

Resilience for Better Sustainability. ISO 28000: 2022 vs 2007. Comparative Analysis

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ISO 28000:2022 “Security and Resilience — Security Management Systems — Requirements” is the second edition management system standard that supersedes the first edition (ISO 28000:2007, “Security Management Systems for the Supply Chain”). Both standards include aspects relevant to the supply chain; however, the incumbent (28000:2022) standard omitted notification about the supply chain in the title. So authors are interested in the reason for the accentuation shift as a necessary standard.

The article argues that Resilience now comes to the fore because of poly-crises in the world and Ukraine. It causes the rethinking and balancing actions for many aspects of Resilience and security based on the United Nations Sustainable Development Goals (2015), EU Green and Tweens transition (2019), and Paris Agreement (2015), and a paradigm shift from short-term to long-term values to ensure environmental, social, and governance (ESG) externalities for better Sustainability and Resilience.

In Ukraine, DSTU ISO 28000:2008, “Security Management Systems for the Supply Chain” will become obsolete in 2025. After the revision, ISO 28000:2022 covers all aspects of organizations much beyond the supply chain noted in ISO 28002:2011, “Security management systems for the supply chain — Development of resilience in the supply chain — Requirements with guidance for use”.

The author engages in prioritizing implementing ISO 28000:2022 in Ukraine. That is especially important to the nuclear industry with a complicated and safety-significant supply chain.

Keywords: ESG, ISO, nuclear energy, resilience, SDG17, supply chain, sustainability.

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Background

Resilience for better Sustainability in the poly-crises is hard to obtain and manage, and people accumulated knowledge incentivizing a paradigm shift from short-term to long-term values. Based on the United Nations Sustainable Development Goals (SDG17) [1], EU Green and Twins transition [2], and Paris Agreement [3] for better Sustainability and Resilience, it will ensure the internalization of environmental, social, and governance (ESG) externalities, will reframe assessment from risk-return to impacts-risk-return, from shareholders to stakeholder's value, from supply chain to the nexus between supply chain and GHG emissions.

Now we are witnessing an operating nuclear power plant under shelling and eventually occupied by enemy forces [4]. That is why a researcher needs to consider emergencies as granted for now and post-emergencies as a future norm. A helicopter big picture view on Nuclear Power vs Renewable Energy

Deployment, Small Modular Reactors, Nuclear Power and War, Grid connection, Supply chain and waste management, Security and Cybersecurity and many other issues should work with micro and medium observation [5]. The author implies methods of system thinking and the theory of changes to compare incumbent ISO standards and obtain results addressed to increasing Sustainability and Resilience in Ukraine.

The system thinking is an approach that includes classifying objects and tasks by elements, topology and systems, analyzing and synthesizing their characteristics, and thinking over models [6] and simulating solutions.

The theory of change (ToC) [7] is an outcome-based concept for developing and evaluating strategic documents, planning, public policy measures or individual projects and program directed to receive the most complete and consistent list of actions. The ToC presented the results of inputs, activities (short-, medium-, and long-term changes), outputs, outcomes, and intended impacts.

ISO 28000:2022 vs 2007

Understanding of security, supply chain, objects and processes have exposed in standards in chronological order:

ISO 28000:2007, "Specification for Security Management Systems for the Supply Chain" provides requirements and guidance for organizations in international supply chains to develop and implement supply chain security processes; establish and document a minimum level of security within a supply chain(s) or segment of a supply chain [8].

DSTU ISO 28000:2008 "Security Management Systems for the Supply Chain. Requirements" [9] has come in force in Ukraine in 2008.

ISO 28002:2011, "Security Management Systems for the Supply Chain — Development of Resilience in the Supply Chain — Requirements with Guidance for Use" specifies mainly information about significant risks, hazards and threats on the supply chain [10].

ISO 28000:2022, "Security and Resilience — Security Management Systems — Requirements" is the second edition management system standard [11] that cancels and replaces the first edition (ISO 28000:2007, "Security Management Systems for the Supply Chain" [8]). The latter has been technically revised but maintains existing requirements to provide continuity for organizations using the previous edition. Both standards include aspects relevant to the supply chain; however, the incumbent standard from 2022 omitted notification about the supply chain in the title. The comparison is here [12].

The three main advantages of the scrutinized document that justifies the necessity to implement ISO 28000:2022 [11] in Ukraine:

Firstly, after the revision, ISO 28000:2022 [11] can be applied to all aspects of organizations beyond the supply chain. The new standard is fully interactable and easy to use together with other management system standards like ISO 9001 [13] on quality management or ISO 22301 [14] for business continuity management, security strategies, procedures, processes and treatments and security plans. ISO 28000:2022 [11] applies to all, regardless of type, size, and industry, having enough flexibility in the environmental, social, and governance context of organizations.

Secondly, ISO 28000:2022 [11] benefits include, but are not limited to: improved security and thereby enhancing Resilience; systematized management practices; enhanced credibility and brand recognition; aligned terminology and conceptual usage; improved organizational performance including aspects of the supply chain; benchmarking against internationally recognizable criteria; greater compliance processes [15].

Finally, customers will not need to use intuition or ideas from the internet to provide security [16] as long

as ISO 28000:2022 [11] follows the best global practices for increasing Resilience and defending from disruption. Development and progress – ISO Standard can give the proper leverage for stakeholders.

Conclusion: DSTU ISO 28000:2008 [9] stands behind the best international practice not only because of its dissolving in 2025 but because of the content that becomes obsolete. The ISO 28000:2022 [11] standard is a part of the solution which initiated a paradigm shift from short-term to long-term values to ensure the internalization of environmental, social, and governance (ESG) externalities for regulators, public and private institutions and companies in the nuclear and other sectors.

Recommendation: New domestic standards based on ISO 28000:2022 [11] reflects the best practices and can meet new challenges in Ukraine.

Resilience and Nuclear Sector Transformation

ISO 28002:2011 [10] defines Resilience as the adaptive capacity of an organization in a complex and changing environment. 1) Resilience is an organization's ability to prevent or resist being affected by an event or to return to an acceptable level of performance in an acceptable period after being affected by an event. 2) Resilience is the capability of a system to maintain its functions and structure in the face of internal and external change and degrade when needed [10].

According to [17], Resilience is the capacity to successfully buffer and adapt to change in two narrower ways that arose from assumptions of their associated disciplines: engineering resilience and ecological resilience. When it comes to Transformations, the author argues that Resilience has to ground on 1) Redundancy; 2) Diversity; 3) Dispersion; 4) Autarky; 5) Active adaptability; 6) Transformability or combinations of them. Financial and non-financial (ESG) enforcement priorities refer to the nuclear industry's supervisory board and executive responsibilities.

ISO 28000:2022 [11] specifies requirements for a security management system, including aspects relevant to the supply chain and much beyond that. It applies to all types and sizes of organizations. By applying the Plan-Do-Check-Act (PDCA model to planning, establishing, implementing, operating, monitoring, reviewing, maintaining, and continually improving the effectiveness of the organization's security management system), ISO 28000 gives formal procedures on how to manage security-related risks and increase Resilience. Each organization can impact their objectives and points in a time of poly-crises, uncertainty, and vulnerability.

The International Atomic Energy Agency (IAEA) figures out the technological and safety aspects of nuclear power and climate-resilient energy

infrastructures because of the robustness of individual generation [15] technologies, the grid infrastructure and demand side management. Net zero emission systems need built-in ecological resiliency to guarantee the security of the energy supply. Over the past decades, the nuclear industry has accumulated specific knowledge of measures to mitigate and adopt climate risks and extreme weather events. [18].

Even though some institutions do not support including nuclear energy in the EU Taxonomy [19], their expertise can contribute well to raising Resilience awareness for implementing ISO 28000:2022 to the better Sustainability and Resilience of the nuclear sector [20].

Given those execution standards such as ISO 28000:2022 [11] are complex and the task encompasses several technical, scientific, legal, financial, and even military areas, we should consider professional education and study for Sustainability, Security, and Resilience managers, regulators, and board members at the universities and academia.

Conclusions

ISO 28000:2022 [11] covers all aspects of organizations much beyond the supply chain. This standard improves security and enhances Resilience and Sustainability, providing a system for management practices for better Sustainability and Resilience. The standard supports the rethinking and balancing actions for many aspects of Resilience and security based on the SDG17 [1], EU Green and Tweens transition [2], and Paris Agreement [3].

In Ukraine, DSTU ISO 28000:2008 [9] will become obsolete in 2025. The regulators have to put priority on implementing ISO 28000:2022 [11] in Ukraine.

The significance of modern standards for Ukraine is much broader than being regulation-driven. Without modern toolkits and standards, the nuclear sector and its stakeholders cannot cope with poly-crises in the world and Ukraine. It is unique when climate change, twin transitions, and social polarization simultaneously impact the war, supply chain disruption, global inflation, upcoming recession, energy, and food crises.

Based on the integrity of the ISO 28000:2022 [11] with law, finance, and technology as a holistic system with ESG and SDG17 [1] approach and metrics, stakeholders could achieve more Sustainability and Resilience. The latter has to fit the objective in areas as follows: 1) Redundancy; 2) Diversity; 3) Dispersity; 4) Autarky; 5) Active adaptability; 6) Transformability or combinations of them.

Education in Sustainability will raise awareness and give the institutional capacity to implement on-time modern guidance, best practices and standards in Ukraine and elsewhere.

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Резильєнтність для кращої стійкості. ISO 28000:2022 / ISO 28000:2007. Порівняльний аналіз

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ISO 28000:2022 «Security and Resilience — Security Management Systems — Requirements» — друге видання стандарту системи управління, яке замінює перше видання (ISO 28000:2007 «Security Management Systems for the Supply Chain»). Обидва стандарти містять аспекти, що стосуються ланцюга постачання; однак чинний стандарт (ISO 28000:2022) пропустив повідомлення про ланцюжок постачання в назві. Тому авторів цікавить причина зсуву акценту як необхідний стандарт.

У статті стверджується, що стійкість зараз виходить на перший план через полікризи у світі та в Україні. Це спричиняє переосмислення та збалансування дій для багатьох аспектів стійкості (резильєнтності) та безпеки на основі Цілей сталого розвитку ООН (2015), зелених та цифрових трансформацій у ЄС, так званий «подвійний» перехід (2019), та Паризької угоди (2015), а також зміну парадигми від короткострокових до довгострокових цінностей для забезпечення екологічних, соціальних та управлінських зовнішніх ефектів для кращої сталості та стійкості.

В Україні ДСТУ ISO 28000:2008 «Системи управління безпекою ланцюга постачання. Вимоги» втрачає чинність у 2025 році. Після перегляду ISO 28000:2022 цей стандарт охоплює всі аспекти організації, що виходять за межі ланцюга постачання, зазначеного в ISO 28002:2011 «Security management systems for the supply chain — Development of resilience in the supply chain — Requirements with guidance for use». Автор займається визначенням пріоритетів впровадження ISO 28000:2022 в Україні. Це особливо важливо для атомної промисловості зі складним і важливим для безпеки ланцюгом постачання.

Ключові слова: ESG, ISO, ланцюг постачання, резильєнтність, сталий розвиток, ЦСР17, ядерна енергія.

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