



To be “a developed country” or not to be? The effect of the Paris agreement on Turkish forest law

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Received: 21 November 2018 / Accepted: 7 March 2019 / Published online: 15 March 2019
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Abstract The Paris Agreement (PA), which is an important step toward mitigating climate change, has ascribed new responsibilities to the signatory parties that differ from those of the Kyoto Protocol (KP). This study is focused on the new responsibilities and the reasons why Turkey has not yet assigned the agreement into its own domestic law, although it was signed on April 22, 2016. There are several political and legal reasons for this, but the most important is Turkey’s membership in the OECD as a developed country. Besides, developing countries shall be supported by the Green Climate Fund (GCF) at a \$100 billion budget per year. Turkey needs GCF support in terms of technology transfer, capacity building, and financial in order to achieve the agreement’s goals. Turkey has demanded privileged status similar to the one in the KP, i.e., whether or not to be deemed as a developed country.

The core aim of the PA is to keep global temperature increases below 20 °C by the year 2030, insomuch as to limit temperature increases even further to 1.50 °C. This goal depends on the mitigation of CO₂ levels, which

means that countries should mitigate GHG emissions caused by deforestation and take further actions by primarily abandoning fossil fuels, improving/attaching importance to energy efficiency, and changing/improving land use planning. Within this context, the second part of the study analyzes the efficiency level of forestry legislation and Turkey’s climate policies in terms of the responsibilities to be assigned by the PA. The analysis is based on the question as to what extent the Turkish forestry legislation fulfills the responsibilities ascribed by the PA for preventing deforestation. Consequently, it has been concluded that eight criteria determined by the PA are not adequately included in the Turkish forestry legislation and shall require an amendment on a large scale, particularly when Turkey is deemed as a developed country.

Keywords Turkey · Paris agreement · Climate change · Forests · Development

Introduction

Climate change and its effects, which are among the most prevalent global problems, started to be realized in the 1800s by scientists such as Joseph Fourier, Edme Mariotte, John Tyndall, Svante A. Arrhenius, and Guy Stewart Callendar (Berger and Tricot 1992; Bolin 2007; Van der Veen 2000; Klein et al. 2017). Each of the mentioned scientists succeeded in implementing important developments on climate change, but English scientist Callendar’s works have become a new direction in

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theory (Henderson-Sellers 1990) that, today, works by Callendar are defined as “The Callendar Effect” (Fleming 2007). As can be observed in his work of 1938, he suggested that global warming could be brought about by increases in concentrations of CO₂; he further explained the linear interplay between this concentration and burning fossil fuels (Callendar 1938). Moreover, Callendar suggested this increase to be a positive situation rather than negative, thinking that global warming would increase agricultural production in the cold northern regions and prevent a return to the ice age (Engin 2010). Today, there are scientific studies that prove that almost all of the increase in the proportion of CO₂, the largest waste product of modern societies, is due to human influence (Salawitch et al. 2017).

The warming that started at surface temperatures in the late nineteenth century became even more pronounced after the 1980s and broke global temperature records almost every year with a yearly rise (Türkeş et al. 2000). The research on the impact of this warming gained speed over the years, along with its large-scale negative effects on human health (McMichael et al. 2006); furthermore, figures for bird migration (Lemoine and Böhning-Gaese 2003), marine productivity (Bopp et al. 2001), agriculture (Mendelsohn et al. 1994), and plant diseases (Chakraborty et al. 2000) were projected. For instance, the World Health Organization estimates that about 150,000 people lost their lives over the last 30 years due to excessive rainfall and climate change-related warming, and this amount may be double by the year 2030 (Patz et al. 2005).

Moreover, the most vulnerable countries have already experienced the impacts of climate change, particularly developing states on small islands (Robinson 2018). With the increasing globalization of economic development at the regional and multilateral levels, there is an increasing demand for international environmental agreements. As the field of international environmental law continues to grow, it will play a major role in determining how environmental protection priorities are developed (Housman 1994). Not all threats to nature can be tackled at the national level, and international cooperation is required to combat these threats (URL-1 2019). Modern international environmental law dates to approximately 1972 when countries gathered for the United Nations Stockholm Conference on the Human Environment, and the United Nations Environment Programme (UNEP) was established (Weiss 1992). International law shapes the underlying

framework of the international system for allocating resources, by establishing basic rules about circumstances under which nations can assert property rights in resources. International rules and agreements are the forms in which nations usually express their resource arrangements; they indicate how nations deal with these issues now. Finally, international law provides a process, a set of techniques, and a body of experience that can help nations to forge better solutions to resource problems, i.e., the only tools available for cooperative efforts are those provided by international law (Bilder 1980). In the last century alone, international law has played a significant role in global debates regarding ownership, use, control, and development of land and natural resources (Miranda 2012).

To that end, countries have implemented several international meetings and signed agreements with the purpose of stopping climate change or at least slowing it down. Global climate change was emphasized for the first time in the first World Climate Conference led by the World Meteorological Organization (WMO) in 1979, and the importance of the issue was brought to the attention of the world. In the aftermath, a great number of researches and meetings were carried out in regard to the importance of climate change and steps to take to alleviate this situation. However, the assessment report for the course of action on climate change revealed with scientific findings in 2013 showed that, even though international negotiations had been held since 1979 on the issue, the point reached is quite insufficient (TIPIG 2013). In addition, there are no clear approaches in the present policies to overcome and mitigate the future climatic changes (Vij et al. 2017).

PA, which is thought to end the period where international climate policy has stopped (Stua 2017), was approved on December 12, 2015, by 195 countries and the EU during COP 21, which became the most prosperous climate change COP ever (Kinley 2017). The agreement sets out a more robust institutional framework to enhance transparency around adaptation commitments and progress (Lesnikowski et al. 2017).

Before the COP21, where PA was approved, parties had agreed at the COP 19 in Warsaw to initiate/intensify preparation of their “Intended Nationally Determined Contributions” (INDC) so as to be able to submit well in advance of the Meeting of Parties to the UNFCCC in Paris (Höhne et al. 2014). A total contribution parties 119 of 147 (please see Turkey’s report; URL-2 2015) covering 86% of global GHG emissions were submitted

and took into account the secretariat's Synthesis Report produced on October 30, 2015 (Rajamani 2016). The fairness of contributions to national mitigation can be analyzed in many ways (Pan et al. 2017); further, these INDCs prepared before the PA and the works carried out during KP doubtlessly formed an important basis for PA.

This insufficiency had not caused a negative impact on the willingness to mitigate climate change; on the contrary, the PA, the latest international convention on the issue, was unanimously signed by 195 countries in 2015. Turkey also signed the agreement, but its domestic law has not been adapted due to several reasons. In further parts of the study, Turkey's position to the PA is to be evaluated by considering two time periods as before and after and later on; thus, the reasons for not adapting the agreement to the domestic law are analyzed within the scope of climate change and forest governance.

The main objective of the PA is for it to serve as support for the actualization of the UNFCCC approved in New York in 1992 and for the achievement of its goal. In order to achieve this, it first targets to keep the global average temperature to "well below 2 °C," as in pre-industrial levels, and to maintain efforts toward a 1.5°C temperature limit. By doing so, it is aimed to consolidate the ability of countries to deal with the impacts of climate change in such a manner that it will not threaten the climate resistance and low emission food production and provide the necessary financial flow.

The agreements signed before the PA ascribed the countries with similar predetermined commitments expected to fulfill the commitments. Nevertheless, with PA, in order to achieve the main objective, a party primarily experiences unique situations such as different emissions levels, emissions reduction occasions, different risk profiles from a changing climate, and different resource requirements (Levin et al. 2015). Accordingly, the countries shall consider their renewable energy potentials, agricultural activities, forestation levels, and waste product amounts and then calculate the total amount to be reduced by determining how much GGE should be reduced from each of the titles listed above (Karakaya and Sofuoğlu 2015). According to Articles 4/8 and 9 of the agreement, these INDCs need to be prepared in a clear manner and submitted to UNFCCC every 5 years.

Parties are categorized as "developed countries" and "developing countries" under PA, and Turkey is deemed

as a developed country as a result of its OECD member status. However, according to the World Economic Situation and Prospects (2019), Turkey is included among the developing economies (according to real GDP growth, unemployment rates, consumer price inflation, and real effective exchange rates) and upper-middle-income countries of Asia. Therefore, it is clearly stated that Turkey's demand for a different and unique position was similar to the one in UNFCCC and KP so that it could use the green climate fund while making an investment on environmentally friendly technologies as a developing country. Turkey's demand was placed on the agenda of COP23 held in Bonn/Germany in 2017, and Jochen Flasbarth, chief negotiator for climate change and the undersecretary of the German Federal Ministry of Environment, was decided to be the negotiator between Turkey and the United Nations (URL-3 2017). The process is still in progress; therefore, no amendment regarding Turkey has been made yet.

According to Richards, who examined the INDCs prepared by 160 countries for per the PA, forestry is well represented as the center of mitigation activities in the UNFCCC (153 parties) (Richards et al. 2016). Forest-related mitigation measures are more frequently expressed than agricultural measures; 109 parties intend to use forest management, deforestation, afforestation, or reforestation to meet their reduction commitments.

Materials and methods

Basic determinative criteria on afforestation in international conventions

In the criterion selection, PA's responsibilities toward a country are taken into consideration. Here, first, the criteria in the PA to be evaluated have been selected in order to identify the adaptation level of Turkey's national legislation to the responsibilities imposed by international conventions. Because forest ecosystems are defined in PA as one of the sink areas, "the necessity of their protection and enlargement" is directly emphasized; further, "the protection and enlargement of forests" and "sustainable forest management" have been determined as two primary criteria. The third criterion has been determined as "inventory detection," one that is among the most important provisions of the PA and is the identification of the potentials of the country parties. The necessity of "reporting and planning" of these

Table 1 The constitution and the laws

The Constitution of 1982 No 2709 Turkish Constitution	
The Law No. 6831 of 1956	Forest Law
The Law No. 2872 of 1983	Environmental Law
The Law No. 2873 of 1983	National Parks Law
The Law No. 4122 of 1995	The Law for National Afforestation and Erosion Control (abbr; Afforestation Law)
The Legislative Decree No. 645 of 2011	Statutory Decree on the Organization and Functions of The Ministry of Forestry and Water Affairs (abbr; Ministry Law)
The Law No. 3234 of 1985	Statutory Decree on the Organization and Functions of the General Directorate of Forestry (abbr; Directorate Law)

potentials every 5 years has been specified as the fourth criterion. PA orders encouragement and financial support, particularly for the developing countries, for reducing/mitigating climate change and demands reports on how and to what extent this financial support is used. “Encouragement and financial support” has been determined as another criterion in order to reveal national support in addition to the emphasis on encouragement and financial support. Development and transfer of technology are also emphasized in the PA. Therefore, the sixth criterion has been determined as “technological development and transfer.” Another important criterion of PA has been determined as “national and international collaboration,” i.e., the developing of technologies and transferring these technologies from developed countries to developing countries. Finally, because promoting public awareness, along with training and public participation about climate change and preventability, is emphasized, “public awareness, education and public participation” have been determined as the eighth and last criterion.

Within the next step of this study, it will be explained how the determined eight criteria in the agreement will be investigated in Turkish legislation and the way they are evaluated. Table 1 shows the selected laws related to forestry, the constitution being in the first place, in this regard.

Undoubtedly, it is not possible to limit the environmental and forestry legislation by these laws alone.

Apart from that, although there are numerous legal arrangements indirectly related to the issue, many legal issues have been covered by the regulations. However, because of a wide range of scope, the study has been decided to be conducted only at the level of laws, considering the hierarchy of norms. Therefore, the study has been conducted at the level of laws so that, with the presence of relevant principles in the laws, the discretionary authority limits of the administration shall be kept, and the directives have been excluded from the study such as the Climate Change Strategy of Turkey (ÇŞB 2019), the National Action Plan on Climate Change (ÇŞB 2011), and the National Strategy and Action Plan to Combat Desertification (OSIB 2015). Those regulations are important and include provisions for mitigating the effects of climate change.

The study has been based on the determination of the situation of the Turkish Forestry Legislation listed above when compared with the eight criteria that are determined as elements of afforestation. The analysis begins with inquiring the presence of the related criterion in the related law and, in the event of the presence, continues with scoring according to Table 2 the impact and sufficiency level of the current provision on afforestation.

Coşkun and Gençay (2011), Elvan (2013), and Elvan and Türker (2014) previously used the method in this study, which was accepted as reliable. While scoring, if the selected criterion is regulated more than once in law, it has been given the highest score. Then, if there are

Table 2 Scoring chart

The law does not include “any provision” on the issue	0
The law includes a “negative,” “direct,” or “indirect” provisions	1
The law includes a “positive,” “direct,” or “indirect” provision, but it is “insufficient”	2
The law includes a “positive,” “direct” provision, and it is “sufficient”	3

both positive and negative regulations, the score has been calculated as the average of.

Findings

Each determined criterion has been inquired in the selected law; further, its sufficiency has been scored and evaluated under different categories in different charts so as to obtain a forest law compliance outlook.

Protection and enlargement of forest criterion

PA is based on the protection of sinks and reservoirs; further, it is regulated that the parties should protect and enhance the forest ecosystem properly. Within this context, the presence of measures to be taken against forest fires, forest crimes (e.g., illegal logging, illegal transporting, occupied land, and illegal pasturage), insects, and fungus hazards that may arise parallel to the temperature increases caused by climate change has been inquired under this title. Each item has been scored

according to Table 2, and the results are indicated in Table 3.

When Turkish forestry legislation is evaluated in terms of protection, it has been confirmed to be in good condition in general. The reason for the score not being higher is the presence of negative regulations in the constitution and the forest law. Some provisions such as the designation of forests for the other purposes, the application of Article 2/B, etc., cause scores to decrease. Within this context, it can be concluded that Turkish forestry legislation is close to a positive and adequate level as per the PA in terms of the protection and enlargement of forests. In order to increase the score, it is necessary to either remove the negative regulations from the legislation or amend them so that the activities in question shall be performed without damaging/ degrading the forests.

Sustainable forest management criterion

According to PA protection of forests, their sustainable management plays an important role in the enhancement of forest carbon stocks in the developing countries. The

Table 3 Evaluation of the criterion “the protection and enlargement of forests”

Legislation	The protection and enlargement of forests	Score
The Constitution	Article No. 169: The state shall adopt the necessary laws and take measures for the protection of forests and the extension of their area.	3
	Article No.169/4; 170: Degrades formerly forested lands before the date December 31, 1981 (negative article).	1
Forest Law	Article No.14; 91; 68; 69; 75. Forest crimes and punishments are identified for the protection of forests. The importance of fighting with forest fires is emphasized.	3
	Article No. 57: Issues related to afforestation are organized to increase forest areas.	
	Article No. 26: The production on state forests shall be run by the state in order to provide protection of forests in human–forest relations; to base the production on usage value and to bring about the principles of multilateral utilization in forestry and management.	1
	Article No. 2: Degrades destroyed formerly forested lands and with Article No. 7 allows activities such as mining, energy transmission lines etc. which is a negative regulation (negative article).	
Environmental Law	Article No. 3/j and 9: The technical, administrative, financial, and legal arrangements to prevent environmental pollution and for the protection of the ecosystem and natural resources that consist the natural environment and are regulated by the ministry.	3
	Article No. 20/l and more: Administrative fine for stubble fire; if the area is close to forests, then the fine is increased fivefold.	
National Parks Law	Article No. 13: Technical activities are carried out to ensure the protection, development, and maintenance of forests and natural assets.	3
Afforestation Law	Article No. 1: The aim of this law is to protect the forests and increase the growing stock.	3
Ministry Law	Article No. 2: Establishing policies for the protection, development, operation, and afforestation of forestlands are the duties of the ministry.	3
Directorate Law	Article No. 2, 7, 11: Protection and improvement of forest resources, afforestation activities, combating forest pests, and preventing illegal use of forests are listed among the duties.	3

Table 4 Evaluation of the criterion “sustainable forest management”

Legislation	Sustainable forest management criterion	Score
The Constitution	Article No. 169: The state shall adopt the necessary laws and take measures for the protection of forests and the extension of their areas.	2
Forest Law	The criteria for the protection and enlargement of the forests indirectly meet the criterion for sustainable forest management.	2
Environmental Law	Article No.3/c: Authorized institutions that make decisions on land use and resource utilization and evaluate that the project shall observe the sustainable development principle in decision-making processes. (d) The advantages of the economic activities to be carried out and their impact on natural resources are considered within the frame of the sustainable development principle on a long-term basis.	2
National Parks Law	Article No. 13: On the forests, scrub, and heathers and the lands with different uses located on the grounds covered by this law, technical activities are carried out with regard to forestry plans based on multilateral use and protection principle to ensure the protection, development, and maintenance of forests and natural assets.	2
Afforestation Law	No relevant provision is found.	0
Ministry Law	Article No.2/b: The ministry is responsible for the development of policies for the protection of nature; designation of protected areas; the protection of national parks, nature parks, natural monuments, natural conservation areas, wetlands, biodiversity, game, and wildlife; managing, developing, and governing of those areas.	2
Directorate Law	Article No. 2: (a) Planning and management of forest resources in harmony with the ecosystem and (c) ensuring the sustainability of forest products and services are listed among the duties.	3

presence and sufficiency of policies compatible with sustainable and holistic management in the national legislation, therefore, has been inquired under this title, and the following results have been gathered (Table 4).

Sustainable forest management is important for the future of the forests. The forestry in Turkey complies with the standards composed during the Ministerial Conference on the Protection of Forests in Europe in terms of sustainable forest management and implementing related international decisions. The General Directorate of Forestry periodically organizes workshops concerning sustainable forest management and submits reports about the status of the forests in Turkey in terms of six sustainable forest management criteria. However, the score of the sustainable forest management criterion cannot reach a sufficient level because the activities are not at a law level, and the legislation is outdated. A low score of the sustainable forest management criterion, which has a close relation with protection criterion, is due to not being covered by laws rather than not being regarded. Therefore, this study suggests that sustainable forest management criteria should be involved while updating the legislation.

Inventory detection criterion

PA depends on the country parties forming their own INDCs. In order to form the INDCs in a reliable manner, it is necessary to implement inventory detection, which

is an important criterion of the PA. Related legislation has been inquired about inventory detection for the calculation of forestlands and their carbon sequestration potentials under this title. The results are indicated in Table 5.

Designation of forests is necessary to calculate the carbon sequestration potential. In Turkey, forest inventory detection is provided through forest management plans. Regular design of forest management plans began in 1963, and the plans were completed in 1972 (OGM 2015). When viewed from this aspect, The General Directorate of Forestry is responsible for forest inventory detection, and the score for the presence of related provisions both in the organization and functions of the General Directorate and in the Forest Law is quite close to a “sufficient” level. However, when other laws are involved in the medium, the general score has been encountered at a lower rate. This situation is thought to be caused by not being included in secondary legislation, because the primarily related laws include relevant provisions adequately, rather than being perceived that inventory detection is conducted insufficiently or is not conducted at all.

Reporting and planning criterion

Developing countries are obliged to report their capacity development plans, along with their policies, activities, measures, and progress in implementing

Table 5 Evaluation of the criterion “inventory detection”

Legislation	Inventory detection criterion	Score
The Constitution	Article No. 166: The state is responsible for the inventory detection of the resources of the country. Article No. 169: The regulation stating that the borders of the forests cannot be narrowed down is implicitly related to the designation of forests.	2
Forest Law	Article No. 7, 8, 9, 10, 11, and 12: These articles include regulations on performing land surveys of forests, which means the designation of forestlands. Article No. 26: The article states that forest management plans (hence, inventory detection) shall be prepared by the state.	2
Environmental Law	Article No. 3/h: Obligatory standards for ensuring the protection of the environment, the prevention and clearance of pollution; market-based mechanisms such as taxes, fees, share, and incentives for renewable energy sources and clean technologies, emission charges, contamination charges, and emission trading. Economic means and incentives shall be implemented.	2
National Parks Law	Article No. 3/2: Nature parks, natural monuments, and natural conservation areas shall be designated with the consent by the Ministry of Agriculture and Forestry on both forestlands and the lands with forest characteristics.	2
Afforestation Law	Article No. 2 (Detection and Consent on State Forestlands): State institutions and organizations and natural and legal persons may be permitted free of charge for the purpose of fulfilling afforestation activities and activities to combat erosion based on the principles and priorities designated by the Ministry on the lands where deforestation occurred due to several reasons, except for fire, and on the lands reserved for afforestation according to the forest management plans within the borders of forestlands.	2
Ministry Law	Article No.2/b: Developing policies for the purpose of preserving the environment and designating the areas to be conserved are listed among the duties of the ministry. Article No.8/a: The activities related to the designation of protected areas, national parks, nature parks, natural monuments, natural conservation areas, and wetlands are listed among the duties and responsibilities of the ministry.	2
Directorate Law	Article No.2: (c) Reserving recreation areas, urban forests, research forests, arboretums, biodiversity protection areas, model forests, and protection forests; protection of these areas; governance of these areas; and having these areas governed by third parties; (h) any kind of research and development activities; fulfilling activities related to inventory, printing, publishing, and advertising; designing projects and publicizing the results; marketing these results at home and abroad are listed among the duties and responsibilities of the General Directorate. Article No. 8: Conducting activities related to making cadastral surveys of the forests is listed among the duties and responsibilities of The Forest Cadaster and Ownership Department. Article No. 9: (b) Evaluating the inventory data required by forestry services; regulating mapping and photogrammetry activities are listed among the duties and responsibilities of The Forest Management and Planning Department.	3

those in their INDCs clearly to be submitted to UNFCC every 5 years. It is important to determine the land use, considering the characteristics of the land and designing the forestry management plans in a multifaceted and compatible manner with other planning stages. It is crucial to have an efficient and integrated plan for the sake of sustainable management understanding and the rational use of resources. This responsibility ascribed by the PA for the countries, therefore, has been picked as another criterion to be inquired in the related legislation. The score for the reporting and planning criterion is indicated in Table 6.

When the results are evaluated, it can be stated that the level of the criterion “planning and reporting” is not

sufficient. Nevertheless, Turkey has prepared its first INDC—which includes plans and policies to be implemented for energy, industry, transport, buildings and urban transformation, agriculture, waste, and forestry; under the title of forestry, there are two important commitments: to increase forest areas and prevent land degradation, along with implementing an action plan on forestry rehabilitation and national afforestation campaign—and submitted it to UNFCC as per the PA. However, as a result of insufficient adaption of the legislation considering the planning and reporting criterion, which is a base for INDC preparation, some uncertainties such as not being a country party to the PA yet and to be assumed whether as a developed country or as a developing country have been observed.

Table 6 Evaluation of the criterion “reporting and planning”

Legislation	Reporting and planning criterion	Score
The Constitution	Article No.169: New forests shall be grown on the burnt-out forest areas. Article No. 166: The state is responsible for the inventory detection of the resources of the country, planning the efficient utilization of these resources, and establishing essential organizational structures for fulfilling the aforementioned responsibilities.	2
Forest Law	Article No. 26: It is stated that forest management plans shall be designed by the state. Article No. 59: Real and legal persons subject to private law that are wanted to plant trees on their own lands shall be provided with technical support in planning, project drawing, and implementing those projects by the forest administration in the event that the owners of these mentioned lands demand technical support.	2
Environmental Law	Article No. 10: The institutions, establishments, and businesses that are likely to cause environmental problems as a result of activities they are planning to practice are obliged to submit an environmental impact assessment report or a kind of project information file.	2
National Parks Law	Article No. 4: The ministry prepares the development plan covering the protection, use, establishment, development, and running of the areas designated as national parks considering their characteristics.	2
Afforestation Law	Article No. 2/2: The activities on the lands reserved for afforestation shall be inspected by the competent forest administration in every six months and the progress of the activities shall be reported.	3
Ministry Law	Article No. 8/a: The Directorate General for Nature Conservation and National Parks is responsible not only for the designation of national parks, natural parks, natural monuments, natural conservation areas, and wetlands but also the conservation, development, administration, governing, and inspection of these areas that are registered by the Ministry of Environment and Urban Planning.	2
Directorate Law	Article No. 2: (a) Managing forest resources in harmony with the ecosystem and with the flora and fauna assets by taking into account their ecological, economic, and sociocultural benefits; planning in a multifaceted and a participatory manner. (d) Afforestation and erosion control activities on any kind of lands either within or out of the borders of the forests; rangeland improvement related to forests; combating desertification; flood and avalanche control activities; designing and implementing integrated water basin projects are listed among the duties and responsibilities of the general directorate.	2

Encouragement and financial support criterion

The agreement is considered necessary to encourage mitigation efforts by the developing country so that it can maintain enhancing its efforts. It is emphasized that policy approaches and positive incentives for mitigating the emission amounts, particularly caused by deforestation and forest degradation, are of great importance. The necessity of encouragement for alternative policy approaches such as joint mitigation and adaptation for the sake of integral and sustainable management of forests is regulated by the agreement as well. Encouragement is one of the important elements to prevent deforestation and to expand current forests. It is extremely important to allocate funds from the budget for any kind of activities to prevent deforestation, to financially support the projects related to the issue, to meet the technical equipment requirements of the related administration immediately and to encourage the administration. The following results (Table 7) have been obtained when all the activities that can be evaluated under the title “encouragement and financial support” included in the legislation are analyzed.

The presence of incentives in the legislation for improving forests is revealed to be close to sufficient levels, i.e., encouraging and financially supporting the development of forests; in addition, the high level of protection criterion constitutes the strength of Turkish forestry legislation.

Technological development and transfer criterion

According to the agreement, countries should collaborate in fully implementing the development and transfer of the technologies in terms of improving flexibility against climate change and reducing GHG emissions. The agreement aims to facilitate capacity-enhancing technology development, transfer, and utilization in order to motivate adaptation and emission reduction activities, particularly in countries that are affected by climate change. Therefore, the national legislation has been analyzed regarding developing technologies to expand forest areas and to enhance the capacity of current forests, thus keeping up with the latest technologies and transferring them and facilitating the implementation of these

Table 7 Evaluation of the criterion “encouragement and financial support”

Legislation	Encouragement and financial support criterion	Score
The Constitution	Article No. 63: The state ensures the protection of the historical, cultural, and natural assets and their values; takes supportive and incentive precautions.	2
Forest Law	Article No. 59: Real and legal persons subject to private law that want to plant trees on their own lands shall be provided with free technical support in planning, project drawing and implementing those projects by the forest administration. Article No. 61: Afforestation of the lands which are outside the borders of forests and afforestation of which are deemed necessary shall be carried out as per the plan prepared by the General Directorate of Forestry. Article No. 63: Various kind of support on afforestation plans and informational assistance on planting shall be carried out by the forest administration free of charge.	3
Environmental Law	Article No. 3/h: Obligatory standards for ensuring the protection of the environment; the prevention and clearance of pollution; market-based mechanisms such as taxes, fees, share, and incentives for renewable energy sources and clean technologies, emission charges, contamination charges, emission trading; economic means and incentives shall be implemented.	3
National Parks Law	No relevant provision related to the criterion is found.	0
Afforestation Law	Article No.11/2: The Ministry of Forestry, the Ministry of Environment, the Directorate of Religious Affairs, Turkish Radio and Television Association, and the Directorate General of Press and Information shall carry out the necessary promotional activities to encourage afforestation and erosion control and to encourage membership in foundations established for the mentioned purposes. Article No. 12: All the expenses for afforestation, maintenance, and protection of the forests established as per the provisions of this law shall be deducted from income and corporate tax basis.	3
Ministry Law	Article No. 7/1: (a) Supporting plans and projects for the purpose of protection of soil and improvement of natural resources are listed among the duties of The General Directorate of Combating Desertification and Erosion.	2
Directorate Law	Article No. 2: (f) Supporting private afforestation, improvement, and erosion control activities of real and legal persons and establishment, operation, and marketing of nursery of these mentioned persons are listed among the duties of the General Directorate. Article No. 11: (b) Encouraging and supporting the private afforestation and improvement activities carried out by both real and legal persons and state institutions and organizations are listed among the duties of The Department of Afforestation. Article No. 14: (d) Encouraging real and legal persons to establish nursery gardens, to produce seeds, to govern these establishments, and to commercialize them are listed among the duties of the Nursery and Seed Department.	3

technologies. The following chart (Table 8) indicates the results.

When the presence of technological development criterion, which has the lowest score of all evaluated criteria up to this point, in the legislation is evaluated, it has been understood that some deficiencies exist in terms of legal regulations on developing technologies rather than involving technologies in the issue. It is essential to amend the legislation in terms of technology development and transfer, i.e., the technology mutually in order to make up the deficiency.

National and international collaboration criterion

PA places great emphasis on national and international collaboration. In particular, it has been

emphasized that developed countries need to share innovative technologies with developing countries and collaborate with them. Besides, the importance of national collaboration on the most up-to-date techniques to be used in reducing the impacts of global climate change has been emphasized. In this context, Table 9 indicates the presence of regulations about national and international collaboration in national legislation.

When the score is analyzed, it is observed that Turkish forestry legislation is quite sufficient in terms of national collaboration. However, as for international collaboration, the result is insufficient. Once international collaboration is attached, in order to increase the international collaboration ratio of the legislation, an important criterion of PA shall be met.

Table 8 Evaluation of the criterion “technological development and transfer”

Legislation	Technological development and transfer criterion	Score
The Constitution	Article No. 166: Efficient use of resources is aimed. Development initiatives shall be carried out according to this plan.	2
Forest Law	Additional Article No. 8: Higher education institutions, except for those established by real or private legal entities or foundations, might be permitted to build facilities for the purpose of education and research on the lands assumed as forestlands as per the third paragraph of the Article No. 17 of this law for a fee.	2
Environmental Law	Article No. 3/f: It is essential to use environmentally compatible technologies that reduce waste production at the source and ensure the recycling of the wastes in order to use natural resources and energy efficiently. Article No. 3/h: Obligatory standards for ensuring the protection of the environment, the prevention and clearance of pollution; market-based mechanisms such as taxes, fees, share, incentives for renewable energy sources and clean technologies, emission charges, contamination charges, emission trading; economic means and incentives shall be implemented.	2
National Parks Law	Article No. 13: On the forests, chaparral, and heathers and the lands with different use located on the grounds covered by this law, technical activities are carried out with regard to forestry plans based on multilateral use and protection principle to ensure the protection, development, and maintenance of forests and natural assets.	2
Afforestation Law	No relevant provision related to the criterion is found.	0
Ministry Law	No relevant provision related to the criterion is found.	0
Directorate Law	Article No. 7: (b) Enriching forest firefighting techniques, building fire towers, and keeping them ready for service. (c) Improving forest firefighting techniques and minimizing the damages caused by fire by reducing the time spent for firefighting are listed among the duties of Forest Fire Combating Department. Article No. 22: (b) Identifying primary forest research areas, research programs and projects and ensuring the execution and finalization of the projects are listed among the duties of Foreign Relations, Training, and Research Department.	2

Public awareness, education, and public participation criterion

The PA emphasizes that the importance of education, public awareness, public participation, access to information, and collaboration at all levels of every aspect of the subject is admitted and invites the countries to the conference of the parties in order to submit their contributions to capacity-enhancement activities that are to be fulfilled considering the issues mentioned above. The agreement also regulates that countries are obliged to collaborate in taking precautions in order to enhance their activities such as education on climate change, public awareness, and access to information. While national legislation is being analyzed under this criterion, not only the education of the society but also the education of related personnel has been evaluated. The results are shown in Table 10.

It has been observed that the public awareness criterion has a quite good score average, and national legislation attaches importance to the issue. Public awareness and public support are important for the country, 28% of which consists of forest, for the purpose of protecting and expanding forest areas. In this context, legislation

being prepared in this way has been determined to be positive.

Conclusion

Based on the 2015 data (which will be updated in 2020), Turkey has 22.3 million hectares of forest that covers approximately 28.6% of the country's surface area. The distribution of forest areas to main functions is 50% economical, 42% ecological, and 8% sociocultural (OGM 2015). Due to its biodiversity richness, Turkey's environmental conservation movements are as important to the world as they are for Turkey (Coskun 2005). As historical development shows, the pressures on the environment will not diminish in the future but will increase (Ayanoglu 1995). Yet, deforestation and its underlying drivers in Turkey have been in flux constantly over the past 80 years (Gençay et al. 2018). Because of the traditional forest exploitation methods/habits of the society in pre-republic period, most of the forests (99.9%) are still under the state ownership (Velioglu 2006) and the state fulfills duties through the Ministry of Agriculture and Forestry and its affiliate, the General Directorate of Forestry. But there is growing consensus

Table 9 Evaluation of the criterion “national and international collaboration”

Legislation	National and international collaboration criterion	Score
The Constitution	Article No. 56: Every citizen has the right to live in a healthy and balanced environment. It is the duty of the state and its citizens to improve and to protect the environment and to prevent pollution. Article No. 170: Precautions ensuring the cooperation between the state and villagers living either in the forests or near the forests on issues such as improving the village, protection of both the forest and its integrity, and taking care of the forest and its operation shall be taken.	2
Forest Law	Article No. 81: The reeve and the council of the villages located in or around the forests are obliged to cooperate with the forestry organization for protecting state forests that remain within the borders of the mentioned villages.	2
Environmental Law	Article No. 3/b: The ministry collaborates with local authorities (with professional chambers, unions, and nongovernmental organizations as well when necessary) in any activity related to protection of the environment, prevention of environmental degradation, and the clearing of pollution.	2
National Parks Law	Article No.16/2: In order to protect the resource value of lands covered by this law and to ensure the use of these lands, the Ministry of Forestry and Water Management shall conduct the necessary activities in cooperation with related organizations and institutions.	2
Afforestation Law	Article No. 4: The Ministry of Environment shall carry out afforestation and erosion control activities where necessary and shall cooperate with related institutions technically to have these activities carried out.	2
Ministry Law	Article No. 2/d: Carrying out the arrangements at the national level for the purpose of monitoring and contributing to the international activities that are within the scope of the ministry in cooperation with related institutions is among the duties of the ministry. Article No. 8: (d) Determining the principles of protection and use in the areas designated by international protection conventions. (e) Taking measures to protect the plant and animal species and areas protected by international conventions and cooperating with related organizations are listed among the duties of the ministry.	3
Directorate Law	Article No. 2: One of the duties of the general directorate (1) is to work in order to spread the use of forest products and services; to work in close cooperation with the private sector, nongovernmental organizations, and universities that produce, process, market, import, and export all kinds of forest products; to mentor these organizations both at home and abroad and to implement projects.	3

that Turkish legislation related to forests and environment is weak in comparison with that of developed countries and acts as a constraint on participation by virtue of its command and control approach (Güneş and Coşkun 2005). In addition, the PA, which is an important step in mitigating climate change, ascribes various responsibilities on country parties to the agreement. Although Turkey has signed the agreement, it has yet to adapt its domestic law because of not being assigned as a developing country in the agreement. Turkey has demanded its position to be replaced as a developing country, as the PA ascribes different responsibilities on developed countries and developing ones. Turkey is concerned that it may encounter difficulties in fulfilling the responsibilities if it is assigned as a developed country. Therefore, the study aims to identify to what extent Turkey’s legislation meets the criteria that have been designated by the PA for developed and developing country parties and how well it meets the terms of the agreement.

For this purpose, of eight criteria to be used in reducing the effects of climate change and adaptation have

been selected from the PA, and the present proficiency level of these criteria in the national legislation has been analyzed. Figure 1 indicates the average score of the criteria and the national legislation. The best score belongs to Decree-law on the Organization and Duties of the General Directorate of Forestry among the national legislation, and the best score also belongs to “the protection and enlargement of forests” criterion among other criteria.

The Constitution of the Republic of Turkey, which has one of the lowest scores in terms of legislation, actually includes provisions that are expected from a constitution, as constitutions are the highest legal norms of a country and the reason they constitute abstract provisions. They usually leave the detailed provisions to the lower legal norms. In this context, although the score is low, the Turkish Constitution, after determining the general frameworks, guides the detailed regulations to the sublegal and administrative regulations. Because these general frameworks are seen as positive and sufficient, it is accepted that the constitution contains sufficient provisions.

Table 10 Evaluation of the criterion “public awareness, education, and public participation”

Legislation	Public awareness, education, and public participation criterion	Score
The Constitution	Article No. 56: Every citizen has the right to live in a healthy and balanced environment. It is the duty of the state and its citizens to improve and to protect the environment and to prevent pollution.	2
Forest Law	Article No. 62: The General Directorate of Forestry makes the necessary publication and propaganda in order to enroot and spread the love for trees. The principles regarding the assignment of students and soldiers for planting and maintenance of trees and the principles on teaching the benefits of the trees to the students shall be regulated through the directives that shall be prepared with the collaboration of the Ministry of Agriculture and Rural Affairs, the Ministry of National Education, the Ministry of Forestry, the Ministry of Youth and Sports, and the Ministry of Defence.	2
Environmental Law	Article No. 3 (e) The right to participate in the formation of environmental policies is essential. The ministry and local authorities are responsible for providing a participation environment for professional chambers, unions, nongovernmental organizations, and citizens to use their right to participate. (ı) It is essential to include the subjects related to the environment in the curriculum of the formal education institutions under the Ministry of National Education starting from the pre-school stage for the purpose of environmental protection and developing environmental awareness in public.	3
National Parks Law	Article No. 16/2: The Ministry of Forestry and Water Management collaborates with related institutions and organizations on the training of the nearby villagers and villagers located within the borders of preserved lands as territory guides.	2
Afforestation Law	Article No. 11: Turkish Armed Forces and the Ministry of National Education shall include and provide applied training on afforestation and erosion in their curriculum. The Ministry of Justice also shall provide the same training in prisons and detention houses in order to spread the love for trees and forests. Article No. 4/d: The Ministry of National Education establishes “School Forests” by making each student plant not less than three trees per year on the appropriate places allocated by the Ministry of Forestry, governorates, district governorates, and municipalities. Field preparations are under the responsibility of the institutions that allocate the field.	3
Ministry Law	Article No. 7/c: Carrying out research and development activities in cooperation with the universities and research and development institutions and conducting education, publication, and promotional activities are among the duties of the ministry.	2
Directorate Law	Article No. 2: (ı) Carrying out any kind of activities for informing the public about forests and forestry. (ğ) Providing all kinds of pre-service and in-service training required by the service or having those pieces of training provided are listed among the duties of the directorate. Article No. 22: (e) Preparing the training plan of the general directorate organization and carrying out pre-service, in-service, and vocational training activities is one of the duties of Foreign Relations, Training, and Research Department.	3

Because Decree-law on the Organization and Duties of the General Directorate of Forestry, which has the highest score of 2.8, sets the necessary provisions for implementing and has been regarded as a highly sufficient law. However, what is more important here is to what extent the relevant law would be successful at the implementation stage. The General Directorate of Forestry (OGM) reports that not only the amount of forest areas but also the quality of the forests increases day by day in Turkey (OGM 2015). Therefore, it can be stressed that the Statutory Decree on the Organization and Functions of the General Directorate of Forestry is successful in practice.

The general average of the legislation has been calculated as 2.2, and it is thought to be insufficient, according to the score given in Table 2. It is insufficient, particularly in meeting the responsibilities

that PA imposes on developed countries. If Turkey is assigned among the developed countries, and if inadequate provisions in the national legislation are to be amended with the comprehensive provisions, then, consequently, the mentioned general average score would be increased; thus, it can be regarded as sufficient and positive. Therefore, whether or not Turkey is assigned as a developed country is quite important for its legislation in terms of meeting the criteria of the PA.

Our results, wherein the general average of the criteria has been calculated as 2.2, the most important deficiency has been revealed in technological development and transfer. Turkish legislation does not meet this criterion, which imposes the related responsibility mostly on the developed parties. Sustainable forest management criterion has also been revealed to be insufficient

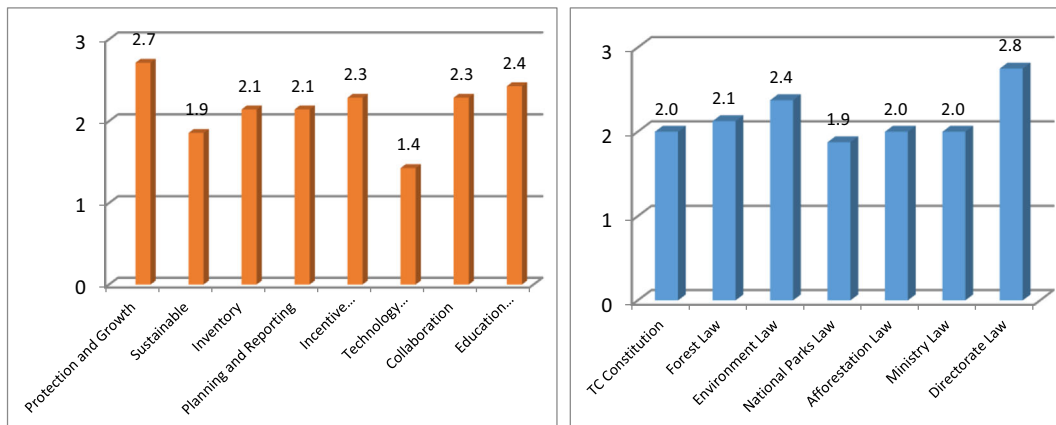


Fig. 1 Scores of the national legislation and the criteria

and is concluded that Turkey needs to address the issue comprehensively while updating its national legislation.

PA is giving different categories of responsibilities to parties by considering their development statutes as developed or developing. If the actual legislation structure is maintained, and if Turkey is assigned as one of the developing countries, it will be able to meet the obligations of the PA more easily by obtaining funding from the “green climate fund.” On the other hand, if Turkey is assigned in the category of developed countries, then related national legislation and regulations have to be reviewed and required major amendments have to be made by considering our findings and results so as to achieve the required sufficiency level.

References

Ayanoğlu, S. (1995). Orman ve çevre üzerinde olumsuz etki yaratan yasal düzenlemeler. *İstanbul Üniversitesi Orman Fakültesi Dergisi*, 45(1–2), 53–60.

Berger, A., & Tricot, C. (1992). The greenhouse effect. *Surveys in Geophysics.*, 13(6), 523–549.

Bilder, R. B. (1980). International law and natural resources policies. *Natural Resources Journal*, 20, 451.

Bolin, B. (2007). *A history of the science and politics of climate change*. Cambridge: Cambridge University Press.

Bopp, L., Monfray, P., Aumont, O., Dufresne, J. L., Le Treut, H., Madec, G., et al. (2001). Potential impact of climate change on marine export production. *Global Biogeochemical Cycles*, 15(1), 81–99.

Callendar, G. S. (1938). The artificial production of carbon dioxide and its influence on temperature. *Quarterly Journal of the Royal Meteorological Society*, 64(275), 223–240.

Chakraborty, S., Tiedemann, A. V., & Teng, P. S. (2000). Climate change: potential impact on plant diseases. *Environmental Pollution*, 108(3), 317–326.

Coskun, A. A. (2005). An evaluation of the environmental impact assessment system in Turkey. *International Journal of Environment and Sustainable Development*, 4(1), 47–66.

Coşkun, A. A., & Gençay, G. (2011). Kyoto protocol and “deforestation”: a legal analysis on Turkish environment and forest legislation. *Forest Policy and Economics*, 13(5), 366–377.

ÇŞB, (2011). Türkiye Çevre ve Şehircilik Bakanlığı, İklim Değişikliği Ulusal Eylem Planı 2010–2023. <http://www.dsi.gov.tr/docs/iklim-degisikligi/ideptr.pdf?sfvrsn=2> (Date of access 19.02.2019).

ÇŞB, (2019). Türkiye Çevre ve Şehircilik Bakanlığı, <https://www.gmka.gov.tr/dokumanlar/yayinlar/Turkiye-Iklim-DeGISikligi-Stratejisi.pdf> (Date of access 19.02.2019).

Elvan, O. D. (2013). The legal environmental risk analysis (LERA) sample of mining and the environment in Turkish legislation. *Resources Policy*, 38(3), 252–257.

Elvan, O. D., & Türker, Y. O. (2014). Analysis of Turkish groundwater legislation and policy regarding international principles and conventions. *Water Science and Technology*, 69(10), 2155–2165.

Engin, B. (2010). İklim Değişikliği ile Mücadelede Uluslararası İşbirliğinin Önemi. *Sosyal Bilimler Dergisi*, (2), 71–82.

Fleming, J. R. (2007). *Te Callendar Effect*. Published by the American Meteorological Society, ISBN 978-1-878220-76-9.

Gençay, G., Birben, Ü., & Durkaya, B. (2018). Effects of legal regulations on land use change: 2/B applications in Turkish forest law. *Journal of Sustainable Forestry*, 37(8), 804–819.

Güneş, Y., & Coşkun, A. A. (2005). Legal structure of public participation in environmental issues in Turkey. *Journal of Environmental Assessment Policy and Management*, 7(03), 543–568.

Housman, R. F. (1994). International environmental law and industrial ecology. *The greening of industrial ecosystems*, 108–122.

Henderson-Sellers, J. A. (1990). History of the greenhouse effect. *Progress in Physical Geography*, 14(1), 1–18.

Höhne, N., Ellermann, C., & Li, L. (2014). Intended nationally determined contributions under the UNFCCC. Discussion Paper.

Karakaya, E., & Sofuoğlu, E. (2015). İklim Değişikliği Müzakerelerine Bir Bakış: 2015 Paris İklim Zirvesi. Uluslararası Avrasya Enerji Sorunları Sempozyumu, 28–30.

- Kinley, R. (2017). Climate change after Paris: from turning point to transformation. *Climate Policy*, 17(1), 9–15. <https://doi.org/10.1080/14693062.2016.1191009>.
- Klein, D., Carazo, M. P., Doelle, M., Bulmer, J., & Higham, A. (Eds.). (2017). *The Paris agreement on climate change: analysis and commentary*. Oxford University Press.
- Lemoine, N., & Böhning-Gaese, K. (2003). Potential impact of global climate change on species richness of long-distance migrants. *Conservation Biology*, 17(2), 577–586.
- Lesnikowski, A., Ford, J., Biesbroek, R., Berrang-Ford, L., Maillet, M., Araos, M., & Austin, S. E. (2017). What does the Paris Agreement mean for adaptation? *Climate Policy*, 17(7), 825–831.
- Levin, K., Rich, D., Bonduki, Y., Comstock, M., Tirpak, D., Mcgray, H., et al. (2015). *Designing and preparing intended nationally determined contributions (INDCs)*. Washington, DC, USA: World Resources Institute.
- McMichael, A. J., Woodruff, R. E., & Hales, S. (2006). Climate change and human health: present and future risks. *The Lancet*, 367(9513), 859–869.
- Mendelsohn, R., Nordhaus, W. D., & Shaw, D. (1994). The impact of global warming on agriculture: a Ricardian analysis. *The American Economic Review*, 84(4), 753–771.
- Miranda, L. A. (2012). The role of international law in intrastate natural resource allocation: sovereignty, human rights, and peoples-based development. *Vanderbilt Journal of Transnational Law*, 45, 785–840.
- OGM (2015). Türkiye Orman Varlığı, Orman Genel Müdürlüğü, <https://ogm.gov.tr/ekutuphane/Yayinlar/T%C3%BCrkiye%20Orman%20Varl%C4%B1%C4%9F%C4%B1-2016-2017.pdf>. Accessed 10 November 2018.
- OSİB, (2015). Orman ve Su İşleri Bakanlığı, Çölleşme ile Mücadele Ulusal Stratejisi ve Eylem Planı, <http://www.cem.gov.tr/erozyon/Files/00000000ulusalstratejibelgesi2015-2023/CEM%20STJ%20EYLEM%20PLANI%202015xBASKISON.pdf>. Accessed 20 February 2019.
- Pan, X., den Elzen, M., Höhne, N., Teng, F., & Wang, L. (2017). Exploring fair and ambitious mitigation contributions under the Paris Agreement goals. *Environmental Science & Policy*, 74, 49–56.
- Patz, J. A., Campbell-Lendrum, D., Holloway, T., & Foley, J. A. (2005). Impact of regional climate change on human health. *Nature*, 438(7066), 310–317.
- Rajamani, L. (2016). Ambition and differentiation in the 2015 Paris Agreement: interpretative possibilities and underlying politics. *International & Comparative Law Quarterly*, 65(2), 493–514.
- Richards, M., Bruun, T. B., Campbell, B. M., Gregersen, L. E., Huyer, S., Kuntze, V., ... & Vasileiou, I. (2016). How countries plan to address agricultural adaptation and mitigation: an analysis of intended nationally determined contributions. CCAFS dataset.
- Robinson, S. A. (2018). Climate change adaptation in small island developing states: insights and lessons from a meta-paradigmatic study. *Environmental Science & Policy*, 85, 172–181.
- Salawitch, R.J., Canty, T.P., Hope, A.P., Tribett, W.R., Bennett, B.F. (2017). Paris climate agreement: beacon of Hope. Springer Climate, Open Access.
- Stua, M. (2017). From the Paris agreement to a low-carbon Bretton woods: rationale for the establishment of a mitigation alliance. Springer.
- TIPIG, (2013). İklim Değişikliği Eylem Planı Değerlendirme Raporu, https://tr.boell.org/sites/default/files/tipig_idep_raporu.pdf. Accessed 12 November 2018.
- Türkeş, M., Sümer, U. M., Ve Çetiner, G. (2000). Küresel iklim değişikliği ve olası etkileri, Çevre Bakanlığı, Birleşmiş Milletler İklim Değişikliği Çerçeve Sözleşmesi Seminer Notları (13 Nisan 2000, İstanbul Sanayi Odası), 7–24, ÇKÖK Gn. Md., Ankara.
- URL-1, (2019). International Protection of Nature and Wildlife, <http://www.environmentlaw.org.uk/rte.asp?id=210>. Accessed 20 February 2019.
- URL 2, (2015). http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Turkey/1/The_INDC_of_TURKEY_v.15.19.30.pdf. Accessed 15 October 2018.
- URL-3, (2017). <http://yesilekonomi.com/almanya-turkiye-icin-arabuluculuk-yapacak>. Accessed 15 October 2018.
- Van der Veen, C. J. (2000). Fourier and the “greenhouse effect”. *Polar Geography*, 24(2), 132–152.
- Veliöğlu, N. 2006. Types of forest property and their characteristics. 8th International Symposium on Legal Aspects of European Forest Sustainable Development Proceedings Book p:231–237. İstanbul.
- Vij, S., Moors, E., Ahmad, B., Uzzaman, A., Bhadwal, S., Biesbroek, R., ... & Saeed, B. A. (2017). Climate adaptation approaches and key policy characteristics: cases from South Asia. *Environmental Science & Policy*, 78, 58–65.
- Weiss, E. B. (1992). International environmental law: contemporary issues and the emergence of a New World Order. *Georgetown Law Journal*, 81, 675.
- World Economic Situation and Prospects. (2019). https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/WESP2019_BOOK-web.pdf. Accessed 20 February 2019.

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