The Integrated Management System – A Transition Pathway to a Sustainable and Circular Bioeconomy

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Abstract

Starting from the current context, characterized by global warming, limited non-renewable resources, ecosystem degradation and population growth, organizations around the world have become increasingly concerned with achieving the goal of sustainable development by moving to the circular economy.

Organizations operate in an unstable environment, constantly changing, characterized by the permanent action of external or internal factors. Rapid adaptation to these factors means increasing competitiveness and resource efficiency, and the chances of making a profit increase significantly. The effective implementation of integrated management systems (quality-environment-food safety) in accordance with the revised new ISO standards that address risk-based thinking is necessary in order to increase the overall performance of the organization and, implicitly, long-term business development (sustainable success). Thus, the implementation of integrated management systems according to the revised new ISO standards becomes a ***concrete and viable*** *tool for achieving the goal for a sustainable development and circular economy in Europe.*

Key words: integrated management system, sustainable development, sustainable and circular bioeconomy, product life cycle
J.E.L. classification: M11, M14,Q01, Q56, Q57, Q58

1. Introduction

Sustainable development has been at the forefront of the European Union and at the heart of the European project for several decades, the first step being taken in 1972 when the Paris Summit was organized in order to prioritizethe future Community actions: to be established regional environmental policies, social, energy and industrial affairs and 1980 was confirmed as the deadline for achieving economic and monetary union (https://europa.eu/european-union/about-eu/history).

The strategic approach for implementing the 2030 Agenda and meeting the Sustainable Development Goals were presented by the European Commission in 2016 with the adoption of the act entitled "*Next steps towards a sustainable European future. European action for sustainability*" (European Commission, 2016).

We cannot talk about a sustainable and circular bioeconomy without taking into account the fact that any private organization is created with the purpose of bringing profit to investors, and the effective implementation of the integrated management systems (*quality-environment-food safety*) in accordance with the new revised ISO standards (EN ISO 9001: 2015, EN ISO 14001: 2015, EN ISO 22000: 2018) which emphasize that risk-based thinking is necessary to increase the global performance of the organization and, implicitly, the development of long-term business (*sustainable success*). Thus, the implementation of integrated management systems according to

the revised new ISO standards becomes a concrete and viable tool for achieving the goal of sustainable development and circular economy in Europe.

Achieving the intended results, knowing the external and internal threats, preventing or reducing unwanted effects and reaping the desired effects determine a safe and solid long-term development of the organization by consistently offering quality products and services with an efficient and low consumption of resources, without affecting the quality of the environment or the health of the consumers.

2. Theoretical background

The new European Commission elected by the European Parliament in November 2019 has set out 6 priorities of action regarding the implementation of the 2030 Agenda for the period 2019-2024 (European Commission, 2019):

- The "European Green Pact" - in an attempt to become the first climate-neutral continent;
- "An economy in the service of the citizens" - in order to achieve equity and social prosperity;
- "An Europe ready for the digital era" - to make new generations of technology available to the European citizens;
- "Promoting our European way of life" - in order to protect the European citizens and values;
- "A stronger Europe at an international level" - with a view to strengthening, through sustained efforts, the position as a responsible global leader;
- "A new impetus for the European democracy" - to promote, protect and strengthen European democracy.

The Green Pact is the new European strategy for a resource-efficient growth that aims to reduce greenhouse gas emissions to zero by 2050, an autonomouseconomic development towards resource utilization and inclusive for all European citizens. (European Commission, 2019).

According to the timetable set for the implementation of the *Green Pact*, a proposal for a *Circular Economy Action Plan* focusing on the sustainable use of resources was launched in March 2020 in order to provide sustainableproducts which will last for a long period of time and enable the full participation of European citizens in the circulareconomy and to the positive changes brought by it (https://ec.europa.eu/commission/ presscorner/detail/en/fs_20_437).

In what the wastes are concerned, based on the statistical data according to which each European citizen produces half a tonne of municipal waste per year, the *Circular Economy Action Plan* proposes the introduction of some measures in order to prevent and reduce waste by increasing the content that can be recycled and minimizing the waste export outside the EU (European Commission, 2020).

The EU Strategy on sustainable bioeconomy launched in 2012 and revised in 2018 by the European Commission Communication entitled "A sustainable bioeconomy for Europe: strengthening the links between the economy, society and the environment", focuses on 3 priorities: expanding and strengthening the biosectors, rapidly developing bioeconomies across Europe, protecting the ecosystem and understanding the ecological limitations of the bioeconomy (European Commission, 2018)

In line with the strategy for implementing the 2030 Agenda and meeting the sustainable development goals, an integral part of any European sectoral policy, in its October 2018 Communication, the European Commission is committed to promoting a bioeconomy focused on sustainability and circularity. Circular sustainable bioeconomy allows the transformation of waste, residues or biological waste into valuable resources and can create innovations and incentives to reduce food waste up to 50% by 2030 (European Commission, 2018).

According to the timetable set for the implementation of the Green Pact and linked to the European strategy for sustainable and circular bioeconomy, on 20 May 2020 the strategy "From farm to consumer, for a fair, healthy and environmentally friendly food system" for more sustainable food systems, having as general objectives: healthy, sustainable and affordable food for European citizens; combating climate change; environmental protection and biodiversity conservation; fair economic gains in the food chain; development of organic farming.

According to the EC Communication of 20 May 2020, the "Farm to Consumer" strategy, the "heart of the Green Pact", is essential for achieving the 17 sustainable development goals set by the UN and also the way forward following the COVID-19 pandemic and the economic crisiscaused by it. The COVID-19 pandemic highlighted the importance and need for the implementation of a "robust and resilient food system" capable of operating in all circumstances, ensuring a sufficient supply of food to citizens at affordable prices. (European Commission, 2020).

Figure no. 1 Circular economy

Source: https://www.europarl.europa.eu/news/ro/headlines/priorities/economia-circulara

3. Research methodology

Given the topic of this paper, during the research we used analysis, a method that allowed us to highlight many theoretical and practical aspects of the contribution of integrated management systems quality-environment-food safety implemented to increase quality of life, to the development of organizations in the conditions of a sustainable bioeconomy.

Based on the research results, we highlighted some conclusions on the benefits of effective implementation of integrated management systems (quality-environment-food safety) in accordance with the new revised ISO standards that address risk-based thinking, an approach that is needed to increase overall performance of the organization.

4. Results

Integrated management systems in accordance with the new ISO standards and their contribution to the achievement of sustainable development objectives

In 2013, ISO decided that all standards for management systems should have the same structure (*High Level Structure*) adding Annex SL to the ISO Directives - ISO / IEC Directives, Part 1, *Procedures Specific to ISO* - define the basic procedures to be followed for the development of the international standards and other publications (www.iso.org).

The revision of the ISO standards was necessary for several reasons, namely (www.iso.org):

- ✓ adaptation to international changes (globalization, regionalization, requirements and needs of customers and stakeholders, information revolution, sustainable development);
- ✓ the growing need for sustainable food security systems;
- ✓ greater applicability for service organizations;
- ✓ integration with other standards for management systems (for example with the standard for information security);
- ✓ adoption of the SL Annex (*High Level Structure*) and its terminology;
- ✓ introduction of new concepts related to quality and management;
- ✓ introduction of new concepts related to environment and management (leadership and product life cycle);

- ✓ use of the revised quality principles;
- ✓ the need to have an international standard and to improve occupational health and safety management systems in response to the global failure of occupational safety at work (according to ILO statistics, 2.78 million people die annually from accidents or occupational diseases , meaning 7600 deaths daily, respectively one death every 11 seconds).

The technical committees responsible for issuing the system standards were in line with the requirements of Annex SL and, after the revision procedure (about 3 years), the new editions of the standards were published (EN ISO 9001: 2015, EN ISO 14001: 2015, ISO 45001: 2018, ISO 22000: 2018).

The revised management system standards according to Annex SL, have radically changed the approach to the implementation of a management system bringing many new elements: the procedural approach (mandatory in the case of the ISO 9001 standard); approaching risk-based thinking; addressing the concept of sustainable development including the product life cycle (9001 and 14001); the principle of leadership (specific only to the quality standard prior to Annex SL); change management approach (change planning); aligning policies and objectives with the organization's development strategy; greater attention to the customer, consumer, stakeholders; greater flexibility of documentation in that mandatory procedures have been abandoned.

With the adoption of Annex SL, the principles of the quality management system were revised, 6 of the 7 being applicable to any management system: leadership, staff commitment, process-based approach, improvement, evidence-based decision making, relationship management (ISO 9000: 2015). *Customer orientation* is a principle applicable to the quality management system and the food safety management system; *pollution prevention* is the principle applicable to the environmental management system, *food safety through the combined efforts of all parties involved in the food chain* (ISO 22000: 2018) - a principle specific to the food safety management system.

The structure of each management system standard, according to Annex SL, respects the principle of the process-based approach:

Figure no. 2 The structure of the new ISO standards for management systems

Source: Authors' contribution

According to the current editions of the standards for management systems, risk-based thinking has been incorporated into requirements and becomes essential for the effective implementation of the management systems, systems that will act as prevention tools. Organizations need to determine the context in which they operate and, in close connection with it, to determine their risks and opportunities as a basis for planning. The processes in an organization will never have the same level of risk in terms of meeting the objectives, and the risks and opportunities will always be different from one organization to another, even for similar organizations in terms of activity field or organizational structure. For this reason, the standards for management systems have left it to the organizations to decide on the complexity of the risk-based thinking approach methodology; organizations may choose to develop a broader approach to risk than it is mentioned in the standardsfor quality, food safety, environmental, sso and for this purpose may use a documented risk management process in accordance with ISO 31000: 2018.

Change planning, a new requirement addressed in the new editions of the management systemsstandards, is an important aspect of maintaining the integrated management system; the organization thus ensures that any proposed changes are planned and implemented in a controlled manner, without having negative effects on the achievement of the intended results of the system. The analysis of the potential consequences of the changes leads to the avoidance of negative effects (non-compliant products / processes, obsolete deadlines, etc.) and to the fructification of positive effects (reduction of non-conformities, reduction of incidents caused by human errors, etc.).

The life cycle approach involves taking into account the life cycle stages for the organisation's own products and services that can be controlled or influenced by it with particular attention to the treatment of the product at the end of the life cycle in order to reintegrate it into nature. A correct approach to the life cycle will allow the transformation of scrap or waste into valuable resources and the reduction of the amount of waste generated.

According to environmental standards (ISO 14001: 2015, ISO 14044: 2007) the stages of the life cycle of a product or service include the purchase of raw materials or the exploitation of natural resources, product design or service development, product production or manufacture, production and use of fuels, electricity and heat, transport of the product or delivery of the service, use and maintenance of the product (post delivery), disposal of waste and process products, recovery of used products (including reuse, recycling and energy recovery), manufacture of auxiliary materials, manufacture, maintenance and decommissioning of production equipment, additional operations such as lighting and heating, end-of-life treatment of the product and reintegration into the wild. Some aspects with a significant impact on the environment may occur during these stages. By providing information, as an operationally control method, an organization can prevent or mitigate negative environmental impacts during these stages of the life cycle.

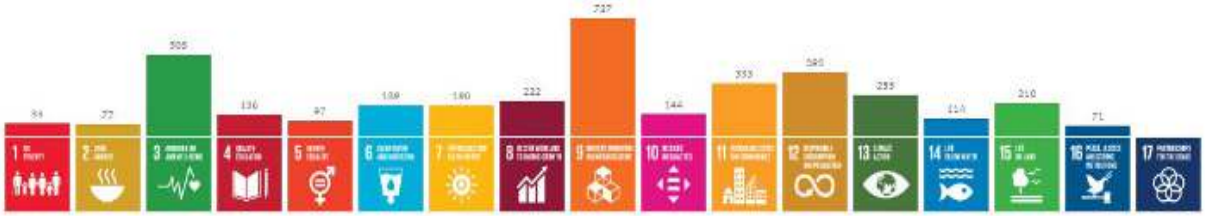
Figure no. 3 The benefits of an integrated management system that addresses risk-based thinking

Source: Authors' contribution

According to the document published by ISO in 2018 entitled "The contribution of ISO standards to the United Nations goals for sustainable development" the more than 22,000 standards and associated documents contribute to each of the three pillars of sustainable development:

- economic - by facilitating international trade, supporting industrial development, competitiveness in global markets, efficient use of natural and human resources, food security, health, environmental protection or sustainable business practices;
- social - ISO standards cover all social aspects: welfare, health systems, accessibility and social inclusion;
- environmental - ISO standards cover issues ranging from the implementation of a sustainable environmental management system to the measurement and reduction of greenhouse gases, emissions and energy consumption by encouraging responsible consumption (www.iso.org).

Figure no. 4 The number of standards that are directly applicable to each sustainable development goal adopted by the UN



Source: Authors' contribution

5. Conclusions

Regarding the goal of sustainable development "*No poverty - eradicating poverty in all its forms everywhere*" we can say that ISO standards contribute to the sustainable production of food and primary resources and to ensuring sustainable jobs; for example, the ISO 20400 standard "*Sustainable procurement. User Guide*"guides organizations in applying sustainable and ethical procurement procedures; ISO 37001 standard „*Anti-bribery management systems. User Guide Requirements* "supports private and public entities to develop integrity and combat bribery (www.iso.org).

For the goal of sustainable development "*No hunger - eradicating hunger, ensuring food security, improving food and ensuring a sustainable agriculture*", there are over 1600 standards for food production so that to increase confidence, improve agricultural practices, promote sustainable and ethical supply, for testing nutrition and safety, quality, packaging and traceability of food; the ISO 22000 family of food-specific standards helps to identify and control food hazards, and standards such as ISO 26000 (social responsibility) or ISO 20400 (sustainable procurement) promote responsible social behavior and ensure ethical working conditions for agricultural workers, promotes ethical supply practices for the entire food chain (www.iso.org).

To achieve the goal of sustainable development "*Responsible consumption and production - ensuring sustainable consumption and production patterns*", ISO standards contribute to sustainable production and consumption, encouraging the reduction of the negative impact on the environment, responsible supply, promoting the use of renewable resources. Also, the ISO 14020 (environmental labeling) series of standards provides guidance and principles on the use of environmental labels and self-declaration documents to inform and help consumers make the best decision when choosing products (www.iso.org).

Regarding the goal of sustainable development "*Combating climate change*", the contribution of ISO 14000 family standards to environmental management systems is particularly important. This family of standards, which also includes the ISO 14001: 2015 standard "*Environmental management systems. User-Guided Requirements* "(the second most popular standard after ISO 9001 - quality), covers many aspects, from general requirements to audits, communication, labeling, product life cycle analysis, environmental performance to adaptation methods to the climate change and reducing its effects; the ISO 14064 series sets out specifications for the quantification, monitoring and verification of greenhouse gas emissions, and the ISO 14067 technical specification mentions requirements for measuring the carbon footprint of products. The environmental standards of the 14000 family regarding the environmental management system together with ISO 14055 "*Environmental management - guide of good practices for combating soil degradation and desertification*" successfully contribute to the achievement of the sustainable development objective "*Life on Earth - Protection, restoring and promoting the sustainable use of terrestrial ecosystems* "(www.iso.org).

Regarding the economic pillar of sustainable development, we cannot fail to mention the ISO 9001 standard "Quality management systems. Requirements"which since the revised edition in 2015 emphasizes the"approach to risk-based thinking ", thus ensuring through its effective implementation the development of long-term business and the increase of the overall performance of the organization (sustainable success).

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