Kuwait J. Sci. 46 (1) pp 68-75, 2019

Legal support for integration of renewable energy sources in the energy law of the countries from the international legal position

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Abstract

The development of renewable energy sources contributes to energy and environmental security, preservation of theT environment, the conquest of world markets for renewable energy sources, conservation of own energy resources for future generations, and increased consumption of raw materials for non-energy use of fuel. Therefore, the topic is popular and deserves attention. The main goal of the work is to analyze the legal support for the integration of renewable energy sources in the energy law of countries with an international legal position. The bases of renewable energy sources' regulation, namely their structural composition, component basis, regulation principles are studied in the article. The used methods of analysis, comparison, reasoning, description, gave the opportunity to consider the problems in detail. An understanding of alternative and renewable energy, which in the world are generally considered synonymous was established as a result. It is shown that in the framework of regulating the use and development of renewable energy sources, different countries rely on world trends and form the possibility of stratifying the use of the energy sources being researched taking into account the national potential. The results of the research can be used in decisions on the use of renewable sources for municipal, regional and republican authorities, in order to eliminate the energy imbalance and subsequently increase the basis for the development of economic sectors.

Keywords: Alternative energy sources; energy legislation; fixed tariff; green technology; international legal relations.

1. Introduction

Today, non-traditional natural resources are actively used for power alongside oil, coal, and natural gas. Renewable energy use is increasing in many countries because of its numerous benefits. Thus, many countries are including renewable power in their energy mix. International law uses several designations for these types of energy: renewable, alternative, new, environmentally oriented, and non-traditional. The UN General Assembly Resolution 67/215 of January 21, 2012 aimed to increase the share of these energy sources in the world energy balance. In this document, the various cognates are combined into the single term "sustainable energy".When discussing the trend towards greater renewable energy use, one must acknowledge the fact that until now, the development has received those directions of energy that provided a fairly fast direct economic effect. The social and environmental consequences associated with this development were considered collateral damage. Environmental awareness regarding problems with fossil fuels and the like has led to increased interest and formal discussion on the benefits of clean fuel. However, there is almost no full dialogue between countries on legal regulation (Kapitonov *et al.*, 2016). The development of international energy relations has been affected by clean energy discussions at the international level. Certain international legal agreements are being adopted that will contribute to deepening cooperation between countries regarding the use of renewable energy sources. New international legal norms are being formed. The goal is to encourage countries to reduce or refuse to use traditional energy sources, thereby increasing renewable energy use.To date, there is no single international legal body that regulates renewable energy use, a fact that significantly complicates international legal cooperation. Norms that relate to renewable energy are generally presented in other documents. Some of these are the Johannesburg Declaration on Sustainable Development, the United Nations Framework Convention on Climate Change and the Kyoto Protocol, the Energy Charter Treaty, the Gleneagles Action Plan, and the Delhi Declaration of Principles of International Law Relating to Sustainable Development. The World Trade Organization (WTO) is one international body that concerns itself with issues involving renewable energy sources. WTO interest in regulating energy issues is caused by a number of factors. First, in recent years, countries that have played a significant role in the export, import and transit of energy resources. For example, the Russian Federation since 2012 and the Republic of Kazakhstan since 2015 have joined the WTOs efforts. They are negotiating for the accession of Algeria, Iraq and Libya. Second, the conflicts related to the growing need for energy carriers, the competition intensification in the

energy market, became aggravated. In many countries, governments are providing less energy while private companies, including international ones, are growing. In order to expidite the transition to renewable energy, or even to improve energy efficiency, existing international legal regulatory mechanisms must be urgently reformed. This is especially true for laws related to international energy trade. That is why programs to support the use of renewable energy sources should become a priority for states and, if necessary, receive additional support, for example, in the form of subsidies. However, any government incentives regarding energy production could provoke worldwide economic instability. This is because global markets are directly dependent on the trade of traditional energy sources, like petroleum. As a globally respected organization, the WTO could play an important role in litigating such issues.There are many regional bilateral agreementsbetween countries outlining international legal cooperation. The main objective of such contracts is to further develop renewable energy. Despite the increasing international interest, the legal ramifications are poorly understood. Therefore, the issues of international legal regulation of the renewable energy sector are of considerable scientific interest (Yakimova, 2017).

The diversification of global energy sources to include more clean energy havs far-reaching geo-economical and geostrategic advantages. First, less fossil fuel use means a reduction of greenhouse gas emissions. This will reduce global respiratory problems leading to a healthier and more productive world population. Second, ecological damage from non-renewables will be lessened. Third, countries will find increased stability both from use of clean energy and even export. In essence, international relations will be less prone to energy policy. Because of the health, ecological, financial, and political benefits stemming from renewable energy use, international cooperation between governments is vital in order to promote the development and introduction of renewable energy sources (Pitsykevych, 2015; Younas *et al*., 2015; Xuejun *et al*., 2015).

2. Literature review

One of the problems of international regulatory law for the use of renewable energy sources is the absence of a single conceptual apparatus. Modern society is natural resource dependent on a global scale. Many of these resources are raw materials used for energy production (Getman, 2013). In general, from the legal and economic point of view, "energy" is an independent object of interstate relations. The need to establish international legal cooperation in the extraction, transportation, and use of energy has long made it this. International law has not developed a single qualification of energy (Ásványi *et al*., 2017; Teleuyev *et al.*, 2017). In other words, potential energy is difficult to legal describe since it does not yet exist. The materials from which it shall be produced are commodities, but the energy itself must be quantified. Gladilin & Gladilin (2017) argue that the object of international energy law is not energy as such, but directly the energy resources that this energy produces. In turn, they count primary sources of exhaustible and inexhaustible energy reserves.

According to the authors, these energy resources include oil, natural gas, coal, uranium, solar energy, wind energy, wave energy, tidal energy, transformation of thermal energy of the ocean into electrical energy, hydroelectric power, biomass, hydrogen, and geothermal energy. Vershinin and Gegechkori (2017) posit that since these energy sources will be used in parallel with coal, oil, and gas, counting all energy types as primary sources is the best solution. Raskosova *et al.* (2017) proposed dividing all energy sources into "non-renewable" and "permanent" ones, the latter to include solar and wind. In addition, The authors also often use terms such as "non-traditional or renewable sources of energy".

According to Atrashenko (2017), the fact that International Renewable Energy Agency (IRENA) does not provide a full list of renewable energy sources is fully justified. He believes that it is more correct to point out the principle that underlies the existence of renewable energy sources and provide a short list of the most typical sources. Khubiev (2017) believes that renewable energy includes a variety of different energy resources and technologies, including hydropower, solar energy, wind energy, biomass and geothermal energy. Solar energy is a general term that includes the direct production of electricity from photovoltaic cells and active and passive heating and cooling systems. Wind energy is extracted from separate, autonomous generators or from a set of generators concentrated in one place (a wind farm). Such generators, as a rule, are located in open positions close to the seashore or in mountain passes. Biomass includes a number of energy resources arising from organic material, including pulp, fuelwood and agriculture, wet waste, gas from organic waste, burning solid waste, and the like (Xuejun *et al*., 2015; Younas *et al.*, 2015). Geothermal energy includes both the direct production of electricity through steam and space heating through the circulation of heated water. Certain renewable energy sources were first categorized in The UN General Assembly Resolution 33/148 "UN Conference on New and Renewable Sources of Energy" in 1978 (Resolution A/RES/33/148). The conference defined them as "solar, geothermal and wind energy, tidal power, wave energy and thermal gradient of the sea, biomass conversion, fuelwood, charcoal, peat, energy from draught animals, oil shale, tar sands and hydropower" (p.112).

3. Materials and methods

There are a number of approaches associated with studying renewable energy. For this study, the method of analysis made it possible to divide legal support problems regarding the integration of renewable sources into a multitude of elements (their properties and relations). This helped to structure them more thoroughly. Then, with the help of synthesis, the previously separated parts of the problem were combined into a single whole. The analogy method was used to study the properties of legal regulation on the use and development of renewable energy sources in different countries. Based on these data, the experience of some countries went over to others. A comparative legal research method was also used in this study. It aided the aspect of implementing the provisions for the legislative regulation of the use of renewable sources in the European Union (EU) and Eurasian Economic Union (EAEU) countries. The historical method has been tested for the purposes of structuring the regulation of the issue under study in the process of developing the issue in different countries, taking into account the processes of economic globalization and legal regulation at the United Nations (UN) level.

4. Results and discussion

At first glance, it may seem that the concepts of sources are identical, but such a judgment is incorrect. To derive a timeframe that would most accurately reflect the essence of energy resources, it is necessary to analyze all international documents that define them.The first international act was ECOSOC Resolution 598 (XXI) "Study of New Energy Sources, Excepting the Atom as a Factor of Economic Development" dated May 4, 1956. This resolution defined such energy sources (solar energy, wind energy, tidal energy, geothermal energy, thermal energy of the seas) as "new" (E/RES/598(XXI)). However, this was only one of the variations of the term used in the framework of ECOSOC. In its subsequent resolutions, in particular Resolution 710 A (XXVII) "Economic Development of the Underdeveloped Countries: Energy Sources" from April 17, 1959, the term "unusual sources of energy" is used (Resolution 710A). Then Resolution 779 (XXX), "United Nations Conference on New Sources of Energy (Solar Energy, Wind Energy and Geothermal Energy)", reverts to the definition of "new". Only since the 1970s was the phrase "new and renewable energy sources" officially used . In purely political documents, for example, the G8 St. Petersburg Plan of Action on Global Energy Security 2006, explains why the definition of "renewable energy" and "alternative energy" is different. "Renewable" means solar energy, wind energy, hydropower and biomass, and "cleaner", low-carbon energy is considered "alternative". The Charter of the IRENA can become the main guideline in determining which term should be used. Thus, under Article 3 of the Charter, renewable energy means all forms of energy that are constantly generated by renewable sources. It is the author's prof essional opinion that this definition should be taken as a basis for drawing up international treaties and adopting national legislation, since to date, the IRENA Charter is the only unified act aimed at regulating cooperation between nations in the use of renewable energy sources. In general, the IRENA Charter assumes that renewable energy sources are all forms of energy that are constantly produced by renewable sources, including, in particular, bioenergy, geothermal energy, hydropower, ocean energy (tidal, wave, and thermal), solar, and wind energy.The next problematic aspect is that the list of energy sources that can be qualified as "renewable" varies from document to document. The issue of biofuel deserves special attention. Within the UN, biofuel was defined as a renewable type of fuel of biological origin that is fuelwood, charcoal, manure, biogas, bio-alcohol, agricultural waste and energy-bearing plants. Thus, the definition assumes that biofuel includes biomass rather than the opposite. Furthermore, bioenergy is the energy obtained from the use of biofuel. This approach was applied in the IRENA Charter. In it, the first item among renewable energy sources is bioenergy, which implies all the biofuel types listed above (Saifuddin & Boyce, 2016; Druzyanova *et al*., 2017).Under EU law, there is also no unambiguous understanding of what should be attributed to renewable energy sources. The main legal acts regulating the relevant relations are:

1) Directive 2001/77/EC of the European Parliament and of the Council of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity market (EU Directive 2001/77/EC);

2) EC Directive 2002/91/EC of the European Parliament and of the Council of 16 December 2002 on the energy performance of buildings (Directive 2002/91/EC);

3) Directive 2004/8/EC of the European Parliament and of the Council of 11 February 2004 on the promotion of cogeneration based on a useful heat demand in the internal energy market and amending Directive 92/42/EEC (Directive 2004/8/EC);

4) Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC (Directive 2009/28/EC).

In the beginning, sources of energy included the liquefaction and gasification of solid fuels, the

exploitation of geothermal deposits, and the solar energy use. Later, documents began to delineate the legal regulation of the production, transportation, use and consumption of electricity from renewable sources. Directive 2001/77/EC identified wind, sun, waves, and other sources of hydropower, geothermal energy, etc., among such sources. Directive 2009/28/EC considers renewable energy sources in a complex. In the document, renewable energy sources include wind, solar, aerothermic, geothermal and oceanic energy, hydropower, biomass, gas from organic waste, gas from treated sewage water and biogas. There is also a detailed explanation of aerothermal energy, defining it as power that is obtained in the form of heat in atmospheric air. Geothermal energy is obtained as heat from the subsoil. Hydrothermal energy is obtained as surface water heat. Biomass is the biological fraction of production, waste and biological residues from agriculture, forestry, fisheries, and aquaculture, as well as the biological share of industrial and domestic waste. In regards to national legislative acts in the field of renewable energy, it should be noted that the only similarities are the main issues of legally regulating the use of renewable energy sources. Almost all countries recognize the priority for development of this energy sector, focusing on financial support, as well as establishing interstate relations for technology transfer and experience exchange. As Tsenzharik (2017) rightly notes, the legal regulation of energy conservation is developing in two directions: reducing energy intensity and developing renewable energy sources.

For example, it is typical of the legislation of the Russian Federation to differentiate solar energy, wind, geothermal energy, wave and tidal energy, hydropower, biomass energy, gas from organic waste, gas from sewage treatment plants and biogas among the renewable sources. Another feature is the mention of secondary energy resources, which include blast furnace and coke oven gases, gas methane degassing coal deposits, transforming the waste energy potential of technological processes. Equally complex is the issue of the legal regime of energy derived from traditional sources or nuclear fuel and renewable energy sources, namely, the issue of their identity. The question of identity and similarity of goods is one of the main issues raised in complaints to the WTO. For example, Article III: 4 of the General Agreement on Tariffs and Trade (GATT) deals with obligations to treat similar products on a non-discriminatory basis. Thus, as the first step in assessing whether a less favorable regime really exists on its own, it is necessary to establish that there is a sufficient similarity between goods for the same legal regime. It's important to note that the analogy of the products in this case is established on an individual basis for each specific case. The electricity importer can potentially argue that government-defined higher tariffs or preferential price levels for domestic energy producers received from renewable sources violate Article III of the GATT. In this regard, a number of issues arise that need to be addressed. For example, there is an import of electricity, which is supposedly carried out under less favorable conditions, a commodity for the purposes of Article III of the GATT. Naturally, the establishment of similarity can be emphasized, based on how this electricity was produced. Obviously, the unit of electrical power is identical to any other unit of electricity. Therefore, the physical characteristics of electricity received from different sources of energy (for example, conventional, nuclear or renewable energy sources) indicate the similarity of the product. However, the way electricity is produced is reasonably indicative of their serious difference. In particular, in the case of Canada's renewable energy program, the Appeal Body (determining what can be considered an appropriate market for the purpose of defining the "advantage" under Article 1.1(b) of the Agreement on Subsidies and Countervailing Measures) has made distinctions between electricity received from traditional sources and nuclear fuel, and energy from renewable sources. In this respect, a less favorable regime for electricity produced from fossil fuels or nuclear fuel, compared to electricity produced from renewable energy sources, is fully justified in accordance with WTO rules provided that these types of energy are efficient. Similar conditions are also established regarding a domestic producer of electricity derived from fossil fuels or nuclear fuel. Otherwise, a foreign electricity producer can reasonably complain about a less favorable system for similar products, namely, imported electricity produced from traditional sources or nuclear fuel and domestic electricity produced from traditional sources and nuclear fuel, taking into account discriminatory measures, established with respect to identical goods. On this basis, it can be concluded that there is no common understanding in national or international law of what should be considered a renewable energy source. The Charter of the International Renewable Energy Agency, which is the only unified act aimed at regulating cooperation for the use of renewable energy sources can serve as the main guidelines in determining which term should be used. Thus, on the basis of Article 3 of the Charter, all forms of energy that are constantly produced by renewable sources would fit this definition. Renewable energy sources can enhance the reliability of all forms of the energy supply. In addition, the use of renewable energy sources meets environmental requirements, and in the case of the replacement of fossil fuels, it helps to reduce greenhouse gas emissions and local air pollutants. However, despite the declared goals and priorities

of state policy and the urgent need to improve the efficiency of using fuel and energy resources for the successful development of the country's economy, significant progress in energy saving and the use of renewable energy sources has not yet been achieved in the Russian Federation. This situation is partially explained by the shortcomings of the legal regulation regarding relations arising in connection to the use of renewable energy sources and in the sphere of energy saving. These inadequate regulations at the legislative level led to the adoption of a large number of subordinate regulations in recent years. However, they are not implemented effectively, and many program provisions have not been implemented in practice. For example, the Energy Strategy of the Russian Federation until 2030 envisages the main directions for the development of legislation in the field of energy conservation. In particular, it plans to adopt a new version of the Law "On Energy Saving" which should contribute to:

1. improving the procedure for the regulation of specific energy costs;

2. creating a system of new energy standards;

3. improving the system of state expertise on energy conservation;

4. introducing mandatory statistical reporting on the use of energy resources; and,

5. creating a single mechanism for state control in the field of energy saving and energy efficiency, avoiding duplication of governmental functions in these areas.

In addition, in order to create conditions for economic incentives for business entities so that they may increase the efficiency of the energy resources use, it is necessary to develop draft amendments to the tax legislation, insofar as limiting the attribution of energy resources to gross costs consumed by economic entities and establishing a charge for overspending energy resources in comparison with the norms for consuming energy resources. In the sphere of renewable energy sources of the Russian Federation, it is necessary to develop a large-scale integrated program and ensure its appropriate implementation. International experience shows that countries that have made significant progress in this area have had targeted government policies to support them. Simultaneously, it is necessary to identify three main areas of policy that affect the development of technologies and the market for renewable energy sources (Kapitonov *et al*., 2017):

1. Research and innovation policy: This supports the development of renewable energy technologies from the basic and applied levels to the demonstration phase through budget financing or by attracting private financing;

2. Market promotion policy: This facilitates the promotion of technologies in the marketplace by raising citizen awareness, the competitiveness of technologies, their technical effectiveness, and encouraging producers and end-users to use such technologies; and,

3. Market energy policy: This provides a competitive market environment.

At the same time, in many countries, there is a practice of combining policy in the sphere of energy efficiency and renewable energy sources use within the framework of the overall energy strategy. This is done because combining energy efficiency promotion activities with measures for the use of renewable energy sources provides higher economic, social and environmental efficiency, so it achieves a synergistic effect.

Both energy efficiency measures and measures to promote the use of renewable energy sources contribute to ensuring the reliability of energy supplies and, accordingly, to reducing dependence on imports of traditional energy carriers. They also reduce greenhouse gas emissions. In addition, improving energy efficiency and increasing the share of renewable energy use have similar obstacles. These are subsidized prices for traditional energy resources, inefficient regulation, lack of information, institutional obstacles, and difficult access to financing.

In order to overcome these obstacles, it is recommended that the national legislation provide for legal norms in the two areas under consideration with respect to:

- integrated use of energy certification;
- tax incentives for investment activities;
- special lending instruments;
- financing by third parties; and,
- information and training.

Thus, within the framework of a unified energy strategy, the comprehensive implementation of appropriate measures in the field of energy efficiency and use of renewable energy sources can become an important component for ensuring energy security, diversifying energy supply sources and achieving other goals in the energy sector. Also, activities in the field of energy efficiency and the use of renewable energy sources are an important element of environmental policy and especially climate change policy. The development of energy efficiency and the use of renewable energy sources also contributes to meeting the commitments to reduce greenhouse gas emissions under the Kyoto Protocol.

Participants in the market for renewable energy equipment, which was born in the Russian Federation, are working in difficult conditions today. Like other sectors of the economy, renewable energy faces serious investment obstacles, including a lack of transparency, which does not reflect the prime cost of energy prices, and a weak financial sector. The lack of a special national strategy for the use of renewable energy sources

and an adequate regulatory framework for renewable energy projects further limit the development of renewable energy equipment markets. Improving the overall investment climate by continuing economic, financial, legislative and tax reforms is vital. It is also important to support and expand reforms in the electricity sector in order to eliminate subsidies for traditional sources of energy. As the renewable energy market develops (biomass boilers, wind turbines in remote areas, solar water heaters, small hydropower plants and geothermal plants), new markets for renewable energy equipment will emerge, creating innovative opportunities for competition. Each renewable energy technology requires specific measures to facilitate its entry into the market, therefore in order to reform the energy sector of the economy of the Russian Federation, it is necessary to study the experience of foreign countries with a leading position in the development of renewable energy. A typical example strategy followed by many International Energy Agency (IEA) countries for the development of the renewable energy market includes three main steps: adopting a renewable energy development strategy (setting the task), adopting a legislative framework (establishment of a market structure), and defining implementation mechanisms (setting rules).

5. Conclusions

The activities of the UN system institutions related to certain aspects of renewable energy source use are of a derivative nature with respect to their original functions. On this basis, international intergovernmental organizations in the field of renewable energy could be structured as follows

1. Organizations whose activities with respect to renewable energy sources evolved primarily through the prism of environmental objectives (some specialized agencies and UN programs);

2. International organizations of the fuel and energy complex (OPEC, IEA); and,

3. Organizations that specialize exclusively in renewable energy sources (IRENA, ITER).

The Charter of the International Renewable Energy Agency (IRENA) can become the main guideline in determining which term should be used. This is the only unified act aimed at regulating cooperation in the use of renewable energy sources. Furthermore, it acknowledges by them all forms of energy that are constantly produced by renewable sources. Since the principle of prohibiting the infliction of transboundary damage is a duty of all countries, due to the private-legal nature of this rule, a unified approach to regulating this issue is expected to be developed in the near future.

Adoption of the Convention on the basis of the draft articles on the prevention of transboundary damage from hazardous activities developed by the International Law Commission would significantly accelerate this process, and the existing "soft" law in this area would make the mechanism for regulating interstate relations more appropriate.The definitive main international legal instrument in the field of energy is the Energy Charter Treaty (hereinafter referred to as the “Treaty”) and its Protocol. The Protocol encourages the principles of “fuller reflection of costs, improvements and sustainable development, and cost-effective measures” for the development of energy efficiency policies and wider international and institutional cooperation. The Protocol is currently one of the most progressive international legal instruments on the use of renewable energy sources. The WTO has repeatedly expressed proposals on the adoption of a special multilateral agreement on energy trade. In our opinion, the draft of such a document may include the Treaty with regard to various aspects (i.e. trade, investment and environmental protection) of the relevant energy sectors of the contracting parties. The Treaty can reasonably be viewed as an interstate agreement stemming from the GATT/WTO system, given that the Treaty was established as an alternative to the previously unsuccessful efforts to prepare an energy agreement within the framework of the WTO. The emergence of norms that directly or indirectly regulate the use of renewable energy sources testifies to the establishment of a new order in the energy sector. The norms of the Treaty, the Protocol and its Annexes reflect the process of changing and improving international legal regulation in accordance with the needs dictated by the current worldwide energy and environmental situations.

The main function of the Treaty and the Protocol is the establishment of a single environmentally sound mechanism for regulating energy cooperation between countries.The main shortcoming of the legal regulation of renewable energy sources at the international level is the lack of specific provisions, the insufficient influence of international organizations on states, which is the recommendatory nature of acts of international organizations. The creation of the International Renewable Energy Agency (IRENA) is a positive step towards the creation and support of international energy security in the 21st century. More effective results are brought by the legal regulation of renewable energy sources at the regional level (within the EU, CIS, EAEU, SCO and other regional organizations). Despite the absence of a special agreement on energy, the multilateral framework of the WTO system constitutes the legal basis for regulating international energy trade, including cross-border trade of renewable energy sources. The role of the WTO in ensuring traditional energy security is defined as accidental, albeit

insignificant. On the other hand, the WTO plays a much more significant role in the context of renewable energy sources. In addition, the rules of trade that are provided for by multilateral agreements are also supplemented by provisions envisaged by "group" or pluralistic agreements, provided that the relevant WTO member countries joins them.

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Submitted: 18-04-2017
Revised: 01-08-2017
Accpeted: 27-09-2017

الدعم القانوني لإدراج مصادر الطاقة المتجددة في قانون الطاقة في البلدان ذات الوضع القانوني الدولي

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الملخص

يَسهُم تطوير مصادر الطاقة المتجددة في توفير الطاقة وحماية البيئة والحفاظ عليها، ويعمل على تنافس الأسواق العالمية على مصادر للطاقة المتجددة، والحفاظ على موارد الطاقة للأجيال القادمة، واستهلاك المواد الخام في أغراض أخرى بخلاف استخدامها كوقود. لذلك، فإن الموضوع شائع ويستحق الاهتمام. إن الهدف الرئيسي من هذا العمل هو تحليل الدعم القانوني لإدراج مصادر الطاقة المتجددة في قانون الطاقة في البلدان ذات الوضع القانوني الدولي. ففي هذا المقال، تمت دراسة قواعد تنظيم مصادر الطاقة المتجددة، أي بمعنى: التركيب الهيكلي وأساس المكونات ومبادئ التنظيم. إن الأساليب المُستخدمة في التحليل والمقارنة والاستدلال والوصف أتاحت الفرصة لدراسة المشاكل بالتفصيل. ونتيجة لذلك تم التوصل إلى فهم للطاقة البديلة والمتجددة، والتي تُعتبر بوجه عام مرادفاً عالمياً. وقد تبين أنه في إطار تنظيم استخدام وتطوير مصادر الطاقة المتجددة، تعتمد بلدان مختلفة على التوجهات العالمية وتدرس إمكانية استخدام مصادر الطاقة التي يجري بحثها مع مراعاة الإمكانات الوطنية. يمكن استخدام نتائج البحث في القرارات المتعلقة باستخدام مصادر الطاقة المتجددة في الهيئات الحكومية على المستوى المحلي والإقليمي، للقضاء على اختلال توازن الطاقة، وبالتالي زيادة الأساس لتطوير القطاعات الاقتصادية.