in the new program and extend their ideas to the world, not only to Germany (SPD, Bündnis 90/Die Grünen, 2002; see also Roehrkasten and Westphal, 2013). Even the coalition was eager to establish an intergovernmental organization, the Environment Minister Juergen Trittin from the Green Party opposed the idea and he supported to create a nongovernmental organization rather than IRENA (Scheer, 2007). In 2003, the German parliament reached a decision to initiative the launch of IRENA based on Scheer's proposal (IRENA et al., 2009). After the Bonn Conference and the establishment of REN21, the coalition government led by Schröder did not make further progress because elections were held earlier than expected (Roehrkasten, 2015). These elections, held in 2005, produced a grand coalition between the Christian Democrats (CDU/CSU) and the SPD, and Merkel became the new prime minister of Germany who maintained the idea of creation IRENA. The new coalition would be seen as a drawback for the SPD to establish IRENA; however, the SPD gained three major ministries (foreign affairs, development, and environment) that would aid them in accomplish this goal. So, the change of coalition accelerated the creation of IRENA, rather than slowing down it (Roehrkasten and Westphal, 2013).

Finally, the German government took an initiative to establish the new agency in 2007. Merkel's government wanted to set certain targets together with both countries in Europe and the G8 for deploying renewable energy and combating climate change. The policies were successful in the EU, resulting in a 20% increase in renewable energy capacity and a 20% decrease in GHGs emissions by 2020 (The German Federal Government, 2007; Guardian 2007). At the same time, the UN did not realize gains, and it was understood

that the countries could not agree on the certain targets working under the umbrella of the UN. G77 countries had been to grow their interest over time, but countries like Saudi Arabia, which exports hydrocarbon, did not support the targets (IISD, 2007).

The German government nonetheless was eager to disseminate the idea of IRENA to both industrialized and developing countries. Peter Christian Hauswedell, Hans-Ullrich Spohn, and Harald Ganns were entrusted with the task of establishing bilateral relations between IRENA and different countries. Austria and the Czech Republic in Europe; Costa Rica, Chile, Argentina from Latin America; and South Korea in Asia all conveyed further interests to IRENA. First of all, Germany became the leader of the politically powerful countries as well as those most interested in renewable energy. German ambassadors visited the G8 and EU countries, Jordan, United Arab Emirates, and Morocco to support IRENA's foundation in them. The success of this initiative could be seen in how it drew great interest from countries such as Nigeria and the UAE, which supported the new organization even though they are members of OPEC. Oil import-dependent countries and many African countries also backed IRENA (Scheer, 2008; Roehrkasten and Westphal, 2013). In 2008, IRENA was officially introduced to the world countries (Graaf, 2013).

From 10 to 11 April 2008, the German Federal Government hosted 170 delegates from 60 different countries for the First Preparatory Conference for IRENA. Danish and Spanish representatives strongly supported the conference and convinced countries to become members of IRENA. On the one hand, the Spanish government strongly supported the development of domestic renewable energy capacity. On the other hand, the Danish government endeavoured to make IRENA's name familiar among the participant countries in Copenhagen Climate Change Conference which was organized in 2009. To overcome the problems related with the rapid growth of energy demand and combat climate change, participant countries expressed their support to establish the agency in the quickest time possible. It was agreed that IRENA must be the first intergovernmental organization for deployment of renewable energy as an independent driving power. In that conference it was claimed that the world would not be able to use renewable energy effectively without a specific intergovernmental organization working on the issue, like IRENA. Furthermore, the prospective activities, aims, organizational structure and financial processes of the organization were discussed in the meeting. The

conference chair stated that the agency needs a director-general, a general conference, and a board of governors. The conference concluded with wishes for the new participant countries to take part in the new intergovernmental organization, and the German government invited participants to a founding conference planned for the autumn of 2008 (Roehrkasten and Westphal, 2013; IRENA, 2008a).

After a few months, from 31 June to 1 July at the same year, the German government organized workshops for creating IRENA and nearly 100 representatives from 44 countries attended.¹ At the first workshop, a preliminary working schedule and the aims, definitions and actions of IRENA were determined. It was decided that IRENA should provide information on financial opportunities to utilize the investments of their members, rather than being a funding institution directly. Then, at the second workshop, participants discussed the organizational structure, statue, and financial position of IRENA. These two workshops laid the foundation for the future of IRENA.

The second and final preparatory conference was held in Madrid between 24-28 October 2008. Nearly 150 representatives of 51 countries attended. The statue of IRENA was finalized and the signing of the final agreement was set for 26 January 2009 in Bonn. The methods and pre-conditions to choose the interim headquarters and the interim director-general were also settled. For the candidacy of both headquarters and director-general, signatory states were invited to elections hosted by the German government. Also, it was emphasized that IRENA needed to interact with related international institutions to achieve its goals. Madrid marked a new phase, from preparing the organization to operating it (IRENA, 2008b).

By the invitation of Germany, Denmark and Spain, the founding conference of IRENA went ahead as planned in January 2009 in Bonn. All UN members were invited, and 124 countries and the entire European Community attended. There was also considerable interest from non-state organizations such as the UN, regional renewable energy organizations from Europe and the United States, and global non-government organizations (NGOs) like Greenpeace. In total, 47 such organizations were represented at the conference. The German government chaired the conference, while the Danish and Spanish ministers involved in process were elected as vice-chairs. Officers were elected from different countries including Austria, Benin, Chile, Finland, the Republic of Korea,

¹ IRENA n.d., *Workshops for IRENA* viewed 31 July 2018, <http://www.irena.org/history/workshopsIII>.

Jordan, and Germany. Delegations from Austria stated their eagerness that the IRENA's Secretariat be settled in Vienna, while the delegations from the UAE lobbied for it to be in Abu Dhabi. Egypt, meanwhile, requested the opportunity to host the second preparatory conference (IRENA, 2009a). The conference concluded with an agreement to make all efforts to establish IRENA, while a Preparatory Commission would be established to take the essential steps; 75 states from industrialized and developing countries became signatory for creating IRENA (IRENA, 2009b).

According to Roehrkasten and Westphal (2013), 75 signatories was a notable achievement when compared to previous expectation of 50 signatories. At first, neither Brazil, China, India, Indonesia, Mexico and South Africa as emerging states nor Canada, Japan, Russia, UK and USA as five members of the G8 did not sign the statute of IRENA. Also seven member states, the Czech Republic, UK, Belgium, Estonia, Hungary, Malta and Slovakia, out of 27 member states of the EU in 2009 also did not sign the founding agreement. Graff (2012) explains that being a founding country posed risk because they might not receive support from the leading global countries and in their regions. Also, 25 of the IEA countries became members of IRENA. Only Canada, Belgium and Hungary did not join the founding agreement, even if they had already demonstrated support for IRENA. Many of the absent countries in the founding process have since been convinced and become members.

The founding members who joined IRENA did so because they believed that the agency would be established in any case and they could have a stronger voice to shape the new organization by being founding members rather than joining later. The US, which was the main promoter of IEA, was reluctant to establish a new international institution at first. But the US government was also aware of the ambition of the European countries to realize IRENA. Thus, the US changed its approach because it wanted to appear sensitive to domestic and foreign public opinion. Additionally, being part of the agency was a reasonable way to give the impression that the Obama Administration (2009-2017) cared about low carbon policies after the Bush Administration's (2001-2009) pro-fossil fuel policies, and the US became a member in 2011. With the US effect, Australia in 2011, the UK in 2012, Japan in 2014 joined IRENA (Graaf, 2013; Roehrkasten and Westphal, 2013).

Membership in IRENA appeared to help the developing and the least developed countries the most, augmenting their policy-making and technologic capacity. Each member may not have the equal chance to benefit from these features of IRENA, but the limited capacity caused member countries to compete with each other in renewable energy policies and, indeed, it created positive results for the world energy transition. IRENA encouraged developed and emerging countries to deliver their advanced technologies to markets of other countries, even though the agency did not give direct financial support to countries. Also being a member of IRENA helped political leaders who gained from appearing to give importance to the issue of climate change (Upelainen and Graaf, 2015; Graaf, 2013).

Since the beginning, Germany had been eager to establish IRENA's headquarters in Bonn, but it also wanted to assure the interests and participation of its members. Both for the headquarters and director-general, many countries nominated candidates, which means that German strategy was successful (Roehrkasten and Westphal, 2013). The Second Preparatory Commission was held in Sharm El Sheikh, Egypt from 29 to 30 June 2009. For hosting the agency's interim headquarters, four cities became candidates, Bonn, Vienna, Abu Dhabi, and Copenhagen, although Denmark later withdrew its candidacy. After the brief presentations of the candidates, the UAE became the host country for the interim headquarters. Germany became host Innovation Centre of the agency in Bonn, and Austria planned the Liaison Office in Vienna, which was charged with maintaining relationships between IRENA and UN institutions and other international agencies.² In the meantime, six candidates applied for the interim director-general position. Spain, Norway, Denmark, France, Nigeria and Greece nominated candidates from various areas as ministers, academicians, bureaucrats, and executives of international organizations, although the nominees of Nigeria and Norway were deemed invalid. H el ene Pelosse from France was elected as interim director-general (IRENA, 2009c).

Hosting IRENA was seen as great achievement for the UAE, because Masdar City was the first experience for Arab states to host the headquarters of an international organization. The country was supported by developing countries in Middle East, the Pacific and especially Africa (Weatherby et al., 2018). The achievement can also be

² However, the creation of Liaison Office in Vienna was put hold, according to IRENA (2011) in the Report of the Fifth Session of Preparatory Commission for the International Renewable Energy Agency.

explained by the country's generous financial support for IRENA, 136 million USD over a six-year period for founding its centre, with 50 million additional USD to finance the new projects in developing countries. Germany, on the other hand, could promise only 11 million USD for the centre and 2.5 million USD for development support for renewable energies by 2014 (Speigel, 2009). The UAE's prominent position in IRENA was supported by many of its Western allies, but many remained suspicious because of the UAE's massive, decades-long investments in oil. The UAE's nuclear agreements signed with the US and France for the countries' electricity needs prompted additional suspicion from renewable energy defenders, as IRENA could become a supporter of nuclear, even the organization has been remained distant to nuclear energy since its creation (Block, n.d.).

The interim director-general of the agency, Pelosse, discussed the nuclear policies of France and the UAE at great length. France was known as the major exporter and user of nuclear energy. The situation put a question mark in the minds of renewable energy defenders about low carbon policies of IRENA. Nuclear could be recognized as low carbon energy by the agency under Pelosse's administration (Macalister, 2009). As a result, Pelosse was not strongly supported by member countries as director-general (Rhoerkasten and Westphal, 2013).

IRENA's governance under Pelosse had a rough time until her resignation in October, 2010. Pelosse dissented from the UAE's authorities. Scheer backed her view that these figures were blocking her efforts within the agency. However, some administrative members expressed that Pelosse was weak on budgetary issues and came out against nuclear energy. Because of her opposition on these critical issues, she was criticized because an international organization cannot get into as sensitive issues. Thus, the US and Japanese governments withdrew their financial supports to IRENA. Pelosse responded by arguing that governments were not serious about the agency and that these attitudes cannot tackle climate change, correct energy injustice among countries, or restrict the use of oil. The voluntary contributions were about 14 million USD, of which only 5 million USD was collected (Emirates247, 2009; New York Times, 2010). According to Wouters (2017), Pelosse took charge of the policymaking process in the European Union, but she was inexperienced operating in the UN system. IRENA's budgetary system was arranged like the UN, in which member countries give financial

support based on their respective gross domestic products (GDP). At the same time, member countries have only one vote each on policy. In practice, the high-level GDP countries want to use their economic power to sway policies in international organizations; otherwise they cut their support. The result of this dynamic was the withdrawal of major countries, such as US and Japan, which created major, obvious obstacles. After Pelosse, Adnan Amin from Kenya was selected as the new interim director-general until the next assembly in 2011. Amin was experienced in the UN system and had already been deputy interim director-general before his assignment in Fourth Preparatory Commission in 25 October, 2010 (Bisiaux, 2010).



CHAPTER 3

IRENA: STRUCTURE AND ACTIVITIES

In this section, the current status, and structure of IRENA are explained in detail. The agency will be evaluated in terms of its creation of international renewable energy norms by its facilitation and initiatives which are described in this chapter.

3.1. PRESENT IDENTITY

As an international organization, IRENA was formally established on January 2009 with 75 signatory states, a momentous event for countries to embark on sustainable renewable energy transitions. The agency aimed to be the driving force for increasing renewable energy usage in the world. In 2011, its headquarters was placed in Masdar City in the UAE. It has also two offices as Innovation Centre of the agency in Bonn and Office of the Permanent Observer to the UN in New York.³ IRENA's membership has grown unusually fast, almost doubling in the first eight years as of December 2018, with 159 member countries and a further 24 in the accession process. IRENA accepts six types of renewable energy, produced by any kind of renewable sources in a sustainable way, as solar, wind, geothermal, hydropower, biomass, ocean energy (IRENA, 2009a).

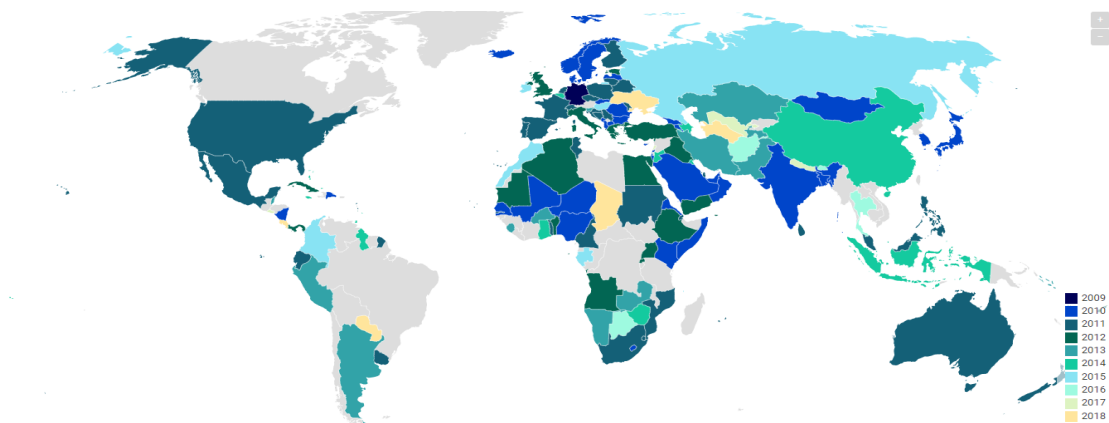


Figure 3.1 The members of IRENA by their membership years ⁴

³ IRENA n.d., *IRENA Offices*, viewed 12 September 2018, <https://www.irena.org/contact>.

⁴ IRENA n.d., *IRENA Membership*, viewed 12 July 2018, <https://www.irena.org/irenamembership>.

IRENA is understood to be an “epistemic” and “policy-oriented” institution (Meyer, 2013), with the aim of specific technical and capacity-building assistance to its member countries. Rather than setting up binding rules or directly standardize the behaviours of its members, IRENA concentrates on collecting and disseminating information about renewable energy on some specific issues as annual reviews of renewable energy employment, capacity statistics, estimations, gender balance in renewable energy sector.⁵ In this way, IRENA tries to create new norms that its member countries voluntarily champion. Additionally, IRENA does not fund or implement capital investment in renewables. Because of its compatibility and its primary interest in enhancing countries’ knowledge and experience, the ratification rate of the agency has been relatively higher than other intergovernmental organizations (Overland and Reischl, 2018; Urpelainen and Graff, 2015). As a result, the agency follows non-destructive methods, which means that it promotes renewable energy without denigrating other types of fuels as hydrocarbons or nuclear energy (Roehrkasten and Westphal, 2013). Even though IRENA has been mainly fulfilling advisory roles, it has also provided concessional loans in developing countries by means of the IRENA/Abu Dhabi Fund for Development Project Facility (Esu and Sindico, 2016).

As mentioned in the IRENA’s statute, the agency seeks to promote countries to internalize renewable energy use for sustainable development. The organization is eager to stabilize volatile energy markets by securing energy supplies and to reduce GHG emissions by its long-term policy plans for the member countries. IRENA offers employment opportunities with sustainable growth in renewable energy sector by harnessing state-of-art technologies and tries to increase access to decentralized energy systems in developing countries, rural regions and small islands. It’s also evinces concern about the unsanitary and ineffective use of fossil fuels and traditional use of biomasses, while trying to reduce deforestation, loss of biodiversity, and climate change by strengthening social cohesion and encouraging sustainable growth. So, IRENA encourages renewable energy use and tries to cooperate with countries by taking into consideration the realities faced by local governments (IRENA, 2009a).

⁵ IRENA n.d., *About IRENA*, viewed 23 July 2018, <https://www.irena.org/aboutirena>; <https://www.irena.org/newsroom/articles/2018/Oct/Be-part-of-the-IRENA-Gender-and-Renewable-Energy-Survey>.

Before IRENA, the lack of internationally binding rules and institutions on renewable energy created fragmentation and a gap in renewable energy management (Graff, 2013). IRENA was different from the other organizations because it specifically focused on global renewable energy development. The rapid acceptance of its Statute can be evidence that before IRENA there was a deficiency in global renewable energy governance (Urpelainen and Graff, 2015).

Scheer (2007) claimed that organizations as UN and World Bank objected to the establishment of IRENA, because it could be seen as rival. However, IRENA has been eager to cooperate with the other international organizations including the IEA and the UN (Wright, 2011). For example, the UN (2012) launched the Sustainable Energy for All (SE4ALL) initiative, which aimed to increase global renewable energy capacity by 50% to 2030, which had been rejected for several years by certain groups in the UN. Also, IEA has put a new face on its energy policies towards capacity building for renewable energy. Also IEA and IRENA agreed to cooperate on publishing a joint database system (IEA, 2012).

3.2. STRUCTURE

IRENA consists of three main bodies: assembly, council, and secretariat. The assembly is the supreme body and is made up the all of the member countries, with each country having one representative like the UN. In decision-making, there is an equity principle among members. The assembly meets annually at the headquarters if there is no exception and is responsible for making decisions and recommendations. It is required that election for a president and other officials at the beginning of the meeting. Decisions are taken by consensus. If one cannot be reached, no more than two members can disapprove. It still, however, requires consensus to resolve such issues as electing the council members, determining the budget and working schedule, and confirming amendments of statute.

The council must consist of eleven to twenty representatives from the members. They are elected by the assembly for two years with taking into account the equitable geographic distribution and financial status of the countries. The meetings of the council are held biannually at the headquarters. Each member has one vote, and a two-thirds majority is needed to pass the decisions. The council is accountable and responsible to the agency. It

works to assist the consultation and collaboration among members, thinking on the draft work programme and draft budget and presenting them to the assembly, and entering into agreements with the other international organizations or states by the consent of the assembly.

The secretariat, located in Masdar city, consists of the director-general and staff that is bound to the director-general. The director-general is appointed by the recommendation of the council every four years and can be reappointed for only one additional term. The director-general is responsible for supporting the assembly and council technically and administratively, attending the meetings of both, drafting the working programme, budget and annual report and presenting them to the council, and implementing the working programme. IRENA's budget consists of three different sources: compulsory contributions which are determined by the economic power of the members by GDPs, voluntary contributions and other financial resources (IRENA, 2009a).

3.3. PROJECT FACILITATIONS

Renewable energy projects could meet with difficulties in political, regulatory, and marketing phases. The difficulties stem from cumbersome administrative procedures, technological breakdowns, inadequate information, and lack of transparency and access to financial services. If renewable energy projects are not planned in detail, the projects encounter problems especially in bankability and shareholder networking issues. Therefore, IRENA has developed online tools on project facilitation for enhancing market visibility and relations with the stakeholders and obtaining financial sources.⁶

3.3.1. Global Atlas

Global Atlas is an online platform developed by IRENA and Clean Energy Ministerial (CEM) where worldwide end-users are able to access outlooks for renewable energy

⁶ IRENA n.d., *Project Facilitations*, viewed 23 October 2018, <https://www.irena.org/ourwork/Project-Facilitation/About-project-facilitation-platforms>.

resources in different geographies locations.⁷ The initiative was officially established in 2013 at the third assembly of IRENA, as the information repository of worldwide solar and wind energy sources. In 2013, nearly 70 governments and 50 different organizations declared their contributions in a year, and 50,000 end users reached the Global Atlas (IRENA, 2013a).

Global Atlas first published the maps of the sun and wind; however, it has aimed to expand its scope since its foundation. Currently, it offers more than 2,000 data points in the fields of solar, wind, bioenergy, geothermal and marine energy. In their research, variables such as resource quality, distance to communication networks, topography, population density, socio-economic factors, political situations of countries and regions are taken into consideration and various estimations are made by IRENA. While researching, IRENA cooperates with partner institutions and countries because any outside information must be as recent and accurate as possible. The initiative targets to reach policy makers, the public, investors and developers through its website. It also offers training opportunities and simulations for those eager to learn more. It provides a global visualization in order that users of Global Atlas can combine databases. In addition to maps showing global energy sources, there are also country-based maps with detailed analysis. They are available for download, access simulations as off grid PV battery simulator or PV project simulator and divided into categories for education and assessing potential.⁸

IRENA and CEM have created the Global Atlas as a geographical information system considering that existing data is based on incompatible information and complicated since it is harvested various and sometimes irrelevant sources (Estima et. al., 2013). By assuring more reliable data sources, the initiative of Global Atlas decreases the risk of poor investments in developing countries and provides optimization options of renewable energy projects on production and transmission phases (Varadi et al., 2018). It tries to eliminate injustice between countries and influence decision-making mechanisms in the transfer of renewable energy potential to the database. It aims to develop different

⁷ CEM n.d., *Multilateral Solar and Wind Working Group*, viewed 5 July 2018, <http://www.cleanenergyministerial.org/initiative-clean-energy-ministerial/multilateral-solar-and-wind-working-group>.

⁸ Global Atlas Platform n.d., *Global Atlas for Renewable Energy*, viewed 22 June 2018, <https://irena.masdar.ac.ae/gallery/#gallery>.

technologies for each region and to create a consistent pool of knowledge. Access to the Global Atlas is publicly available and there is no charge (Müller, 2017).

3.3.2. Project Navigator

Up to now, big companies and institutions have been the most influential investors in renewable energy technology projects. Because energy investments require strong financial support, renewable energy technologies based on independent manufacturer models face many challenges and barriers from their earliest stages. In particular, there are great difficulties in financing. The most important of these is the failure of the project developers and investors to obtain financial backing. Other reasons are prejudice in society as well as political and socio-economic problems. When preparing the project, it is not only necessary to have confidence about electricity prices, but also about the strength of a local economy. At the same time, factors such as combating climate change increase interest in renewable energy investments (Roesch et al., 2015).

With recent innovations, de-centralized plans to transition to energy systems and production models independent from small-scale renewable energy systems are popular (Altmann et al., 2010). The project navigator tool was developed by IRENA in order to ensure that these independent production models become more prominent and widespread. In order to facilitate the work of independent investors, Project Navigator provides special support for renewable technology work. It also provides online services like many of the agency's tools and aims to provide guidance on the latest technologies for how to develop a viable project. As a result, it provides many benefits to help project developers to take the proper steps, to provide the necessary information, to prepare a project plan, and to prepare high-quality recommendations. Project Navigator consists of three main parts: learning, project start, and financial navigator. The learning section includes a pool of knowledge, past examples and drafts, and a project development guide. At the beginning of a project, there is information about where to start it. This section proceeds through a pre-built to-do list. The financial navigator includes databases that can help with the project's investments. The main purpose is to accelerate the process of the project.

IRENA's website includes investment options that can be filtered by technology and region. It can be registered via e-mail.⁹ It provides project guidance for major renewable energy technologies such as solar, wind, bioenergy, geothermal, hydropower technologies. Tools, models, and templates are developed to prepare a proposal, and various workshops and webinars are organized to aid their adoption. The project development process consists of identification, assessment, selection, pre-development, and development steps. Bankable offers assistance services to project developers to create a project proposal; is a guide for understanding and minimizing project risks in understanding the project flow. Accordingly, the initial identification process is important. It should be based on sound foundations from the first step of a project. In this sense, it is important to evaluate identification and potential opportunities. Appropriate project selection, detailing technical and logistic issues, price analysis, and time scheduling are all critical if the project is to become operable (Roesch et al., 2015).

For project developers as well as for investors and financiers, it is important to ensure the lower transaction costs for the effective use of funds and to create an objective benchmark for bankable investments. For policy-makers, it is important to increase project development capacity through trainings and to clearly explain the roles that stakeholders will undertake in the project and, as a result, to create transparent criteria from renewable energy support mechanisms.

3.3.3. IRENA /Abu Dhabi Fund for Development Project Facility

As the host country of IRENA's headquarters, the UAE prioritizes the UN Sustainable Development Goals (SDGs) and makes a large part of its external assistance with the Abu Dhabi Fund for Development (ADFD).¹⁰ In addition to privileged funds for developing countries, the ADFD also provides occasional grants. Since 2009, the ADFD has partnered with IRENA to provide funds for renewable energy projects. The most important factor in the selection process is that the project can be repeatable by other

⁹ IRENA n.d., *Project Navigator Platform*, viewed 24 June 2018, <https://navigator.irena.org/index.html>.

¹⁰UN n.d., *Sustainable Development Goals*, viewed 1 November 2018, <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>.

investors, serves as a seed in a region, and accelerates the energy transition (Weatherby, et al., 2018).

Table 3.1 IRENA/ ADFD selected projects¹¹

Projects Type	Number of total projects	Installed Capacity (MW: megawatts)	Budget (USD millions)
Solar/PV	10	54,8	110,5
River Hydro	1	20	15
Geothermal	2	20	21
Small Hydro	2	7,4	20
Wind+ Solar+ Hydro	2	6	23
Waste	1	4	6
Bio	1	3	7
Wind	1	1	5
Wind+ Solar	1	1	6
Total	21	117,2	213,5

In this fund, a total of USD 350 million of aid was intended to cover the separate periods each year for a total of seven years. So far, the fifth years of projects have been determined. Applications for the sixth period were completed recently; however, the projects entitled to receive the fund will be announced in January 2019. Applications for the seventh period, which is the last period, will be completed in February 2019. In the five-year period, as it seen in Table 3.1, 21 renewable energy projects were selected from 20 countries with a budget of between 1 and 15 million USD per project. In other words, approximately two-thirds of the total funds have been used so far, and it is estimated that around 120 MW of installed capacity will be achieved with the already allocated funds, and 200,000 total carbon dioxide (tCO₂) of emissions have been reduced.¹² Even though it is stated that the loan is intended for any kind of tried and tested renewable energy resources, almost half of the total installed capacity is solar energy. As a prerequisite for the application to the credit fund, government guarantees are required in the countries


¹¹ IRENA n.d., *Selected Projects to IRENA/ADFD Project Facility*, viewed 3 November 2018, <https://www.irena.org/ADFD/Selected-Projects>.

¹² IRENA n.d., *Abu Dhabi Fund/ Project Facility*, viewed 18 June 2018, <https://www.irena.org/ADFD>.

where the projects are developed. Public, private, and civil society organizations can apply to the fund. However, before applying, feasibility studies should be finished but the tender and execution phases should not be completed. With the help of the ADFD, half of the budgets of the projects are funded.

Energy access, better living standards, affordable energy prices and carbon saving could be provided by the support of the joint initiative. Through renewable energy, sustainable development could be reached by improved health and education outcomes and produce better livelihoods and working conditions. It is now known that over 2.5 million people benefit from these IRENA/ADFD-funded projects (Emirates News Agency, 2018).

3.3.4. Sustainable Energy Marketplace



The Sustainable Energy Marketplace (SEM) tries to gather actors in the renewable energy sector and the technical know-how of IRENA to extend sustainable energy use in emerging and developing countries. It is an initiative aimed at increasing renewable energy and energy efficiency investments in both the private and public sectors and to expand the global investment (Clean Energy Solutions Center, n.d.). SEM is seen as a facilitator for renewable investments and brings together project owners, financial providers, investors, countries where the project will be made, and service and technology providers within a web-based platform. It provides opportunities for investors to be more concrete, while providing project developers with access to funding resources, experts and previously acquired projects. The required information on the online platform can be explored comfortably. With the matchmaking method, funding sources and other stakeholders are twinned with project owners for project development. This initiative was established in 2015 at COP21, especially in Africa, Latin America, Southeast Asia and SIDs (IRENA, 2015).

3.4. INITIATIVES

Through its initiatives, IRENA has become visible and effective in many regions. The initiatives focus on creating data sets and knowledge-sharing activities both in developing and developed countries as well as supports capacity building activities. Other, specific

initiatives will be discussed below, including efforts to achieve energy access in specific regions, especially in small island and Africa.

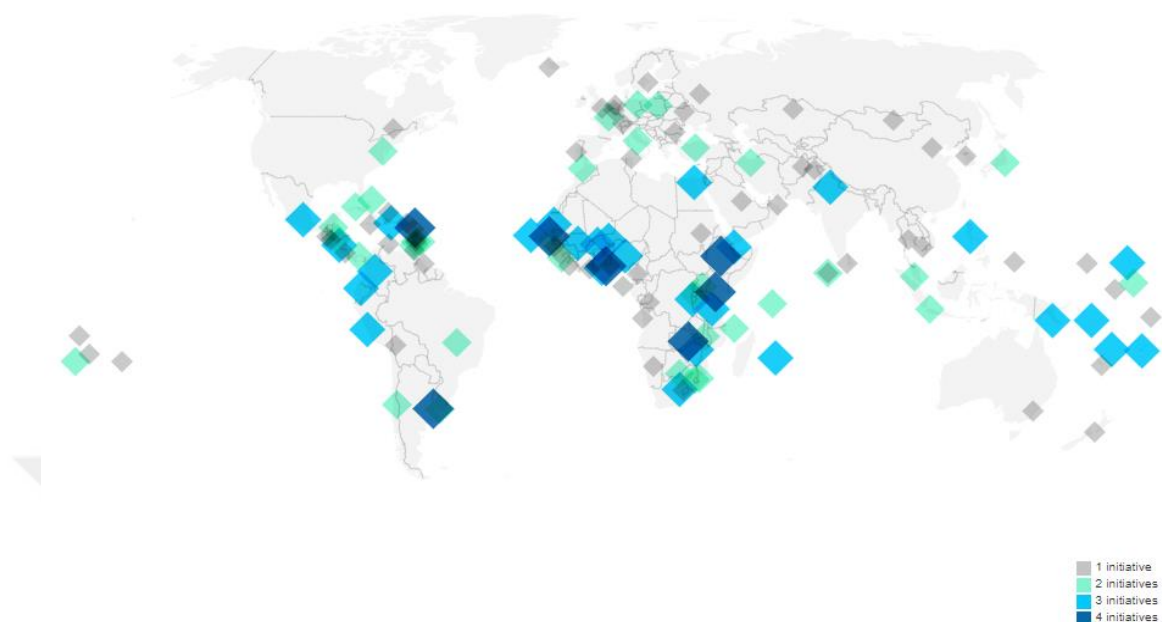


Figure 3.2 The Number of IRENA’s initiatives per members ¹³

3.4.1. Clean Energy Corridors

The demand for renewable energy has been rapidly increasing because of the decline in the cost of new renewable technologies and incremental increases in oil prices. For specific regions, renewable energy deployment via widened grid infrastructure facilitates access to secure and reasonably priced electricity. Power pools integrate power, especially the electricity markets of several countries in a particular region. It could help transition into low carbon energy system, creation new investment areas as well as employment within regions. Thus, IRENA has attempted to promote Clean Energy Corridors in the regions for cross-border electricity trade that would be produced by local and affordable renewable sources.¹⁴ The agency focuses on several regions for implementation of the Clean Energy Corridors such as Africa, Latin America and Asia (Varadi et al., 2018).

¹³ The initiatives of IRENA as Clean Energy Corridors, REmap, RRA, GGA, SIDs Lighthouses are used for the map, however, the other initiatives (Parliamentary Network and Coalition for Action) are not used. Because, the members which apply them are not indicated in the IRENA’s website.

¹⁴ IRENA n.d., *Clean Energy Corridors*, viewed 22 July 2018, <https://www.irena.org/cleanenergycorridors>.

Africa has five different energy pools in the South, North, East, West and Central regions. However, the pools face some infrastructural, regulatory and capacity problems. Due to rapid economic growth, high dependency on hydrocarbons in electricity generation, and abundant renewable energy resources in the region, Africa is a proper choice for IRENA's this initiative (Saadi et al., 2015). The African Clean Energy Corridor (ACEC) was presented as the first regional integration grid project of IRENA in the third Assembly in January 2013 (IRENA, 2013a). However, it was difficult to persuade the decision makers as ministers, professionals, regulators, and power suppliers in the region because they could have been rejected the ACEC initiative between East and Southern Energy Pools. Thus, IRENA invited the financial institutions, power suppliers and decision makers for a workshop to discuss the initiative on June 2013, which received positive feedback (IRENA, 2013b). After that, on June 2014, in the next assembly, the communiqué of the ACEC was endorsed strongly by ministers from Angola, Botswana, Burundi, the Democratic Republic of Congo, Djibouti, Egypt, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Namibia, South Africa, Sudan, Swaziland, Uganda, the United Republic of Tanzania, Zambia and Zimbabwe. In addition, ministers of Eastern and Southern African countries agreed to attend the UN Climate Summit on 2014 to discuss this issue (IRENA, 2014). The ACEC seeks to reduce carbon emission rates in Africa as well. According to Saadi et al. (2015), the annual carbon emissions in the region's energy sector were roughly 360 million tons (mt) and the business as usual scenario for 2030 is annually 700 mt. However, if the initiative turns out well, the emission rates will reduce to annually 310 mt. So, in total 2,500 mt of carbon emissions could be saved from 2010 to 2030. The initiative proposes transition from natural gas to wind energy in East Africa and to solar energy in South Africa instead of coal.

The regional clean energy corridors initiatives will be expanded to include corridors both in West Africa and Central America. In 2016, with the partnership of Economic Community of West African States (ECOWAS) and practice of ACEC in East and South Africa, West Africa Clean Energy Corridor (WACEC) was developed by IRENA. WACEC includes Benin, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo, and Burkina Faso and relies on five main pillars: determining renewable energy districts, enhancing regional

and national plans, developing investment models, working on capacity building, and raising public consciousness.¹⁵

The Clean Energy Corridor of Central America (CECCA) was presented in 2015. Only two countries were members of IRENA, as Nicaragua and Panama in 2016, so Panama was selected as a pilot country for this initiative to support development and cross-border renewable energy trade. The agency works on the region for modelling renewable energy resources and preparing power purchase agreements. In 2018, IRENA held a regional meeting for CECCA; further capacity enhancement and technical recommendations across the region were discussed with the attendance from Belize, Costa Rica, El Salvador, Honduras, Nicaragua and Panama.¹⁶

One of the common problems faced by regions is to estimate how much countries will develop their renewable energy capacity. While estimation in coal and hydropower is quite simple because of the stability in resource cost and efficiency technologies, the cost of solar and wind energies is difficult because of rapid technological development. On the other hand, the regulatory process in these countries is slow and weak, so most of the countries have been unsuccessful in this issue. One of IRENA's main efforts in the Clean Energy Corridor initiative is supporting countries on renewable energy price forecasting (Wouters, 2017, Varadi et al., 2018).

3.4.2. Coalition for Action

The Coalition for Action for Public Support was announced in the fourth Assembly of IRENA in January 2014. Director-General Amin emphasized that one of the most important issues on renewable energy discussions is public support; the biases and misunderstandings both in society and the media hinder the expansion of renewable energy technologies. Thus, there is a necessity for proponents of renewable energy to combat these biases and misunderstandings and facilitate the transition to renewables.

In this context, IRENA has undisputed responsibility to provide social acceptance. At the first, IRENA convened to 35 partners together from private sector companies, industry

¹⁵ IRENA n.d., *West Africa Clean Energy Corridor (WACEC)* viewed 23 October 2018, <http://www.irena.org/cleanenergycorridors/West-Africa-Clean-Energy-Corridor>.

¹⁶ IRENA n.d., *Clean Energy Corridor of Central America*, viewed 23 October 2018, <http://www.irena.org/cleanenergycorridors/Clean-Energy-Corridor-of-Central-America>; <http://www.irena.org/events/2018/May/CECCA-Regional-Meeting>.

associations, civil society, research institutes and intergovernmental organisations under the Coalition for Action. The action could be provided by modern communication methods, supports from both intellectuals and media, and some researches as public survey. By this way, the coalition could help increasing reliance on renewable energy. Private sector representatives, industry associations, financial institutions, specialists from universities, civil society organizations as well as various international organizations were interested in the new initiatives, including Greenpeace International, WWF International, and Vestas Wind Systems. The representatives of the partners expressed that the founding idea of IRENA matches with providing unbiased information to society under the Coalition for Action initiative. It was also suggested that integrating with national platforms in each country could increase societal awareness about renewables. IRENA must gather the efforts in collaboration, rather than only create new communication material to governments, which does not reach society at-large (IRENA, 2014).

IRENA held a workshop about social acceptance for renewable energy technologies six months before the coalition. The results suggest that rather than replying to public concerns, the advantages of renewable energy technologies must be explained in detail with visual images to make it clearer and more palatable. The unconvinced part of society should be targeted for this outreach. It could be possible to build a website for the public and creating a professional network for those who are interested in the environment and renewable energy (IRENA, 2013b).

The Coalition for Action currently has 80 renewable energy actors who focus business and investment, communication, and policy-making issues. The membership of Coalition is possible for relevant institutions and organization and is elaborated on IRENA's website.¹⁷

3.4.3. Global Geothermal Alliance

The Global Geothermal Alliance (GGA) was established in 2015 at the COP21 summit to raise both geothermal electricity production and direct use of geothermal heat worldwide. As the coordinator of Alliance, IRENA prepared a working plan and provided

¹⁷ IRENA n.d., *Coalition for Action*, viewed 23 October 2018, <https://coalition.irena.org/>.

the latest information and data. According to the joint communiqué, in parallel with the Sustainable Energy for All (SE4ALL) target, the establishment of GGA aims to increase the installed capacity of geothermal electricity about five-fold and in geothermal heating nearly two-fold. There is potential for geothermal energy in 90 countries, but only 24 countries are producing it, which equals only 6% of the total global potential. In its foundation phase, the alliance had 24 member countries and 20 partner institutions, which includes many regional and global organizations as European Geothermal Energy Council, African Development Bank, World Bank, United Nations Environment Programme and IRENA. The alliance tries to improve cooperation and increase capacity building for policymaking, regulatory actions, technological improvements and financial management (UNFCCC, 2015b).

By October 2018, GGA member countries and global partners increased to 46 and 33, respectively. GGA provides a suitable environment for geothermal investments, tries to eliminate market risks, supplies specified solutions for potential countries and regions, and makes potential research and market analysis. To this end, it tries to bring together the private sector, states and international organizations.

Also, it aims to expand awareness on geothermal energy in terms of its advantages in tackling climate change (GGA, n.d.). Pellizzone et al. (2017) states that geothermal energy is seen a sustainable resource for decreasing carbon emissions, and the establishment of GGA shows the recent interests of global groups on geothermal energy.

3.4.4. Parliamentary Work

Representatives of the national parliaments have key roles to play in the domestic policy making process in various fields including energy. However, many of representatives have inadequate information. They need detailed know-how for decision-making, budget preparation, and policy-implementation processes. Therefore, dissemination of knowledge and experience sharing about the energy sector for these decision makers are crucial for the global renewable energy transition.

The country representatives have considerable influence on their local electoral districts. Therefore, they can disseminate knowledge and create or increase awareness on renewable energy issues at the local level. Representatives are able to reach prejudices

and question marks against renewable energy technologies. Thus, parliamentarians may construct knowledge, eliminate prejudices, and clear the way for the energy transition. IRENA understands the importance of representatives in national assemblies, and tries to improve dialogue among representatives in different countries. In this way, countries can interact with each other properly. It is also helpful for representatives because they can create closer relationships between both private sector and local NGOs, which can in turn bolster the power of parliamentarians within their national assemblies.¹⁸

On March 2018, the Inter Parliamentary Union (IPU) arrived at a decision about promoting renewable energy to reach the Sustainable Development Goals (SDGs) of the UN by its 178 parliaments, which supports interactions among representatives of different countries in particular and includes networks such as IRENA. The assembly underlined the importance of off-grid systems to electrify the rural areas. To achieve these goals, representatives must first aspire to increase renewable energy awareness according to the SDGs. Only then can they promote the erection of competitive electricity markets powered by renewable energy sources (IPU, 2018).

To get in touch with the representatives and inform them about recent developments in renewable energy sector, IRENA has been publishing “Review for Parliamentarians” twice a year since 2015 of which each issue focusing on a particular topic such as climate change or job creation. Besides English, the review is translated into Spanish and French to reach further representatives and societies. The agency also organizes a legislator forum to bring representatives together annually, and uses Facebook to communicate among the representatives in a special group.

3.4.5. Renewable Energy Roadmap

Since 2012, the UN has started an initiative named “Sustainable Energy for All” to provide universal energy access, double both renewable energy shares and reduce energy intensity. Then the UN General Assembly identified the years 2014-2024 as the “SE4ALL decade” (UN, 2012).

¹⁸ IRENA n.d., *Parliamentary Network*, viewed 24 October 2018, <http://www.irena.org/parliamentarynetwork>.

As one of the main purposes of the agency, preparing roadmaps to set certain targets and follow suitable paths have been discussed for member countries since the Preparatory Commission (IRENA, 2010). IRENA fastened its work on forging a renewable energy roadmap in the same year as establishing SE4ALL. Then, the REmap to 2030 was presented to member countries to enhance their prospective renewable energy policies (IRENA, 2013a). Then, REmap cases were improved to 2050 in 2018.¹⁹

REmap is created by bottom-up approach that takes national policies into consideration. Besides that, the bottom-up approach is supplemented by some top-down variables including technological developments, worldwide energy demand, costs analysis, forecasts of economic growth, employment data, and carbon emission rates. Combining both approaches may give more reliable outputs for mapping out countries paths to renewable energy and enhancing global technological improvements. As well as reports and written documents, IRENA publishes the outputs of studies by excel sheets to facilitate member countries' works, while the transparency of sharing makes easier the acceptance of REmap data easier (IRENA, 2017a).

At first, IRENA created an energy roadmap for Tonga, which tried to reduce the vulnerability of the country and contribute to sustainable energy transition in the region. It could be seen as the earliest road map initiative of IRENA (Wright, 2011). Then, IRENA chose 25 countries that contain nearly two thirds of global energy demand. Before REmap, it was obvious that it is not possible to double renewable energy share, even all the countries in the world met their national energy targets (Wouters, 2017). So, firstly, IRENA used a "business-as-usual" case that included current policies and national plans of the REmap countries from 2010 to 2030, which is called reference cases. Then, the agency used optimal decarbonisation scenarios and technological developments to achieve SE4ALL goals, which are termed, REmap cases. REmap cases vary from the other estimations because there is information flow and cooperation between the countries and IRENA (IRENA, 2017a). REmap cases have been published since 2014 for particular countries and regions to provide a reliable and sustainable energy future. By 2017, REmap analyses are prepaid for 70 countries, which equates to 90% of world energy use.

¹⁹ IRENA, 2018. *Global Energy Transformation: A Roadmap to 2050*, viewed 1 November 2018, <https://irena.org/publications/2018/Apr/Global-Energy-Transition-A-Roadmap-to-2050>.

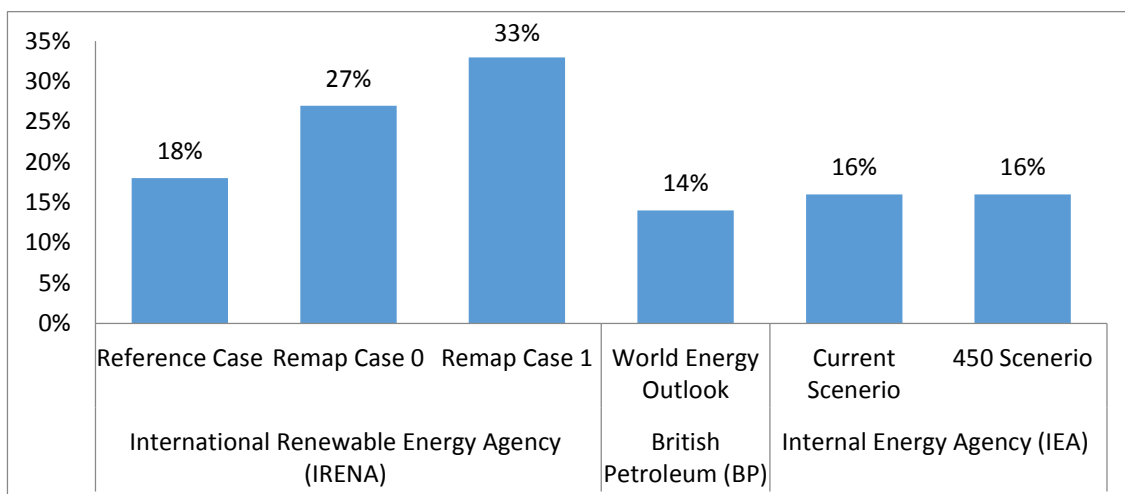


Figure 3.3 Projected primary renewable energy shares until 2030 ²⁰

When the business as usual and REmap cases of the agency are compared with the other energy databases as BP and IEA, it is seen, in the Figure 3.3, that IRENA forecasts better scenarios. The situation encourages countries to apply REmap policies for their energy transitions.

3.4.6. Renewable Readiness Assessment

The Renewable Readiness Assessment (RRA), developed by IRENA in 2011, is one of the organization's initial tools. It seeks to expand renewable energy capacities by assessing relevant situations and the expectations of countries for the short and medium term. The assessment could be a guide for countries eager to improve renewable energy conditions, while identifying primary needs and concrete steps. RRA brings together shareholders under the leadership of a country to connect them to development leaders. It also helps to draw the attention of credit institutions and related organizations. Its assessment contains five main topics as national renewable energy strategies and policies, institutions and markets, resources and technologies, business models, and requirements for capacity building.

There are four stages of the RRA process: initiation and demonstration, detailed country assessment and action plan, RRA validation and finalization, and follow up. In the first stage, consultants and key partners are selected for the assessment. The background paper

²⁰ REN21, 2018. *Renewables Global Futures Report*, viewed 1 November 2018, http://www.ren21.net/wp-content/uploads/2017/10/GFR-Full-Report-2017_webversion_3.pdf.

on renewable energy situation and potential is then prepared by RRA consultants by taking into consideration the socio-economic context and other country-specific concerns as well as its institutions, policies and legal infrastructures. After that, consultants create a national expert group from decision makers, scientists, and other leading names in the renewable energy sector. In the second stage, interviews and workshops with experts are held for drafting urgent action plan, and RRA consultants draft a report. In the third stage, the report is presented for the approval of the stakeholders and the ministries responsible for renewable energy; then IRENA published the report. In the fourth and final stage, the report is disseminated and the operational process is monitored. The agency and development partners provide additional support to the RRA country during the implementation phase.

In 2011, the RRA was first attempted this work in Senegal and Mozambique as well as in Tonga. Then, the initiative expanded to Grenada in Latin America region and Kiribati in Pacific region. It was strategizing that by selecting pilot countries in different regions, RRA recommendations could be disseminated more easily to neighbours (IRENA, 2014; Wright, 2011). By 2018, RRAs had been completed in ten countries in Africa, six countries in Asia and the Pacific, five countries in Latin America and Caribbean, and one country (Oman) in the Middle East.²¹

3.4.7. SIDS Lighthouses

The Small Island Developing States (SIDS) Lighthouses Initiative was launched in 2014 at the Lima Climate Change Conference in Peru. The initiative focuses on helping fossil fuel-dependent SIDS transition to renewable energy with partners from the private and public sectors as well as international and civil society organizations. For that it recommends policy and regulatory strategies, tries to support states for their technical and financial competence, and creates networks for experience sharing to encourage technological and human capacity building among countries, regional and international partners in operational phases. It is aimed to set a course for renewable energy policies, mobilise about 500 million USD, and deploy 120 MW renewable energy capacities by

²¹ IRENA n.d., *Renewable Readiness Assessments*, viewed 1 November 2018, <https://www.irena.org/rra/Completed-RRA-Country-Reports>.

2020 (IRENA, 2017b). By 2017, the installed capacity in SIDS increased hydropower by 22.6 MW, wind by 61.2 MW, bioenergy by 95.8 MW, solar by 258.9 MW, and 400 MW in total renewable energy capacity.

The island countries have been using diesel fuel for generating electricity for a long time, but price fluctuations threaten their fragile economies. Renewable energy use within hybrid and smart grid systems is therefore an opportunity for these states. IRENA develops tailor-made solutions for different countries. The SIDS generally have solar energy potential because they geographically located in the tropical belt, but they lack the necessary fields for PV panels. Thus, wind is used for alternative source of these regions besides that geothermal, biomass and waste sources are applied as well as hydropower on larger islands. IRENA gives importance to the SIDS lighthouses initiative because there are many islands and each of them has the right to vote in the agency's structure (Wouters, 2017).

CHAPTER 4

EVALUATING IRENA WITH SOCIAL CONSTRUCTIVISM

The activities of IRENA are here evaluated by using Social constructivism. Table 4.1 summarizes the ten main points of the theory and comments.

According to social constructivism, people are the main agents in society, and society and people are affected by each other according to the duality principle (Giddens, 1984; Wendt, 1987). Thus, any individual act can alter its affiliated society. Change in preference of any energy type may be triggered with duality principle in society. Some renewable energy entrepreneurs are birthed within today's technological, social, economic, and environmental dynamics. These tendencies influence and change each other's thoughts and preferences. For the renewable energy movement in Germany, Herman Scheer was an innovative norm entrepreneur first in his own country, and then in world by founding the global renewable energy organization, IRENA. For this reason, Scheer and his colleague Hans-Josef Fell are called "the Sun Kings" in a chapter in *Agents of Change* written by Kasbergen (2012). While Scheer and Fell initiated the deployment of renewable energy in their country, they were aware of the challenges of depending on fossil fuels and the knowledge deficiency of people. However, they introduced their ideas with a catchy title, "100,000 Roofs Program". They tried to disseminate their knowledge by bottom-up solar movement ideas to both national and international politicians, as well as to academia, media, civil society, industry, lobby groups, and renewable energy entrepreneurs. Eventually, they convinced the government in 2000, and Germany became the biggest PV market in the world in 2006 (Kasbergen, 2007; BP, 2018).

Similarly, states are seen as the main agents of international system. The interests and policies of states define international system dynamics, while the international anarchic system shapes the policies of states. This duality principle is conducted in this level as well as in the society. In addition to states, international organizations also play important roles in shaping international structures (Wendt, 1987; Onuf, 2013).

Constructivists argue that IOs can change the interests and identities of states inter-subjectively by creating, reflecting and disseminating normative understandings (Onuf, 1989; Simmons and Martin, 2002). As the first worldwide renewable energy institution

Table 4.1 The main points of theory and comments

	The main points of theory	Comments
1	People are the main agents in society and they are affected from each other. Thus, any individual act can alter its affiliated society (Giddens, 1984; Wendt, 1987).	For the renewable energy movement in Germany, Scheer and Fell were innovative norm entrepreneurs, first in their own country and then in world with their “100.000 Rooftop Program.” They tried to disseminate their knowledge by bottom-up solar movement. They convinced the government in 2000 and Germany became the biggest PV market in the world in 2006 (Kasbergen, 2007; BP, 2018).
2	IOs can change the interests and identities of states and international structure (Onuf, 1989; Simmons and Martin, 2002).	IRENA was identified as an “institutional innovation” and “milestone” of the international renewable energy governance (BMU, 2009). Therefore, IRENA can be a proper choice to examine the international organization’s changing role for states and other IOs.
3	Science policy organizations as UNESCO provide better policies in terms of fostering educational and cultural progress in countries. Norms can be adapted and formed in states by the instructive functions of IOs (Finnemore, 1993).	IRENA is eager to disseminate knowledge to countries worldwide and its officials aim to be a “one stop shop” for guiding activities in renewable energy issues (Wright, 2011). Thus, IRENA can encourage states to work in renewable energy issues.
4	States regard norms as standard and appropriate behaviours and domestic norms and international norms shape each other. The alteration of ideas and norms will lead to change even the international structure (Finnemore and Sikkink, 1998).	IRENA’s policies were first seen as a reflection of Germany’s renewable energy policies and later it changed the ideas of states on renewable energy and international norms by transferring information and interacting with the states (Müller, 2017).
5	IOs are willing to disseminate norms and rules as "good political behaviours" and the developing countries are generally preferred as the target for the diffusion of norms (Barnett and Finnemore, 1999).	IRENA also targets the developing countries such as Africa, Latin America and small island states in the Pacific Region.
6	The role of bureaucrats in norm transferring is an essential part of the international structure and bureaucrats can forge links between national states and IOs (Finnemore and Sikkink, 1998).	IRENA’s parliamentary networks try to improve relationships between state representatives and inform them about the benefits of renewable energy. It also arranges seminars, webinars, and various meetings for the representatives as well as creates a Facebook group for their interactions.

7	States make rational choices for their own interests and change their identities through collective interests rather than their self-interests (Wendt, 1999). In this respect, international organizations can create a collective identity (Finnemore and Toope, 2001).	The Clean Energy Corridors Initiative increases collective identity in related regions by creating renewable energy hubs; the Coalition for Action Initiative convenes global dialog among partners; and the Parliamentary Network Initiative for national representatives can enhance relationships among states and create collective identities.
8	In case of threat, states consider distribution of interest for their security rather than strengthen their power (Wendt, 1999).	Global climate change is an international threat for states to consider distribution of interest. With the development of new environmental consciousness, the share of renewable energy also increases and IRENA can be a proper tool for this.
9	States want to feel as if their behaviours are legitimate in the eyes of other states and powerful states try to convince other states to cooperate for legitimizing their actions (Baylis et al., 2007).	The UAE's close relations with African and Arabian countries and Germany's with the other European countries can be seen as impression-making activities for legitimizing renewable energy as norm. Countries want to be a part of IRENA to show other countries that they support this norm; this would be an inexpensive way to be interpreted as an environmentally friendly country (Urpelainen and Graff, 2015)
10	Norm cycles are divided into three phases: (1) norm emergence, (2) wide acceptance, and (3) internalization (Finnemore and Sikkink, 1998).	IRENA and its founding member states such as Germany, Denmark, Spain and the UEA, have already gone through the first phase. Now IRENA is gaining experience in the second phase, and the new norms have been accepted by 159 member states in 2018. The third stage started with the national plans and/or regulations of these countries, however, the goals of IRENA for a complete transition need a long time to be realized, so the internalization process has not yet finished.

that recognizes solar, wind, geothermal, hydropower, biomass, ocean energy types as viable alternative energies, IRENA provides an international platform to its members and partners for sharing information and technical experience and creating cooperation and synergy (Kottari, 2016). IRENA was identified as an institutional innovation and milestone of the international renewable energy governance (BMU, 2009). According to these definitions, IRENA could be a proper choice to examine an international organization's changing role for states as well as other international organizations. When the aims of IRENA are evaluated, the agency supports new norms about renewable energy to turn them into policies in its member states (Yesevi and Yavuz-Tiftikçigil, 2017).

International policy-making organizations are widespread around the world. As (Finnemore, 1993) exemplified, UNESCO, for instance, is a science policy organization that provides better policies in terms of fostering educational and cultural progress. The organisation is accepted as one of the most influential international bodies, so as UNESCO, international organisations will develop country policies through its teaching skills. In this way, it is thought that new norms can be adapted and formed in states by the instructive functions of international organizations. Many studies on IRENA have classified the agency as an epistemic institution and try to disambiguate information in renewable energy sector (Meyer, 2013). The organization is eager to disseminate knowledge to countries worldwide. Wright (2011, p. 267) even expressed that the officials of agency aim to be a "one stop shop" for guiding activities in renewable energy issues. Thus, IRENA can teach states to work in renewable energy. At the Bonn conference, Hans- Joseph Fell stated that renewable energy is an immediate necessity for world and had to be promoted globally because there was knowledge deficiency and ignorance about its advantages. The deficiency is not only seen in society, but also in politicians and academia. He also emphasized that complete transition to renewable energy can be completed in the next decades if the necessary political conditions are met. He exemplified that IAEA's efforts to narrow the knowledge deficit between the public and scientist. Furthermore, the Non-Proliferation Treaty disseminated information that supports the idea that nuclear energy must be used for peaceful purposes (IRENA et al., 2009). Müller (2017) identified RRAs and Global Atlas as political technologies, in addition to them Project Navigator, REmap, and Parliamentary Network facilitation are

the main informative tasks to improve renewable energy investments and create objective and transparent datasets to policy makers and scientists not only for energy policies but also economic and environmental policies.

International organizations are willing to disseminate norms and rules as "good political behaviours". In this sense, developing countries are generally preferred as the target for the diffusion of norms. In particular, the EU and other powerful UN states encourage non-Western states to make policy innovation through international organizations (Barnett and Finnemore, 1999). IRENA uses the same method as other international organizations and its target group is developing countries. When the information and capacity-building facilities of the agency are examined, it is seen that Africa, Latin America and small island states in the Pacific Region are targeted (Figure 3.2). It does not mean that the agency is not interested in developed countries, but IRENA disseminates knowledge much as the other international organizations do.

At the establishment phase, Scheer and the German government disagreed about which areas to focus on with IRENA. While Scheer thought that the agency should focus on developing countries to adopt norms and make policies easier to understand and implement, the German government emphasized IRENA's global goals. States such as US, UK, Japan and Australia were in favour of orientating the agency activities towards developing countries as well, because the states demanded that the IEA preserve its role within OECD countries (Roehrkasten and Westphal, 2013). When the UAE became the host country, the orientation towards developing countries was realized by the specific activities of the organization as Abu-Dhabi Fund, Clean Energy Corridors, RRAs, and SIDs Lighthouses facilitations. Urpelainen and Graff (2015) divide the countries as Southern and Northern rather than as Western and non-Western, as Barnett and Finnemore (1999) indicated. The classification is different, but both of them reveal countries as developing and developed. As Roehrkasten and Westphal (2013, p.15) stated: "normatively, IRENA's role is no less than to convince and to prove that renewable energies do offer policy choices for developing, emerging and industrialized countries." The agency should imply its activities without exception to countries because the transition to renewable energy is still incomplete and will take decades, even in developed countries.

Constructivists are not interested in the level of regionalism. They focus on social construction and the consolidation processes of regions (Antola, 2009) as well as interactive relations in regions and the structure of regional order and collective identities. The EU is most frequently referred to region in international relations and it has binding rules and a collective identity. However, it does not mean that the EU is in the most effective socialization process. On the contrary, regionalism is more effective in the Southeast and East Asia regions where the legal environment is less formal. Europe has a partially inclusive and partially exclusionary identity structure, which may cause neighbouring countries to complain (Rumelili, 2015). Collective identities for renewable energy behaviour can be built through interaction and socialization among IRENA members. In the early years of the agency, many countries such as China and Brazil were suspicious of the binding requirements of the agency. For instance, China had the most investment across renewable energy technologies mix and was not eager to enter into IRENA's obligations (Roehrkasten and Westphal, 2013). Thus, IRENA faced a dilemma to convince countries to join the agency and create norms for renewable energy policies. For that reason, rather than creating binding norms to its member states, IRENA tries to increase informative activities, which includes, renewable energy datasets, analysis and estimation. In this way, policymakers in member countries can be more rapidly convinced to adopt renewable energy.

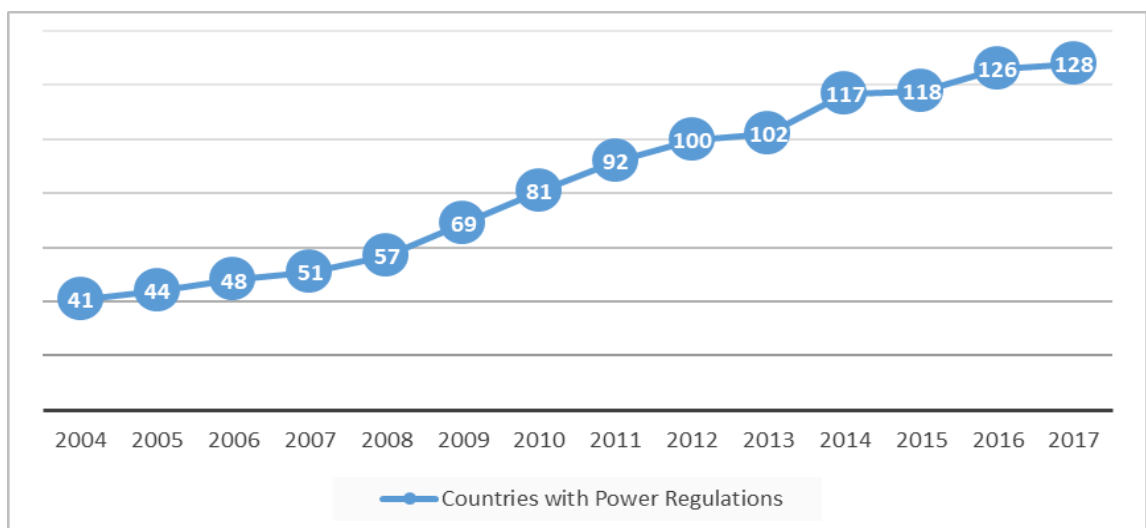


Figure 4.1 Number of countries with power regulatory policies²²

²² IRENA, IEA & REN21, 2018, *Renewable Energy Policies in a Time of Transition*, IRENA, OECD/IEA and REN21.

Even the agency does not have any binding rules for its members; states can alter their identities by interacting with and internalizing each other's norms. Figure 4.1 shows the number of countries with renewable energy regulatory policies. The growth can not solely be attributed to IRENA; the NDCs submitted at Paris were also effective (UNFCCC, 2015a). IRENA, IEA and REN21 analyze renewable energy policies, and many illustrations are used in the research. Countries get information from other states in a practical way; even research findings can affect the states' behaviour and change norms. Ideas, norms, knowledge, culture, and argument are the main concepts of constructivism (Finnemore and Sikkink 2001, p. 393). The rules have instructive roles on the states about what they should do, in this manner the norms help to determine what states want. In the other words, rules and norms have a considerable contribution in shaping the behaviour of states (Baylis et al., 2007; Finnemore, 2004). States regard norms as standard and appropriate behaviours. Domestic norms and international norms shape each other. In this respect, the alteration of ideas and norms will lead to change even in the international structure (Finnemore and Sikkink, 1998). At first, IRENA's policies were seen as a reflection of Germany's renewable policies, and, when the road to the agency's establishment is examined, domestic norms can be seen as shaping international norms. While disseminating information about renewable energy and interacting with the states, IRENA transfers knowledge on renewable energy norms as a norm entrepreneur (Müller, 2017). With knowledge transferring, IRENA can change the ideas of states on renewable energy and international norms as well.

The role of bureaucrats in norm transferring is an essential part of the international structure. Bureaucrats can forge links between national states and the international organizations (Finnemore and Sikkink, 1998). In this case, IRENA's parliamentary networks try to improve relationships between state representatives who can directly communicate with their citizens and inform them about the benefits of renewable energy. IRENA tries to arrange seminars, webinars and various meetings for the representatives as well as creating a Facebook group for their interactions. Social acceptance of norms can enhance alteration in states, but also in international structure.

Through the Coalition for Action, one of the initiatives that partners with international NGOs, IRENA can realize the "boomerang pattern" of forging links between NGOs and states. Even a state that has already become a member of IRENA, NGOs may contact the

agency and try to create a boomerang effect on renewable energy and environmental policies. Sometimes states refuse the demands of NGOs, but they can still get support from IRENA, and IRENA can give advice to member states on national issues through its informative tools. IRENA has partnerships with international NGOs such as Greenpeace and WWF. With its branch offices around the world, the Coalition for Action initiative can develop relationships with a country-specific NGO. The relationship could increase policymakers' and the public's awareness of renewable energy and the boomerang effect can help make norms (Price, 1998).

Constructivists also argue that states make rational choices for their own interests and change their identities through collective interests rather than their self-interests (Wendt, 1999). A collective identity can also take place in an institutional structure. In this respect, international organizations can create a collective identity (Finnemore and Toope, 2001). Interactions among member states of IRENA can enhance behaviours in those countries where there is less attention to renewable energy and even prompt them to become members of IRENA. Collaboration on renewable energy can be internalized as culture by rational choices of member states. The Clean Energy Corridors initiative can increase the possibility of collective identity mainly in West Africa, Central Africa and Central America regions by creating renewable energy hubs. Also the Coalition for Action to convene global dialog among non-governmental and governmental partners, as well as the Parliamentary Network and Legislator Forum for national representatives can enhance relationships among states and create collective identities.

According to Lockean anarchy, states can co-operate and engage with other states on the condition that there is a threat from outside. In situations of threat, states can adopt security rather than strengthen themselves, and distribution of interest may occur (Wendt, 1999). In this respect, global climate change is a reason for states to realize distribution of interest. One of the most effective methods to reduce carbon emissions is to transition from fossil fuel to renewable energy. With the development of new environmental consciousness, there is a direct proportion to the transformation of renewable energy into a norm (Cruciani, 2013).

In different periods of history, different approaches and rules for have been dominant. During the Cold War, for instance, the rules of realism ordered states' actions. Thus, the Cold War became an institution in the twentieth century. The global economy is a key

institution of the twenty-first century, and the concepts of refugees or mass destruction of weapons were created a short time ago. It is obvious that actors create concepts. The roots of these concepts emerge from the interaction between the institutions and ideas. Constructivists discuss that international system as consisted of socially constructed realities; for this reason, shared rules, practices, meanings, norms and identities are crucial. The features indicate states' interests, identities, choices, and actions (Baylis, et al., 2007). So, renewable energy can be one of the key concepts in twenty-first century; by the help of IRENA and its member countries, the countries can identify renewable energy as a norm.

Constructivists argue that power depends on ideals rather than material structures (Wendt, 1999). The only purpose of these ideals cannot be control over other states. States want to feel as if their behaviours are legitimate in the eyes of other states. Particularly powerful states convince other states to cooperate for legitimizing their actions (Baylis et al., 2007). The relationship between African and Arab countries and the UAE, and European countries and Germany, which are politically close to them, can be seen as impression-making activities. Countries interpret environmentally friendly in inexpensive way and can develop their economies through renewable energy policies (Urpelainen and Graff, 2015)

Finnemore and Sikkink (1998, p. 895) divide norm cycles into three phases: (1) norm emergence, (2) wide norm acceptance, (3) and internalization. In the first phase, entrepreneurs bring norms into existence, and a small group of states leads other states to adopt them. In the second phase, the norm leaders orient norm followers to apply new rules through socialization. The norm adoption period could be accelerated by coercion, demand for international legitimacy and demand from states to improve their self-confidence. In the third phase, when internalization is realized, there is no comprehensive disputation besides the norm gaining acceptance and guarantee. As women's suffrage and the abolition of slavery are disputed by almost nobody in society in the contemporary world, the renewable energy transition is going to be accepted and realized worldwide with the norm cycle process.

IRENA and its founding member states have gone through the first phase. Norm emergence has occurred by means of the countries as Germany, Denmark, Spain and the UEA. Now IRENA is gaining experience in the second phase, and the new norms have

been accepted by 159, including EU, member states in 2018. When the member countries plans are examined, it seems that the transition goals of IRENA need a long time to be realized, so the internalization process has not yet finished. Even the entrepreneur countries of IRENA need time to internalize renewable energy adaption. As Figure 4.1. shows, internalization will be completed if countries increase their targets for the share of renewable energy in their energy mix.

Social constructivism, contrary to other approaches, gives importance to the norm-making role of international organizations. Even though they say that domestic decisions change the foreign policies of the states, these organizations have a certain influence on foreign policies (Barnett and Finnemore, 1999). As an international organization, IRENA has concrete effects on the global environment through its efforts to create and disseminate knowledge. The knowledge and awareness of benefits of renewable energy could enhance the norm-making process on both environmental and economic policies of the states.

CONCLUSION

The contributions of global renewable energy governance, especially the role of IRENA for enhancing global renewable energy policies, have been discussed in this thesis. The historical development of creating a global renewable energy network and institutional structuring were used to evaluate IRENA's activities with the social constructivist approach. The relationship between agency and member states was also discussed. It was found that IRENA has an important role in developing renewable energy policies worldwide as well as in promoting to its members to gain a new identity on its energy preferences by creating knowledge, shaping behaviours and changing norms in international energy structure.

During the foundation process of IRENA, it was obvious that the entrepreneur countries such as Germany, Spain and Denmark were in the right place at the right time. Also, in its first assembly, 75 countries signed simultaneously the Statute of IRENA. It now has 159 member states while the UN has 193 members. IRENA has raised the level of worldwide awareness on the global renewable energy transition. Urpelainen and Graff (2015, p. 162) defined the creation of IRENA as a "miracle" since generally interest in international organizations is waning. Its openness for application to all UN members, and highly simplified membership requirements were seen as an inexpensive way to be low carbon supporting country. The success of IRENA in attracting different countries can be explained by the political activism of the entrepreneur countries as well as the UAE, which is the host country of the headquarters. In addition, Small Island Developing States also played an important role for the wide acceptance of IRENA (Roehrkasten and Westphal, 2013).

Since the preliminary target of the IRENA is to provide transparent information including renewable-energy datasets, analyses and estimations, the agency is considered "epistemic" and "policy-oriented" (Meyer, 2013). Through time, agency developed new research areas such as employment of renewable energy markets, gender distribution in the renewable energy sector, renewable energy roadmaps, etc. The data gathering and transparent sharing of it on its website free of charge have created knowledge among the public, governments, civil society and the private sector. IRENA also organized seminars, webinars and legislator forums for country representatives. In this way, policymakers in

member countries started to be convinced to rapidly adopt renewable energy. While the agency does not apply binding rules on its members, it has formed interactions among individuals, states, and institutions with the socialization process to transfer knowledge as well as norms. Müller (2017, p. 318) states that IRENA may serve to effect change in “energy cultures” through its political artefacts.

IRENA has created competition between international organizations. With the creation of IRENA, the UN increase its struggles to transition into renewable energy, as well as IEA has focused on strengthening research activities and international corporation on renewable energy and energy efficiency issues. IRENA has also created partnerships with organizations including SEA4ALL of the UN, the IEA, and REN21. For this reason, the establishment of IRENA can be seen as a turning point in attracting the attention of international system actors (Esu and Sindico, 2016).

IRENA identified renewable energy as “a key solution” to combat climate change. The agency participated in the UN Climate Change Conferences and co-hosted several organizations such as World Climate Summit.²³ According to social constructivist theory, states act together when they feel a threat, and climate change is seen as a global threat. The agency managed to increase awareness on climate change among the actors in energy sector.

After the UAE became the host country of the agency, the world has seen that an OPEC member and one of the largest oil exporters can change its energy options. The country changed its renewable energy norms and created an identity that supports the renewable energy transition. The UAE’s transferring the headquarters to its capital not only effected this country, but also the countries that are close to it geographically and diplomatically. The Abu-Dhabi Fund Project that was established by the UAE in a partnership with IRENA also increased renewable energy capacities of the developing states. This project created new norms in various regions, especially in developing countries.

When looking at the recommendations that were given to IRENA in the early years, the recognition and reference usage rates of the agency among the members were seen as inadequate and it was suggested to increase the agency’s interactions with the other states and international organizations (Roehrkasten and Westphal, 2012). Recent studies have

²³ For further information see also <http://www.irena.org/events/2018/Dec/IRENA-at-COP24>, viewed 10 December 2018.

shown that IRENA increased its recognition and citations in the policy documents of states. Overland and Reischl (2018) showed that IRENA caught the IEA, which has a high recognition among states and is frequently used as a reference in states' policy documents. However, some recommendations to the agency have not been considered yet. According to Roehrkasten and Westphal (2012), the regional orientation of IRENA tends towards developing countries. They advised the agency to keep its global focus rather than concentrate on developing countries. According to them, the agency could increase its facilities for developing countries as well as in smart grid and storage issues. In this study it was found that the agency has already achieved to create some norms in particular developing regions in Africa, Pacific Region, Latin America as well as Small Island Developing States. This is mostly because the agency's activities are focused on these regions, but it is nonetheless an achievement to cover the globe as it has. Still, IRENA is not effectively active in all regions. It needs to develop efficient activities in developing countries as well as develop further activities specifically in regions such as South Asia, South Europe and Middle East. Figure 3.2 shows the situation very well. IRENA should develop projects all around the world instead of focusing on some special areas. This is also one of its most important targets by its foundation Statue.

Also, Wouters (2017) emphasized that the agency should position itself on issues related to climate change much as Scheer did. When the suggestion of Wouters is examined, IRENA has used non-destructive language to be a global renewable energy hub, especially it has not compared with the renewable energy to fossil and nuclear energies. At least, the agency can use the pros and cons and make fair comparisons on energy types about their environmentally friendliness and cost effectiveness because of its informative feature.

Apart from the previous literature, the thesis has some suggestions for IRENA to be more effective. IRENA should carry out in-depth investigation on a sub-sector level. The agency has analysed renewable energy activities in different concepts, but there are few influential activities on energy-related sectors such as transportation and industry. The agency can tend towards specific sectors for producing effects and changing norms among its members.

Secondly, IRENA should give responsibilities to various countries. When the headquarters' role of the UAE is examined, the responsibility of the country increased its

attention into renewables. The states' identity has been changed from fossil fuel dependent to renewables supporter. The agency can give responsibilities to other states in different regions. It can create different renewable energy identities and facilitate the norms of renewable and sustainable energy. The situation can be improved by organizing meetings in different countries or opening branches in different regions.

This study is essential to analyse IRENA as an international organization and evaluating the effects of the agency in the international structure for norm making and adoption processes on renewable energy. However, the study falls short on some issues because of time limitation. The outcomes of the study could be improved by interviews with IRENA professionals as well as member states' representatives. Also, a poll among member country representatives to understand IRENA's effects in them could be a good method for evaluating the outcomes. The study would be more fruitful by visiting the agency's headquarters as well as witnessing its assembly meetings.

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