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Antúñez Sánchez, Alcides
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Green Energies and Public Control: Environmental Concern and Business Ethics

*Energías verdes y el control público: preocupación ambiental y ética de las
empresas*

Alcides Antúnez Sánchez
Universidad de Granma (Cuba)

aantunez@udg.co.cu

<http://orcid.org/0000-0002-8561-6837>

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ABSTRACT

The article aims to characterize the environmental audit in the different scenarios executed by the audit team of the General Comptroller's Office in the studied stages of public control in Cuba until the XXI century, it concludes with the public control of green energies by the forms of management that they implement to mitigate pollution and achieve sustainable development by modifying the energy matrix in relation to the Millennium Goals for 2030, indicated by ECLAC.

Key words: aeolian energy; hydric energy; solar energy; cycle of life

JEL CODE: Q56; Q48; M14.



RESUMEN

El artículo tiene como objetivo caracterizar a la auditoría ambiental en los diferentes escenarios ejecutados por el equipo auditor de la Contraloría General, en las etapas estudiadas del control público en Cuba hasta el siglo XXI. Se concluye con el control público a las energías verdes por las formas de gestión que la implementan para mitigar la contaminación y alcanzar el desarrollo sostenible, al modificarse la matriz energética, en relación con los Objetivos del Milenio para el 2030, señalados por la CEPAL.

Palabras clave: energía eólica; energía hídrica; energía solar; ciclo de vida.

Códigos JEL: Q56; Q48; M14.

INTRODUCTION

The article aims to characterize the environmental audit in the different scenarios executed by the audit team of the General Comptroller's Office in the stages of public control under study in Cuba until the 21st century. It concludes with the public control of green energy based to the forms of management used to implement these measures to mitigate pollution and achieve sustainable development by modifying the energy matrix in relation to the Millennium Goals for 2030, indicated by ECLAC (2018).

The drawback of renewable energy and energy saving is notable in the 21st century for the States in the Latin American and Caribbean region (ECLAC, 2004), being a paradigm to achieve it through public policies. Since the energy obtained from energy sources and the quantities that can be used from said sources have been called "green energy resources" because they are natural resources used by man in his imprecise relationship with the environment, for modification and promotion by transforming the Energy Matrix.

Consequently, modifying the exploitation of limited resources establishes a challenge for the Public Administration in their public exercise. To do so, the use of green energy sources is encouraged, with the use of photovoltaic solar energy, wind, geothermal, thermosolar, hydroelectric, bioenergy and the power of marine currents. It is a recurring theme in Cuban public policies to advance towards the principle of sustainable development and push towards fulfillment of the millennium objectives for 2030 (ECLAC, 2018), as part of the nation's strategic axes in updating its economic and social model in the 21st century and following its path towards development.

The progress seen in the country with the use of green energy has spread in the 21st century because it is available throughout the world, unlike traditional sources such as gas, coal and oil, which Cuba does not have in abundance. Studies carried out in the academic world show that the use of renewable energies to obtain clean energy does not generate hazardous waste, is easy to dismantle, increases autonomy, and generates green jobs. Renewable energies are considered safe, with inexhaustible sources either in their use and exploitation by the management subjects who weigh these considerations in their business strategies to modify their energy matrix, as has been verified in the European Union and in Latin America since the Environmental Administrative Law (Martin, 1997: 3-79; Botassi, 1997: 29; Lozano, 2004: 23).

These elements, analyzed up supra, are derived from the science of Law, and are applied to the progress and application of International Energy Law, which is rooted in the Treaties as a new branch of this social science. The purpose of Energy Law, within its broad spectrum, is to order and regulate its activity in all its forms in the international energy trade (Pastor, 2015: 69).

Therefore, as a result of the complexity and wide variety of its object of regulation, it has been argued that International Energy Law covers fields and aspects from International, Private, Economic, Commercial, Administrative, Environmental, Fiscal and Constitutional Law, among other branches, due to its transdisciplinary and multidisciplinary nature.

Hence, in recent years in this century, the Latin American, Spanish, French and Italian doctrines have decided to use the common terminology of the International Law on Energy and raw materials, conceived by the English jurists such as the "International Law of Energy and Raw Materials". As pointed out in the analyses by Aguilar and Aguilar (2004:117), and Embid Irujo (2010:13, ss).

For Environmental Administrative Law, the control activity —an environmental audit— executed by the Public Administration, makes it possible to verify the fulfillment of public policies and evaluate the principle of the legality of environmental standards, in order to achieve sustainable development in regard to the Millennium Goals for 2030 (ECLAC, 2018), relevant for generating energy savings and efficiency by promoting the use of green energy in Cuba, weighted as one of its strategic sectors when updating its economic and social model to modify the energy matrix, as conceived by Antúnez Sánchez (2015:1-20).

Although it is pertinent to highlight that, concomitant with this management instrument analyzed in the body of the article on public control, after having carried out environmental audits of water resources, biosafety and climate change in Latin America (Antúnez, 2015:1-25), this management tool is linked to the environmental impact assessment, the environmental inspection and the environmental license (Antúnez & Ramírez, 2016:1-25).

PUBLIC CONTROL AND RENEWABLE ENERGY SOURCES. THEORETICAL REFERENCES FROM FOREIGN LAW

Another environmental problem in the world, because fossil fuels involve finite resources, where their burning has been identified as the main cause of the phenomenon of global warming and generates the climate change we suffer from today. Renewable energy sources, as they become relevant on a global scale, have been identified as another field of action for environmental auditing, as a control measure by Supreme Audit Institutions in their development and evolution in the current century.

Given the diversity of the energy supply as one of the means for its development on a sustainable basis, it is essential to have varied energy matrices. Renewable sources of energy are the energies obtained from natural resources. Their main characteristic is their ability to be inexhaustible, both for the amount of energy they contain, and for the possibility of regenerating by natural means while not polluting the environment.

From International Environmental Law it can be seen how 2012 was proclaimed the *International Year of Sustainable Energy for All*. Also, the United Nations Environment Program (UNEP, 2012), published a report in which governments were asked to develop new policies to promote the use of renewable energy in third world nations in 2013. This requires a financial effort due to the high cost of acquiring these clean technologies for developing nations.

In the Latin American and Caribbean region, which includes the nation of Cuba, there is great potential for renewable energy sources such as —wind energy, photovoltaic, biomass, biogas, waves, and geothermal energy—. This statement is supported by the report published by the Economic Commission for Latin America and the Caribbean (ECLAC, 2003) “Renewable Sources of Energy in Latin America and the Caribbean: Situation and policy proposals”. Which confirms our position in the development of the article, when studying Castillo's position (2013: 113).

9

In the 21st century, Professor Mora Ruiz (2010a:6), understood that the use of energy, development and the environment, considers that the three current vertices for the legal arrangement of renewable energies require of the qualified intervention of Administrative Law. Thus, the satisfaction of the general interest implies the balance of the three elements to achieve the objectives of security in the supply of energy, which allows for continuity for the economic development of the States and their legal environmental protection, given that renewable energies are conceptualized, almost unanimously by the doctrine, as "those primary sources of energy that, periodically, are renewed through natural cycles, any may thus be considered inexhaustible”(Mora, 2007: 157). From this perspective, Mora finds that the effective management of renewable energies is decisive in achieving these objectives, which, although apparently disparate, are closely related.

The author of the article agrees with Professor Mora Ruiz (2010b:194), in considering that mitigating the adverse effects of climate change will be necessary as part of the public policies of the States, by promoting the use of renewable energies, in response to their economic relevance as an energy sector, pertinent to Cuban Environmental Law, which must be taken into account in the new legal provisions in the fight against climate change and other regulations in order to modify the energy matrix that survives today.

The studied author specifies that given the importance of this new field of action for environmental auditing —renewable energies— (Mora, 2007: 157), she stated that with precedence, the academic Martín Mateo (1982: 47), lectured on a new Energy Law well in advance, on energy saving measures as the way to balance economic growth in the face of increased energy demand, stating,

"...energy saving becomes the so-called 'invisible source of energy', without this necessarily implying a decrease in the rate of development, or the limitation of satisfactions..." (Domingo López, 2000:29).

The analysis carried out by García Novo (2007:227-253) continues, who points out “...*that access to energy... in the third millennium has become a requirement for the survival of society and the biosphere...*” Thus, in our opinion, the relevance of renewable energy sources goes beyond mere help in the fight against climate change, it becomes a fundamental global dimension, where the water resource is especially relevant.

10 These positions demonstrate how Energy Law has been studied in the European Union and in particular, in the nation of Spain, historically a legislative reference for Law in Cuba. These studies draw from the theory of Environmental Administrative Law guidelines for their study, analysis and subsequent management by the States that promote the use of renewable energies in public policies to mitigate the effects of climate change and modify the energy matrix, the legal regulation of biomass (Martín, 2008; Sanz, 2010:24; González, 2011:97; Mellado, 2012:79; Pérez-Bustamante, 2012: 139); on the use of solar thermal energy (Jiménez-Blanco, 2010: 249-251); the promotion of wind farms (López, 2008:160, ss.); on the use of electricity production and its efficiency (González, 2011:79); about the principles of Energy Law (Parente, 2010:279-286); in relation to wind energy: legal, economic and environmental issues (Mora, 2010a: 6), among other aspects studied by Nebreda (2009: 394-395), Giménez (2010: 115), Alenza (2010: 77-82), and Sánchez (2019: 89).

The author corroborates that in the search for information (included in the bibliography), Energy Law may be known by other denominations, although its object of study is the same, but the overall outlook in the 21st century is that the law is promoted, to be less polluting, and it is confirmed that in Latin America, other authors have also been exploring this new sub-branch of Environmental Law, as its development in the European Union has made explicit (Sala, 2009: 307-324; Becker, Cazorla, & Martínez-Simancas, 2008: 23-80; Sánchez, 2019: 27-125).

We agree then with the position of Mora Ruiz (2010a: 194), who points out that to insist on the importance of the management of renewable energies, connected to the her assessments on the necessary relationship between energy, environment and sustainability, and in noting the need to have an adequate and, above all, effective legal framework, not only from a purely

environmental perspective, but also from an economic perspective associated with the relevance of the energy sector as an area of economic development.

Lozano (2004: 23) finds that the promotion of this activity will require the development of training programs and the training of human resources in all fields applicable to renewable energies for their use, their implementation and regulation in the legal system, as well as in matters of a legal nature related to taxation, as a new field of action for environmental auditing derived from Environmental Administrative Law. On this aspect, the authors agree on the relevance of the development of Energy Law in Cuba, as it is one of the strategic sectors in the updating of the economic and social model, in which the academy has an essential role in training in relation to the Energy Law.

From this legal perspective, it can be seen how the environment is incorporated into the design of these public policies, but requires an adequate legal arrangement which, on the one hand, makes the production of energy from renewable sources attractive to investors and, on the other, does not turn the sustainability requirements into an element of distortion in the energy markets, with the consequent risk of failing to advance the generalization of these clean energies as a sub-branch of Environmental Law for their study and development, as Mora provided in her position statement (2007:157).

Examples of what has been studied so far are distinguished in the promotion work that has been assimilated from the Environmental Administrative Law, with the creation of wind farms as a source of renewable energy, linked to the generation of electricity in the electricity sector by using the energy provided by wind in the Cuban nation. Another example is the creation of photovoltaic parks, which use the energy generated by the Sun, and convert this energy into electricity managed by the public sector, and the energy generated by the waves of the seas. These energies have a common denominator: the use of technologies to obtain this clean energy, known in legal studies as Energy Law or Electrical Law.

It is thus asserted that the promotion from Public Law is aimed at entrepreneurs to develop and implement within their companies and industries the use of non-renewable energy through heaters, solar panels, biogas generators, wind engines, and any other technology or product that uses unconventional energy as a total or partial source, in accordance with the legal standards on the electricity sector, environmental legislation, administrative legislation, legislation on the use of non-conventional non-renewable energies, legislation on Tax incentives for the promotion of non-renewable energies, tax exemptions for the construction of machinery, cars, mopeds, among others, in the legal systems of nations in Latin America and the Caribbean such as Nicaragua, Chile, El Salvador, Argentina, Brazil, the Dominican Republic, and Costa Rica, among other countries involved in promoting the use of green energy for change of the energy matrix and the mitigation of the effects of climate change,

as Valls (1977: 87) and Drnas De Clément (2017: 115) have pondered in their studies on environmental matters since the 20th century and in particular on the Law of Energy as a new paradigm within public policies in regard to the use of green energy and Environmental Law in the preservation of the environment as a human right with meeting points in this 21st century.

RENEWABLE ENERGIES: USE, IMPLEMENTATION AND REGULATION IN THE CUBAN LEGAL SYSTEM BASED ON PUBLIC ENVIRONMENTAL CONTROL

In the study of the legal system promulgated since the last 20th century in 1975 in the Cuban nation, it is verified from Law No. 1287, Electricity Law, that its objectives are to guarantee the organization and regulation of the growth of the electricity industry, facing growing demand based on the economic and social development of the country.

In 1975, the Electricity Service Regulation was approved and published as part of the legal system for this sector, establishing the regulatory bases for the rational use of electric power, it being necessary to update and unify the regulatory technical standards in these matters. This legal body empowered the Ministry of the Electric Industry as the sole provider of this service in the nation, and put in place the priorities established by the Government for the development of economic and social plans in 1976 in the Cuban nation in the last century.

An important event in the advancement of the recognition of renewable sources was the creation and start-up of the Solar Energy Research Center created in the city of Santiago de Cuba between 1980-1984, belonging to the Ministry of Industries. In continuity, in 1984, the country promoted the creation of different Development and Research Groups in the Bodies of the Central State Administration and in almost all the provinces, dedicated to the generalization of the use of various renewable sources of energy, mainly hydro, biogas, biomass, solar thermal and wind.

Next, in the 1990s, the National Assembly of People's Power approved the *Program for the Development of National Energy Sources*, whose objectives were directed towards achieving greater efficiency in the use of bagasse and waste agricultural sugarcane (biomass); and extended to the use of hydraulic, solar thermal, solar photovoltaic and wind energy, as well as the use of biogas from industrial, agricultural and urban waste (PAEC, 1997).

In the 1990s, Cuban society relied on civil society for the promotion of renewable sources of energy and respect for the environment (CUBASOLAR), by the Cuban Academy of Sciences and the National Energy Commission, using the Ministry of Science, Technology and Environment (CITMA) as reference.

With the arrival of the new millennium, the energy situation in the country worsened as a result of the United States' economic blockade policies towards the Cuban nation, and the State decided to make an Energy Revolution in 2005, focused on programs related to the saving and rational use of energy, the increase and availability of electricity service, the use of renewable energies, the increase in the exploitation of oil and gas, and the international collaboration by the Ministry of Energy and Mines created in 2012.

In this study, it is appreciated how the State on the island of Turiguanó implemented the first wind power generators in the country, an issue that has been expanding to other regions in Cuba, such as in the province of Las Tunas in the area of La Herradura. In terms of photovoltaic energy, there are examples of its implementation in the provinces of Pinar del Rio, Ciego de Ávila, Granma and Cienfuegos. As well as the execution of small hydroelectric plants in rivers, the implementation of bioelectric plants in the sugar factories in the province of Ciego de Ávila.

In their implementation by the State, as a public policy in the social order, incandescent bulbs and deficient equipment have been replaced, the university-company link has been strengthened, and communication strategies on energy saving have been implemented, among other actions. In regard to the treatment of renewable energies, its expression is appreciated in the fulfillment of the Millennium Goals for 2030 (ECLAC, 2018) in Cuba as part of the public policies crafted to modify the energy matrix.

13

In the political order, in 2011, the *Guidelines for the Economic and Social Policy of the Party and the Revolution* were approved to update the economic and social model in Cuba. This document defined the economic system that would be in force starting that year, based on the same principles of socialist property in force to date, taking market trends into account market. Among these, the country's energy policy and the measures to be adopted to update it have been identified, seeking the adoption of effective methods and techniques for less pollution and more efficient energy systems, increasing the use of new, renewable and economically viable energy sources to reduce the harmful effects on the atmosphere and the environment; the increase in the production, distribution and use of energy in an efficient, safe and ecologically sound manner; and the promotion of international cooperation for the Development of the National Energy Program (PAEC). (Rodríguez., 2004:12)

In the legislative order, as a result of the transformations in the legal system, a series of legal bodies have appeared, such as Decree Law No. 301 of 2012, which created the Ministry of Energy and Mines, as an evolution of the former Ministry of Basic Industry, which has since been extinguished. From the legal level, binding within the legal system itself with the subject analyzed in the article, the following legal bodies are binding on the subject under study, with

Law No. 81 of 1997, Environmental Law, Law No. 118 of 2014, Foreign Investment Law, Decree-Law No. 165 of 1996, On Free Zones and Industrial Parks, Decree Law No. 313 of 2013, Mariel Special Development Zone, and Law No. 124 of 2014, Law of Terrestrial Waters.

It can be seen that in order to promote the use of renewable energy sources or green energies, actions should not only be taken in the field of research, innovation and foreign investment. There is a need for a legal component that offers legal certainty for the stimulation of future projects, and that is where Law, as a regulatory science of social relations, is a useful tool in this sense, binding in regard to the control activity considered by the author in his studies on environmental controls (Antúnez & Ramírez, 2016: 1-25).

This event, studied in 2013, shows how the use of renewable energy sources in state facilities is encouraged by the Public Administration, given the high dependence on imported fuels for electricity generation, high environmental pollution, high costs of the energy delivered, low efficiency of thermal generation, losses in the distribution networks, and the low use of renewable energies. These causes have led to the promotion of renewable energies in the country by the Ministry of Energy and Mines with the use of bioelectric plants, wind energy, photovoltaic solar energy, biomass, and hydropower.

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- 14 It is clear from Law No. 1287 of 1975, the Cuban Electric Law and its Regulations, that now is the time for its updating by the legislator, in order to respond and be tempered to the reality of the 21st century in energy matters with the updating of the economic and social model. It should be noted that this legal rule, valid for 45 years, drafted in a period of abundance in fossil fuels because the Cuban nation is part of the economic bloc of socialist countries with the Council for Mutual Economic Assistance (CAME), regulates the first measures to avoid the waste or inadequate use of energy, recognizing as a mandatory objective the need to update and unify the various technical standards on the matter, dispersed until their time of issuance. Elements that are considered valid for updating the Administrative Penalty Law (Antúnez, 2017).

As of the promulgation of the new constitutional text of 2019, it is considered that the challenges of the Cuban legislator are to: update Law No. 1287 of 1975, the Electric Law of the defunct Ministry of the Electric Industry, and Law No. 81 on the Environment of 1997; and assess the approval of new legal norms with the field of Law on Sustainable Economy, Renewable Energies and their efficient use, to thus make it possible to harmonize the energy diversity that survives in the Cuban nation. With these regulations, it will be possible to have an impact on achieving a greater contribution of renewable energies in electricity generation, creating greater independence for the import of fuels and stimulating public policy that contributes to the promotion of the presentation and execution of foreign investment projects related to the use of renewable energies.

Of course, it is noted that the fiscal policy established in Law No. 113 of 2012, the Tax Law, should play a determining role, considering the granting of tax benefits, preferential loans with financial interest subsidies, exemptions from import taxes, and the payment of remuneration for renewable energy installations that generate electricity linked to their use, as part of this policy mentioned above by the Public Administration.

It is noted that, in updating the legal system, Decree Law No. 345 of 2017, on the development of renewable sources and the efficient use of energy, legal novelties have been established regarding the production of energy by independent producers that are not part of the National Electric Union, from which it can be purchased. An example is the energy produced in the Sugar Agroindustry with cane waste (biomass), with its essential legal basis in article 75 of the Constitution. There is a National Development Program for legal entities, for the promotion of efficient green energies by the Public Administration, as commissioned by the Ministry of Energy and Mines, already referred to as part of the 3rd Industrial Revolution. In the fiscal order, it promotes tariff and tax incentives, royalties and bank credits, as has been pointed out in their studies from Spain by Giles and Mora (2013:7, ss).

It should be noted that with this legal body, the private sector is authorized to acquire these technologies for the first time and to sell its surplus to the public sector as already outlined in this new approved legal regulation. Here, foreign investment is prioritized, as it is foreign investment that will introduce state-of-the-art technology to the nation. This normative provision is accompanied by internal administrative acts of the Ministries of Energy and Mines, of Foreign Trade, the Central Bank of Cuba, and by the Ministry of Finance and Prices. This is a legal novelty, in keeping with the new constitutional text of 2019.

15

In context, it has made possible that with the development of these public policies, Cuba has photovoltaic solar parks in each province of the country, either in operation or under construction. There are already four wind farms, built on an experimental basis; a hydroelectric plant in service, located in the Mayarí dam in the province of Holguín; and 13 new plants in preparation. Regarding the electrification of isolated areas, 5,533 photovoltaic systems have been installed in rural homes, which helps contribute to raising quality of life. In the field of transportation, buses, cars and motorcycles that use electrical energy are already traveling on the roads.

Based on all that has been analyzed, an assessment is made of the coordinated audit on renewable energies as a control activity, which was carried out in 2018-2019 in the countries of Brazil, Chile, Colombia, Costa Rica, Cuba, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Paraguay, and Venezuela in alliance between the Court of Accounts of the Union

(TCU) and the Latin American Organization of Supreme Audit Institutions (OLACEFS, 2019).

The objective of the control activity studied was to evaluate public policies for the expansion of renewable sources in the electricity matrix, in particular, by identifying good practices and opportunities for improvement in these policies in order to contribute to compliance with the commitments acquired through the Sustainable Development Goals for 2030 (ECLAC, 2018) and the Paris Agreement from International Environmental Law, of which the Cuban nation is a State party.

Regarding the situation in Cuba, deficiencies have been pointed out in the result of this evaluation in response to outdated data on Greenhouse Gas emissions, which makes it difficult to monitor possible progress in relation to reductions; problems in following goals or guidelines due to the lack of adequate monitoring or deficiencies in the established indicators; weaknesses in the articulation between the actors responsible for the policies for insertion of renewable sources in the energy matrix; lack of evaluation of the results of the incentives granted to renewable sources, which creates a risk that the strategies adopted are not justified in cost-benefit terms; weaknesses of government instruments to ensure that the expansion of renewable sources is carried out to guarantee the reliability and economy of the electrical system.

16

In short, this control activity carried out since 2014 has made possible the joint action of the member countries of the Latin American Organization of Supreme Audit Institutions (OLACEFS), which serves as an example for the execution of audits coordinated by other Supreme Audit Institutions, since mitigating the effects of climate change is a transnational problem that requires the joint effort of the international community, as does drinking water.

It is these elements studied which lead us to consider that the environmental audit program for green energies must be focused on its transdisciplinarity and multidisciplinary to evaluate the compliance of the components from the perspective of Environmental Administrative Law, integrating content in its evaluation process, as well as in the university-company relationship for postgraduate training in content related to:

- Environmental legislation linked to renewable energies in relation to their sustainable use and the protection of water as a natural resource.
- The legal documentation of the entity in charge of the management of renewable energy in the legal file.
- The evaluation of the accounting entries related to environmental protection registered in the patrimony as a subject of management.
- The evaluation of the accounting fixed assets established in its patrimony linked to environmental protection.

- The degree of compliance with the environmental management of the audited management subject established by OLACEFS, CITMA, and the Comptroller General.
- The degree of compliance with the state environmental policy for environmental protection by CITMA.
- Compliance with the 2030 Goals for the sustainable development of the audited form of management.
- The training of human resources in environmental matters in relation to the financial capital allocated in the subjects of management in accredited institutions.
- The control actions carried out at the company where environmental management is evaluated and its progress and setbacks are known.
- The plan to replace the technology that affects clean production in business environmental management considered within its financial budget.
- The weighting of the use of the environmental label in business production by economic subjects as an added value.
- The degree of compliance with environmental technical standards in business activity by economic subjects.
- Update the implementation of the legal standard of the audit in the Cuban legal system, for its execution by the General Comptroller's Office of the environmental audit of natural persons; the private sector does not have an adequate culture in the public control.
- The evaluation of the environmental impact of the life cycle within the environmental management of the economic subjects by CITMA and the Public Administration bodies that pay taxes in the granting of the environmental evaluation.

Having presented this scientific panorama of the legal institution studied from 2003 to 2020 in the Cuban legal system, the analysis of interdisciplinary positions from the social sciences, from accounting, law, business sciences, computer science and science environmental, evidence the legal, accounting, ecological and business treatment that this public control activity has had since its legislative recognition in the legal systems, executed in an environmental accounting evaluation of the financial statements of the industry and the company that implements these practices. Its legal nature is an evaluator of environmental management subject considered to be competitive in the various fields of action where it has activity, which continues to evolve in the 21st century, in pursuit of sustainable development from the imprint of the economy, which circulates as a new paradigm in Cuba, to make a company competitive in the domestic and foreign markets, and thereby achieve energy sovereignty. (Antúnez, 2017)

CONCLUSIONS

Renewable sources of energy are those that are obtained from natural resources found in the environment in a practically inexhaustible manner, for their transformation into and use as useful energy, reducing the environmental impact of energy use, thus constituting a viable alternative to conventional energy. Renewable sources are of vital importance for the energy and economic development of nations. These resources have advantages when compared to the fossil fuels being exploited in the world today, whether at the social, economic, domestic, environmental and market level.

The environmental and ethical concern of companies as subjects of management according to the trends of societies are not new. These have been global concerns since the 1990s. In the 21st century, the protection of the environmental legal asset is externalized in three dimensions: economic, social and environmental, starting with industrial development, balanced to generate resources, jobs and promote environmental education as bases of social well-being and quality of life, to achieve the principle of sustainable development with the application of Corporate Social Responsibility standards and forming Companies responsible for the Environment and paying tribute to the scope of sustainable development in their field of action.

18

In Latin America, the eco-audit progresses with three environmental audits which focus their field of action on the environment, making it possible for the Public Administration to obtain information on the behavior of public policies and environmental regulations as environmental paradigms, draw strategies that involve all the actors involved in environmental protection, develop new tactics, recommendations, campaigns to promote environmental culture to achieve sustainable development, distinguishing it from the models of the United States of America and the European Community, by recognizing itself as *subject to nature* within *De Jure Legal Pluralism*.

In Cuba, the environmental audit of green energy, executed by the General Comptroller of the Republic as a control activity under Law No. 107 of 2009, has emerged in 2019. In relation to Energy Law, there is no theoretical doctrinal construction that allows its study, where structural elements of Environmental Law are incorporated as a new autonomous discipline of law from the social sciences. Its antecedent was in 2014, with the execution of the environmental audit of the Vento Almendares Watershed in the face of climate change.

In the Cuban legal system, with the promulgation of Decree Law No. 345 of 2017, individuals and the state sector as an actor that provides this public service are permitted to promote the use of green energy as a way to respond to the adverse effects of the economic blockade that

prevents the purchase of oil for electricity generation. It establishes that the protection of the electrical service corresponds to the Ministry of Energy and Mines, and recognizes the individual in the generation of energy, releasing this activity. The challenge is how its acquisition in the foreign and national markets will be contextualized within the strategies of the national public policy for the mitigation of the energy crisis in the environment-development relationship of the economy and energy within the Cuban model with its update in the economic and social field for 2030.

Environmental Administrative Law through the control activity carried out by the Ministry of Sciences, Technology and the Environment under Law No. 81 of 1997, will be responsible for observing compliance with the principles imparted, such as prevention, precaution, non-regression, legality, in pursuit of the demands of environmental guidance in environmental protection with the promotion of green energy that makes it possible to find the results of the model implemented in relation to research, development, and innovation in the public and private sectors, according to their legal classification, considered *res communis omnium*, as members of the public domain and those of the private domain.

The Cuban academy, through the school of Law, has the challenge of deepening the studies of Energy Law, and in other sciences due to the transdisciplinarity of the subject in the face of the challenges of the economic crisis in the training of undergraduate and graduate degrees in both the public and the private sectors, in accordance with the changes in the economic and social model after the update of the constitutional text in 2019 from the academic perspective for its theoretical and legislative development, which makes it possible to train a competent professional.

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