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www.drmkc.jrc.ec.europa.eu
In a world facing growing risks from natural disasters associated with climate change, and industrial and man-made hazards, the security of citizens, critical infrastructure and assets has become a high priority in the EU.

Any damage to the power we use in our homes, the water we drink or the transportation that moves us, may have a significant negative impact for the security of the EU and the well-being of citizens. Strengthening capacities in disaster risk and crisis management, including in the area of security and migration, is a key EU objective and research challenge.

Climate change is expected to become a key driver of migration. “Climate refugees” will become a new challenge, if we do not act swiftly. During 2008-2016 environmental disasters displaced 25.3 million people annually. In some parts of the world, sudden-onset natural disasters (e.g. floods, landslides, wildfires) are already displacing many more people than violent conflict.

Sometimes policy-makers are rightly criticised for failing to notice that a solution to our problem may already exist in another field. Migration and security happen to be one of those policy areas where in the face of considerable recent pressure we have perhaps spent more time dealing with than preparing for crises. But this is also what the European Agenda for Migration and the Security Union are trying actively to correct.

However, looking forward, the inter-disciplinary nature of DRMKC activities is critical to help building preparedness and resilience. The findings of cutting-edge scientific analysis from a range of disciplines presented in this Newsletter will prove essential for policy-makers looking to boost the risk reduction capacity of the EU to future natural or man-made disasters. Thanks to our co-operation with JRC we can ensure that science and policy work hand in hand to continuously improve disaster risk management (DRM).

The DRMKC and the Community of Users on Secure, Safe and Resilient Societies coordinated by DG HOME have been working together to reduce current fragmentation in security research and to facilitate information exchanges among policy-makers, research, industry (including SMEs), practitioners (first responders, civil protection units, etc.), and the general public. The most tangible result of this collaboration is the shared tool developed under Project Explorer, hosting information from around 1000 DRM-related research projects and the more than 4000 organizations involved.

DG HOME recently organised a Conference on Security Research in Tallinn, where JRC provided important input in a key session on DRM. Further consolidating this collaboration, DG HOME will participate in and chair a session of the 3rd DRMKC Annual Seminar on the topic of “Advancing Innovation for First Responders”, on 26-27 April this year. We hope that this event will find ways to involve practitioners more closely in the research cycle to ensure that innovation responds to the challenges faced on the ground.

Even if migration flows to the EU have dropped in recent months as a result of a series of measures under the European Agenda on Migration, the trend for the coming years and factors in migration dynamics, such as climate change and demography in the EU and its neighbourhood, point to migration remaining a challenge for decades. This is why the EU is following EU and global developments in this area very closely and continues to equip itself with a future-proof system of managing migration responsibly and fairly.

Simon Mordue
13th Copernicus European Flood Awareness System (EFAS) Annual Meeting

The 13th annual meeting of the European Flood Awareness System (EFAS) was held on 13-14 March 2018, in Norrköping, Sweden. EFAS is the first operational European system for monitoring and forecasting floods across Europe, providing complementary flood early warning information up to 10 days in advance to its partners: the national and regional hydrological services and the European Response and Coordination Centre (ERCC). Since 2012 EFAS has been part of the Copernicus Emergency Management Service (EMS). The EFAS annual meeting brings EFAS partners – mainly, national hydro-meteorological and civil protection entities from across Europe – together with the EFAS operational centres and the European Commission’s Joint Research Centre (JRC). At the 2018 meeting, the main topics were: the latest improvements to EFAS; the revision of the Union Civil Protection Mechanism (UCPM); and a possible open data policy for EFAS.

Two major improvements of EFAS were presented. Spatial coverage of EFAS forecasts is about to be extended eastwards and southwards, bringing several new countries within the forecasting domain. The new EFAS web-page, which will soon be available, will have a more modern “look” and, most importantly, the forecast viewer will have enhanced features such as individual dashboards, integration of external web-map services, and a fully customizable visualization of the different EFAS layers. The new web-site is a step towards a more harmonized representation of the Copernicus EMS components.

In view of the high number of recent emergencies, in November 2017 the European Commission announced new plans to strengthen the EU’s civil protection response to support Member States, in order to better respond to and prepare for natural and man-made disasters. The foreseen changes to UCPM legislation were presented, and possible implications for Copernicus EFAS were discussed. There is an increasing trend towards open data, also regarding flood forecasting. Copernicus generally promotes an open data policy, except that data may be restricted where security interests are affected. In Copernicus EFAS, real-time predictions are currently only available to partner organizations, to ensure a “single voice” regarding flood warnings. As more and more real-time hydrological and meteorological forecasts become available as open data (for example, from DWD, the German weather service), there is a need to discuss how systems like Copernicus EFAS can ensure continued support to the relevant authorities in their task to provide flood warnings, while also supporting the open data policy.

Some EFAS partners apply an open data policy themselves, and so have experience with flood forecasts and warnings from different sources being available publicly, with potentially conflicting information. Different concerns were raised regarding increased requests to national authorities due to different flood warnings from different sources, or the legal aspects of publishing flood forecast information. Some possible solutions for Copernicus EFAS were discussed, ranging from having strict data license conditions for real-time flood forecasts, publishing only a limited set of data without indication of extremes, or releasing only raw data for research. An initial survey at the meeting showed that about 33% were in favour of opening up EFAS real-time data, with 22% against and 45% undecided.

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For more information:
http://www.efas.eu
European Civil Protection Forum 2018: “Civil Protection in a Changing Risk Landscape”

On 5-6 March 2018, the 6th edition of the European Civil Protection Forum - a landmark event organised by the European Commission’s Directorate-General for European Civil Protection and Humanitarian Aid Operations (DG ECHO) - gathered some 900 representatives from the European civil protection community, including EU Member State governments, civil protection authorities in Europe and the European Neighbourhood (19 countries), first-line responders, academia, international organisations, NGOs and European institutions, to discuss current developments in the Union Civil Protection Mechanism (UCPM) framework, and put forward new ideas for tackling common challenges.

During the Roundtable with Local Governments, entitled “Scaling up Disaster Prevention: from Local to European Level”, representatives implementing prevention measures at local and regional level, along with stakeholders managing EU funding and financing instruments, discussed synergies between different programmes in the field of disaster risk prevention and the need for scaling up investments. Panelists highlighted the point that, although sufficient funding has been made available for prevention activities, a more efficient use of the available funds is needed. The role of national civil protection authorities should be to help local and regional authorities channel their investments adequately.

During the first plenary session, entitled “rescEU: Solidarity with Responsibility”, political leaders discussed recent developments in the area of European civil protection focusing on efforts to enhance the European capabilities in emergency response and regain the confidence of European citizens by bringing the EU closer when they most need it. The second plenary session, entitled “Working across Sectors to Increase Climate Resilience”, focused on the need to adopt a cross-sector approach when mainstreaming climate change considerations into EU civil protection policies and increase the synergies between disaster risk management planning and climate change adaptation strategies at all governance and policy levels.

To achieve resilient societies, coherent action is needed across sectors. Signing the three major global agreements in 2015 - namely, the Paris climate agreement, the Sendai Framework for Disaster Risk Reduction, and the Sustainable Development Goals – has enabled the putting in place of these connections, and the mutual reinforcement of their impacts.

A first priority is to understand risk - both present and in the future - and the impact in all sectors. Science is increasingly tackling the systemic nature of risk: “everything is connected to everything”, so to speak. Action to mitigate risk in one area may have unexpected benefits or negative consequences in another sector. A common scientific knowledge and evidence base is essential for improving coherence across policies and sectors.

At European level an increasing number of Commission Services are collaborating to reinforce the links between the different policies related to Disaster Risk Reduction (DRR) and Disaster Risk Management (DRM), to ensure an optimized use of the resources and to maximize the impact of a more coherent implementation. The common factor linking these policies is the need for disaster damage and loss data for a sounder, evidence-based development, implementation and monitoring of adequate Risk Management Plans. The local level is crucial in the implementation of agreements and policies drafted at higher levels.

Cities are one of the main contributors to climate change, but since most of the population live in urban areas, cities also represent an opportunity to address the problem. In fact, the accountability of local authorities facilitates cities take the lead in fighting against climate change. Nowadays, almost 8,000 cities are part of the “Covenant of Mayors” initiative, representing 226 million citizens. As the DRR community,
this bottom-up initiative faces challenges when implementing adaptation actions, as it requires proper identification of current and future hazards, active stakeholder participation, and cost estimation, all depending on the particular context.

The need for “data” goes hand-in-hand with the need for “models”, to be able to forecast future losses and to develop and implement, in a timely manner, suitable plans for prevention, mitigation and/or adaptation, with the ultimate aim of improving resilience. In fact, lack of data is an issue that hinders most of the processes for analysing and planning to deal with disaster risk. Equally important is accurate planning for the preparedness, response, recovery and reconstruction phases. The involvement of the scientific community is essential for the development of sound DRM actions.

Organised under four strategic pillars - namely, “Strengthening preparedness”, “Simplifying response”, “Scaling up prevention”, and “Fostering Resilience” - the Forum included twelve break-out sessions covered the main issues emerging from the recent evaluation of the UCPM’s performance as well as additional analytical work carried out on the Mechanism.

Alongside the Forum, the exhibition on Disaster Risk Communication and Awareness showcased different solutions and good practices presented by public and private organisations from Austria, Belgium, Bulgaria, Finland, France, Germany, Italy, Spain, Turkey and UK, in addition to a number of international organisations, including the International Federation of Red Cross and Red Crescent Societies (IFRC), and the United Nations Educational, Scientific and Cultural Organization (UNESCO). In addition, the Forum hosted the signing of an Administrative Arrangement between the National Office of Civil Protection of the Republic of Tunisia and DG ECHO. This agreement aims at enhancing cooperation on disaster risk prevention, preparedness and emergency response, thus reinforcing the EU-Tunisia Privileged Partnership.

This news article is based partly on extracts from the Final Report of the European Civil Protection Forum 2018, available from the web-link below.

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For more information:  
http://ec.europa.eu/echo/partnerships/civil-protection-partners/civil-protection-forum_en

Panel for Plenary Session 2 (“Working across sectors to increase climate resilience”) of the European Civil Protection Forum 2018. Left to right: Jagan Chapagain, Under Secretary General, International Federation of the Red Cross and Red Crescent Societies (IFRC); José Manuel Fernandes, Member of the European Parliament; Charlina Vitcheva, Deputy Director General, DG JRC, European Commission; Miguel Arias Cañete, Commissioner for Climate Action and Energy, European Commission; Eduardo Cabrita, Minister of Internal Administration, Portugal.

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1st Workshop on Risk Management Capability Assessment: report published

The report on the first Workshop on Risk Management Capability Assessment, which was organised by the European Commission’s Joint Research Centre (JRC) on 14-15 December 2017 in Ispra, Italy, has been published recently (Marin Ferrer and Casajus Valles, 2018).

The Workshop on Risk Management Capability Assessment, which was attended by over 30 experts from more than 20 different countries, was organised within the context of Decision No 1313/2013/EU on a Union Civil Protection Mechanism, which stipulates that in order to promote an effective and coherent approach to the prevention of and preparedness for disasters, “Member States shall ... make available to the Commission the assessment of their risk management capability at national or appropriate sub-national level, every three years following the finalisation of the relevant guidelines...”. The event was therefore an opportunity for participants to share good practices in carrying out this type of assessment and to learn from each other’s experiences.

The two-day Workshop was divided into three sessions. Two sessions addressed specific hazards (namely, floods and epidemic events), while the third session tackled cases of multi-hazard and the link with climate change adaptation, in particular with the Actions Plans formulated within Europe’s “Covenant of Mayors for Climate and Energy” initiative, which gathers local governments voluntarily committed to achieving and exceeding the EU climate and energy targets (https://www.covenantofmayors.eu/en/). The sessions at the Workshop were chaired and supported by colleagues from several Commission departments (DGs), namely JRC, European Civil Protection and Humanitarian Aid Operations (ECHO), Health and Food Safety (SANTE), Climate Action (CLIMA) and Environment (ENV).

At the Workshop, participants from different Ministries and agencies were able to exchange information and lessons learned on methodologies and resources that could be used to plan and implement measures dealing with disaster risk. This served to clarify and strengthen the linkage between risk assessment, capability assessment and the elaboration of evidence-based Risk Management Plans. Assessment of capabilities at national level, which can be done based on the “Risk Management Capability Assessment Guidelines” (Commission Notice 2015/C 261/03), was seen as an opportunity to assist authorities in drafting strategies and allocating funds for research and for establishing fruitful cross-sectorial collaborations with initiatives implemented at lower governance levels. This is especially relevant, since it is at that level where data is collected that produces the evidence for developing and implementing disaster risk management (DRM) activities.

The discussions at the Workshop also highlighted the need to further develop the topic for identifying, assessing and sharing results on capabilities assessments. The role of risk awareness and innovation, and the need for monitoring and learning from disasters, were stressed as pivotal issue for tackling the dynamics of disaster risks and for acting in a more efficient manner.

Ainara Casajus Valles
DG JRC, Directorate “Space, Security and Migration”

References:
Participate! How to facilitate effective meetings on disaster risk reduction and climate change adaptation

“I recently attend the Raising Risk Awareness learning event. The event brought together a huge range of partners from across Ethiopia, India, Kenya, Pakistan, the UK and the US, amongst others, as well as a range of stakeholders including scientists, government ministries, practitioners and academicians. The event was a great success, which benefited hugely from the participatory design and facilitation, which meant that everyone was engaged in the discussions and contributed to the outcomes of the event.” (Emma Lovell, Research Officer, Risk and Resilience Programme, ODI, 2017).

There is increased alarm over the humanitarian consequences of climate-related events, particularly for the world’s most vulnerable people. Increased exposure and vulnerability result in rising human and economic disaster impacts, magnifying the shortcomings of the prevailing “wait-and-see-and-respond” approach. No single actor will be able to address this complex set of problems effectively. Indeed, effective disaster risk reduction (DRR) and climate change adaptation (CCA) requires a multi-stakeholder and multi-sectoral approach.

Recent decades have seen an increased popularity of collaborative approaches bringing State and non-State actors together to engage in a process focused on consensus-based decision-making. It is recognised that such collaborative approaches have many advantages, such as providing different perspectives on the risks and uncertainties in decision-making, and increasing the legitimacy and public acceptability of decisions. However this dialogue is not easy.

In 2012, in its broad review of the literature in collaboration and multi-stakeholder dialogue (MSD), the International Union for Conservation of Nature and Natural Resources (IUCN) identified six broad groups of challenges for MSDs: stakeholder composition and representation; participation capacity; structure of interaction; facilitation; external support and linkages; resource needs. In particular, good process facilitation is widely seen as crucial to the success of MSDs.

PLACARD (Platform for Climate Adaptation and Risk Reduction) is establishing a comprehensive coordination and knowledge exchange platform for CCA and DRR, for MSD. In order to support the design of effective science, policy and practice dialogues, three PLACARD partners - the Red Cross Red Crescent Climate Centre (www.climatecentre.org), Stockholm Environment Institute (www.sei.org), and University of Geneva (www.unige.ch) - have teamed up with the Applied Improvisation Network (http://appliedimprovisation.network/), to create the “Participate!” on-line training.

“Participate!” is an interactive on-line training module to support the design of effective science, policy and practice events. It focuses on participatory meetings such as workshops, conferences and training courses for the CCA and DRR communities. Each participant will be equipped with a range of participatory methodologies and facilitation tips, and will complete a real-world project for review and support by mentors and colleagues. All examples are from the risk reduction and adaptation worlds.

“Participate!” will run for five sessions, with a maximum of 25 participants for each of two series of dates during 2018: (a) 19 and 26 April; 3, 10, and 17 May; (b) 31 May, and 7, 14, 21, and 28 June. The first series is already in progress, while the second series is accepting applications until 30 April 2018.

Margot Steenbergen
Learning Coordinator, Red Cross Red Crescent Climate Centre

For more information: http://www.placard-network.eu/participate-find-out-how-to-create-truly-effective-meetings-on-cca-drr/
Knowledge

Monitoring and assessment of South Africa’s on-going drought crisis, by the JRC’s Global Drought Observatory

South Africa is currently gripped by its worst drought in a century. The long-term drought, which was triggered in 2015-2016 by one of the strongest ever “El Niños” (the irregular, periodic, abnormal warming of the western tropical Pacific Ocean), has drastically reduced water availability for agriculture and sanitation, and is causing a major urban water crisis in Cape Town. A recent analysis of the crisis was carried out by the Global Drought Observatory (GDO) of the European Commission’s Joint Research Centre (JRC), for the Emergency Response and Coordination Centre (ERCC) of the Commission’s European Civil Protection and Humanitarian Aid Operations department (DG ECHO). In 2018, GDO and the closely related European Drought Observatory (EDO) will become part of the EU’s Copernicus Emergency Management Service (EMS), complementing the existing “early warning” components for floods and forest fires.

Drought is a normal, recurrent climate feature which can occur anywhere, usually affecting large areas and population numbers. Unlike “sudden-onset” natural disasters (floods, wildfires, earthquakes, landslides, tsunamis, etc.), drought is a “slow-onset” event, emerging gradually over time, with the resultant humanitarian crisis often the result of cumulative impacts of a number of recurring events. Meteorological drought is a prolonged period of less than average rainfall in a given region, which generally precedes agricultural drought, when there is reduced crop production due to insufficient soil moisture, and hydrological drought, when there is below-normal water availability in rivers, streams, reservoirs, lakes, or the groundwater table. Socio-economic drought occurs when meteorological, agricultural, or hydrological drought conditions have impacts on supply and demand of economic goods and services (e.g. water; animal fodder; food grains; fish; hydro-electric power). Depending on the exposure and vulnerability of assets and people, drought can have severe impacts on local, national and even global economies. In very vulnerable, poor countries, it can have disastrous effects, causing starvation and migration.

Regarding the on-going drought crisis in South Africa, as can be seen in the map below, which was produced as part of the GDO analysis for the ERCC, the situation is particularly severe in Western Cape, with an extreme deficit in total precipitation from January 2016 to January 2018. As a result, the level of the Theewaterskloof dam, which holds 41% of the water storage available to Cape Town, is now critically low (11.3 % of capacity). Cape Town’s so-called “Day Zero” - when the municipal water supply is switched off, with water only distributed via dedicated distribution points - is currently set for 27 August 2018.

There is a scientific consensus that, under a changing climate, the long-term global trend is for increasing risk of extreme weather events, such as heatwaves, heavy precipitation, drought and wildfires. Droughts in particular are likely to increase in frequency, duration and severity in many parts of the world, including the Mediterranean and Southern Africa. In this context, the importance of systems, such as Copernicus EMS, that can provide the relevant and timely information required for mitigating and responding to all types of natural disasters, including slow-onset emergencies such as droughts, cannot be overstated.

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For more information:
http://edo.jrc.ec.europa.eu/
http://edo.jrc.ec.europa.eu/gdo

Emergency management in the nuclear sector: Lessons learned from non-nuclear events

After the major accident at the Fukushima nuclear power plant in 2011, there was a move towards including emergency preparedness and response (EPR) in the nuclear sector within a broader framework for achieving an all-hazards approach to emergency management. This includes learning lessons from non-nuclear industrial sectors, which can help to enhance existing emergency management efforts for nuclear power plants.

The Nuclear Energy Agency (NEA) of the Organisation for Economic Co-Operation and Development (OECD) has therefore joined forces with the European Commission’s Joint Research Centre (JRC), the OECD Working Group on Chemical Accidents, and the High-Level Risk Forum of the OECD’s Public Governance and Territorial Development Directorate, to assess experiences from different industrial sectors, in order to “cross-fertilize” practices in the nuclear domain. The results of this collaboration are summarized in the NEA flagship report “Towards and all-hazards approach to emergency preparedness and response: Lessons learnt from non-nuclear events” (OECD, 2018). The report confirms similarities in emergency management across sectors, identifies lessons learned and good practices for the benefit of the international community, and demonstrates the value of an all-hazards approach.

The JRC’s contribution to this flagship report includes two chapters by the Major Accident Hazards Bureau (MAHB) and the Natech team, with insights related to EPR from in-depth analyses of both chemical and “Natech” (natural hazard triggered technological disasters) accidents, using data from the JRC’s eMARS and eNatech on-line databases:

➔ eMARS (Major Accident Reporting System): https://emars.jrc.ec.europa.eu/

Recommendations from the JRC analysis include the following:

➔ Preparedness can make the difference between success and failure in limiting damage and long-term impacts from a disaster. Lessons learned are an enormous reference for identifying gaps in emergency preparedness, and innovative ways to manage both expected and unexpected parts of the response.

➔ Chemical and Natech accidents can occur in a wide range of industries, and scenarios vary widely from site to site, depending on the type of danger present and the phenomena that may result. For this reason, training and coordination between internal and external responders on site-specific scenarios, are a critical element of preparedness.

➔ Natech accidents pose specific challenges to emergency management, since several accidents can happen simultaneously and impact large areas, affecting people, the natural and built environment, as well as neighbouring industry and infrastructures.

➔ On- and off-site emergency plans for accidents involving hazardous materials, should take the risks from natural hazards into account, and on-site emergency plans should assume that off-site response resources are unavailable under natural disaster conditions.

➔ The vulnerability of emergency response resources to natural hazards and to hazardous materials release, should be assessed.

The NEA flagship report is a major milestone towards building an all-hazards approach to emergency preparedness and response. Through this collaboration, the JRC, OECD and NEA aim to engage more extensively with international organisations, in order to build such an approach, and to ensure that the best preparations are made to protect citizens when disaster strikes.

Elisabeth Krausmann
DG JRC, Directorate “Space, Security and Migration”

References:
Electricity is the backbone of European society. When a natural disaster hits the power grid, full restoration of supply can take from a matter of hours up to several months. In addition to hampering the emergency response after a natural disaster, power outages can trigger accidents and halt economic activity. A recent study by the European Commission’s Joint Research Centre (JRC) analysed how the characteristics of earthquakes, floods and space weather influence the recovery time of the power grid after impact, and identified the most effective mitigation strategies (Karagiannis et al., 2017). Using forensic analysis of past events, the JRC study highlighted how different natural hazards affect the power grid in different ways.

Earthquakes, for example, cause damage to heavy equipment (generators, transformers) and brittle items (e.g. ceramics), while ground failure and soil liquefaction can be devastating to power grid assets. In most cases it took 1-4 days to restore power supply, although this ranged from a few hours to months.

Floods are common in Europe, and are often associated with power outages. Erosion and landslides due to floods undermine the foundations of transmission towers. Serious damage may occur when electrified equipment contacts water, while moisture and dirt necessitate time-consuming repairs of equipment. Unlike for earthquakes, early warning is possible, enabling electricity utilities to shut off power in flood zones, minimizing damage. Restoration times in the study ranged from 24 hours up to three weeks after the flood.

Until recently, space weather impacts on the power grid were little understood. (A JRC study on this subject is reported elsewhere in this Newsletter). Space weather, caused by solar activity, affects the power grid by means of “geomagnetically induced currents” (GICs). Unlike earthquakes and floods, GICs can impact the entire transmission network. Although some early warning is possible, lead-times are typically very short. Restoration time varies from under 24 hours (in the case of tripping of a limited number of protective devices) up to several months (for repairs of damaged equipment).

Other factors affecting the power grid recovery time after natural disasters include the disruption of other critical infrastructures - either as a direct result of the event or because of the loss of power supply.

The study makes a number of policy, hazard mitigation and emergency management recommendations, to increase the resilience of the EU power grid including:

➔ Integrating risk assessment and risk management, across various policy areas directly or indirectly affecting the power grid.

➔ Transition from strengthening grid components to withstand hazard impacts, to resilient grid design so that operation can continue when critical infrastructure is damaged.

➔ Improving cross-jurisdiction and cross-border emergency management related to the provision of electricity. Policies should ensure inter-operability between neighbouring power system operators, and with emergency management organisations.

➔ Improving space weather forecasting, to help power system operators in preparation for severe events.

Full details of the JRC study are available on-line (see report reference below).

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References:
Preparation of the new flagship report – “Science for DRM 2020: Acting today, protecting tomorrow”

After receiving a great response, the public Call for Authors for the second report in the “Science for Disaster Risk Management” flagship series, is now closed. The new report, entitled “Science for Disaster Risk Management 2020: acting today, protecting tomorrow”, will be finalised by the end of 2020, and follows in the wake of the successful launch of the “Science for DRM 2017: Knowing better and losing less” report, which so far has had over 4,500 downloads and more than 2,000 hardcopies distributed worldwide.

As part of the preparation of the new report, a public Call for Expression of Interest from Authors, Reviewers and Advisors, was open from December 2017 until February 2018, and attracted great attention from the disaster risk management (DRM) community, with contributions from almost 200 applicants. A thorough selection process is now beginning, involving guest Advisors and other selected assistants to the Editorial Board. A first Workshop with Lead Advisors and Authors is planned to be held in late June 2018.

While the 2017 report focussed on a scientific hazard-based risk assessment approach for DRM, the 2020 report, as a natural follow-up targeting end-users, takes a step further in reinforcing the science-policy interface, by centring its analysis on the impacts of the hazards, including assets (e.g. population, economic sectors, critical infrastructures, ecosystems) at risk. Thus, because the starting point for the new report is disaster impacts across the different sectors of human life and activity, rather than the hazards themselves, policy-makers, practitioners and citizens will be able to find the content that directly addresses their needs. The Science for DRM 2020 report will also facilitate alignment with other global initiatives, including implementation of the Sendai Framework for Disaster Risk Reduction, monitoring of the Sustainable Development Goals, and the outcome of the Paris Climate Agreement. The Report will be delivered through an open participation process exploring the synergies in global expertise and experience, and supporting the coherence between the Climate Change Adaptation and Disaster Risk Reduction policies and communities.

As expressed in the final Chapter of the Science for DRM 2017 report (Poljanšek et al., 2017 - page 522): “Science needs to produce coherent advice, during emergencies and for long term risk management (...). Impact-based multi-hazard early warning systems must be developed to assess the likely impact of any hazard on population, economy and society”. We look forward to extending the bridge between scientists, practitioners and policy-makers, and further enhancing the use of sound knowledge for communicating and managing disaster risk more effectively. In a nutshell, this will be a Science Report looking for concrete innovative solutions – moving from identifying needs to identifying solutions.

Further detailed information, in particular the Table of Contents, the Terms of Reference, and a tentative Workplan, can be found in our dedicated website page (see web-link below).

Afonso do Ó
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For more information:

References:

Planned Structure for the DRM Report 2020

1. INTRODUCTION
1.1. Review of hazard related risks affecting the EU
1.2. Moving towards prevention: from Disaster Management to Disaster Risk Management
1.3. Local solutions for global disasters

2. INTEGRATING THE RISK MANAGEMENT CYCLE
2.1. Risk Assessment
2.2. Risk Management Planning
2.3. Implementing Risk Management Measures

3. IMPACTS AND ASSETS AT RISK
3.1. Methodologies for Disasters Impact Assessment
3.4. Critical infrastructures: Public facilities, Network infrastructures, Core industrial and energy facilities, Communication systems.
3.5. Environment and ecosystems: Ecosystem services, Environmental assets.

4. COMMUNICATING DISASTER RISK TO ALL
4.1. Linking stakeholder, sectors and governance levels
4.2. Citizen participation and public awareness
4.3. Integrating tools for prevention and response communication systems

5. GLOBAL SYNERGIES OF EU EXPERTISE

6. CONCLUSIONS AND FINAL RECOMMENDATIONS
6.1. To Scientists
6.2. To Policy-makers
6.3. To Practitioners
6.4. To Citizens
6.5. Future Challenges
Quantifying risk and recovery of disasters around the globe: Copernicus Risk and Recovery Mapping (RRM)

The EU’s Copernicus Emergency Management Service (EMS) provides timely and accurate geo-spatial information that is required both for emergency response to different types of disasters, and for disaster prevention (i.e. mitigation), preparedness, and recovery. As one of two mapping modules of Copernicus EMS, Copernicus Risk and Recovery Mapping (RRM) is designed for pre- or post-crisis situations in support of disaster risk reduction, prevention, preparedness, and recovery activities. (The other mapping module - Copernicus Rapid Mapping - focuses on rapid service delivery during the crisis response phase).

Copernicus RRM delivers maps and analyses are focussed on the pre-disaster situation - when lending support to disaster prevention and preparedness actions - and on the post-disaster situation - when providing support for example for reconstruction planning and progress monitoring. (In the latter capacity it complements Copernicus Rapid Mapping). Supported disaster types include all hazards under the Sendai Framework for Disaster Risk Reduction, including natural and man-made hazards, and humanitarian crises. Copernicus RRM is also useful for disaster-related climate change adaption. Typical Copernicus RRM products include the following:

➔ Pre-disaster: Hazard exposure, vulnerability assessment, resilience, risk status, evacuation plans and modelling scenarios.
➔ Post-disaster: Post-disaster needs assessment, recovery plans, reconstruction / rehabilitation monitoring, including Internally Displaced Persons (IDP) and refugee camps monitoring.
➔ Reference analyses and maps providing comprehensive and updated knowledge of the territory and relevant assets.

Given the need for extensive data research and analysis, the delivery of Copernicus RRM products usually occurs within 20 working days after contract signature. Satellite imagery, aerial imagery (aeroplanes and “unmanned aerial vehicles” or drones), and geographic information system (GIS) layers are the usual source for global reference data. An up-to-date list, including descriptive summaries - in both tabular and interactive map format - of all activations of the Copernicus RRM service, is available at the web-link shown below.

How to activate the Copernicus RRM service:
Copernicus RRM can be triggered by “Authorised Users”, which include National Focal Points (NFPs) in the EU and in countries participating in the EU Civil Protection Mechanism, European Commission departments (DGs), and the Situation Room of the European External Action Service (EEAS), the EU’s diplomatic service. “Associated Users” - who must go through Authorised Users to trigger the service - include local, regional and other public entities; International Governmental Organisations (e.g. UN agencies, World Bank), and National and International Non-Governmental Organisations; entities and institutions linked to the EEAS, such as EU Delegations, the EU Intelligence and Situation Centre (EU INTCEN), and the EU Satellite Centre (EU SatCen). The general public cannot trigger the service, but can be informed of activation requests through the Copernicus EMS - Mapping portal (see below).

Details of the procedure for triggering Copernicus RRM are available at the Copernicus EMS - Mapping portal (see below), under “How to use the service”. A list of Authorised Users / NFPs of Copernicus EMS - Mapping is provided in the Copernicus EMS User Guide (see link below), under “List of Authorised Users”.

Peter Spruyt
DG JRC, Directorate “Space, Security and Migration”

For more information:
http://emergency.copernicus.eu/mapping/list-of-activations-risk-and-recovery
http://emergency.copernicus.eu/mapping/ems/service-overview
http://emergency.copernicus.eu/mapping/ems/copernicus-ems-user-guide


© European Commission
A JRC study analysing the vulnerability of the northern part of the European power transmission grid to extreme space weather events, was published recently in the Journal of Space Weather and Space Climate (Piccinnelli and Krausmann, 2018).

Space weather, as distinct from the terrestrial weather of Earth’s atmosphere, refers to the effects of solar activity (solar flares, coronal mass ejections or CMEs, high-speed solar wind, and solar energetic particles) on conditions in the near-Earth space environment (“geospace”). Geomagnetic disturbances (GMDs), or geomagnetic storms, are one type of space weather that affect the Earth’s “magnetosphere”. Apart from creating beautiful “auroras” (polar lights), the largest GMDs (associated with CMEs), can disrupt satellite navigation systems, and create harmful “geomagnetic induced currents” (GICs) affecting ground-based critical infrastructure, in particular electrical power transmission grids, as well as oil and gas pipelines. Regions at higher latitudes (e.g. Scandinavia, Canada, northern US) are most susceptible to damage from GICs, although effects can be felt at any latitude. As well as latitude, ground (geological) conductivity is also a factor in determining the distribution of GICs.

Disruption of the electrical power grid by GICs is mainly due to saturation of high-voltage transformers (used to change voltages between high transmission levels and lower distribution levels), leading to voltage instability and blackouts, and even damage to transformers. On 13 March 1989, a severe GMD (caused by a CME four days earlier) collapsed the power grid in Quebec, Canada, resulting in a nine-hour general blackout affecting over six million people. On 29–31 October 2003, another GMD collapsed the power grid in Malmö, southern Sweden, resulting in a blackout that lasted an hour and affected about 50,000 people.

In the JRC study, the behaviour of the North European power grid in response to the GICs produced by a “worst-case” GMD scenario, was simulated using an innovative approach. The GMD scenario was based on the geoelectric fields arising during an extreme geomagnetic storm (with an occurrence rate of one in 100 years), in areas of high latitude (above 50–55°) and low ground conductivity. The model-base for the study was the Northern European portion of the ENTSO-E (European Network of Transmission System Operators for Electricity) map of Europe’s high-voltage transmission system network (see Figure 1). The modelling used in the JRC study differentiated between two types of transformer (i.e. with three or five “limbs” in their magnetic core), took account of “series-compensated” long transmission lines (i.e. with series capacitors inserted, to increase power transfer capability and improve voltage stability), and considered power consumption during winter-time, which was assigned to the network based on population density.

Amongst the findings of the JRC study (full details of which are in the reference below) are the fact that the North European power transmission system is fairly robust against extreme space weather events, with only a few episodes of voltage instability due to the underlying system load, while the presence of mitigation measures (i.e. series-compensated transmission lines) was shown to limit the areas in which voltage instabilities arise.

Niall McCormick
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References:
SERA Workshop on seismic hazard assessment in Europe, on 21 March 2018

Seismic hazard, or the hazard associated with potential earthquakes in a particular area, is the precursor of many human and economic losses in Europe and worldwide. The severe earthquakes that hit central Italy, in August and October 2016, and January 2017, are graphic cases in point.

On 21 March 2018, as part of the SERA (Seismology and Earthquake Engineering Research Infrastructure Alliance for Europe) project, a Workshop on seismic hazard assessment was held at the European Commission’s Joint Research Centre (JRC) in Ispra, Italy. SERA is an EU Horizon 2020 project that aims to reduce the risk posed by natural and anthropogenic earthquakes, based on innovative research and development projects. SERA will significantly improve access to data, services and research infrastructures for scientists and other professionals. Participants at the Workshop included the SERA project partners, and experts from the European Committee for Standardization (CEN) Technical Committee (TC) 250 Sub-Committee (SC) 8, which is responsible for the development of Eurocode 8, the European Standard for the design of structures for earthquake resistance.

The Eurocodes, or structural Eurocodes, are a series of 10 European Standards (EN 1990 - EN 1999), developed under the guidance and coordination of CEN/TC 250, that provide a common approach to structural design in the EU. Eurocode 8 (or EN 1998) applies to the design and construction of buildings and other civil engineering works in seismic regions. Its purpose is to ensure that, in the event of earthquakes: human lives are protected; damage is limited; and structures important for civil protection remain operational.

As the responsible technical body for Eurocode 8, CEN/TC 250/SC 8 is one of the main stakeholders regarding the topic of the Workshop. It is currently working on the next generation of Eurocodes, under a standardisation mandate. The JRC has enjoyed a fruitful collaboration with CEN/TC 250 (“Structural Eurocodes”), and Sub-Committee 8, for more than 20 years, covering all the phases of development, further harmonisation, international promotion, and updating of the Eurocodes. The JRC, in agreement with DG GROW (the Commission’s Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs), supports the Eurocodes development and implementation by, among other activities, maintaining a dedicated Eurocodes web-site (see web-link below) and supporting international promotion and training for the Eurocodes.

The objectives of the Workshop were to provide first-hand insights on the outputs of the SERA project, to integrate SERA activities with other scientific efforts in the field, and to ensure a widely accepted basis for the new European Seismic Hazard Model (ESHM). At the Workshop more than 30 experts from across Europe discussed the latest developments, for example regarding updating and extension of the ESHM, definition of ground conditions, representation of seismic action in Eurocode 8, engineering requirements for the design of earthquake-resistant structures, as well as the views from EU and EFTA Member States on seismic hazard assessment. The SERA partners and CEN/TC 250/SC 8 expressed interest in continuing discussions towards knowledge transfer from research to standardisation, for development of a widely accepted reference seismic hazard map, and agreed to establish a liaison to facilitate collaboration and exchange of views.

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For more information:
www.sera-eu.org
http://eurocodes.jrc.ec.europa.eu/
On 12 June 2017, a strong earthquake, measuring 6.3 on the moment magnitude scale (Mw), occurred between the Greek island of Lesbos and the Aegean coast of Turkey. This was followed on 20 July 2017 by an even stronger earthquake (Mw 6.6), between the Greek island of Kos and the resort town of Bodrum in western Turkey. Both earthquakes were damaging and caused local tsunamis (tidal waves), while the second event also caused two human fatalities and many injuries. The second tsunami caused significant inundation and some economic loss along both adjacent coasts.

Both of these events in 2017 highlighted the requirement to have collaborative work between Greece and Turkey. A first effort towards this direction was undertaken within the framework of the Disaster Risk Management Knowledge Centre (DRMKC) Support Service of the European Commission, by experts Dr. Gerassimos Papadopoulos, from the National Observatory of Athens (NOA), Greece, and Dr. Ceren Özer Sözdinler from Kandilli Observatory and Earthquake Research Institute (KOERI), Bogaziçi University in Turkey. The aims of the collaborative study were to better understand the event of 12 June 2017; to evaluate the tsunami potential, to conduct tsunami numerical modeling in the area, to review the tsunami warning capabilities, and to recommend improvements towards reducing tsunami risk in the area of the East Aegean Sea.

The 12 June 2017 earthquake caused structural damage in Vrissa village in south-eastern Lesbos Island, and a local tsunami of about 0.5 metres in the nearby coast of Plo- mari. Other visual tsunami observations were reported from Agios Isidoros (south-eastern Lesbos), Marmaro Bay (northern Chios Island, Greece), and the coastal towns of Foca, Karaburun and Yeniliman, in western Turkey. The tsunami was recorded with low amplitude at the approximately 100 km distant tide gauge station of Bozcaada, Turkey. Tsunami numerical modeling has been conducted with the aim to reproduce the visual tsunami observations at those specific coastal locations.

Although not very large in magnitude, the two earthquakes were a reminder of the tsunami threat in the Mediterranean Sea, particularly during the peak summer season.

The recommendations of this collaborative study include: improving local response to warning systems; increasing the number of tide-gauge stations; and promoting tsunami evacuation exercises and other preparedness plans aiming to tsunami risk reduction. The Final report of the collaborative study can be found at the DRMKC Support System website (see link below).

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National Observatory of Athens (NOA), Greece

Ceren Özer Sözdinler
Kandilli Observatory and Earthquake Research Institute (KOERI), Bogaziçi University, Turkey


References:
The DRMKC Risk Data Hub: Identifying potential impact hotspots for multi-hazards at pan-European level

In view of the changing landscape of hazards that threaten the European Union (EU) and the rest of the world, and with an increasing number of losses caused by events linked to climate change, and also considering the fact that global population is increasing in particular in areas where vulnerability is higher, there is a clear need for a strengthened, more efficient approach to disaster risk management (DRM).

In the last decade, a number of EU Policies and global agreements have been developed which are aimed at creating a more resilient society. The scope of these initiatives ranges from supporting the identification and implementation of measures to reduce the impact of forthcoming events, to promoting actions to mitigate the hazard itself, while also advocating innovative adaptation proposals as well as defining monitoring systems to measure the progress made.

In the light of the context mentioned above, it is imperative to strengthen the links between disaster risk reduction (DRR) and DRM policies, in order to achieve a more holistic, coherent, inclusive and efficient policy implementation. A common factor linking DRR- and DRM-related policies is the need for data that can provide the evidence base required for a decisive enhancement of societal resilience. Data should be collected at the most appropriate sub-national level that guarantees sufficient resolution for clear identification of weaknesses and corresponding counter-measures that will be included in Risk Management Plans.

Data that are collected “post-event” provide essential information regarding the past, but are also required for models that can forecast future potential losses. These models should be used to prepare multi-hazard National Risk Assessments, which are the predecessors of adequate Risk Management Plans.

The Risk Data Hub of the Disaster Risk Management Knowledge Centre (DRMKC), allows the collection of pre- and post-event information, in order to facilitate the assessment of potential losses, and to register the actual losses. It supports the exchange of good practices, while allowing national authorities to preserve confidentiality through dedicated “national corners” that are under the full responsibility and control of national bodies. Available tools, models and data at EU level are offered as a baseline, but may be easily replaced by more accurate datasets and / or models that are more appropriate to the context. The DRMKC Risk Data Hub provides access to the most advanced methods for risk assessment, and to the DRMKC Project Explorer, which hosts information and results of more than 1,000 DRR- and DRM-related research projects.

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DG JRC, Directorate “Space, Security and Migration”

For more information:

On the left: screen shots of the forthcoming DRMKC Risk Data Hub platform, showing how to navigate from Europe-wide methodologies for risk assessment to local hazard, vulnerability and exposure data. On the right: the work groups involved in the scientific partnership for Disaster Risk Reduction.

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Upcoming events

11th EU Loss Data Workshop
16-17 April, Brussels (Belgium)
The focus of the workshop is to improve the coordination of the different stakeholders for data collection based on identified needs, such as the Sendai Frameworks reporting and the National Risk Assessment. The workshop is addressed to members of DRR National platforms, technical experts on loss data and organizations contribution to loss data collection and reporting at local, regional, national, EU and even international level.

Resilient Cities 2018
26-28 April, Bonn (Germany)
The Annual Global Forum on Urban Resilience and Adaptation – is hosted every year in Bonn. More than 500 participants and beyond 30 partners each year helped make Resilient Cities a milestone event connecting local government leaders and climate adaptation experts to discuss adaptation challenges facing urban environments around the globe.
Resilient Cities 2018 will focus on: Stocktaking, Social cohesion, Reinventing business as usual.

2nd International Symposium on Natural Hazards and Disaster Management (ISHAD) 2018
04-06 May, Sakarya (Turkey)
ISHAD is a multidisciplinary international symposium devoted to the presentation, discussion and publication of scientific studies and original researches on disaster science and engineering. ISHAD associates different scientific fields with operational disciplines to contribute to the mitigation of disasters throughout the world. The objective of the symposium is mainly to create an atmosphere for the academics and professionals world-wide to share and discuss the holistic methods of the current interdisciplinary scientific activities so that a strong cooperation among the universities, scientists and professional operators is achieved on international level as far as natural hazards and disaster management are concerned.
The topics to be covered during the symposium are: Disaster Logistics Planning and Coordination, Disaster Sensitive Urbanization, Computer and Information Technology on Disasters, Earthquake Resistant Structures, Risk Analysis and Disaster Management in Natural Disasters, Hydro-Meteorological Disasters, Climate Change, Chemical, Biological, Radiological and Nuclear Risks, Seismic Hazard Analysis, Civil Defense, Transportation Network Security and Reliability, Fire, Soil Problems, Disaster Communication, Disaster and Health Management.

International Conference on Water, Environment, Energy and Society (ICWEES’2018)
08-11 May, Zarzis (Tunisia)
The objective of the ICWEES-2018 is to integrate research, technology and practice in the fields of Water, Environment, Energy, Sustainability, Health, Management and Society, and bring together Scientists, Academicians, Researchers, Practicing Engineers, Consultants, Planners, Policy Makers, Economists and Social Scientists, Managers, and Leaders from around the world to share their knowledge, skills, experience, and expertise through research papers, case studies, and keynote addresses on, but not limited to, water resources, climate change, ecosystems implications for human health, sustainable land use and eco-cities, integrated resources management, green economy, green energy, cleaner production, planning, disaster management, environmental management, etc.

2018 UNDERSTANDING RISK FORUM
14-18 May, Mexico City (Mexico)
"Understanding Risk" is a global community of experts and practitioners with interest in the field of disaster risk identification, specifically risk assessment and risk communication.

12th International Conference on Environmental Legislation, Safety Engineering and Disaster Management (ELSEDIMA)
17-19 May, Cluj Napoca (Romania)
How to properly use knowledge, science innovation, and technology to build a culture of safety and resilience at all levels? Does the level of scientific and technological development including data sharing, land and space-based earth observations, modeling and forecasting make a difference in terms of better identification, assess, and monitor risks? The workshop proposes an open, multi-approach discussion regarding the status of interaction among the main actors in natural and technological disaster management, using as a model earthquakes and NaTech, existing collaboration framework and future perspectives.

6th International Conference on Flood and Urban Water Management (FRIAR)
23-25 May, La Coruña (Spain)
The meeting is aimed to attract researchers, academics and practitioners actively involved in improving our understanding of urban water systems and flood events. It will bring together social scientists, surveyors, engineers, scientists, and other professionals from many countries involved in research and development activities in a wide range of technical and management topics related to urban water and flooding and its impacts on communities, property and people. The following list covers some of the topics to be presented at FRIAR 2018: Regarding floods: Flood risk management, Flood warning and forecasting, Flood response and recovery, Flood risk adaptation, Flood protection, Flood modelling, Flood mitigation, Flood vulnerability, Urban flooding. Regarding urban water systems: Water supply networks, Leakage and losses, Modelling and experimentation, Safety and security of water systems, Water quality, Water savings and reuse.

11th Community of Users Meeting
04-08 June, Brussels (Belgium)
Addressed themes include the following: National Community of Users, Geological disasters, Climate extremes, Water safety and security, Resilient cities, External security.

15th International Conference on Structures under Shock and Impact (SUSI)
04-06 June, Seville (Spain)
The increasing need to protect civilian infrastructure and industrial facilities against unintentional loads arising from accidental impact and explosion events as well as a terrorist attack is reflected in the sustained interest in the SUSI meetings over three decades. Large-scale testing is prohibitive and small-scale laboratory testing results in scaling uncertainties. Continuing
research is therefore essential to improve knowledge of how these structures behave under a variety of load actions, some of which interact making it even more complex and difficult to define. Consequently, more use of advanced numerical simulations for load and structural response calculations is common practice in industry and research. Such calculations can directly be used in design and risk assessment calculations, but also be applied as an input to more simplified design tools and design codes. Whether numerical or analytical modelling techniques are employed, experimental validation is vital for there to be acceptance of the approach to be used. The SUSI meeting over the years has fulfilled many objectives, not least to provide a forum for the exchange of research ideas and results to promote a better understanding of these critical issues relating to the testing behaviour, modelling and analyses of protective structures against blast and impact loading.

11th International Conference on Risk Analysis and Hazard Mitigation
06-08 June, Seville (Spain)

Organised by the Wessex Institute of Technology (UK), the conference covers a series of important topics of current research interests and many practical applications. It is concerned with all aspects of risk management and hazard mitigation, associated with both natural and anthropogenic hazards.

Society for Risk Analysis Europe Conference
17-20 June, Ostersund (Sweden)

The Society for Risk Analysis - Europe (SRA - E) aims to bring together individuals and organisations interested in risk assessment, risk management and risk communication in Europe.

16th European Conference on Earthquake Engineering
18-21 June, Thessaloniki (Greece)

The 16th European Conference on Earthquake Engineering (16ECEE) will take place in Thessaloniki, Greece from 18 to 21 June 2018, organized by the Hellenic Society of Earthquake Engineering (member of EAEE), and the Civil Engineering Department of the Aristotle University of Thessaloniki. 16ECEE is around a breadth of state-of-the-art scientific topics: earthquake structural and geotechnical engineers, geologists and seismologists from all over the world will find an excellent forum to exchange ideas, share knowledge and discuss the most recent advances in soil dynamics, structural and geotechnical earthquake engineering, up to the boundaries of geology and engineering seismology. Distinguished invited keynote lecturers will present recent and ongoing developments, addressing unresolved issues and projecting ideas for the future. Special sessions, workshops and round table discussions will also be carefully organized on selected topics of particular engineering and societal interest, to broaden the horizons of the earthquake engineering community and to reinforce international cooperation links.

The ECEE conference is a highly-anticipated event, held every four years, and is considered to be the leading activity of the European Association for Earthquake Engineering (EAEE), as well as the baseline and meeting point for the scientific and professional sector at an international level, with more than 1000 delegates from Europe and worldwide. The Organizing Committee of 16ECEE calls for original submissions for the conference via the online submission system before May 31st, 2017.

2018 International Tech4Dev Conference
27-29 June, Lausanne (Switzerland)

Tech4Dev is the biennial flagship event of the UNESCO Chair in Technologies for Development hosted by CODEV at EPFL. It focuses on the potential of technology solutions to advance inclusive social and economic development in the Global South. Tech4Dev addresses the following core thematic areas and cross-cutting themes: Technologies for Humanitarian Action, Medical Technologies, Science and Technology for Disaster Risk Reduction (DRR), Technologies for Sustainable Access to Energy, ICT for Development, Technologies for Sustainable Habitat and Cities. The third theme, Science and Technology for DRR, has five specified areas for which submissions are being accepted: DRR: The Elusiveness of Resilience, People-centred Early Warning Systems (EWS) for Natural Hazards, High-Tech and/or Low-Tech for DRR in the Global South, Low-cost ICTs for flood and drought risk management and development, Adapted Technologies for EWS: Playing with Uncertainty.

The 3rd DRMKC Annual Scientific Seminar will be held in two locations: the headquarters of the Bulgarian Academy of Science and the National Archeology Museum.

Bulgarian Academy of Sciences
ul 15-ti noemvri 1, 1040 Sofia, Bulgaria
The nearest metro station is “St. Kliment Ohridski” and the nearest bus stop is “Orlov most” (Eagle bridge). Buses number 184 and 84
The seminar will gather around 120 inter-disciplinary experts on disaster management, early detection, forecasting, warning and risk assessment of natural and man-made disasters.

**Topics and objectives:**
- Progress made by the DRMKC since its launch in September 2015
- Early input to the upcoming 2019-2020 DRMKC Action Plan
- Policy and science challenges in Disaster Risk Reduction, including DRM capabilities assessment and Sendai monitoring framework
- Concrete conclusions to feed into the upcoming Global Platform for DRR (Switzerland, May 2019)

**National Archeological Museum**
Atanas Burov square, 1000 Sofia, Bulgaria
The nearest metro station is “Serdika”.

For more information:

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**EIC Horizon Prize: Early Warning for Epidemics**

The European Innovation Council (EIC) “Horizon Prizes” have the ambitious goal to solve major challenges facing society, without detailing how this should be achieved or who should achieve it. The prizes are open for to anyone willing to think "outside the box", across sectors and disciplines.

“Early Warning for Epidemics”, which is one of the six EIC Horizon Prizes, aims to develop a scalable, reliable, and cost-effective early-warning system prototype to forecast and monitor vector-borne diseases in order to contribute to the prevention of outbreaks, mitigating their impact on local, regional and global scales, and providing support to existing elimination efforts. The expected results should encompass innovative technological solutions integrating big data derived from different sources (e.g. space-borne, airborne, in-situ and citizen observations) in the Earth observation domain.

The specific rules of the contest will be published in the second quarter of 2018 by the European Commission’s Directorate-General for Research and Innovation (DG RTD), which will directly launch and manage the contest and award the prize. The prize value is €5 million. The contest is open to all legal entities (i.e. natural or legal persons, including international organisations) or groups of legal entities. The indicative timetable is as follows: 2018 second quarter - contest opens; 2020 third quarter - deadline to submit applications; 2021 first quarter - prize awarded.

More information:  
http://ec.europa.eu/research/eic/index.cfm?pg=prizes_epidemics

**The challenge**

The challenge is to develop a scalable, reliable, and cost-effective early-warning system prototype to forecast and monitor vector-borne diseases in order to contribute to the prevention of outbreaks, mitigating their impact on local, regional and global scales, and providing support to existing elimination efforts.

According to the World Health Organisation (WHO), vector-borne diseases such as malaria, Zika, dengue or yellow fever cause more than 1 million deaths globally each year. Vectors are living organisms that can transmit infectious diseases between humans or from animals to humans. Vector-borne diseases are a global threat to public health and can have far-reaching economic and social impacts.

Climate and environmental phenomena contribute to creating the necessary conditions for these kinds of diseases to thrive. Variables such as rainfall, temperature and humidity affect the number and survival rate of mosquitoes and other vectors of diseases.

The 2030 Agenda for Sustainable Development, in the context of its Sustainable Development Goal 3 “Ensure healthy lives and promote well-being for all at all ages”, aims to end the epidemics of malaria and neglected tropical diseases (amongst others) by 2030. It calls for strengthening the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks.
The Earth Observation domain is changing with increasing amounts of data being generated from space-borne, air-borne, in-situ and citizen observatories. Effective management of big data in this domain shall be an essential element in improving the ‘early warning’ capabilities of any system which aims to mitigate epidemics related to vector-borne diseases. The full potential of combining all the available data is not yet harnessed and innovative solutions are needed to enable the system’s wider use and exploitation in this context. Such solutions would not only help to improve the ‘preparedness’ and response related to vector-borne disease outbreaks, but also foster the creation of a digital solution marketplace in the domain of environmental and climate health risks.

**Expected results**

A reliable, cost-effective and scalable early warning system prototype to forecast and monitor vector-borne diseases, which should encompass innovative technological solutions integrating big data derived from different sources (e.g. space-borne, airborne, in-situ and citizen observations) in the Earth observation domain.

It should including climate data, vector-related modelling, meteorology, and geo-located information related to vector-borne disease outbreaks and behaviour. These should be interoperable with public health data and other socio-economic data.

The prototype should be demonstrated at local level, taking into account any relevant societal factors in the chosen geographical area.

It should be compatible for use with data coming from existing multi-disciplinary networks comprising health, humanitarian aid and emergency management actors, in order to leverage data and information from these networks, as well as to showcase the operational potential and added value of the solution.

**About European Innovation Council (EIC) Horizon Prizes**

The last decade saw the emergence of major new markets and a global platform economy. Today’s successful, high-growth innovative enterprises often rely on new business models and technologies emerging at the intersection between sectors and disciplines.

But despite early technology leads, the EU has supported the creation of few companies that shape and capture these new markets. While Europe compares relatively well internationally in terms of numbers of start-ups, too few of these succeed in scaling up and generating the new, high-skilled jobs on which Europe’s future depends and which would strengthen Europe’s position in the platform economy.

EIC Horizon Prizes set an ambitious goal, without saying how it should be achieved or who should achieve it. Each prize is awarded to who can best meet a defined challenge. The prizes address difficult societal problems, and call for breakthrough solutions from innovators, aiming to demonstrate the feasibility or potential of particular technologies and promote uptake.

The objectives of the prize contests are to solve a problem, without prescribing a specific solution to be implemented. The contests are built on simple, clear, comprehensive and objective targets that must be reached to win the contest. They address challenges to be solved by 2021 at the latest (see specific conditions for each contest).

Specific characteristics for each Prize are defined in the individual rules of contest, which lay down conditions for submission and participation, detailed award criteria (scoring and the weighting methodology), and the evaluation process.

Prizes are awarded to whoever can most effectively meet the defined challenge as set out in the rules of contest. The amount of the prize is not linked to the costs of the activities incurred by the winner; the principles of eligible costs, co-financing, non-retroactive award and no-profit do not apply.

**More information on EIC Horizon Prizes:**
https://ec.europa.eu/research/eic/index.cfm?pg=prizes
ENHANCING THE KNOWLEDGE BASE TO SUPPORT DISASTER RISK MANAGEMENT

WHY?

DISASTER RISK IS GROWING

UNDERSTANDING THIS RISK IS ESSENTIAL

FOR WHAT?

TO MANAGE DISASTER RISK IN A MORE COORDINATED WAY
DRMKC PROVIDES A NETWORK APPROACH TO THE SCIENCE POLICY INTERFACE IN DISASTER RISK MANAGEMENT

OUR ROLE

EC DIRECTORATES
- DEVCO
- ECHO
- GROW
- H2020
- JRC
- CLIMA
- REGIO
- RTD
- ENV
- SANTE

DRMKC
- PARTNERSHIP
- KNOWLEDGE
- INNOVATION

SERVING
- UN
- NGOS
- OTHERS

DRMKC DEVELOPS INTEGRATED SCIENTIFIC SOLUTIONS FOR POLICIES' DEVELOPMENT AND IMPLEMENTATION

HOW?

- Support system
- Scientific partnerships
- Pooling of research results
- Networks of laboratories
- Identification of research needs and gaps
- Science policy interface