



Publisher: Scientific-Professional Society for Disaster Risk Management

International Journal of Disaster Risk Management

Journal homepage: <https://internationaljournalofdisasterriskmanagement.com>



Review article

Sustainable Recovery: the Link Between Development and Response to Disasters

Ivica Đorđević¹, Jasmina Gačić¹

¹ Faculty of Security Studies, University of Belgrade, Gospodara Vučića 50, 11040 Belgrade, Serbia; djivica@gmail.com (I.Đ.); jasmina.gacic@fb.bg.ac.rs (J.G.)

* Correspondence: djivica@gmail.com

Received: 10 August 2024; Revised: 1 October 2024; Accepted 5 November; Published: 25 December

ABSTRACT

This paper examines the critical role of sustainable recovery in strengthening disaster risk resilience through the integration of sustainable development principles into strategic planning and policy frameworks. Sustainable recovery comes as a result of respecting the basic principles of sustainable development when making strategic plans in all areas essential for responding to risk conditions that can lead to disasters. To raise awareness of the importance of sustainability, it is necessary to incorporate this concept into the teaching contents of all educational levels, especially when training personnel for disaster risk prevention and reduction. The aim is to analyze the interconnectedness of sustainability and resilience, focusing on how local knowledge, scientific methods, and strategic planning can mitigate vulnerabilities and enhance community preparedness for disasters. The findings highlight that communities which prioritize sustainable practices and incorporate disaster risk reduction measures into their development strategies demonstrate higher levels of resilience to hazards. Also, the practice has shown that the most resilient communities are those that base their development strategies on respect for local specificities and knowledge of scientific methods derived from previous experiences with numerous risks and their consequences. This study also identifies key factors contributing to vulnerability, emphasizing the importance of education, intersectoral collaboration, and policy reforms in fostering long-term resilience. Vulnerability comes as a result of many factors, the knowledge of which can contribute to raising the level of community resistance to hazards and risks to which the area is exposed. The phenomenon of sustainable development or sustainability as well as sustainable recovery is a major catalyst for change in government policies and legal frameworks, which has dramatically changed the role and behavior of nations. Politics, economy, ecology, geographical characteristics of the area and climatic conditions in combination with personnel potential can be part of the solution, but also the source of the problem. The results underscore the necessity for integrating sustainability principles at all levels of governance to achieve a holistic approach to disaster risk reduction and community resilience. Future research should focus on developing standardized indicators for measuring sustainable recovery and resilience across diverse socio-economic and geographical contexts.

KEYWORDS

Disasters, hazards, sustainability, vulnerability, resilience, development, recovery.

1. Introduction

Man has always sought to adapt nature to his needs (Al-ramlawi, El-Mougher, & Al-Agha, 2020; Aleksandrina, Budiarti, Yu, Pasha, & Shaw, 2019; Cruz & Ormilla, 2022; Mohammed M. El-Mougher, 2022). Archaeological research has identified some periods in the development of human society when the inhabitants of certain areas, through their thoughtless actions, made their habitat no longer suitable for life (Cvetkovic & Martinović, 2020; Cvetković & Planić, 2022; Perić & Cvetković, 2019). This phenomenon becomes more pronounced with technological progress and the acquisition of tools that multiply human power, and therefore the potential for causing disasters caused by erroneous actions based on poor judgment. The tendency present in the capitalist era of civilization's development, based on belittling the value of natural resources and glorifying products that come from cheap raw materials and labour, particularly exacerbates the situation. The imposition of a model of social organization that recognizes happiness exclusively in economic growth and material progress leads to a threat to the survival of those happy individuals (Mohammed Mohammed El-Mougher & Mahfuth, 2021; Hasan & Sultana, 2024; Jehoshaphat & Oghenah, 2021; Kabir, Hossain, & Haque, 2022).

The model of functioning of modern civilization, based on the necessity of increasing the volume of economic activities and industry needs for new products to achieve market placement, reduces the reserves of safe drinking water, intensively pollutes the air and contaminates agricultural land (Artiola, Walworth, Musil, & Crimmins, 2019; Dhir, Jatayan, & Kumar, 2018; Hallberg, 1987; Kochar, Sushil, & Rahul, 2020; Macek, Pavlíková, & Mackova, 2004; Okorogbona et al., 2018; Parris, 2011; Sharma, 1996; Srivastav, 2020; Wu & Sun, 2016). Despite the obvious earlier negative effects, it is only with the internationalization of industrial processes that the true scale of human action on the planetary ecosystem is seen. In the early 1970s, a serious campaign began to raise awareness in society about the disruption of the ecological balance as a consequence of the mismatch between the exploitation of natural resources and the planet's ability to absorb the damage that humans cause to nature through their activities.

The concept of sustainable development is the result of the search for solutions to overcome problems arising from an irrational attitude towards limited resources and an economic model that does not recognize environmental costs. Perhaps the idea of the ecological footprint is the best illustration of the consequences of industrial civilization on the planet as a human habitat. Namely, meeting current global consumption exceeds the capacity of the planet by 70%, which means that to maintain ecological balance, we need another planet, or a planet 70% larger than the one we live on (GFN, 2024).

Sustainability as a concept is becoming synonymous with a rational relationship with nature, but also a term with which we want to point out the importance of a process for long-term planning and the effects of activities undertaken in the future (Cvetković & Šišović, 2024; Grozdanić, Cvetković, Lukić, & Ivanov, 2024; RajeevM, 2014). In this context, we say that a community or economic entity that manages to harmonize inputs with results so that negative effects do not put the survival of the entity and the environment in question is sustainable. Given the increased awareness of the global ecosystem, this means that no community or economic system should be allowed to transfer its pollution to someone else's backyard and thus create the illusion of its sustainability. At the same time, the planetary application of the principles of sustainability implies respect by all actors, but also the assistance of the developed to the underdeveloped so that they can overcome their development problems through new technologies that are currently not available to them. Given the fact that we are contemporaries of the process of an emerging global society, it is necessary to achieve a balance between economic processes, environmental standards and the needs of the community at the planetary level.

2. The link between disaster resilience and development

With the increasing frequency, intensity and scale of disasters caused by climate change (Cvetković, Renner, Aleksova, & Lukić, 2024), the concept of resilience to events that can lead to disasters is increasingly mentioned in public discourse (Sergey, 2021; Shibru, Operea, Omondi, & Gichaba, 2022; Thennavan, Ganapathy, Chandrasekaran, & Rajawat, 2020; Umer, 2024; Xuesong & Kapucu, 2019). For this occasion, we will use the United Nations International Strategy Disaster Reduction's definition of resilience as: "the ability of a system, community or society exposed to risk to resist, absorb, adapt and recover from the effects of risk in a timely and effective manner, including the preservation and restoration of essential basic structures and functions" (UNISDR, 2009).

The complexity of the definition itself indicates the need for a multidisciplinary approach that encompasses all aspects relevant to achieving resilience. Certainly, bearing in mind the previous remarks on sustainability, we can say that it is impossible to separate sustainability from resilience, i.e. sustainability is the main determinant of system resilience. No community can be resilient to disasters without being sustainable at the same time. There are exceptions when part of the risks and negative effects are transferred to neighbouring areas, that is when one's resilience is built on raising the vulnerability of others. Bearing in mind the character of the text, we are talking here about the emerging global community, and in that context, we ignore excesses such as the practice that instead of solving the problem of pollution in developed countries, the causative agents are displaced to underdeveloped regions. In those situations, the export of the cause of pollution only creates the illusion that the problem has been solved, because the effects of such a practice return like a boomerang in the form of worsening climate changes that also affect the local community from which the holder of said practice originates.

A holistic approach to the problem of sustainability, that is, resilience, is the only one that can lead to results. There should certainly be an awareness that reaching global goals implies creating conditions for their realization at the local level. When we talk about the community, we said that our commitment to analysis is on a global level. However, the global community is made up of several levels of international subjectivity, starting from universal organizations, through regional integrations to states. Again within the states there are several levels of different organizational forms from institutions at the state level, through federal units, districts, cities and villages.

Solving a problem of a global nature implies identifying its cause at the level at which it arises. Bearing in mind the current dominant system of organization of modern societies, the level of state institutions is the one that has the instruments for directing the functioning of the system and the behaviour of all actors in the area of their competence. And here it should be said that thanks to the instruments at their disposal, states can implement a certain policy and sanction all those who do not comply with the established norms. The problem arises when trying to harmonize national policies at the global level because some countries do not want to adhere to what was agreed or consider that the global agreement is not in their interest.

Given that we have opted for the analysis of phenomena of a global nature that are largely determined by local actors, below we try to present the basic elements of sustainability and the principles on which it is based. For a community to be considered viable, it should have continuity in duration resulting from a healthy living environment, social solidarity, resilience to disasters and economic vitality, all of which contribute to the quality of life of its members. Community members' satisfaction with life within it, among other things, stems from democratic processes that respect the needs of the majority and the opportunity to participate in the decision-making process actively.

Perhaps the best theoretical framework for analyzing the level of sustainability of both local communities and global civilization is the concept of human security, which offers a seven-dimensional matrix for analyzing the quality of life in an area. The quality of people's life determines their attitude towards their current habitat and based on their satisfaction with the conditions in which they live and work, citizens make a decision to stay or change their place of residence. In the concept of human security, the factors that are taken into account when assessing the situation in an area or within a community are: economic situation, health system, quality of nutrition, environmental conditions, political situation, personal and community security (Đorđević, 2013). The harmony of all

the mentioned elements is necessary so that the community can function normally for a long period of time and survive in its living space. Coherence is the result of the interaction between community members and their awareness of a common identity arising from coexistence in a certain territory.

The social sphere implies a minimum of common elements that result from the interaction of all members of the community, and whose catalyst is the corresponding political system. The functioning of complex social structures is not possible without appropriate mechanisms that enable reaching consensus on important matters. Starting from the level of local self-government, where rules of conduct, attitudes towards others, tolerance and a minimum of rules related to the arrangement of common space should be established, as well as standards related to individual construction and the relationship of individuals to the community. Building awareness that our every move affects not only the immediate environment but in the long term also on us as individuals, that is, our families, is the first step in the process of building community sustainability. When we manage to agree at the level of the local community on the basic principles of its functioning, then the nature of things is to harmonize with the neighbouring communities that may have some of their specifics in relation to nature and social norms. That is why the political system of representative democracy, which has mechanisms for harmonizing the interests of several entities, serves us. The majority of community members must participate in the process and feel that they influence the adoption of the rules, which ultimately contributes to the level of their compliance. It is normal that within every community there are individuals who do not want, or are unable, to follow the rules established by the majority. In those cases, it is necessary to activate mechanisms for sanctioning those who do not comply with the adopted rules so that the system can function normally.

For the existence of a community in an area, the existence of certain ecological conditions and an appropriate economic system are necessary. Certainly, people chose the place for their settlements following the natural characteristics of the terrain, such as healthy drinking water, fertile soil or mineral deposits. However, with time, if the mentioned elements are not taken care of, the ambience may change. Let's say that during the exploitation of ores, or excessive use of fertilizers in agriculture, there is pollution of drinking water sources and contamination of arable land. These processes can lead to mass migration of the population in search of new areas more suitable for living.

That is why it is necessary to take into account their long-term effects when making decisions about the exploitation of natural resources. What are the costs of the undertaken activities, not only in the form of financial resources but also the long-term effects on the natural environment should be decisive factors when making decisions about the economic model of the community. Let's say that cutting forests and the wood industry would bring a lot of profit in the short term, but deforestation leads to the degradation of the terrain, the initiation of landslides and the occurrence of flash floods. An example of an irresponsible attitude towards forests shows that short-term benefits can bring long-term damage that calls into question the survival of the community in a certain area.

Mileti lists six principles that communities should adhere to if they want to be sustainable (Mileti, 1999):

1. Maintain the existing level and, if possible, improve the quality of life of the residents.
2. To improve the local economic structure.
3. Ensure social and intergenerational equality.
4. Maintain and, if possible, improve the quality of the environment.
5. Include disaster resilience and disaster risk reduction in development plans.
6. When planning, use a participatory process so that decisions are made by consensus.

For each principle, Mileti states broader explanations that can also be linked to the concept of human security. For the sake of example, for important elements affecting the quality of life, we can mention: the level of earnings the cost of living, the quality and scope of education, the availability of health system services, housing conditions, the level of employment and the social welfare system, respect for the law and exposure to crime, respect moral norms, level of environmental pollution, exposure to diseases, disasters and other risks.

Mileti believes that the community should take care of economic vitality, which means a sufficient number of jobs under conditions worthy of a human being. In this context, it is necessary to engage the community to attract and retain companies that enable the local population to achieve their existence in the area of their permanent residence. When choosing an economic strategy, the basic criterion of selection should not be only the financial effect, but the ecological aspects of the process must also be taken into account; the degree of labour exploitation and the effect of the process on the health of the population is also an important criterion for the choice of investors.

Long-term effects on living space are also important here, the basic postulates of sustainable development should not be violated. The current generation should not leave their descendants a devastated living environment, polluted nature and devastated deposits of natural raw materials. When thinking about the ecological aspects of production processes, concrete relationships of intergenerational and intergenerational solidarity are often neglected. If the current processes are controlled by a small group of interest-organized owners of large capital, there is a high probability that the positive effects of the exploitation of natural resources will be enjoyed by a small number of people who can afford a standard far above the average. In that situation, the negative effects in the form of polluted waterways, depleted sites used for disposal of toxic substances contaminated soil with an increased risk of landslides, and occupational diseases of workers remain a burden on the local community. The uneven distribution of wealth from the exploitation of natural resources leads to the growth of social inequalities, inadequate solutions in the field of urban planning, the neglect of critical infrastructure and the outflow of the population that does not see the perspective in such an environment. As a rule, in such situations, the most educated personnel who could change the situation for the better leave.

Because of all the above, there must be an identity belonging to the community that is built through the education system, family tradition and participation in the political system. Work on maintaining existing resilience and raising its level can only be provided by a community that strategically thinks about long-term survival in the current living space. Only a community with a collective awareness of common interests can make decisions that increase the level of resistance to climate change. Consideration of topics that are important for the preservation of the existing entity implies appropriate scientific processing, which is achieved through research within the academic community. Through their activities, institutes and faculties not only contribute to the identity determination of members of the community but also point to possible scenarios bearing in mind climate change and its effects on the specific area.

3. International strategies and declarations for sustainability and disaster risk reduction

At the international level, the problem of the sustainability of the current civilizational paradigm became visible in the early 1970s after the publication of the Club of Rome's *The Limits to Growth* (Meadows et al., 1974): It was then that the bleak perspective of the current economic model and the functioning of modern civilization, based on the excessive exploitation of natural resources without their proper valuation, was first presented. The Club of Rome had several more publications that drew attention to the problem but without any significant resonance in profit-oriented circles.

The Brundtland report of the World Commission on Environment and Development continued the campaign to draw attention to the problem of the sustainability of the system, in which sustainability is placed in the context of the global effects of human activities on the environment. One of the results of the commission's work is the most quoted definition of sustainable development: Sustainable development can be considered to be "... development that meets the needs of the present without compromising the ability of future generations to meet their own needs". The report points to the connection that exists between social capital, economic productivity and environmental quality. The authors of the report, inspired by the heated globalization, emphasized the need to build awareness of the planet as a common living space and a common destiny shared by all peoples of the world, which should lead to the construction of common global values (Brundtland, 1987).

The United Nations Conference on Environment and Development in Rio de Janeiro, Brazil, from 3 to 14 June 1992 promoted sustainable development as a framework for international action and to guide future development projects at the global level. At the summit in Rio, Agenda 21 was adopted, which, in addition to emphasizing the ecological aspects of development, also pointed out the need for social contextualization of the new approach to development. The agenda promotes the concept of development, which, in addition to protecting the living world on the planet, should provide conditions in which vulnerable groups of people will get the opportunity to qualitatively improve their living conditions. One of the messages stemming from the Agenda is that with planned changes in people's behaviour patterns, it is possible to change the negative effects of human activities concerning the planet as ours, but also the habitat of plant and animal life as a unique ecological entity (UNCED, 1992)

A new world summit devoted to sustainable development was held in Johannesburg in 2002 to initiate the process of applying the principles of sustainable development adopted in Rio (UNCED, 2002). Then numerous gatherings deal with the same topic with the idea of finding a common content that would attract all actors to participate in the process and respect the adopted declarations. The main problem during this process is the obstruction by profit-oriented circles that used the representatives of their countries to work out a more favourable position for themselves. The most drastic example in this context is the withdrawal of the USA from the Paris Agreement with the explanation that its implementation harms the interests of the American economy (Chakraborty, 2017).

Given that attempts to take preventive action and reduce the negative impact of humans on the planetary ecosystem have largely been unsuccessful, the international community is trying to find ways to deal with the negative trends caused by climate change (Cvetković & Grbić, 2021; Cvetković, Milojković, & Mlađan, 2013; O'Gorman, 2015). International action to help underdeveloped countries deal with the consequences of climate change is particularly important. The recommendations adopted in Hyogo were in the direction of reducing the level of risk based on practices that gave good results in threatened areas (UNISDR, 2007). In Sendai, it went a step further with the idea of raising the level of efficiency of response in cases of large-scale disasters (UNISDR, 2015). The Global Platform for Disaster Risk Reduction (GPDRR) (UNDRR, 2019) was established based on experiences with the implementation of the conclusions of the aforementioned conferences. GPDRR brings together representatives of national governments, international organizations, academic institutions and the private sector every other year. The goal is to evaluate the level of achieved results in the implementation of the agreed at this forum, but also to exchange new experiences from practice. The number of actors involved and the commitment to the realization of the goals raises the hope that in due time we can expect a change in attitudes towards the negative impact of man on the living environment and that the negative trends of which we are contemporaries can be stopped.

4. Building local sustainability capacities

Understanding the importance and context of local sustainability capacities implies, first of all, determining the content of the concept of community as an entity on which the achievement of the goal of sustainability in an area depends most. In the Oxford Dictionary, community is defined in several ways, depending on the context in which the term is used. For this work, we opt for the definition that reads: "A body of people who live in the same place, usually sharing a common cultural or ethnic identity." Hence: a place where a particular body of people lives" (OED, 2024).

For a complete understanding of the term, it should be said that it is a group of people who share a common living space, have the same or similar needs, engage in social interaction, carry out joint actions and have a sense of belonging - an identity created based on tradition and history. For the validity of the analysis related to a specific community, it is necessary to know its territorial scope. We have already said that it can be the level of local communities, regions, and countries, but also the planetary level. The principles on which the analysis is based are the same, only the elements are complicated because there is a multi-layered level on which the interaction of community members depends. The simplest analysis is at the local level, where we only have citizens and institutions in

charge of their space. If we expand the area of analysis, then we have to include higher administrative levels starting from municipalities, through districts, republics, and up to universal organizations. That is why it is necessary to determine the context of the meaning of the community with an additional prefix such as local or global and thus specify the level of institutional competence.

Given that in this part of the material we are dealing with issues important to the local community, it should be borne in mind that we are talking about the level of local (self) administration as the lowest level of the institutional system. Territorial boundaries of local communities are most often determined according to the criteria of geographical units and represent areas with certain climatic characteristics. That is why the population living in the space of a community has a more or less similar history, collective memory of past events and needs related to the common space. The level of spatial organization and the degree of resistance to extreme phenomena such as floods, droughts or some other form of threat to the survival of people in their habitat depends on the behaviour of both individuals and narrow social groups. The individual attitude towards the interests of the community and the living space determines the level of quality of life of all members of the community. That is why it is important that within each community we can identify individuals or groups of people who are important for taking appropriate actions to realize the interests of that community. Past historical experiences have shown that the best form of identification of community representatives and their leaders is the direct election system. In the elections, the members of the community test their position on who has the greatest reputation and gains the trust of others that he can successfully contribute to the common interest.

Certainly, in addition to the territorial dimension of the organization of community members, its functional dimension should also be taken into account (Žganec, 2003). Namely, bearing in mind that local communities are by nature part of broader entities and that, following the rules related to administrative and administrative division, many actions of a local nature must be coordinated with plans adopted at the level of broader entities, local communities elect their representatives in higher institutional structures. This is already the point where certain problems can arise, considering that a functional community can include areas with different geographical and climatic characteristics. The alignment of needs at the level of functional communities largely depends on the quality of elected representatives at the level of local communities who should represent the interests of the members of their communities. At that level, too, misunderstandings and the imposition of the interests of more numerous and economically powerful social groups can occur. That is why it is important to establish institutional mechanisms that will enable the harmonization of everyone's interests to ensure the functionality of communities and their survival.

The specificity of the topic we are dealing with points us to the fact that the local community should have a key role and influence in raising resilience to disasters because its members are potentially the most vulnerable and suffer the greatest consequences (Chen & Lin, 2023; Cvetković, Milašinović, & Lazić, 2018; Cvetković, Tanasić, Renner, Rokvić, & Beriša, 2024; Kalantari, Ferreira, Keesstra, & Destouni, 2018). At the local level, there is the best knowledge about the characteristics of the local topography, available resources and living conditions. That is why local structures must be actively involved in the process of disaster management in all phases; from development plans and disaster response plans to dealing with their consequences. Each local community should have the initiative to develop its capacities, but also to build systems at higher levels that should contribute to the general resistance to disasters, as well as overcoming their consequences when they occur. It should always be kept in mind that local communities are not only in the role of victims, but they are also the first line of defence and assistance in the event of disasters when assistance to the affected is necessary. Therefore, a bottom-up management approach is necessary in this sector to obtain a model that solves the problem at its source.

For the effectiveness of the response system in emergencies, it is necessary to build participative strategies that, with the inclusion of all actors in the process, contribute to reducing the vulnerability of the area and increasing their resilience. By involving citizens in the process of risk assessment and making plans, awareness is raised about risks from the immediate environment, but also about the importance of their behaviour to urban plans and construction standards. It is also necessary for all public officials to familiarize themselves with their roles in the system so that when making

decisions, they also take into account the possible consequences of the risks faced by the community whose interests they represent.

Specific activities that can be undertaken to make the population aware of the importance of preventive action concerning potential risks are:

- Acquaintance of the population with handling in the event of disasters through the media and within the educational process.
- Acquaintance of the local population with the risks they are exposed to to the characteristics of the terrain and phenomena that can contribute to raising the level of risk. Given that floods and landslides are most often the result of reckless human action, the population should draw attention to the consequences that may occur as a result of deforestation, cutting roads on steep slopes, and building houses in flooded areas. A public demonstration and display of disaster-resistant construction methods should be organized with reference to the selection of locations for houses and commercial facilities.
- A good way to activate the local population is to establish working groups for the repair of water infrastructure, cleaning sediments and waste that can cause overflowing rivers, reforestation. Getting to know objects that can be a source of contamination and dealing with accidents by organizing exercises is a good way to approach abstract theoretical developments to citizens who are potential victims of identified risks.
- Preparation of facilities for shelters and evacuation in case of disasters. Acquainting the community with disaster response plans and actions can significantly contribute to a community's level of resilience.

We should certainly take into account the fact that from the perspective of local structures, it is not always possible to see the wider picture of all relevant facts regarding the mechanisms of the causes that lead to disasters, so coordination at the level of wider entities is also necessary. It is especially important to establish structures at the regional level that can raise the level of efficiency of the response system, but also of planned action in order to reduce risks and eliminate the causes of potential disasters. The establishment of a system in a wider area enables the rationalization of available resources because specialized units and equipment can be designed in accordance with the needs assessments of wider entities, which avoids the multiplication of organizational units and technical resources.

Just as it is important to establish a system based on local characteristics in accordance with the dangers and risks to which residents of certain areas are exposed, it is also important to analyze experiences from other areas that have already faced the consequences of certain natural or technical destructive phenomena. This is especially important considering the change in the characteristics of the area due to climate change, which also leads to a change in the spread of climate zones.

4.1. Reliance on tradition

Traditional knowledge and skills refer to historical experiences that contribute to the understanding of natural processes from the immediate environment. From today's perspective, we can say that it is the accumulation of knowledge resulting from interaction with the environment, which over time becomes part of the historical heritage of the community, a kind of philosophy of life. Tradition can also be defined as a local system of knowledge developed through practical action in everyday life activities. Tradition is an indispensable part of cultural heritage that manifests itself through a belief system, and a relationship with nature and community members. Certain rituals and traditions contribute to the preservation of traditional knowledge and their intergenerational transfer and can be recognized in the specificity of indigenous languages through terms used by the local population to express certain natural phenomena. (UNESCO, 2020)

Although there are significant differences in the way the traditional knowledge system and modern science were created, the potential and importance of tradition for reducing the risk of disasters is recognized. Tradition makes it possible to obtain a long-term dimension of sustainability and

community survival in their territory. The complementarity of modern and traditional contributes to the realization of the goals of sustainable development. The principles of modern science and the methodology of research and application of scientific achievements with respect for traditional experiential knowledge enable obtaining models that significantly contribute to the sustainability of the community and reduce the risk of natural disasters. (Hadlos et al., 2022).

Development plans in an area should be the result of an assessment of the characteristics of the terrain and the potential risks that the local community may face in the future. It is not a rare phenomenon that newly built buildings increase the probability of the realization of existing risks, but they can also create an environment that causes additional risks. When planning, it is certainly necessary to take into account the perception of risk that exists in the collective consciousness of the local population of the area where new construction is intended or an intervention that affects the change in the geographical characteristics of the area. Folk wisdom that comes as a result of collective experience with the destructive power of natural phenomena is transmitted through oral traditions or written down in historical documents. Among the highly educated part of the population, there is a tendency to underestimate folk traditions in the context of current processes and phenomena. However, the practice has shown that many lives and material goods were saved precisely thanks to the collective experience and heritage based on which the population recognized the danger in time. It is for this reason that the Hyogo Framework for Action (2005-2015) states that it is important to use “traditional and indigenous knowledge and cultural heritage” as a source of “knowledge, innovation and education to build a culture of security and resilience at all levels”.

There is a significant number of publications dedicated to the need to include traditional knowledge in modern development strategies and the creation of emergency response systems. We do not have to cite foreign experiences in this sphere, we also have domestic examples. One of the good examples of the importance of collective consciousness for maintaining community resilience is the case of Sokobanja. During the transition period in Serbia, many people saw forest cutting as a good source of income. Many mountain areas were exposed to relentless deforestation regardless of all the negative aspects of that practice. After the slopes of Mount Ozren above Sokobanja also came, the local population rebelled against the intention to realize those plans, having experience with torrential floods that were a frequent occurrence in Sokobanja after the Second World War when the Germans completely stripped the hills above that town. It took several decades for the trees to grow, which now absorb a significant amount of rainfall and prevent flash floods. Thanks to the collective action of the people of Sokobanja, the surrounding forests have been preserved. Current protests against the cutting of forests to build a wind farm on Cestobrodica should also be interpreted in this context.



4.2. Application of international standards

The importance of international standards for building local sustainability capacities should be seen in the context of the previous unit. International standards are created based on successfully applied practice that is recognized by ISO system experts and practitioners who apply certain techniques and procedures in the performance of their professions. The success criterion of a process, among other things, takes into account its effects on the living environment as well as on its immediate participants. Here, it is particularly important to emphasize the criterion of success based on experience from practice, which means that every society doesn't need to go through all the stages of realizing the principles of functioning of a process. Bearing in mind the nature of climate change, today we are contemporaries of the shifting of climate zones, which implies changes in the living environment of communities. These changes are usually a new challenge or an already known phenomenon but with far more intense effects. That is why it is important to be able to use procedures and rules that are successful when dealing with some dangers.

The standards of the ISO system were created as a result of the need to standardize the quality of products and their technical characteristics. Later, with the development of global processes and the growth of awareness of the planet as a unique living space of the human population, the space

covered by the ISO system expands. It is particularly important to draw attention to profitability as the basic criterion of capital owners, which is often in conflict with citizens' interest in a healthy living environment. Namely, owners of investment capital make their investment decisions guided by indicators of profit rates, while the effects of investments on the living environment and quality of life are less taken into account. Developed countries with a democratic tradition have built institutional mechanisms to force capital owners to implement local laws when starting new investments that limit negative effects on air, water, soil and the health of the public. Investment funds in search of new sources of income offer their members cross-border investments in countries with corrupt rulers and areas where there is no insistence on systems for purifying polluting products of production processes.

This practice is one of the biggest challenges of the emerging global community and requires an answer to the question of how to reconcile the need of the underdeveloped for new technologies and facilities that will employ the population of underdeveloped countries and the need for those facilities not to threaten the survival of those same people who work in them. It is the activities that are carried out within the ISO system that can be the answer to the mentioned problem. Let's say that TNCs are obliged to apply the same protection standards in the business process, regardless of the location of the plant. If all the countries of the world insisted on applying the same business rules, then the problem with local corrupt systems would be solved. Certainly, in this process, the most developed countries have the greatest responsibility because they have the mechanisms to force companies originating from their areas to comply with established rules. At the same time, insisting on knowing the origin of the product and the availability of information on whether the product was created in a plant that respects the appropriate standards on environmental protection, workers' rights and the emission of harmful substances would prevent speculative actions in this sphere and solve a good part of the problems concerning the sustainability of modern civilization. (Djordjević & Keković, 2023)

Within the UN activities that are carried out to fulfil the goals of sustainable development, there is a lot of potential for the application of appropriate standards and the promotion of their importance. For each of the dimensions of human security that concern the quality of life of the population, there is a group of standards whose application can contribute to the realization of the goals of sustainable development and at the same time raise the existing level of the quality of life of all inhabitants of planet earth. One of the examples that best illustrates the stated thesis is the impact of ISO 20400 on the realization of sustainable development goals.



Table 1. The impact of the ISO 20400 Standard application on the goals of sustainable development is based on ISO (2018), UNDP (1994) and UNHSU (2016).

No.	Goal	Contribution
1.	No Poverty	Development based on the principles of sustainability eliminates poverty among the local population.
2.	Zero Hunger	Ensuring a minimum income for a life worthy of a human being implies sufficient funds for the procurement of food.
3.	Good Health and Well-Being	Thanks to the improvement of conditions at the workplace and the provision of sufficient resources for regular and healthy nutrition, the general well-being and health of people is contributed to.
4.	Quality Education	Sustainability also means allocation for investments in local infrastructure and public services. Education gains quality thanks to higher budget revenues, which enables better working conditions, as well as better teaching staff.
5.	Gender Equality	With economic development, conditions are created for the application of the principle of gender equality in the local community.
6.	Clean Water and Sanitation	Larger public funds enable investments in the water supply network and wastewater treatment systems.
7.	Affordable and Clean Energy	A higher economic standard implies the expansion of the electrical network and the availability of energy to all residents with a higher rate of investment in environmentally friendly energy sources.
8.	Decent Work and Economic Growth	Sustainability implies working conditions that do not endanger the health of employees. If the principles of sustainability are consistently applied, then in addition to economic growth, we also get development, which is a prerequisite for raising the quality of living and working conditions of the population.
9.	Industry, Innovation and Infrastructure	With the development of the economy, the outflow of civil servants decreases. The creative part of the population remains in the country of origin and contributes to its development and more rational use of local resources.
10.	Reduced Inequalities	With development comes a reduction in the gap between the rich and the poor.
11.	Sustainable Cities and Communities	The application of sustainability principles ensures cleaner air in cities, a lower level of water pollution and soil contamination. As the level of development increases, the level of criminal and socially undesirable forms of behavior also decreases.
12.	Responsible Consumption and Production	Insisting on sustainability reduces the unnecessary pollution that comes as a result of consumerism and reduces processes that are big polluters.
13.	Climate Action	A responsible attitude towards production and consumption contributes to reducing the negative effects of climate change.
14.	Life below Water	Insisting on recycling and treating wastewater reduces pollution of the world's seas and oceans.
15.	Life on Land	Respecting the principles of sustainability ensures the preservation of biological diversity on the planet.
16.	Peace, Justice and Strong Institutions	A higher level of public revenues enables the hiring of better quality personnel in public services, which increases the efficiency of their work and reduces corruption. It ensures the stability of institutions and reduces the likelihood of internal and international conflicts.
17.	Partnerships for the Goals	Awareness of common interests in the preservation of the planet as a common habitat of all people, plants and animals contributes to the establishment of global partner networks.

Source: (Djordjević & Keković, 2023).

Thanks to the application of good practice models at all levels, it is possible to contribute to the change of negative trends related to climate change, the cause of which is man's irresponsible behavior. By adopting proven models from community practice, they change their attitude towards the environment, raise the level of efficiency of institutions and contribute to their resilience in relation to potential dangers. Table 2 contains a list of the most important standards in the field of environmental protection.

Table 2. Selected ISO standards relevant for environmental security

ISO/TS/ASTM	The name of the standard
9806	Solar energy — Solar thermal collectors — Test methods
14000	Environmental management systems
14001	Environmental management systems — Requirements with guidance for use
14020	Environmental labels and declarations
14055	Environmental management – Guidelines for establishing good practices for combatting land degradation and desertification
14064	Greenhouse gases
14067	Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification and communication
14080	Greenhouse gas management and related activities — Framework and principles for methodologies on climate actions
20245	Cross-border trade of second-hand goods
20400	Sustainable procurement — Guidance
24518	Activities relating to drinking water and wastewater services — Crisis management of water utilities
24521	Activities relating to drinking water and wastewater services — Guidelines for the management of basic on-site domestic wastewater services
30500	Nonsewered sanitation systems – Prefabricated integration treatment units – General safety and performance requirements for design and testing
38200	Chain of custody of wood and wood-based products
50001	Energy management systems – Requirements with guidance for use

Source: (Djordjević & Keković, 2023).

The possibilities and potential offered by the ISO system in the field of managing local community affairs should be emphasized here. The resistance of institutions to the influence of self-interested organized profit-oriented groups through corrupt activities is a prerequisite for the community's resistance to the effects of natural and other disasters. Insisting on the application of appropriate standards (Table 3) lowers the probability of the realization of some risks due to the irresponsible operations of business entities, but also of the state administration.

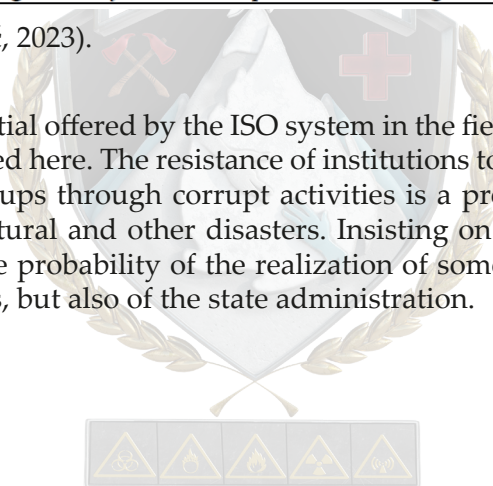


Table 3. Selected ISO standards most relevant for community security.

ISO/TS/ASTM	The name of the standard
15392	Sustainability in buildings and civil engineering works
22311	Societal security — Video-surveillance — Export interoperability
22313	Security and resilience — Business continuity management systems — Guidance on the use of ISO 22301
22315	Societal security — Mass evacuation — Guidelines for planning
22319	Security and resilience — Community resilience — Guidelines for planning the involvement of spontaneous volunteers
22320	Security and resilience — Emergency management — Guidelines for incident management
22322	Societal security — Emergency management — Guidelines for public warning
22324	Societal security — Emergency management — Guidelines for colourcoded alerts
22325	Security and resilience — Emergency management — Guidelines for capability assessment
22326	Security and resilience — Emergency management — Guidelines for monitoring facilities with identified hazards
22327	Security and resilience — Emergency management — Guidelines for implementation of a community-based landslide early warning system
22328	Security and resilience — Emergency management — General guidelines for the implementation of a community-based disaster early warning system
22329	Security and resilience — Emergency management — Guidelines for the use of social media in emergencies
22370	Security and resilience — Urban resilience — Framework and principles
22393	Security and resilience — Community resilience — Guidelines for planning recovery and renewal
22395	Security and resilience — Community resilience — Guidelines for supporting vulnerable persons in an emergency
22397	Societal security — Guidelines for establishing partnering arrangements
22399	Societal security - Guideline for incident preparedness and operational continuity management
24526	Water efficiency management systems— Requirements with guidance for use
26000	Guidance on social responsibility
37101	Sustainable development in communities — Management system for sustainable development
37120	Sustainable cities and communities — Indicators for city services and quality of life
37122	Sustainable cities and communities — Indicators for smart cities
37123	Sustainable cities and communities — Indicators for resilient cities
37151	Smart community infrastructures — Principles and requirements for performance metrics
37152	Smart community infrastructures — Common framework for development and operation
44001	Collaborative business relationship management systems — Requirements and framework

Source: (Djordjević & Keković, 2023).

Certainly, one of the prerequisites for understanding the concept of sustainability and the connection between daily life activities and long-term effects on the planetary ecosystem is quality education for the public. In this context, we should also mention ISO 21001 (Educational organizations — Management systems for educational organizations — Requirements with guidance for use) whose goal is to raise the level of quality of work of formal educational institutions. No less important is the ISO 29993 standard, which covers all types of non-institutional education (adult education, professional education and training within the company), which is especially important considering the need for continuous improvement and familiarization with changes in our environment.

5. (Un)sustainable development and disaster risk reduction in Serbia

Sustainable development has become one of the key elements in the formulation and implementation of development policies in the world, but also a key determinant of the development of nation-states in the future. On the other hand, no matter how well-prepared a country is and how solid its policy frameworks are, it will often face disasters with inevitable and very devastating consequences. If recovery processes are only partially implemented and are not focused on strengthening resilience, the consequences of disasters can last for a very long time and affect the lives of entire generations (UNDP, 2014). As the Secretary-General of the United Nations reminds us: "Risk considerations should be included in all investments in sustainable development."

The new seventeen sustainable development goals are more comprehensive than those set out in the Millennium Development Goals of 2000. They cover a wide range of issues related to the economy, social issues, the environment, governance, human rights and gender relations. The Sustainable Development Goals reflect the understanding that development has multiple dimensions and that development in one area depends on the results achieved in other areas. The Sustainable Development Goals also place a much greater emphasis on the concept of resilience, including disaster risk reduction, which is an essential element for every country and a common theme that unifies the tasks set for each of the goals. In its recent history, Serbia has faced many challenges, of which, due to their scope and complexity, a significant place belongs to solving problems in the field of environmental protection, disaster risk reduction and sustainable development. The concept and issues of sustainable development, as well as risk management in our country, are not new and unknown.

At the UN Conference on Environment and Development, held in Rio de Janeiro in 1992, Serbia, as part of a federal state, supported the main guidelines of the conference, the most important of which are the following: peace, development and environmental protection are interdependent and indivisible, to achieve sustainable development, environmental protection is an integral part of the development process and cannot be considered separately from it. At the United Nations World Summit on Sustainable Development in Johannesburg in 2002, it opted for the implementation of the Johannesburg Plan of Action in its strategic documents, constantly bearing in mind the Rio Declaration, Agenda 21 and the three Rio Conventions. At the same time, enthusiasm and commitment to sustainable development did not have the same intensity in all phases. Particularly noteworthy are the years 2002 and 2003, when this process was given a significant boost by the message of the then leadership of the Republic of Serbia to the World Summit on Sustainable Development, that "the environment is a priority and a significant support for economic development", as well as the years 2009 and 2010, in which the confirmation of Serbia's commitment to sustainable development by the country's representatives at the Millennium Development Goals Summit can be highlighted.

The most important document in this area is the National Sustainable Development Strategy (Government of the Republic of Serbia, 2008), which bases its solutions on European documents: the EU Sustainable Development Strategy adopted in 2001 and revised in 2006, and the EU Lisbon Strategy from 2009. The Strategy is aligned with the UN Millennium Development Goals and the National Millennium Development Goals in the Republic of Serbia, which were adopted by the Government of the Republic of Serbia in 2006. The orientation towards sustainable development is a logical choice for our country in the future, given the long-standing experience of unsustainable development, especially in conditions of catastrophic consequences of risks, which require high costs and counted on short-term effects, even at the cost of a drastic slowdown in economic dynamics over a long period of time. Serbia has undoubtedly needed a decisive move towards the application of the principles of sustainable development in politics, the economy and all other areas of life, especially in disaster risk reduction. Instead of fragmented and poorly coordinated policy decisions affecting the economic, social and environmental dimensions of development, the aim was to achieve an integrated set of policies that work together to improve human well-being. Sustainable development cannot be achieved without good governance, which ensures that different (economic, social, environmental, and institutional) priorities are based on a broad consensus in society and that the voices of all, especially the most vulnerable, are heard when decisions are made on the allocation of resources. The responsibility for implementing sustainable development lies largely with the state,

but other institutions from the private sector and civil society should also become active partners in the process.

Along with the progress in the application of the concept of sustainable development and the clearly visible need for its synergy with other areas, the need for transformation in the field of disaster risk reduction has also been recognized. Globally, but also at the national level, the concept and practice of disaster risk reduction are reflected in systemic efforts to analyze the causal factors of disasters and to manage them, including reduced exposure to hazards, reduced vulnerability of people and property, sound land and environmental management, and improved preparedness for harmful events (UNISDR, 2009). One of the most important activities for preventive risk reduction and its consequences in Serbia in the process of transformation is building the capacity and resilience of society to risks and disasters, which is directly correlated with sustainable development. The transformation process also implies that reconstruction as a process must not be viewed only through the prism of financial assistance to the community in order to strengthen resilience.

A key component in this process, especially at the national level, is rehabilitation through education and training among the affected population, but also in society in general, which needs to be given special emphasis through the planning and design of comprehensive educational programs. Also, in risk reduction and risk management, one should not seek a solution based on subjective assessment and opinion, ignoring the socio-economic, environmental, institutional and other aspects that are highlighted in disasters. It is equally important that effective risk management implies, first of all, their understanding. This means that all those who analyze, assess risks and plan to manage them must understand its ambiguity - it is about the exposure of community components to a particular hazard, but also the likelihood of numerous consequences. These two components - exposure, and especially consequences - warn us that an even more important activity than risk management is disaster risk reduction. This activity, as a preventive one, is defined in international documents and in the national Law on Disaster Risk Reduction and Emergency Management from 2018 as a policy aimed at preventing new and reducing existing risks. This is done through the implementation of integrated economic, social, educational, normative, health, cultural, technological, political and institutional measures. They strengthen the preparedness of the community to respond to and mitigate the consequences of disasters. Therefore, in addition to risk assessment, a disaster risk reduction plan is of utmost importance.

The territory of the Republic of Serbia and the Western Balkans is threatened by numerous risks that threaten new consequences from year to year and directly endanger the further sustainable development of society. In the Republic of Serbia, in the period 1900–1940, 100 natural disasters occurred every ten years, in 1960–1970 there were 650, and in 1980–1990 as many as 2000, while in the ten-year period 1990–2000 the number of disasters increased to 2800. The trend shows that the number of hazards is increasing from year to year, so in recent years the economic costs have tripled. In the Study on the Economic Benefits of RHMS of Serbia, weather-dependent economic sectors in the Republic of Serbia were identified, their share in gross national income (excluding value-added tax), and recorded and estimated damages. The share of weather-dependent sectors in the gross national income of the Republic of Serbia, excluding the Autonomous Province of Kosovo and Metohija, at constant 2002 prices excluding value-added tax, ranged from 42% to 43.8% in the period 2000 to 2004. As early as 2005, the share of weather-dependent sectors in the gross national income of the Republic of Serbia was 47.18%. The World Bank study covered only 49% of weather-dependent sectors and did not take into account damages caused by forest fires. However, during 2007, 258 forest fires were registered. The forest fires caused damage of around 40 million euros. 24 million euros are needed for the restoration alone. Indirect damage has not been estimated. (Government of the Republic of Serbia, 2011).

Analysis of further trends in terms of the type, frequency, causes and severity of catastrophic events in Serbia shows that there has been an increase in damage and economic consequences, especially due to floods and earthquakes, droughts and climate change. According to climate change projections in the Second National Communication to the United Nations Framework Convention on Climate Change for Serbia 2001–2030. (UNDP, 2015), the temperature increase will range between 0.8 and 1.1 C°, while precipitation in most parts of the country is expected to increase moderately by

up to 5 percent in the period under review. Other climate change models predict a greater increase in temperature (up to 3.4–3.8 °C) and a decrease in precipitation of up to a maximum of 15 percent (Popović et al., 2009). Observations over the last two decades show that droughts usually affect the territory of Vojvodina in the north, as well as the southern parts of the country (Government of the Republic of Serbia, 2011). According to Andjelković and Kovač, the driest year in the last twenty-five years was 2012, when precipitation was very low and temperatures were high, over 35°C. It was the largest of the seven major droughts recorded and significantly affected agricultural production. Droughts cause significant economic losses in the Western Balkans and Serbia, especially in the agricultural, energy and water management sectors (Kovač & Andjelković, 2016).

The area of Serbia that is at risk from floods caused by hundred-year floods is 1.57 million ha, of which 1.45 million ha are located in Vojvodina. About 80% of the area at risk from floods is agricultural land, including 512 larger settlements, 515 industries, 4,000 km of roads and 680 km of railways. In Vojvodina, this is about 1 million ha of agricultural land, 260 settlements, 3 840 km of roads and about 150 km of railways (Republic of Serbia, 2014). Floods are occurring more frequently and are becoming more destructive as a result of unsustainable economic development, especially poor management of forests and agricultural land, as well as uncontrolled urbanization. As Varga states, during the development of this area of water management to date, the principle of “flood control” has been primarily applied in Serbia, which involved the construction of significant and expensive investment facilities (dams, reservoirs, embankments, watercourse regulation, relief channels, etc.) to ensure safety for people and goods located in flood zones. The principle of “flood control” was, until the last decades of the last century, most often applied in the world, when a new one was introduced - “living with floods”. This new concept is far more sustainable and seeks to harmonize the requirements of the “human” component (protection of goods and human lives) and the “ecological” component (preservation or restoration of natural functions and resources of the floodplain) (Varga et al., 2001).

Serbia felt the unsustainability of the existing concept of flood risk assessment and the entire disaster risk reduction system most acutely in the period from 1999 to 2006, and then in May 2014, when it was faced with catastrophic floods, accompanied by landslides, which affected more than two-thirds of our country (119 out of 165 municipalities), or 1.6 million people. 57 Serbian citizens lost their lives, and the total damage was estimated at over 1.7 billion euros, or about 4.7% of GDP in the year. More than 400 houses were destroyed, and about 20,000 housing units were damaged. The impact of the floods was by far the greatest in the field of production, and then in the field of social services and infrastructure. Looking at individual sectors, mining and energy were the most affected, followed by housing, agriculture, trade and transport. It is estimated that 1.346 billion euros are needed for restoration and reconstruction, 51,800 jobs were temporarily lost due to the interruption of work activities in the 24 most severely affected municipalities, and damage to the housing stock is also extensive, leading to a significant deterioration in the living conditions of the local population (RS, 2014). This disaster triggered a recession in the Serbian economy, which recorded a decline of 1.8 percent in 2014, instead of the expected growth of 0.5 percent (Bijelić & Lazarević, 2015). The reconstruction began on 1 August 2014, immediately after the adoption of the Law on Flood Relief (Government of the Republic of Serbia, 2014). For these purposes, approximately 229 million euros in grants were approved (to the limited account of the Government of Serbia, from bilateral donations, from the EU Solidarity Fund and pre-allocated EU funds from pre-accession assistance) and 300 million dollars in World Bank loans (approved in October 2014 for reconstruction in the energy, agriculture and water management sectors). To this should be added the expected amount of the Japanese Government loan of 65 million euros, for which a request has been submitted and which is intended for the reconstruction of the entire energy sector. Although these are large amounts of money, it seems that this is only a small part of the estimated damage.

The state of disaster resulting from the inability to control flood risks negatively affected Serbia’s key macroeconomic and social indicators in 2014. Serbia’s vulnerable economy, affected by the floods, entered its third recession since the outbreak of the global economic crisis. Instead of the slow growth expected before the floods, real GDP fell by 1.8% in 2014. This was also contributed to by the slower-than-expected recovery of our largest foreign trade partners. Industrial activity decreased the most, and the floods caused the most damage to the mining and energy sectors, which are re-

sponsible for the decline in industrial production by more than 80%. Electricity exports practically stopped in the second half of the year, so in the whole of 2014 they were lower than in the previous year. The floods increased the import of electricity, as well as the import of coal for its production. In contrast, the export of petroleum derivatives increased compared to 2013, while the value of imports decreased significantly due to the modernization of plants in the petroleum industry. Similarly, the decline in activity in the chemical and metal processing industries was also influenced by lower imports of natural gas. Given the high share of energy products in total imports and significantly lower in exports, the trade balance of the energy sector in 2014 was negative (NBS, 2015). The floods created additional pressure on public finances, through lower tax collection and higher costs in mitigating their consequences. However, fiscal developments were favourable in the second half of 2014, primarily due to fiscal consolidation measures taken in the area of combating the shadow economy and tax evasion, as well as reductions in public sector wages and pensions.

Previous analysis of catastrophic floods, but also the impact of numerous natural risks, most notably recent climate shocks, has highlighted the importance of strengthening the resilience of the economy and population to risks, extreme weather events and climate change. Disaster risk management in the country and the region, according to World Bank experts, should be promoted and included in national development strategies (WBG, 2015). Disaster risk reduction is a development issue of paramount importance. Efforts to avoid risk bring the greatest long-term return on investment in development. However, the intangible benefits of avoiding losses can make these efforts less politically attractive, making it difficult to include them in strategic development documents. Effective disaster risk management requires collective action by a wide range of key actors across ministries, departments, agencies and at all levels. In addition, institutional stability is needed, as well as a strong coordination mechanism between different sectors, to ensure the sustainability of these activities.

6. Conclusion

Sustainability has become a fundamental principle of development in more and more activities and organizations, from local to national and global levels. There has been much discussion about indicators and other elements of development to determine development policies and assess the level of progress. To this day, although the concept of sustainability has been common in the world for several decades, the goals and practical implications of sustainable development have not yet been fully accepted. Discussions and debates about the term “development” have not ended, although development has been discussed since the first steps of humanity’s civilization. The phrase “sustainable development” itself is in intensive use in many fields that analyze this concept from different angles and are associated with it, but also has different approaches, which often causes difficulties in its practical application.

The goal is to solve the problem of the state of disasters before they occur and threaten development, that is, to ensure that the development model does not lead to disasters. Disaster risk reduction focuses on risks, not disasters themselves, and the concept of disaster risk reduction emphasizes the need to reduce the exposure to hazards and the vulnerability of people and communities and to improve preparedness and early warning systems for potential risks. Disaster risks depend on the level of development in given contexts, including demographics, poverty, gender equality, urbanization, the environment, and climate change. The main lesson is that we as individuals and societies are still extremely vulnerable. It is therefore important to understand that the elements of sustainable resilience are ongoing risk assessment, improved early warning systems, support for decision-makers, long-term investment in risk reduction, planning and implementation of prevention measures, and international cooperation.

Summarizing the previous discussion, we can conclude that the current model of economic development is accompanied by numerous natural risks, climate change, poverty and inequality and as such increases the risk of disasters and is not sustainable in the long term. Disaster situations cause great loss of human life, destruction of economic and social infrastructure, as well as envi-

ronmental consequences. This undermines the capacity of many, primarily underdeveloped and middle-income countries, to undertake capital investments and provide social expenditures necessary to achieve sustainable development. To break this vicious circle and prevent a sharp increase in disaster risks, their causes must be addressed. This implies a transformation of the development model, taking into account sustainability criteria. Therefore, disaster risks should be managed from within, from the development process, which can play a key role in the transition of development from an unsustainable to a sustainable path.

References

1. Aleksandrina, M., Budiarti, D., Yu, Z., Pasha, F., & Shaw, R. (2019). Governmental Incentivization for SMEs' Engagement in Disaster Resilience in Southeast Asia. *International Journal of Disaster Risk Management*, 1(1), 32-50.
2. Al-ramlawi, A., El-Mougher, M., & Al-Agha, M. (2020). The Role of Al-Shifa Medical Complex Administration in Evacuation & Sheltering Planning. *International Journal of Disaster Risk Management*, 2(2), 19-36.
3. Andjelković, B., & Kovač, M. (2016). Izveštaj o humanom razvoju Srbija 2016. Socijalni Kapital: Nevidljivo Lice Otpornosti. Beograd: UNDP Srbija.
4. Artiola, J., Walworth, J., Musil, S., & Crimmins, M. (2019). Soil and Land Pollution. *Environmental and Pollution Science*. doi:10.1016/B978-0-12-814719-1.00014-8
5. Bijelić, M. & Lazarević M. (2015). Resilient Financing: The Economic Costs of Natural Disasters A Case Study of 2014 Serbia Floods. Belgrade: UNDP.
6. Brundtland, G.H. (1987) Our Common Future Report of the World Commission on Environment and Development. Geneva: UN-Document A/42/427. Retrieved from: <https://digitallibrary.un.org/record/139811?v=pdf>. Accessed: 16.10.2024.
7. Chakraborty, B. (2017) Paris Agreement on climate change: US withdraws as Trump calls it 'unfair', June 1, Fox News. Retrieved from: <https://www.foxnews.com/politics/paris-agreement-on-climate-change-us-withdraws-as-trump-calls-it-unfair>. Accessed: 16.10.2024.
8. Chen, I.-Y., & Lin, S.-Y. (2023). Resilience Analysis of Power System for Seismic Disaster Mitigation. Paper presented at the EGU General Assembly Conference Abstracts, Vienna, Austria. <https://ui.adsabs.harvard.edu/abs/2023EGUGA..25..270C>
9. Cruz, R. D. D., & Ormilla, R. C. G. (2022). Disaster Risk Reduction Management Implementation in the Public Elementary Schools of the Department of Education, Philippines. *International Journal of Disaster Risk Management*, 4(2), 1-15.
10. Cvetkovic, V. M., & Martinović, J. (2020). Innovative solutions for flood risk management. *International Journal of Disaster Risk Management*, 2(2), 71-100.
11. Cvetković, V., & Grbić, L. (2021). Public perception of climate change and its impact on natural disasters. *Journal of the Geographical Institute Jovan Cvijic*, 71(1), 43-58.
12. Cvetković, V., & Planić, J. (2022). Earthquake risk perception in Belgrade: implications for disaster risk management. *International Journal of Disaster Risk Management*, 4(1), 69-89.
13. Cvetković, V., & Šišović, V. (2024). Understanding the Sustainable Development of Community (Social) Disaster Resilience in Serbia: Demographic and Socio-Economic Impacts. *Sustainability*, 16(7), 2620.
14. Cvetković, V., Milašinović, S., & Lazić, Ž. (2018). Examination of citizens' attitudes towards providign support to vulnerable people and voluntereeing during disasters. *Journal for social sciences, TEME*, 42(1), 35-56.
15. Cvetković, V., Milojković, B., & Mlađan, D. (2013). Climate change as a modern security threat. Paper presented at the International conference climate change impacts on water resources Belgrade.

16. Cvetković, V., Renner, R., Aleksova, B., & Lukić, T. (2024). Geospatial and Temporal Patterns of Natural and Man-Made (Technological) Disasters (1900–2024): Insights from Different Socio-Economic and Demographic Perspectives. *Applied Sciences*, 14(18), 8129.
17. Cvetković, V., Tanasić, J., Renner, R., Rokvić, V., & Beriša, H. (2024). Comprehensive Risk Analysis of Emergency Medical Response Systems in Serbian Healthcare: Assessing Systemic Vulnerabilities in Disaster Preparedness and Response. Paper presented at the Healthcare.
18. Dhir, K., Jatayan, M., & Kumar, S. (2018). Water Pollution Burden and Techniques for Control. 146-179. doi:10.4018/978-1-5225-3379-5.CH009
19. Djordjević, I. & Keković, Z. (2023). The Impact of International Standards on the Quality of People's Life. *International Journal for Quality Research*, 17(4), pp.1025–1040. DOI – 10.24874/IJQR17.04-04
20. Đorđević, I.Lj. (2013). *Ljudska bezbednost – globalni kontekst i primena u Srbiji*. Beograd: Institut za uporedno pravo i Dosije Studio.
21. El-Mougher, M. M. (2022). Level of coordination between the humanitarian and governmental organizations in the Gaza Strip and its impact on the humanitarian interventions to the Internally Displaced People (IDPs) following May escalation 2021. *International Journal of Disaster Risk Management*, 4(2), 15-45.
22. El-Mougher, M. M., & Mahfuth, K. (2021). Indicators of Risk Assessment and Management in Infrastructure Projects in Palestine. *International Journal of Disaster Risk Management*, 3(1), 23-40.
23. GFN (2024). Measure what you treasure. Oakland and Geneva: Global Footprint Network. Retrieved from: <https://www.footprintnetwork.org>. Accessed: 16.10.2024.
24. Gledaj RS (2024) Sokobanja protiv vetroparka "Čestobrodica": Zaustavite seču šuma! 25. Mart. Retrieved from: <https://gledaj.rs/2024/03/25/sokobanja-protiv-vetroparka-cestobrodica-zaustavite-secu-suma/>. Accessed: 23.10 2024.
25. Government of the Republic of Serbia (2008). Nacionalna strategija održivog razvoja. Službeni glasnik RS, 57. Retrieved from: <https://pravno-informacioni-sistem.rs/eli/rep/sgrs/vlada/strategija/2008/57/1/reg>. Accessed: 23.10 2024.
26. Government of the Republic of Serbia (2011). Nacionalna strategija zaštite i spasavanja u vanrednim situacijama. Službeni glasnik RS, 86. Retrieved from: <https://pravno-informacioni-sistem.rs/eli/rep/sgrs/skupstina/ostalo/2011/86/1>. Accessed: 23.10 2024.
27. Government of the Republic of Serbia (2014). Zakon o otklanjanju posledica poplava u Republici Srbiji. Službeni glasnik RS, 75.
28. Grozdanić, G., Cvetković, V., Lukić, T., & Ivanov, A. (2024). Sustainable Earthquake Preparedness: A Cross-Cultural Comparative Analysis in Montenegro, North Macedonia, and Serbia. *Sustainability*, 16, 3138.
29. Hadlos, A., Opdyke, A., & Hadigheh, S.A. (2022). Where does local and indigenous knowledge in disaster risk reduction go from here? A systematic literature review. *International Journal of Disaster Risk Reduction*. September, Vol.79. <https://doi.org/10.1016/j.ijdr.2022.103160>
30. Hallberg, G. (1987). Agricultural chemicals in groundwater: Extent and implications. *Renewable Agriculture and Food Systems*, 2, 3-15. doi:10.1017/S0889189300001405
31. Hasan, M. K., & Sultana, N. (2024). Dynamics of Internal Migration in the Southwest Region of Bangladesh. *International Journal of Disaster Risk Management*, 6(1), 13-26.
32. ISO (2018). Contributing to the UN sustainable development goals with ISO standards. Geneva: International Organization for Standardization. Retrieved from: <https://www.iso.org/files/live/sites/isoorg/files/store/en/PUB100429.pdf>. Accessed: 23.10 2024.
33. ISO (2024). Online browsing platform. Geneva: International Organization for Standardization. Retrieved from: <https://www.iso.org/obp/ui#home>. Accessed: 23.10 2024.
34. Jehoshaphat, J. D., & Oghenah, B. (2021). Building resilience through local and international partnerships, Nigeria experiences. *International Journal of Disaster Risk Management (IJDRM)*, 3(2), 11-24.

35. Kabir, M. H., Hossain, T., & Haque, M. W. (2022). Resilience to natural disasters: A case study on the southwestern region of coastal Bangladesh. *International Journal of Disaster Risk Management*, 4(2), 91-105.
36. Kalantari, Z., Ferreira, C., Keesstra, S., & Destouni, G. (2018). Nature-based solutions for flood-drought risk mitigation in vulnerable urbanizing parts of East Africa. *Current Opinion in Environmental Science & Health*. doi:10.1016/J.COESH.2018.06.003
37. Kochar, D., Sushil, & Rahul. (2020). Effect of Industrialization and Urbanization on Agriculture. Retrieved from <https://consensus.app/papers/effect-of-industrialization-and-urbanization-on-kochar-sushil/db30a66392205cc5b0a9e2027f4b80ba/>
38. Macek, T., Pavlíková, D., & Mackova, M. (2004). Phytoremediation of Metals and Inorganic Pollutants. 135-157. doi:10.1007/978-3-662-05794-0_7
39. Meadows, D.H., Meadows, D.L., Randers, J., & Behrens III, W. W. (1974). *Granice rasta*. Zagreb: Stvarnost.
40. Mileti, D. S. (1999). *Disasters by Design*. Washington, D.C.: The Joseph Henry Press.
41. NBS (2015). *Izveštaj o inflaciji*. Belgrade: National Bank of Serbia.
42. O’Gorman, P. A. (2015). Precipitation extremes under climate change. *Current climate change reports*, 1, 49-59.
43. OED (2024). *The Oxford English Dictionary*, Oxford University Press. Retrieved from: https://www.oed.com/dictionary/community_n?tl=true. Accessed: 23.10 2024.
44. Okorogbona, A., Denner, F., Managa, L., Khosa, T., Maduwa, K., Adebola, P., . . . Macevele, S. (2018). Water Quality Impacts on Agricultural Productivity and Environment. 1-35. doi:10.1007/978-3-319-75190-0_1
45. Parris, K. (2011). Impact of Agriculture on Water Pollution in OECD Countries: Recent Trends and Future Prospects. *International Journal of Water Resources Development*, 27, 33-52. doi:10.1080/07900627.2010.531898
46. Perić, J., & Cvetković, V. M. (2019). Demographic, socio-economic and phycological perspective of risk perception from disasters caused by floods: case study Belgrade. *International Journal of Disaster Risk Management*, 1(2), 31-45.
47. Popović, T., Djurdjević, V., Živković, M., Jović B. & Jovanović, M. (2009). Promena klime u Srbiji i očekivani uticaji. V regionalna konferencija EnE09-Životna sredina ka Evropi. Beograd: Ambasadori životne sredine i Privredna Komora Srbije, pp. 6-11.
48. RajeevM, M. (2014). Sustainability and Community Empowerment in Disaster Management. *International Journal of Social Work and Human Services Practice*, 2, 207-212. doi:10.13189/IJRH.2014.020601
49. RS (2014). *Serbia Floods 2014*. Belgrade: UN Serbia, EU, World Bank Group.
50. Sergey, K. (2021). Methodology for Building Automated Systems for Monitoring Engineering (Load-Bearing) Structures, and Natural Hazards to Ensure Comprehensive Safety of Buildings and Constructions. *International Journal of Disaster Risk Management*, 3(2), 1-10.
51. Sharma, M. (1996). Impact of Agriculture on Nutrient Contamination of Water Resources. 57-79. doi:10.1007/978-94-011-0393-0_5
52. Shibru, M., Operea, A., Omondi, P., & Gichaba, M. (2022). Impact of 2016-2017 drought on household livestock assets and food security: the case of pastoralists and agro-pastoralists in Borana zone, southern Ethiopia. *International Journal of Disaster Risk Management*, 4(1), 49-69.
53. Srivastav, A. (2020). Chemical fertilizers and pesticides: role in groundwater contamination. 143-159. doi:10.1016/b978-0-08-103017-2.00006-4
54. Thennavan, E., Ganapathy, G., Chandrasekaran, S., & Rajawat, A. (2020). Probabilistic rainfall thresholds for shallow landslides initiation – A case study from The Nilgiris district, Western Ghats, India. *International Journal of Disaster Risk Management*, 2(1), 1-14.

55. Umer, S. S. (2024). Analyzing in Post COVID-19 era: The Effect of Occupational Stress and Work-Life Balance on Employees Performance. *International Journal of Disaster Risk Management*, 6(1), 75-90.
56. UNCED (1992). Agenda 21. United Nations Conference on Environment and Development, Rio de Janeiro. Retrieved from: <https://www.un.org/en/conferences/environment/rio1992>. Accessed: 16.10.2024.
57. UNCED (2002). World Summit on Sustainable Development. 26 August-4 September 2002, Johannesburg. Retrieved from: <https://www.un.org/en/conferences/environment/johannesburg2002>. Accessed: 16.10.2024.
58. UNDP (1994). Human development report. New York: United Nations Development Programme.
59. UNDP (2014). Human Development Report 2014: Sustaining Human Progress: Reducing Vulnerabilities and Building Resilience. New York: United Nations Development Programme.
60. UNDRR (2019). The Global Platform for Disaster Risk Reduction. The UN Office for Disaster Risk Reduction. Retrieved from: <https://www.unisdr.org/we/coordinate/global-platform>. Accessed: 16.10.2024.
61. UNESCO (2020). Report of the UNESCO expert meeting on indigenous knowledge and climate change in Africa, Nairobi, Kenya. 27–28 June 2018. Paris: United Nations Educational, Scientific and Cultural Organization. Retrieved from: <https://unesdoc.unesco.org/ark:/48223/pf0000374999>. Accessed: 23.10.2024.
62. UNHSU (2016). Human security handbook - An integrated approach for the realization of the Sustainable Development Goals and the priority areas of the international community and the United Nations system. New York: Human Security Unit of United Nations. Retrieved from: <https://www.un.org/humansecurity/wp-content/uploads/2017/10/h2.pdf>. Accessed: 23.10.2024.
63. UNISDR (2007). Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters. Geneva: United Nations International Strategy for Disaster Reduction. Retrieved from: <https://www.undrr.org/publication/hyogo-framework-action-2005-2015-building-resilience-nations-and-communities-disasters>. Accessed: 16.10.2024.
64. UNISDR (2009). Terminology on Disaster Risk Reduction. Geneva: United Nations International Strategy Disaster Reduction.
65. UNISDR (2015). Sendai Framework for Disaster Risk Reduction 2015 – 2030. Geneva: United Nations International Strategy for Disaster Reduction. Retrieved from: https://www.unisdr.org/files/43291_sendaiframeworkfordrren.pdf. Accessed: 16.10.2024.
66. Varga, S. i Babić-Mladenović, M. (2001). Zaštita od poplava u Srbiji – novi pristup. U: Upravljanje vodnim resursima Srbije, Beograd: Institut za vodoprivredu „Jaroslav Černi“.
67. Wackernagel, M., and Rees E.W. (1996): Our Ecological Footprint, Reducing Human Impact on the Earth. Gabriola Island, BC: New Society Publishers.
68. WBG (2015). Coping with Floods, Strengthening Growth. South East Regular Economic Report No 7, Washington: World Bank Group.
69. Wu, J., & Sun, Z. (2016). Evaluation of Shallow Groundwater Contamination and Associated Human Health Risk in an Alluvial Plain Impacted by Agricultural and Industrial Activities, Midwest China. *Exposure and Health*, 8, 311-329. doi:10.1007/s12403-015-0170-x
70. Xuesong, G., & Kapucu, N. (2019). Examining Stakeholder Participation in Social Stability Risk Assessment for Mega Projects using Network Analysis. *International Journal of Disaster Risk Management*, 1(1), 1-31.
71. Žganec, N. (2003). Pojmovno određenje zajednice, u Ajduković, D. ured. Socijalna rekonstrukcija zajednice : psihološki procesi, rješavanje sukoba i socijalna akcija. Zagreb: Društvo za psihološku pomoć.

