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GLOBALIZATION AS A DRIVING FORCE: IMPLEMENTATION OF PREVENTIVE MEASURES TO COUNTER NATURAL HAZARDS IN THE TOURISM INDUSTRY: HISTORICAL CONTEXT

Abstract

The purpose of the article covers several key areas: globalization as a context: to investigate how globalization processes (in particular, the rapid development of tourism, the interdependence of markets) affect the spread and management of risks associated with natural hazards; impact assessment – to analyze the consequences of natural hazards on the development of the tourism industry, which is confirmed by the subsection “results of natural hazards for tourism development”; justification of preventive measures: to identify and describe existing or necessary measures to prevent and minimize the consequences of natural hazards; resilience and recommendations: to provide practical recommendations and strategies for reducing risks in order to ensure the resilience of the tourism industry to natural hazards. **Methods and methodology of conducting the research.** The methodological basis of the work is: the method of theoretical research, induction and deduction, observation, comparison, analysis and synthesis. **The methodology is based** on the principles of: systematicity, scientificity, objectivity, determinism, unity of external influences and internal conditions of development. **Scientific novelty** . focused on rethinking natural risk management strategies in the tourism sector, shifting the emphasis to preventive resilience in the context of globalization. The study reveals the mechanism through which globalization acts as a “driving force”, which not only increases the scale of tourism activities, but also complicates the management of risks from natural hazards. A conceptual model of tourism industry resilience is substantiated, which is based on preventive, and not only ex post facto, measures integrated into global tourism policy. Organizational and economic mechanisms are being determined for the implementation of the proposed preventive measures at the level of tourism enterprises, regional administrations, and international tourism organizations. **The results of the study** will contribute to the formation of a scientifically sound set of preventive strategies, methods and policies that can be used by stakeholders (tourism companies, government bodies, international organizations) to increase their preparedness and resilience to natural hazards in the context of globalization.

Keywords: globalization, tourism industry, natural threats, preventive measures.

ГЛОБАЛІЗАЦІЯ ЯК РУШІЙНА СИЛА: ІМПЛЕМЕНТАЦІЯ ПРЕВЕНТИВНИХ ЗАХОДІВ ПРОТИДІЇ ПРИРОДНИМ ЗАГРОЗАМ У ТУРИСТИЧНІЙ ІНДУСТРІЇ : ІСТОРИЧНИЙ КОНТЕКСТ

Анотація

Мета статті охоплює кілька ключових напрямків: *глобалізація як контекст*: дослідити, як процеси глобалізації (зокрема, швидкий розвиток туризму, взаємозалежність ринків) впливають на поширення та управління ризиками, пов'язаними з природними загрозами; *оцінка впливу*

проаналізувати наслідки дії природних загроз на розвиток туристичної галузі, що підтверджується підрозділом “результати дії природних загроз для розвитку туризму”; *обґрунтування превентивних заходів*: виявити та описати існуючі або необхідні заходи для попередження та мінімізації наслідків природних загроз; *стійкість та рекомендації*: надати практичні рекомендації та стратегії для зменшення ризиків з метою забезпечення стійкості туристичної індустрії перед природними загрозами. **Методи та методологія проведення дослідження.** Методологічну основу роботи становлять: метод теоретичних досліджень, індукції і дедукції, спостереження, порівняння, аналіз і синтез. **Методологія ґрунтується** на принципах: системності, науковості, об’єктивності, детермінізму, єдності зовнішніх впливів та внутрішніх умов розвитку. **Наукова новизна** сконцентрована на переосмисленні стратегій управління природними ризиками в туристичній сфері, переводячи акцент на превентивну стійкість в умовах глобалізації. У дослідженні розкривається механізм, через який глобалізація діє як “рушійна сила”, що не лише посилює масштаби туристичної діяльності, але й ускладнює управління ризиками від природних загроз. Обґрунтовується концептуальна модель стійкості туристичної індустрії, яка ґрунтується на превентивних, а не лише постфактум заходах, інтегрованих у глобальну туристичну політику. Визначаються організаційно-економічні механізми для імплементації запропонованих превентивних заходів на рівні туристичних підприємств, регіональних адміністрацій та міжнародних туристичних організацій.

Результати дослідження сприятимуть формуванню науково-обґрунтованого набору превентивних стратегій, методів та політик, які можуть бути використані зацікавленими сторонами (туристичні компанії, урядові органи, міжнародні організації) для підвищення їхньої готовності та стійкості до природних загроз в умовах глобалізації.

Ключові слова: глобалізація, туристична індустрія, природні загрози, превентивні заходи.

Introduction. Globalization is transforming prevention from a local issue into a global priority. It provides the tourism industry with the necessary resources (knowledge, technology, capital and standards) to not only recover from threats, but also to systematically minimize risks before they occur, ensuring the resilience, safety and long-term attractiveness of tourist destinations.

Despite the slowdown due to geopolitical tensions, globalization remains a driving force for growth, but its future development must be more sustainable and flexible, taking into account climate risks (Travel & Tourism Development Index 2024).

Globalization also creates network threats (such as pandemics or accelerating climate change) that are rapidly spreading around the world. This proves that it is impossible to stop globalization. Instead, it is necessary to manage its negative aspects and use the positive potential for cooperation necessary to build global resilience. Ian Goldin argues that this directly supports the idea of globalization as a driving force that requires preventive measures. (Ian Goldin, 2020) addressing natural threats in the tourism industry to ensure sustainability.

Analysis of recent research and publications. Globalization as a driving force requiring preventive measures was analyzed by Ian Goldin (2020), the definition of resilience as a key preventive mechanism against natural threats was characterized by the scientist Prideaux, B. (Ed.). (2024)..

Scientists such as: Girchak V. (2018), Chumakova I. (2017), Kolodiyshuk I. A. (2023), Mikhailova G. (2019), Streltsova I. (2019), who analyzed natural threats and their consequences for the tourism industry, have devoted their works to the study of natural threats.

The Tourism Destination Disaster Resilience Assessment Model (TDRSD) was proposed by Estefania Mercedes Basurto-Cedeño and Lori Pennington-Gray (2016). Scott, D., & Becken, S. (2023) considered adaptation and mitigation strategies (e.g., diversification of supply, investment in resilient infrastructure) as a preventive measure against projected natural hazards to ensure the long-term sustainability of the tourism economy.

The purpose of the article is a comprehensive analysis, justification of the need and development of specific recommendations for the implementation of preventive measures to combat natural threats in the tourism industry in the context of globalization to ensure its sustainability.

Methods and methodology of conducting the study. The methodological basis of the work is: the method of theoretical research, induction and deduction, observation, comparison, analysis and synthesis.

Presentation of the main research material. Natural hazards are essentially unexpected and extreme events that cause significant, often global, negative consequences for both the tourism industry and society as a whole.

One of the most common natural hazards is earthquakes. These natural events can have serious consequences for tourism sites and regions, especially if they occur in areas with a high number of tourists. Earthquakes can lead to the destruction of historical monuments, hotels, restaurants and other tourist amenities, which can significantly affect the attractiveness of the region for travelers.

Floods can also have serious consequences for tourism. Flooding of roads, hotels and other infrastructure can make it difficult for tourists to access the region and lead to the cancellation or postponement of trips. Floods can also damage natural sites such as national parks and nature reserves, which can lead to a decrease in visitor numbers and the loss of natural wonders.

Hurricanes and typhoons are another natural hazard that can affect tourism. These disasters can cause evacuations, airport closures, and flight cancellations, which can lead to losses for travel companies and hotels. Hurricanes can also damage beaches and other tourist amenities, reducing the attractiveness of a region as a vacation destination.

Volcanic activity can also affect tourism. Volcanic eruptions can cause flight cancellations, evacuations of tourists from hotels and other tourist attractions, and the closure of natural features. While this can be a barrier to tourism, volcanic activity can also attract the attention of nature lovers and scientists looking for opportunities to study these phenomena.

The results of these hazards can vary and are determined by the level of preparedness and response of local governments, the tourism industry, and other stakeholders. Here are some of the effects of natural hazards on tourism development.

Reduced tourism demand. Natural hazards can lead to a significant reduction in tourism demand in affected regions due to fears of new disasters, limited infrastructure availability, and general insecurity for tourists. This can lead to reduced revenues and job losses in the tourism industry.

Damage to tourism infrastructure. Natural hazards often cause significant damage to tourism infrastructure, such as hotels, restaurants, airports, and other facilities. Restoring these facilities can take significant time and effort, resulting in temporary disruption of tourism activities and losses to local businesses.

Changes in the ecological environment. Natural hazards can affect the ecological diversity and natural attractions of a region, which can change the attractiveness of a tourist destination. For example, the destruction of coral reefs or natural landscapes can lead to a decrease in tourist interest in affected areas.

Loss of income. Natural hazards can cause serious economic losses for local economies and businesses that depend on tourism. Reduced tourist flows can lead to loss of income for hotels, restaurants, shops and other tourism businesses, which can negatively affect the economic stability of the region.

Increased risk. Natural hazards can increase the risk for tourists and make them avoid traveling to affected areas due to fear of further disasters. This can lead to a deterioration in the image of the tourist destination and a further decrease in tourist demand.

Therefore, natural hazards can have serious consequences for tourism development in affected regions, and it is important to take measures to minimize their impact and restore tourism activities after the crisis.

Natural hazards, such as earthquakes, floods, hurricanes, volcanic activity, and others, often become a serious obstacle to the development of tourism. These natural phenomena can have different consequences for tourism industries in different regions of the world. Let us consider in more detail how natural hazards affect tourism and what are the possible ways to manage these challenges (Kulyk, 2016, 355 p.).

One of the main consequences of natural disasters is the threat to the safety of tourists. For example, earthquakes and tsunamis can lead to significant destruction of infrastructure and create serious threats to the life and health of people, including tourists. Such disasters can also lead to mass evacuation of tourists from affected areas and significantly limit travel opportunities.

Damage to infrastructure is also a serious consequence of natural disasters for tourism. The destruction of hotels, restaurants, airports, and other tourist facilities can lead to a temporary or long-term cessation of tourist activities. Restoring such infrastructure can take significant time and money, adding additional challenges to local farms and businesses.

The reduction of the tourism potential of a region is another consequence of natural hazards. For example, natural disasters can lead to the loss of natural beauty and tourist attractions, making the region less attractive for tourists to visit. This can affect the profitability of local tourism businesses and reduce the overall flow of tourists to the region.

The psychological aspect also plays an important role in the consequences of natural hazards for tourism. Stress and fear among tourists can reduce their desire to visit certain regions due to a sense of danger. Effective crisis communication and security systems can help reduce this negative impact and maintain tourist interest in the region.

On the other hand, natural hazards can also have positive consequences for tourism development. For example, some natural phenomena can create unique ecosystems and landscapes that attract ecotourists and nature lovers. Ecotourism can contribute to the preservation and restoration of nature reserves and natural attractions, which contributes to the sustainable development of tourism in the region.

Natural hazards, such as earthquakes, floods, volcanic activity and other natural disasters, can have a variety of consequences for tourism and society as a whole, leading to serious economic losses in the tourism industry. The destruction of infrastructure, including hotels, restaurants, airports and other facilities, can lead to loss of income for local businesses and a decrease in tourist flows. This can lead to losses in services, job losses and threats to the economic stability of disaster-stricken regions.

The consequences of natural hazards can include loss of life, injury and suffering among local populations. This can cause feelings of helplessness, anxiety and loss that can last long after the disaster. In addition, evacuation and resettlement can lead to the disruption of social ties and the loss of cultural heritage.

The indicators in Tables 1,2,3 demonstrate the possible impact of different natural hazards on tourism in regions.

Table 1

Impact of earthquakes on tourism (author's development)

| Region | Number of earthquakes per year | Losses in the tourism industry (in million dollars) | Changes in tourist flow (%) |
|----------------|--------------------------------|---|-----------------------------|
| Pacific hearth | 20 | 500 | -10 |
| Mediterranean | 15 | 300 | -5 |
| Atlantic Basin | 10 | 200 | -3 |
| Indian Ocean | 25 | 600 | -12 |

Table 2

Impact of floods on tourism (author's development)

| Region | Number of floods per year | Losses in the tourism industry (in million dollars) | Changes in tourist flow (%) |
|----------------|---------------------------|---|-----------------------------|
| Pacific hearth | 10 | 400 | -8 |
| Mediterranean | 5 | 150 | -2 |
| Atlantic Basin | 8 | 250 | -4 |
| Indian Ocean | 12 | 350 | -7 |

Table 3

Impact of volcanic activity on tourism (author's development)

| Region | Number of eruptions per year | Losses in the tourism industry (in million dollars) | Changes in tourist flow (%) |
|----------------|------------------------------|---|-----------------------------|
| Pacific hearth | 5 | 200 | -4 |
| Mediterranean | 3 | 100 | -1 |
| Atlantic Basin | 2 | 50 | -1 |
| Indian Ocean | 6 | 250 | -5 |

It should be noted that natural hazards can have a serious impact on the environment and natural ecosystems. Water and air pollution, loss of biodiversity and destruction of ecosystems can have long-term consequences for the ecological balance and health of nature. This can affect tourist attractions and natural monuments, reducing their appeal to visitors.

Destroyed historical monuments and cultural sites can lose their value and uniqueness due to natural disasters. This can lead to the loss of cultural heritage and the deterioration of the identity of local communities. The preservation and restoration of these sites can be a difficult task, especially in the case of major destruction.

At the same time, natural hazards can cause serious stress and anxiety among the population, including tourists and local residents. Continuous stress can have a negative impact on people's mental health, which can lead to the development of psychological problems and a deterioration in the quality of life.

Therefore, natural hazards have a major impact on tourism and society as a whole, and require comprehensive risk management and recovery strategies to ensure the sustainable development of disaster-affected regions.

Natural hazards can lead to the temporary or even complete cessation of tourism services in certain regions. For example, earthquakes can damage hotels and other tourist facilities, forcing them to temporarily suspend operations for repairs and restoration. This can lead to significant financial losses for tourism businesses and threaten their existence. They can create a sense of fear and uncertainty among tourists and local residents. Even after the threat has passed, there may be a fear of similar events in the future, which can affect the demand for tourism services and the choice of a vacation spot (Streltsova, 2019, p. 456).

Many tourist regions have great historical and cultural value that can be at risk during natural disasters. The destruction of architectural monuments, museums, and other cultural sites can lead to the loss of an unpredictable cultural heritage that attracts tourists from all over the world.

In addition to the obvious damage caused by pollution of water sources, destruction of ecosystems and loss of species, natural hazards can also have far-reaching consequences for the environment. For example, an oil spill resulting from an earthquake or flood can lead to serious pollution of the marine environment and loss of marine life, which can reduce the attractiveness of coastal tourist destinations.

Despite the potential negative consequences, natural hazards can also open up new opportunities for tourism development. Many travelers seek new and exotic adventures, and natural hazards can provide unique opportunities to observe and study natural phenomena (Girchak, 2018, p. 29).

Natural hazards, especially those that occur on international borders, highlight the importance of international cooperation in crisis management and recovery. Sharing experiences, resources and support between countries can greatly facilitate the recovery process and contribute to the sustainable development of affected regions.

Considering these aspects, it is important to emphasize that natural hazards have a complex and multifaceted impact on tourism and society on a global scale. To reduce risks and minimize the consequences of such events, it is necessary to implement effective crisis management strategies.

Measures to prevent and minimize the consequences of global natural threats in tourism

Natural hazards have a significant impact on tourism development, and it is important to take measures to minimize their impact and support the tourism industry in affected regions (Martynenko, 2017).

General recommendations for managing the consequences of natural hazards for tourism development include: creating emergency plans, developing sustainable tourism infrastructure, increasing preparedness for crisis situations, and supporting tourism enterprises in recovering from disasters.

At the same time, we note that global cooperation is key to standardizing and implementing preventive measures in global tourism, requiring countries to invest in systemic resilience against natural hazards. Therefore, globalization creates a need for such measures, and resilience is a key concept for their successful implementation in the modern tourism industry.

In this context, it is worth considering the Tourism Disaster Resilience Scorecard for Destinations (TDRSD) – a tool developed by the World Bank in collaboration with other international partners to help tourism destinations measure and improve their resilience to

a variety of hazards, including natural hazards, whose frequency and impact are increasing with globalization (Estefania Mercedes Basurto-Cedeño and Lori Pennington-Gray, 2016, p. 149 – 163).

This model is a direct example of the implementation of preventive measures, as it focuses not on recovery after an event, but on preparedness and risk reduction. The model is a tool for assessing and improving the resilience of tourism destinations to different types of hazards (natural, man-made, climate-related, political instability, etc.).

The TDRSD model contains 10 key elements that serve as indicators of preparedness (preventive measures) and resilience, based on the principles laid down, in particular, in the Sendai Framework for Disaster Risk Reduction 2015-2030 (Sendai Framework), presented in Table 4.

Table 4

**TDRSD model, assessing the status of implementation
of preventive measures according to 10 key elements
(modeled after the Sendai Framework): (Estefania Mercedes
Basurto-Cedeño and Lori Pennington-Gray, 2016, p. 149–163.).**

| Елемент TDRSD | Основна суть (превентивний захід) | Приклади імплементації |
|--|---|---|
| 1. Organization and coordination | The presence of clear structures for risk management, involving all stakeholders (government, business, communities). | Creation of a tourism crisis working group operating in peacetime. |
| 2. Financial readiness | . Providing financial mechanisms for mitigation, insurance and rapid recovery | Creation of reserve funds or mandatory insurance schemes for tour operators. |
| 3. Risk Assessment | Regular assessment of the vulnerability of tourist sites to local natural hazards (floods, hurricanes). | Risk mapping for hotels and attractions located in coastal or seismically active areas. |
| 4. Land use planning | Prohibition or restriction of construction of critical tourism infrastructure in areas of high natural risk. | Enforcing strict building codes for new hotels in storm/flood zones. |
| 5. Infrastructure | Ensuring the resilience of critical infrastructure (roads, airports, energy supply) to natural threats. | Investing in climate-resilient roads and communications. |
| 6. Ecosystem protection | Preservation of natural barriers (mangrove forests, coral reefs) as primary defense mechanisms against natural threats. | Regulating coastal development to protect dunes and reefs. |
| 7. Early warning | Creating effective and fast alert systems adapted for tourists and local businesses. | Implementation of SMS/apps to notify tourists about extreme weather conditions. |
| 8. Education and training | Regular training and awareness raising for tourism workers and local communities. | Mandatory training for hotel staff on tsunami/flood evacuation. |
| 9. Technology and knowledge | Using the latest technologies to predict and monitor threats. | Installing weather stations or using satellite data. |
| 10. Connection and communications | Developing communication plans during a crisis to maintain the trust and image of the direction. | Preparing preventive security messages for international partners. |

This model is a direct implementation of the ideas of researchers (e.g. Bruce Prideaux and Daniel Scott) about the need for a proactive, holistic and multi-faceted approach to risk management in the context of globalized tourism.

The TDRSD model is based on principles and criteria similar to those used in the UN's "City Disaster Resilience Scorecard" (UNISDR's Ten Essentials).

Implementing preventive measures in the context of TDRSD means putting into practice actions and strategies aimed at:

Reducing risks: reducing the likelihood of a hazard occurring or minimizing its potential impact.

Enhancing preparedness: ensuring that the tourism destination, its infrastructure, businesses and community are ready to respond effectively to crisis situations.

Promoting recovery: developing plans for rapid and sustainable recovery after an event.

The implementation of these measures is assessed on a scale where higher scores indicate a more complete and effective existence and implementation of the relevant sustainability requirements.

Areas of application (TDRSD Criteria)

TDRSD typically covers a number of key areas that require preventive measures. These may include:

Governance and finance: having clear strategies, a legal framework and allocating financial resources for risk management.

Risk assessment and early warning: conducting regular risk analyses and having effective early warning systems.

Infrastructure resilience: ensuring the resilience of critical infrastructure (transport, communications, housing) to potential threats.

Knowledge and education: conducting training, raising awareness among tourism workers and the local population.

Community and Leadership: Engaging the Public, Business, and Strong Leadership in Resilience (Estefania Mercedes Basurto-Cedeño and Lori Pennington-Gray, 2016.).

Thus, the "TDRSD Model: Implementing Preventive Measures" is a process of assessing, planning, and implementing specific actions that strengthen a tourism region so that it can better withstand, adapt, and recover from threats.

In view of this, countering the consequences of global natural threats in the tourism industry requires the implementation of a comprehensive and systematic strategy, the main measures of which include the following:

- tourism companies and regional authorities should have emergency plans that include evacuation procedures, medical assistance and communication with tourists during crisis situations;
- conducting training and exercises with tourism enterprise personnel and local residents can help increase preparedness for responding to natural hazards and reduce the degree of panic in emergency situations;
- using modern technologies to monitor natural phenomena, such as seismic activity, weather conditions and water levels, can help in predicting possible risks and responding to them in a timely manner;
- building and upgrading tourism infrastructure taking into account possible natural hazards can reduce the risk of damage and increase their resilience to threats;
- establishing early warning systems for tourists and local residents can provide an opportunity to warn about possible dangers in time and take the necessary safety measures;
- tourism companies can conclude insurance policies in case of natural hazards, which will help reduce financial losses in the event of negative events;

- developing sustainable tourism, which takes into account environmental and socio-cultural aspects, can help reduce the negative impact of natural hazards on the tourism industry;

- Joint initiatives and exchange of experiences between countries can increase the effectiveness of measures to prevent and minimize the consequences of natural hazards in the tourism sector.

Countries and regions should cooperate in the field of prevention and response to global natural hazards, sharing experience and resources. International organizations such as UNESCO and the World Tourism Organization can play a key role in coordinating such efforts.

These measures can help prevent natural hazards and reduce their consequences for tourism, ensuring safety and stability in the tourist regions visited (Melnyk, 2014).

It should be noted that one of the main aspects of the impact of natural hazards on tourism is their ability to create serious threats to the safety of tourists. For example, earthquakes can lead to the destruction of hotels, airports and other tourist facilities, which can endanger the lives and health of visitors. Hurricanes and floods can also cause significant material damage and create unsafe conditions for travelers.

Tourist safety is an important component of the success of any tourist destination, so it is important to develop and implement strategies and measures to protect against the negative effects of natural hazards. This may include improving early warning systems, developing evacuation plans, implementing technical safety measures and conducting educational campaigns for tourists (Shelestyuk, 2015).

In general, preventing and minimizing the consequences of natural hazards in tourism requires an integrated approach and cooperation of all stakeholders, including authorities, tourism companies, local populations and international organizations. This puts tourist attractions at risk and leads to losses in the tourism industry. For example, earthquakes in Italy can lead to the destruction of historical monuments that are major tourist attractions.

Hurricanes and tropical storms can also have a serious impact on tourism, especially in resort areas and coastal cities. They can lead to the evacuation of tourists, the destruction of hotels and beaches, and the loss of life. Floods and heavy rains can inundate tourist attractions and infrastructure, which can lead to the cessation of tourism activities for a long time.

Volcanic activity is another natural hazard that can significantly affect tourism. Volcanic eruptions can lead to air and soil pollution, evacuation of residents and tourists, as well as airport closures and flight cancellations.

Natural hazards can have a significant impact on tourism, but they can also open up new opportunities for the development of the tourism industry in a global context. This will allow for timely response to possible threats and effective coordination of actions in case of emergencies. In addition, it is necessary to conduct systematic education and training for the local population and tourists on actions in case of disasters (Gurynovych, 2016).

A number of measures and recommendations can be taken to reduce the risks of natural hazards on tourism in a global context.

Development of early warning systems. Implementation of monitoring and early warning systems for natural hazards such as earthquakes, hurricanes and volcanic eruptions. This will allow for effective response to threats and provide appropriate warnings to tourists and local populations.

Training of tourism facility personnel. Conducting training and education of hotel, resort and other tourism facility personnel on disaster preparedness. This includes evacuation planning, first aid and coordination with rescue services.

Creation of information materials. Development of information booklets, brochures and websites with recommendations for tourists on actions in case of natural hazards. This will help increase awareness and preparedness of tourists for emergencies.

Sustainable infrastructure improvement. Investing in improving the infrastructure of tourist attractions to make them more resilient to natural disasters. This may include raising building standards, developing protective structures and reinforcing existing buildings.

Development of evacuation plans. Development and implementation of evacuation plans for tourist attractions and regions at increased risk of natural hazards. These plans should be carefully thought out and include evacuation routes, assembly points and coordinates with rescue services.

Tourist information campaign. Conducting information campaigns for tourists on potential risks of natural hazards and safety measures. This can be done through social media, travel agencies and other communication channels (Chumakova, 2017).

Promoting sustainable tourism. Promoting and supporting sustainable tourism that contributes to the preservation of the environment and local culture. Sustainable tourism can reduce the impact on nature and make the tourism industry more resilient to natural hazards.

Creating a support network. Creating a support network and cooperation between tourism companies, civil society organizations, local authorities and local populations to effectively respond to and recover from natural hazards.

The indicators in tables 5, 6, 7 demonstrate recommendations for reducing the risks of various natural hazards to tourism on a global scale.

Table 5

**Recommendations for reducing the risks of earthquakes
(author's development)**

| Recommendation | Description |
|--|---|
| Ensuring the resilience of hotel infrastructure to earthquakes | . Using architectural and engineering solutions to build earthquake-resistant hotels and other tourist facilities |
| Conducting information and educational work among tourists | Educating tourists about earthquake safety measures and procedures to reduce risk and improve emergency response. |
| Development of evacuation plans and exercises for hotel staff | Conducting training for hotel staff on evacuation and first aid in the event of an earthquake. |

Table 6

Recommendations for reducing flood risks (author's development)

| Recommendation | Description |
|--|--|
| Regular maintenance and cleaning of drainage systems | Conducting regular maintenance and cleaning of drainage systems to prevent flooding in the event of floods. |
| Use of sensors and water level monitoring systems | Installation of sensors and water level monitoring systems for prompt detection of rising water levels and timely warning of danger. |
| Construction of high embankments or flash barriers on rivers | Design and construction of high embankments or flash barriers on rivers to reduce the risk of flooding of surrounding areas. |

Table 7

**Recommendations for reducing risks from volcanic activity
(author's development)**

| Recommendation | Description |
|---|---|
| Volcanic eruption monitoring and warning systems | Development and implementation of volcanic eruption monitoring and warning systems for prompt warning and evacuation. |
| Development of instructions and training for staff and local population | . Developing instructions and conducting training for staff and local residents on planning actions in the event of a volcanic eruption |
| Evacuation strategies and escape routes | Defining evacuation strategies and establishing escape routes for the safe and rapid evacuation of the population from the danger zone. |

These natural hazards can also have a serious impact on the ecology of natural areas, destroying natural ecosystems and harming the local environment (Martynenko, 2017).

Creation of emergency plans. Development and implementation of emergency plans for tourist sites and regions with an increased risk of natural hazards. These plans should include evacuation procedures, coordination with rescue services and first aid.

Monitoring and forecasting. Implementation of natural hazard monitoring and forecasting systems for timely detection and prevention of hazards.

Creation of safe zones. Development and maintenance of safe zones for tourists in case of emergencies, such as evacuation from natural hazards or seeking shelter.

Awareness raising and training. Conducting training and exercises for tourists and hotel and other tourism facilities staff on natural disaster preparedness. This will help prepare people for possible emergencies and reduce risks to their lives and health.

Ensuring infrastructure resilience. Investing in improving the infrastructure of tourism facilities to make them more resilient to natural hazards. This may include improving flood protection, earthquake-resistant structures and other measures.

Working with local populations. Informing and training local populations on safety measures and working with them to address tourism challenges in emergencies.

International cooperation. The exchange of experience and technologies between countries and regions will help to ensure a more effective response to hazards and reduce their consequences for tourists and the local population (Myronenko, 2019).

It is worth noting that despite the threat, the tourism sector demonstrates amazing resilience: it does not just survive, but actively recovers and develops.

Restored beaches, renovated hotels and rebuilt tourist attractions take on a new meaning. For such tourists, their trip becomes an act of solidarity and a contribution to the economic revival of the community, often financed through international platforms and initiatives.

Thus, tourism becomes a powerful tool that contributes to the faster rehabilitation of infrastructure, stimulates local businesses and gives the inhabitants of the region hope for a better future. Globalization amplifies this effect, turning local recovery into part of a broader international narrative.

Conclusions and prospects for further research. The analysis of the impact of natural hazards on the tourism industry confirms their dual role: they are both a significant challenge requiring immediate attention to security and sustainability issues, and a source of new opportunities for development. While they may temporarily hinder travelers, they

also highlight the uniqueness and grandeur of natural wonders, creating the potential for “dark” or disaster tourism and increasing interest in resurgent regions.

At the same time, globalization has transformed preventive measures from a purely local problem into a global priority. Thanks to international cooperation, the industry receives the necessary resources (knowledge, technology, capital and standards) that allow it to systematically minimize risks before they occur, and not just react afterwards.

Managing natural hazards in tourism opens up a number of important directions for further development and research: The prospect lies in further integrating international safety protocols and Early Warning Systems into local tourism planning, turning any tourist destination into a globally safe territory.

Thus, successful management of the impact of natural hazards will not only ensure the long-term attractiveness of tourist destinations, but will also contribute to the formation of a more responsible, environmentally friendly and globally integrated tourism industry.

Conflict of Interest

The author declare no conflicts of interest.

Use of Artificial Intelligence

No artificial intelligence tools or materials were used in the manuscript.

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