

# **SELF-REGULATION AS A RISK MITIGATION TOOL IN THE DESIGN AND CONSTRUCTION OF CRITICAL INFRASTRUCTURES**

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**Abstract:** Critical infrastructures are of strategic significance for the functioning of the economy, the security of a state, society and the population. Their breakdown or destruction has a considerable impact on the national security and defence, the natural environment, leads to material and financial losses and possibly casualties. Therefore, ensuring quality and reliability of such infrastructure is a priority of the state policy. The state policy in this regard is implemented through state regulation mechanisms aiming to protect life, health, property, and the environment, as well as by establishing ways of organizing or conducting activities, licensing rules, place and time of activities, volume of production or provision of services, etc. Control and supervisory functions are also important elements of the state regulation. In the Ukrainian experience, traditional mechanisms of state regulation do not ensure a relevant culture in construction. Thus, it is necessary to study and implement best international practices of avoiding risks in construction, in particular by self-regulation. This paper reviews approaches to self-regulation and the extent to which such practices contribute to risk mitigation in the design and construction of critical infrastructure assets, as currently implemented in Ukraine.

**Keywords:** construction, exploitation, critical infrastructure, security, risk management, self-regulation.

## **Introduction**

The quality and reliability of critical infrastructure sites and assets is important for the functioning of the state. Their loss or violation may endanger the lives of citizens and cause serious negative economic or social consequences for the society or its part.

The objects of critical infrastructure are enterprises and institutions (regardless of ownership) of such industries as energy, chemical industry, transport, banks and finance, information technology and telecommunications, food, health care, utilities. These include objects of state administration, justice and public order protection, social services, etc.

Critical infrastructures should not only meet the requirements of strength, reliability, operational safety and environmental safety, but also be able to successfully withstand various threats, in case of emergency or crisis situations and in case of unintentional actions or staff mistakes. Therefore, reducing the risks in the construction of such facilities is an issue of considerable importance for national security and for successful development. Ultimately, the quality and reliability of the critical infrastructure objects depends on the country's system of norms and regulations on construction activities and, as a consequence, on the proper culture of construction.

## **Regulation of Construction Activities**

The regulation of construction activities is carried out through the establishment of rules and control over their compliance through the use of balanced mechanisms of encouragement and enforcement. An effective regulatory system in construction consists of three main components:

1. normative base of the construction industry;
2. the system of supervision and control of the implementation of building legislation;
3. a system for assessing and verifying the conformity of objects and subjects of regulation with the requirements of building legislation and standards.

The policy and degree of participation of state authorities (legislative, executive and judicial) in the normalization, standardization and assessment of the conformity of products, services and processes to the requirements of laws, technical regulations and standards in different countries vary. Foreign experience shows that the state plays a significant, yet not necessarily central role in the system of technical regulation in general and in its separate components in particular.<sup>1</sup> It is entirely natural that, within the system of technical regulation, public administration bodies are in a privileged position due to their special status in the legal system of the state. However, modern regulation of construction activities is not necessarily regulation by the state.

The tendency to end the monopoly of the state through the transfer of state functions to the private sector is conditioned by factors such as the globalization of the world economy, close economic integration at regional and international levels, the reduced significance of national trade and economic borders, and a technical revolution that has strengthened its influence on the construction industry.

In the condition of technical revolution, the state simply does not have sufficient resources to keep track of new technologies, materials, products, methods and processes, not to mention the qualitative assessment of their safety and applicability in practical situations.<sup>1</sup> At the same time, simply increasing funding and expanding the staff

of qualified personnel will not solve the problem of processing a huge amount of engineering and technical information that accompanies the flow of innovation caused by the technical revolution. The acute shortage of competent specialists and the lack of sufficient financial, material and human resources in public institutions make it necessary to transfer functions that were historically prerogative of the state into private hands. Otherwise, there is a danger of lowering the quality of regulation of construction activities and, accordingly, the quality of construction products.

As a result, the peculiarity of modern construction regulation systems is the widespread application of mechanisms of self-regulation and the involvement of private sector specialists to perform supervisory, control and conformity assessment functions.

## **Implementation of Self-regulation in Construction**

### ***Forms of Self-regulation***

Analysis of the practice of decentralization of public administration in different countries<sup>2</sup> allows to highlight certain models of self-regulation of the construction industry.

The first model of *delegated self-regulation* is typical in situations where the state forms professional self-government organisations as legal entities of public law, delegating them a number of state functions on the industry improvement or type of activity. In this case, one can engage in professional activities only if he or she is a member of a professional association, whose activities are governed by special rules and standards.

With *voluntary self-regulation*, the status of self-regulatory organisations is provided by public associations that are created by representatives of the profession or type of activity and must establish high standards of work quality and ensure their compliance with their members.

*Mixed self-regulation* combines the two models described above. In this case, non-profit organisations that are formed voluntarily by entities of a certain type of economic activity or profession, in the case of compliance with legally established requirements, obtain from the state powers to perform only regulatory functions traditionally assigned to them. First of all, that applies to work authorization and dismissal from work.

In Ukraine, the model of professional self-regulation is mixed and tends towards a model of civic organisations which, for the most part, carry out functions for establishing rules of professional ethics and standards of activity, and also ensure representation of the common interests of its members before the state authorities. At the

same time, their powers as alternative to the state regulatory influence are fixed in the legislation.<sup>3</sup>

### ***Ukrainian Experience of Self-regulation***

Self-regulatory organisations in Ukraine act as public associations, created on the basis of professional membership in one profession or type of activity. Granting a public association the status of a self-regulatory organisation takes place on the basis of a decision of the state authority in the relevant sphere.

Today in Ukraine, self-regulation is provided for in 15 types of professional and economic activity.<sup>4</sup> In fact, 20 self-regulatory organisations were formed in five types of activities, including four self-regulatory organisations in the field of construction and architecture: the Guild of Designers in Construction, the Association of Building Experts, the Guild of Engineering Supervisors and the National Union of Architects of Ukraine.

To such organisations, the law<sup>3</sup> entrusts the regulation of activities related to the construction of objects, and in particular the professional certification of architects, engineers, designers, engineers of technical supervision and experts, admission to the market of these persons. That is, self-regulatory organisations are endowed with certain powers which, as a rule, are part of the powers of the state.

Self-regulatory organisations establish their own rules and standards of entrepreneurial and professional activities at a level not lower than that determined by the state and monitor the compliance of its implementation. In addition, they provide mechanisms for compensation of losses caused to consumers due to the performance of works of poor quality by their members.

The outspread of professional self-regulation, the formation of a system of public self-regulation of the urban environment in Ukraine<sup>5</sup> contributes to the improvement of the responsibility of market participants, implementing and maintaining high standards of economic activity, improving the quality of works and services in construction. Members of self-regulatory organisations are personally responsible for the results of their activities. Such specialists are involved in the construction of the most complex and responsible objects: ports, roads, power plants, including the New Safe Confinement over the damaged power unit of the Chernobyl nuclear power plant.

### **Conclusion**

The proposed analysis allows some generalisation. The perspective direction of development of the construction industry, aiming to ensure the quality and reliability of construction products, is to improve the system of self-government as a means of risk management. Ukrainian legislation already has preconditions for the introduction of

such mechanisms. As of today, self-regulatory organisations have been created and operate in construction, they have been delegated certain powers related to admission to the market and regulation of risks. The experience of these organisations should be the basis for the improvement, testing and implementation of effective models of self-regulation. This will promote the implementation and maintenance of high standards of construction activity, improvement of the quality of works and services, reliability of construction projects, and first of all –the objects of critical infrastructure, important for national security, functioning and development of the state.

## References

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