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MECHANISMS FOR IMPLEMENTING NATIONAL EDUCATIONAL PLATFORM CERTIFICATES FOR EARTHQUAKE PREPAREDNESS OF THE POPULATION IN UZBEKISTAN

Bekmirzayev D.A., Ismoilov A.M.

Institute of Mechanics and Seismic Stability of Structures named after M.T. Urozboev (Tashkent, Uzbekistan)

National Research Institute of Seismic Safety and Sustainable Construction (Tashkent, Uzbekistan)

Abstract This article provides a scientific analysis of issues related to increasing the practical effectiveness of certificates issued through the national educational platform for earthquake preparedness of the population in the Republic of Uzbekistan. The study is based on the experience of Turkiye in implementing certification systems for emergency preparedness and related incentive mechanisms. In the context of Uzbekistan, an incentive model integrated with the energy, labor, education, and local governance systems is proposed to enhance the real socio-economic value of certificates. The research findings indicate that reinforcing certificates with practical benefits is an effective tool for improving the population's level of preparedness for emergency situations.

Keywords: earthquake preparedness, seismic safety, national educational platform, certificate, incentive mechanism, differentiated incentives, institutional element, emergency situations.

МЕХАНИЗМЫ ВНЕДРЕНИЯ СЕРТИФИКАТОВ НАЦИОНАЛЬНОЙ ОБРАЗОВАТЕЛЬНОЙ ПЛАТФОРМЫ ПО ПОДГОТОВКЕ НАСЕЛЕНИЯ К ЗЕМЛЕТРЯСЕНИЯМ В УЗБЕКИСТАНЕ

Бекмирзаев Д.А., Исмоилов А.М.

Институт механики и сейсмостойкости сооружений имени М.Т. Уразбаева (Ташкент, Узбекистан)

Национальный исследовательский институт сейсмической безопасности и устойчивого строительства (Ташкент, Узбекистан)

Аннотация В данной статье представлен научный анализ вопросов, связанных с повышением практической эффективности сертификатов, выдаваемых через национальную образовательную платформу по подготовке населения к землетрясениям в Республике Узбекистан. Исследование основано на опыте Турции по внедрению систем сертификации готовности к чрезвычайным ситуациям и связанных с ними механизмов

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стимулирования. В контексте Узбекистана предлагается модель стимулирования, интегрированная с системами энергетики, труда, образования и местного самоуправления для повышения реальной социально-экономической ценности сертификатов. Результаты исследования показывают, что укрепление сертификатов практическими преимуществами является эффективным инструментом повышения уровня готовности населения к чрезвычайным ситуациям.

Ключевые слова: готовность к землетрясениям, сейсмическая безопасность, национальная образовательная платформа, сертификат, механизм стимулирования, дифференцированные стимулы, институциональный элемент, чрезвычайные ситуации.

Введение. Earthquakes stand out for their devastating consequences and significant casualties, as this natural phenomenon can claim hundreds or thousands of lives and cause enormous economic damage within seconds. Scientific research indicates that the severity of earthquake consequences is largely dependent on the level of population preparedness, and that properly organized preparedness measures can significantly reduce human casualties [6; p.320, 7; p.910]. In particular, the knowledge and skills of populations living in seismically active areas are of decisive importance in mitigating the consequences of emergency situations.

A large portion of the territory of the Republic of Uzbekistan lies within seismic zones rated 7-9 points, making earthquake preparedness one of the priority directions of state policy. In recent years, the country has implemented the 'National Educational Platform for Earthquake Preparedness of the Population,' which provides both employed and unemployed segments of the population with knowledge on proper behavior before, during, and after an earthquake through distance learning [8; pp.22-24].

According to statistical data from users of the National Educational Platform for Earthquake Preparedness, as of February 1, 2026, a total of 242,041 learners had registered on the platform. Of these, 65,827 were employed citizens, and 176,214 belonged to the unemployed segment. Of the registered learners, 201,128 had fully completed the educational courses and obtained certificates based on the established requirements [10; pp.189-195].

However, practical analyses reveal that, despite the platform's capabilities, the coverage of population segments and the rate of completing national training courses and obtaining certificates remain insufficient. One of the main reasons is that certificates do not hold real social or economic value in everyday life. International experience, particularly the example of Turkiye, demonstrates that linking emergency preparedness certificates with practical benefits ensures active public participation. Therefore, developing incentive mechanisms for certificates in the Uzbekistan context is an urgent scientific and practical challenge [9; pp.17-21].

This research is aimed at identifying opportunities for integrating national educational platform certificates for earthquake preparedness with practical incentive mechanisms, conducted on the basis of a comprehensive approach. The research methodology was grounded in contemporary scientific theories on emergency risk reduction, specifically the Community-Based Disaster Risk Reduction (CBDRR) concept and the principles of the UN Sendai Framework for Disaster Risk

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Reduction 2015-2030 [3; p.37, 6; p.320]. These concepts envisage the population not as a passive object of protection, but as an active subject in risk management.

In the first stage, a comparative analysis method was applied to study the emergency preparedness system, certification process, and associated incentive mechanisms introduced by AFAD in Turkiye [4; p.112, 5; p.250]. The organizational structure of this system, the volunteer institution, training programs, and social motivation tools were compared with the existing emergency management system in Uzbekistan. Institutional similarities and differences were identified, and elements applicable in the Uzbekistan context were extracted.

In the second stage, a normative-legal analysis method was applied. Laws, Presidential decrees, Cabinet of Ministers resolutions, and normative documents of relevant ministries and agencies were studied. Electricity consumption limits introduced in the energy sector, population training systems, and the authorities of the mahalla institution were analyzed, and the legal possibilities for implementing incentive mechanisms were assessed.

In the third stage, a systems approach method was applied, examining the preparedness process as an interconnected system of 'education - certificate - incentive - social security.' This approach allowed the national educational platform to be interpreted not merely as an educational tool, but as an institutional element of safety management. The systems analysis scientifically substantiated that increasing the practical value of certificates contributes to a sustained improvement in population preparedness.

In the fourth stage, scientific generalization and modeling methods were applied to develop a conceptual model of incentive mechanisms. The energy, education, labor, and local governance systems were considered in an integrated manner. The social effectiveness of the proposed mechanisms was evaluated on the basis of risk reduction theories and international practices.

The research findings demonstrate that the effectiveness of certificates issued through the national educational platform for earthquake preparedness is sustainable only when linked with practical incentive mechanisms. Analysis of international experience confirms that, alongside increasing public knowledge, it is necessary to align this knowledge with everyday life interests.

Methods. The Social Motivational Significance of the Certificate. In the experience of Turkiye, the involvement of citizens who have completed emergency preparedness courses in the AFAD volunteer system increased their activity in ensuring societal safety. As a result of this approach, a culture of behavior during emergency situations was formed, and the speed of providing initial assistance increased. This demonstrates that the effectiveness of a knowledge-based safety model increases when reinforced with practical incentives.

Results. Expected Impact of Incentivization in the Energy Sector

The electricity consumption limits introduced for the population in the Republic of Uzbekistan function as a social regulation tool [2; p.64]. According to the research findings, establishing an additional energy limit (for example, 250-300 kWh) for citizens holding earthquake preparedness certificates could increase the level of public engagement with the platform. This mechanism does not require economic subsidies but is applied as a differentiated incentive within the existing tariff system. As a result, the preparedness process is aligned with citizens' personal interests (Table 1).

Table 1

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Indicator	Current Situation	Proposed Situation
Electricity consumption limit	200 kWh	250-300 kWh
Duration of benefit	Does not exist	During the validity period of the certificate
Social impact	Low motivation	Increase in public activity

Analysis and discussion of results. Opportunities for Application in the Labor and Education Systems.

Recognizing emergency safety preparedness certificates as qualifications conferring priority status in labor relations strengthens the internal safety systems of organizations. International studies show that organizations with trained safety personnel have lower loss rates during emergencies [6; p.320, 7; p.910]. In the education system, recognizing such certificates as professional development documents contributes to the formation of a safety culture in educational institutions (Table 2).

Table 2 System of Benefits Introduced Based on Certificates

Sector	Type of Benefit	Expected Outcome
Education	Professional development document	Safety culture
Labor	Job position priority	Trained personnel
Mahalla (Community)	Official volunteer status	Evacuation efficiency

Strengthening Community Participation at the Mahalla Level

The Community-Based Disaster Risk Reduction (CBDRR) model relies on the active participation of local communities. By involving certificate-holding citizens as volunteers at the mahalla level, the effectiveness of rapid information exchange, evacuation, and first aid at the initial stages of emergency situations is enhanced. This approach reduces the burden on government services and strengthens the role of the population in risk management.

Overall Effectiveness of Institutional Integration

Analyses indicate that a system organized on the basis of the 'education-certificate-incentive-safety' chain serves to increase seismic safety in the long term. As stipulated in the Sendai Framework, reducing the consequences of disasters is achieved not only through technical measures but also through the conscious preparedness of the population. Therefore, integrating certificates with incentive mechanisms strengthens the preventive direction of state policy (Figure 1).

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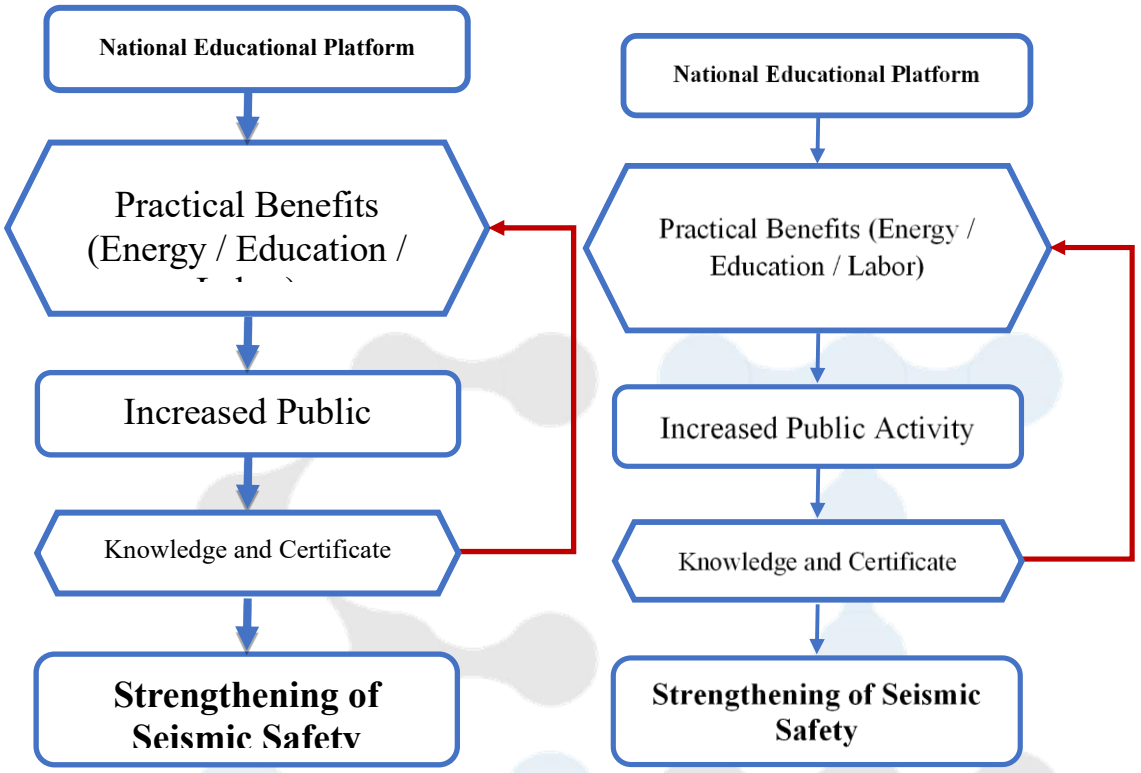

Figure 1. Conceptual Model of Certificate-Based Incentivization

The proposed incentive mechanisms transform the process of earthquake preparedness from a compulsory or formal educational activity into a sustainable social process aligned with personal interests and social responsibility. According to the CBDRR concept, involving citizens in the preparedness process through incentive tools forms their conscious attitude toward risks and increases the likelihood that the knowledge acquired will be applied in real situations.

Conclusions. The research findings demonstrate that the effectiveness of certificates issued through the national educational platform for earthquake preparedness is directly dependent on the extent to which they are integrated with practical incentive mechanisms. A system based solely on providing theoretical knowledge does not yield long-term sustainable results, as emergency preparedness is inextricably linked with the process of shaping social behavior.

International experience, particularly the practice of Turkiye, confirms that linking certificates with social status, professional priority, and practical incentives significantly increases the level of population preparedness. This approach is consistent with the Community-Based Disaster Risk Reduction concept.

In the context of Uzbekistan, implementing certificates in an integrated manner with the energy, education, labor, and local governance systems shapes an innovative and economically viable model for ensuring seismic safety. The significance of this system lies in its implementation within the framework of existing socio-economic mechanisms.

Overall, improving the preparedness system on the basis of incentivization contributes to forming a safety culture, reducing the consequences of emergency situations, and increasing societal resilience.

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References

1. Decree of the President of the Republic of Uzbekistan No. PF-144 dated May 30, 2022, 'On Measures to Further Improve the System of Ensuring Seismic Safety of the Republic of Uzbekistan' // National Database of Legislation, 31.05.2022.
2. Ministry of Energy of the Republic of Uzbekistan. Normative Documents on Electricity Consumption Limits. - Tashkent: Ministry of Energy Publishing House, 2023. - 64 p.
3. UNDRR. Sendai Framework for Disaster Risk Reduction 2015-2030. - Geneva: UNDRR, 2015. - 37 p.
4. AFAD. Turkiye'de Afet Egitimi ve Toplumsal Farkindalik Programlari. - Ankara: AFAD Yayinlari, 2021. - 112 p.
5. Erdik M. Earthquake Risk and Mitigation in Turkey. - Springer, 2018. - 250 p.
6. Shaw R., Izumi T. Disaster Risk Reduction and Community Resilience. - Emerald Publishing Limited, 2016. - 320 p.
7. Wisner B., Gaillard J.C., Kelman I. Handbook of Hazards and Disaster Risk Reduction. - London: Routledge, 2012. - 910 p.
8. Bekmirzayev D.A., Qosimov E.A., Ismoilov A.M. The Role of the National Educational Platform Designed for Teaching the Population Earthquake Preparedness Processes // Journal of Construction and Education. - 2024. - Vol.3, No.3(9). - Pp. 22-24.
9. Bekmirzayev D.A., Qosimov E.A., Ismoilov A.M. Methods of Earthquake Preparedness of the Population Based on Foreign Experience // Journal of Construction and Education. - 2024. - Vol.3, No.3(9). - Pp. 17-21.
10. Bekmirzayev D.A., Qosimov E.A., Ismoilov A.M. Consequences of Earthquakes and Preventive Measures Based on Foreign Experiences // Scientific and Technical Journal, Namangan Institute of Engineering and Technology. - 2024. - Vol. 9(2). - Pp. 189-195.

Information about the authors

Bekmirzayev Diyorbek Abdugapporovich – Institute of Mechanics and Seismic Stability of Structures named after M.T. Urozboev, Academy of Sciences of Uzbekistan email: diyorbek_84@mail.ru

Ismoilov Axror Maxamadibragimovich – National Research Institute of Seismic Safety and Sustainable Construction email: aismoilov802@gmail.com