Articles

Evolution of the implementation of ISO 14001:2015 in Ecuador

Evolución de la implementación de la norma ISO 14001:2015 en Ecuador

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ABSTRACT

Environmental impact is affected due to human-generated activities, products and services. Companies are expected to comply with environmental standards and show their commitment to reducing the environmental impact of their daily activities. This can be a bit complicated, however, it is an opportunity for companies to demonstrate their environmental responsibility, stand out from their competition and demonstrate commitment to their current and potential customers. The ISO 14001:2015 standard details the requirements that an organization can implement for an environmental management system and thus increase its environmental performance, this has allowed public and private companies worldwide to join the certification considering environmental management as a priority, according to data obtained in the year 2022 the largest number of certifications were obtained in the construction and automotive sectors. Although Ecuador is currently in seventh place in relation to other South American countries, it has shown a remarkable growth in the number of companies certified in ISO 14001:2015 over the last 16 years.

Keywords: ISO 14001:2015, environment, environmental, environmental management.

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RESUMEN

El impacto medioambiental se ve afectado debido a las actividades, productos y servicios que genera el ser humano. Se espera que las compañías obedezcan las normas medioambientales y muestren su compromiso para la reducción del impacto ambiental en sus actividades diarias. Esto puede ser un poco complicado, sin embargo, es una oportunidad en el que las compañías pueden demostrar su responsabilidad medioambiental, sobresalir entre su competencia y demostrar compromiso a sus clientes actuales y potenciales. La norma ISO 14001:2015 detalla los requerimientos que una organización puede implementar para un sistema de gestión ambiental y así lograr aumentar su rendimiento ambiental, esto ha permitido que a nivel mundial se vayan sumando empresas públicas y privadas a la certificación considerando como prioridad la gestión ambiental, según los datos obtenidos en el año 2022 la mayor cantidad de certificaciones se obtuvieron en los sectores de construcción y automotriz. Aunque actualmente Ecuador se encuentra en el séptimo lugar en relación con los demás países de América del Sur, ha demostrado un notable crecimiento de empresas certificadas en ISO 14001:2015 en los últimos 16 años.

Palabras clave: ISO 14001:2015, medioambiente, gestión ambiental

INTRODUCTION

In order to meet the needs of the present without compromising the capacity of future generations, it is considered essential to achieve a balance between the environment, society and the economy, through the balance of these three fundamental pillars of sustainability it is possible to achieve sustainable development (Valdés Fernández et al., 2016)..

Due to increasing environmental pollution, inefficient use of resources, inadequate waste management, climate change, ecosystem degradation and loss of biodiversity, society has a perspective regarding sustainable development, transparency, responsibility and accountability in the face of growing pressure from increasingly stringent legislation (International Organization for Standardization, 2015).

Through ISO 14001:2015 organizations can achieve expected results in terms of their environmental management system, as they provide value to the environment, to the organization itself and to stakeholders. Regardless of the activity in which they are engaged companies should consider as a priority the management of the environmental

impact they generate, this can be achieved through an environmental management system as it provides a framework for making decisions and making changes in processes which would help to improve environmental performance.

The EMS initiative based on ISO 14001 has been related to the level of development of the countries, the size of the company and its organizational level. This is due to the need to integrate the environmental dimension into the business strategy (Alzate-Ibáñez et al., 2018).. Hikichi et al., (2016) mention that large companies are the ones that obtain the most certifications because they are more vulnerable to pressures from their stakeholders, especially by regulatory bodies, they also have more financial resources to get certified and improve their environmental performance.

In recent times, the Ecuadorian government has taken several actions to promote the protection and use of the environment, including laws such as the 2008 Constitution of the Republic of Ecuador, which establishes standards of care towards the environment, the Environmental Management Law and the Organic Environmental Code also take into account environmental aspects.

These legal frameworks at the national level have led public and private organizations to focus on rapidly improving their environmental management systems, which has allowed them to implement ISO 14001:2015 certification.

According to ISO 14001:2015, an environmental aspect is anything that can cause an environmental impact whether it is a service, a product or any activity carried out in an organization (Araque Arevalo et al., 2018)..

Some of the environmental aspects that can be found in an organization are detailed below:

- Waste generated by the organization's operations
- Generation of electrical waste from the organization's operation
- Water consumption
- Consumption of materials in the company's operations
- Generation of sewage, rainwater and industrial wastewater discharges
- Noise generation
- Atmospheric emissions from stationary sources and mobile sources
- Heat generation from use of machinery
- Fuel consumption for machinery use

According to Valdés Fernández et al, (2016) environmental management through an organized approach can help organizations achieve long-term success and offer alternatives to contribute to sustainable development, this can be achieved through:

- Protection of the environment through prevention or mitigation of adverse environmental impacts
- Decrease the potentially adverse effects of environmental conditions on the organization.
- Support to the organization in complying with legal and other requirements
- Improved environmental performance

- Control over the way in which the organization produces, distributes, consumes its products or services, using a life cycle perspective that can prevent environmental impacts from being unintentionally shifted to another stage of the life cycle.
- Environmental information to relevant stakeholders
- Financial and operational recognition that may be the result of implementing environmentally friendly alternatives that strengthen the organization's position in the market.

According to Briggs (2017), in the guidance on establishing a management system in accordance with the requirements specified in ISO 14001:2015 mentions the following benefits on the implementation of the environmental management system:

- Helps to improve the control and management of emissions, effluents and waste
- Reduction of waste generated
- Increased energy efficiency and cost savings
- Conservation of natural resources, including water, land and minerals
- Operational efficiency leading to cost savings
- Provides a global perspective to meet regulatory requirements
- Achieving environmental initiatives that are in line with the company's priorities
- Handle hazardous contaminants safely

In addition, superior profitability, desirable access to markets, and better relationships with stakeholders such as customers, suppliers, investors, shareholders, regulators and the companies in the environment can be achieved.

The effects of industrial processes nowadays generate environmental concern as all activities, projects or undertakings can affect the environment (Rubio, 2018).

Taking into account the Ministerial Agreement 061 (2015)establishes that an environmental impact comprises a diversity of variations that can be positive, negative, neutral, direct and indirect. Environmental impacts can be caused by economic activities, works, public or private projects and that as a result of accumulation or delay produce measurable and verifiable alterations with respect to the environment, its components, interactions and relationships.

Over the years, Ecuador's environmental legislation has undergone significant and beneficial changes. Beginning with the 2008 Constitution, there was a change in the understanding of the environment as an object of law and it has been earmarked as a subject of law. Subsequent to these transformations, several laws, ministerial rulings and other guidelines have been issued that facilitate the creation of government policies to protect and preserve nature (Velasco et al., 2022)..

In the world environmental ranking of the most environmentally friendly countries, Ecuador ranks 87th out of 180 countries and 12th out of 20 Latin American countries. In addition, its carbon dioxide emissions are below 50,000 kilotons. According to the Economic Commission for Latin America and the Caribbean, Ecuador generates 1.9 metric tons of carbon dioxide per capita, representing 0.1% of global emissions (Aizaga et al., 2006). (Aizaga et al., 2021)..

MATERIALS AND METHODS

To carry out this study, computer tools with Internet access were needed, which were used to search for bibliographic information that was used as the basis for the study. A bibliographic documentary model and a review methodology were used for the distribution of the research.

The selection of academic documents and scientific articles was examined and the review was carried out systematically using criteria such as the English and Spanish language, importance, thematic relationship, and with a publication time of no more than 15 years, using several databases, such as Scielo, ResearchGate, Elsevier, among others, also Internet sources of valid statistical results were used, such as Global Standards and the official ISO page, likewise the variety of bibliographic documents included books, graduate and postgraduate theses, among other documents of scientific and academic level.

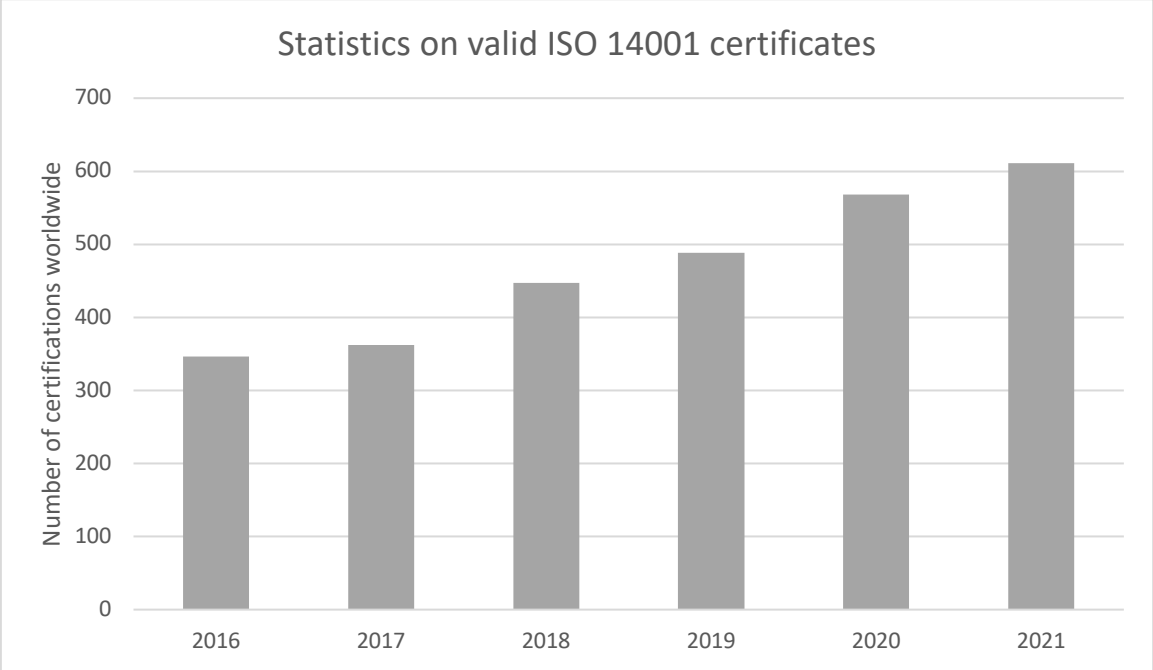
The aforementioned databases were subject to a random and consecutive search, using descriptions that were in line with the topic of study, such as: ISO 14001:2015, ISO 14001 + Ecuador, Implementation of ISO 14001 + Ecuador, Environmental laws + Ecuador, resulting in a considerable amount of bibliographic records.

RESULTS

Companies today are forced to consider changing and incorporating an environmental management system into their business model as an integral part of their business strategy to generate value for stakeholders. Consequently, the sustainability of the organization depends on its commitment to its stakeholders.

In the mid-2000s, North America and Western Europe were the first continents to implement ISO 14001. Once business connections developed, the number of certifications increased in East Asia, which subsequently spread to South America and Euro-Asia (Alzate-Ibáñez et al., 2018).

Figure 1. Number of ISO 14001 certified sites worldwide from 2016 to 2022.



Source: ISO Survey Report (International Organization for Standardization, 2023).

Figure 1 shows the number of sites that have ISO 14001 certification worldwide from 2016 to 2022, a remarkable growth is contemplated with respect to the number of certifications, surpassing the 346 147 certifications obtained in 2016 to have 511 332 certifications in 2022 worldwide, presenting an increase of 32.30 % in the 6 years. This shows a worldwide trend in which public and private sector companies are seeking certification taking into account environmental management as a priority.

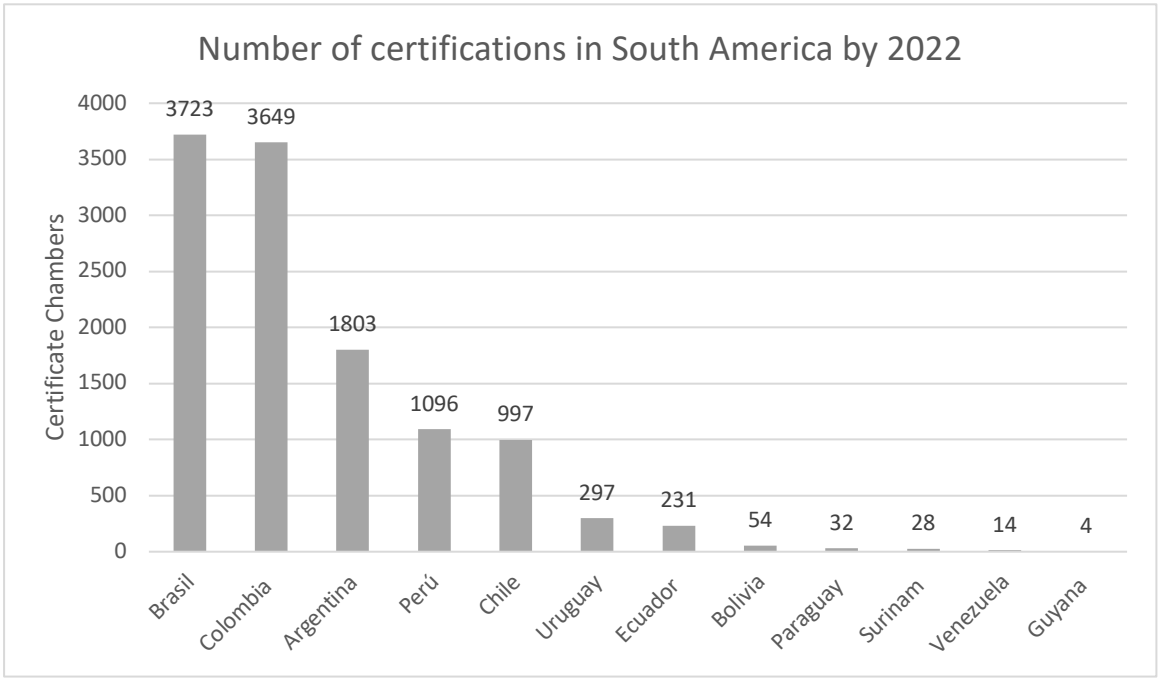
Table 1. *Ranking of countries with the highest number of 2022 certificates.*

Country	Number of certifications
China	293 996
Japan	26 246
United Kingdom	21 217
Spain	17 498
Germany	13 681
India	10 357
France	6 425
Romania	5 937
Republic of Korea	5 801
Czech Republic	5 185

Source: Certificate statistics in 2022 (International Organization for Standardization, 2023).

Table 1 shows the results issued by the International Organization for Standardization (2023). (2023) indicating the ranking of the 10 countries that presented the highest number of ISSO 14001:2015 certifications in 2021.
These data demonstrate the importance given by developed countries to the implementation of ISO 14001:2015, leaving aside countries with emerging economies. The Latin American ranking is headed by Brazil with 3,723, Colombia with 3,649 certificates by 2022, followed by Mexico with 2,788, and finally Argentina with 1803 certifications issued by 2022.
Figure 2 shows all South American countries and the number of ISO 14001 certifications issued in 2022, with Brazil leading the region with 3,723 certifications, followed by Colombia with 3,649 certifications, then Argentina and Peru with 1,803 and 1,096 certifications, respectively.

Figure 2. Certifications in South America in the year 2022.



Source: Certifications in South America (International Organization for Standardization, 2023).

With regard to Ecuador in 2022, a total of 231 certifications were generated among the different economic sectors, among those that presented the highest number of

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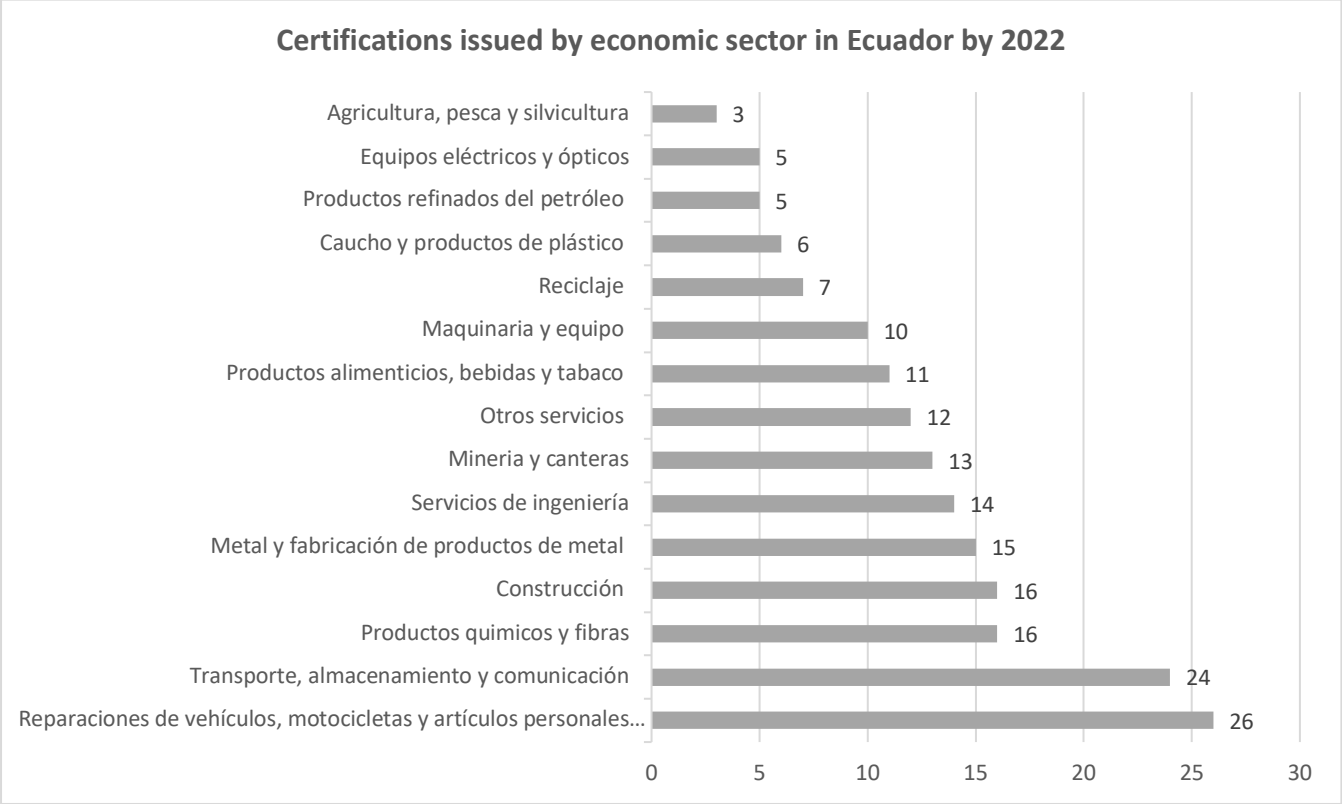
certifications as detailed in Figure 3 were repairs of vehicles, motorcycles and personal and household goods with 26 certifications, followed by the transportation, storage and communication sector with 24 certifications, followed by chemical products and fibers, in addition to the construction sector with 16 certifications each.

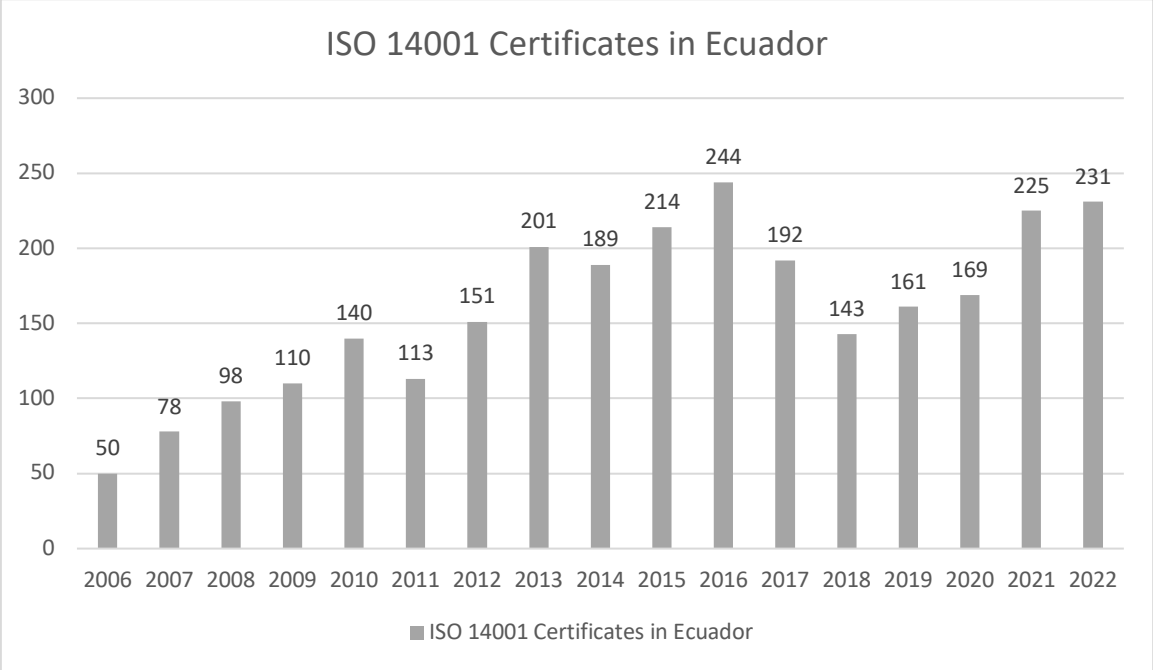
Figure 3. ISO 14001:2015 certifications in Ecuador of some of the economic sectors during the 2022 period.



Source: Certifications by economic sector in Ecuador (International Organization for Standardization, 2023).

Although Ecuador is a country with legislation that supports environmental care, it is in seventh place in South America with 231 certifications in 2022; however, there has been a notable growth in the number of certifications for this standard over the last 16 years, as shown in Figure 4; at the beginning there were only 50 certificates and by 2022 there were 231 certifications, which indicates considerable growth. This data confirms the commitment of companies in Ecuador to environmental management.

Figure 4. ISO 14001 certifications in Ecuador from 2006 to 2022.



Source: ISO 14001 certificates issued in Ecuador during the last 16 years. (International Organization for Standardization, 2023).

In the country there is an increasing trend of ISO 14001 certifications with a growth of around 200% in the last 16 years. However, there have been slopes such as in 2017 when only 192 certifications were issued, while in 2016 244 were obtained, following this trend in 2018 with an amount of 143.

DISCUSSION

ISO 14001:2015 certification is broad enough to provide benefits to organizations in any sector, while providing a specific framework for implementing good sustainable practices. Therefore, any organization will benefit from this certification.

The achievement of a company is related to the way it manages its operations for capital utilization, making the most of resources, technology and invention, as well as the aptitude of companies and individuals in a region. As a result, to maintain and improve its performance over time, the success-oriented organization must be structured as a dynamic system that is in constant interaction with its environment, constantly reviewing planning and its components to ensure that they are relevant and current in relation to changes in the environment.

The countries with the highest number of ISO 14001 certifications in South America are Brazil and Colombia.

As for Ecuador its trend of certifications for ISO 14001:2015 is increasing, it currently ranks seventh in comparison to the other South American countries, however, the country is considered a relatively low emitter of carbon dioxide in the region.

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