

Dealing with the Global Resilience Challenge Resulting from Climate Change

The Critical Role of the Risk Professional

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PREFACE



On a sunny autumn day in 2017, a few weeks after yet another flood in Bulgaria, I visited the town of Mizia. It is located in the poorest region in northwest Bulgaria (and in the whole of the European Union (EU)), not far from my hometown.

I wanted to understand the consequences of the devastating floods that had occurred three years earlier in the summer of 2014.

To my pleasant surprise, there was significant evidence of regeneration in the central part of the small town and multiple signs designating the EU funding that had been allocated to the projects.

I headed to a nearby café where a few locals were having lunch, and asked them whether they had been affected by the floods in 2014 and if they would be willing to tell me more about what had happened since then.

Fairly reluctantly at first, a couple of them admitted that their houses had been severely flooded by more than a metre of water and all their white goods – refrigerators and washing machines – had been damaged beyond repair. They had restored their houses and bought new fridges and cookers, but the mould, which was reappearing on their walls, constantly reminded them of the horror they had been through.

While there were two fatalities directly linked to the floods, the locals recalled that there were many more deaths a few months later, primarily of elderly people who were emotionally devastated by the incident and saw no hope for the future.

They spoke keenly about the Bulgarian Red Cross and other volunteers who arrived from across the country and assisted with food and shelter in the early days. Some received donations of white goods. While they could not insure them immediately due to the lack of available insurance cover, they proudly confirmed that they had finally arranged property insurance three years later.

This is only one example of many similar stories from around the world, some with better endings than others.

¹ This paper was one of the top dissertations from the 2019 Airmic Leadership Programme, delivered in partnership with the Business School at City, University of London (formerly known as Cass Business School). The views conveyed in this paper are solely those of the author, and do not necessarily represent that of the organizations she has been affiliated with either currently or in the past.

1. INTRODUCTION

This paper examines the need for a holistic approach to risk management, risk reduction and risk financing of natural disasters, and the critical role of the risk professional in analysing these risks and putting together mitigation and financing strategies for sustainable long-term results.

In recent years, there have been numerous initiatives, international agreements and hundreds of pages of published research on climate change and its effects on populations and economies, as well as alternative risk financing. But the efforts feel somewhat isolated and the results sporadic at best.

2. INTERNATIONAL CHALLENGES

Two years after my conversation with the residents of Mizia, the risk of natural disasters has not improved, but has in fact deepened.

Climate change is a risk that scientists, environmentalists and even society at large have been aware of for a while. It is increasingly impossible to disregard the record-breaking temperatures, and numerous floods and wildfires occurring on a weekly and sometimes daily basis around the world. Due to constantly rising temperatures, the frequency and consequences of natural disasters will increase in the coming years.

The World Economic Forum's (WEF) annual reports on Global Risks of the past few years have paid particular attention to the subject, with extreme weather being of the greatest concern.

"Is the world sleepwalking into a crisis? Global risks are intensifying but the collective will to tackle them appears to be lacking. Instead, divisions are hardening,"² the 2019 WEF report states. It further explains that there is a growing tension between the globalisation of the world economy and growing nationalism. Co-operation is increasingly difficult in a divided world.

Additionally, a lack of empathy and an increase in the number of mental disorders, including depression and anxiety, were identified in the report. People suffering

from depression and anxiety are more vulnerable, but lack of empathy means that help might not be readily available.

Economic development and the search for financial independence drive people to financial clusters such that "two-thirds of the global population is expected to live in cities by 2050".³

This significant accumulation of human and financial capital in certain areas, coupled with the questionable quality of buildings in some cases, brings another very serious potential risk for societies, and local and central governments.

According to the World Bank, natural disasters force 26 million people into poverty and cost US\$520 billion in losses every year.⁴ In 2017, the losses from natural and man-made disasters recorded by Swiss Re amounted to US\$350 billion. In 2018, this figure was US\$155 billion.⁵ The good news is that the insured losses for 2018 were higher than the average in any of the previous 10 years, which may indicate that people and businesses have become more aware of the risks. Unfortunately, 49% of losses are still uninsured.

3. AN OVERVIEW OF BULGARIA

Besides it being my home country, I chose Bulgaria as a case study and the subject of further research due to its unique position of being a part of the EU with all the privileges and responsibilities that EU membership brings, while also being the poorest country in the EU. This brings Bulgaria's challenges closer to those of developing countries.

3.1. Economy

In terms of the size of its economy, Bulgaria is ranked 73rd out of 205 countries,⁶ with a GDP of US\$67.9 billion in 2019. GDP per capita in 2018 was US\$9,080, which classes it as a middle-income country. Compared with a GDP per capita of US\$12,189 for Romania, Bulgaria is the EU member state with the lowest GDP per capita. For comparison, the GDP per capita for the UK is US\$42,261, while Luxembourg's (the highest figure in the EU) is US\$113,954.⁷

² World Economic Forum (2019) The Global Risks Report 2019, 14th Edition, Insight Report.

³ Ibid.

⁴ The World Bank, "Natural Disasters Force 26 Million People into Poverty and Cost \$520bn in Losses Every Year, New World Bank Analysis Finds," 14 November 2016. <https://www.worldbank.org/en/news/press-release/2016/11/14/natural-disasters-force-26-million-people-into-poverty-and-cost-520bn-in-losses-every-year-new-world-bank-analysis-finds>

⁵ Insurance Journal, "Global Insured Losses From Disasters at \$79 Billion in 2018: Swiss Re Sigma Estimate," 18 December 2018. <https://www.insurancejournal.com/news/national/2018/12/18/512384.htm>

⁶ The World Bank, "Gross domestic product 2019 [by country]." <https://databank.worldbank.org/data/download/GDP.pdf>

⁷ International Monetary Fund (website), "Report for Selected Countries and Subjects." <https://www.imf.org/external/pubs/ft/weo/2018/02/weodata/weorept.aspx?pr.x=68&pr.y=7&sy=2017&ey=2018&ssd=1&sort=country&ds=.&br=1&c=914%2C946%2C137%2C962%2C911%2C122%2C912%2C181%2C913%2C124%2C921%2C943%2C963%2C918%2C138%2C142%2C964%2C182%2C960%2C423%2C968%2C935%2C922%2C128%2C135%2C942%2C939%2C936%2C961%2C172%2C967%2C132%2C184%2C915%2C134%2C174%2C144%2C146%2C944%2C176%2C178%2C186%2C136%2C926%2C112%2C941&s=NGDPDPC%2CPPPPC&grp=0&a=>

The National Statistics Institute of Bulgaria announced that the threshold for poverty for the whole country was 351.11 lev in 2018, or about US\$200 per month per individual. At or below this threshold were 1.55 million people, or 22% of the country's population.⁸

"Over 40% of the population is at risk of poverty or social exclusion, particularly Roma families and other ethnic minorities."⁹

The poorest people are often the ones hardest hit by natural disasters, because they lack the resources to build resilient houses, buy insurance or recover from the devastation by rebuilding their property or getting through to the new growing season.

3.2. Natural disasters in Bulgaria, their impact and EU funding

Bulgaria is prone to most kinds of natural disasters. While floods and extreme weather temperatures are the most common ones, a significant earthquake could have the most devastating effect financially and in terms of loss of life.

According to data recorded by the Emergency Events Database,¹⁰ 47 disasters in Bulgaria were recorded between 1928 and 2017. These comprised 19 floods, two droughts, nine extreme temperatures, one landslide, six storms, four wildfires and six earthquakes (see Table in Annex 1 for details).

The most significant events – by the number of people affected – were three floods that took place between 2005 and 2014. They affected more than 57,000 people and caused 11 deaths. While these events were riverine floods, all three of them were accompanied by secondary disasters such as broken dams or land/mud slides.

Bulgaria has drawn on the EU Solidarity Fund on a few occasions in recent years. Only €10.5 million of the €300 million requested from the European Union Solidarity Fund (EUSF) was approved for withdrawal in relation to the flood damage suffered in 2014. As of November 2014, provision of the funding was imminent, but it had still not been received.

Considering the events from the perspective of the death toll, earthquakes and extreme temperatures (cold wave) have taken the lead, with a total of 157 deaths between 1928 and 2017. The most recent

event which took 30 lives was extreme cold weather (when temperatures plummeted to -30 Celsius in 2012).

Earthquakes are a serious concern because an estimated 98% of Bulgarian territory is prone to earthquakes that measure 7.0 or more on the Richter scale.¹² A single earthquake in 1928 accounted for 107 deaths alone.

With more than 75% of apartments in the country being over 30 years old and made of prefabricated panel blocks that have been poorly maintained, this is a significant concern.¹³

Additionally, 15% of the population live in houses shared by more than one family, sometimes with three generations or six to eight family members in one house.

3.3. Property damage and insured losses

Only 12 of the 47 noted natural disaster events have a record of any property damage. This suggests the recorded total losses of US\$1.42 billion for these events – a figure which I had seen in one database – is a gross underrepresentation of reality. The first record of property damage dates from 2000. Even since then, almost two-thirds of the noted events have no record of any property damage.

Of the largest 10 events with recorded property damage, all but three were floods, while two were wildfires and one was a storm.

Disturbingly, the only record of any insured losses was against a storm that took place in Sofia in 2014 and caused US\$545 million in damage. The insured losses were US\$73,000, or 0.00013% of the total loss.

3.4. The state of the insurance market

As of the beginning of 2019, the insurance market was split by class as shown in the chart below, with compulsory motor liability insurance dominating almost 70% of all general insurance. Fire and other perils under property insurance represented a mere 15%.

In 2017, insurance penetration for Bulgaria was 2.23%, which is significantly lower than the average for Europe of 7.2%.¹⁴

⁸ Republic of Bulgaria, National Statistical Institute (website).

⁹ The World Bank, "Housing Sector Assessment: Final Report – Prepared for the [Bulgaria's] Ministry of Regional Development and Public Works," June 2017. <http://documents.worldbank.org/curated/en/776551508491315626/pdf/116518-REVISED-PUBLIC-BulgariaHousingAssessmentFinalReportEN.pdf>

¹⁰ Universite catholique de Louvain (UCL) - Centre for Research on the Epidemiology of Disasters (CRED) – D. Guha-Sapir, Brussels, Belgium. www.emdat.be. The author wishes to thank a leading insurance company for pointing her to this database.

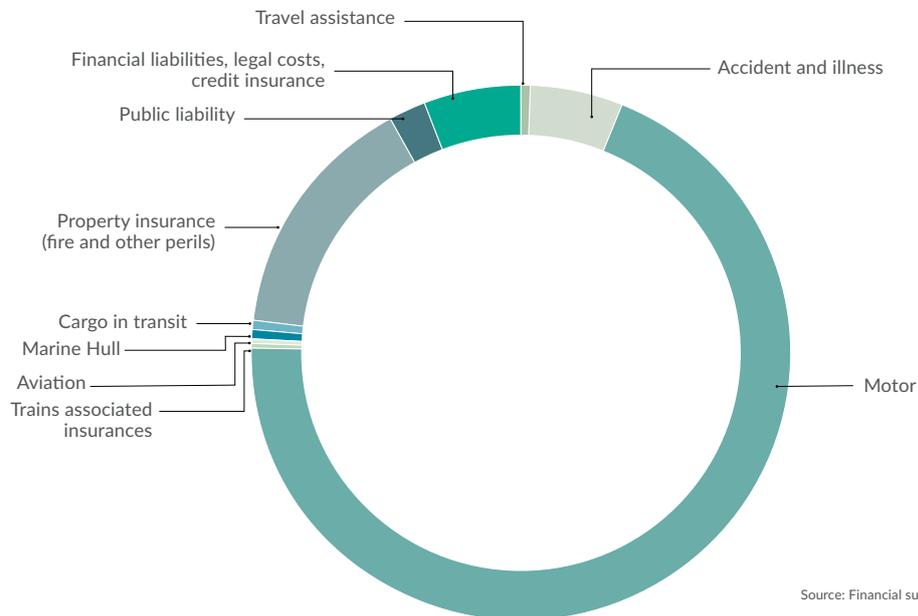
¹¹ Novinite, "Bulgaria to Get 6% of Requested EUR 300 M under EU Solidarity Fund," 27 November 2014. <https://www.novinite.com/articles/165056/Bulgaria+to+Get+6+of+Requested+EUR+300+M+under+EU+Solidarity+Fund>

¹² World Bank Group, "Insurance against climate change: Financial disaster risk management and insurance options for climate change adaptation in Bulgaria." <http://documents.worldbank.org/curated/en/517531468224991168/pdf/891010WPOP14590tOClimat0Change0ENG.pdf>

¹³ The World Bank, "Housing Sector Assessment: Final Report – Prepared for the [Bulgaria's] Ministry of Regional Development and Public Works," June 2017.

¹⁴ Insmarket, "Insurance in Bulgaria," 1 October 2018 [article in Bulgarian]. http://insmarket.bg/%D0%90%D0%BD%D0%B0%D0%B8%D0%B7%D0%B8%D0%97%D0%B0%D1%81%D1%82%D1%80%D0%B0%D1%85%D0%BE%D0%B2%D0%B0%D0%BD%D0%B5%D1%82%D0%BE-%D0%B2-%D0%91%D1%8A%D0%BB%D0%B3%D0%B0%D1%80%D0%B8%D1%8F_i.a_at.2_i.462206.html

Structure of insurance premiums by insurance class



Source: Financial supervision commission

4. LEARNING FROM CORPORATE INSTITUTIONS

Due to the complexity of multi-stakeholder involvement in natural disaster risks, there needs to be a holistic approach, good co-ordination and co-operation, as well as persistence and continuity, in order to successfully tackle the multidimensional problems associated with natural disasters and building resilience.

Governments and international organisations need to consider being more proactive, but this is very difficult to achieve, especially with the added uncertainty posed by elections every four years.

In this regard, governments can learn from corporate organisations. The corporate sector has long established the need for professional risk and insurance managers as an aide to their business strategy. The Chief Risk Officer (CRO) is an integral part of the C-suite of every major corporation, whose role is to scan the horizon for emerging risks, and research and assess these, as well as manage current risks. Through facilitation and co-ordination, the CRO brings the right experts to the discussion in order to agree on a mitigation strategy and a business continuity plan. Even if individual risk owners leave the organisation and are replaced with new hires, the

role of the Chief Risk Officer or Risk Manager remains the same.

One might argue that businesses are more vulnerable to risks compared to a country, and this is the reason for their more active management of risks. However, consider that Walmart, the largest corporate institution in the world, had a revenue of US\$500.3 billion in 2018¹⁵ – more than seven times the size of Bulgaria’s GDP for the same period. Moreover, there were only 25 countries in 2018 with a GDP greater than Walmart’s annual revenue.

The person holding the role of Vice President, Global Risk Management at Walmart leads a team of more than 550 risk and insurance management professionals, who have collective responsibility for Walmart’s Global Risk Management Division¹⁶ and for the specifically identified operational risks of natural disasters and climate change.

Why are governments not following suit? Is it an oversight on their part, or a failure of our profession to identify the similarities in risks that states and corporations face, and thereby produce the right calibre of risk professionals who can be an integral part of a government’s strategy towards mitigating long-term challenges?

¹⁵Walmart, "Annual report 2018: Accelerating innovation." https://s2.q4cdn.com/056532643/files/doc_financials/2018/annual/WMT-2018_Annual-Report.pdf

¹⁶ Insurance Market, "Walmart's Stills Named to RIMS 2019 Risk Management Honor Roll," 7 March 2019. <https://www.insurancejournal.com/news/southcentral/2019/03/07/519965.htm>

5 THE 'NATIONAL CHIEF RISK OFFICER'

One way to resolve many current challenges would be to have the equivalent of a Chief Risk Officer at the state level (whom I will call a 'National Chief Risk Officer'), placed in the middle of the risk spider-web, allowing a holistic 360-degree view, facilitating conversations, and ensuring continuity and adaptation to keep policy actions relevant.

To allow for the continuity of goals delivery, the National Chief Risk Officer should be in a senior administrative position that is not linked to a political party, but still have enough authority and access to Ministers to move policy along. In an ideal world, political interests and personal ego should be left behind in the face of the significant, real and potentially devastating risk of climate change and associated natural disasters.

At present, while governments and societies are to varying degrees trying to slowly combat and even reverse climate change, the reality is that the focus should really be on preparedness and mitigation for our generation and possibly those to follow.

6. PREPAREDNESS AND MITIGATION

In order to propose mitigation measures, we need to first consider the processes that take place whenever a natural disaster strikes and the associated risks for the various stakeholders. The following chain of events usually takes place:

Both the public and the government (local and/or central) suffer a loss. The emergency services assist the public while co-ordinating with local government and NGOs. The NGOs start fundraising campaigns targeting institutional and corporate donors, as well as the general public, in order to continue the response beyond the initial alleviation of suffering.

The local government requests funding from the central government, which then requests funding from the EU. Supranational institutions get involved not only with funding, but also in regulation, advice and research.

The central government funds local government and the population. Money is often spent on compensation for people's personal property.

While many studies provide clear evidence and recommendations for co-operation with the insurance and reinsurance industry, it becomes clear from the above scenario that both the insurance industry and

universities or scientists are almost completely excluded. It is also clear that there is a lack of co-ordination and coherence, which makes recovery much slower and more difficult.

7. DISASTER RISK MANAGEMENT IN THE EU

The EU quickly realised that with the European continent warming faster than most other parts of the world, urgent action was needed. The first EU Strategy on Adaptation to Climate Change was issued in April 2013. The climate change adaptation budget for 2014-2020 was increased threefold.¹⁷

Unfortunately, an evaluation of the strategy issued in December 2017 assessed national adaptation strategies to be "in general ineffective". Among the identified drivers and barriers were "institutional barriers within the [European] Commission, lack of political will in some Member States, insufficient interactions between scientists and policymakers and practitioners, difficulties with accessing data, insufficient cooperation between policymakers across Member States, and insufficient funding and research".

One of the recommended actions was the "continuing need for the European Commission (EC) to promote action by Member States to develop a more climate-resilient Europe".¹⁸

In the amended EU strategy issued at the end of 2017, it was specified that EU member states should reinforce their ability to respond to disasters, as well as focus on prevention and coherence.

Furthermore, a single co-financing rate of 75% for pre-committed response capacities (including adaptation, repair, operational costs) was proposed. EU member states were directed to prepare prevention and preparedness plans for submission by early 2019.

Most importantly, national and regional risk assessments needed to be in place in order for EU member states to have access to the European Structural and Investment Funds related to climate change adaptation and management.

It is evident that the EC was quickly learning from earlier shortfalls in its strategy. It was not only bringing risk management to the fore when it came to access to funding, but it also clarified that national plans needed to be supported by scientific and extensive evidence. This meant bringing the other two identified stakeholders – universities and the insurance industry – closer to policymaking, because of their expertise and data collected in the field.¹⁹

¹⁷ European Commission, "The EU strategy on adaptation to climate change," https://ec.europa.eu/clima/sites/clima/files/docs/eu_strategy_en.pdf

¹⁸ European Commission, "Study to support the evaluation of the EU Adaptation Strategy" (Summary, December 2017). https://ec.europa.eu/clima/sites/clima/files/consultations/docs/0035/summary_interim_findings_en.pdf

¹⁹ European Commission, "Communication from the Commission to the European Parliament, the Council and the Committee of the Regions (Strengthening EU Disaster Management: rescEU Solidarity with Responsibility)." COM(2017) 773 final. <https://ec.europa.eu/transparency/regdoc/rep/1/2017/EN/COM-2017-773-F1-EN-MAIN-PART-1.PDF>

Regrettably, it took the EC four years to become aware of the risks and the mitigation measures needed, which could arguably have been identified through a project risk assessment well before the initial EU strategy was issued.

It is evident that the EU member states will need professional risk management support if they are to meet their obligations and gain access to funding in the future.

8. BULGARIA AS A MEMBER STATE OF THE EUROPEAN UNION

With the assistance of the World Bank, Bulgaria has now developed a National Climate Change Adaptation Strategy and Action Plan.

The completeness and efficacy of this plan are of huge importance to Bulgaria. According to Inform Global Risk Index, the risk of a humanitarian or natural disaster crisis in Bulgaria was rated in third-highest place in the EU in 2018, while the lack of capacity to deal with such crisis was rated second-highest in the EU, after Romania.²⁰

The document clarifies that the Ministry of Environment and Water (MoEW) will “lead and coordinate action at the national level to reduce the vulnerability of natural, social and economic systems in Bulgaria, and to maintain and improve their capacity to adapt to the inevitable impacts of global climate change”,²¹ which is a very positive step.

The action plan recognises that a large number of ministries and other institutions, and municipalities currently have responsibilities in relation to climate change adaptation and its associated complexities. Consequently, it proposed that the ministry be supported by the National Expert Council on Climate Change and the Coordination Council on Climate Change, covering the period until 2030.

During this time, there will be two to three national elections, and potentially two to three different governments. The EU has set deadlines for various actions, but it has planned for five-yearly assessments to be made.

The election cycle does not correspond to the EU's timelines, of course. It is problematic if one government has developed a plan and another is expected to deliver it. Similarly, if no risk assessment has been carried out, the country could easily waste five or more years taking ineffective or no action. In five years, much new research and evidence will become available. Without a professional risk manager's support in assessing these, any action plan could quickly become irrelevant and useless.

9. IDENTIFIED RISKS AND RECOMMENDED MITIGATIONS

9.1. Supranational organisations and associated international initiatives

The United Nations, the World Bank and the EU often provide guidance, regulation and financial assistance.

The Sendai Framework specifically considers disaster risk reduction (2015-2030), shifting the focus from disaster management to disaster risk management. It has been accepted by all UN member states and is being developed with major assistance from the EU. In the Action Plan Implementation Priorities of the framework, the following key areas have been laid down:

1. Building risk knowledge in all EU policies
2. An all-of-society approach in disaster risk management
3. Promoting EU risk-informed investments
4. Supporting the development of a holistic risk management approach.²²

It is evident that UN member states cannot deliver on these requirements without the professional risk manager's involvement, and many of the recommendations below support the key areas of the Sendai Framework.

They also need to act fast and become more resilient individually, as funding from the supranational organisations is limited, late and subsequently inefficient in many cases. It would be significantly more beneficial in financial and preservation of life terms if assistance is provided for preparedness and mitigation instead of recovery. For every \$1 spent on mitigation or preparedness, \$6 is saved in recovery.²³ Where the financial assistance for recovery is provided as a loan, the arrangement can be expensive too.

9.1.1. Risks to supranational organisations

Due to the increased number and severity of natural disasters, there is an increased demand on finite financial resources. Additionally, there is lack of evidence of long-term efficiency.

9.1.2. Identified mitigations:

- Sharing of **best practice** and lessons learnt
- **Sharing of information** on such initiatives freely, in simple language and with wide audience so that good examples are better known and understood.

²⁰ European Commission (website), “DRMKC – INFORM.” <http://www.inform-index.org/Portals/0/InfoRM/2018/INFORM%20Annual%20Report%202018%20Web%20Spreads%20v2.pdf?ver=2017-12-20-141446-540>

²¹ Ibid.

²² European Commission, “Commission Staff Working Document: Action Plan on the Sendai Framework for Disaster Risk Reduction 2015-2030: A Disaster risk-informed approach for all EU policies.” SWD (2016) 205 final/2.

²³ Pew, “Every \$1 Invested in Disaster Mitigation Saves \$6.” 11 January 2018. [https://www.pewtrusts.org/en/research-and-analysis/articles/2018/01/11/every-\\$1-invested-in-disaster-mitigation-saves-\\$6](https://www.pewtrusts.org/en/research-and-analysis/articles/2018/01/11/every-$1-invested-in-disaster-mitigation-saves-$6)

9.2. Central government

9.2.1. Risks to central budgets

Natural disasters inevitably have an adverse effect on central government budgets. The government needs to redirect funds or use reserves, borrow money and apply for international funding in order to fund local government recovery works, rebuild infrastructure and make compensations for society, directly or through NGOs. If recovery is not handled efficiently, this could influence future election results.

9.2.2. Recommended mitigation measures:

- Similar to the way companies insure their assets, governments should have **insurance protection** as part of their fiscal policy. Insurance provides budgetary predictability and can alleviate significant fiscal pressures at times of unexpected losses. A professional risk and insurance manager can provide a risk transfer strategy based on the state's needs and requirements, taking into account different self-insurance and risk transfer strategies, as well as a combination of various instruments.
- For quick and accessible funding, parametric products could also be explored. These have proven efficient for the 19 countries which participate in the Caribbean Catastrophe Risk Insurance Facility (CCRIF). From 2007 to 2018, payouts totalling US\$138.8 million were made, spurring a bold ambition to make the Caribbean region the first climate-resilient zone in the world.²⁴
- Considering the three main floods that wreaked the most damage in Bulgaria recently and the aggravated effect of the broken dam walls, it is imperative that compulsory insurance for the liability of owners and lessees of dams and reservoirs be introduced. The appropriate levels of cover should be based on a risk assessment of the damage that could be incurred on private or state assets.

These could be calculated with the assistance of the insurance industry, based on the region and the type of disasters it is prone to, as well as the local concentration of risk.

This would allow the state to focus on rebuilding the critical infrastructure, ensuring minimum disruption to the region, instead of just providing financial assistance to citizens.

It should also be ensured that the insurance market offers products under which compensation will not be unduly delayed.

A risk professional experienced in risk transfer should be involved in the policymaking process and the ensuing assessments.

- Ensuring that there is **suitable private insurance** coverage for people to protect their property, livestock, life and health, including the availability of microinsurance which would be accessible to the 22% of the population living below the poverty line and the 40% who are at risk of poverty.

Options for providing this cover as part of a government facility or subsidised pool should be explored under the guidance of an experienced risk financing professional.

- At the current rate of losses, insurance will only be available for 'good risks' in due course, and this is where increased and targeted action is required from the government in relation to **improving risk protection** for both public and private assets.
- Due to the old stock of property with poor maintenance records, a complete review of the housing situation in Bulgaria is required, with **new building policies and regulations** issued. The project and any of the proposed policies should be risk assessed.
- Due to the high risk of earthquakes, the government could consider active policies in **developing regions other than Sofia and Varna**. In the 10 years to 2011, these were the only regions that did not suffer depopulation – half of all the people who migrated within Bulgaria moved to either of these two regions²⁵.

There is an ample stock of dwellings in the rural regions, which people have left in search of better opportunities. Creating jobs elsewhere, and investing in schools and hospitals could help more people remain in smaller towns and villages.

- With ownership comes responsibilities. As such, people should be required to maintain their properties in a good state of repair. To assist with repairs following a natural disaster, home insurance purchases should be heavily incentivised, if not made compulsory.
- People do not always understand the risks they face. Awareness should be raised through a targeted information campaign, developed and delivered with the insurance market, scientists and meteorologists. Information on risks in each region could be provided as part of the weather forecast announcement for greater audience outreach.
- Early warning systems and up-to-date, rehearsed evacuation plans for the highest risk regions.

The National Chief Risk Officer should be the one co-ordinating and facilitating these activities, to ensure that all risks are being actively managed.

²⁴ CCRIF SPC (website), "Company overview." <https://www.ccrif.org/content/about-us>

²⁵ The World Bank, "Housing Sector Assessment: Final Report – Prepared for the [Bulgaria's] Ministry of Regional Development and Public Works," June 2017.

9.3. Local government

9.3.1. Risks to local governments

The risks to local government mainly pertain to damage to critical local infrastructure, the possibility of a local economic slowdown and temporary unemployment.

9.3.2. Recommended mitigations:

- Detailed risk maps and corresponding disaster recovery plans should be prepared at the regional level. Budgets should be set appropriately, including for risk transfer (for better predictability), and more funds should be allocated to mitigation and preparedness measures at the start of the year.

If risk recovery plans are up to date, and budgets and/or insurance products are arranged so that a quick draw on funds can be made, the effects of any economic slowdown would be reduced to a minimum.

- Assistance should also be provided to local businesses in terms of risk awareness and the sharing of risk transfer information, in order to minimise local business disruption to a minimum.
- Parametric insurance could also be considered for the private sector, for the tourism industry or farming sector, for instance.

Such actions could easily be undertaken with the assistance of a risk professional who understands the local risks and needs, and who reports to the National Chief Risk Officer.

9.4. Population

9.4.1. Risks identified:

The risks that have been identified for the population are the loss of life, damage to property, the loss of jobs, deteriorating infrastructure and the difficulty of obtaining insurance cover in the future.

9.4.2. Recommended mitigations:

- People often underestimate the impact a natural disaster can have on their communities and their lives. After a disaster, they often rely on their friends' help and on government relief.

Most of the risks above would be significantly improved by the recommendations made for central and local governments. However, individuals play a role too. They need to gain an understanding of the risks they face and the simple mitigation practices that can be adopted.

It is indeed the government's responsibility to clean the riverbanks, but it is up to people not to

cut trees, to keep communal areas clean and to buy private insurance when they have the means.

9.5. Insurance market

Insurance is recognised as a significant potential mitigant in disaster risk management at both the public and private levels, contributing to sustainable public finances and promoting risk awareness and mitigation.²⁶

9.5.1. Risks identified

The low penetration of insurance, the lower capacity, the lack of funds and the lack of interest in new product development are risks – although these are also an opportunity for developing the market.

9.5.2. Recommended actions (as an opportunity for the insurance industry and a mitigation tool for the state):

- Building public-private partnerships, offering insurers financial capacity, expertise and risk assessment tools and models in return for higher penetration. Uninsured losses could deepen poverty, consequently undermining economic growth. If planned and developed well, public-private partnerships could be a win-win for both the industry and the state. Additionally, insurers and reinsurers have a treasure trove of data which could prove very useful in verifying high-risk areas, and preparing evacuation and recovery plans, minimising the adverse impacts both for the government but also for individuals.
- Increase risk prevention through market-based incentives. Simple, inexpensive improvements can not only reduce the vulnerability of individuals and their homes, but can also influence where people live, contributing towards resolving the challenges of risk accumulation by adopting an insurance rating system based on risk and impact zones. Possible mitigation factors should be shared and rewards provided for having them in place. This will incentivise people to spend money on preventive action rather than on premiums.
- Assist with state-mandated catastrophe insurance pools.
- Develop accessible, easy-to-understand and fair products. Develop new and cheaper distribution channels and pass the savings on to the customer to avoid exclusion. Create a simplified claiming procedure to ensure speedy claim payouts.
- Many people need insurance policies that will just pay for a broken window. It does not cost much, but could present a serious problem if not fixed before the winter.

²⁶ European Commission, "A Green Paper on the insurance of natural and man-made disasters." COM (2013). <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2013:0213:FIN:EN:PDF>

In 2012, the majority of people who lost their lives in the winter were homeless.

There are multiple examples of how microinsurance can help people through different products being developed. Life and health insurance appear to be the most popular ones, but agricultural and property insurance are also available.

The insurance industry may find it useful to co-operate with NGOs, as they are experts on the needs faced by people living in poverty or who are at risk.

- Based on the identified needs of the government, develop and offer suitable parametric insurance products. These could be related to public or private assets, food security or property damage, among other things.
- Provide training and awareness building for the government and policymakers as well as for the general public, and build insurance into the curriculum of high school and university business courses as well as for emergency services training.

Insurance seminars should be arranged across the country in co-operation with NGOs, in which the public have higher trust.

All these activities should be in collaboration with the government, and be subjected to efficient co-operation and co-ordination based on a common understanding of the problems and objectives. The expertise of a risk professional with good knowledge of risk transfer and the insurance industry is critical.

9.6. Non-Governmental Organisations (NGOs)

9.6.1. Risks identified

NGOs play a major role in the disaster recovery stage and now recognise that the current funding and operation model is inefficient due to fundraising taking place post-event, which delays vital remedial works and slows down recovery and raises the costs. A number of NGOs could rush to assist in the early days after disaster, which could lead to duplication of efforts and waste of resources if not well co-ordinated.

9.6.2. Recommended mitigations

NGOs now recognise the need for immediate access to funding and good co-ordination of efforts to increase efficiency.

- Following the example of the Start Network (a network of more than 40 aid agencies across five continents), NGOs should explore ways of alternative humanitarian funding. Due to

insurance providing predictability, which is what is currently lacking in humanitarian funding, risk transfer to insurance providers is an option.

The Start Network is piloting “new funding instruments that enable humanitarians to mobilise collaboratively, predictably, to manage risks rather than react to crises. These mechanisms are based on:

1. The use of science and data to model and quantify risks in advance in the areas in which we operate;
2. Working together to pre-plan and pre-cost different crisis response activities needed to support communities;
3. Pre-positioning funds according to pre-agreed protocols for release, so that when the conditions are met, funding is rapidly released.”²⁷

Once again, this highlights the importance of multi-stakeholder involvement in any solution.

- In order to ensure the efficiency of responses, there needs to be pre-developed response plans (developed with local government), which take into account the immediate needs of people, the actions required and how these would be co-ordinated with the emergency services.

9.7. Emergency services

9.7.1. Risks identified

The risks are the lack of capacity at the local level, non-functioning early warning systems, or the lack of them, thereby delaying response times to emergencies, and the lack of detailed data that would otherwise facilitate the earmarking of resources.

9.7.2. Recommended mitigation measures

- Training of local citizens (even at the basic level) could benefit from much-needed assistance, where capacity is lacking.
- The co-ordination of training for all emergency service brigades across the country, so that the same operating procedures are applied. If emergency services from other regions join the response effort in another region, the process can then be seamless.
- Operational, regularly tested early warning systems should be made available and linked to emergency services, to allow for early preparation, planning and response.
- Make data from scientists and the insurance industry available, to allow for strategic preparation of resources for timely and efficient responses.

²⁷ Start Network (website), “Anticipation and risk financing.” <https://startnetwork.org/start-labs/risk-financing>

The involvement of a risk professional experienced in business continuity planning would be beneficial in ensuring the co-ordination of the above recommendations.

9.8. Universities and scientists

9.8.1. Risks identified

While there is detailed and helpful research and data, the lack of co-operation with universities and scientists means that their body of knowledge is not being fully utilised.

9.8.2. Recommended mitigation measures

- Reinforce collaboration with policymakers, ensuring that the latest research is factored into future initiatives.
- Increase the publicity of research output through engagement with industry, presenting at conferences, promotion by PR agencies and public information campaigns.
- Current students are the leaders and policymakers of the future. Reinforcing the need for research and development by engaging students in the process and teaching them about the risks and possible mitigations, as well as how to identify and assess emerging risks, will ensure that future initiatives will be much more efficiently planned.

10. CONCLUSION

Climate change and natural disasters are complex and potentially unique risks, which require a multi-faceted solution. Changes to any of the risks identified in this paper for the stakeholders will influence the efficiency of the mitigation measures envisaged for a number of the others. Regardless of the substantial efforts by many parties, there are still millions of people around the world suffering from the consequences of natural disasters, demonstrating the need for urgent and more efficient actions.

Risk professionals come from various educational and career paths, bringing with them different expertise, but we are all facilitators with strong common sense. Risk professionals have been the missing link in all these efforts for a long time. While some organisations are rectifying this missing link, states need to follow suit.

Risk professionals have a critical role to play in the proactive mitigation and management of all risks, and natural disasters are no exception. Here is an obvious solution which institutions, states, society have overlooked for some time. Now is the time for change.