

DRAFT WORKING PAPER

A Community of Users on Disaster Risk and Crisis Management Building on a mapping of EU policies and their links to technical and scientific challenges

Table of contents

1. INTRODUCTION

1.1. Policy background

- 1.1.1. The EU framework
- 1.1.2. CBRN-E
- 1.1.3. Civil Protection Mechanism
- 1.1.4. Major accidents hazards
- 1.1.5. Serious cross-border threats to health
- 1.1.6. Climate-change related threats
- 1.1.7. Water-related threats
- 1.1.8. Critical infrastructures
- 1.1.9. Energy
- 1.1.10. Transport
- 1.1.11. Control of exports and transit of dual-use items
- 1.1.12. Union Custom code
- 1.1.13. Law Enforcement

1.2. Research background

1.3. Needs for a Community of Users

- 1.3.1. Who are the users?
- 1.3.2. Why building a Community of Users?

2. MAPPING POLICY CHALLENGES WITH RESEARCH OUTPUTS

2.1. Preparedness and prevention

- 2.1.1. CBRN-E
- 2.1.2. Civil protection
- 2.1.3. Major-accidents hazards
- 2.1.4. Critical infrastructure protection
- 2.1.5. Cross-border threats to health
- 2.1.6. Adaptation to climate change-related impacts

2.2. Detection / Surveillance / Control

- 2.2.1. CBRN-E
- 2.2.2. Cross-border threats to health
- 2.2.3. Customs policies

2.3. Response and Recovery

- 2.3.1. CBRN-E
- 2.3.2. Civil protection
- 2.3.3. Cross-border threats to health
- 2.3.4. Critical Infrastructure Protection

2.4. Horizontal features

- 2.4.1. Standardization
- 2.4.2. International Cooperation
- 2.4.3. Other horizontal features
 - 2.4.3.1. Experts fora
 - 2.4.3.2. Exchanges of good practices
 - 2.4.3.3. Training

3. WAY AHEAD

This draft working paper has been prepared by the Secure Societies Programme (DG HOME, Unit B4). It does not reflect a formal position of the European Commission and is prone to iterations following discussions and comments from the developing Community of Users.

Executive summary

In a world facing a growing risk of man-made and natural disasters resulting from increasingly frequent and severe natural, industrial and man-made hazards, the security of citizens, infrastructure and assets has become a high priority in the European Union. Strengthening capacities in disaster risk / crisis management and improving resilience in the fields of CBRN-E (Chemical, Biological, Radiological, Nuclear and Explosive) and natural and man-made disaster management represent key EU policy and research challenges.

The overall EU security policy framework covers many different sectors, which imply needs for coordination among various communities. In this respect, policy development and implementation rely on effective interactions among policy-makers, research, industry (including SMEs) and operational actors (first responders, civil protection units etc.) in the EU Member States. This requires a proper exchange of information and communication about either policy updates or (research) project results, which should be tailor-made to different sectors concerned with the goal to enhance the transfer of research solutions or new policy recommendations to users in a timely and relevant fashion. Such exchanges are also needed to identify and address user's needs regarding research, technologies and policies, in order to better design funding programmes at EU level. Finally, a proper transfer of knowledge from research to policy sectors may have a direct impact on policy formulation and review.

However, the policy complexity, the high number of research projects, the difficulties to bring innovative tools to the market and the lack of "interfacing" mechanism make it difficult to efficiently reach these goals. To improve this situation, the European Commission is hence funding various types of projects, including large-scale demonstration projects to help improving the situation. In the field of Disaster Risk and Crisis Management (including CBRN-E, natural and man-made disasters), two large-scale projects have the potential to make a difference and help building a critical mass by federating efforts at EU level: EDEN and DRIVER, along with other projects which have an "interfacing" component.

These projects, along with different policy committees and think-tanks develop networks with user's groups in the Member States which have a great potential but are presently fragmented. In this respect, the need to build a **"Community of Users"** in the EU based on existing user's communities has been expressed in various fora. In this respect, discussions with different actors have taken place over the last few months and a mapping of policies and research projects has been carried out in the light of features regarding the overall risk management cycle (from preparedness / prevention, detection / surveillance, response / recovery) and the need to ensure a proper transfer (and implementation) of research outputs to "users".

This working paper presents the reasoning for the development of a Community of Users in Disaster Risk and Crisis Management and the results of the mapping of policies and (FP7 secure societies) research, which is aimed to pave the way for improving future links among Horizon2020, capacity-building, training, industrial developments and policy implementation. **It has been prepared in view of discussions at the first Community of User's meeting held in Brussels on the 24-25 November. It does not reflect a formal position of the European Commission.**

1. INTRODUCTION

This paper presents the reasoning for the development of a **Community of Users in Disaster Risk and Crisis Management** and the results of the mapping of policies and (FP7 secure societies) research, which is aimed to pave the way for improving future links among Horizon2020, capacity-building, training, industrial developments and policy implementation.

In a world facing a growing risk of man-made and natural disasters resulting from increasingly frequent and severe natural, industrial and man-made hazards, the security of citizens, infrastructure and assets has become a high priority in the European Union. Strengthening capacities in disaster risk / crisis management and improving resilience in the fields of CBRN-E (Chemical, Biological, Radiological, Nuclear and Explosive) and natural and man-made disaster management represent key EU policy and research challenges. In the case of CBRN-E incidents and threats, the huge explosion at the AZF fertiliser factory in Toulouse in 2001, the deadly *E. Coli* outbreak which hit Germany in May 2011 and the current *Ebola* crisis, as well as the recent chemical weapons use during the Syrian conflict, are some examples illustrating the level of risk faced by the EU today.

The impact of climate change on natural hazards has also seen a rise in the severity and frequency of various natural disasters in Europe and beyond. Meteorological hazards such as extreme weather events, floods and heat waves, as well as forest and wildfires have become recurrent phenomena in the EU. The Xynthia storm in 2010, the major floods in Southern Germany and neighbouring regions in 2013, and the deadly heat wave which struck Europe in 2003 are a few examples. Similarly, crisis management also addresses various geological hazards such as earthquakes, volcanoes and tsunamis, as well as health-related hazards (pandemics, livestock epidemics) and other man-made risks (cyber-attacks, loss of critical infrastructure) which all present risks to the EU and its citizens.

The many different risks affecting security involve various communities covering research, policy and operational actors (including industry/SMEs, first responders, civil protection units, decision-makers etc.), all of which have specificities but present also common features regarding the overall risk management cycle (from preparedness / prevention, detection / surveillance, response / recovery) and the need to ensure a proper transfer (and implementation) of research outputs to "users". Disaster Risk / Crisis Management policies have common technical grounds, including the need to check the effectiveness and performance of existing equipment, tools and processes (testing and validation), the detection of new threats (e.g. new substances) and risk assessment, training and exercises ; in addition, they are all supporting the improvement the usage of results of research.

This diversity of actors requires that dissemination and communication of project results be tailor-made to different sectors, while bearing in mind that the common goal is to ensure that "solutions" resulting from research will reach the users (often regional implementers, first responders, civil protection units, SMEs, individuals, etc.) in a timely and relevant fashion and be translated into "useful & used operational tools", hence contributing also to the European economy through improved competitiveness. The high number of research projects and the lack of "interfacing" mechanism make it difficult to efficiently reach this goal. This is why large-scale demonstration projects have been funded by the European Commission to help improving the situation. In the field covering Disaster Risk and Crisis Management (including CBRN-E, natural and man-made disasters),

two large-scale projects have the potential to make a difference and help building a critical mass by federating efforts: EDEN and DRIVER (see section 1.2), along with other projects which have an "interfacing" component.

At the present stage, the wide range of sectors, disciplines and actors involved in "security" as well as "safety" issues are not sufficiently interlinked. While some specificities of each sectors do not necessarily require multisectorial interactions (e.g. tools specific to a given hazard), general aspects related to disaster risk management are often common to all types of (CBRN-E, natural and man-made) hazards. The need to build a **"Community of Users"** in Europe based on existing user's communities has hence been expressed in various fora. In this respect, discussions with different actors have taken place over the last few months and a mapping of policies and research projects has been carried out in the light of features regarding the overall risk management cycle (from preparedness / prevention, detection / surveillance, response / recovery). The results of this mapping address several needs such as proper transfer (and implementation) of research outputs to "users" in the light of specific policy requirements (formulation, implementation, review), identifying user's needs and taking them into consideration in designing research programmes.

1.1 Policy background

1.1.1 The EU framework

Two key EU policy documents set the framework for security strategies regarding Disaster Risk and Crisis Management, these are the EU Internal Security Strategy¹ establishing a security policy framework and the Security Industrial Policy² which aims to boost industry competitiveness and innovation (thus the access to market of developed technologies); they both refer to various actions which are themselves closely related to either existing regulations or policies / programmes that have been developed as a result of these two major texts. Another key policy is obviously the EU research policy represented by Horizon2020³.

With regards to CBRN-E, the key EU policy is represented by the EU Action Plan on Enhancing the Security of Explosives⁴ and the CBRN Action Plan⁵ (DG HOME). Other EU policies include CBRN as a focal point, namely in the sectors of Civil Protection⁶ (DG ECHO), Consumer Health Protection⁷ (DG SANCO), Energy Infrastructure and Transport Networks⁸ (DGs ENER and MOVE), Customs⁹ (DG TAXUD), Environment and Industrial Risks¹⁰ (DG ENV) as well as International Cooperation, e.g. CBRN-E Centres of Excellence (DG DEVCO).

¹ COM(2010) 673 final

² COM(2012) 417 final

³ Horizon2020

⁴ Doc. 8109/08 and Regulation 98/2013

⁵ COM(2009) 273 final and COM(2014) 247 final

⁶ Decision 1313/2013

⁷ Decision 1082/2013

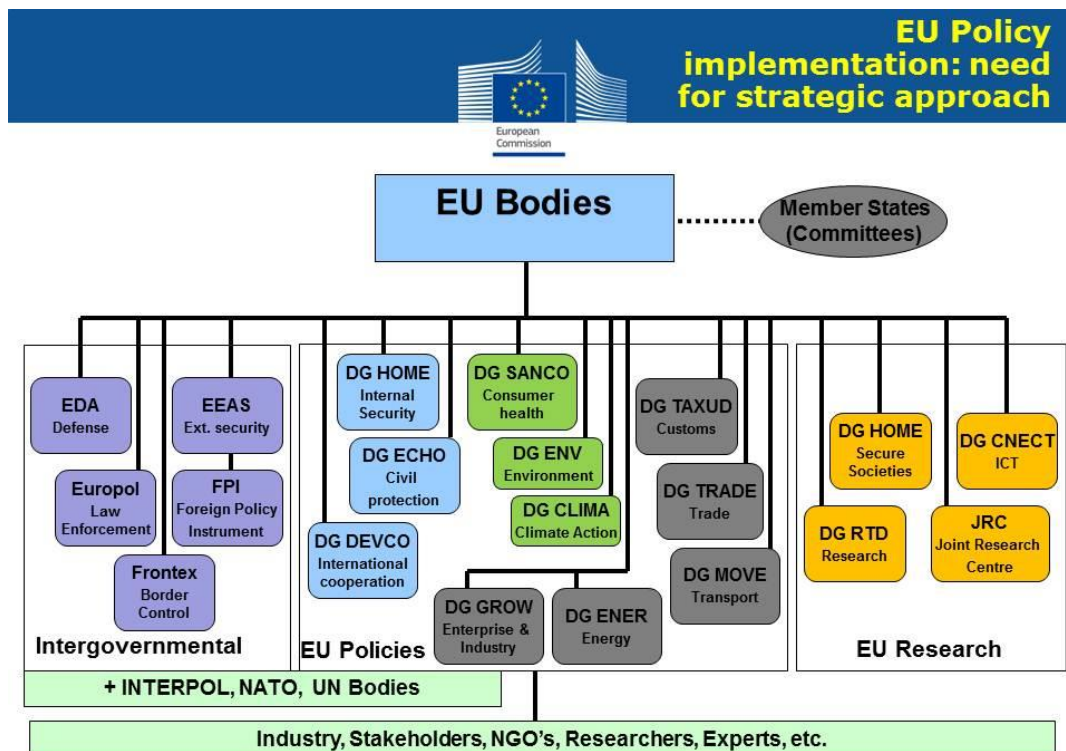
⁸ Regulation 347/2013 and Decision 661/2010

⁹ COM(2012) 793 final

¹⁰ Directive 2012/18/EU

Crisis Management policies follow an integrated approach for the management of natural and man-made hazards focusing on disaster risk reduction (prevention and preparedness) and disaster response. The policy is represented by the EU Civil Protection Mechanism⁵, and the operational dimension is coordinated by the Emergency Response Coordination Centre (ERCC). Disaster risk management is also addressed through the above-mentioned EU's Internal Security Strategy¹ (DG HOME), health (DG SANCO), external action (EEAS), and Research and Innovation (DG R&I) policies; in particular, climate-related disasters are covered by environmental and climate policies (DG ENV, in particular the Flood Directive¹¹ and CLIMA through the EU climate change adaptation strategy¹²). Finally, intergovernmental agencies are also involved in security policies, namely the European External Action Service (EEAS) implementing the EU Common Foreign and Security Policy, and Europol, which is the EU Law Enforcement Agency, both of them assisting EU Member States.

Complementary to EU policies, international policies are also active in Disaster Risk and Crisis Management. In the case of CBRN-E, various conventions exist, namely the 1540 Resolution, the Chemical Weapon Convention (CWC controlled by the Organization for the Prohibition of Chemical Weapons, OPCW), the Biological and Toxin Weapon Convention (BTWC without control mechanisms), and the Nuclear Non-proliferation Treaty (NPT controlled by the International Atomic Energy Agency, IAEA). In the field of Disaster Risk Management, Disaster Risk Reduction is the core action line of the United Nations Hyogo Framework for Action on how to mitigate the impact of natural and man-made disasters, which is closely interlinked with the EU disaster risk management policy, and which is now entering a "post-2015" phase¹³.



¹¹ Directive 2007/60/EC

¹² COM (2013) 216 final

¹³ Post-2015 framework for disaster risk reduction

The implementation of these policies represents a complex and ambitious challenge as they involve a wide variety of players whereas each Member State often follows specific national approaches (national action plans) for dealing with crises and are also differently organised in terms of disaster risk management capabilities. The EU framework represents a means and a real opportunity to discuss possible ways to improve coordination among the various national approaches and develop a common EU vision strengthened by a joint strategy in this field. The development of a Community of Users is, in this respect, an essential component to bring together key scientific, policy and industry actors, as well as other stakeholders (e.g. first responders, police representatives, firemen, civil protection units) around this common vision and strategy. This is closely linked to the EU industrial policy¹⁴ under the responsibility of DG GROW, the EU research policy¹⁵ coordinated by DG R&I and involving DG HOME (Secure Societies Programme), DG CNECT and JRC, the EU civil protection policy managed by DG ECHO, as well as the EU environmental and climate policies coordinated by DG ENV and CLIMA respectively.

1.1.2 CBRN-E

From the above, it is clear that Chemical, Biological, Radiological, Nuclear and Explosive (CBRN-E) threats are covered by a range of policies. In views of improving coordination of actions related to CBRN-E risk management, the European Commission has issued strategic documents which main features are described below regarding technical challenges.

The **CBRN Action Plan**⁴ aims to ensure that unauthorised access to CBRN materials of concern is as difficult as possible. Prevention is based on robust risk-assessment processes, which include the prioritisation, security and control of high-risk CBRN materials and facilities, developing a high-security culture of staff, improving the security of transport, information exchange, import and export regimes, and strengthening cooperation on the security of nuclear materials. Key Actions defined in the Plan are designed to reduce threat and damage from CBRN incidents of accidental, natural and intentional origin, including terrorist threats. It is a political commitment which may be seen as a roadmap of intentions guided by principles of EU solidarity (the responsibility of protection population against CBRN incidents lays with the Member States), EU added value (respecting principles of subsidiarity and proportionality), based on existing regulations and instruments, and in close consultation with national authorities. Actions are based on risk- and threat assessments and cost-effective assessments. Confidentiality of certain types of information is taken into account. Actions are financially supported by existing Community programmes and instruments^{16, 17}.

The plan implies to efficiently respond to incidents involving CBRN materials and recover from them as quickly as possible. Specific attention is made to CBRN emergency planning, strengthening countermeasure capacity, reinforcing information flows, developing better modelling tools and improving criminal investigation capacity. The plan focuses on the required capability to detect CBRN materials in order to prevent or respond to CBRN incidents. This is related to the development of minimum detection standards to be applied across the entire EU, establishing trialling, testing and

¹⁴ COM (2010) 2020 final

¹⁵ COM (2011) 152 final

¹⁶ OJ L 58, 24.2.2007, p.1-6 - Prevention, Preparedness and Consequence Management of Terrorism and other Security related risks

¹⁷ OJ L 58, 24.2.2007, p.7 - Prevention of and Fight against Crime

certification schemes for CBRN detection and improving the exchange of good practices on the detection of CBRN materials. The plan promotes a scenario-based/modelling approach at EU level to identify work priorities in the detection field (identification of CBRN material and detection technologies), wide risk assessment (including events with cross-border effects) built on existing scenarios and national experience, and gap analysis ; it supports the exchange of methods and procedures for developing scenarios and modelling, interconnecting detectors at national levels where feasible including data on incidents, coordination of exercises and lessons learnt. It also promotes a mechanism of information exchange among Member States on methodologies of scenario development related to sampling and detection, taking appropriate confidentiality into account. In the specific area of biological pathogens and toxins, the plan promotes the development of detection models, considering distribution, possible vectors, infectious dose and stability.

The CBRN Action Plan is complemented by the **new EU approach to the detection and mitigation of CBRN-E risks**³ which adopts a proactive approach and to put effective, proportional safeguards in place, including prevention, preparedness and response measures at EU level with the objectives to better assess the risks, to develop countermeasures, to share knowledge and best practices, test and validate new safeguards with the ultimate goal of adopting new security standards.

The response mechanisms within the CBRN Action Plan are linked to various EU policy instruments such as the **EU Mechanism for Civil Protection**⁵ (see section 1.1.3), Crisis Coordination Arrangements (CCA) through the ARGUS crisis management system allowing for an immediate exchange of information among Commission rapid alert systems such as the ECURIE system for radiological emergencies, the Early Warning and Response System (EWRS) for communicable diseases, the RAS-BICHAT for biological and chemical health threat and the Emergency Response Centre (ERCC) on civil protection issues. Besides this, the Health Security Committee (see section 1.1.5) plays an important role in responding to health threats (notably in terms of crisis preparation, exercises on CBRN events, listing of pathogens and chemicals which pose a health threat) whilst the European Centre for Disease and Control (ECDC) provides risk assessments for communicable diseases and biological incidents.

At international level, the **EU strategy against Proliferation of Weapons of Mass Destruction** (WMD strategy), together with relevant Community Instruments, in particular the Instrument for Stability (supporting third countries to develop training and assistance on CBRN risk mitigation and preparedness), reinforces actions on reducing the risks from CBRN materials. This is linked to nuclear non-proliferation for strengthening nuclear security¹⁸. Furthermore, the Implementation of the UN Security Council Resolution 1540 will be further strengthened by supporting the International Atomic Energy Agency (IAEA), in particular contributing to more efficient export control and border monitoring systems. Regional Centres of Excellence will be instrumental in order to exchange best practices, support capacity building and share experiences gathered at EU level with key regions. Issues related to the threat of CBRN materials are also discussed by international organisations such as the Organisation for the Prevention of Chemical Weapons (OPCW), the BTWC Conference, Interpol and the Global Health Security Initiative (GHSI).

¹⁸ COM(2009) 143 final, 26.03.2009

1.1.3 Civil Protection Mechanism

The **EU Community Civil Protection Mechanism**¹⁹ aims to facilitate reinforced cooperation in civil protection assistance interventions, with financing ensured by the Civil Protection Financial Instrument²⁰ providing funding to support and complement the efforts of the Member States for the protection, primarily of people but also of the environment and property, including cultural heritage, in the event of natural and man-made disasters, acts of terrorism and technological, radiological or environmental accidents and to facilitate reinforced cooperation between the Member States in the field of civil protection. Built upon these policy instruments the Decision 1313/2013⁵ is about developing an integrated approach to disaster management. The EU action promotes solidarity and support, complements and facilitates the coordination of Member State's actions in the field of civil protection with a view of improving the effectiveness for preventing, preparing for and responding to natural and man-made disasters. The overall mechanism takes due consideration of laws and international commitments, and exploit synergies with relevant Union initiatives such as the European Earth Observation Programmes (Copernicus), the European Programme for Critical Infrastructure Protection (EPCIP) and the Common Information Sharing Environment (CISE). The mechanism is based on the Emergency Response Coordination Centre (ERCC) and the European Emergency Response Capacity (EERC) in the form of voluntary pool of pre-committed capacities from the Member States, trained experts, a Common Emergency Communication and Information System (CECIS) managed by the Commission and contact points in the MS. It also recognises the role of regional and local authorities in disaster management. Outside the Union, disaster response is coordinated with the United Nations and other relevant international actors with reference to Council Regulation No 1257/96 concerning humanitarian aid²¹. Finally, the use of military means under civilian leads as a last resort may constitute an important contribution to disaster response.

On technical grounds, the Union Mechanism claims for a general policy framework on disaster risk prevention aimed at achieving a higher level of protection and resilience against disasters by preventing or reducing their effects and by fostering a culture of prevention. From this perspective, it promotes the review of risk assessment, risk management planning conducted at national/regional level and the development of an integrated approach, linking risk prevention, preparedness and response actions.

The Union Mechanism is closely related to the Hyogo Framework for Action 2005-2015 (HFA)²² "Building the resilience of nations and communities to disasters" which was adopted by 168 UN Member States that voluntarily committed to work towards achieving its objectives, in particular improving disaster resilience and disaster risk reduction as a necessary ingredient for the achievement of poverty reduction and sustainable development. Consultations are ongoing regarding the future framework for disaster risk reduction (post-HFA) to be endorsed in Sendai (Japan) in March 2015 in the world conference for disaster risk reduction. These objectives are supported by IPCC recommendations expressed in the special report on extreme events²³.

¹⁹ Council Decision 2007/779/EC, OJ L 314, 1.12.2007

²⁰ Council Decision 2007/162/EC, OJ L 71, 10.3.2007

²¹ Council Regulation No 1257/96, OJ L 163, 2.7.1996

²² HFA

²³ SREX report, IPCC

1.1.4 Major accidents hazards

Major accidents can have consequences beyond frontiers and the ecological and economic costs of an accident are borne not only by the establishment affected, but also by the Member States concerned. It is therefore necessary to establish and apply safety and risk-reduction measures to prevent possible accidents, to reduce the risks of accidents occurring and to minimise the effects if they do occur, thereby making it possible to ensure a high level of protection throughout the Union.

The **Directive 2012/18/EU on major-accidents hazards involving dangerous substances**⁷ sets risk assessment objectives based on the fact that operators are obliged to take all necessary measures to prevent major accidents and to limit their consequences for human health or the environment. The Directive lays down rules for the prevention of major accidents which involve dangerous substances and the limitation of their consequences for human health and the environment, with a view to ensuring a high level of protection throughout the Union in a consistent and effective manner (no application to military establishments and to gas exploitation facilities).

1.1.5 Serious cross-border threats to health

The protection of human health is a matter which as a cross-cutting dimension and is relevant to numerous Union policies and activities. The Commission should ensure, in liaison with the Member States, the coordination and exchange of information between the mechanisms and structures established under the **Decision 1082/2013/EU on serious cross-border threats to health**⁴ as well as activities which are relevant to the preparedness and response planning, monitoring, early warning of, and combating serious cross-border threats to health. Pursuant to Decision 2119/98/EC, a network for the epidemiological surveillance and control of communicable diseases in the Community has been set up. Apart from communicable diseases, a number of other sources of danger to health, in particular related to other biological or chemical agents or environmental events, which include hazards related to climate change, could by reason of their scale or severity, endanger the health of citizens in the entire Union, lead to the malfunctioning of critical sectors of society and the economy and jeopardise an individual Member State's capacity to react. The legal framework set up under the above Decision should, therefore, be extended to cover other threats and provide for a coordinated wider approach to health security at Union level. In the context of this Decision, an important role in the coordination of recent crises of Union relevance has been played by an informal group composed of high-level representatives from Member States, referred to as the Health Security Committee, and established on the basis of the Presidency Conclusions of 15 November 2001 on bioterrorism. The Decision promotes preparedness and response planning through consultation among the Member States and the commission in order to share best practice and experience, as well as interoperability of national preparedness planning and addressing the intersectoral dimension of preparedness and response planning at Union level.

1.1.6 Climate-change related threats

The **EU Adaptation Strategy to Climate Change**¹¹ highlights the consequences of climate change and the need for adaptation measures. It focuses on early, planned and coordinated action rather than reactive adaptation. The communication highlights the need for systematic exchanges of best practice on how to best adapt to climate change. The strategy takes account of global climate change

impacts such as disruptions to supply chains or impaired access to raw materials, energy and food supplies. The overall aim is to contribute to a more climate resilient Europe by enhancing the preparedness and capacity to respond to the impacts of climate change at local, regional, national and EU levels, developing a coherent approach and improving coordination. This strategy is closely linked to national adaptation strategies which are considered as recommended instruments by the UN Framework Convention on Climate Change. A close coordination between climate change adaptation and disaster risk management / policies is also required. Development is foreseen of guidelines on minimum standards for disaster prevention based on good practices.

The requirement for "climate-proofing" and mainstreaming of adaption measures in various sectors also calls for strengthened preparedness and science-policy links. The strategy makes reference, in particular, to the Marine Framework Directive (Directive 2008/56/EC) and various environmental policies, related to e.g. Forestry (EC Regulation 2152/2003), Water (Directives listed in the COM(2012)673 on the Blueprint to Safeguard Europe's Water Resources), as well as other sectors such as Transport (Decision 661/2010/EC), Energy (COM(2011)665/3), and the above described Disaster Risk Prevention (within the Union Civil Protection mechanism) and Health (Decision 1082/2013).

1.1.7 Water-related threats

Linked to the above, specific policy instruments are in place in the water sector, hence related to extreme hydrometeorological events such as floods and droughts. In the first place, complementing the **Water Framework Directive** (WFD)²⁴, flood prevention and management are tackled by the **Flood Directive**¹⁰ which requires EU Member States to assess and manage flood risks, with the aim to reduce adverse consequences for human health, the environment, cultural heritage and economic activity associated with floods in Europe. This directive has to be coordinated with the implementation of the WFD from the second river basin management plan onward (which will take place from 2015 to 2021). It therefore provides a comprehensive mechanism for assessing and monitoring increased risks of flooding, taking into account the possible impacts of climate change, and for developing appropriate adaptation approaches. Water scarcity and droughts are also considered in the policy context²⁵. In particular, an annual European assessment of water scarcity and droughts is conducted by the European Commission in the framework of the Water Scarcity and Drought Communication to monitor changes across Europe and to identify where further action is needed in response to climate change. A review of the strategy for water scarcity and droughts as well as policy options are currently developed at EU level in the context of the Blueprint to Safeguard Europe's Water Resources²⁶. It may, therefore, be considered that the successive steps of the WFD River Basin Management Planning (RBMP) and the related flood and drought policy framework may conveniently incorporate adaptation to climate-related water risks through risk assessment, monitoring, environmental objective setting, economic analysis and action programmes to achieve well defined environmental objective.

²⁴ Directive 2000/60/EC

²⁵ COM(2007) 414 final

²⁶ COM(2012) 673 final

1.1.8 Critical infrastructures

The **European programme for Critical Infrastructure Protection**²⁷ (EPCIP) is built on a review of the 2006 programme and the Council Directive 2008/114/EC²⁸ on the identification and designation of European Critical infrastructures and the assessment of the needs to improve their protection. It aims to ensure a high degree of protection of EU infrastructures and increase their resilience (against all threats and hazards). It looks at interdependencies between critical infrastructures, industry and state actors, taking account of the cross border dimension and interdependencies between sectors (e.g. European high-voltage electricity grid). With focus on four critical infrastructures of European dimension (Eurocontrol, Galileo, the electricity transmission grid and the gas transmission network), the programme requests (1) procedures for the identification and designation of European critical infrastructures and assessment of the need to improve their protection (in reference to the Directive 2008/114/EC); (2) measures to facilitate its implementation, including action plan, warning information network, CIP expert groups at EU level and information sharing process; (3) funding CIP-related measures and projects focussing on 'Prevention, Preparedness and Consequence Management of Terrorism and other Security Related Risks'; and (4) developing the EPCIP external dimension. At the time of publication of the programme (2013), less than 20 European critical infrastructures had been designated and hence very few Operator Security Plans had been produced, the Directive 2008/114/EC has mainly encouraged bilateral engagement of Member States instead of a real European forum for cooperation – the sector-focused approach of the directive represents a challenge to a number of MS as in practice the analysis of criticalities is not confined to sectoral boundaries and follows rather a 'system' or 'service' approach (e.g. hospitals, financial services). There is a need for a cross-sectoral approach development. In practical terms, development of preparedness strategies are based around contingency planning, stress tests, awareness raising, training, joint courses, exercises and staff exchange. The programme also promotes the dialogue between the operators of the critical infrastructures and those who rely upon them in order to better prepare responses to events affecting European critical infrastructures.

1.1.9 Energy

The **guidelines for trans-European energy infrastructure**²⁹ are built upon the Communication of 28 February 2011 entitled 'Energy infrastructure priorities for 2020 and beyond – A blueprint for an integrated European energy network'; it stipulates that the Union's energy infrastructure should be upgraded in order to prevent technical failure and to increase its resilience against such failure, natural or man-made disasters, adverse effects of climate change and threats to its security, in particular as regards European Critical Infrastructures and the assessment of the need to improve their protection.

²⁷ SWD(2013) 318 final

²⁸ Council Directive 2008/114/EC, OL L345/75

²⁹ Regulation (EU) no 347/2013 of 17 April 2013, OJ L115/39 of 25.04.2013

1.1.10 Transport

Creating the environment for safe transport is essential for European citizens. EU transport policies³⁰ cover a wide range of security and safety policies in the air, road, maritime and rail areas which all relate to technical standards for preventing / detection risks and responding to major threats, including terrorist attacks, crimes and accidents. In order to maintain proper security levels cooperation with third countries is paramount and the Commission consolidates and strengthens security by working together with major international partners, exchanging experiences and best practices. Security in transport also relies on new technologies that can really assist in developing smooth high-security systems for the future but without making the security checks too long and intense.

1.1.11 Control of exports and transit of dual-use items

The **Council Regulation (EC) no 428/2009 on a Community regime for the control of exports, transfer, brokering and transit of dual-use items**³¹ is setting rules that Member States have to apply to control the transfer of certain dual-use items within the Community in order to safeguard public policy or public security. This includes the effectiveness of controls on exports from the Community and those items which only pass through the territory of the Community (i.e. not assigned to a customs-approved treatment or use other than the external transit procedure or placed in a free zone or warehouse with no record of them).

1.1.12 Union Custom code

EU customs policy for security and trade facilitation³² aim to facilitate legitimate trade whilst applying the level of controls necessary for guaranteeing the safety and security of citizens and protecting the public health, environment, financial and economic interests of the EU and its Member States. The increase in global terrorism has expanded customs to become a major player in the field of supply chain security. The deployment of detection technologies plays an essential role.

1.1.13 Law Enforcement

Regarding law enforcement, the European Commission is not in charge of operational activities. It contributes to the enhancement of law enforcement cooperation by making proposals for EU legislation and assisting EU States in the implementation of existing legal instruments such as e.g. the Data Retention Directive, the Decision on access for consultation of the Visa Information System etc.³³ and participating in specialised EU bodies such as COSI, Europol and CEPOL. Support to Law Enforcement policies is also granted via the financing of national and multi-national projects that enhance police cooperation, mainly from the Prevention of and Fight against Crime (ISEC) programme.

³⁰ Transport

³¹ OJ L 134/1 of 29.05.2009

³² Regulation (EU) no 952/2013

³³ Europol

1.2 Research background

On-going research and demonstration efforts within FP7 in CBRN-E and natural and man-made disaster management areas are directly or indirectly supporting the implementation of the above key EU policies. Research developments within the European Commission are spread over three funding DGs, namely DG R&I, DG ENTR and DG CNECT, while research actions are also undertaken by the Joint Research Centre (JRC). In addition to this, within the framework of the European Defense Agency (EDA), research projects are also conducted for CBRN protection, which are coordinated with DG ENTR under the so-called European Framework Cooperation (EFC), in which Dual-Use synergies are explored especially in the fields of detection, protection and decontamination.

Although operationally the security and industrial safety communities of users are separated, in many cases the same technology solutions can work for both applications. Therefore combined technological development will be equally beneficial for security and safety domains. In the Security area, Horizon 2020 will contribute to the implementation of the policy goals of the Europe 2020 strategy, the Security Industrial Policy², the Internal Security Strategy¹ and the Cyber Security Strategy³⁴, the Union Civil Protection Mechanism⁵, as well as supporting the various above-mentioned thematic policies. The primary aim of the Work Programme on "Secure societies – Protecting freedom and security of Europe and its citizens" is to enhance the awareness, preparedness and resilience of our society against natural and man-made disasters. Crisis Management (including CBRN-E, natural and man-made disaster risk management) related research will be considered in various topics focusing on new crisis management tools, novel solutions for the protection of critical infrastructure, and new forensic tools for fighting crime and terrorism.

A large range of projects has hence been funded in FP7, many of them running over the forthcoming years, and new projects will start as a result of the first call of H2020 from 2015 onwards. In parallel to these, various actions which are directly funded by DG HOME, DG ECHO, DG DEVCO, EEAS/FPI etc. (e.g. prevention, preparedness and response projects in disaster risk management funded by DG ECHO) have also potential links to research projects, e.g. training, capacity-building, networking. Two large-scale demonstration projects have the potential to develop exchange platforms and help building the foundation of strengthened contacts among various actors in the CBRN-E and Disaster Risk Management sectors, these are the EDEN (CBRN-E) and DRIVER (Crisis Management in the case of natural and man-made disasters) demonstration projects.

1.3 Needs for a Community of Users

1.3.1 Who are the Users?

Both fields, CBRN-E and Disaster Risk / Crisis Management, are themselves scattered into many different disciplines and sectors, e.g. CB experts hardly work with RN specialists, while various types of hazard-related communities are often working independently on somehow overlapping crisis situations (e.g. experts dealing with climate extreme events vs earthquake specialists), so definitions about "Users" (of science and technology information) may be prone to various interpretations. To

³⁴ COM (2013) 48 final

simplify, we will distinguish five main categories of users: (1) Policy-makers and Stakeholders; (2) Scientists; (3) Industry (including SMEs); (4) training and operational units; and (5) general public:

a. Policy-makers and stakeholders

- At EU level, the main policy DGs concerned with Crisis Management are DGs HOME, ECHO, SANCO, ENTR, ENV, ENER, MOVE, TAXUD, TRADE, EEAS/FPI (see section 2.1)
- At Member State's level, Ministries of Defence, Interior, Foreign Affairs, Civil Protection, Research and Industry), Agencies as well as Regional Authorities all benefit from research outputs.
- Often working at the interface between policy and science, various stakeholders are involved in bridging interests of different communities, e.g. consultancy companies

b. Scientists

- Security research involves a wide range of scientific disciplines which have to interact, ensuring complementarity and building interdisciplinary networks
- Different types of scientists are to be considered (University, Research Institutes, research units linked to Defence/Interior ministries or agencies)

c. Industry (including SMEs)

- The security sector involves many industry branches and stakeholders in the areas of defence, forensics, civil protection etc. Research results can benefit most first responders
- Different communication approaches to be followed towards large industries and SMEs often disconnected from discussions at EU level

d. Operational units

- First responders, emergency services, police, civil protection units, military units, laboratories, etc.
- Training centres for first responders
- Command control centres
- Decision-makers (at national or regional levels)

e. General public

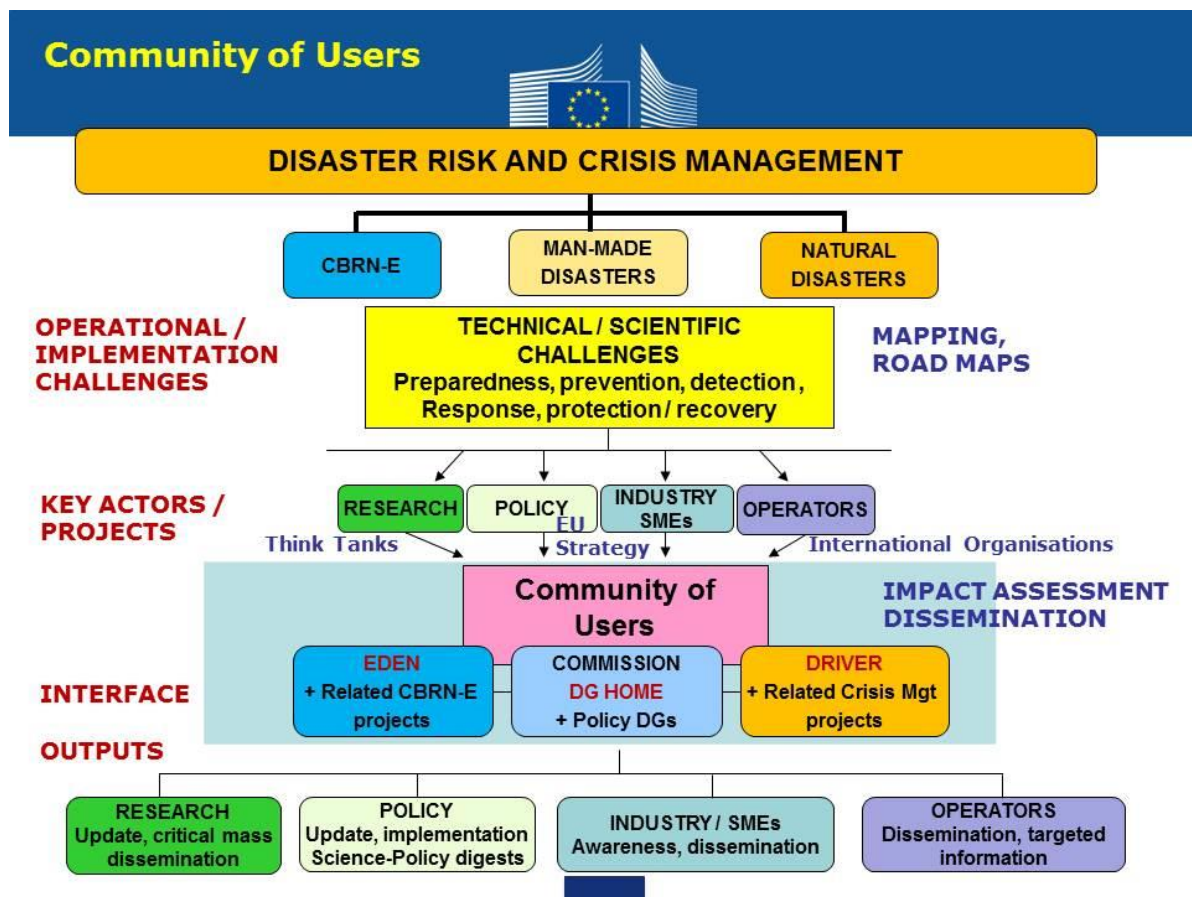
- NGOs
- Public at large
- Education (schools) and training

While some of the above actors in categories *a*, *b* and *c* are used to participate in international meetings, this is less frequent for SMEs (in category 3) and even less for actors in categories *d* and *e*. New ways have hence to be found to ensure that information may freely circulate “horizontally” as well as “vertically” (see p.18)) in order to fertilize all project deliverables while, at the same time, maturing them to the final operational phase (also called "usefulness & use") by end users, and integrating them into appropriate EU strategy and security policy.

1.3.2 Why build up a Community of Users?

The large span of projects leads to a huge dispersion of resources as no mechanism is presently in place to establish a common platform to exchange information of public character, boost awareness and transfer of relevant research projects to relevant users and make them "useful and used". In addition, efforts will be done to better address user's needs which will be reflected into possible inputs to research programming. Another aspect stems from contribution of scientific progress to policy formulation, implementation and review which also require being better coordinated. This awareness is readily made for the FP7 projects resulting from the Secure Societies programme (SEC), a large part of which being managed by REA. Information exchanges occur even less among SEC projects and projects managed by other DGs.

A Community of Users will benefit from a better coordination of information exchanges of general nature through a visible platform. This can hardly be done without resources and by the sole officials in charge of the projects. However, the two Demonstration Projects referred to in section 1.2 (EDEN for CBRN-E, DRIVER for Crisis Management) could play the role of catalyst for the development of such a Community of Users. Both projects inter alia aim to demonstrate the added value of large scale integration of security solutions (related to various risks) and to support Member States' preparedness and response organizations in improving integration and information sharing in countering various threats. They have both their own specificities and user's platform in the framework of which confidential information is shared among the partners, and the proposed Community of Users will naturally not interfere with these specific fora.



The intention of the Community of Users is hence to provide an "umbrella" at EU level which will provide an overall outlook (based on publicly available information) of science and policy developments in the relevant sectors. Along with other projects funded under FP7, EDEN and DRIVER are positioned to enhance and strengthen such Community of Users in the CBRN-E and other Crisis Management areas (natural and man-made disaster risk management), from the defence and security sectors, to the safety sector (food, medical, industrial risks as well as natural hazards).

Transfer of knowledge has to be coordinated at various levels:

A. Horizontally

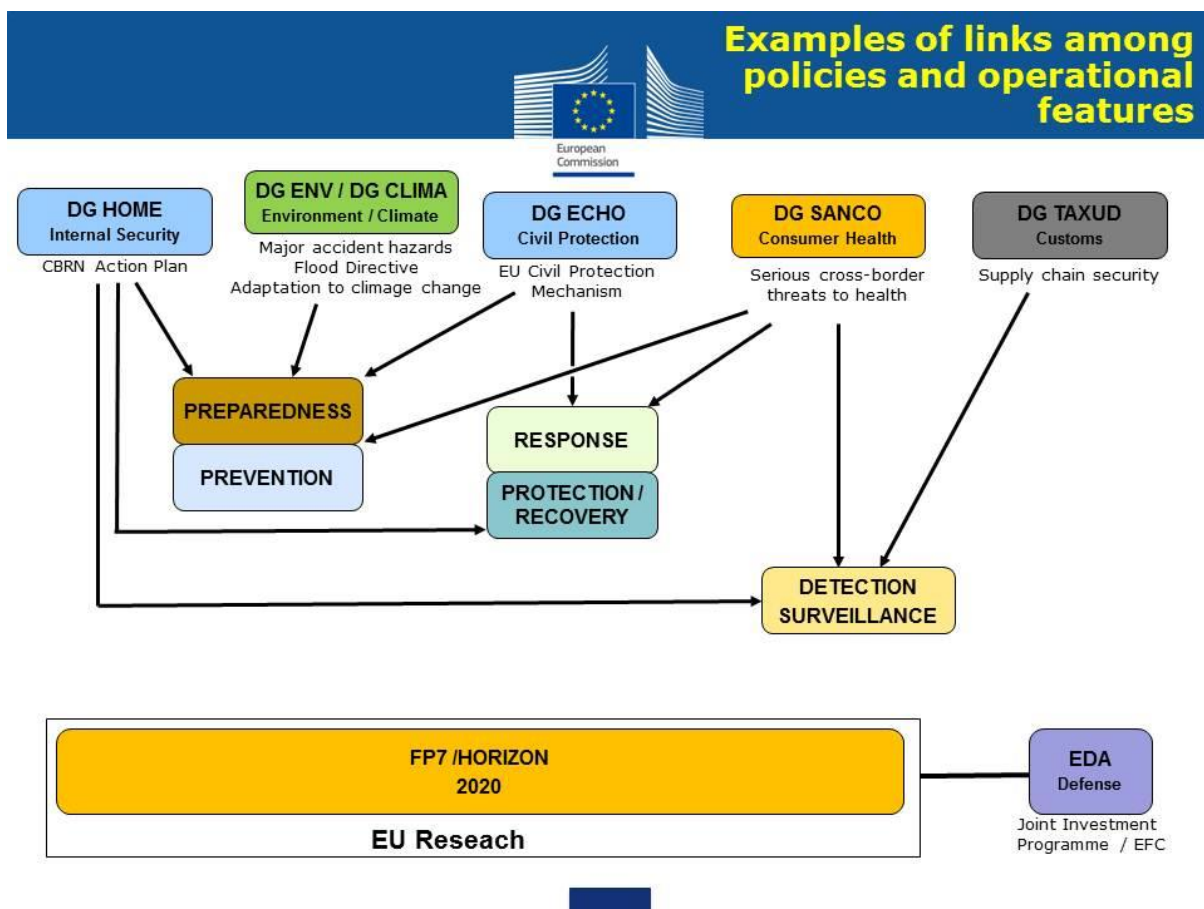
- **Policy to policy:** while International and EU policies are developed in close consultation among different sectors, in practice few interactions take place at the implementation level among sectors within the Member States. This is partly due to insufficient sharing of information and joint actions.
- **Science to science:** EU-funded projects respond to topics which are generally based on well-defined policy hooks. We might hence expect that projects supporting common policy goals will establish synergies, which is rarely the case without a push from the Commission owing to various considerations (IPR and classified information in particular). Here again, sharing information and developing interactions on a regular basis should become a practice that the Commission should ask of projects.
- **Policy to science:** an essential component of the policy to science interaction is the capacity for policy-makers to identify research needs on the short to long term and communicate these needs in anticipation to the research community so that programming, research development and implementation can match the policy timeline (e.g. access to the scientific state-of-the-art, short-term research / capacity building, longer term research goals, pre- and co-normative research).
- **Science to policy:** this is obviously directly linked to the above, with the requirement for the scientific community to format/translate research information in a way which is tailor-made to policy applications, basically responding to well specified technical challenges. This is the subject of the mapping described in this document.

B. Vertically

- **International/EU to National:** at international/EU level, policies are elaborated by relevant organisations (e.g. UN for various conventions and European Commission for security-related EU policies). The links to the National level take place through Committees (e.g. CBRN Advisory Group, Civil Protection Committee, H2020 Committees) in which Member States are represented. There is a need to ensure that these Committees be informed on similar grounds about science & policy developments.
- **National to Regional/Local:** once Member State's Committee representatives are duly informed, it is to be expected that appropriate relays with regional / local implementers will then take place under the MS responsibility. This also requires a level of coordination which depends upon the willingness and capacity of each Member State. This level of interaction is less well defined than the EU level because of different settings within the Member States.

2. MAPPING POLICY CHALLENGES WITH RESEARCH OUTPUTS

While policies and research programming are designed in a concerted way at EU level (to avoid possible duplications and ensuring best possible complementarity), in practice policy coordination in operational terms (i.e. implementation by Member States) and research synergies are often lagging behind what could be achieved. This is partly due to a lack of "matrix" which establishes links among different branches of a given sector (in the case of this document: Disaster Risk and Crisis Management (including CBRN-E, natural and man-made hazards)), but this lack of matrix concerns all fields which involve policy, research, industry and training / operational units). This section proposes a way to establish such a matrix which is not solely linked to given sectors (e.g. internal security, civil protection, health etc.) but to common features of the crisis management cycle. A review of different EU policies showed that almost all regulations contain operational elements of the crisis management cycle, namely prevention / preparedness, detection / surveillance, response / protection / recovery. In addition, horizontal and external actions (e.g. international cooperation) also embed operational features that are common to all sectors. While it is recognised that CBRN-E and Disaster Risk Management (both natural and man-made) have their own specificities, one of the pillars for establishing a "matrix" is the mapping of operational features in the different EU policies, which has been carried out in close consultation of the DGs concerned. These mapped elements are described in the sections below; some examples of policy links with operational features (supported by EU-funded programmes as well as EDA) are shown below.



Complementing the above, a mapping of projects funded under the FP7 Secure Societies programme, as a starting point, has been carried out to establish links among project's objectives and outputs and policy challenges. Other projects (e.g. projects funded by other FP7 programme, EDA etc.) could complement this mapping if appropriate. Based on the mapping elements, and taking into considerations the technical/scientific/training needs of the various EU policies, it has been possible to establish links among these (operational elements / policies) and EU-funded projects. The objective was not to make an impact assessment but to understand the complexity of the matrix and better **prepare the ground for a strategy of science-policy-operator's interactions within future Horizon2020 projects.**

In the sections below, the different policy sectors are separated into operational goals with highlights of specific actions to which FP7 projects have a potential to respond (in the various tables throughout the document, the "Excel Table" refers to Annex 1 to this document). It should be stressed again that, at this stage, the document is not providing an analysis of the research outputs but rather provides the overall architecture of science-policy interactions related to the different sectors. Links among policy objectives and specific projects are tentatively established with regard to an area coverage and not *sensu stricto*, i.e. attributions/references are prone to modifications.

2.1 Preparedness, Prevention and Protection

2.1.1 CBRN-E

Prevention within the **CBRN Action Plan**⁴ is covered by a number of goals and related key actions, which are all directly or indirectly linked to technical and scientific features.

2.1.1.1 EU lists of high-risks CBRN materials

One of the highlights of the plan is the development of EU lists of *high-risks CBRN materials*. These lists are developed and updated through joint efforts involving scientists, security experts from the Member States, Europol, Eurojust and relevant international organisations, including risk assessment, criteria and method to be used, with quantitative thresholds where appropriate. Several projects have looked into such lists in different policy sectors:

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
149	CBRN-E	HOMER	Homemade explosives and recipes characterisation- Capability	Homemade explosives, characterisation of production
193	HEALTH See also Section 2.1.5	NMFRDISASTER	Identifying the Needs of Medical First Responders in Disasters	Medical First Responders
211	FOOD SAFETY, HEALTH See also Section 2.1.5	PLANTFOODSEC	Plant and Food Biosecurity	Plant and Food Bio security, networking

2.1.1.2 Risk-based approaches to security

The CBRN Action Plan promotes *risk-based approaches to security* (chemical agents, biological agents and toxins, radioactive sources), which has also been prone to potential support by a range of projects, namely:

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
102	CBRN-E	ENCOUNTER	Explosive Neutralisation and Mitigation Countermeasures for IEDs in Urban/Civil Environment	Explosives, Counter-measures, IEDs, Urban Environment
219	CBRN-E	PREVAIL	PRecursors of ExplosiVes: Additives to Inhibit their use including Liquids	Additives to Inhibit Explosives use
298	CBRN-E	SUBCOP	Suicide Bomber Counteraction and Prevention	Response, PBIED
19	HEALTH See also Section 2.1.1.5	ANTIBIOTABE	Neutralizing antibodies against botulinum toxins	Security, safety, Neutralization of antibodies, Security against bio-threats
157	CUSTOMS, TRANSPORT	IMCOSEC	Integrated approach to IMprove the supply chain for COnainer transport and integrated SECurity simultaneously	Supply chain, global transportation, Container
318	TRANSPORT	UNSETH	Unique Smart anti-tampering and Enveloping TechNologies	Packaging, Protection of security systems & anti-tampering technologies
293	FOOD SAFETY, HEALTH	SPICED	Securing spices & herbs commodity chains in EU against deliberate, accidental or natural biological and chemical contamination	Faultless Goods and Food Safety
248	HEALTH	SAVEMED	Microstructure secured and self-verifying medicines	Tackling counterfeit medicines & related criminal networks, Crime, counterfeiting
222	LAW ENFORCEMENT	PROACTIVE	PRedictive reasOning and multi-source fusion empowering AntiCipation of attacks and Terrorist actions In Urban EnVironmEnts	Prevention, terrorism, urban environments

2.1.1.3 Diagnostic laboratories

The CBRN Action Plan also asks to verify whether security arrangements are adequate including *diagnostic laboratories* handling. It also calls for the establishment of *registry of facilities* possessing substances on the EU list of high risk biological agents and toxins. Supporting projects are supporting forensics and health policies:

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
138	CBRN-E, LAW ENFORCEMENT See also Section 2.1.1.2	GIFT-CBRN	Generic Integrated Forensic Toolbox for CBRN incidents	Forensics, Investigation
185	CBRN-E, HEALTH	MIRACLE	Mobile Laboratory Capacity for the Rapid Assessment of CBRN Threats	Mobile laboratory
132	LAW ENFORCEMENT	FORLAB	Forensic Laboratory for in-situ evidence analysis in a post blast scenario	IED blast, scenarios

2.1.2 Civil protection

The **Civil Protection Mechanism**⁵ supports and promotes Member State's risk assessment and mapping activity through the sharing of good practices, and facilitates access to specific knowledge and expertise on issues of common interest. In particular, the mechanism establishes and regularly updates a cross-sectoral overview and maps of natural and man-made disaster risk the Union may face, by taking a coherent approach across different policy areas that may address or affect disaster prevention and taking due account of the likely impacts of climate change. In this context, the use of various Union funds that may support sustainable disaster prevention is promoted and EU Member States and regions are encouraged to exploit those funding opportunities. Preparedness is closely linked to the operation of the Emergency Response Coordination Centre (ERCC) and the Common Emergency Communication and Information System (CECIS). This is supported by:

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
198	CIVIL PROTECTION	OPTI-ALERT	Enhancing the efficiency of alerting systems through personalized, culturally sensitive multi-channel communication	Alerting systems, multi-channel communication, Adaptive alerting tool
209	CIVIL PROTECTION	PEP	Public Empowerment Policies for Crisis Management	Public Empowerment Policies for Crisis Management
259	CIVIL PROTECTION	SECRICOM	Seamless communication for crisis management	Seamless communic. for crisis management
142	CIVIL PROTECTION	HARMONISE	Holistic Approach to Resilience and Systematic Actions to make Large Scale Urban Built Infrastructure Secure	Design areas, Resilience of large scale urban built infrastructure,

217	CIVIL PROTECTION	PREDICT	PREparing for the Domino effect In Crisis siTuations	Cascading effects in multi-sectoral of CIs, models, methodologies, software tools
321	CIVIL PROTECTION	VASCO	Virtual Studio for Security Concepts and Operations	Design areas, secure critical government assets

Within Horizon2020, the **DRS-3-2015 topic** on "Demonstration activity on large scale disasters and crisis management and resilience of EU external assets against major identified threats or causes of crisis" is aimed to directly support the EU Civil Protection Mechanism, with a capitalization on past projects. The call will be published in 2015. This will be complemented by strategic developments expected with the **DRS-10-2015** topic on "Natural Hazards: Towards risk reduction science and innovation plans at national and European level". In 2014, the **DRS-7-2014** topic on "Crises and disaster resilience – operationalizing resilience concepts" will provide a direct contribution to the Civil Protection Mechanism.

2.1.2.1 Transnational detection, early warning and alert systems

The Civil Protection Mechanism supports specific prevention and preparedness actions in support of ERCC and CECIS maintenance, contributing the development of *transnational detection, early warning and alert systems* of European interest, in order to enable a rapid response as well as to promote the inter-linkage between national early warning and alert systems and ERCC / CECIS. Some projects have the potential to respond to these needs, namely:

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
31	CIVIL PROTECTION	BESECURE	Best practice Enhancers for Security in Urban Environments	Urban, best practices, assessment tools, citizen, media
212	CIVIL PROTECTION	POP-ALERT	Population alerting	Communication, crisis, warning, disasters
275	CIVIL PROTECTION	SIAM	Security Impact Assessment Measures	Scenarios, Decision Support System
301	CIVIL PROTECTION	SUPER	Social sensors for secUrity Assessments and Proactive EmeRgencies management	Citizen, Media
97	CIVIL PROTECTION	ELASTIC	Enhanced Large scale Architecture with Safety and Security Technologies and special Information Capabilities	Security , Resilience, Natural & man-made disasters
16	CIVIL PROTECTION	AIRBEAM	AIRBorne information for Emergency situation Awareness and Monitoring	Awareness toolbox, aerial (unmanned) platforms, performance indicators, Restoring security/safety in case of crisis

2.1.2.2 Interoperability of modules

The CBRN Action Plan and Civil Protection Mechanism support efforts to improve the *interoperability of modules* and other *response capacities*, taking into account the best practices at the level of the Member States and at international level. Support projects are as follows:

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
87	CIVIL PROTECTION See also Section 2.3.1.1	DISASTER	Data interoperability Solution at Stakeholders Emergency Reaction	Emergency, Management, Interoperability, Stakeholders
167	CBRN, CIVIL PROTECTION See also Section 2.3.1.1	INNOSEC	INNOVation Management Models for SECurity Organizations	Security, Modelling, Innovation
168	CIVIL PROTECTION	INSEC	Increase Innovation and Research within Security Organisations	Security, End-Users, Innovation, Emergency
189	CIVIL PROTECTION	MOSAIC	Multi-Modal Situation Assessment & Analytics Platform	Decision Support, Detection, Mapping, Awareness Raising, Surveillance
103	CIVIL PROTECTION	EPISECC	Pan-European Information Space	Data interoperability, PPDR users, Security of Citizens, communication
155	CIVIL PROTECTION	IDIRA	Interoperability of data, procedures in large-scale multinational disaster response actions	Data Interoperability, procedures, large-scale disaster, Command & Control Structure, guidelines, Restoring security-safety in crisis
148	CIVIL PROTECTION	HI-GATE	Heterogeneous Interoperable Transportable GATEway for First-Responders	Secure Communication, communications interop. between First-Responder networks
243	CIVIL PROTECTION	SALUS	Security And Interoperability in Next Generation PPDR CommUnication InfrastructureS	Next generation communication network for PPDR
260	CIVIL PROTECTION	SECTOR	Secure EU Common informaTion space for the interOperability of first Responders and police authorities	Information Management, Analysis & identification of security systems, data set used by first respond. & police authorities
113	CIVIL PROTECTION See also section 2.4.2.2	EULER	EUropean software defined radio for WireLEss in joint secuRity operations	Interoperability, software defined radio (SDR) maturing ongoing efforts in EU, standardisation, implementation of SDR
134	CIVIL PROTECTION	FREESIC	Free Secure Interoperable Communications	Secure Communication, secure cost effective interoperability

246	CIVIL PROTECTION	SAVASA	Standards Based Approach to Video Archive Search and Analysis	Interoperability Information, Video archive search, Tracking analysis of CCTV footage
256	CIVIL PROTECTION, HFA	SECINCORE	Secure Cloud for Information, Communication, Resource Interoperability based on Pan-European Disaster Inventory	Information Management
229	CIVIL PROTECTION, LAW ENFORC.	RAPTOR	Rapidly deployable, gas generator assisted. inflatable mobile security kits for ballistic protection of European civilians against crime and terrorist attacks	Intelligence, Terrorism, Ballistic protection, Risk Analysis, Infrastructure, Extreme Weather
213	CIVIL PROTECTION,	PPDR-TC	Public Protection and Disaster Relief Transformation Center	Classification of reference services, PPDR

Within Horizon2020, a Pre-commercial Procurement (PCP) will be open via the **DRS-18-2015 topic** (2015 call) on "Interoperable next generation of broadband radio communication system for public safety and security" which will be a direct continuation of the FP7 research efforts.

2.1.3 Major-accidents hazards

Linked to risk assessment / prevention, the **Directive 2012/18/EU on major-accidents hazards involving dangerous substances** requires a *knowledge base about dangerous substances* under normal processing or handling conditions or in an unplanned loss of containment, their physical form, their inherent properties (dispersive behaviour) such as molecular mass and saturated vapour pressure, the maximum concentration of the substances in the case of mixtures, as well as health, physical and environmental hazard properties, including the dangerous substance's potential for causing physical, health or environmental harm, physical and chemical properties, health and physical hazard properties, environmental hazard properties and information about substance-specific operating conditions (e.g. temperature, pressure) under which the dangerous substance is stored. The directive requires operators to draw up a document setting out the major-accident prevention policy (MAPP) and to ensure that it is properly implemented. This is linked to the production of a safety report demonstrating that the MAPP has been put into effect, demonstrating that major-accident hazards and possible major-accident scenarios have been identified and that the necessary prevention measures have been taken to prevent such accidents and to limit their consequences for human health and the environment (including adequate safety/reliability in the design, construction, operation and maintenance of any installation, storage facility, equipment and infrastructure connected with its operation). The Directive also includes preparedness actions related to controls on the setting of new establishments, modifications of establishments (review, MAPP, new safety report), new developments including transport routes, locations of public use and residential areas in the vicinity of establishments which can be the source of or increase the risk or consequences of a major accident, and protection of areas of particular sensitivity or interest in the vicinity of establishments. To date, there are very few Secure Societies projects which cover environment-related hazards, namely:

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
265	ENV	SECURENV	Assessment of environmental accidents from a security perspective	Knowledge base, Threats, Environment
14	CIVIL PROTECTION	AF3	Advanced Forest Fire Fighting	UAV, Interception of non-cooperative vehicles , Legal requirement, Forest Fires

Within Horizon2020, the **DRS-15-2015 topic** (2015 call) on "Protecting potentially hazardous and sensitive sites/areas considering the multi-sectorial dependencies" will support research in support of the Directive 2012/18/EU.

2.1.4 Critical Infrastructure protection

2.1.4.1 Tools for risk assessment, smart grids

Linked to the EU Internal Security Strategy, the **European Programme for Critical Infrastructure Protection** is working with four main sectors (Eurocontrol, Galileo, Electricity Transmission Grid and European Gas Transmission Network), with update on security measures and synergies of *smart grids* with other sectors (ICT, water etc.), setting *tools for risk assessment*. Projects related to CIPs can also be found in the section 2.1.6.1.

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
15	ENERGY	AFTER	Framework for electrical power sysTems vulnerability identification	cascading, energy grids, major failures, methodologies, vulnerability, evaluation
23	ENERGY	ARGOS	Advanced pRotection of critical buildinGs by Overall anticipating System	Detection, Early Warning Technologies, power plants, gas pipes
114	ENERGY	EURACOM	EU Risk Assessment & COntingency planning Methodologies for interconnected energy networks	Energy supply, protection, resilience, interconnected energy networks, risk assessment & management
290	ENERGY	SPARKS	Smart Grid Protection Against Cyber Attacks	Protection, smart energy grids, Energy Transport
46	ENERGY	CIPRNET	Critical Infrastructure Preparedness and Resilience Research Network	Infrastructures Simulation, Critical Infrastructure
169	ENERGY	INSPIRE	INcreasing Security and Protection through Infrastructure Resilience	Critical Infrastructure Protection
50	ENERGY	COCKPITCI	Cybersecurity on SCADA: risk prediction, analysis and reaction tools for Critical Infrastructures	Cyber security, SCADA, Risk prediction, Critical Infrastructures

216	ENERGY	PRECYSE	Prevention, protection, REaction to CYber attackS to critical infrastru	Cyber attacks, Critical infrastructures, Capability
69	ENERGY	CRISALIS	CRITICAL Infrastructure Security AnaLysis	Critical infrastructure Security , SCADA protocols,
84	CIP	DESURBS	Designing Safer Urban Spaces	Design, Planning, Urban, Technology for safer crowded spaces
100	CIVIL PROTECTION	EMILI	Emergency Management in Large Infrastructures	Data management, complex event processing, knowledge representation, SCADA
147	CIP	HIPOW	Protection of Critical Infrastructures against High Power Microwave Threats	CI protection; robust architectures, risk management process
183	CIP	MICIE	Tool for systemic risk analysis and secure mediation of data exchanged across linked CI information infrastructures	CI Warning Information Network (CIWIN)
192	CIP	NI2S3	Net-centric information and integration services for security systems	Security systems integration, interconnectivity and interoperability: interconnected transport or energy infrastructures
219	CIP	PROGRESS	Protection and Resilience Of Ground based infRastructures for European Space Systems	Resilience of Global Navigation Satellite Systems, develop prototype Security Management Solution
235	CIP	RIBS	Resilient infrastructure and building security	Design areas, Built infrastructure protection, resilience to attack at the design stage
254	CIP	SECCRIT	Secure Cloud Computing for Critical Infrastructure IT	Cloud computing technologies with respect to security risks in sensitive environments, best practices for CI IT.
267	CIP	SEGRID	Security for smart Electricity GRIDs	Protection of smart grids against cyber-attacks
272	CIP	SESAME	Securing the European electricity Supply Against Malicious and accidental thrEats	Decision Support System for protection of EU power transmission, distribution, generation system
294	CIP	SPIRIT	Safety and Protection of built Infrastructure to Resist Integral Threats	Terrorism, Infrastructure, Protection
271	CIP	STRUCTURES	Strategies for The impROvement of critical infrastrUCTure Resilience to Electromagnetic attacks	Effects of electromagnetic (e.m.) attacks, intentional e.m. interference on CIs, Protection, detection
325	CIP	VITRUV	Vulnerability Identification Tools for Resilience Enhancements of Urban Environments	Design areas, Planning, (re)engineering of urban areas less vulnerable, more resilient to security threats,

Within Horizon2020, several topics concern Critical Infrastructure Protection, namely for the 2015 call, **DRS-12-2015** on "Critical Infrastructure "smart grid" protection and resilience under "smart meters" threats", **DRS-13-2015** linked to standardisation (but not only) on "Demonstration activity on tools for adapting building and infrastructure standards and design methodologies in vulnerable locations in case of natural or man-originated catastrophes", **DRS-14-2015** on "Critical Infrastructure indicator – analysis and development of methods for assessing resilience" and the SME instrument topic **DRS-17-2014/2015** on "Protection of urban soft targets and urban critical infrastructures". These research efforts will be complemented by an ethics/societal topic, namely **DRS-20-2014** dealing with "Improving protection of Critical Infrastructures from insider threats".

2.1.4.2 Stress tests

Risk management is taking stock of existing research and innovation activities conducted notably in the Environment (including climate change) of FP7, in particular the Group on Earth Observation (GEO) such as the Supersites Initiative and research on "stress tests" for critical infrastructures. The programme is furthermore enhancing links with management activities undertaken within the Union Civil Protection Mechanism.

2.1.5 Cross-border threats to health

Preparedness and response planning is an essential element for effective planning, *early warning* of and *combating serious cross-border threats to health*. Such planning should include in particular adequate preparedness of critical sectors of society, such as energy, transport, communication or civil protection which rely, in a crisis situation, on well-prepared public health systems that are also in turn dependent on the functioning of those sectors and on maintenance of essential services at an adequate level. In the event of a serious cross-border threat to health originating from a zoonotic infection, it is important to ensure the interoperability between health and veterinary sectors for preparedness and response planning. Two projects illustrate support given to prevention and preparedness in the health sector. Other projects related to health policies can be found in section 2.1.1.2.

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
26	HEALTH	ATHENA	AnThocyanin and polyphenol bioactives for Health Enhancement through Nutritional Advancement	Crisis management, Media, Social Networks
124	CBRN-E, HEALTH	EXPEDIA	EXplosives PrEcursor Defeat by Inhibitor Additives	Explosive precursors, first responders, medical staff, crime scene

Within Horizon2020, a major topic (particularly relevant in consideration of the Ebola crisis) has been published in the 2014 call, namely the **DRS-4-2014 topic** on "Feasibility study for strengthening capacity-building for health and security protection in case of large-scale pandemics". This is a first phase for a larger demonstration activity that should be anticipated for forthcoming calls.

2.1.6 Adaptation to climate change-related threats

Preparedness and adaptation planning to threats related to climate change are defined in **the EU Adaptation Strategy to Climate Change**, which calls for bridging the knowledge gap, in particular on damage and adaptation costs and benefits, regional and local-level analyses and risk assessments, tools to support decision-making, monitoring and evaluating past adaptation efforts. Links with Horizon2020 DRS topics have been designed in this respect. Support to Member States has been given by the Commission through the development of guidelines for formulating adaptation strategies in support of Member States efforts; in addition, LIFE funding covers issues of climate change adaptation, including cross-border management of floods, combating desertification and forest fires in drought-prone areas. To date, only one project deals with this issue within the Secure Societies Programme in relation to critical infrastructures. The bulk of the research is actually undertaken by the FP7 Environment programme.

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
170	CLIMATE ADAPTATION See also section 2.1.4.1	INTACT	On the Impact of Extreme Weather on Critical Infrastructures	Extreme weather, resilience enhancement, risk-based techniques, cost benefit analysis, crisis response, vulnerability assessment

Within Horizon2020, several topics are responding to research needs in support of the adaptation strategy, namely the **DRS-9-2014/2015 topic** on "Science and innovation for adaptation to climate change: from assessing costs, risks and opportunities to demonstration of options and practices", the **DRS-11-2015** on "Mitigating the impacts of climate change and natural hazards on cultural heritage sites, structures and artefacts" and a study on "Impact of climate change in third countries on Europe's security" (**DRS-22-2015**).

2.2 Detection / Surveillance / Control

2.2.1 CBRN-E

2.2.1.1 Detection technologies and methods

The **CBRN Action Plan** includes various requirements regarding detection, surveillance and control, for example requirements for appropriate measures to ensure that security plans/security management systems are in place in high-risk chemical facilities. Controls also concern the delivery of high-risk chemicals and equipment by chemical industry to legitimate users through appropriate customer qualification scheme proportionate to the risk and cost effective linked to the trading. The control requirements call for the consideration of creation of licensing scheme for certain high-risk chemicals in particular Chemical Warfare Agents (CWA) precursors, taking in account the Drug Precursors Regulation and CWC (Chemical Weapons Convention) licensing scheme. In the radiological and nuclear areas, controlling measures are focused on e.g. the causes and consequences of the loss of *control over radioactive sources*, on current status of used and disused sources in the EU and

transport patterns for legal uses of radioactive sources. These objectives are backed-up by the **new EU approach to the detection and mitigation of CBRN-E risks** (COM(2014) 247 final) in which shortcomings in detection technology (in particular gap analysis on the detection of CBRN materials) are addressed as well as practical trials in areas which laboratory environments cannot reproduce. It also clearly highlights the need to ensure that research takes security policy needs into account and help development programming so that research priorities reflect law enforcement and other end-user needs, as well as policy needs.

The new approach on CBRN-E detection and mitigation opens the doors for a *cross-sectoral overview of natural and man-made risks* the Union may face that the Commission must establish and update. In addition, building on existing networks, the Commission aims to explore together with Member States the establishment of a civil-military cooperation group in the areas of *detection technologies and methods* to counter improvised explosive devices, man-portable air defence systems (MANPADs) and other relevant (CBRNE) threats.

A wide range of research projects are supporting the CBRN-E Action Plan's objectives, namely:

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
33	CBRN-E	BONAS	BOmb factory detection by Networks of Advanced Sensors	Sensors network, IED devices
101	CBRN-E	EMPHASIS	Explosive Material Production (Hidden) Agile Search and Intelligence System	Detection of illicit production of explosives & IEDs in urban areas
68	CBRN-E, LAW ENFORCEMENT	CRIM-TRACK	Sensor system for detection of criminal chemical substances	identification of illegal drugs, drug precursors, home-made explosives
199	CBRN-E	OPTIX	Optical technologies for identification of explosives	Explosives, Detection, transportable system
236	CBRN-E	ROSFEN	Rapid On-site Forensic Analysis of Explosives and Narcotics	Advanced forensic methods, Detection of high-explosive primer charge
242	CBRN-E	SALIENT	Selective Antibodies Limited Immuno Assay Novel Technology	Real-time analysis, trace levels of explosives, toxic chemicals and drugs
49	CBRN	COCAE	Cooperation across Europe for CdZnTe based security instruments	Cutting-edge portable radiation detectors
52	CBRN-E	COMMONSENSE	Development of a Common Sensor Platform for the Detection of IED "Bomb Factories"	multivariate sensing platform that detects manufacturing facilities for IEDs, Explosives
141	CBRN-E	HANDHOLD	HANDHeld Olfactory Detector	CBRNE modular sensor platform
160	CBRN-E	IMSK	Integrated Mobile Security Kit	CBRNE mobile system for VIP protection, rapid deployment at venues & sites

191	CBRN	MULTISENSE CHIP	The lab-free CBRN detection device for the identification of biological pathogens on nucleic acid and immunological level as lab-on-a-chip system applying multisensor technologies	On-site bio-terrorism detection kit
251	CBRN	SCINTILLA	Development of detection capabilities of difficult to detect radioactive sources & nuclear materials	CBRN Protection, detection capabilities of R, N sources, nuclear materials
315	CBRN, HEALTH	TWOBIAS	Two stage rapid biological surveillance and alarm system for airborne threats	B-detection. Very fast alerting
181	CIVIL PROTECTION	LOTUS	Localisation of Threat Substances in urban areas	Localisation & tracking of components of substance production
34	CIVIL PROTECTION	BOOSTER	BiO-dOSimetric Tools for triagE to Responders	New bio-dosimetric tools, Nuclear radiation Detection Tools
110	CIVIL PROTECTION	ESS	Emergency support system	Detection, data collection technologies into unique platform
188	CBRN	MODES_SNM	Modular detection system for special nuclear material	Development of detection capabilities of difficult to detect radioactive sources and nuclear materials
323	CIVIL PROTECTION	VIKING	Vital infrastructure, networks, information and control systems management	Networked control systems
32	HEALTH See also section 2.2.2	BIO-PROTECT	Ionisation-based detector of airborne bio-agents, viruses and toxins for fast-alert and identification	Spore detection, pathogens, toxins, viruses, fast-alert, easy-to-use device
55	HEALTH	CONPHIRMER	Counterfeit Pharmaceuticals Interception using Radiofrequency Methods in Realtime	Portable, easy-to-use sensor
56	TRADE	CONSORTIS	Concealed Objects Stand-Off Real-Time Imaging for Security	Real-time detection, security screening, EU mass-transit markets

A further research effort on CBRN detection within Horizon2020 will be through the **DRS-2-2014 topic** on "Tools for detection, traceability, triage and individual monitoring of victims after a mass CBRN contamination and/or exposure". In the forensics area, the **FCT-3-2015 topic** on "Mobile, remotely controlled technologies to examine a crime scene in case of an accident or a terrorist attack involving CBRNE materials" will also support the CBRN-E Action Plan for the detection part.

2.2.1.2 Testing and certification, quality assurance

Trialling, *testing and certification schemes* for CBRN detection in the EU are also promoted as key actions in the plan, in particular regarding technical requirements necessary for the sampling and detection of CBRN materials (according to the field of applications of the devices). It also supports the exchange of good practices and methodologies for *quality assurance* (including criteria for *method validation*) related to CBRN detection in the Member States, the establishment of an EU

validation and certification scheme based on continuing quality assurance mechanisms and an EU-wide trialling scheme to evaluate the quality of both detection tools and systems in practical field operations. The new CBRN-E approach is more specific as regards the support of further short-term trials for practitioners in order to improve detection during future sport, cultural and other large-scale events; it also further supports CBRN-E research, testing and validation activities and progress towards appropriate detection standards adapted to each type of environment, including projects such as ERNCIP (European Reference Network for Critical Infrastructure Protection) and continues to support ITRAP Phase 2 assessing the feasibility of integrating radiological and nuclear risks and explosives detection in the same device, and helping Member State's laboratories to obtain accreditation in the detection of radiological and nuclear risks, evaluate new detection equipment and enabling the definition of European or international standards. Various FP7 projects have contributed to the certification / testing goals:

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
66	CBRN-E	CREATIF	CBRNE related testing and certification facilities	Networking, testing and certification facilities
105	CBRN See also section 2.4.2.1	EQUATOX	Establishment of Quality Assurances for the Detection of Biological Toxins of Potential Bioterrorism Risk	Network of experts, Good practices, Critical gaps, Detection technology
186	LAW ENFORCEMENT	MISAFE	Development and Validation of Microbial Soil Community Analyses for Forensics Purposes	Crime Prevention, forensic methods and equipment
184	LAW ENFORCEMENT	MIDAS	The development and validation of a rapid millifluidic DNA analysis system for forensic casework samples	DNA analysis, validation

2.2.2 Cross-border threats to health

Within the Decision 1082/2013 **on Cross-border threats to health**, exigency of comparable and compatible data information, as well as relevant information concerning the progression of epidemic situations (trends) and unusual epidemic phenomena, are required in relation to the Network of epidemiological surveillance, operated and coordinated by ECDC. The Decision also requests case definitions concerning communicable disease and health issue subject to epidemiological surveillance in order to ensure the comparability and compatibility at Union level of the collected data. To date there is only one project looking at border threats, focusing on the food chain security:

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
284	FOOD SAFETY, HEALTH	SNIFFER 2	Securing the food chains from primary production and animal feeds to consumer-ready food against major deliberate, accidental or natural CBRN contamination	Securing food chains from CBRN agents

2.2.3 Water-related threats

Water security threats are directly related to the risks of quality degradation, either from an user's viewpoint (quality of drinking water) or ecological standpoint (ecological or chemical water status). While intentional degradation of water quality is not specifically covered by EU water policies, the quality deterioration is nevertheless regulated by the Water Framework Directive and its parents directives dealing with drinking water, priority substances and groundwater. Extreme hydrometeorological events are also considered though the Flood Directive and the Water Scarcity and Drought Communication. Technological needs regarding detection / surveillance concern all these regulations, in particular with regard to risk assessment, trend studies and monitoring. Several research projects are responding to these needs, namely:

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
173	CBRN, ENV	ISIS	Integrated intelligent sensor system for improved security of water supply	Advanced monitoring, drinking water networks
262	CBRN, ENV, HEALTH	SECUREAU	Security and decontamination of drinking water distribution systems following a deliberate contamination	sensors, water contamination, urban & rural water distribution networks
240	CBRN, ENV, HEALTH	SAFEWATER	Innovative tools detection & mitigation of CBRN related contamination events of drinking water	Detection, CBRN contamination, drinking water
309	CBRN, ENV	TAWARA_RTM	Tap WATER RAdioactivity Real Time Monitor	Real-time monitoring, radioactive contamination in tap water

2.2.4 Critical Infrastructures

The **European Programme for Critical Infrastructure Protection** (see section 2.1.4) includes technical requirements related to detection, some of which are covered by projects below:

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
328	CIP	WSAN4CIP	Wireless sensor networks for the protection of critical infrastructures	Wireless Sensor technology, CIs protection
28	CIP	BASYLis	moBile, Autonomous and affordable SYstem to increase safety in Large unpredictable environmentS	CIPs - refugee camp protection, smart sensing platform
92	CIP	ECOSSIAN	European CONTROL System Security Incident Analysis Network	Network, Critical Infrastructures, Control System
154	CIP	IDTECT 4ALL	Novel intruder detection & authentication optical sensing technology	Sensor technologies, CI protection

316	CIPs	UAN	Underwater acoustic network	Wireless sensor network, protection of off-shore & coastline CIs
244	LAW ENFORC.	SAMURAI	Suspicious & Abnormal behaviour Monitoring Using a network of cAmeras for situation awareness enhancement	Innovative surveillance system, monitoring interior & surrounding areas of CI site
81	CIVIL PROTECTION See also Section 2.1.4.1	DEMASST	Security of critical infrastructures related to mass transportation	CIs Security, mass transportation, threats of terrorism, Algorithms detecting pre-defined threat, real-time evaluation

2.2.5 Customs policies

The Regulation 952/2013 highlights the need to develop and test detection technologies, in particular *Non-Intrusive Inspection equipment and radiation detection* for conducting inspections. The approach is clearly cross-border, not only within the EU but also concerning third countries, e.g. the EU-US joint statement of *Supply Chain security* calls to extend and intensify cooperation on technology (including R&D, sharing best practices, opportunities for common certification practices and contributing to setting international standards).

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
179	CUSTOMS, LAW ENFORC., BORDER CONTROL	LINKSCH	Grasping the Links in the Chain	Forensics, Illicit-drug control measures
90	CBRN-E, CUSTOMS, BORDER CONTROL	DOGGIES	Detection of Olfactory traces by orthoGonal Gas identification technologies	Detection of hidden persons, illegal substances, drugs & explosives
75	CUSTOMS, BORDER CONTROL	CUSTOM	Drugs and Precursor Sensing by Complementing Low Cost Multiple Techniques	Chemical identifications in custom offices, truck inspection, cars, containers, people, baggage
283	CUSTOMS, BORDER CONTROL	SNIFFER	A bio-mimicry enabled artificial sniffer	Border security at airports, illegal trafficking of all kinds (drugs, tobacco, illegal immigration...), terrorist acts
285	CUSTOMS, BORDER CONTROL	SNIFFLES	Artificial sniffer using linear ion trap technology	Detection of illegal substances at crossing points on land, airports, seaports
86	CUSTOMS, BORDER CONTROL	DIRAC	rapid screening and identification of illegal Drugs by IR Absorption spectroscopy and gas Chromatography	Detection of illicit substances, Border check
286	CUSTOMS, LAW ENFORC.	SNOOPY	Sniffer for concealed people discovery	Artificial sniffer system, customs/police inspection purposes, freight containers control

2.2.6 Surveillance

Broadly speaking, surveillance is a generic term which concerns various policies in the disaster risk and crisis management areas. The table below provides a snapshot of projects related to it:

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
327	CBRN	WIMAAS	Surveillance in Wide Maritime areas, air vehicles	Airborne building block of maritime surveillance
162	CIVIL PROTECTION, LAW ENFORC.	INDECT	Intelligent information system supporting observation, searching and detection for security of citizens in urban environment	Intelligence against Terrorism, Security of citizens, automatic threat detection, urban observation system
22	TRANSPORT	ARENA	Architecture for the Recognition of threats to mobile assets using Networks of multiple Affordable sensors	Flexible surveillance system, recognition of threats on mobile critical assets (trucks, trains, vessels, oil rigs)
234	CBRN	REWARD	REal-time Wide-Area RaDiation Surveillance System	Mobile system for real-time, wide-area radiation surveillance
280	LAW ENFORCEMENT	SMART	Scalable Measures for Automated Recognition Technologies	Ethics Justice, smart surveillance systems, data protection, integrity
54	BORDER CONTROL, HEALTH	CONCORDE	Decision Support System improving preparedness & interoperability of medical services during emergency which affects health of population at local, regional or cross-border level	Surveillance, EU external borders, Decision Support System, preparedness & interoperability of medical services during an emergency
247	CRIME	SAVELEC	Safe control of non-cooperative vehicles through electromagnetic means	Control, Crime Forensic
281	CRIME	SMARTPREVENT	Smart Video-Surveillance System to Detect and Prevent Local Crimes in Urban Areas	Video-surveillance systems, urban scenarios
10	CRIME	ADABTS	Automatic Detection of Abnormal Behaviour and Threats in crowded Spaces	Detection, threat behaviours counter-terrorism
12	LAW ENFORCEMENT	ADVISE	Advanced Video Surveillance archives search Engine for security applications	Security, surveillance-footage, archive systems
24	DUAL, BORDER CONTROL	ARGUS 3D	AiR Guidance and Surveillance 3D	3D mapping, surveillance flying objects, Primary Radar Surveillance, alert level

2.3 Response and recovery

2.3.1 CBRN-E

2.3.1.1 Emergency response, threat assessments

The **CBRN Action Plan** requires that capacities are in place to efficiently respond to incidents involving CBRN materials and recover from them as quickly as possible. One of the goals is to improve emergency planning, i.e. ensuring that CBRN risks are appropriately taken into account in *emergency response plans* on the basis of *risk and threat assessments*.

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
8	CBRN, CIVIL PROTECTION	ACRIMAS	Aftermath Crisis Management System-of-systems Demonstration	Crisis management, Scenarios, Standards, Needs assessments, Roadmap, Restoring security, safety in crisis
44	CBRN, CIVIL PROTECTION	CATO	CBRN crisis management: Architecture, Technologies and Operational Procedures	CBRN crisis management, Toolbox, resilience, Restoring security, safety in case of crisis
214	CBRN, CIVIL PROTECTION	PRACTICE	Preparedness and Resilience against CBRN Terrorism using Integrated Concepts and Equipment	Toolbox, integrated system for coordinated response to CBRN terrorist attack
27	CBRN-E	AVERT	Autonomous Vehicle Emergency Recovery Tool for CBRN threat	CBRN threat, contamination, suspect vehicles
163	CIVIL PROTECTION	INDIGO	Innovative Training & Decision Support for Emergency operations	Support to response, transboundary crises & disasters
208	CIVIL PROTECTION	PEACE	IP-based emergency applications and services for next generation networks	Emergency management framework
226	ETHICS	PSYCRIS	PSYcho-Social Support in CRISis Management	Crisis Management, Human behaviour

2.3.1.2 Criminal investigations and forensics

The CBRN Action Plan promotes the improvement of the capacity to conduct *criminal investigations*, e.g. through the analysis of potential problems in the transport of CBRN contaminated evidence across borders within the context of criminal investigations and emergency situations in general. Linked to this Eurojust and a network of Forensic Science Institutes develop recommendations to ensure that collected *forensic evidence in a CBRN crime scene* is of a high enough quality to be admissible in court proceedings in the EU Member States, with establishment of laboratory practices which can be used during legal prosecutions to be coordinated by Eurojust, Europol, The European Network of Forensic Science Institutes and the JRC Institute for Trans Uranium elements. These goals

are supported by enhancing and supporting cooperation between forensic laboratories, reference and specialised laboratories, including those equipped for measurement/analysis of CBRN materials.

Responses to CBRN emergencies are also linked to the establishment of processes in order to develop generic scenarios illustrating the law enforcement responses to a potential event involving CBRN materials at the national and the international level, with identification of the relevant stakeholders. In the radiological sector, the plan requires to assess the adequacy of existing platforms for international exchange of information during radiological emergencies and build on and integrate them if necessary, with consideration to their (scenario-based) applicability to all radiological and nuclear incidents of concern and efforts to assess the possibilities of streamlining alert messages through different rapid alert systems.

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
150	LAW ENFORCEMENT	HYPERION	Hyperspectral imaging IED and explosives reconnaissance system - develop, test a system concept for on-site forensic analysis of an explosion	on-site forensic analysis of explosion, IED, reconnaissance system

2.3.1.3 Decontamination/remediation capacity, decision-support systems

Strengthening decontamination and remediation capacity is another goal of the CBRN Action Plan. The JRC is assessing modelling tools with modelling experts and emergency response personnel in order to assess practical requirements for modelling tools with the aim to identify research needs. Available means for decontamination of affected population, environment and infrastructure are also assessed, as well as their capacity to deal with mass casualties with reference to CBRN materials with different cultural and social contexts. In the RN sector, further investigations are undertaken about the possibility of using RODOS (Real-time On-line Decision Support system for off-site emergency management in Europe) and ARGOS (Accident Reporting and Guidance Operational System) or other *Decision Support Systems* to address CBRN releases, e.g. radiological dispersal devices in events such as the polonium incident in 2006 as well as development of transport and dispersion models for large buildings, e.g. airports, railway stations and underground systems.

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
63	CBRN, CIVIL PROTECTION	COUNTERFOG	Device For Large Scale Fog Decontamination	CBRN attack, rapid response system, Decontamination System
135	CBRN, CIVIL PROTECTION	FRESP	Advanced first response respiratory protection	Protecting well-being of first responders, safety in case of crisis
156	CBRN, CIVIL PROTECTION	IF REACT	Improved First Responder Ensembles Against CBRN Terrorism	provide next generation of protective clothing for first responders

190	CBRN, CIVIL PROTECTION, HEALTH	MULTIBIODOSE	Multi-disciplinary biodosimetric tools to manage high scale radiological casualties	assessing radiation exposure to general population, triage of victims
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2.3.2 Civil protection

The **Civil Protection Mechanism** and the ERCC provides assistance request by Member States in case a disaster occurs within the Union or is imminent. This implies collecting validated information without delay for dissemination to the Member States and making recommendations, fully respecting subsidiarity, Member States competences and responsibility. When a disaster occurs outside the Union, coordinated actions with international organisations are integrated with the overall coordination provided by the UN Office for the Coordination of Humanitarian Affairs (OCHA) which has the leading role (supporting actions, maximizing synergies, seeking complementarity, avoiding duplication and gaps). Technical issues relate to support to common assessment of disaster situations and needs, providing technical advice and/or facilitating the coordination on site, sharing relevant assessments and analyses with relevant actors.

2.3.2.1 Response to disasters

A specific action in the Civil Protection Mechanism is the promotion of the *consistency in the response of disasters* (networking), and the support to coordination of operational organisations (OCHA, Member States). A range of projects provide support to emergency responses, namely:

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
35	CIVIL PROTECTION See also Section 2.1.2.2	BRIDGE	Bridging resources and agencies in large-scale emergency management	Interoperability of data, systems, tools & equipment, large-scale emergency
36	CIVIL PROTECTION See also Section 2.1.2.2	C2-SENSE	Interoperability Profiles for Command/Control Systems and Sensor Systems in Emergency Management	Interoperability of information & meta-data exchange amongst sensors, control systems
58	CIVIL PROTECTION	COPE	Common Operational Picture Exploitation	integrate COTS solutions, novel technologies for step information flow change to first responder in command chain
74	CIVIL PROTECTION See also Section 3.2	CRISYS	Critical Response in Security and Safety Emergencies	Roadmap to demonstrate better disaster response, Aftermath Crisis Management
145	CIVIL PROTECTION See also Section 3.2	HELP	Enhanced Communications in Emergencies by Creating & Exploiting Synergies in Composite Radio Systems	Aftermath crisis management, roadmap, wireless communication capabilities
273	CIVIL PROTECTION	SGL FOR USAR	Second generation locator for urban search and rescue operations	Integrated specialist search & rescue system

109	CIVIL PROTECTION	E-SPONDER	holistic approach towards the development of the first responder of the future	robust platform, ad-hoc services, facilities & support for first responders at crisis scenes
288	CIVIL PROTECTION	SOTERIA	Online and Mobile Communications for Emergencies	Citizen Media, toolbox communication technologies
165	CIVIL PROTECTION	INFRA	Innovative Novel First Responders Applications	Personal technol., secure emergency manag. system, first responders
137	CIVIL PROTECTION	GERYON	Next generation technology independent interoperability of emergency services	emergency inter-network system of connecting first responders. communication systems, mobile networks by standardized interfaces
89	CIVIL PROTECTION	DITSEF	Digital innovative technologies for security, efficiency of first responders operation	Safety of First Responders, optimal information gathering
291	CIVIL PROTECTION	SPARTACUS	Satellite Based Asset Tracking for Supporting Emergency Management in Crisis Operations	Satellite Based Asset Tracking for Supporting Emergency Management in Crisis Operations
292	CIVIL PROTECTION, HEALTH	S(P)EEDKITS	Rapid deployable kits as seeds for self-recovery	Rapid deployment of kits, shelters, facilities and medical care resources following major disaster
83	CBRN	DESTRIERO	DEcision Support Tool for Reconstruction and recovery and for the IntEroperability of international Relief units in case Of complex crises situations, including CBRN contamination risks	Post-crisis assessment, recovery planning, remote sensing, mobile devices
159	HEALTH, CIVIL PROTECTION	IMPRESS	IMproving Preparedness and Response of HHealth Services in major criseS	Tools in case of large disasters, Emergency health operations, medical services
144	CIVIL PROTECTION, TRANSPORT	HELI4RESCUE	Heavy Payload Helicopter for Last Mile Rescue	Air transport systems, crisis sites, EU Civil Security users
228	CIVIL PROTECTION, CLIMATE	RAIN	Risk Analysis of Infrastructure Networks in Response to Extreme Weather	Extreme Weather, Risk Analysis, Infrastructure, Design areas
197	CIVIL PROTECTION	OPSCIC	Operationalising Psychosocial Support in Crisis	Psycho social support in Crisis Management
82	CIVIL PROTECTION	DESSI	Decision Support on Security Investment	Security, Decision Support, Civilian use of drones, search and rescue
78	CIVIL PROTECTION	DARIUS	Deployable SAR Integrated Chain with Unmanned Systems	solutions to adapt unmanned systems to SAR operations needs, constraints
125	CIVIL PROTECTION, LAW ENFORC.	FASTID	FAST and efficient international disaster victim Identification	Police database, identification of missing persons, Restoring security, safety in crisis

2.3.2.2 Planning of response operations, scenario building

The Commission and the Member States undertake joint actions to improve the *planning of disaster response operations* under the Union mechanism, including through *scenario-building* for disaster response, asset mapping and the development of plans for the deployment of response capacities. Several projects are contributing to provide knowledge and tools in this area, namely:

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
41	CIVIL PROTECTION	CASCEFF	Modelling of dependencies and cascading effects for emergency management in crisis situations	Cascading effects, supply chain, incident management, first responders, response, effect simulation, media role
276	CIVIL PROTECTION	SICMA	Simulation of crisis management activities - improving decision-making capabilities through integrated suite of modelling, analysis tools providing insights into collective behaviour of whole organisation in response to crisis scenarios	Intelligent decision support, integrated suite of modelling, analysis tools
287	CIVIL PROTECTION	SNOWBALL	deep analysis of cascading effects, development of methods to anticipate them	preparedness, response capacities of decision-makers, emergency planners, first responders in large disasters
174	CIVIL PROTECTION	ISITEP	Inter System Interoperability for Tetra-TetraPol Networks	Interoperability between first responder communication systems
48	CIVIL PROTECTION	COBACORE	Community Based Comprehensive Recovery	Damage recovery, health, social, economic, other critical humanitarian needs
231	CIVIL PROTECTION	RECONASS	Reconstruction and REcovery Planning: Rapid and Continuously Updated CONstruction Damage, and Related Needs ASSEssment	Post-crisis needs assessment tool, damage mapping
120	CIVIL PROTECTION	EVACUATE	A holistic, scenario-independent, situation-awareness and guidance system for sustaining Active Evacuation Route for large crowds	Crowd evacuation operations
153	CIVIL PROTECTION	ICARUS	Integrated Components for Assisted Rescue and Unmanned Search operations	Integrated solutions for search, rescue teams after disaster; unmanned SAR tech. for detecting, locating, rescuing humans
161	CIVIL PROTECTION	INACHUS	Technological and Methodological Solutions for Integrated Wide Area Situation Awareness and Survivor Localisation to Support Search and Rescue Teams	Survivor Localisation, Urban Search, Rescue Operations
172	CIVIL PROTECTION	ISAR+	Online and Mobile Communications for Crisis Response and Search and Rescue	Citizen Media, violent radicalization, Use of new communication/social media in crisis situations

305	CIVIL PROTECTION, HFA	TACTIC	Large-scale & /or cross-border disasters	Disaster Management
136	TRANSPORT	GAMMA	Global ATM security management	Air traffic management vulnerabilities, new scenarios created by Single EU Sky program,
238	CRIME	SAFE-COMMS	Counter-terrorism crisis communications strategies for recovery and continuity	Crisis communication, Counter-terrorism , recovery and continuity
37	CIVIL PROTECTION	CAERUS	Evidence based policy for post crisis stabilization	Post crisis stabilization, humanitarian, transitional situations, policies,

2.3.3 Cross-border threats to health

The Decision 1082/2013 promotes cooperation among the Member States and the commission in order to share best practice and experience in response planning. This includes coordination structures for cross-sectoral incidents, the description of the business continuity plans, measures or arrangements aimed at ensuring the continuous delivery of critical services and products. On a more technical ground, the decision requires the establishment of early warning and response system (EWRS) for alerting, assessing public health risks and determining the measures that may be required to protect public health in consideration of relevant information such as e.g. type and origin of the agent, means of transmission or dissemination, toxicological data, detection and confirmation methods. The above goals takes into account the European Food Safety Authority (EFSA) Regulation 178/2002 (procedures in matter of food safety) and the recognition of health emergency situations by the EC in relation to epidemics of human influenza considered to have pandemic potential and other cases of international concern causing serious cross-border threat to health at Union level.

The CBRN Action Plan promotes strengthening of *countermeasure capacity* also in the health sector, in particular through the assessment of required amounts and types of medical countermeasures in case of an incident involving high-risk CBRN materials, of medical resources for the decontamination of victims, transport and of required countermeasures in the form of technical CBRN equipment, and of the possibility of *sharing medical counter-measures* across borders in the case of an incident.

In addition, the recommendation is given to proceed with the collection and dissemination of good practices among the Member States concerning the ways in which medical staff and other first responders can receive *guidance on dealing with large scale CBRN emergencies* and a rapid increase of the number of victims. Various project support these goals:

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
204	HEALTH	PANDHUB	PANDHUB	Integrated toolbox to aid transport operators, pandemic & dangerous pathogen response plans

227	HEALTH	PULSE	Platform for European Medical Support during major emergencies	Medical Support, Emergencies
274	HEALTH	S-HELP	Securing Health Emergency Learning. Planning	Health Services, Response capacities

2.3.4 Dual Use

Technology development have always benefited from flows from defence to civil or vice-versa. This interesting cross-fertilisation is however limited by several factors including the legitimate confidentiality that must surround both sensitive defence applications, but also cutting-edge civilian development bringing a competitive advantage. Few technologies are per se military or civilian, very often innovative technologies can find applications in various sectors: civil, space and defence. So there is a need to understand the multipurpose nature of technologies and to make the best use of the limited resources to develop them in a coordinated manner to the benefit of all potential users. Efforts should be taken for the future European Research & Innovation Framework Programmes to have a more comprehensive approach of key multi-purpose technologies, with an explicit objective of cross-fertilization between defence and civil research. In order to find dual-use synergies, since a few years EDA and the Commission are coordinating research under the so called European Framework Cooperation, especially for CBRN protection research. This has proven successful. Calls are coordinated and information is exchanged as far as the legal frameworks allow. Expertise in EDA and Commission has been shared as much as possible: the Commission is part of the management committee of the EDA Joint Investment Programme on CBRN Protection and EDA is often represented in Advisory boards of CBRN related projects under the Commission Research Framework Programmes (FP7 and H2020).

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
79		D-BOX	Demining tool-BOX for humanitarian clearing of large scale area from anti-personal landmines and cluster munitions	Explosives, Demining tools
312		TIRAMISU	Toolbox Implementation for Removal of Anti-personnel Mines, Submunitions and UXO	Humanitarian clearing, demining tools

2.4 Horizontal features

2.4.1 Demonstration, capacity-building

Two large-scale demonstration projects form the pillars of the development of the Community of Users described in this paper, these are the EDEN and DRIVER projects: The EDEN (End-User Driven Demo for CBRNe) currently represents the biggest research effort ever made in the CBRNe area, with the primary objective to provide solutions to improve CBRNe resilience and allow enhanced interoperability between CBRNe operators to improve interoperability and effectiveness. The DRIVER project is the largest demonstration project in the area of Crisis Management funded under the 7th Framework Programme. It is built on the same principle of the EDEN project, i.e. developing synergies among crisis management projects and offering them pilot sites to demonstrate new methods/technologies. While EDEN is essentially focusing on CBRN-E, DRIVER focuses on natural catastrophes, hence both projects are complementary.

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
94	CBRNE	EDEN	End-user driven DEmo for cbrNe	Toolbox of Toolboxes, preparedness, crisis response, recovery phases
91	CIVIL PROTECTION	DRIVER	DRiving InnoVation in crisis management for European Resilience	Crisis Management, Research Tools, Demonstration

2.4.2 Standardisation

Standardisation supports a range of EU policies and is closely related to research developments (pre-, co- and post-normative research). The recent Mandate 487 report prepared by CEN has identified a number of needs and recommendations in the CBRN-E, Crisis Management and Border Control areas, which resulted in the selection of priorities by the Commission. These were dealt with in two different ways for CBRN-E and Crisis Management: (1) the development of Workshop Agreements within the framework of expert groups coordinated by the European Reference Network for CIP (ERN-CIP); and (2) mandates to CEN for the development of selected standards. Besides these formal activities, research projects also include standardisation components as described below.

Within Horizon2020, the **DRS-6-2015 topic** on "Addressing standardisation opportunities in support of increasing disaster resilience in Europe" will complement on-going activities (see above) on standardisation (derived from M487 recommendations) and discuss gaps and perspectives for future standardisation developments.

2.4.2.1 CBRN-E

Key standardisation goals are identified in the **CBRN Action Plan**, in particular the requirement to make a comprehensive overview of relevant regulations or standards at hand and their relevance to biosecurity and biosafety, and to consider implementation of the CEN Workshop Agreement CWA 15793 and WHO Laboratory Biosecurity Guidance. The plan also promotes the development of a

coherent set of minimum technical *detection standards* (including within the context of border monitoring) based on scenarios, user requirements and risk and threat assessments while building on existing work, in particular the engagement of the private sector, especially ESOS (CEN, CENELEC, ETSI) and consideration of forensic requirements for evidence as well as legal metrology requirements. This is complemented by the requirement to develop *reference materials of biological agents* for both clinical and environmental samples (according to internationally accepted standards) in order to achieve *quality assurance in detection*. Finally, the plan also requires the setting of minimum requirements for sampling, detection, identification and monitoring of pathogens and toxins within a civilian security context at EU level and make these available to the private sector, with due consideration of confidentiality. The CBRN Action plan also requires the development of guidelines based on existing standards for CBRN training of Explosive Ordnance Disposal (EOD) specialists, including standards developed by EDA to the non-military context.

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
278	CBRN	SLAM	Standardisation of laboratory analytical methods	Standardisation of CBRN detection & identification

2.4.2.2 Civil Protection

In the sector of **civil protection**, border monitoring is required, with a focus on radiation and nuclear detection, and reinforced by training programmes on RN detection and progress towards *standardisation*. The establishment of the European Emergency Response Capacity (EERC) is linked to quality requirements (based on international standards where such standards exist) defined by the Commission for the response capacities that Member States will commit. It is related to a process for certification and registration of the Member States response capacities made available to the EERC. Potentially significant strategic response capacity gaps in the EERC are identified with help by the Commission to Member States consortia.

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
73	CIVIL PROTECTION	CRISP	Evaluation and certification schemes for security products	Standardisation, certification schemes, taxonomy
143	CIVIL PROTECTION	HECTOS	Specifying industrial standards for explosives detection & person-scanning technology	Certification and Testing of Security Products

2.4.2.3 Climate Change Adaptation

In the framework of the EU **Adaptation to climate change**, a mandate is given to CEN to map *industry-relevant standards* in the area of energy, transport and buildings and identifying standards to be revised for better inclusion of adaptation considerations.

2.4.3 International cooperation

2.4.3.1 Exchanges of good practices, communication, early warning

The CBRN Action Plan promotes international cooperation (*exchange of good practices with third countries and international organisations*) and exchange of information on participation of MS and the Commission in international CBRN-related fora for the purpose of better coordinating their positions in order to ensure that common EU objectives are achieved. It also promotes communication with the public with a view to encouraging the spread of good practices concerning *communication strategies* and for raising public awareness for the generic risks of high-risk CBRN materials, in particular for the public living close to facilities holding any high risk CBRN materials. Linked to communication goals, the plan supports the development of improved *information tools for CBRN security* (web portal in which good-practices on CBRN security could be shared, using as far as possible existing systems) as well as *Early Warning Systems* (EWS) for incidents related to high risk CBRN materials.

2.4.3.2 Explosives

The new EU approach to the detection and mitigation of CBRN-E risks also promotes International cooperation: in particular in the EU-US explosives experts context, by sharing lessons learned from implementing the relevant *chemical precursors regulations* and other control measures, look at new ways of sharing information and best practices, organise pilot projects providing technical assistance and training in third countries, for instance on vulnerability assessments with a view to help build their capacity, develop and share information on *explosives detection* dog programmes with third countries who are interested in such exchanges (Canada, US and others)

2.4.3.3 Critical infrastructures

International cooperation is done within the **European Programme for Critical Infrastructure Protection** via the Instrument for Stability (COM(2011) 845 final), with exchange of best practices, methodologies, analysis, lessons between the EU, U.S. and Canada, including the issue of global *cascading effects*. Via the CIPS funding instrument (DG HOME): expert knowledge and deeper understanding of critical infrastructures, with outputs such as CIP good practices manual for policy makers (JLS/2009/CIPS/AG/C1-036), improved knowledge of effective critical infrastructure protection and facilitating exchange of best practices (JLS/2008/CIPS/011).

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
271	CIP	SERSCIS	Semantically enhanced resilient and secure critical infrastructure service	Adaptive service-oriented technologies, secure, resilient systems

2.4.4 Other horizontal features

2.4.4.1 Experts fora, networks, communication

Expert fora and networks are operated in all sectors in different forms, either at formal level (Member States Committees), within research projects (e.g. Advisory Boards) or ad-hoc groups. The **CBRN Action Plan** calls for the establishment of fora for EU level dialogue between relevant authorities in the field of CBRN risk-management and facilitate exchanges of best practices through regional/EU level meetings. Overall, the plan promotes the improvement of information exchange. The new EU approach to the detection and mitigation of CBRN-E risks also promotes lead country initiatives and work with industry: enhancing the dialogue with the private sector – such as operators of facilities handling CBRN-E materials, equipment manufacturers and security services providers, through (1) proactive engagement with stakeholders and organisation of meetings with Member States representatives on CBRN-E affairs to better handle prevention, preparedness and response measures, (2) set-up a platform for the exchange of information between the Commission, Member States and other stakeholders and organise regular workshops on the research needs of end-users.

Several projects are developing networks and experts fora, namely:

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
311	HORIZONTAL	THE HOUSE	Enhancing European Coordination for National Research Programmes in the Area of Security at Major Events	Assistance to EU countries hosting Major Event through European House
268	HORIZONTAL	SEREN & SEREN2	Security research NCP network, phases 1 and 2	Raising knowledge, enhancing cooperation
118	HORIZONTAL	EU-SEC II	Coordinating national research programmes and policies on security at major events in Europe	Network, Major Event security, planning standards
62	CIVIL PROTECTION	COSMC	Contribution of Social Media in Crisis Management	Citizens Media Security, Social networks
266	CIVIL PROTECTION	SECUREPART	Increasing the engagement of civil society in security research	Security, Civil Society
65	CIVIL PROTECTION 2.1.2 Civil	CPSI	Changing perceptions of security and interventions	Citizen, Media, tools, Methodology, data warehouse,
232	CIVIL PROTECTION	REDIRNET	Emergency Responder Data Interoperability Network	Information Management, Analysis & identification of security systems & data set used by first responders, police , interoperability of communications

Other projects are dealing more specifically with communication / media:

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
99	CIVIL PROTECTION	EMERGENT	Emergency Management in Social Media Generation	Social media during emergencies
70	CIVIL PROTECTION	CRISCOMSCORE	Developing a crisis communication scorecard	Citizen, Media, communication, strategies of public authorities
30	CIVIL PROTECTION	BESECU	Human behaviour in crisis situations	Cross cultural investigation to tailor communication

The **DRS-19-2014 topic** on "Next generation emergency services" will provide a mean to improve early warning and communication in the area of civil protection.

2.4.4.2 Exchanges of good practices

The implementation of security policies is supported by good practices exchanges, which are recommended in e.g. the CBRN Action Plan and the EU Civil Protection Mechanism. This practice is often part of research projects which have hence the capacity to respond to policy recommendations.

The **CBRN Action Plan** identifies several needs for identifying, developing or *sharing good practices*, e.g. regarding the security of high-risk chemical facilities including varying levels of security measures adapted to the risk posed by particular chemical agents, the handling of clinical samples containing high risk biological agents and creating collaborative networks of facilities working on these substances, as well as the development and spreading of good practices in security training and education to raise awareness of appropriate protection procedures related to persons working with/having access to or handling high-risk CBRN materials, including guidelines for minimum security training requirements. In addition, the plan promotes the development of codes of conduct for chemical industry as well as professionals working on bio-issues concerning awareness of security-related issues.

Similarly to other sectors, *good practice exchanges* are supported by both the CBRN Action Plan and the new complementing approach related to CBRN-E; this includes in particular the detection of CBRN materials, awareness raising and training, the assessment of feasibility of EU handbooks on sampling and detection of CBRN materials for practitioners (e.g. operators of detection devices) in all official EU languages, protocols for responding when CBRN materials are detected, and on sampling and detection methods and processes. It also includes the development of mobile detection, identification and sampling capabilities, as well as an enhanced cooperation among laboratories assigned to deal with unknown pathogens and toxins at national level, networking of these laboratories across the EU specialising in high risk biological agents and toxins as well as establishment of network of reference laboratories. Linked to this, the plan promotes the creation of

EU capability and mechanism to rapidly and safely transport biological samples in accordance with international regulations.

Training (see section 2.4.4.3) is associated to the identification of *good practices* on responding to security incidents involving the facilities possessing any of the substances on the EU lists of high risk CBRN materials (see section 2.1.1.1), and improved cooperation among relevant agencies in crisis and consequence management, response and recovery in the biological area.

The **Civil Protection Mechanism** also includes a requirement to improve the knowledge base on disaster risks and facilitate the sharing of knowledge, best practices and facilitate access to specific knowledge and expertise on issues of common interest. It promotes several types of actions of horizontal nature, including studies, surveys, modelling and scenario building to facilitate the sharing of knowledge, best practices and information, monitoring, assessment and evaluation actions, public information, education and awareness raising and associated dissemination actions, so as to involve citizens in preventing and minimising the effects of disasters in the Union and to help Union citizens to protect themselves more effectively and in a sustainable manner.

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
98	CIVIL PROTECTION	ELITE	Elicite to Learn Crucial Post-Crisis Lessons	Post-Crisis lessons, best practices, Responders
25	CIVIL PROTECTION	ASSERT	Assessing Security Research: Tools & Methodologies to measure societal impact	Societal impacts, best practice, tool
197	CIVIL PROTECTION	OPSIC	Operationalising Psychosocial Support in Crisis	Best practice-studies for psychosocial support in crisis

The water policy sector is also well structured with respect to expert foras and good practices exchanges through the so-called Common Implementation Strategy which embeds the Water Framework Directive as "umbrella" as well as various policies with a direct link to security, in particular floods and droughts.

In the health sector, exchange of information between the Member States and the Commission on the experience acquired with regard to the implementation of the Decision on **Cross-border threats to health** is orchestrated by the Health Security Committee.

Finally, the **European Programme for Critical Infrastructure Protection** promotes the creation of a Critical Infrastructure Warning Information Network (CIWIN), an internet-based protected information and communication system for exchanging and discussing CIP-related information.

2.4.4.3 Training

Training activities are a recognised tool for supporting security policies and funding instruments are in place by the main policy DGs, namely DG HOME and DG ECHO, to stimulate training at EU level. A range of research projects also include training components in the work programmes, primarily to

enhance testing capacities of developed tools and methods. These activities are, however, scattered and would benefit a better coordination at EU level.

Training is included in several objectives of the **CBRN Action Plan**, namely regarding requirements for inspection and enforcement entities so that they can provide the highest possible levels of relevant CBRN security expertise. Actions related to security rules on CBRN materials, good practices, security requirements for logistics enterprises, tracking/tracing systems and training, CBRN exercises for transport staff dealing with security of CBRN materials are hence part of the plan. The also promotes the organisation of regular training at European and international level for testing cooperation of all relevant national agencies, particularly of health, first responders, security and judicial authorities with, where appropriate, involvement of private sector stakeholders, with a view of enhance interoperability for various types of CBRN hazards. Similarly to other operational goals, *training and simulation exercises* are promoted for testing cooperation of all relevant organisations, particularly of health, first responders, security radiation protection and judicial authorities and private sector where appropriate, including possible criminal investigations and forensics. The new EU approach to the detection and mitigation of CBRN-E risks also promotes the further development of training tools, encourage the sharing of best practices and develop guidance materials to support practitioners with state-of-the-art training, in particular helping law enforcement practitioners improve their detection practices, for instance through the activities of EEODN (European Explosives Ordnance Disposal Network), (2) continue to raise awareness of the limitations of explosives detection equipment, (3) develop model quality control programmes for testing the effectiveness of explosives detection dogs and help Member States develop explosives detection dog certification protocols recognised as top global models, (4) improve its guidelines on implementing Regulation No 98/2013 on the marketing and use of explosive precursors, (5) improve communication between industry, security service providers and Member States through workshops and tools and improve the level of security, (6) ensure CBRN risks are taken properly into account in the development of the European Emergency Response Capacity and establish closer links with training and exercises provided in the framework of the EU Civil Protection Mechanism, and (7) expand the portfolio of nuclear security related training courses at the European Nuclear Security Training Centre (EUSECTRA)

The mechanism involves the setting up by the Commission and the management of a training programme for civil protection and emergency management personnel on prevention of, preparedness for and response to disasters, including joint courses and a system for exchange of experts. The training network is open to training centres for civil protection and emergency management personnel as well as other relevant actors and institutions: it has the potential to create synergies among its member through exchange of experience and best practices, relevant research, lessons learnt (including aspects from the entire disaster management cycle, monitoring, analysing and evaluating relevant civil protection actions), courses and workshops, exercises and pilot projects. The programme of lessons learnt from civil protection actions conducted within the Union mechanism aims to obtain an experience-based foundation for the development of activities within the disaster management cycle, and developing methods and tools for gathering, analysing, promoting and implementing lessons learnt – including where appropriate lessons learnt from interventions outside the Union. It also stimulates and encourages the introduction and use of relevant new technologies for the purpose of the Union Mechanism. The **Civil Protection Mechanism**

supports training, exercises, workshops, exchanges of staff and experts, creation of networks, demonstration projects and technology transfer, as well as a programme of lessons learnt from intervention and exercises in the context of the Union mechanism. It makes a reference to support to obligatory training courses, exercises and workshops necessary for the certification of Member States' response capacities.

FP7 projects specifically dealing with training are listed below. As stressed above, many other projects are including training components.

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
88	CBRN, CIVIL PROTECTION, HFA	DITAC	Disaster Training Curriculum	Disaster, international crisis management, first responders & crisis managers
71	CBRN, CIVIL PROTECTION, HFA	CRISIS	CRITICAL Incident management training System using an Interactive Simulation environment	Simulation, Diagnosis, Planning under uncertainty & stress, Team coordination, Interoperability, Crisis Management
43	CBRN-E, CIVIL PROTECTION	CAST	Comparative Assessment of Security-Centered Training Curricula for First Responders on Disaster Management in EU	Training, Curricula, First Responders, Disaster Management
72	CBRN, CIVIL PROTECTION, HFA	CRISMA	Comparative Assessment Security-Centered Training Curricula for First Respond. on Disaster Management	Simulation-based decision system, modelling crisis management, Restoring security, safety in crisis
6	CBRN, CIVIL PROTECTION	A4A	Alert for All	EWS, Crisis, simulation, training concepts, media, inform. management
176	CIVIL PROTECTION	L4S	Learning for security project	Computer 'games' for learning crisis management skills
178	CIVIL PROTECTION	LEILA	Law Enforcement Intelligence Learning Application	Learning methodology & serious games, improving cognitive capabilities, decision making under uncertainty
205	CBRN, CIVIL PROTECTION, HFA	PANDORA	Advanced training environment for crisis scenarios	Cridis Training, emotional affect on trainees

2.5 Foresight, roadmaps

2.5.1 Foresight

The constant progress of science and implementation of security policies require a degree of anticipation about future needs (either related to research or policy implementation). This is why many projects are running foresight studies and discuss roadmaps to better prepare the future.

Projects dealing with foresight studies and scenarios building can be found in the list below:

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
106	SECURITY - All sectors	ESC	European Security Challenge	Security businesses, Dev. risk, disruptive technical solutions, awareness
112	SECURITY - All sectors	ETTIS	European security trends and threats in society	Scenarios, threats to society , societal security, needs
127	SECURITY - All sectors	FESTOS	Foresight of evolving security threats posed by emerging technologies	Scenarios, emerging technologies, threats
122	SECURITY - All sectors	EVOCS	Identify the various EU concepts of The evolving concept of security	Scenarios, security concept
130	SECURITY - All sectors	FORCE	Foresight Coordination for Europe	Scenarios, Decision Support Systems
131	SECURITY - All sectors	FORESEC	Europe's evolving security	Security, safety, energy, crime, terrorism, society, health, technologies
296	SECURITY - All sectors	STRAW	Security technology active watch	Security, Technology Watch
133	SECURITY - All sectors	FORTRESS	Foresight Tools for Responding to cascading effects in a crisis	Cascading effects, predictive model
21	CBRN-E, CIVIL PROTECTION	ARCHIMEDES	Support to security end users	Common culture, end-users & operators, operational needs, networking
20	CIVIL PROTECTION	ANVIL	Analysis of Civil Security Systems in Europe	Civil Security Systems, consensus definitions
53	LAW ENFORCEMENT	COMPOSITE	Comparative Police Studies in EU	Comparative strategic analysis, strategic analyses
61	LAW ENFORCEMENT	COREPOL	Conflict Resolution	Strategic Analysis
296	DUAL, CIVIL PROTECTION	STRAW	Security technology active watch	Defense and Security research, industry, cooperation
129	CIVIL PROTECTION See also Section 2.1.2.1	FOCUS	Foresight Security Scenarios	Scenarios, interactive roadmap for security research,

Within Horizon2020, research in support of "Better understanding the links between, culture, risk perception and disaster management" will be pursued through the **DRS-21-2015 topic**.

2.5.2 Roadmaps

Some projects are more specifically focusing on roadmaps, aiming to identify research needs and providing recommendations based on expert group discussions. The results of these projects contribute to the formulation of research programming, identification of demonstration needs, gap analysis, evaluation of technologies etc. :

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
111	SECURITY - All sectors	ETCETERA	Evaluation of critical and emerging technologies for the elaboration of a security research agenda	Mapping, critical and emerging technologies, safer future
45	CBRN-E	CBRNEMAP	Road-mapping study of CBRNE demonstrator	CRBNE Road Map
67	CBRN-E, CIVIL PROTECTION, INDUSTRY, TRADE	CRESCENDO	Create real EU security market & strengthen EU competitiveness by closing the loop between academia, industry	Roadmap, European security market
40	CIVIL PROTECTION, TRANSPORT	CARONTE	Creating an agenda for Research on Transportation Security	Land transportation
108	CIVIL PROTECTION	ESENET	Emergency Services Europe Network	Emergency services, end-user networks, practitioners, standardisation roadmap
80	CBRN-E, LAW ENFORCEMENT	DECOTEESC1	DEmonstration of COunterTErrorism System-of-Systems against CBRNE	Gap analysis, system-of-systems structure , Strategic roadmap, Restoring security and safety in case of crisis

3. Way ahead

Most policies dealing with Disaster Risk and Crisis Management have established operational links with research. For example, the CBRN Action Plan includes the goal to strengthen and prioritise research. Furthermore, an engagement in further research cooperation with international partners is promoted with a view to enhancing synergies and avoiding duplications, using existing scientific networks, taking into account the research work performed by EDA, JRC and ESRI, organisation of periodic meetings by the Commission.

While interactions among research and policies are high on the policy agenda, much remains to be done to improve the way information flows from the different communities involved in implementation of both research outputs and policies. This includes capitalizing on past research and enhance cooperation among EU Member States organisations. The complexity of the security sector stems from the wide variety of actors involved and the lack of coordination mechanism at EU and national level regarding the transfer of information and their actual use by implementers and decision-makers. The need for enhanced coordination and information sharing form the basis of the Community of Users on Disaster Risk and Crisis Management described in this paper.

Prior to developing a Community of Users (based on existing communities which are presently fragmented) with the view of improving science-policy-industry-operator's links in the context of Horizon2020, it was essential to **understand the architecture** of the research framework and how it interacted with various policy technical/scientific challenges. This was the subject of the mapping described in the document which should not be regarded as an impact assessment (i.e. no analysis was done about the actual impact and use of research outputs on policies) but rather as a means to better understand the complex science-policy working environment at EU and national levels and propose a mechanism to **streamline information flows and transfer in the future**. The analytical value of the document stands for the "matrix" established between research and science, i.e. a factual image of the present situation. For the time being, it does not go as far as analysing the real outputs of research regarding policy implementation.

Based on this report, what is the way ahead? Several objectives will be pursued, from the short to the long term, namely:

- On the short-term (Spring 2015), the mapping of Secure Societies Projects will be complemented by a mapping of projects funded by DG Research & Innovation and DG CNECT, in close cooperation with the services concerned. This will enable to complement the overall picture and provide an overview of EU-funded security-related research. It will also have the effect of improving the links among the different research programmes within the European Commission. Based on the present document (which will be prone to amendments by policy services and research projects) and the additional information to be collected, a consolidated report by the Commission will be prepared and made publicly available.
- On the medium-term (Spring to December 2015), a strategic roadmap will be established for Horizon2020 in close cooperation among the research Policy DGs (R&I, HOME, CNECT), the Joint Research Centre, Management Agencies (REA, EASME) and EU Member States (policy committees and organisations involved in FP7 and H2020 projects). This roadmap will be

built up using the architecture described in the present document, i.e. enabling to identify links among future research projects with different policy sectors in an operational way (identifying from the very start of the projects what should be the deliverables that policy sectors might expect).

- From 2015 onward, the European Commission will organise meetings of the Community of Users twice a year (Spring and Autumn) in order to ensure that new research information and policy updates will be made available widely (including to stakeholders at Member States level through web streaming). This will ensure that different actors will be made aware of the developments in the different fields and that possibly initiatives will be taken to create synergies, thus fighting fragmentation at EU level. Highlights of the meetings (e.g. relevant scientific progress in a given area, policy update) with references and contacts will be compiled in the form of an annual Commission's interservice compendium on security science & policy at the end of each year.
- On the long term (two years and beyond), regular information exchanges and debates will enable to better channel the information to different actors described as "users" in this paper, which will have a direct effect on research programming, policy implementation and update. If the Community of Users is developing as expected, it has a potential to become an essential supporting group to EU security policies in the framework of which the European Commission with the EU Member States (through the policy and programme committees), EU Agencies, Intergovernmental Agencies, International Organisations and the wide range of sectors concerned (research, industry, operators) will cooperate for boosting implementation of research outputs and improving EU policy implementation in the Member States. This will in addition have the capacity of returns of experiences from Industry and operators to the EU level, and enable to identify the most potential technologies, tools and methods in order to support their access to the market.

Annex 1

Excel Table of Secure Societies Projects – How to read it?

The attached Excel Table provides a comprehensive listing of all Secure Societies projects financed so far (November 2014). It will be complemented by the last projects under negotiation within FP7. In the future, this database will be kept updated for all future Horizon2020 projects along a similar architecture described in the document.

The projects are listed alphabetically. In the various tables of the document, references are made to specific lines (rows) in the Excel Table, which contains the following elements:

1	2	3	4	5	6	7	8	9	10
Line	Project DG	Website	Call	Abstract	Contract dates	Coordin.	Consort.	Key words	Applic. fields

1. Line in Excel table, corresponding to the reference lines included in each Table of the document
2. Project DG: indicates which DG or Agency is managing the project
3. Website: project website, in principle verified and operational
4. Call: reference of the call under which the project has been submitted
5. Abstract: summary of objectives and outputs extracted from CORDIS, CORDA, Secure Societies project catalogues, project websites and partner's websites. All the information is publicly available
6. Contract dates: starting and termination dates of the project Grant Agreements
7. Coordinator's organization
8. Consortium: list of project's partners
9. Key words
10. Application fields

Annex 2

Other Secure Societies Projects not referred to in this document (dealing with other policies, e.g. Border Control, ethics etc.)

The Secure Societies Programme covers a wide range of areas which are not directly related to Disaster Risk and Crisis Management, subject of this report. In this annex, the bulk of the remaining projects (not listed in the core document) is given, they cover in particular Ethics and Border Control, the mapping of which will be done in a second step.

BORDER CONTROL

Aviation Security

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
7	BORDER CONTROL	ABC4EU	ABC Gates for EU	Airports, Boarder management, biometrics
59	BORDER CONTROL	COPRA	Comprehensive European Approach to the Protection of Civil Aviation	Protection of Civil Aviation, COPRA Aviation Security Research Roadmap
308	BORDER CONTROL	TASS	Total airport security system	Multi-level intelligence & surveillance system for entire airport security
329	BORDER CONTROL	XP-DITE	Accelerated Checkpoint Design Integration Test and Evaluation	Airport checkpoints
116	BOARDER CONTROL	EUROSKY	Single European Secure Air-cargo Space	Secure Air-Cargo Space
299	BORDER CONTROL	SUBITO	Surveillance of Unattended Baggage and the Identification and Tracking of the Owner	Surveillance of Unattended Baggage

Maritime Security

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
18	BORDER CONTROL	AMASS	Autonomous maritime surveillance system	Round-the-clock maritime monitoring solution, sensors, surveillance system
57	BORDER CONTROL, TRANSPORT	CONTAIN	Container Security Advanced Information Networking	Container security Communic. & Information Security, Surveillance

152	BORDER CONTROL	I2C	Integrated system for Interoperable sensors & Information sources for Common abnormal vessel behaviour detection & Collaborative identification of threat	Sea borders
261	BORDER CONTROL	SECTRONIC	Security system for maritime infrastructure, ports & coastal zones	Surveillance, protection of critical maritime infrastruc
302	BORDER CONTROL	SUPPORT	Security UPgrade for PORTs	Main sea and inland port security system
314	BORDER CONTROL	TRITON	Trusted Vessel Information from Trusted On-board Instrumentation	Civilian, commercial maritime control: surveillance & safety systems
317	BORDER CONTROL	UNCOSS	Under water Coastal Sea Surveyor	Surveillance in wide maritime areas through active & passive means
196	BOARDER CONTROL	OPERAMAR	Interoperable approach to EU maritime security management	Maritime security , Interoperability
117	BORDER CONTROL	EU CISE 2020	EU test bed for maritime Common Information Sharing Environment in the 2020 perspective	EU roadmap for CISE, EU maritime institutions & Surveillance
224	BORDER CONTROL	PROMERC	Protection Measures for Merchant Ships	reduce vulnerability of EU merchant fleets, maritime supply lines to criminal abduction, extortion
47	BORDER CONTROL	CLOSEYE	Collaborative evaluation Of border Surveillance technologies in maritime Environment bY pre-operational validation of innovative solutions	Border Surveillance, maritime, operational and technical framework
210	BORDER CONTROL	PERSEUS	Protection of European seas & borders through the intelligent use of surveillance	demonstrate EU maritime surveillance system integrating existing national, communitarian installations
253		SEABILLA	Sea Border Surveillance	
13		AEROCEPTOR	UAV Based means for land & sea non-cooperative vehicles stop	Tracking, stopping land & maritime non cooperative vehicles, automated aerial system.

Land transport

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
258	TRANSPORT	SECRET	SECurity of Railways against Electromagnetic aTtacks	Protection of railway infrastructure
307	BORDER CONTROL	TALOS	Transportable autonomous patrol for land border surveillance system	Transportable autonomous patrol for land border surveillance system
123	BORDER CONTROL	EWISA	Early Warning for Increased Situational Awareness	Land borders, intelligence in video surveillance
195	BORDER CONTROL	OPARUS	Open Architecture for UAV-based Surveillance System	Intelligent Boarder surveillance, unmanned air-to-ground wide area land, sea border
300	BORDER CONTROL	SUNNY	Smart UNmanned aerial vehicle sensor Network for detection of border crossing and illegal entry	Sensors for RGB image, radar information, autonomous UAVs
187	BORDER CONTROL	MOBILEPASS	A secure, modular and distributed mobile border control solution for European land border crossing points	Land Borders, mobile equipment, check EU, visa-holding
225	TRANSPORT	PROTECTRAIL	Railway-Industry Partnership for Integrated Security of Rail Transport	Energy Transport , Integrated protection of rail transportation
295	TRANSPORT	STAR-TRANS	Strategic Risk Assessment and Contingency Planning in Interconnected Transport Networks	
264	TRANSPORT	SECUR-ED	Secured Urban Transportation - European Demonstration	Global EU improvement in mass transportation security
270	TRANSPORT	SERON	Security of road transport networks	Impacts of possible man-made attacks on transport network

Supply chains

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
175	CUSTOMS	ISTIMES	Integrated system for transport infrastructures surveillance, monitoring by electromagnetic sensing	Supply chain, data sharing, risk assessment

42	CUSTOMS	CASSANDRA	Common assessment and analysis of risk in global supply chains	
180	CUSTOMS	LOGSEC	Development of a strategic roadmap towards a demonstration project in EU logistics & supply chain security	Supply chain, Logistic
263	BOARDER CONTROL	SECURECHAINS	Integration of security technology supply chains and identification of weaknesses and untapped potentia	Security technology supply chains
171	BORDER CONTROL	IPATCH	Intelligent Piracy Avoidance using Threat detection and Countermeasure Heuristics-PROTECTION	Supply chain, Non-military protection, merchant shipping against piracy
60	CUSTOMS	CORE	Consistently Optimised Resilient Secure Global Supply-Chains	Securing supply chains, gaps, practical problems, develop capabilities, solutions for sizable
201	CUSTOMS, TRADE	OSMOSIS	Overcoming Security Market Obstacles for SMEs Involvement in the technological Supply chain	Supply chains, Market integration
239	CUSTOMS	SAFEPOST	Reuse and development of Security Knowledge assets for International Postal supply chains	Postal Security Target Operating Model

Identification Technologies, others

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
166	BOARDER CONTROL	INGRESS	Innovative Technology for Fingerprint Live Scanners	Boarder check
200	BOARDER CONTROL	ORIGINS	Recommendations for Reliable Breeder Documents Restoring e-Passport Confidence, Leveraging Extended Border Security,	e-Passport Confidence, document security
128	BORDER CONTROL	FIDELITY	Fast and Trustworthy Identity Delivery and Check with ePassports leveraging Traveller Privacy	Boarder check
324	BORDER CONTROL	VIRTUOSO	Versatile information toolkit for end-users oriented open sources exploitation	Intelligent Boarder Surveillance
310	BORDER CONTROL	TERASCREEN	Multi-frequency multi-mode Terahertz screening for border checks	Detection & classification of objects concealed under clothing
330	BORDER CONTROL	ZONESEC	Towards a EU framework for security of Widezones	Information Gathering, surveillance systems for the security of WideZone

95	BORDER CONTROL	EFFISEC	Efficient Integrated Security Checkpoints	Border security, material detection, checkpoints
9	BORDER CONTROL	ACXIS	Automated Comparison of X-ray Images for cargo Scanning	Detection, X rays, cargo scanning
126	BORDER CONTROL	FASTPASS	harmonized, modular reference system for all European automatic border crossing points	Boarder check

Standardisation, roadmaps

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
139	BORDER CONTROL	GLOBE	Global Border Environment	Boarder check, comprehensive strategy, standardisation data sharing, fusion of surveillance information

ETHICS

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
17	LAW ENFORCEMENT	ALTERNATIVE	Developing alternative understandings of security and justice through restorative justice approaches in intercultural settings within democratic societies	Security, Handling conflicts, intercultural contexts
121	LAW ENFORCEMENT	EVIDENCE	European Informatics Data Exchange Framework for Court and Evidence	Evidence collection and exchange, detection rules, reliability standards, ethical implications
203	LAW ENFORCEMENT	PACT	Public perception of security and privacy	Security, societal perspective
221	LAW ENFORCEMENT	PRISMS	Technologies enhancing security are subjecting citizens to increasing surveillance, causing infringements of privacy, fundamental rights	Ethics Justice, privacy and security
257	LAW ENFORCEMENT	SECONOMICS	socio economic context	Societal security, Economy, modelling, emerging threats
289	LAW ENFORCEMENT	SOURCE	Virtual centre of excellence for research support and coordination on societal security	Societal security
303	LAW ENFORCEMENT	SUPRISE	Surveillance, Privacy and Security	Ethics Justice, privacy and security

164	LAW ENFORCEMENT	INEX	Converging and conflicting ethical values in EU internal / external security continuum	Ethics, internal & external security in EU, foreign security policy - ETHICS
233	LAW ENFORCEMENT	RESPECT	Rules, Expectations & Security through Privacy-Enhanced Convenient Technologies	Policy Matrix Checklist, Operating guidelines -- ETHICS
279	LAW ENFORCEMENT	SLANDAIL	Security System for language and image analysis	Citizen Media, social media, emergencies - ETHICS
345	LAW ENFORCEMENT	SAPIENT	Supporting fundamental rights, Privacy and Ethics in surveillance Technologies	Surveillance, smart technologies, legal framework, scenarios, privacy, practical handbook - ETHICS
304	LAW ENFORCEMENT	SURVEILLE	Surveillance: Ethical Issues, Legal Limitations, and Efficiency	Surveillance technology, public perceptions, fundamental rights, legal, ethics, prosecution of terrorism and other crimes - ETHICS
322	LAW ENFORCEMENT	VIDEOSENSE	Virtual Centre of Excellence for Ethically-guided and Privacy-respecting Video Analytics in Security	Ethics, privacy, video analytics, data intelligence technologies - ETHICS
11	LAW ENFORCEMENT	ADDPRIV	Automatic Data relevancy Discrimination for a PRIVacy-sensitive video surveillance	Data storage, camera networks, citizen's privacy rights - ETHICS
202	LAW ENFORCEMENT	P5	Privacy Preserving Perimeter Protection Project	Perimeter Protection, proactive surveillance system, standards
255	LAW ENFORCEMENT	SECILE	Securing Europe through Counter-Terrorism—Impact, Legitimacy and Effectiveness	Ethics Justice, Legitimacy and effectiveness of legal measures
206	LAW ENFORCEMENT	PARIS	PrivAcY pReserving Infrastructure for Surveillance	Citizen, Media, Ethics, Privacy-by-Design, Accountability-by-Design,
303	ETHICS	SURPRISE	Surveillance, Privacy and Security	Ethics Justice, relationship between Human privacy and security

FORENSICS

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
182	CRIME	MEPROCS	Forensic identification by craniofacial superimposition	Crime Forensics, ID methods
115	CRIME	EUROFORGEN-NOE	EUROPEAN FORENSIC GENETICS Network of Excellence	Forensic genetics
5	CRIME	3D-FORENSICS	Mobile high-resolution 3D-Scanner and 3D data analysis for forensic evidence	Evidence reconstruction, 3D-scanning, crime scenes analysis

177	CRIME	LASIE	Large Scale Information Exploitation of Forensic	Information Gathering, face-recognition, data processing
29	CRIME	BEAT	Biometrics Evaluation and Testing	Biometrics, standardization
230	LAW ENFORCEMENT	RECOBIA	REduction of COgnitive BIAses in Intelligence Analysis	Citizen, Media
283	LAW ENFORCEMENT	SMARTPRO	Lightweight, flexible and smart protective clothing for law enforcement personnel	Crime Forensic, Lightweight, protective clothing
249	LAW ENFORCEMENT	SAWSOC	convergence of physical/logical security technologies	Detection, Diagnosis of attacks, Cyber

CRIME

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
241	CRIME	SAFIRE	Scientific Approach to Finding Indicators of and Responses to Radicalisation - PREVENTION	Radicalization, prevention, modeling, group typology
250	CRIME	SCIIMS	Strategic crime and immigration information management system	Information Gathering, human trafficking
313	CRIME	TRACE	Support stakeholders in combating & disrupting human trafficking	Information Gathering, human trafficking - CRIME
140	CRIME	GRAFFOLUTION	Awareness and prevention solutions against graffiti vandalism in public areas and transport	Collaborative Knowledge Base, statistics, good practices, prevention strategies, visualisations, web platform
158	CRIME	IMPACT EUROPE	Innovative Method and Procedure to Assess Counter-violent-radicalisation Techniques in EU	Citizen Media, radicalization
220	CRIME	PRIME	PREventing, Interdicting and Mitigating Extremist events: Defending against lone actor extremism	Prevention, extremism, Citizen Media
319	CRIME	VALCRI	Visual Analytics for Sense-making in CRiminal Intelligence analysis	Information Exploitation, Complex Data, Criminal Intelligence Analysis
326	CRIME	VOX-POL	Virtual Centre of Excellence for Research in Violent Online Political Extremism	Extremism
277	CRIME	SIIP	Speaker Identification Integrated Project	Suspect Identification, speech analytic algorithms
306	CRIME	TACTICS	Tactical Approach to Counter Terrorists in Cities ongoing research	Counter-terrorism, airports, public transport
194	CRIME	ODYSSEY	Strategic pan-European ballistics intelligence platform for combating organised crime and terrorism	Informaion Gathering, Ballistics, Intelligence, Interoperable Data

104	CRIME	EPOOLICE	early Pursuit against Organized crime using enviroNmental scanning, the Law and IntelligenCE systems	Detection, scanning, organised crime, intelligence systems systems
215	CRIME	P-REACT	Petty cRiminality diminution through sEarch and Analysis in multi-source video Capturing and archiving platForm	Data capturing, archiving, protection, small businesses, petty crimes
85	CRIME	DETECTER	Detection technologies, terrorism, ethics and human rights	Counter-terrorism, human rights & ethical standards, detection technologies

CYBER CRIME

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
39	CRIME	CAPER	Collaborative information, Acquisition, Processing, Exploitation and Reporting for the prevention of organised crime	Cyber crime
93	CRIME	E-CRIME	Economic impacts of Cybercrime	Economics, taxonomy, Cyber crime - CRIME
96	CRIME	EKSISTENZ	Fight against Identity Theft – protect theft from stealing citizens' paper documents, or using digital means	Cyber crime, economics, , taxonomy, counter-measures
107	CRIME	ESCORTS	European network for the security of control and real-time systems	Cyber security, SCADA, Taxonomy - CRIME
38	CRIME	CAMINO	Comprehensive Approach to cyber roadMap coordINation and develOpment	Cyber security, resilience - CRIME
64	CRIME	COURAGE	Research agenda for Cyber Crime and Terrorism	Cyber security, taxonomy, critical infrastructures - CRIME
77	CRIME	CYBERROAD	Development of the Cybercrime and Cyber-terrorism Reseach Roadmap - RESEARCH ROADMAP	Cyber security, terrorism, energy grids - CRIME
237	CRIME	SAFECITI	Future Internet Applied to Public Safety in Smart Cities - TRAINING	Cyber security, smart cities, Training, scenarios - CRIME
252	CRIME	SCOUT	Multitech SeCurity system for intercoNnected space control groUnd staTions	Cyber security, ground stations network - CRIME
76	TRADE	CWIT	Countering WEEE Illegal Trade, Waste Electrical Electronic Equipment	Cyber, Waste Electrical Electric Equipment, Illegal Trade
151	CIP	HYRIM	Hybrid Risk Management for Utility Providers	Cyber Crime, Hybrid Risk Metrics, CI networks,,
218	CYBER CRIME	PREEMPTIVE	Preventive Methodology and Tools to Protect Utilities	Tools to prevent against cyber attacks on utility networks of Cis

FINANCES, ECONOMICS

Reference in Excel Table (line)	Policy sector(s)	Project Acronym	Project Title	Key words
207	FINANCIAL	PARSIFAL	Protection and trust in financial infrastructures	Information infrastructure, research roadmaps, CFI scenarios, best practice guides
119	FINANCIAL	EUSECON	Agenda for European security economics	Security economics, Terrorism and organised crime, industrial accidents, natural disasters
146	LAW ENFORCEMENT	HEMOLIA	Hybrid Enhanced Money Laundering Intelligence, Investigation, Incrimination and Alerts	Anti-Money Laundering, financial data, Privacy
320	ETHICS	VALUESEC	Mastering the Value Function of Security Measures	Security Economics, security investments & trade-off between security & other societal objectives
51	FINANCIAL	COMIFIN	Communication Middleware for monitoring FINancial CI	Financially Critical Infrastructures, International Cooperation, failure scenarios, holistic approach,