

Article

Using School Systems as a Hub for Risk and Disaster Management: A Case Study of Greece

Stavros Kalogiannidis ^{1,*}, Ermelinda Toska ², Fotios Chatzitheodoridis ² and Dimitrios Kalfas ³

¹ Department of Business Administration, University of Western Macedonia, 50100 Kozani, Greece

² Department of Regional and Cross-Border Development, University of Western Macedonia, 50100 Kozani, Greece; drdcbs00002@uowm.gr (E.T.); fxtheodoridis@uowm.gr (F.C.)

³ Department of Agriculture, Faculty of Agricultural Sciences, University of Western Macedonia, 53100 Florina, Greece; kalfdimi@otenet.gr

* Correspondence: aff00056@uowm.gr; Tel.: +30-6947-447761 or +30-2461-025505

Abstract: The link between climate change and growing poverty levels makes communities more vulnerable to catastrophes, reducing community resilience to disaster consequences. Development practitioners, planners, and researchers must find novel techniques to build community resilience in the face of an ever-growing hazard in such a circumstance with a spectrum of risk and catastrophe. As a result, the focus of this study was on how school systems, as significant social institutions, might effectively minimize disaster risk in communities. People's standards, beliefs, and behaviors are greatly influenced by societal institutions. After the family, the school is the second most significant socializing institution, in charge of shaping people's attitudes, knowledge, behaviors, specialized skills, and values in order to ensure social conformity. The prospect of using school systems to increase catastrophe risk reduction in poor areas of Greece was specifically addressed in this study. The study confirmed that the school curriculum has a positive and significant relationship with disaster risk management. Many advantages are realized, according to the research, if catastrophe risk mitigation is made a priority in Greece's educational systems. Learning about ideas such as civil protection and incorporating disaster risk management into school curricula are both viewed as vital in enhancing disaster risk management.

Keywords: disaster risk reduction; school systems; civil protection



Citation: Kalogiannidis, Stavros, Ermelinda Toska, Fotios Chatzitheodoridis, and Dimitrios Kalfas. 2022. Using School Systems as a Hub for Risk and Disaster Management: A Case Study of Greece. *Risks* 10: 89. <https://doi.org/10.3390/risks10050089>

Academic Editors: Antonio Portela Pruaño and Roman Dorczak

Received: 14 March 2022

Accepted: 18 April 2022

Published: 20 April 2022

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Copyright: © 2022 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

In many countries, disaster relief organizations play a critical role in disaster response (Selby and Kagawa 2012). According to Diakakis et al. (2020), well-functioning civil protection services in any nation play a critical role in raising awareness and warning people about major societal threats and how to deal with the repercussions. Civil protection services have evolved over the last century into more powerful entities capable of quickly responding to disasters, resulting in a significant decrease in the number of lives lost as a result of disasters (Diakakis et al. 2020). Specifically, safeguarding people of a state from severe natural catastrophes implies a variety of efforts addressed by national civil protection services (Hermoso and Luca 2006) through a complex of key areas such as crisis management, emergency preparation and management, contingency planning, civil contingency, as well as civil assistance (European Civil Protection and Humanitarian Aid Operations 2022).

Bernhardsdottir et al. (2016) stated that in recent decades, civil protection has developed into a more proactive and broadly integrated approach, with a focus on better preparedness and actionable early warnings to minimize catastrophe risks and increase response efficiency and speed. Furthermore, Bernhardsdottir et al. (2016) reported that in certain countries, government agencies conduct large-scale earthquake simulation exercises and use education systems to strengthen disaster preparedness procedures in order to

foster a culture of safety and resilience (Diakakis et al. 2020). However, in order to play their prominent role, civil protection agencies face an uphill struggle concerning the effective and efficient resource management (Milěj and Marinič 2017), which demands an efficient planning and execution of limited financial resources solutions from all parties and authorities at the local, regional, and global level (OECD 2012; Gaetani et al. 2009).

Civil protection systems contribute to disaster risk reduction by focusing on disaster preparedness and response in the traditional sense, thus pushing governments to implement dependable disaster risk reduction policies (Diakakis et al. 2020). Civil protection systems' traditional focus on preparedness and response, as well as their new engagement in the broader catastrophe risk reduction agenda, provide an entrance point into the creation of inclusive recovery plans in general. This is always possible through improving relevant capabilities and information sharing through an assessment of their strengths, needs, and opportunities (Gunawan et al. 2016). In the background of a traditional approach of preparedness and response, the accumulated knowledge and modern technology could turn into benefits, efficiently contributing to an enhanced civil protection strategy (IPCC 2021) toward any kind of threat reckoning in the evolving social, technological, and political conditions (Cook and Dorussen 2021). Disasters are becoming more frequent and intense, posing a major humanitarian concern. Likewise, there is a manifestation of anxiety over the new dangers to which society and individuals are apparently exposed, such as the coronavirus pandemic, natural hazards, and extreme weather phenomena (United Nations and UNDS 2020). However, disasters can be mitigated, and their effects can be reduced if people take precautions. When risk reduction measures are taken before a disaster strikes, the extent of the loss and damage is reduced, and education can resume quickly. In an emergency, disaster risk reduction (DRR) is critical for education response (Selby and Kagawa 2012). Large natural disasters, according to Behnam and Shojaei (2018), are extremely destructive and can result in significant human and financial loss. Pre- and post-disaster strategies are frequently used to reduce the risk posed by earthquakes.

One of the most important methods for increasing disaster risk management awareness is integrating DRR initiatives into a country's emergency preparation strategy. Cluster coordinators, sector coordination groups, and education or technical staff can improve their involvement in disaster preparation and response by incorporating disaster risk reduction into all other cluster activities before, during, and after an incident (Gunawan et al. 2016). At the same time, they will be in a strategic position to integrate DRR awareness into the development agenda, ensuring that the country's education system continues to grow without interruption. As a result, it is critical to concentrate efforts on determining the effect of educational systems on hazards and catastrophe management.

1.1. Theoretical Review

In the background of the *Yokohama Strategy and Plan of Action for a Safer World* during the World Conference on Natural Disaster Reduction in 1994, knowledge management, educational and informational programs, and training in disaster prevention, preparedness, and mitigation were highlighted the key areas of the Strategy for Disaster Reduction for the year 2000 and beyond (IDNDR—*International Decade for Natural Disaster Reduction 1994*). Subsequently, the *Hyogo Framework for Action 2005–2015: Building the Resilience of Nations and Communities to Disasters* underlined the importance of knowledge and education in its conception, and highlights building a culture of safety and resilience as a strategic priority in order to enhance disaster risk reduction (Basabe 2013; UNISDR 2005). Specifically, the promotion of DRR knowledge to youth and children is encouraged through its inclusion in school curricula in both schools and institutions of higher education through programs focused on local risk assessment, disaster preparedness programs, and learning activities to minimize the effects of hazards (Basabe 2013; UNISDR 2005).

As a replacement to the *Hyogo Framework of Action*, the *Sendai Framework for Disaster Risk Reduction 2015–2030* was approved on 18 March 2015 at the Third UN World Conference in Sendai, Japan. Its goal is to help countries and communities become more resilient

to catastrophes. Specifically, the *Sendai Framework of Action* guarantees that the efforts started by the *Hyogo Framework of Action* are continued by adopting a more people-centered way of prevention (UNISDR 2015). In this research, the *Sendai Framework* is important since it emphasizes community resilience to disasters. Because one of the focuses of the *Sendai Framework* is the acknowledgment of stakeholders and their responsibilities, it includes schools, students, parents, and administrators (teachers, heads) as key stakeholders in disaster management (Petal 2009). Therefore, the school education system and its immediate actors are important stakeholders in DRR and community resilience (Twigg 2015). Notably, in every particular community, schoolchildren and youth as “agents of change” (UNISDR 2015) are the most significant source of catastrophe information able to conduce to disaster risk reduction.

However, as Norton, Atun, and Dandoulaki (Norton et al. 2015) noted, disaster risk reduction is called to maintain its importance in the public sphere due to the newly formed environment of emerging socioeconomic crisis and financial risks. Specifically, in times of Greek economic crisis, phenomena such as brain drain and staff reduction of academic community intensify the concern for knowledge maintenance and information updating regarding disaster risk awareness and acceptability (Norton et al. 2015).

1.1.1. Education Based Civil Protection in Emergency Preparedness

As stated by S. Kalogiannidis et al. (2022b), society’s duty is to provide a high-quality educational environment where contemporary pedagogical methods are applied, offering new skills and knowledge. In this notion, ensuring an advanced teaching and learning educational process by society to school-age children and youth constitutes a vital support to their future. In agreement with Striessnig et al. (2013), investment in education, especially primary and secondary education, has emerged as the most crucial factor among different social and economic components, with important impacts on the reduction of vulnerability to natural disasters and uncertain future climate.

The civil protection organizational framework in Greece can be described as a system of three different authority levels: national, regional, and local (Soldi 2016; European Civil Protection and Humanitarian Aid Operations 2022; European Committee of the Regions 2022), with a mission focused on citizens’ life, health, and property; society’s wealth, cultural heritage, and natural environment; and the country’s resources (Stavros Kalogiannidis et al. 2022a), as depicted below in the Figure 1. Concentrated on the triptych of “preparedness, prevention and disaster response” (Stavros Kalogiannidis et al. 2022a), civil protection operations include disaster risk forecasts, early warning systems about disasters, emergency preparedness plans, emergency item collecting and storage, safe evacuation, and mock exercises (Selby and Kagawa 2012). Furthermore, civil protection agencies normally focus on disaster emergency service and support in times of a disaster or in the aftermath of any crisis. At this point, the most important measures are to save human lives and avoid more physical damage. Other priority tasks during this stage include search and rescue, relief, emergency health services, temporary housing, clean drinking water and sanitation, and food preparation (Mutsau and Billiat 2015). Moreover, Marrion (2013) indicates that the recovery and rebuilding phase includes repairing and enhancing disaster-affected services and facilities, and restoring income-generating and livelihood activities. This phase of rehabilitation and rebuilding includes activities such as raising public awareness, institutional strengthening and coordination, funding, and implementation arrangements, such as communication, information, and grievance channels. These stages must encourage the involvement and engagement of the communities at the center of the activities being carried out (Marrion 2013).

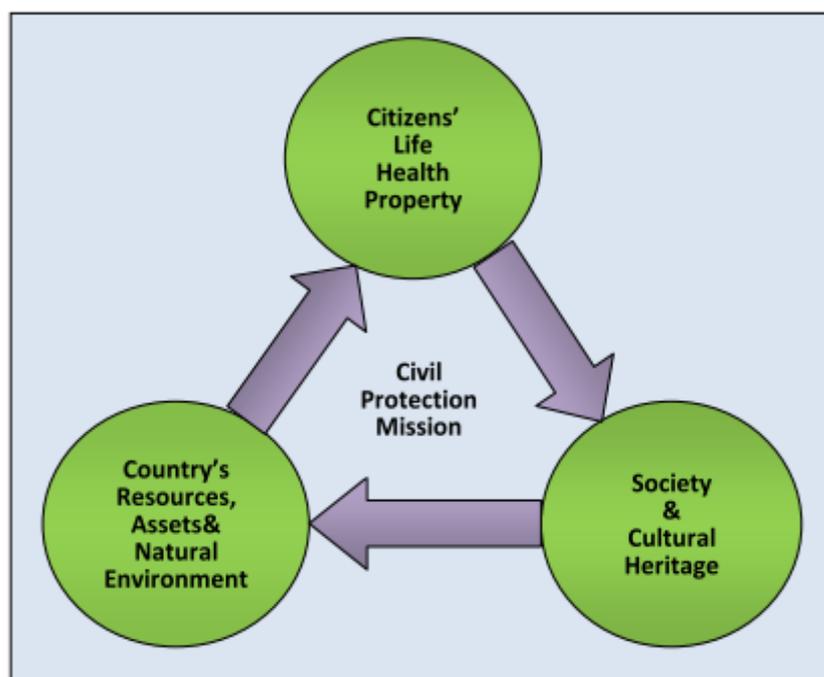


Figure 1. Civil protection mission in Greece. Source: Authors' scheme.

Furthermore, successful civil protection requires the participation of the private sector and the community. In the instance of Haiti (Cravioto et al. 2011), employing local engineers and training them proved to be more efficient in better and faster reconstruction. As a result, CSOs must be included in the civil protection system (European Commission 2020). The European Union's emergency response mapping was recognized as one of the best current tools that might be duplicated abroad to guarantee an effective civil protection strategy (European Civil Protection and Humanitarian Aid Operations 2020). Therefore, it is suggested the technical and scientific organizations that supply the primary data and information utilized by civil protection should be reinforced and improved. The session advocated for prioritizing human resource development alongside technological advancements. It was determined that there is a significant mismatch between the significance of civil protection and the resources given to it in many nations, as shown by comparable incompatibilities in civil protection systems in countries such as Niger and Togo (Gunawan et al. 2016).

Nevertheless, governments worldwide do not completely comprehend or support the potential of civil protection systems in fostering inclusive recovery. As a result, it is essential to concentrate on lobbying and raising the sector's image to obtain financing and more attention from many stakeholders. In the near future, most nations will need an inclusive approach to civil protection system design that includes communities and civil society organizations (Gaetani et al. 2009).

1.1.2. Rationale for Disaster Risk Reduction through School Settings

The majority of people's standards, beliefs, and behaviors are influenced by societal institutions. Following the family, school is the second most significant socializing institution for shaping people's views, knowledge, and behaviors. (S. Kalogiannidis et al. 2021). Likewise, Ovington et al. (2012) agreed that schools and educational institutions are agents for socializing individuals in society on particular skills and values, thus ensuring social conformity. This demonstrates how schools and education institutions are mass-targeted. Hence, any platform that allows for contact with children while they are still young provides significant possibilities for community character development (Kohler et al. 2020). Consequently, there is compelling evidence that disaster risk management should focus on educational systems to create a disaster-aware culture in communities. Individuals are not

the focus of disaster management; rather, groups or communities are. When a community is affected rather than individuals, the catastrophe is magnified, implying that the emphasis should be on the community rather than on individuals. As a result, addressing big groups of people and influencing their behavior makes more sense than targeting individuals (Soldi 2016).

The school education system targets many individuals at any one moment as they go through it. School children account for 1.8 billion people in the developing world, where disasters have the most effect (Gunawan et al. 2016). Young children are the perfect age for instilling new behaviors and knowledge. There is little question that engaging 1.8 billion school children in disaster risk reduction via the school-education system would improve disaster resilience in the areas affected. One may use the gregarious excitement, energy, and aptitude for learning new things among the school-age people and configure them to improve catastrophe risk reduction in their particular areas (Bhatia et al. 2013).

In the context of the *Hyogo Framework* and *Sendai Framework of Action*, there is a widespread shift in disaster risk management, focusing on actions before a disaster event occurs and actions after the disaster has occurred (UNISDR 2015). As briefly illustrated in Figure 2, there is a new approach, implying a shift from reactive to preventive mobilization including both pre-actions and past-actions in order to build resilience in society. Generally speaking, the traditional form of knowledge is transferred inside classrooms and diffused among the actors of the academic community, from teachers to schoolchildren and students at all educational levels. Afterward, outside the school environment, schoolchildren act as disseminating satellites of the knowledge acquired from school to their relatives at home and to adults.

Shimada (2018) claimed that the emphasis on social capital was one of the defining features of the discourse that followed the Great Hanshin Awaji Earthquake. The author concluded that the community was well-functioning prior to the earthquake and that people actively participated in the reconstruction process. The author used elementary school areas as the unit for social capital, which appears to be a useful alternative to disaggregating prefectural data because elementary schools are the focus of much community effort in Japan.

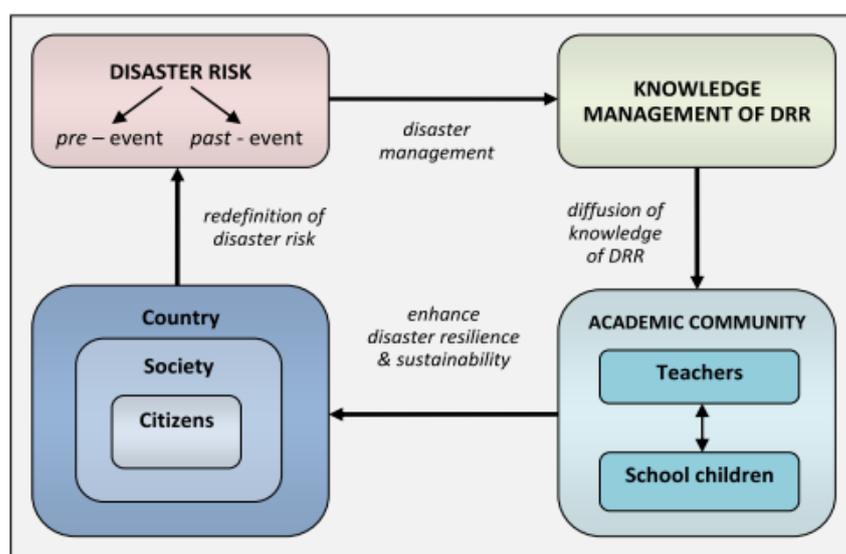


Figure 2. DRR approach through school system. Source: Authors' scheme.

Specifically, in the case of DRR, the importance of education exists in the expansion of available risk knowledge, strengthening of skills and abilities of children, and the formation of attitudes capable of coping with risks provided before their occurrence, as well as during and after the hazards. Hence, through this process, education's focal point is building a

culture of safety (Basabe 2013). In this environment, the role of schoolchildren is upgraded to agents of change (UNISDR 2015) who contribute to the enhancement of disaster resilience at the individual (citizens) and collective (communities and country) level, amplifying the society's sustainability and implying the redefinition of the DRR concept. Finally, DRR seems to focus on managing risks rather than managing disasters (Desai et al. 2015; UNISDR 2015) by reducing existing risks and preventing the creation of new risks including both pre-event actions of preparedness, response and recovery, and past-event actions during full disaster management cycle (Vaughter 2016).

1.1.3. Schools System in Improving Disaster Risk Reduction

In Greece, schools are community development hubs. However, the substance of Greece's elementary and secondary curricula contains relatively little disaster risk reduction (DRR), according to curriculum analysis. Specifically, there is no catastrophe risk reduction material in the basic curriculum (Diakakis et al. 2020). Similarly, there is relatively little disaggregated DRR material in secondary school. Subjects such as geography and agriculture have a limited amount of knowledge, and are lacking in breadth and depth. Furthermore, the knowledge is not systematically provided and mainstreamed to achieve the goal of teaching catastrophe risk reduction and vulnerability (Selby and Kagawa 2012).

On the subject of teachers' education, curriculum in most countries is devoid of disaster risk reduction material. Nonetheless, teachers' postsecondary education should include disaster risk reduction material to aid in spreading disaster risk reduction knowledge as they educate their pupils (European Civil Protection and Humanitarian Aid Operations 2020). Most significantly, educational policies and processes must be reviewed to account for catastrophe risk reduction. Specifically, this involves the government reorganizing current educational concepts, regulations, and guidelines to achieve a long-term educational objective. Hence, the purpose of education is to develop a cadre capable of addressing national issues and difficulties. There is little question that incorporating disaster risk reduction into all kinds of schooling would produce a workforce capable of contributing effectively to the country's community disaster risk reduction initiatives (Diakakis et al. 2020).

Therefore, universities, teachers' colleges, and polytechnics in Greece must be required by policy to incorporate disaster risk management in their curriculum. Institutions can lead research to predict emergency and catastrophe harbingers in Greece (European Civil Protection and Humanitarian Aid Operations 2020). Specifically, polytechnics and university technical departments must develop actual models and devices that the industry can produce in catastrophe risk reduction interventions at the practical and applied level. Likewise, the leadership's commitment to providing universal education should be at the same effort required to safeguard the same people who receive an education. As a result, catastrophe risk reduction via education may be included in all national agendas, ensuring sufficient national financing, discussion, and stakeholder participation (Kohler et al. 2020).

Overall, schools are the development centers of society in Greece, particularly in rural areas. It is crucial for more schools to be established in disadvantaged regions as community development centers. Many activities revolve around the school, as it serves as the focal point for community engagement. Therefore, schools serve as a focal point for community development (Diakakis et al. 2020). The increasing need for disaster risk reduction in Greece's disadvantaged groups is being met by mainstreaming disaster risk reduction via educational systems. As a result, education becomes a capacity-building and comprehensive empowering process for communities that would not otherwise receive such interventions without funding. Finally, using the school system is a long-term process since it reduces operating expenses and ensures continuity (Papaevangelou 2021; Ovington et al. 2012).

1.2. Research Gap

Disaster risk reduction has been typical for Greece in previous interventions. Non-governmental organizations (NGOs) have generally delivered interventions in a one-size-

fits-all approach. The majority of current initiatives are top-down and exogenous. Although there is a significant link between disaster education and disaster resilience, according to studies, there is little literature on catastrophe risk reduction being mainstreamed into Greek educational institutions. This indicates that there is minimal interest in and activity in this subject, specifically in Greece. According to the literature, looking at disaster risk reduction through the lens of the school system allows for the integration of local and indigenous knowledge systems with scientific information. Within this notion, in this research, disaster risk reduction via schools and educational institutions is critical in instilling community knowledge and awareness of local dangers, and preparing people for the worst-case scenario. Other researchers have agreed with the previous assertion, linking school instruction to disaster preparedness in communities.

For instance, [Momani and Salmi \(2012\)](#) focused on the readiness range and preparedness among different types of schools (public and private), and three levels (primary, elementary and secondary) of boy's schools of the Jeddah province, have achieved toward earthquakes' threats. In this research, the data were selected through a questionnaire conducted with the school principal. Specifically, the institutions' readiness was determined via six important topics: the experience gained from earthquake, other disaster emergencies measures, the adaptation of measures concerning earthquake mitigation, preparedness, response, and recovery. Based on their findings, [Momani and Salmi \(2012\)](#) highlighted the absence of the preparation toward future earthquakes inside schools. Their proposal concentrated on the necessity to organize an administrative crisis management department, a public emergency plan, and training programs for school directors and teachers. Hence, their crucial focus was preparation, including disaster and crisis awareness programs, and disaster management in schools of every type and level.

In addition, the natural hazard prevention education strategy was discussed by [Chen and Lee \(2012\)](#), with an emphasis on severe floods and damaged schools infrastructure aftermath of Typhoon Morakot on 8 August 2009 in Taiwan, which caused the loss of student life and economic catastrophe. The research was based on GIS analysis of spatial rainfall distribution, field investigations, as well as aerial photos, in order to explain the landslides and debris flows. The research concluded into three main outcomes about educational strategy in terms of disaster prevention: (i) Formal school curricula did not encompass disaster prevention education courses and activities. (ii) The number of teachers with appropriate background was not enough to support disaster prevention formal education and activities. (iii) The absence of unified managers implied weakness in the supervision and evaluation of disaster prevention education performance. In this framework, the analysis recommended the integration of disaster prevention education into formal or non-formal school curricula by including lessons concerning school infrastructure safety and vulnerability assessment, as well as students' psychological recovery in the aftermath of the occurrence of the disaster phenomenon.

Furthermore, [Muzenda-Mudavanhu et al. \(2016\)](#) examined the role of disaster education programs in risk perception focused on school-age children of Muzarabani, a disaster-prone area of Zimbabwe. They underlined the significance of the school in combination with the family role, as well as the memory retention of past disaster events experienced, in developing the perception of disaster knowledge of children, especially of phenomena such as drought and floods. However, they mentioned that children's awareness and DRR knowledge did not enable a successful civil protection network. Apart from the awareness, an effective preparedness is vital and could be achieved through political commitment, resource availability, and social support. In the same context as the aforementioned study, the current study focuses on the importance of leveraging school systems in disaster risk management as it is reflected through the perspective of active teachers. Teachers are the connecting link among the educational institutions and the students, the final recipients of the educational activity.

2. Research Methodology

In this section, the problem statement and purpose of the study are presented. Likewise, the research design and data collection are described, introducing the target population. Finally, the data analysis is briefly discussed.

2.1. Problem Statement

Like many other areas around the globe, Greece is plagued by various dangers (Diakakis et al. 2020). Various factors may produce dangers, which can be classified into two types: natural threats and human-made threats. However, we may debate the main cause of natural character threats and conclude that humans are to be blamed. However, this is a subject for a separate study. These risks may result in catastrophes if they are not properly handled, if no preventative measures are taken, and if no action is taken after the threat has appeared (World Health Organization 2019). As a result, it is critical to determine the best approach to combat these dangers and, if at all possible, avoid catastrophes or minimize them (Department for International Development 2017).

Removing the key driver of community development from the DRR equation, thereby increasing the gap between national and local action to the detriment of community resilience, is equivalent to removing the key driver of community development from the DRR equation. Farahani et al. (2020) indicated that countries that normally suffer from earthquakes tend to face different geotechnical seismic hazards that can be devastating in various ways. This could also apply to Greece in cities such as Kozani. Education and the school system are the focal points for community socioeconomic development (Papaevangelou 2021). Failure to prioritize them in disaster risk reduction slows community resilience to disasters, which is a concern. Schools are the best places to create communal forums in a community, and disaster risk reduction is one of the most important principles that schools must spread by establishing schools as modes and loci of participatory risk reduction in communities (Mutsau and Billiat 2015). Schools and education systems must be a focal point for disaster risk reduction to enhance Greece's disaster resilience.

In 2020, the total number of educational staff of the Kozani regional unit was 1169 teachers. The sample size was determined after calculating the accuracy ($\pm km 7.32$) and the level of reliability of the survey ($P = 99.7\%$). The variance of the distance of the educational unit in which they work and in the permanent residence of the teachers, $S^2 = 304.53$, and the standard deviation, $s = 17.45$, were determined with a preliminary sample (or pilot sampling) of 50 teachers. The value of z depends on the level of reliability (P) required. When applying the sample size determination, it is typical to take a value of $z = 3$, which corresponds to a level of reliability $P = 99.7\%$. According to Equation (1) and using our numbers— $N = 1169$, $s = 17.45$, $z = 3$, and $d = 3.99$ (the required accuracy d was subjectively determined and expresses half the confidence interval)—it was estimated that the minimum sample of respondents should be 149.38, or 150 people (Kalfas et al. 2013, 2020, 2022).

$$n = \frac{N(zs)^2}{Nd^2 + (zs)^2} \quad (1)$$

Calculation of the minimum sample of respondents.

2.2. Purpose of the Study

The project's main goal was to evaluate the concept of leveraging educational systems as a center for risk and catastrophe management, using Greece as a case study. The research also focused on a number of specific goals, including:

- To establish the effect of school curriculum on disaster risk management in schools.
- To explore the effect of civil protection knowledge acquisition on disaster risk management in schools.

Consequently, the research questions that arise can be summarized as follows:

1. What is the effect of school curriculum on disaster risk management in schools?
2. What is the effect of civil protection knowledge acquisition on disaster risk management in schools?

For this purpose, the research hypothesis can be formulated as below:

Hypothesis 1 (H1). *School curriculum has a positive effect on disaster risk management in schools.*

Hypothesis 2 (H2). *Civil protection knowledge acquisition has a positive effect on disaster risk management in schools.*

Therefore, the significance of study's findings is attributed to provision of key insights into the importance of school systems in enchaining disaster risk management. In this case, new knowledge will be generated about concepts of civil protection, school systems, and their role in disaster risk management.

2.3. Research Design, Target Population, and Data Collection

The study used a quantitative approach and a descriptive research design. Descriptive research is an inquiry in which quantitative data is gathered and evaluated to characterize a particular phenomenon in terms of current trends, current occurrences, and current connections between various variables. The descriptive research design was used because it enabled the researcher to generalize the findings to a larger population of teachers in the city of Kozani. Specifically, Kozani is a small-sized city located in northern Greece, and one of the four regional units of the region of Western Macedonia (Figure 3) (Kalfas et al. 2022). The other three cities are Florina, Kastoria, and Grevena. Based on data from 2011 census, the Municipality of Kozani geographically extends 366,018 square kilometres in the West Macedonia region of northern Greece, and has a population of 71,388 inhabitants (ELSTAT 2022). The geographical distance of Kozani from the capital of Greece, Athens, is approximately 470 km. In addition, Kozani is approximately 120 km from Thessaloniki, the second largest city of the country. Kozani has faced natural hazards and disasters due to extreme weather phenomena and earthquakes, such as the earthquake of 6.6 on the Richter scale recorded on 13 May 1995 (Stavros Kalogiannidis et al. 2022a). In terms of potential risk exposure, there are local vulnerabilities, specifically industrial and technological accidents, as a result of the dominant position that Kozani has the largest lignite power station and installations in Greece (Stavros Kalogiannidis et al. 2022a).

Regarding educational activity and facilities, Kozani is a university city as it is the seat of the University of Western Macedonia. The University of Western Macedonia was founded in 2003 and includes seven schools with twenty-two departments. The University operates in the five cities of Kozani, Florina, Kastoria, Ptolemaida, and Grevena, with 8661 current students and 193 academic staff (as of August 2021). Concretely, in the city of Kozani, the School of Economic Sciences operates with seven departments. In addition, Kozani is home to two of the five departments of Polytechnic-Engineering School. Moreover, the main campus is located in Kozani, featuring infrastructure, such as administrative services, teaching staff offices, classrooms, laboratories, library, students' residences and restaurants, and the university gymnasium (www.uowm.gr (access on 7 February 2022)). Finally, despite income decreases that ensued from economic crisis in Greece (Chatzitheodoridis et al. 2017), Kozani remains a potential pole of development as it is a competitive destination of tourists, investment, and the exploitation of cultural heritage (S. Kalogiannidis et al. 2022c). As mentioned by Chatzitheodoridis et al. (2013), even in periods of severe economic crisis, the only pathway to endogenous socio-economic growth of rural areas in Greece is achieved through the adoption of policy measures by stimulating the advantages of local factors, such as local resources, as well as specificities of the social and human behavior of the local population.

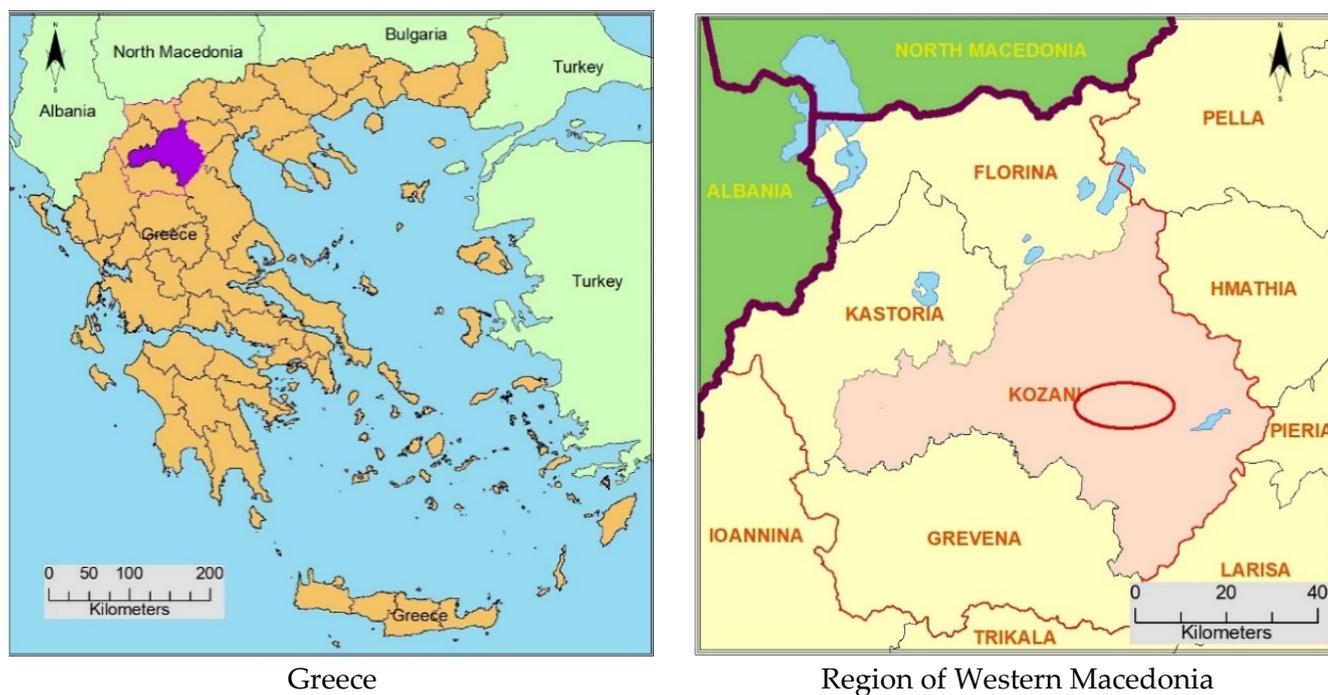


Figure 3. Maps of Greece and Region of Western Macedonia. Source: Authors' scheme.

Regarding data collection, the study utilized an online questionnaire, one of the easiest and most used data gathering techniques. This is because it is less expensive, covers a large number of respondents in a short period of time, and allows respondents to freely answer sensitive topics without fear of judgment or rejection from the researcher. In order to gather insight into using school systems as a locus for risk and catastrophe management in Greece, an online survey questionnaire was deployed.

Concretely, the study targeted the different active teachers in Kozani. The population was selected to establish the most appropriate sample for the study. For this purpose, the study utilized a sample of 150 study participants who were all active teachers from Kozani. In terms of the sampling technique, the study employed stratified and simple random sample methods, both of which fall under probability sampling approaches. In this case, stratified sampling was used to arrive at the goal sample, and the final sample was extracted from the strata using a basic random sampling method. Simple random sampling produces samples that are highly representative of the population. However, it can be tedious and time-consuming, especially when working with large samples.

Finally, respecting the ethical considerations, the researcher ensured that informed consent was obtained to confirm the willingness of teachers to participate in the study. This was in addition to maintaining a high degree of secrecy and privacy while working with respondents' data. The respondents were given the freedom to answer questions based on their interpretation of the different opinion questions. This helped in obtaining broad answers to certain questions.

2.4. Data Analysis

The quantitative data were coded and then transferred to SPSS for analysis. Tables were used to display the findings, and frequencies and percentages were used to interpret them. The total predictive power of the various independent factors on the study's dependent variable was determined using regression analysis. In this instance, calculating various predictive values required the use of a multiple regression model, as shown in Equation (2).

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon \quad (2)$$

where

Y = disaster risk management,

β_0 = constant (coefficient of intercept),

X_1 = school curriculum,

X_2 = knowledge acquisition,

ε = the error term in the multiple regression model, and

$\beta_1 \dots \beta_3$ = the regression coefficient of the two independent variables.

The error term in this research study was based on the assumption that there was an absence of autocorrelation. The hypotheses of the study were tested at the 5% (0.05) level of significance.

3. Results

This section presents the interpretation of the different results obtained after analyzing data collected from the selected teachers in the city of Kozani. Specifically, this section presents the demographic characteristics, descriptive analysis, regression analysis of the study.

3.1. Demographic Characteristics

Results about the demographic characteristics of the selected educational institutions in the city of Kozani are presented in Table 1.

Table 1. Showing participants' demographic information.

Characteristic	Frequency	Percentage (%)
Gender		
Male	93	62
Female	57	37
Age bracket		
Below 25 years	27	18.0
26–35 years	39	26.0
36–45 years	53	35.3
46–55 years	19	12.7
Above 55 years	12	8.0
Level of education		
Diploma	12	8.0
Bachelors	11	7.3
Masters	118	78.7
PhD	9	6.0
Years spent in teaching		
0–4	9	6.0
5–8	52	34.7
9–12	68	45.3
Above 12	21	14.0
Total	150	100

Source: Authors' calculations.

More than half of the study participants (62%) were male, and only 37% were female. The majority of the respondents (35.3%) were between 36 and 45 years old, and only 8% were above 55 years old. Furthermore, the majority of the participants (78.7%) had a master's degree, and only 6% had a Ph.D. Finally, the majority of the teachers (45.3%) had spent between 9 and 12 years teaching, and only 6% had spent less than 4 years teaching. This indicates that the participants had significant experience as teachers with students, as well as knowledge on how school systems can help in enhancing civil protection and disasters risk management.

3.2. Descriptive Analysis

The study sought to establish the effect of school curriculum on disaster risk management in schools. The findings on this variable are presented in Table 2.

Table 2. Results on the school curriculum.

	Strongly Disagree %	Disagree %	Undecided %	Agree %	Strongly Agree
Integrating disaster awareness in school curriculum boosts the disaster management abilities of students.	7.0	11.3	2.6	23.7	55.4
Incorporating civil protection ideas in the curriculum enhances knowledge on disaster management.	3.0	2.7	5.8	62.8	25.6
Evacuation maps in schools improve disaster preparedness.	11.8	60.2	4.4	13.9	1.6
Civil protection subjects in the school curriculum helps to prevent new and reducing existing emergency risks.	10.3	4.7	11.5	28.2	45.3

Source: Primary data (2021). Authors' calculations.

The results in Table 2 indicate that 55.4% of respondents strongly agreed that integrating disaster awareness in school curriculum boosts the disaster management abilities of children, and only 7% strongly disagreed. Moreover, 62.8% of respondents also agreed that incorporating civil protection ideas in the curriculum enhances knowledge on disaster management, and only 1.7% disagreed. In addition, 60.2% of respondents disagreed that Evacuation Maps in schools improve disaster preparedness, and only 13.9% agreed. In addition, 45.3% of the respondents strongly agreed that civil protection subjects in the school curriculum help to prevent new and reducing existing emergency risks.

Furthermore, the study sought to explore the effect of civil protection knowledge acquisition on disaster risk management in schools and the results on disaster risk management. The results in Table 3 reveal that 36.8% of respondents strongly agreed that student knowledge on crisis management leads to a better, stronger, and more resilient country, and only 2.6% strongly disagreed. In addition, 61.5% of respondents agreed that knowledge on disaster management improves students' self-protection abilities, and 40.2% of respondents further agreed that establishing school emergency response teams improves awareness preparedness. In addition, 47.9% of the respondents agreed that the knowledge on civil protection improves awareness on handling emergencies.

Table 3. Results on knowledge acquisition about disaster risk management.

	Strongly Disagree %	Disagree %	Undecided %	Agree %	Strongly Agree
Student knowledge on crisis management leads to a better, stronger, and more resilient country.	2.6	9.4	24.8	26.5	36.8
Knowledge of disaster management improves student's self-protection abilities.	7.9	12.6	9.4	61.5	8.5
Establishing school emergency response teams improves awareness preparedness.	5.9	7.7	23.2	40.2	23.1
Knowledge on civil protection improves awareness on handling emergencies.	3.8	4.3	20.2	47.9	23.9

Source: Primary data (2021). Authors' calculations.

In addition, this section discusses the findings concerning disaster risk management as a result of incorporation into school systems. Respectively, the results in Table 4 indicate that 56.4% of respondents strongly agreed that DRR safeguards the lives and livelihoods of schools and students who are particularly susceptible to disasters or crises. Clearly, 47.0% of respondents agreed that the DRR lessens the effect of catastrophes on those who stand to lose the most. The respondents (51.5%) strongly agreed that DRR helps limit disasters in schools or universities. Finally, 55.6% of the respondents strongly agreed that disaster recovery plans make disaster management cost-effective.

Table 4. Results on disaster risk management.

	Strongly Disagree %	Disagree %	Undecided %	Agree %	Strongly Agree
DRR safeguards the lives and livelihoods of schools and students who are particularly susceptible to disasters or crises.	0	3.5	6.8	33.3	56.4
DRR lessens the effect of catastrophes on those who stand to lose the most.	2.6	6.8	17.1	47.0	26.5
DRR helps to limit disasters in schools or universities.	4.0	6.0	7.7	30.8	51.5
Disaster recovery plans make disaster management cost-effective.	1.9	4.7	6.3	31.6	55.6

Source: Primary data (2021). Authors' calculations.

3.3. Regression Analysis

The relationship between school systems (school curriculum and knowledge acquisition) and disaster risk management was established using regression analysis as presented in the subsequent tables. The dependent variable is disaster risk management. As depicted in Table 5, the independent variable was regressed against the dependent variable, obtaining an R² value of 0.573. This indicates that the independent variables jointly explained 57.3% of the variation in the dependent variable (disaster risk management). The regression results also confirm that the study's independent variables did not influence 42.7% of the changes.

Table 5. Model Summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.831 ^a	0.573	0.484	0.71437

^a Predictors: (Constant), school curriculum, knowledge acquisition. Source: Authors' calculations.

As shown in Table 6, the F-statistic of 71.241 at prob. (Sig) = 0.021 conducted at 5% level of significance was used to determine the significance of the regression model. This indicates a statistically significant linear relationship between the independent variables (school curriculum and knowledge acquisition) and the dependent variable (disaster risk management) as a whole.

Table 6. ANOVA.

S		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	79.216	3	28.031	71.241	0.021
	Residual	71.878	150	0.413		
	Total	143.082	159			

Dependent Variable: Disaster risk management. Predictors: (Constant), school curriculum, knowledge acquisition. Source: Authors' calculations.

Finally, the results in the Table 7 confirm a relationship between school systems (school curriculum and knowledge acquisition) and disaster risk management, since $p < 0.05$.

Table 7. Coefficients.

		Coefficients				
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.617	0.315		1.259	0.210
	School curriculum	0.361	0.065	0.491	11.024	0.000
	Knowledge acquisition	0.052	0.097	0.042	0.628	0.031

Dependent Variable: Disaster risk management. Source: Authors' calculations.

Hypotheses Testing

Since the t-statistic of 0.000 is less than 0.05%, we confirm that the school curriculum has a positive and significant relationship with disaster risk management. Therefore, we accept Hypothesis H1, that the school curriculum positively affects disaster risk management. In addition, since 0.031 is less than 0.05%, we confirm that knowledge acquisition positively and significantly relates to disaster risk management. Therefore, we accept Hypothesis H2, that civil protection knowledge acquisition positively affects disaster risk management in schools.

4. Discussion

The study findings confirm the importance of incorporating civil protection aspects in school systems to enhance disaster risk management. The study establishes a strong relationship between school systems (school curriculum and knowledge acquisition) and disaster risk management. Presently, the education situation is considered to be improving, and we can see many areas where improvements can be made ([World Health Organization 2019](#)). More emphasis on general public education should be placed on local government or local crisis management staff members' education. The problem of the local government's continued underestimation of the role of general public education could be linked to the flood hazard's relatively small spatial concentration ([Papaevangelou 2021](#)). Flood-prone areas, as well as local governments in these areas, are developing general public education. There is also a reversal of flood-related responsibilities. Local governments are fully responsible for disaster management in their territory, with the option of requesting financial or operational assistance from the federal government in the event of a disaster that the local government cannot manage.

Progress has been made in DRR's education through the implementation of the curriculum ([Selby and Kagawa 2012](#)). The primary school and secondary school curricula have both been revised. The question is whether the current state of the curriculum provides appropriate knowledge to students and improves their preparedness and resilience to disasters ([Bernhardsdottir et al. 2016](#)). Although there was a comprehensive Civil Protection system 20 or 25 years ago, it is unfortunate that we must now develop and improve the curriculum to create awareness among students and teachers about disaster risk management. The system includes a theoretical foundation against different kinds of catastrophes, which was implemented in the educational system and the curriculum at each level of schools, governmental institutions, and businesses. During the training events, there were also opportunities to gain practical experience. However, the system has been abandoned due to the political ideology and incompatibility with the new political and public mindset ([Diakakis et al. 2020](#)).

Nevertheless, threats posed by humans, such as terrorism, violence, and bigotry, are not seen as concerns in Greece by its citizens. This is not to say that no action is required; rather, the current measures are appropriate and make the situation in Greece tolerable

(Diakakis et al. 2020). Natural catastrophes, such as floods, landslides, whirlwinds, and disasters caused by other unforeseen events, such as crisis events in chemical or weapons industries, are a more frequent issue in Greece. As a result, a framework for action is required during the catastrophe preventive phase and after the disaster response phase. Therefore, education is required if countries are to develop civic disaster resilience.

5. Conclusions

The study confirms the importance of school systems in enhancing disaster risk management. In this context, the continuous growth of DRR education at all stages of the educational process, beginning with elementary schools, is required. The school curriculum ought to include the theoretical background and practical experience in health protection, first aid, fire prevention, behavior in an emergency event, natural disasters, as well as the functions of civil protection.

Concretely, the education of students in Greece in disaster risk reduction plays an essential role in enhancing the resilience of ordinary citizens to different kinds of catastrophes. However, if we want the right education in terms of academic foundation and practical experience, we need the right education for students in educational faculties. These teachers are the knowledge carriers and mediators for the students. There is significant opportunity for catastrophe risk reduction to be scaled via school-education systems. The Greek educational system provides possibilities to mainstream disaster risk mitigation in educational institutions. Schools are social organizations capable of capturing and redirecting communal money for community development.

The study confirmed that the school curriculum has a positive and significant relationship with disaster risk management. This led to acceptance of Hypothesis H1 that the school curriculum positively affects disaster risk management. The study also confirmed that knowledge acquisition positively and significantly relates to disaster risk management. This led to acceptance of Hypothesis H2, that civil protection knowledge acquisition positively affects disaster risk management schools.

Finally, the study findings confirm the importance of school systems in improving awareness about disaster risk management. Therefore, we recommend that the government restructure the education system and, particularly, the school curriculum, to include civil protection and disaster risk management subjects. Moreover, this study only focused on how to leverage school systems toward improved disaster risk management. Hence, we suggest that future studies focus on the role of education stakeholders in improving disaster risk management awareness in education institutions.

Author Contributions: Conceptualization, S.K. and F.C.; methodology, S.K. and E.T.; software, D.K.; validation, F.C. and E.T.; formal analysis, S.K.; investigation, S.K. and E.T.; resources, S.K., E.T. and D.K.; data curation, F.C. and D.K.; writing—original draft preparation, S.K.; writing—review and editing, E.T.; visualization, E.T. and D.K.; supervision, F.C.; project administration, F.C. and D.K.; funding acquisition, F.C. and D.K. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Data are available on request.

Conflicts of Interest: The authors declare no conflict of interest.

References

- Basabe, Pedro. 2013. Hyogo Framework for Action 2005–2015. In *Encyclopedia of Natural Hazards*. Edited by Peter T. Bobrowsky. Dordrecht: Springer, pp. 508–16. [CrossRef]
- Behnam, Behrouz, and Fahimeh Shojaei. 2018. Chapter 1—A Risk Index for Mitigating Earthquake Damage in Urban Structures. In *Integrating Disaster Science and Management: Global Case Studies in Mitigation and Recovery*. Edited by Pijush Samui, Dookie Kim and Chandan B. T. Ghosh. Amsterdam: Elsevier—Integrating Disaster Science and Management, pp. 3–25. [CrossRef]
- Bernhardsdottir, Asthildur, Gemma Musacchio, Miguel Ferreira, and Susanna Falsaperla. 2016. Informal Education for Disaster Risk Reduction. *Bulletin of Earthquake Engineering* 14: 2105–16. [CrossRef]
- Bhatia, Sunakshi, Giulia Conto, Yasmin Khan, and Paul McGlinchey. 2013. Knowledge, Attitude and Practice Study on School Safety Programme. Knowledge Community on Children in India. Available online: https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/documents/files/kap_in_bihar_practice.pdf (accessed on 7 February 2022).
- Chatzitheodoridis, Fotios, Achilleas Kontogeorgos, and Efstratios Loizou. 2017. Behind the Image: An Investigation of Greek Firefighter’s Body Mass Index. *Pakistan Journal of Nutrition* 16: 525–30. [CrossRef]
- Chatzitheodoridis, Fotios, Anastasios Michailidis, Georgios Theodosiou, and Efstratios Loizou. 2013. Local Cooperation: A Dynamic Force for Endogenous Rural Development BT—Balkan and Eastern European Countries in the Midst of the Global Economic Crisis. In *Balkan and Eastern European Countries in the Midst of the Global Economic Crisis*, 1st ed. Edited by Anastasios Karasavvoglou and Persefoni Polychronidou. Heidelberg: Physica-Verlag HD, pp. 121–32. [CrossRef]
- Chen, Chien-Yuan, and Wen-Cheng Lee. 2012. Damages to School Infrastructure and Development to Disaster Prevention Education Strategy after Typhoon Morakot in Taiwan. *Disaster Prevention and Management: An International Journal* 21: 541–55. [CrossRef]
- Cook, Alistair D. B., and Han Dorussen. 2021. Civil Protection and Disaster Management. In *The European Union’s Security Relations with Asian Partners*. Edited by Thomas Christiansen, Emil Kirchner and See Seng Tan. Cham: Springer International Publishing, pp. 185–207. [CrossRef]
- Cravito, Alejandro, Claudio F. Lanata, Daniele S. Lantagne, and G. Balakrish Nair. 2011. Final Report of the Independent Panel of Experts on the Cholera Outbreak in Haiti. Available online: <http://www.ph.ucla.edu/epi/snow/UN-cholera-report-final.pdf> (accessed on 5 February 2022).
- Department for International Development. 2017. Education in Emergencies Guidance Note. Cambridge Education. Available online: https://www.dai.com/uploads/EiE_Guidance_Note-8fc7f4.pdf (accessed on 18 January 2022).
- Desai, Bina, Andrew Maskrey, Pascal Peduzzi, Andréa De Bono, and Christian Herold. 2015. *Making Development Sustainable: The Future of Disaster Risk Management, Global Assessment Report on Disaster Risk Reduction*. Genève: United Nations Office for Disaster Risk Reduction (UNISDR). Available online: <https://archive-ouverte.unige.ch/unige:78299> (accessed on 12 February 2022).
- Diakakis, Michalis, Dimitris G. Damigos, and Andreas Kallioras. 2020. Identification of Patterns and Influential Factors on Civil Protection Personnel Opinions and Views on Different Aspects of Flood Risk Management: The Case of Greece. *Sustainability* 12: 5585. [CrossRef]
- ELSTAT. 2022. Hellenic Statistical Authority. Available online: <https://www.statistics.gr/en/2011-census-pop-hous> (accessed on 14 February 2022).
- European Civil Protection and Humanitarian Aid Operations. 2020. *Education in Emergencies: Project Mapping Report*. Brussels: European Commission. Available online: https://ec.europa.eu/echo/sites/default/files/eie_mapping_report.pdf (accessed on 28 December 2021).
- European Civil Protection and Humanitarian Aid Operations. 2022. *The National Disaster Management System of Greece*. Brussels: European Commission. Available online: https://ec.europa.eu/echo/what/civil-protection/national-disaster-management-system/greece_en (accessed on 28 January 2022).
- European Commission. 2020. *External Evaluation Civil Society Organisations and Local Authorities Thematic Programme (2014–2019) Development Education and Awareness Raising*. Brussels: European Commission. Available online: https://ec.europa.eu/international-partnerships/system/files/evaluation-cso-la-thematic-programme-2014-2019-dear-component_en.pdf (accessed on 15 February 2022).
- European Committee of the Regions. 2022. The EU’s Assembly of Regional and Local Representatives. European Union. Available online: <https://cor.europa.eu/en> (accessed on 20 January 2022).
- Farahani, Saeideh, Behrouz Behnam, and Ahmad Tahershamsi. 2020. Macrozonation of Seismic Transient and Permanent Ground Deformation of Iran. *Natural Hazards and Earth System Sciences* 20: 2889–903. [CrossRef]
- Gaetani, Francesco, Antonio Parodi, Franco Siccardi, Davide Miozzo, and Eva Trasforini. 2009. The Structure, Role and Mandate of Civil Protection in Disaster Risk Reduction for South Eastern Europe. South Eastern Europe Disaster Risk Mitigation and Adaptation Programme. Report International Centre on Environmental Monitoring Research Foundation C. Report International Centre on Environmental Monitoring Research Foundation. Available online: https://www.unisdr.org/files/9346_Europe.pdf (accessed on 8 February 2022).
- Gunawan, Iwan, Jan Sopaheluwakan, Saut Aritua Hasiholan Sagala, Hoferdy Zawani, Suryani Amin, and Ruby Tumiar Juliana Mangunsong. 2016. *Building Indonesia’s Resilience to Disaster: Experiences from Mainstreaming Disaster Risk Reduction in Indonesia Program*. Jakarta: The World Bank. Available online: <https://documents1.worldbank.org/curated/en/318951507036249300/pdf/106245-REVISED-PUBLIC-Building-Indonesia-s-Resilience-to-Disaster.pdf> (accessed on 26 January 2022).

- Hermoso, Jocelyn Clare R., and Carmen Geanina Luca. 2006. Civil Society's Role in Promoting Local Development in Countries in Transition: A Comparative Study of the Philippines and Romania. *International Social Work* 49: 319–32. [CrossRef]
- IDNDR—International Decade for Natural Disaster Reduction. 1994. Yokohama Strategy and Plan of Action for a Safer World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation. Paper presented at World Conference on Natural Disaster Reduction, Yokohama, Japan, May 23–27; pp. 23–27. Available online: https://www.preventionweb.net/files/8241_doc6841contenido1.pdf (accessed on 7 February 2022).
- IPCC. 2021. Climate Change 2021: The Physical Science Basis. In *Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Edited by Valerie Masson-Delmotte, Panmao Zhai, Anna Pirani, Sarah Connors, Clotilde Péan, Sophie Berger, Nada Caud, Yang Chen, Leah Goldfarb, Melissa Gomis and et al. New York: Cambridge University Press, p. 3949. Available online: <https://www.ipcc.ch/report/ar6/wg1/> (accessed on 10 February 2022).
- Kalfas, Dimitrios, Dimitrios Zagkas, Eleni Dragozi, and Theocharis Zagkas. 2020. Estimating Value of the Ecosystem Services in the Urban and Peri-Urban Green of a Town Florina-Greece, Using the CVM. *International Journal of Sustainable Development & World Ecology* 27: 310–21. [CrossRef]
- Kalfas, Dimitrios, Fotios Chatzitheodoridis, Efstratios Loizou, and Katerina Melfou. 2022. Willingness to Pay for Urban and Suburban Green. *Sustainability* 14: 2332. [CrossRef]
- Kalfas, Dimitrios, Xenofon Tyrselis, Nikos Grigoriadis, and Yannis Matsinos. 2013. Sustainable Management of Local Resources Regarding Mountainous Regions. the Case of Nymfaio in Florina, Greece. *Journal of Environmental Protection and Ecology* 14: 655–63.
- Kalogiannidis, Stavros, Evgenia Marneri, Stavroula Savvidou, and Olympia Papaevangelou. 2021. Leveraging School's Systems as a Locus for Risks and Disaster Management. A Case Study of Greece. Paper Presented at 8th International Conference on Civil Protection & New Technologies—Safe Greece 2021, online, November 24–26; pp. 167–69.
- Kalogiannidis, Stavros, Ermelinda Toska, and Fotios Chatzitheodoridis. 2022a. Contribution of Civil Protection to the Urban Economy: Evidence from a Small-Sized Greek City. *Sustainability* 14: 981. [CrossRef]
- Kalogiannidis, Stavros, Stamatis Kontsas, Giorgos Konteos, and Fotios Chatzitheodoridis. 2022b. Investigation of the Redesigning Process of the Development Identity of a Local Government Regional Unit (City): A Case Study of Kozani Regional Unit in Greece. In *Advances in Quantitative Economic Research, International Conference on Applied Economics (ICOAE)*. Edited by Nicholas Tsounis and Aspasia Vlachvei. Heraklion Crete: Springer, p. 590.
- Kalogiannidis, Stavros, Stavroula Savvidou, Foteini Pakaki, and Olympia Papaevangelou. 2022c. Role of Management in Optimising the Quality of Education in Educational Organizations. In *Advances in Quantitative Economic Research, International Conference on Applied Economics (ICOAE)*. Edited by Nicholas Tsounis and Aspasia Vlachvei. Heraklion Crete: Springer, p. 590.
- Kohler, Kevin, Andrin Hauri, Florian Roth, Tim Prior, and Benjamin Scharte. 2020. Monitoring and Reporting under the Sendai Framework for Disaster Risk Reduction. In *CSS Risk and Resilience Reports*. Edited by Christine Eriksen. Zürich: Center for Security Studies (CSS), ETH Zürich. [CrossRef]
- Marrion, Christopher. 2013. Disaster Risk Reduction. In *Encyclopedia of Crisis Management*. Edited by K. Bradley Penuel, Matt Statler and Ryan Hagen. Thousand Oaks: SAGE Publications, Inc., pp. 290–92. [CrossRef]
- Milér, Tomáš, and Peter Marinič. 2017. Advances and Barriers to Education for Civil Protection in the Early 21st Century. Paper presented at EDULEARN17 Proceedings, EDULEARN, Barcelona, Spain, July 3–5; pp. 6102–6. Available online: https://www.researchgate.net/profile/Peter-Marinic/publication/318705953_ADVANCES_AND_BARRIERS_TO_EDUCATION_FOR_CIVIL_PROTECTION_IN_THE_EARLY_21ST_CENTURY/links/5f6b9f1092851c14bc9226ca/ADVANCES-AND-BARRIERS-TO-EDUCATION-FOR-CIVIL-PROTECTION-IN-THE-EARLY- (accessed on 28 December 2021).
- Momani, Naill M., and Asad Salmi. 2012. Preparedness of Schools in the Province of Jeddah to Deal with Earthquakes Risks. *Disaster Prevention and Management: An International Journal* 21: 463–73. [CrossRef]
- Mutsau, Shepard, and Ednah Billiat. 2015. Leveraging Schools Systems as a Locus for Disaster Risk Reduction in Zimbabwe. *Journal of Education and Practice* 6: 163–69. Available online: <https://files.eric.ed.gov/fulltext/EJ1081275.pdf> (accessed on 26 January 2022).
- Muzenda-Mudavanhu, Chipso, Bernard Manyena, and Andrew E. Collins. 2016. Disaster Risk Reduction Knowledge among Children in Muzarabani District, Zimbabwe. *Natural Hazards* 84: 911–31. [CrossRef]
- Norton, John, Funda Atun, and Miranda Dandoulaki. 2015. Exploring Issues Limiting the Use of Knowledge in Disaster Risk Reduction. *TeMA—Journal of Land Use, Mobility and Environment* 14: 135–54. [CrossRef]
- OECD. 2012. Greece at a Glance: Policies for a Sustainable Recover. OECD. Available online: <http://www.oecd.org/greece/44785912.pdf> (accessed on 7 February 2022).
- Ovington, Gary, Lisa Doherty, Andrea Berther, Guillaume Simonian, and Sonia Sukdeo. 2012. Disaster Risk Reduction in Education in Emergencies: A Guidance Note. Global Education Cluster. Available online: <http://reliefweb.int/sites/reliefweb.int/files/resources/Disasterriskreductionineducationinemergencies.pdf> (accessed on 9 February 2022).
- Papaevangelou, Olympia. 2021. A Short Communication of the Role of Media in Disaster Management Education System. *International Journal of Multidisciplinary Research and Growth Evolution* 2: 390–92. [CrossRef]
- Petal, Marla. 2009. Education in Disaster Risk Reduction. *Disaster Management: Global Challenges and Local Solutions* 21.
- Selby, David, and Fumiyo Kagawa. 2012. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries*. Paris: UNESCO, New York: UNICEF. Available online: http://www.preventionweb.net/files/26470_drrincurriculummapping30countriesfin.pdf (accessed on 15 January 2022).

- Shimada, Go. 2018. A Quantitative Study of Social Capital in the Tertiary Sector of Kobe—Has Social Capital Promoted Economic Reconstruction Since the Great Hanshin Awaji Earthquake? In *Integrating Disaster Science and Management*. Edited by Pijush Samui, Dookie Kim and Chandan B. T. Ghosh. Amsterdam: Elsevier—Integrating Disaster Science and Management, pp. 363–77. [CrossRef]
- Soldi, Rossella. 2016. *Implementation of the Sendai Framework at the EU Level: The Take-up of Resilience Measures by Local and Regional Authorities*. Brussels: Committee of the Regions. [CrossRef]
- Striessnig, Erich, Wolfgang Lutz, and Anthony G. Patt. 2013. Effects of Educational Attainment on Climate Risk Vulnerability. *Ecology and Society* 18: 16. [CrossRef]
- Twigg, John. 2015. Disaster Risk Reduction—Good Practice Review 9. In *Humanitarian Policy Network*. London: Humanitarian Policy Group. Available online: <http://odihpn.org/wp-content/uploads/2011/06/GPR-9-web-string-1.pdf> (accessed on 27 January 2022).
- UNISDR. 2005. World Conference on Disaster Reduction. In *Building the Resilience of Nations and Communities to Disasters*. Geneva: United Nations, p. 147. Available online: <https://www.unisdr.org/2005/wcdr/wcdr-index.htm> (accessed on 15 January 2022).
- UNISDR. 2015. Sendai Framework for Disaster Risk Reduction 2015–2030. Paper presented at the 3rd United Nations World Conference on DRR, Sendai, Japan, March 14–18; Sendai: United Nations, Volume 1, pp. 1–37. Available online: https://www.preventionweb.net/files/43291_sendaiframeworkfordrren.pdf (accessed on 10 February 2022).
- United Nations and UNDS. 2020. A UN Framework for the Immediate Response to COVID-19. United Nations. Available online: https://www.un.org/sites/un2.un.org/files/un_framework_report_on_covid-19.pdf (accessed on 14 February 2022).
- Vaughter, Philip. 2016. *Unmaking Disasters: Education as a Tool for Disaster Response and Disaster Risk Reduction*. Tokyo: United Nations University. Available online: <https://collections.unu.edu/eserv/UNU:5705/PB6.pdf> (accessed on 30 January 2022).
- World Health Organization. 2019. *Health Emergency and Disaster Risk Management Framework*. Geneva: World Health Organization. Available online: <https://www.who.int/hac/techguidance/preparedness/health-emergency-and-disaster-risk-management-framework-eng.pdf?ua=1> (accessed on 5 February 2022).