

A critical evaluation of standardisation as a tool for improving preparedness, crisis management and disaster resilience with recommendations for future development and actions



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ResiStand Project

Standardisation is a powerful tool to achieve better interoperability. However, it needs to overcome a lack of interest and modest participation from stakeholders. Also, promising research results are not always used as the basis for new standards.

The overall goal of ResiStand is to find new ways to improve the crisis management and disaster resilience capabilities of the European Union and individual Member States through standardisation.

ResiStand contributes to an improved disaster resilience by identifying and analysing the drivers, constraints and expectations of three main stakeholder communities: Standardisation Organisations, End-Users and Suppliers, consisting of researchers, industry and SMEs.

Based on this information, gaps in standardisation are identified and a prioritised roadmap for new initiatives will be created. The roadmap will be complemented by a critical evaluation of standards as a tool to improve disaster resilience.

ResiStand aims at implementing a pre-standardisation process that supports the development of standards. The feasibility of the process will be tested by developing a new work item. The aim is that stakeholders will continuously utilize this “ResiStand Process” in the future, and that the project delivers a better understanding of the potential of standards for contributing to an improved disaster resilience.

ResiStand will support the management of increasing threats to society such as armed conflicts, terrorism, pandemics and natural disasters, which have increasingly cross-border, even global consequences due to the on-going globalisation.

Protection of citizens through anticipation, preparedness, response and adaptation to crisis situations – i.e. maintaining disaster resilience – will be more efficient. Collaboration between national, European and international stakeholders will be improved by unified processes and management systems as well as by technical, procedural, operational and semantic interoperability.

Executive Summary

The purpose of this report is to provide a better understanding of the relationship between standardisation and improved disaster resilience and assess the efficiency of standardisation as a tool to improve crisis management and disaster resilience. To achieve this purpose, the characteristics of both standardisation and disaster management have been re-examined with new standpoints.

The ResiStand project is mainly looking at standardisation from the points of view of three stakeholder communities which have their own role, motivation and effect in the process. These three communities are the End users (national authorities, practitioners and NGOs), Suppliers (the industry incl. SMEs and the research domain) and the Standardisation domain (members and employees of standardisation bodies).

In this report, a fourth stakeholder group is introduced, namely the Policy makers involved in disaster management or standardisation. Both European and international key organisations have been addressed and their policies and relationships have been assessed.

An optimal mix of potential new disaster management related standardisation items is sought through sorting and assessing them by standard types and disaster management phases.

The study examines the means to improve the prerequisites for participation of selected stakeholder groups in standardisation activities: end users and small enterprises have difficulties to participate in the standardisation process. Similarly, new ways of getting more results of EU-funded research projects as the basis for new standardisation items are studied.

The coordination of security standardisation has also been addressed and new ideas are presented to improve the cooperation between various bodies.

As disaster management related standards often are utilised in joint or even global operations, the study examines the relationship between existing standards and the globally renowned Sendai Framework. This is done by mapping the items against the four Sendai principles.

A set of conclusions and recommendations are an integral part of this study – these will form a basis for the forthcoming planning of the sustainable ResiStand pre-standardisation process.

Table of Contents

List of Figures	vi
List of Tables	viii
List of Abbreviations	ix
1 Introduction	1
1.1 Objective and Approach	1
1.1.1 Objective	1
1.1.2 Approach	1
1.2 Document Structure and Research Methods	2
1.2.1 Structure	2
1.2.2 Questions 1 to 3: Verification of Hypotheses through a Survey	2
1.2.3 Questions 4 to 5: Mapping of Standards and Needs / Opportunities into a Policy Framework	3
2 Disaster Management Policies	4
2.1 References to Earlier Reports of ResiStand	4
2.2 European Disaster Management Policies and Legislation	4
2.2.1 Introduction to EU policies	4
2.2.2 European Union External Action (EEAS)	4
2.2.3 Directorate-General for Migration and Home Affairs (DG HOME)	5
2.2.4 Directorate-General for European Civil Protection and Humanitarian Aid Operations (DG ECHO)	6
2.2.5 Directorate-General for International Cooperation and Development (DG DEVCO)	7
2.2.6 Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (DG GROW)	7
2.2.7 Joint Research Centre (JRC)	7
2.2.8 European Legal Framework for Disaster Management	7
2.2.9 Conclusions and Recommendations	10
2.3 Global Disaster Management Policies	11
2.3.1 United Nations and Associated Bodies as Policy Makers	11
2.3.2 Introduction to UNISDR and the Sendai Framework	12
2.3.3 The Priorities for Action of the Sendai Framework	14
2.3.4 Conclusions and Recommendations	14
3 A Short Study on Standardisation	16
3.1 References to Earlier Reports of ResiStand	16
3.2 Basic ideas of standardisation	16
3.2.1 Principles of Standardisation	16
3.2.2 General Arguments for Standards	17
3.3 Standardisation and the European Union	18

	3.3.1	European Standardisation Policies	18
	3.3.2	Standards and EU Regulation.....	20
	3.3.3	Conclusions and Recommendations.....	21
4		Question 1: Contribution of Standards to Improvement of Disaster Resilience by Type and Disaster Management Phases	23
	4.1	Contribution of Standards to Disaster Management.....	23
	4.2	Types of Standards.....	23
	4.2.1	ResiStand Research Results.....	23
	4.2.2	Hypothesis H1.1 – Types of Standards	25
	4.2.3	Survey Results.....	25
	4.3	Standards by Disaster Management Phases	26
	4.3.1	ResiStand Research Results.....	26
	4.3.2	Hypothesis H1.2 – Disaster Management Phases	28
	4.3.3	Survey Results.....	29
5		Question 2: Potential and Improved Uptake of Standards	30
	5.1	Potential of Standards	30
	5.2	Standards and Research Projects	30
	5.2.1	ResiStand Research Results.....	30
	5.2.2	Hypothesis H2.1 – Standards and Research Projects	31
	5.2.3	Survey Results.....	31
	5.3	Coordination of standardisation.....	32
	5.3.1	ResiStand Research Results.....	32
	5.3.2	Hypothesis H2.2 – Coordination of DM Standardisation	32
	5.3.3	Survey Results.....	32
6		Question 3: Overcoming the Limitations and Restraints of Standards.....	34
	6.1	Limitations of Standards	34
	6.2	Participation of End Users in Standardisation Activities	34
	6.2.1	ResiStand Research Results.....	34
	6.2.2	Hypothesis H3.1 – Participation of End Users	35
	6.2.3	Survey Results.....	36
	6.3	Participation of SMEs in Standardisation	36
	6.3.1	ResiStand Research Results.....	36
	6.3.2	Hypothesis H3.2 - Participation of SMEs	38
	6.3.3	Survey Results.....	38
7		Question 4: Relation between Existing / Emerging Standards and Policies	40
	7.1	Thematic Areas and Sendai Priorities / Action Points.....	40
	7.2	Mapping of Existing Standards into the Sendai Framework.....	43
8		Question 5: Relation between Standardisation Needs / Opportunities and Policies.....	47
	8.1	Thematic Areas and Sendai Priorities.....	47
	8.2	Mapping of Standardisation Needs and Opportunities into the Sendai Framework	47
	8.2.1	End user needs and the Sendai Priorities	47
	8.2.2	Opportunities from the Suppliers and the Sendai Priorities ..	51
9		Conclusions.....	54
	9.1	General conclusions.....	54
	9.2	Recommendations.....	55
	9.3	Next steps	57

References	58
Annex 1 – Survey Questionnaire	60

List of Figures

Figure 1	ResiStand Stakeholder Approach as a basis for the study	2
Figure 2	The Pre-standardisation approach of ResiStand	3
Figure 3	Scope and purpose, Expected outcome and Goal of the Sendai Framework	13
Figure 4	Hypothesis 1.1 - Survey results	25
Figure 5	The Disaster Management cycle and the four phases.....	26
Figure 6	Hypothesis 1.2 - Survey results	29
Figure 7	Hypothesis 2.1 - Survey results	31
Figure 8	Hypothesis 2.2 - Survey results	32
Figure 9	Hypothesis 3.1 - Survey results	36
Figure 10	Hypothesis 3.2 - Survey results	38
Figure 11	Standards by selected Sendai action points within the thematic area Common procedures.	43
Figure 12	Standards by selected Sendai action points within the thematic area Community Role and Communication.	44
Figure 13	Standards by selected Sendai action points within thematic area Best Practice Sharing.	44
Figure 14	Standards by selected Sendai action points within the thematic area Data sharing.	44
Figure 15	Standards by selected Sendai action points within thematic area Training and education.	45
Figure 16	Standards by selected Sendai action points within thematic area Equipment.....	45
Figure 17	Standards by selected Sendai action points within thematic area Communication Equipment.....	45
Figure 18	Standards by selected Sendai action points within the thematic area Legal/Social Issues.	46
Figure 19	The overall percentage of standards related to the four Sendai priorities.	46
Figure 20	End user standardisation needs by the Sendai Priorities	48
Figure 21	End user needs according to their Thematic Areas within Priority 1 ...	49
Figure 22	End user needs according to their Thematic Areas within Priority 2 ...	49
Figure 23	End user needs according to their Thematic Areas within Priority 3 ..	50
Figure 24	End user needs according to their Thematic Areas within Priority 3 ..	50
Figure 25	Supplier Opportunities by the Sendai Priorities.....	51
Figure 26	Supplier opportunities according to their Thematic Areas within Priority 1.....	52

Figure 27	Supplier opportunities according to their Thematic Areas within Priority 2.....	52
Figure 28	Supplier opportunities according to their Thematic Areas within Priority 3.....	53
Figure 29	Supplier opportunities according to their Thematic Areas within Priority 4.....	53

List of Tables

Table 1	Country of Origin of the Respondents	3
Table 2	The respondents by stakeholder type.....	3
Table 3	Legal framework for Disaster Management	8
Table 4	End user needs with reference to Thematic Areas.....	23
Table 5	Opportunities by Opportunity Type	24
Table 6	Opportunities by Interoperability Issues.....	24
Table 7	Existing relevant standards by DM phase	27
Table 8	End user standardisation needs with reference to DM phases.....	27
Table 9	Standardisation opportunities with reference to DM phases	28
Table 10	Comparison of existing standards with identified end user needs	28
Table 11	Restraints and barriers identified by the End User Community.....	34
Table 12	Restraints and barriers identified by the Research Section of the SUC.....	37
Table 13	The Sendai Priorities	40
Table 14	Action points by Thematic Areas and Sendai Priorities	40
Table 15	Overall number of standards related to the four Sendai Priorities	46
Table 16	Thematic Areas of standardisation needs and opportunities	47
Table 17	The Sendai Priorities	47
Table 18	Recommendations of the ResiStand project.....	55

List of Abbreviations

CEB	United Nations System Chief Executives Board for Coordination
CEN	European Committee for Standardization
CENELEC	European Committee for Electrotechnical Standardization
CEPOL	The European Union Agency for Law Enforcement Training
CoU	Community of Users on Secure, Safe and Resilient Societies
CSDP	Common Security and Defence Policy
DG	Directorate-General Internal Market, Industry, Entrepreneurship and SMEs
DG ECHO	Directorate-General for European Civil Protection and Humanitarian Aid Operations
DG DEVCO	Directorate-General for International Cooperation and Development
DG HOME	Directorate-General for Migration and Home Affairs
DG GROW	Directorate-General for
DM	Disaster Management
DRR	Disaster Risk Reduction
E-UC	End User Community
EC	European Commission
ECI	European Critical Infrastructures
EEAS	European Union External Action
EERC	European Emergency Response Capacity
EFTA	European Free Trade Association
EPCIP	European Programme for Critical Infrastructure Protection
ERCC	Emergency Response Coordination
ERNICIP	European Reference Network for Critical Infrastructure Protection
ESO	European Standardization Organization
ETSI	European Telecommunications Standards Institute
EU	European Union
EU-CCA	EU Emergency and Crisis Coordination Arrangements
EU-ICMA	EU Arrangements for Crisis Management with Cross-border Effects
EU-VRi	European Virtual Institute for Integrated Risk Management (ResiStand Partner)
EUROPOL	European Union's law enforcement agency

FAO	Food and Agriculture Organization
FP7	7 th Framework Programme for Research and Technological Development
FRONTEX	European Agency for the Management of Operational Cooperation at the External Borders
H2020	Horizon 2020 – EU Framework Programme for Research and Innovation
IAEA	International Atomic Energy Agency
ICAO	International Civilian Aviation Organization
IEC	International Electrotechnical Commission
IFAD	International Fund for Agricultural Development
IMO	International Maritime Organization
IOM	International Organization for Migration
ISO	International Organization for Standardization
ITU	International Telecommunication Union
JIS	Joint Initiative on Standardisation
JRC	Joint Research Centre
NSB	National Standardization Body
OPWC	Organisation for the Prohibition of Chemical Weapons
OSCE	Organisation for Security and Co-operation in Europe
SAG	Standards Advisory Group
SME	Small / Medium-sized Enterprise
SMSG	Special Representative of the UN Secretary-General for Disaster Risk Reduction
SSF	Security Sector Forum
SUC	Supplier Community
TC	Technical Committee
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFPA	United Nations Population Fund
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Population Fund
UNIDO	United Nations Industrial Development Organization
UNRWA	United Nations Relief and Works Agency for Palestine Refugees
UNISDR	United Nations Office for Disaster Risk Reduction
UNODC	United Nations Office on Drugs and Crime
WFP	World Food Programme
WHO	World Health Organization

1 Introduction

1.1 Objective and Approach

1.1.1 Objective

The objective of ResiStand Task T5.1 is to provide a better understanding of the relationship between standardisation and improved disaster resilience and assess the efficiency of standardisation as a tool to improve crisis management and disaster resilience. To reach this objective, the study has aimed to find answers to five questions:

- **Q1:** Which type of standards from what sector can actually contribute to improved disaster resilience and how?
- **Q2:** How can the potential of standards be utilised and how can the uptake of standards be improved?
- **Q3:** What are the limitations and constraints of standards with respect to improved disaster resilience and how can they possibly be overcome?
- **Q4:** What is the relation of existing and emerging standards to applicable policies and what are the policy areas and legislations that are currently not covered by standards?
- **Q5:** Are the standardisation needs of end-users and the opportunities on the supply side concordant with the current policy framework in order to achieve the desired improvements in disaster resilience?

1.1.2 Approach

The basis for this study about the usefulness and potential of standards in Disaster Management has been the Stakeholder Approach of ResiStand. The findings of earlier Work Packages that have been surveying the opinions of the three Stakeholder Communities have been used as the main input data:

- Existing standards identified by WP2 from the ResiStand Standards Advisory Group (SAG – representatives of standardisation bodies)
- End user standardisation needs identified by WP3 from the ResiStand End-User Community (E-UC – representatives of public authorities, practitioners, first responders and non-governmental organisations)
- Standardisation opportunities identified by WP4 from the ResiStand Supplier Community (SUC – representatives of the industry incl. SMEs and the research domain).

In addition to the above mentioned data, the same Work Packages have also collected information about the motivating factors and expected benefits that act as drivers to the participation in standardisation activities, and about the barriers and restraints that prevent stakeholders from participating.

This Task brings a new aspect to the work conducted by ResiStand, namely the influence and impact of various policies to the topic of standardisation as a tool for Disaster Management. The ResiStand project has not included a separate Policy Maker Community, but several persons from this domain are members of the other ResiStand communities. Figure 1 below demonstrates the relationship between the stakeholder groups, standardisation and Disaster Management:



Figure 1 ResiStand Stakeholder Approach as a basis for the study

In addition to the above mentioned data from earlier ResiStand Work packages, data has been gathered through desktop research from various public sources; mainly through the Internet.

1.2 Document Structure and Research Methods

1.2.1 Structure

The document begins with section 1 that presents an introduction as well as the objectives, the approach and the research methods of the report, followed by a general study on standardisation (section 2) from the point of view of its suitability as a tool for improvement of Disaster Management.

The core of this document are sections 4 to 8, where the above mentioned questions Q1 to Q5 are addressed. These are followed by section 9, which presents conclusions, recommendations and the next steps to be taken by the project. A copy of the survey questionnaire for questions Q1 to Q3 can be found in Annex 1.

1.2.2 Questions 1 to 3: Verification of Hypotheses through a Survey

Questions Q1 to Q3 are addressed through a method based on hypotheses which were then verified through a survey by members of the ResiStand Communities.

Data from Work Packages WP2 to WP4 has been collected and consolidated. For each question, a set of hypotheses based on this consolidated data have been drafted.

A web-based survey was designed and implemented using EU-VRI's online survey tool. The survey was organized into six sections, each describing a hypothesis as detailed below. The survey was sent to all members of the ResiStand Communities (SAG, E-UC, SUC and interested subscribers not registered to a particular community) and was also advertised on social media. It was open and available for 10 working days, during which 28 participants representing both E-UC and SUC took part and completed it; for an unknown reason, none of the SAG members answered the survey.

For each hypothesis, the background findings of earlier ResiStand work packages were presented, followed by the actual hypothesis. The respondents were then asked to express their agreement with the presented hypotheses through a five-step scale, ranging from "Strongly agree" to "Strongly disagree". Additionally, a comments field (free text) was available for each hypothesis. At the end of the survey, an input field for general comments was included, followed by a set of questions about the respondent's relationship with the Disaster Management domain. A copy of the survey form is attached as Annex 1 – Survey Questionnaire.

A total of 28 respondents completed the survey, distributed by country of origin and professional association to standardisation as presented in Table 1 and Table 2, respectively, as follows:

Table 1 Country of Origin of the Respondents

Country	Number of Answers	Percent	Country	Number of Answers	Percent	Country	Number of Answers	Percent
Poland	5	18%	Turkey	2	7%	Greece	1	4%
Italy	4	14%	Israel	1	4%	Spain	1	4%
Netherlands	4	14%	Germany	1	4%	France	1	4%
Czech Republic	2	7%	Ireland	1	4%	Other	3	10%
Finland	2	7%						

Table 2 The respondents by stakeholder type

Association	Number of Answers	Percent
Standardisation Bodies	0	0%
Suppliers (Research, Industry)	12	43%
End Users (First Responders, Practitioners, NGOs)	19	68%
Other: DM Consultant	1	14%
Other: Academia	1	7%

1.2.3 Questions 4 to 5: Mapping of Standards and Needs / Opportunities into a Policy Framework

These two questions are approached by mapping

- the existing /planned standards identified by ResiStand WP2 (Q4) and
- standardisation needs/opportunities identified by ResiStand WP3 and WP4 (Q5)

into the Sendai Framework for Disaster Risk Reduction [14] through comparison of the Thematic Areas of the findings with the action points of the four Sendai Priorities – see Section 7.1.

Standardisation needs of the end users (public authorities, first responders, practitioners and non-governmental organisations) have been collected and studied in WP3 of ResiStand[23], while the opportunities offered by the Suppliers (industry incl. SMEs and the research domain) have been studied by WP4 [24]. These results are an essential part of the pre-standardisation approach of ResiStand – see Figure 2 below.



Figure 2 The Pre-standardisation approach of ResiStand

2 Disaster Management Policies

2.1 *References to Earlier Reports of ResiStand*

Disaster Management has been studied in detail in the following ResiStand Deliverable:

- D1.1: *Project Handbook* (ResiStand Conceptual Framework) [27]

This report concentrates on the areas not covered by the earlier reports, namely

- European Disaster Management Policies
- European Disaster Management Legislation
- Global Standardisation Policies

The policies are addressed and studied below specifically in order to find out if they include any references to standardisation – general references such as “... applicable standards should be used ...” are too vague and obvious and they are not referenced by this study.

2.2 *European Disaster Management Policies and Legislation*

2.2.1 *Introduction to EU policies*

There are two types of EU policies that are related to Crisis Management and Disaster Resilience, namely internal and external. The internal policies address Safety, Security and Crisis Management in the European Union and its member states, while the external policies address international relief and operations outside the Union. Additionally, there are also cross-cutting topics and areas.

The current European Commission under leadership of Mr. Juncker has defined ten political priorities for 2015-19¹. One of them is called “A stronger global actor”. Three of the policies related to this priority touch closely the concept of crisis management and disaster resilience, namely

- Security (managed by DG HOME and EEAS)
- International cooperation and development (managed by DG DEVCO)
- Humanitarian aid and civil protection (managed by DG ECHO)

The European Commission operates through 53 Departments and Executive Agencies. Quite a few of these are somehow related to Crisis Management and Disaster Resilience. In this study, we concentrate on the main actors presented in Sections 2.2.2 to 2.2.7.

2.2.2 *European Union External Action (EEAS)*

The EEAS² is the European Union's diplomatic service. It helps the EU's foreign affairs chief – the High Representative for Foreign Affairs and Security Policy – carry out the Union's Common Foreign and Security Policy.

¹ <https://ec.europa.eu/avservices/photo/photoByPriorities.cfm?sitelang=en>

² <https://eeas.europa.eu>

The EEAS executes also the Common Security and Defence Policy (CSDP) of the European Union. The CSDP enables the Union to take a leading role in peace-keeping operations, conflict prevention and in the strengthening of international security. It is an integral part of the EU's comprehensive approach towards crisis management, drawing on civilian and military assets.

The Department for Crisis Response & Operational Coordination of the EEAS plays a central coordinating role in the EU's efforts and activities in crisis response. A guiding principle of Lisbon Treaty provisions, which also lies at the heart of the EEAS, is the desire to achieve a substantial increase in 'responsiveness' to the opportunities and challenges that exist beyond EU borders with adequate EU action during external emergencies, which require ad-hoc decision making.

The Union has developed the civilian aspects of crisis management in four priority areas defined by the Feira European Council in June 2000: police, strengthening of the rule of law, strengthening civilian administration and civil protection. The specific capabilities in these four fields could be used in the context of EU-led autonomous missions, or in the context of operations conducted by lead agencies, such as the UN or the OSCE (Organisation for Security and Co-operation in Europe).

2.2.3 Directorate-General for Migration and Home Affairs (DG HOME)

DG HOME³ is responsible for the Asylum and migration as well as Borders and security policies, which both are interesting from the Disaster Management point of view.

The **EU Counter-Terrorism Strategy** [1] commits the Union to combating terrorism globally, while respecting human rights and allowing its citizens to live in an area of freedom, security and justice. Standards or standardisation are not mentioned in this document.

The **EU Emergency and Crisis Coordination Arrangements** (EU-CCA) [2] define rules for interactions between EU institutions and affected EU States during a crisis, while the integrated **EU Arrangements for Crisis Management with Cross-border Effects** (EU-ICMA) facilitate practical cooperation between EU States. These provide a generic arrangement for all types of crises, such as natural and man-made disasters. In these documents, there are two references to "standards operating procedures", but nothing about who should take care of the development.

The **European Programme for Critical Infrastructure Protection** (EPCIP) [3] sets the overall framework for activities aimed at improving the protection of critical infrastructure across all EU States and in all relevant sectors of economic activity. The threats to which the programme aims to respond are not only confined to terrorism, but also include criminal activities, natural disasters and other causes of accidents. In short, it seeks to provide an all-hazards cross-sectoral approach. The EPCIP is supported by regular exchanges of information between EU States in the frame of the CIP Contact Points meetings. Standards or standardisation are not mentioned in this document.

A key pillar of this programme is the **Directive 2008/114/EC on European Critical Infrastructures** [4]. It establishes a procedure for identifying and designating **European Critical Infrastructures** (ECI) and a common approach for assessing the need to improve their protection. The Directive has a sectoral scope, applying only to the energy and transport sectors. Standards or standardisation are not mentioned in this document.

The **European Agenda on Security** [5] aims to strengthen the tools that the EU provides to national law enforcement authorities to fight terrorism and cross-border crime. In particular, the Agenda focuses on improving information exchanges and operational cooperation between law enforcement authorities. It also mobilizes a number of EU instruments to support actions through training, funding and research and innovation. Finally, the Agenda sets out a number of targeted actions to be taken at EU level, to step up the fight against terrorism, organised crime and cybercrime.

³ <http://ec.europa.eu/home-affairs/>

In the Communication from the EC to the EU decision makers – COM(2015) 185 – the following sentences were found:

“The Commission recently mandated European standardization organisations to produce a ‘privacy by design’ standard aimed to promote the embedding of high standards of security and fundamental rights at the earliest stage in technological design. Compliance with this standard will ensure that EU security products and services respect individuals’ rights and thereby enhance consumer confidence.

A competitive EU security industry can also contribute to the EU’s autonomy in meeting security needs. The EU has encouraged the development of innovative security solutions, for example through standards and common certificates. The Commission is considering further action, such as on alarm systems and airport screening equipment, to remove barriers to the Single Market and to enhance the competitiveness of the EU security industry in export markets.”

The text above does not specify at all what would be standardised nor how or by whom these activities should be accomplished. Standardisation as an activity is not mentioned at all in the other app. 30 reports, proposals and communications from the Commission related to the European Security Agenda.

DG HOME is overseeing several decentralized agencies such as FRONTEX, Europol and CEPOL. It also manages several networks and communities. The **Community of Users on Secure, Safe and Resilient Societies** (CoU) brings together and facilitates information exchange among and between policy-makers, research, industry (including SMEs), practitioners (first responders, civil protection units etc.), and the general public.

2.2.4 Directorate-General for European Civil Protection and Humanitarian Aid Operations (DG ECHO)

The main mission of DG ECHO⁴ is to preserve lives, prevent and alleviate human suffering and safeguard the integrity and dignity of populations affected by natural disasters and man-made crises. DG ECHO manages two EU policies: Civil Protection and Humanitarian Aid.

The **EU Civil Protection Mechanism** [6] was established in 2001 to foster cooperation among national civil protection authorities across Europe. It enables a more rapid and effective response to emergencies by coordinating the delivery of civil protection teams and assets to the affected country and population. Any country in the world can call on the Mechanism for help.

The **Emergency Response Coordination Centre** (ERCC) [7] is the operational hub of the Mechanism. It coordinates the delivery of civil protection assistance to disaster stricken countries such as relief items, expertise, intervention teams and specific equipment. Through a direct link with the national civil protection authorities of the Mechanism's participating states, the ERCC ensures rapid deployment of civil protection assets.

Additionally, the ERCC provides emergency communications and monitoring tools through the **Common Emergency Communication and Information System** (CECIS), a web-based alert and notification application enabling real time exchange of information.

To further enhance European preparedness for disasters, European countries created the **European Emergency Response Capacity** (EERC) [8] in 2014, as part of the EU Civil Protection Mechanism. The EERC brings together a range of relief teams, experts and equipment, which participating states make available and keep on standby for EU civil protection missions all over the world.

The second main policy area managed by DG ECHO is **Humanitarian aid**. This includes several humanitarian policies such as Disaster Risk Reduction, Education in Emergencies and EU Aid Volunteers.

No references to standardisation was found on the websites of DG ECHO or its sub-divisions.

⁴ <http://ec.europa.eu/echo/>

2.2.5 *Directorate-General for International Cooperation and Development (DG DEVCO)*

DG DEVCO⁵ is the Commission department responsible for EU policy on development and delivering international aid. It is in charge of international development cooperation, adapting to the evolving needs of partner countries, working closely with the department for neighbourhood policy and enlargement and other Commission services.

DG DEVCO works closely with other Commission services responsible for thematic policies, as well as with the European External Action Service and Commission services on external action, so as to facilitate and help ensure a consistent approach.

DG DEVCO is responsible for formulating European Union Development Policy [29] and thematic policies in order to reduce poverty in the world, to ensure sustainable economic, social and environmental development and to promote democracy, the rule of law, good governance and the respect of human rights, notably through external aid. DG DEVCO fosters coordination between the European Union and its Member States in the area of development cooperation and ensure the external representation of the European Union in this field.

No references to standardisation could be found on the DG DEVCO website nor in the main documents describing its policies.

2.2.6 *Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (DG GROW)*

Although DG GROW⁶ is not directly involved in Disaster Management, it is mentioned here as one of the main policy makers because it is responsible for the industrial policies of the EU. As the industry (incl. SMEs) is one of the stakeholder groups in standardisation, these policies have a significant indirect effect on disaster management.

DG GROW is also responsible for the EU's space policy through the Copernicus and Galileo programmes, which both are extremely useful tools in disaster management.

Being responsible for the Union's Single Market policies, DG GROW accounts for the Standardisation Policy of the EU, which is presented in detail in Section 3.3.1 of this report.

2.2.7 *Joint Research Centre (JRC)*

The Joint Research Centre⁷ is the research arm of the European Commission. In itself, it is not responsible for policies but rather acts as an executive agency assisting the various Commission departments by offering research services to them.

The **European Reference Network for Critical Infrastructure Protection (ERNICIP)**⁸ Project is managed by the Joint Research Centre. It aims at providing a framework within which experimental facilities and laboratories will share knowledge and expertise in order to harmonize test protocols throughout Europe, leading to better protection of critical infrastructures against all types of threats and hazards and to the creation of a single market for security solutions. The ERNICIP project is divided in twelve Thematic Groups, of which several are connected to Crisis Management and Disaster resilience.

2.2.8 *European Legal Framework for Disaster Management*

A legal framework for Disaster Management has been created by the European Union, and it has been complemented several times with various publications during the last decades. The Treaty of Lisbon [9]

⁵ https://ec.europa.eu/europeaid/general_en

⁶ http://ec.europa.eu/growth/index_en

⁷ <https://ec.europa.eu/jrc/en>

⁸ <https://erncip-project.jrc.ec.europa.eu>

emphasizes the commitment of the EU to provide assistance, relief, and protection to victims of natural or man-made disasters around the world (art. 214), and to support and coordinate the civil protection systems of its Member States (art. 196). It further mandates the European institutions to define the necessary measures for such actions to be carried out. Additionally, several Regulations, Commission Decisions and other documents have been published [10] – see Table 3 below.

Table 3 Legal framework for Disaster Management

1. Legislation	
Date of publication	Document name
15/03/2016	Council Regulation (EU) 2016/369 on the provision of emergency support within the Union – no reference to standardisation.
03/04/2014	Regulation No 375/2014 of the European Parliament and the Council on establishing the European Voluntary Humanitarian Aid Corps ('EU Aid Volunteers initiative') – no reference to standardisation.
17/12/2013	Decision No 1313/2013/EU of the European Parliament and of the Council on a Union Civil Protection Mechanism – no reference to standardisation.
20/06/1996	Regulation (EC) No 1257/96 concerning humanitarian aid – no reference to standardisation.
2. Implementing rules	
Date of publication	Document name
16/10/2014	Commission Decision, laying down rules for the implementation of Decision No 1313/2013/EU of the European Parliament and of the Council on a Union Civil Protection Mechanism and repealing Commission Decisions 2004/277/EC, Euratom and 2007/606/EC, Euratom – no reference to standardisation.
29/07/2010	Commission Decision 2010/481/EU, Euratom amending Decision 2004/277/EC, Euratom as regards rules for the implementation of Council Decision 2007/779/EC, Euratom establishing a Community civil protection mechanism – no reference to standardisation.
20/12/2007	Commission Decision 2008/73/EC, Euratom amending Decision 2004/277/EC, Euratom as regards rules for the implementation of the Mechanism – no reference to standardisation.
08/08/2007	Commission Decision 2007/606/EC, Euratom laying down rules for the implementation of the provisions on transport – no reference to standardisation.
29/12/2003	Commission Decision 2004/277/EC laying down rules for the implementation of Council Decision 2001/792/EC – no reference to standardisation.
3. Council conclusions	
Date of publication	Document name
09/06/2011	Council conclusions on the development of the external dimension of the European Programme for Critical Infrastructure Protection – no reference to standardisation.
12/05/2011	Council conclusions on Integrated Flood Management within the European Union – no reference to standardisation.

11/04/2011	Council conclusions on Further Developing Risk Assessment for Disaster Management within the European Union – no reference to standardisation.
02/12/2010	Council Conclusions on Host Nation Support – no reference to standardisation.
08/11/2010	Conclusions on Innovative Solutions for Financing Disaster Prevention – no reference to standardisation.
21/05/2010	Council conclusion on Psychosocial support – no reference to standardisation.
30/11/2009	Council Conclusions on a Community framework on disaster prevention within the EU – one reference to the development of a guideline (“... before the end of 2012, develop together with the Member States guidelines on minimum standards for hazard-specific disaster prevention ...”).
28/11/2008	Council Conclusions calling for civil protection capabilities to be enhanced by a European mutual assistance system building on the civil protection modular approach (16474/08) – no reference to standardisation.
16/06/2008	Council Conclusions on Reinforcing the Union's Disaster Response Capacity – towards an integrated approach to managing disasters – no reference to standardisation.
4. European Parliament resolutions	
Date of publication	Document name
21/09/2010	EP resolution on Community approach on the prevention of natural and man-made disasters – one reference to standardisation (“...Underlines the importance of drawing up standards to analyse and express the socio-economic impact of disasters on communities ...”).
19/06/2008	European Parliament resolution on stepping up the Union's disaster response capacity – no reference to standardisation.
5. Other EU documents	
Date of publication	Document name
01/06/2012	Commission Staff Working Document on EU Host Nation Support Guidelines – no reference to standardisation.
21/12/2010	Commission Staff Working Paper on Risk Assessment and Mapping Guidelines for Disaster Management – two references to standardisation (“... improve the use of good practices and international standards across the EU and help to gradually develop coherent and consistent risk assessment methodology and terminology ...” and “... Improved and standardized definitions and terminology for economic losses and/or damage costs (e.g. including reconstruction costs), affected people, etc. ...”).
26/10/2010	COM(2010)600 Communication Towards a stronger European disaster response: the role of civil protection and humanitarian assistance – no reference to standardisation.
23/02/2009	COM(2009)82 Communication on a Community approach on the prevention of natural and man-made disasters – no reference to standardisation.
05/03/2008	COM(2008)130 Communication on Reinforcing the Union's Disaster Response Capacity – no reference to standardisation.

30/01/2008	Joint Statement (2008/C 25/01) - The European Consensus on Humanitarian Aid – no reference to standardisation.
14/12/2007	Commission Staff Working Document SEC(2007)1721 Towards Better Protecting Citizens against Disaster Risks: Strengthening Early Warning Systems in Europe - one reference to standardisation (“...Successful research projects, however, are able to influence the take-up or operationalisation of research results by submitting their specifications to standards bodies ...”).

2.2.9 Conclusions and Recommendations

One big difficulty in understanding EU policies is their multitude. Not only is the European decision-making been distributed between 53 Departments and Executive Agencies, but there is a large number of departments, offices, programmes, actions and other activities under these agencies; each of these publishing various policies in one form or another.

Another problem for a layman – most people involved in standardisation are not experts on EU management – is the large number of documents of various types. The directives, regulations, communications, proposals, decisions, conclusions, resolutions and working documents form a jungle that is almost impenetrable for someone who does not understand the meaning and position of each of these document types.

Seen particularly from the Disaster Management point of view, a third problem is the dual approach to Disaster Management: On the one hand, it is related to the internal security and safety of the EU and its Member States, and on the other hand, it is related to the external operations of EU in the field of crisis management and humanitarian aid globally. These two fields are taken care of by separate DGs or agencies, of which each are preparing and publishing their own policies.

The diversity of the EU administration is definitely a richness to Europeans, but there is also the other side. All of the above make a comprehensive perception of policies related to a cross-cutting or horizontal theme such as Disaster Management rather difficult. When this is combined with the structure and rules of standardisation – which is not far from complicated either – it is easy to understand that not too many European standards for Disaster Management are available.

It is outside the scope of this project to reform the management structure of the EU, but setting up a cross-sectoral office for Disaster Management (DM) could perhaps help – maybe with a task of coordinating DM related standardisation.

With the exception of DG GROW and the two short sentences included in the European Agenda for Security, standardisation is not mentioned in the policies of the above-mentioned directorates and agencies. Another exception is the Community of Users managed by DG HOME, that has done valuable work to promote standardisation through workshops and publications.

The same applies also to the legal framework behind the policies that guides the work of the EU bodies: With the exception of a few generic statements about development of guidelines and standards, the legal documents do not contain any references nor requirements for the development of standards. This fact partly also explains why there are no harmonised standards in the area of Disaster Management – a prerequisite for a successful standardisation mandate is appropriate legislation with references to standards.

The standardisation policies of DG GROW will be discussed in section 3.3.1

ResiStand recommends that

- **The Commission sets up a central point of contact (e.g. an office, a board or a task force) for all matters related to Disaster Management covering and bringing together all DM work done by the various DGs and Agencies. A person / persons responsible for standardisation of DM will be included in the team managing the above-mentioned point of contact, and**
- **A joint study by all above mentioned agencies will be initiated in order to identify the most critical requirements for standardisation of DM. This includes a definition of a schedule in cooperation with the European Standardisation Organisations.**

2.3 Global Disaster Management Policies

2.3.1 United Nations and Associated Bodies as Policy Makers

The main global Disaster Management policy maker is the United Nations with its programmes, funds, and specialized agencies. Additionally, some other international organisations have a global role in producing Disaster Management related policies. [11]

UN Programmes and Funds

The United Nations General Assembly has established a number of programmes and funds to address particular humanitarian and development concerns. These bodies usually report to the General Assembly through an executive board and they are financed through voluntary rather than assessed contributions. All of the below mentioned programmes and funds have some connection with Disaster Management.

- **UNDP** – The United Nations Development Programme provides expert advice, training and grants support to developing countries, with increasing emphasis on assistance to the least developed countries.
- **UNICEF** – The United Nations Children's Fund provides long-term humanitarian and development assistance to children and mothers.
- **UNHCR** – The United Nations High Commissioner for Refugees protects refugees worldwide and facilitates their return home or resettlement.
- **WFP** – The World Food Programme aims to eradicate hunger and malnutrition. It is the world's largest humanitarian agency. Every year, the programme feeds almost 80 million people in around 75 countries.
- **UNODC** – The United Nations Office on Drugs and Crime helps Member States fight drugs, crime, and terrorism.
- **UNFPA** – The United Nations Population Fund is the lead UN agency for delivering a world where every pregnancy is wanted, every birth is safe, and every young person's potential is fulfilled.
- **UNCTAD** – The United Nations Conference on Trade and Development is the United Nations body responsible for dealing with development issues, particularly international trade – the main driver of development.
- **UNEP** – The United Nations Environment Programme established in 1972, is the voice for the environment within the United Nations system. UNEP acts as a catalyst, advocate, educator and facilitator to promote the wise use and sustainable development of the global environment.
- **UNRWA** – The United Nations Relief and Works Agency for Palestine Refugees has contributed to the welfare and human development of four generations of Palestine refugees. Its services encompass education, health care, relief and social services, camp infrastructure and improvement, microfinance and emergency assistance, including in times of armed conflict.
- **UN Women** – UN Women merges and builds on the important work of four previously distinct parts of the UN system, which focus exclusively on gender equality and women's empowerment.
- **UN Habitat** – The mission of the United Nations Human Settlements Programme is to promote socially and environmentally sustainable human settlements development and the achievement of adequate shelter for all.

UN Specialized Agencies

The UN specialized agencies are autonomous organizations working with the United Nations. All were brought into relationship with the UN through negotiated agreements. Some of them were created together with the UN, while others were created later by the UN to meet emerging needs.

- **WHO** – The World Health Organization is the directing and coordinating authority on international health within the United Nations system. The objective of WHO is the attainment by all peoples of

the highest possible level of health. Health, as defined in the WHO Constitution, is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.

- **FAO** – The Food and Agriculture Organization leads international efforts to fight hunger. It is both a forum for negotiating agreements between developing and developed countries and a source of technical knowledge and information to aid development.
- **IFAD** – The International Fund for Agricultural Development, since it was created in 1977, has focused exclusively on rural poverty reduction, working with poor rural populations in developing countries to eliminate poverty, hunger and malnutrition; raise their productivity and incomes; and improve the quality of their lives.
- **IMO** – The International Maritime Organization has created a comprehensive shipping regulatory framework, addressing safety and environmental concerns, legal matters, technical cooperation, security, and efficiency.
- **ICAO** – The International Civilian Aviation Organization sets international rules on air navigation, the investigation of air accidents, and aerial border-crossing procedures
- **ITU** – The International Telecommunication Union is the United Nations specialized agency for information and communication technologies. It is committed to connecting all the world's people – wherever they live and whatever their means. Through our work, we protect and support everyone's fundamental right to communicate
- **UNIDO** – The United Nations Industrial Development Organization is the specialized agency of the United Nations that promotes industrial development for poverty reduction, inclusive globalization and environmental sustainability.
- **UNISDR** – The United Nations Office for Disaster Reduction serves as the focal point in the United Nations system for the coordination of disaster reduction. UNISDR is introduced in more details below in Section 2.3.2.

Related Organisations

The organisations mentioned below are autonomous organisations with nation-states as members and are not included in the organisation of the UN. They have an international role on their respective focus areas and cooperate with the United Nations.

- **IAEA** – The International Atomic Energy Agency, is the world's centre for cooperation in the nuclear field. The Agency works with its Member States and multiple partners worldwide to promote the safe, secure and peaceful use of nuclear technologies.
- **OPCW** – The Organisation for the Prohibition of Chemical Weapons is the implementing body of the Chemical Weapons Convention (CWC), which entered into force in 1997. OPCW Member States work together to achieve a world free of chemical weapons.
- **IOM** – The International Organization for Migration works to help ensure the orderly and humane management of migration, to promote international cooperation on migration issues, to assist in the search for practical solutions to migration problems and to provide humanitarian assistance to migrants in need, including refugees and internally displaced people.-

2.3.2 Introduction to UNISDR and the Sendai Framework

The UN General Assembly endorsed the **International Strategy for Disaster Reduction** (resolution 54/219) in December 1999. To ensure the implementation of the strategy, the **United Nations Office for Disaster Risk Reduction (UNISDR)** was established.

The International Strategy for Disaster Reduction[12] contains three references to standardisation:

- One of the objectives of the strategy is to “*Establish internationally and professionally agreed standards / methodologies for the analysis and expression of the socio-economic impacts of disasters on societies*”.

- As an implementation action, the strategy suggests to “Establish national, regional/sub-regional, and global information exchanges, facilities, or websites dedicated to hazard, risk and disaster prevention, linked by agreed communication standards and protocols to facilitate interchange” and to “Develop and apply standard forms of statistical recording of risk factors, disaster occurrences and their consequences to enable more consistent comparisons”.

UNISDR is part of the United Nations Secretariat and its functions cover social, economic, environmental and humanitarian fields in the area of Disaster Risk Reduction. UNISDR is led by a Special Representative of the UN Secretary-General for Disaster Risk Reduction (SRSG) and has over 100 staff around the world.

UNISDR coordinates international efforts in Disaster Risk Reduction (DRR). It informs and connects people by providing practical services and tools such as the risk reduction website PreventionWeb⁹, publications on good practices, country profiles and the Global Assessment Report on Disaster Risk Reduction¹⁰, a biennial analysis of global disaster risks and trends.

On request of the United Nations System Chief Executives Board for Coordination in 2011, UNISDR has prepared a **UN Plan of Action on Disaster Risk Reduction for Resilience** [12], which was endorsed by the CEB in April 2013. The action plan does not mention standardisation except with a short reference to ITU as a source for telecommunication standards.

The **Sendai Framework for Disaster Risk Reduction 2015-2030** [14] was adopted at the Third UN World Conference in Sendai, Japan, on March 18, 2015. It is the outcome of stakeholder consultations initiated in March 2012 and inter-governmental negotiations from July 2014 to March 2015, supported by UNISDR at the request of the UN General Assembly. Figure 3 below present the scope and purpose, expected outcome and goal of the Sendai Framework [15].

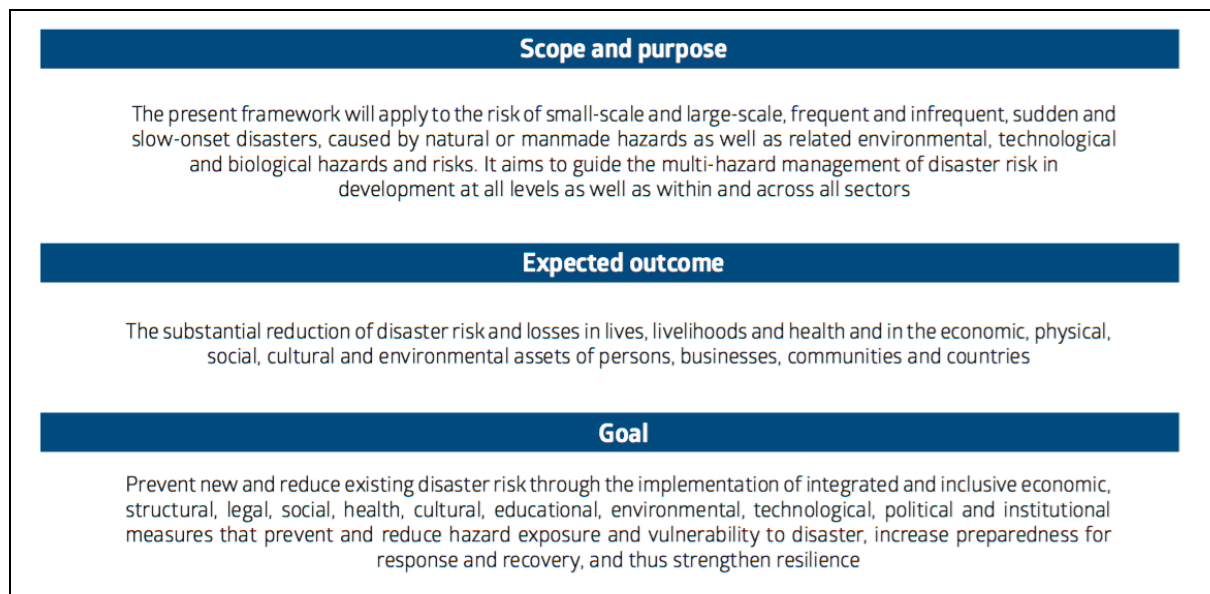


Figure 3 Scope and purpose, Expected outcome and Goal of the Sendai Framework

Questions Q4 and Q5 of this report refer to “Policy frameworks”. After considering several alternatives, the Sendai Framework for Disaster Risk Reduction was chosen as reference framework for these questions. The reasons for this decision were as follows:

⁹ <http://www.preventionweb.net/>
¹⁰ <https://www.unisdr.org/we/inform/gar>

- The Sendai Framework has been globally adopted by the UN;
- The Sendai Framework is voluntary and non-binding agreement between the stakeholders;
- The Sendai Framework is based on shared responsibility between the State and other stakeholders including local government and the private sector, matching well with the Stakeholder approach of ResiStand;
- The Sendai Framework forms a good basis for standardisation activities.

2.3.3 The Priorities for Action of the Sendai Framework

To reach the expected outcome and goal of the Sendai Framework, four priority areas have been defined. Their purpose is to help in focusing actions within and across sectors by States at local, national, regional and global levels. These four priorities were used by ResiStand T5.1 as the mapping base for existing standards (Q4) as well as for needs and opportunities (Q5).

Priority 1: Understanding disaster risk

Disaster risk management needs to be based on an understanding of disaster risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics and the environment.

Priority 2: Strengthening disaster risk governance to manage disaster risk

Disaster risk governance at the national, regional and global levels is vital to the management of disaster risk reduction in all sectors and ensuring the coherence of national and local frameworks of laws, regulations and public policies that, by defining roles and responsibilities, guide, encourage and incentivize the public and private sectors to take action and address disaster risk.

Priority 3: Investing in disaster risk reduction for resilience

Public and private investment in disaster risk prevention and reduction through structural and non-structural measures are essential to enhance the economic, social, health and cultural resilience of persons, communities, countries and their assets, as well as the environment. These can be drivers of innovation, growth and job creation. Such measures are cost-effective and instrumental to save lives, prevent and reduce losses and ensure effective recovery and rehabilitation.

Priority 4: Enhancing disaster preparedness for effective response, and to «Build Back Better» in recovery, rehabilitation and reconstruction

Experience indicates that disaster preparedness needs to be strengthened for more effective response and ensure capacities are in place for effective recovery. Disasters have also demonstrated that the recovery, rehabilitation and reconstruction phase, which needs to be prepared ahead of the disaster, is an opportunity to «Build Back Better» through integrating disaster risk reduction measures. Women and persons with disabilities should publicly lead and promote gender-equitable and universally accessible approaches during the response and reconstruction phases.

2.3.4 Conclusions and Recommendations

In a similar way as the Europeans Standardisation Organisations follow the European standardisation policies, the international standardisation organisations should follow the UN and other international policies. As the United Nations does not have similar policy and legislation based relationship with ISO/IEC/ITU as the European Commission has, instruments like programming initiatives and mandates are not available.

It is obvious, that the potential new standardisation activities originating from the programmes, funds and agencies of the UN and from related organisations should at first hand be developed and managed by the international standards organisations such as ISO, IEC and ITU or by specialized organizations such as IMO and ICAO. This does not mean that the European Union and its member states would not have a strong role in this – actually vice versa, as Europe could take a leading role in turning the UN and related policies into new standardisation items. These activities could for example be channelled through the ‘United Nation Coordination Group’ of ISO/TC 292, which has been established to explore opportunities within the area of

disaster risk reduction and supporting implementation of various of frameworks and programs developed by the United Nations¹¹. As all EU member states are members of the international standards organisations, it would be rather easy to get decisions made and activities accomplished.

Especially, the internationally acknowledged Sendai Framework should be better utilised as a basis for global standardisation. In Sections 7 and 8 of this report, the existing standards as well as needs and opportunities identified by the ResiStand project have been examined and organised according to the Sendai Principles – the results show, that the Framework is an excellent basis for future standardisation of topics related to Disaster Management.

ResiStand recommends that

- **The European Commission together with the European Standardisation Organisations (CEN/CENELEC/ETSI) starts to create a strategy for a European initiative of implementing relevant UN policies related to Disaster Management as new standardisation programmes.**
- **The above-mentioned standardisation work should be done on a global level by the international standards organisations or specialised global bodies, with Europe as a forerunner in all activities. The resulting new international standards should then also be confirmed as European standards (e.g. EN ISO) according to the Vienna agreement or other similar instruments.**
- **The National Standardisation Bodies of the EU Member States should actively support the activities of the ‘United Nation Coordination Group’ of ISO/TC 292 in order to increasingly include standardisation as part the implementation of the Sendai Framework.**

¹¹ <http://www.isotc292online.org/organization/uncg/>

3 A Short Study on Standardisation

3.1 *References to Earlier Reports of ResiStand*

Standardisation has been studied in detail in the following ResiStand Deliverables:

- D1.1: *Project Handbook* (Standardisation Landscape) [27]
- D1.2: *Lessons identified and learned from past Programming Initiatives* (Mandates) [22]
- D2.2: *Analysis of standards and standardisation experiences relevant to disaster resilience* (Standards and standardisation bodies) [25]

This report concentrates in the areas not covered by the earlier reports, namely

- Principles of standardisation
- General argumentation for standards
- Standardisation policies
- Standardisation and legislation

3.2 *Basic ideas of standardisation*

3.2.1 *Principles of Standardisation*

The following principles are drafted by combining descriptions of principles from the websites of several international, European and national standardisation bodies.

Consensus

A standard or other similar document is a result of a general agreement between interested parties, without opposition to its substantial contents. A consensus is reached by taking into account and combining the opinions and arguments of interested parties. However, consensus needs not imply unanimity.

Involvement of all stakeholders

All interested stakeholders are invited to get involved in and contribute to the preparation of a standard in order to achieve the highest possible acceptability of the document after publication.

Openness

The standardisation process is open to the public from the beginning and at all stages. The public must be appropriately informed about the beginning of the preparation of a standard, about the body preparing it, about the document serving as the basis for its preparation and about the preparation stages (public enquiry, issue of the standard).

State of the art

The standards follow state of the art – the technical capability of products, processes and services, bases on the relevant consolidated findings of science, technology and experience.

Coherence of standards collection

A standards collection must not contain conflicting standards; by the adoption of a new standard, the old one is withdrawn. In Europe, this implies that conflicting national standards have to be withdrawn when a European standard is published.

Voluntary Use of Standards

Principally, standards are voluntary documents – there is no automatic legal obligation to apply them. In some cases, laws and regulations may refer to standards and even make compliance with them compulsory.

Voluntary participation

Participation in the standardisation process is voluntary with a self-financing basis. No compensation of working time or travel costs are normally paid by the standardisation bodies to the experts participating in the activities; neither will the authors have any IPRs to the emerging documents.

Independence

The standardisation bodies on international, European and national levels are independent associations that are not part of public organisations nor under direct political control. These bodies are mainly funding their operations through sales of the published standards and participation fees from the participants representing various stakeholders.

3.2.2 General Arguments for Standards

This section addresses the general arguments for standardisation as presented by the international and European standardisation bodies on their respective websites. Several of these are targeted at the consumer – these arguments fall outside the scope of this project and are therefore omitted from the following perusal. Below are listed some of the most important benefits that standards are supposed to bring to their users and to the society according to the CEN website [16].

Compatibility and interoperability

“Standards are a useful tool for ensuring that different products and components are mutually compatible and will function properly when connected together. This objective - also known as interoperability - is vital for numerous industries. By paying close attention to standards, you can make sure that all the products and services you provide are compatible with each other, and that they will also work with products and services offered by other companies and organizations.”

Compliance

“Standards can help companies and other organizations to ensure that their products and services fulfil the requirements of relevant legislation. Some European Standards (called ‘harmonized standards’) enable their users to ensure that their products, services or processes comply with the requirements of specific EU directives and/or regulations. Those who apply these standards are said to benefit from a ‘presumption of conformity’ with the relevant legal requirements.”

Improved performance, quality and reliability

“European Standards provide clear guidelines and instructions that, when correctly applied, should ensure that a product or service will satisfy a series of specific quality criteria, corresponding with customers’ requirements.

By implementing the relevant standards, you can achieve better levels of performance and reliability. This will help to attract and retain customers for your products and services, thereby making your business more competitive and successful.”

Access to the latest knowledge and state-of-the-art solutions

“European and international standards are developed by experts from many different countries who share their knowledge and expertise in a particular field. These standards are also reviewed on a regular basis to

ensure that they take account of the latest scientific, technological, regulatory and market developments. By referring to the current versions of relevant standards, you can benefit from having access to the best available knowledge and state-of-the-art solutions.”

Access to markets and customers

“By using European Standards, your business can take full advantage of the Single Market and reach up to 600 million potential consumers across Europe. European Standards published by CEN are recognized and accepted by the National Standardization bodies in 34 countries, so you can be sure that when you apply these standards, you will be able to sell your products and/or services in all these countries.

Europe is the region that has the largest implementation percentage of international standards. Standards grant access to the global market and are an important asset in contributing to the international dimension of Europe. CEN’s ties with the ISO (the International Organization for Standardization), are settled through the Vienna Agreement. This agreement allows the widening of trade borders of the European Union, and guarantees a strong European presence at international level. Through the involvement of experts in Technical Committees, European and national expertise is being developed and recognized globally.”

Fast and easy transfer of research results to the market

“The European Standardization System provides you also with a trustworthy platform on which you can build your innovations. The close cooperation between the three European Standardization Organizations (ESOs) addresses cross-sectoral standardization activities and provides a system approach to new areas of standardization. Indeed, standardization channels innovation thereby increasing industry's competitiveness, bringing new export opportunities and economic growth and hence contributes to the recovery of Europe's economy.

CEN and its sister organization CENELEC are enhancing their links with Research & Development (R&D) in order to reinforce the role of standards as a tool for market penetration of R&D results through the development of an integrated strategy, better promotion of the benefits of standardization to relevant R&D partners, and active involvement in EU-funded research and innovation projects.”

Reduced costs and more efficiency

“For European businesses, standards have become a strategic management tool to increase their competitive edge. Standards facilitate competition by making it easier for customers to choose between different suppliers offering equivalent products or services. Purchasers are able to choose between products or services that comply with the same standards by looking at differences in terms of quality, price, and other criteria.”

The arguments presented above are easily applicable to Disaster Management. Every benefit might not be suitable to all stakeholders in the DM domain; for instance, “Access to market” brings benefits mainly to the industry and “Transfer of research results” benefits in first line the research community. Still, as a total, standards really can bring substantial benefits to Disaster Management activities.

3.3 Standardisation and the European Union

3.3.1 European Standardisation Policies

European Standardisation System

The members of the European Standardization system are the European Standardisation Organisations (ESO), European Commission, EFTA, National Standardisation Bodies, Affiliates and Cooperating partners.

There are three European Standardisation Organisations, namely:

- European Committee for Standardization (CEN) – responsible for general standards
- European Committee for Electrotechnical Standardization (CENELEC) – responsible for electrical and electronic standards
- European Telecommunications Standards Institute (ETSI) – responsible for telecommunication standards

Regulation No. 1025/2012 on European Standardisation

The European Policies for standardisation are based on the Regulation No. 1025/2012 on European Standardisation [17], which was endorsed by the European Parliament and the Council in October 2012.

The Regulation provides a legal basis for European standards and standardisation activities. It also sets an obligation for European Standardisation Organisations (CEN, CENELEC, ETSI) and National Standardisation Bodies on transparency and participation. The Regulation contains rulings on the following topics:

- **Transparency and stakeholder participation** (Articles 3 to 7): The work programmes of the ESOs and the NSBs must be transparent and publicly available. Standardisation processes shall be inclusive and allow the participation of all relevant stakeholders; especially, SMEs are encouraged to participate.
- **European standards and other deliverables in support of Union legislation and policies** (Articles 8 to 12): The European Commission publishes annually an Annual Work Programme for standardisation, which can form a basis for standardisation requests (mandates),
- **Identification of ICT technical specifications** (Articles 13 and 14): The Regulation lays down a procedure for the identification of selected ICT technical specifications eligible for referencing.
- **Financing of European standardisation** (Articles 15 to 19): A legal basis for the financial support provided by the EU to the European standardisation system. The overall amount available for the support of European standardisation system has been stable over the last years and is worth around € 20 million annually.

The Commission has also published a Vademecum on European Standardisation. [18] The Vademecum compiles all key documents and provides guidance to all parties involved.

Annual Work Programme 2017

The Annual Work Programme for European Standardisation [19] for the current year (2017) concentrates in areas important to the Single Market Strategy, such as ICT and Services. The highlighted parts of the Programme are presented below:

- The Commission will work with ESOs to ensure that their strategies and activity roadmaps take into account the new requirements emerging from the digitisation industries such as vehicles, energy, eHealth and advanced manufacturing.
- The implementation of the proposed framework starts in 2016, following the adoption of the Commission standardisation package. In 2017, the Commission will step up efforts and set practical solutions to promote the greater development and use of European service standards, improve awareness, and address the barriers faced by European service providers.
- The Commission invites the ESOs to continue the joint promotion of international and European standards in those world regions where the European industry can benefit from strengthened standardisation assistance and easier market access.
- ESOs should encourage and facilitate appropriate representation, at technical level, in standardisation activities of legal entities participating in a project that is related to that area and that is funded by the Union under a multiannual framework programme for activities in the area of research, innovation and technological development. ESOs should report to the Commission on the implementation of this action from 2013 until 2016.

As we can see above, standardisation related to Disaster Management is not in the centre point of this year's programme.

Joint Initiative on Standardisation

The Joint Initiative on Standardisation (JIS) [20] was jointly launched by the Commission, the ESOs and other concerned parties in June 2016. The idea of the Initiative is to bring together European and national standardisation organisations and bodies, industry, SMEs, consumer associations, trade unions, environmental organisations, Member States and the Commission. These partners will commit to

modernising, prioritising, and speeding up the timely delivery of standards by the end of 2019. The JIS will better align standard setting priorities with research and innovation impetus, with support from the EU research and innovation programme Horizon 2020. The European Commission will be playing the coordinating role and building consensus, bringing together the expertise of all parties involved.

The parties have agreed on a joint vision on standardisation. The following three cluster domains are identified as priorities in this vision:

1. Awareness, Education and Understanding about the European Standardisation System i.e. increasing the relevant use of standards and participation in the process at all levels;
2. Coordination, Cooperation, Transparency and Inclusiveness, i.e. ensuring adequate, high-quality, user-friendly and timely European standards;
3. Competitiveness and International dimension, i.e. standards supporting European competitiveness in the global markets.;

Proposals for a first draft set of actions and pilot projects under the Joint Initiative on Standardisation were drafted, and the following actions were published [21]:

1. Study on the economic and societal impacts and benefits of standards as well as access to standards in the EU and EFTA Member States.
2. Linking research and innovation with standardisation
3. Programmes for education in standardisation/Training and awareness on standardisation
4. Improvement of standardisation awareness in national public authorities .
5. Aiding the implementation of the Construction Products Regulation (CPR) through standards
6. Improve the exchange of information and dialogue with industry through a Standards Market Relevance Roundtable
7. Optimisation of operational aspects of Regulation (EU1025/2012)
8. Provide high-quality standards delivered and referenced in a timely manner
9. Inclusiveness, transparency & effective participation of all stakeholders in the European Standardisation System
10. Facilitating participation of all stakeholders at national level
11. Increased use of standards in Public Procurement to better implement the public procurement Directives
12. Encouraging the greater development and use of European service standards to help integrate Europe's service markets
13. Promote the European regulatory model supported by voluntary standards and its close link to international standardisation in third countries.
14. Standardisation to support digitisation of European industry
15. Improve the representation of the interests of SMEs in Europe in international standardisation processes

Many of the proposed actions can have a direct positive effect on standardisation of Disaster Management; however, they only provide the necessary basis and framework for future standards.

3.3.2 Standards and EU Regulation

Although the main principles of standardisation include voluntary use of standards and independent preparation of the documents, some standards have a direct connection to EU legislation or other regulation. These standards are called “harmonized standards”.

A harmonised standard is a European standard developed by a European Standards Organisation (ESO) such as CEN, CENELEC, or ETSI. The purpose of these standards is to provide guidelines or solutions for achieving compliance with a legal provision; that is, any organisation can refer to a harmonized standard to demonstrate that their products, services or processes comply with the relevant EU legislation.

Harmonized standards are created by the ESOs on the basis of a mandate from the European Commission. The legislation in question will form a foundation to the standards, which must meet the essential requirements of the legislation. The emerging standards can be European Standards (EN) or international standards confirmed as European standards according to the Vienna agreement¹² (EN ISO) / Frankfurt Agreement¹³ (EN IEC). The references of harmonised standards are published in the Official Journal of the European Union. The list of available harmonised standards is published in the website of the European Commission (DG Growth).

Although the harmonized standards offer an easy way to demonstrate compliance with the relevant EU legislation, they are not mandatory in the essential sense of the word: the compliance of a product, service or process with the legislation can also be shown in a proprietary way. This, however, would be an extremely tedious, slow and expensive process; in practise, harmonized standards can be seen as direct extension of legislation.

3.3.3 Conclusions and Recommendations

Disaster Management standards

The European Standardisation Policies are managed by DG GROW and their main task is to support the Single Market Strategy of the EU, such as harmonization of products and services. This means that standardisation activities are for a large part driven by the industry. This is definitely a good thing and helps the European Industry on the one hand to find markets abroad, and on the other hand to guarantee required levels of quality on the domestic (European) market. However, in the area of Disaster Management related standardisation, the main drivers are not technologies, products and services – the new standardisation activities in this area should be driven by the end user requirements and EU policies related to Disaster Risk Reduction and Resilience.

ResiStand recommends that

- **The European Commission should aim for comprehensive planning of new Disaster Management related legislation and respective harmonized standards by initiating new programming initiatives and mandates.**

Harmonized standards

At present, there are no harmonized standards at all in the area of Disaster Management. As any practises defined in harmonized standards must be taken into use in all member states, they could form an excellent basis for increase the harmonisation of European Disaster Management operations on the basis of already existing and future Disaster Management legislation – see section 2.2.8.

Standardisation Mandates

A study on the Programming Initiatives and Mandates has been presented in ResiStand Deliverable D1.2 [22]. The main findings of the study are presented below as recommendations:

ResiStand recommends, that

- **Mandates, if they should become successful and sustainable over the years of execution, require particular attention by all stakeholders involved to a number of critical issues and dependencies;**

¹² The Vienna Agreement between CEN and ISO, signed in 1991, aims to preventing duplication of effort and reducing time when preparing standards. As a result, new standards projects are jointly planned between CEN and ISO. Wherever appropriate priority is given to cooperation with ISO provided that international standards meet European legislative and market requirements and that non-European global players also implement these standards. More at https://boss.cen.eu/ref/VA_FAQ.pdf.

¹³ The Frankfurt Agreement between CENELEC and IEC, signed in 2016, corresponds to the Vienna Agreement regarding electrotechnical standards.

- Sufficient time and funding to execute the mandate work, but also to follow up on the top-down standardisation actions and recommendations, are essential for the success of such work;
- Involving the 'right' stakeholders at the 'right time' for the 'right level of involvement' is challenging, in particular for topics in the area of security/disaster resilience, these horizontal subjects are even more difficult to cover with an even wider range of stakeholders that are possibly only partially interested in the work.
- A Mandate cannot produce the expected results if legislation that is referring to the developed standards does not exist. This should be taken into account when the European DM related policies are developed further – see section 2.2.9.

International vs. European standardisation

The European Standardisation Policies are strongly built around European standards developed by the ESOs. This is a good practise in many cases and it guarantees certain interoperability, compatibility and a required level of quality for the European DM operations.

However, the crises and their consequences are becoming more and more global – one reason for this is the ongoing climate change. The EU and Member States have participated in crisis management and humanitarian operation all around the world together with other operators from all continents. This requires a growing number of tools that facilitate a smooth cooperation between the parties – international standards could contribute to this. Additionally, international standards can easily be confirmed as European standards (EN ISO or EN IEC) according to the Vienna agreement.

The Vienna Agreement between the CEN and ISO as well as other similar agreements also encourage the parties to develop new standards jointly. Especially in the area of new standardisation items related to DM procedures, data sharing, sharing of best practises – where commercial advantages do not play a major role – this alternative working method would be efficient.

ResiStand recommends, that

- **In the entire area of Disaster Management, development of new standards on the international level should always be considered as the first option.**
- **The above could be enhanced through joint development of standards, which also gives the European parties an opportunity to be a global forerunner of DM standardisation.**

4 Question 1: Contribution of Standards to Improvement of Disaster Resilience by Type and Disaster Management Phases

4.1 Contribution of Standards to Disaster Management

The ResiStand project has carried out extensive research in order to find answers to the above question. In WP2, standardisation bodies and existing standards were studied. Similarly, WP3 studied the needs and expectations of end users operating in the area of Disaster Management (public authorities, practitioners, first responders and non-governmental organisations), while WP4 studied the potential new opportunities for standardisation offered by the supplier community – industry incl. SMEs and the research domain.

Below we present two hypotheses for recommendations; one of them addresses potential standardisation items by standard type, and the other looks at these from the point of view of the Disaster Management Phases targeted by the standards.

4.2 Types of Standards

4.2.1 ResiStand Research Results

Another approach to the existing standards as well as to the end user needs and supplier opportunities is to have a look at the thematic areas, types and interoperability issues related to these items. ResiStand Work Packages WP3 and WP4 have identified also these relations – see the sections below. More information about the research results can be found in ResiStand deliverables D3.3 [23] and D4.4 [24], respectively.

The classification methods of the data varied somewhat between WP3 and WP4 - see the next sections.

End User Standardisation Needs and Standard Types

The end user needs were classified by a list of Thematic Areas, which was derived directly from a synthesis of the most recurrent topics of the needs. The association of Thematic Areas with the needs was found valuable to attain a clear overview of the most relevant areas, inside which the experts observed need for specific standards. Therefore, this overview can provide support in identifying the priority of standardisation topics. However, the concept of Thematic Areas was introduced first in the Workshops, and is thus not available in the data derived from the web survey or the desk research.

Table 4 End user needs with reference to Thematic Areas

Type and source / Share of identified needs	Common procedures	Data sharing	Common Terminology	Training and education	Community role / communication	Equipment	Communication equipment	Best practices sharing	Legal & social issues
Total distribution of end user needs by thematic areas	38%	19%	8%	7%	6%	6%	6%	5%	5%

Standardisation Opportunities by Suppliers

The standardisation opportunities delivered by the SUC members through surveys and workshops and through desk research of the EU-funded projects were classified in two somewhat inter-related ways:

Firstly, the data was classified by Opportunity Types. An opportunity type describes the target of a potential standard such as a procedure, a practice, a service or a technology – in general, the object that is described in the standard. Table 5 below presents the identified opportunities organised by Opportunity Type.

Table 5 Opportunities by Opportunity Type

Identified opportunities from the suppliers by Opportunity Types	Technology	Procedure	Best practice	Solution	Service	Regulatory aspect	Procurement model
Total distribution of supplier opportunities by Opportunity Type	24%	24%	20%	19%	6%	6%	1%

Another way of classifying opportunities is to pinpoint the Interoperability Issue that is addressed by the proposed opportunity. As one of the main purposes of standards is to improve interoperability anywhere, where cooperation and coordination takes place, this approach was found to be logical. Table 6 below lists the numbers of identified opportunities with reference to Interoperability Issues.

Table 6 Opportunities by Interoperability Issues

Identified opportunities from the suppliers by Interoperability Issues	Technical / Communication	Organisational	Semantic	Equipment / Physical	Legal
Total distribution of supplier opportunities by Interoperability Issues	46%	27%	16%	6%	4%

Deduction of Results

The types, thematic areas or interoperability issues of existing standards were not studied during the research work. Therefore, the analysis below is based on a comparison between end user needs and supplier opportunities.

The analysis above shows that the most frequent Thematic Areas, to which the proposed end user standardisation needs were mainly related, were **Common procedures** (needs requiring common decision support tools and procedures to respond coherently at European level in case of a crisis) and **Data sharing** (improvements to problems that multiple collaborating organisations face in collection and exchange of data and information. These two Thematic areas cover 57% of all identified end user needs.

When the standardisation opportunities offered by the industry and the research domain are studied, **technological aspects** are clearly the most frequent areas amid both Opportunity types (24% of opportunities) and Interoperability Issues (46%). This is very natural considering that the main mission of the industry and of a large part of the research projects is to produce technologies or technological solutions and systems.

When looking at the opportunity types, the next largest contingents after Technology are **Procedures** (new ways to proceed in a specific context that could be adopted as a standard method in a specific task) and **Best practices** (de facto standards or well-known practices that could be formally recognised to be adopted uniformly by a wider number of stakeholders). These two types cover together 44% of all opportunities.

In a similar way, when comparing the Interoperability issues, the two next largest contingents of opportunities are **Organisational** (the opportunity allows a better execution of the tasks at an organisation level or between organisations, a common organisational schema, mutual functional mapping, a way to coordinate different organisations, or a way to organise or coordinate temporary multiple organisations during resilience phases) and **Semantic** (the opportunity offers or is strongly related to the semantics of a specific context, such as terminology, meanings of symbols, significance of data, common sensor thresholds, common interpretation of different data about similar events).

From these figures, a conclusion can be drawn that there is both need and existing opportunities for new standards outside the most frequent domain of Technology. Especially, the identified need for common procedures matches very well with opportunities of type 'Procedure' that address organisational interoperability issues. Similarly, a match can be seen between the need for data sharing standards and opportunities of type 'Best practises' that address semantic Interoperability Issues.

4.2.2 Hypothesis H1.1 – Types of Standards

The following hypothesis was created as a result of the deduction of results above:

The basis for new Disaster Management related standardisation activities should be the needs of the end users instead of the technological offering of the industry. The focus of standardisation activities should thus not be mainly on technological standards, but the emphasis of future work should look more and more towards standards that improve cooperation and collaboration of organisations through definition of common procedures and practices; especially those helping organisations to collect and share information with each other.

4.2.3 Survey Results

There is a clear and broad acceptance of this hypothesis as 93% of the responses (26/28 respondents), from both end users and suppliers, agree or strongly agree that standardization should be developed according to the end users' needs.

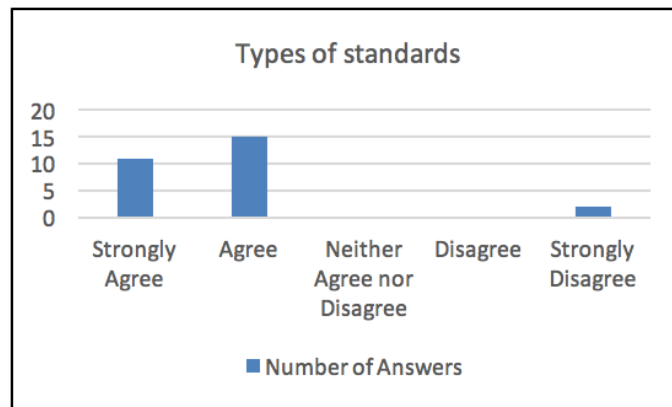


Figure 4 Hypothesis 1.1 - Survey results

Below are some interesting comments from the respondents:

- *"One stand approach limits the cooperation and collaboration opportunities. Standardization of the SOP are crucial for compatibility on cross-sectoral, interagency and international level, as well as for efficiency in using all available means and human capacities. Going deeply in UCPM's opportunities, it can be a fertile ground for future challenges";*
- *"Products need to be designed according to a recognised standard as a first priority so that designers are working from a flat playing field. This is not to say the End Users are not critical (they are as without them nothing would be purchased). The products need to be designed with the requirements of the End User in mind but from then on standardisation issues need to be prioritised";*

- “I disagree with the part ‘especially those helping organisations to collect and share information with each other’. Information sharing is one aspect, but it goes back to the technological aspects. ‘Common procedures’ must be clarified as it could be as ‘the same procedures’ which is not the case, especially since disaster management structures in Europe are different. This is why it is so important to build a minimum common ground that will allow cross sectorial / cross border cooperation during a crisis”;
- “I can understand the political and economic need to support industry but the most important point is to learn to work together”.

Based on the survey results, ResiStand points out that:

- **A sentence in one of the comments above crystallizes the need for standardisation in the area of Disaster Management: *it is so important to build a minimum common ground that will allow cross sectorial / cross border cooperation during a crisis.* This should be the target and the leading driver of future standardisation, and it should be supported by the DM related European policies.**

4.3 Standards by Disaster Management Phases

4.3.1 ResiStand Research Results

The ResiStand project has researched the existing standards that are related to Disaster Management (DM). A part of this research has been to determine how these standards are distributed between the DM phases of the crisis management cycle; i.e. towards which phase each standard is in first line targeted.



Figure 5 The Disaster Management cycle and the four phases

ResiStand has also researched the distribution of identified end user standardisation needs with reference to the DM phases. This has been done through surveys and workshops (ResiStand End-User Community members) and desktop research (EU-funded projects related to DM) – see ResiStand deliverable D3.3 [23]. Similarly, the new standardisation opportunities offered by the Supplier community (the industry incl. SMEs and the research domain) have been researched – see ResiStand deliverable D4.4 [24].

Existing Standards and DM Phases

In ResiStand Work Package WP2, the international, European and other standardisation bodies and Technical Committees were identified. The standards produced by these bodies were evaluated; i.a. to identify the DM phase that each standard was targeting. In case any standard targeted several phases, the most relevant phase was determined. These standardisation bodies together with their respective standards are presented below in Table 7. More information about this topic can be found in ResiStand deliverable D2.2 [25].

Table 7 Existing relevant standards by DM phase

Standardisation level	Standardisation bodies	Mitigation	Preparedness	Response	Recovery
International standardisation	ISO/TC 224, ISO/TC 262, ISO/TC 292, ISO/IEC JTC 1/SC 27, ITU-T FG-DR& NRR and other international standardisation bodies	72	68	32	6
European standardisation	CEN/TC 164, CEN/TC 391, CEN/TC 439 and other European standardisation bodies	9	19	16	5
NATO	STANAG	1	6	1	0
Total distribution of existing standards (n=235)		82	93	49	11
		35%	39%	21%	5%

End User Standardisation Needs and DM Phases

The main objective ResiStand Work Package WP3 was to identify the standardisation needs of the end users. To achieve this mission, the WP5 team conducted a web survey among the E-UC members, organised four workshops, where the needs were discussed, and completed significant desktop research to discover potential standardisation needs from EU-funded (FP7 and H2020) Disaster Management projects. This work is presented in ResiStand deliverable D4.4 [24].

Altogether, 209 standardisation needs were identified. These needs represent all types of standards and are targeted to all four Disaster Management phases.

Table 8 End user standardisation needs with reference to DM phases

End user needs by DM phases	Mitigation	Preparedness	Response	Recovery
Total distribution of needs (n=209)	14%	34%	47%	5%

Standardisation Opportunities by Suppliers and DM Phases

Similar to the end user needs, the potential new standardisation opportunities produced by the Supplier community (industry and the research domain) were identified. The research methods were similar to those for the end users research, including a web survey, two workshops that were used to identify supplier opportunities from the SUC members, and desk research to identify opportunities from FP7 and H2020 projects. The results of this research are presented in Table 9 below. More information about the work of WP4 can be found in ResiStand Deliverable D4.4 [24].

Table 9 Standardisation opportunities with reference to DM phases

Supplier opportunities by DM phases	Mitigation	Preparedness	Response	Recovery
Total distribution of opportunities (n=301)	34%	51%	45%	0%

Deduction of Results

The results of the above-mentioned research (existing standards, end user needs and supplier opportunities) have been collated in Table 10 below in order to determine the relations between the data from the three sources.

Table 10 Comparison of existing standards with identified end user needs

Source of data	Explanation	Mitigation	Preparedness	Response	Recovery
Existing standards	ResiStand deliverable D2.2	35%	39%	21%	5%
ResiStand E-UC	ResiStand deliverable D3.3	14%	34%	47%	5%
ResiStand SUC	ResiStand deliverable D4.4	34%	51%	45%	0%

Until today, the largest number of standards developed by the standardisation bodies have been targeting the first two phases of the Disaster Management cycle, namely the phases Mitigation and Preparedness. The two other phases, Response and Recovery are targeted by only one fourth of the existing standards.

This could lead to a deduction that standardisation is mostly needed in the other two areas that are not covered so well with standards; especially the Recovery phase. However, when we look at the results of the surveys conducted by the ResiStand project, we can easily see that the end users don't seem to have a significant need for new standards for the Recovery phase. The same applies also to the opportunities offered by the Supplier community; i.e. the industry and the research organisations. This is easy to understand: the operations during recovery phase can vary very much depending on the type, magnitude and impact of the disaster in question – thus, standardisation of the activities is rather difficult.

The largest amount of end user needs as well as supplier opportunities target the two phases in the middle of the cycle, Preparedness and Response. Of these two, the Response phase is targeted by a smaller number of already existing standards despite of the largest number of identified needs.

4.3.2 Hypothesis H1.2 – Disaster Management Phases

The following hypothesis was created as a result of the deduction of results above:

The standardisation work for Disaster Management should concentrate in the phases of Response and Preparedness, with emphasis on the former. Standards for the Mitigation phase should still be developed but, as it is already rather well covered by standards, priority should be given to the two other phases mentioned above. No specific effort should be targeted at the Recovery phase due to lacking end user needs. In all cases, the standardisation activities should be based on end user needs and requirements.

4.3.3 Survey Results

Following the broad acceptance of the first hypothesis that end user needs should direct the development of standards, there seems to be a lesser consensus as to what the direction should be. 58% (16/28 respondents) agreed that standardisation should primarily concentrate on the Response and Recovery phases and no special effort should be targeted the Recovery phase, while 28% disagree with this notion.

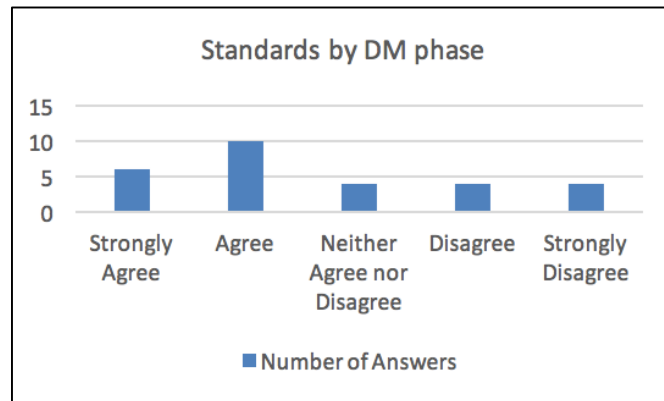


Figure 6 Hypothesis 1.2 - Survey results

Below some interesting comments from the respondents:

- *"Recovery is the most time consuming activity and standards necessary. However, most of the organisations concentrate in the early phase and thus have not so many issues in the late phase - at least in this project";*
- *"But... Ref[erring] Disaster Management related standardization activities - there is a need to accommodate both technology and processes and procedures - the two go together";*
- *"Standardization is useful in all phases. The Preparedness and Response phases are the most visible parts and maybe the most easy to achieve and the most time critical. But i[n] all phases it is useful. The recovery phase will be the most difficult from a disaster management point of view, but that has more to do with the fact that in that phase mainly other parties are more prominent involved and the disaster management experts only play a minor role";*
- *"Mitigation and recovery are deeply affected by national legislation. here a standardisation could be really difficult to be reached".*

ResiStand notes that

- as explained above, the hypothesis was not as clearly accepted as the previous one – the comments how that there is need for standardisation for all DM phases. The best way of creating a reasonable and sufficient set of standards to cover adequately all DM phases is to ensure that all stakeholder groups are well represented in the standardisation bodies (technical committees, working groups) and that the standardisation work is guided and supported by clear European / international policies.

5 Question 2: Potential and Improved Uptake of Standards

5.1 *Potential of Standards*

The ResiStand project has studied the potential of Disaster Management related standards and the benefits that standards could offer to the various stakeholder groups. Below we present two hypotheses for recommendations that would significantly improve the uptake of new and existing standards. The first hypothesis presents ideas for intensification of importing results of EU-funded research as foundations for new standardisation activities, and the other one suggests better and more efficient ways to coordinate Disaster Management related standardisation work.

5.2 *Standards and Research Projects*

5.2.1 *ResiStand Research Results*

The Commission funds annually through various channels (e.g. H2020) a large number of research projects that are related to Disaster Management and matters that could improve and enhance the resilience of our society in crisis situations. The results generated by these projects form an enormous pool of knowledge and information, which should be available for exploitation in any feasible way by the various stakeholders of the society.

These research programmes are policy driven and they are answering demands that are often similar to the policies related to standardisation. In funding programmes such as H2020, many calls include an explicit requirement to address standardisation in the project.

Most H2020 research projects are carried out by consortia where all stakeholder groups (the industry incl. SMEs, the research community and end users such as practitioners) are represented. These research consortia invest a large amount of collaborative efforts with a relatively high level of consensus in the research work. This makes the results ideal as a basis for new standardisation activities, because consensus is a prerequisite for the approval of any standard.

Despite the general endeavour of using H2020 projects as a source for new standardisation items, the practical results are not very encouraging. There are many reasons for this: firstly, there are probably not enough understanding about the benefits of standards among the consortia members, and secondly, there is not enough contacts and communication between the standardisation organisations and the research community.

However, the main problem is actually implicitly buried in the temporal differences between H2020 projects on the one hand and standardisation activities on the other hand. The duration of H2020 projects is time limited; the length of a project seldom exceeds three years. Normally, the final results of a project are presented at the end of the project and can only then be brought into the standardisation funnel.

The standardisation process is, despite significant efforts by the ESOs, rather time-consuming. Only seldom can a standard be approved as a final document in a timeframe shorter than two years. Another problem is, that each new standardisation item has to be proposed and managed by one of the National Standardisation Bodies (NSB), who should understand the work item and be ready to take care of it throughout the process. This is not always so easy, if the NSB has not been involved in the project and does not know the new work item and the reasoning behind it well enough.

Usually, a project presents its results as a new standardisation work item at the end of the project. The first problem is to find someone – most probably the NSB from the homeland of one of the partners – who can take the proposed item into the standardisation funnel and get the work up and running. Then, the work begins, but almost simultaneously, the project ends. As the consortium as a whole does not exist anymore, the synergy of the collaboration for a common goal is lost. In practise this means that the driving force behind the new work item disappears.

5.2.2 Hypothesis H2.1 – Standards and Research Projects

Potential solutions to the problems above have been presented in the hypothesis below:

The H2020 calls for topics that could offer a basis for new Disaster Management related standards should include a special condition stating that one of the partners must be either an NSB or an organisation that actively participates in standardisation in the domain related to the exploitation of the project's results. A certain amount of funding from the project's grant should be available for this partner for a period after the project to cover the costs caused by the standardisation activities.

5.2.3 Survey Results

More than a half of the respondents agree with the statement but 21% (6 respondents) seem to remain ambivalent about the proposed driver or incentive for post-project involvement of the relevant consortium during the started standardization process.

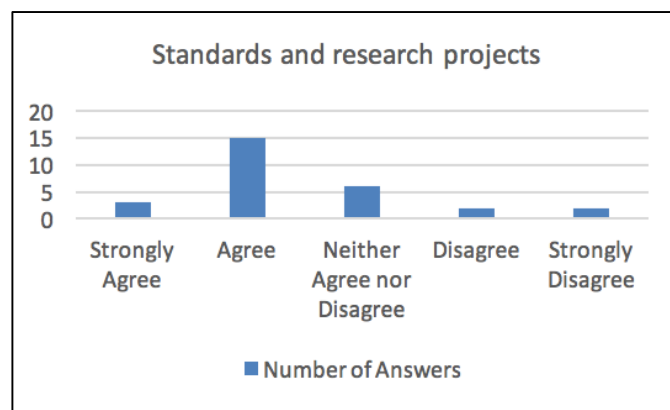


Figure 7 Hypothesis 2.1 - Survey results

- *"This approach will require a new set of roles for H2020 - "funding after the project is ended". Equally important for these projects is commercialization, which also has the issue of lack of funding. So why standardization yes and commercialization no? H2020 main objective is to produce solutions! Having said that it implies that in many cases the results will be kept privileged in order to allow commercialization";*
- *It is difficult to say something on standardization before the start of a project and also about what is needed for it. It should be part of the impact assessment, but the question how does [those] needs to be fixed beforehand, the mentioned way is only possibility but there are more possibilities to assure a follow up and to achieve standardization";*
- *"The standardization work that would follow from the H2020 project is not part of the project and should be ring fenced"*

We presume that there is a general acceptance for the basic idea of the hypothesis: New ways should be invented to guarantee the continuum from the research projects to new standardisation items. The suggestion above is just one alternative and the basic problem can surely be solved in many other ways.

ResiStand recommends that

- **the European Commission and the European Standardisation Organisations initiate a discussion with the goal of finding new, innovative ways to enhance and improve the process of using the research**

results as a basis for new standardisation work. This includes also securing adequate funding for the standardisation even after the research projects have ended.

5.3 Coordination of standardisation

5.3.1 ResiStand Research Results

The ResiStand project has studied the efforts and activities of international and European standardisation committees or similar bodies that produce or have in recent years produced standards related to Disaster Management. These bodies operate under International and European standards organisations, representing general (CEN and ISO), electrotechnical (CENELEC and IEC) and telecommunication (ETSI, ITU) standards. Tens of such bodies have been identified. Some of them concentrate entirely in security standards, while others produce security-related standards among others. At the moment, there is not much coordination between these committees.

There has been discussion about the creation of a new overseeing body, Security Sector Forum. Sector forums are long-term structures within European standardisation that are founded as a response to the need for an integrated interface amongst a number of Technical Committees in a certain sector. Sector Forums address common problems of the TCs and monitor the progress of standardisation in the target business area. They can also present proposals for new fields of activities within the sector, as well as take initiatives to resolve duplication of work.

5.3.2 Hypothesis H2.2 – Coordination of DM Standardisation

A Security Sector Forum (SSF) should be founded as soon as possible. Its members should contain representatives of all security-related Technical Committees of the ESOs, NSBs, European sector organisations, most relevant directorates of the European Commission (DG HOME, DG ECHO, JRC etc.) and major research projects or research organisations.

A Disaster Management Sub-Forum or similar group of DM experts should be created to work under the umbrella of the Security Sector Forum. It should proactively follow end user needs, look for new standardisation opportunities, assess new ideas and suggestions from the stakeholders, and make proposals to the Forum about potential new standardisation items. The Group should also consider whether the new work should be started on European or International level, and make recommendations about a suitable technical committee that would take over the practical work.

5.3.3 Survey Results

It was generally agreed that a new coordinating body should be founded, with a proactive role in the field of producing new standards. While others had no particular opinion about it, 10% strongly disagreed.

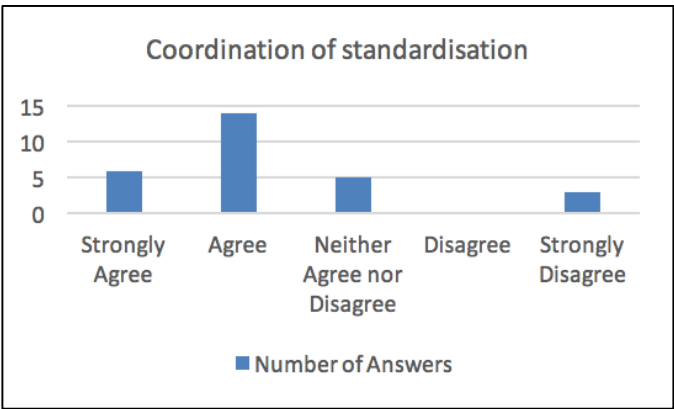


Figure 8 Hypothesis 2.2 - Survey results

- *"First standards in a single European member State have to be fixed. There is a lot of harmonisation going on at international level but more important is to establish procedures how this is taken over in member states";*
- *"The main issue in my eyes, is the participation of REAL civil security practitioners in this initiative. Otherwise it will most probably end as another "talking body". Response organizations should not be expected to donate their personnel to such a task. Only if it becomes mandatory for the member states to nominate representatives to work with such a body and attend meetings, and they are funded by their MS, there will be a real commitment to the work. Voluntary activities are treated as last priority".*

The idea of a Sector Forum has already been discussed within CEN-CENELEC and the relevant Technical Committees and other related parties have been involved in the discussions. At the same time, preliminary information has been heard about the Commission's (DG GROW) idea of adding a new security-related Action Point 16 into the Joint Initiative on Standardisation (JIS). It is too early to say in this phase what new development this amendment will bring to the standardisation of Disaster Management – **ResiStand greets and supports the initiative.**

6 Question 3: Overcoming the Limitations and Restraints of Standards

6.1 Limitations of Standards

The research results identified by the ResiStand project point out that the main restraint for the use of standards is that they are not known well enough by the various stakeholders. Another reason is that the stakeholders don't recognise the standards as tools that bring them significant advantages and benefits.

Our research further shows that the best way to reach a state where all stakeholder groups know the standards and their effectiveness adequately is to encourage them to directly participate in the standardisation activities.

Below we present two hypotheses for recommendations; one is related to the participation of end users and the other to the participation of SMEs. The participation of the research domain is covered in Section 2.1.

6.2 Participation of End Users in Standardisation Activities

6.2.1 ResiStand Research Results

The research conducted by the ResiStand project indicates, that the end users (especially those representing national authorities in the DM area such as first responders or other practitioners) find it difficult to participate in standardisation activities because of two main reasons: firstly, these organisations lack funding to cover the related costs (payroll, travel costs, participation fees etc.). Additionally, the end users often lack a mandate to participate in activities that are not their core responsibilities; for instance, standardisation.

The members of the ResiStand End User Community (E-UC) identified the following main restraints and barrier that prevent them from participating in standardisation activities. More detailed information about the subject can be found in ResiStand deliverable D3.3 [24].

Table 11 Restraints and barriers identified by the End User Community

Challenges		Improvements	
Resources			
Lack of money and resources		<ul style="list-style-type: none">• Make standardisation a requirement• Funding (Industry, EU) of travel costs and expert refunding	
Lack of training for standardisation activities		<ul style="list-style-type: none">• Organise training for End-Users on what to expect from research and standardisation• Introduce a broker role dedicated to facilitating end-users in participating	
Costs of training people in the standardisation process		<ul style="list-style-type: none">• Usage of the standard that is developed should be easy and smooth for the users of the standard. Also on learning aspects. E.g. develop an e-learning module.• Implementation should be part of the standardisation project.• The project should not end after having developed the standard.	
Mandate			
Lack of mandate to participate in standardisation		<ul style="list-style-type: none">• Having different liaison people involved could support participation in standardisation.	

	<ul style="list-style-type: none"> Standardisation organisations should have continuous involvement with end-users. Standardisation organisations should ensure the right balance of stakeholders. Standardisation should be seen as an internal task and not external issue i.e. a governmental mandate.
Information and understanding	
Lack of awareness of standardisation benefits	<ul style="list-style-type: none"> Explaining benefits of standardisation through success stories showcasing improvements because of standards Explaining the benefits and process of standardisation Improve marketing through dedicated "advertising campaigns" Standardisation should be added into training and education. (i.e. Police academies)
Conflicts of interest	
Conflict between industry and end-users	<ul style="list-style-type: none"> Standardisation organisations and government should organise joint discussions and efforts between industry and end-users.
Incompatible timelines between end-users and industry	<ul style="list-style-type: none"> Force industry to dedicate effort and money to short term problems.
Standardisation process	
Complex standardisation procedures	<ul style="list-style-type: none"> Add better ICT tools to manage standardisation Re-design procedures to make them more user-friendly. The process needs to be more accessible, standardisation could be explained during meetings or in simple manuals.
Level of detail vs. standardisation	<ul style="list-style-type: none"> Standards have to get some flexibility in order to be applicable and usable. A clear hierarchical framework from standards to guidelines with variable needs related to the context should be defined. Better understanding of various types of standards (level of detail)

If there aren't enough end users among the members of Technical Committees and Working Groups of the ESOs and other standardisation bodies, the emerging standards do not address the real daily needs of the practitioners but rather only the supplier point of view – mainly that of the industry.

According to the EU Regulation 1025/2012 [17], Member States shall, where appropriate, encourage participation of public authorities in national standardisation activities. As long as this regulation is not brought to the national level in practical terms through EU legislation, it does not bring the desired consequences.

6.2.2 Hypothesis H3.1 – Participation of End Users

To effectively support the participation of end users in Disaster Management (DM) related standardisation activities, the Member States should develop their national legislation and other related regulations so that participation in standardisation will be included in the duties of the national authorities working in the area of DM such as practitioners and first responders. This should include also allocation of sufficient national funding in the budgets of the authorities

Additionally, the national policy makers should encourage these organisations and the national Standardisation Bodies to cooperate and efficiently aim for increasing participation of the end users into the standardisation work.

6.2.3 Survey Results

It is broadly accepted that Member States should strive to include End Users from their national authorities in the standardisation process while about 10% disagree with the notion.

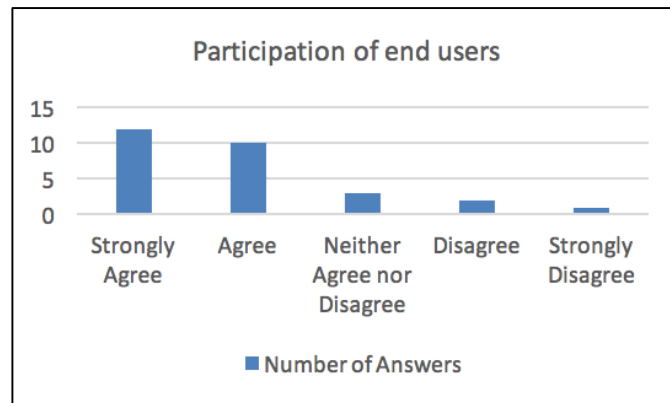


Figure 9 Hypothesis 3.1 - Survey results

- *“Having sign off by end users would be of obvious benefit. The challenge will be to get a fair representation of End Users who are not in the initiative to look after their own interests”;*
- *“This should not be put in law in a strict way. The funding should be available and it should be stimulated, but not obligatory. It has to be needs based, if the need is not there it should stop and that is why it should not be based on a legislative obligation”;*
- *“One of the issue is with - NATIONAL AUTHORITIES, as in many cases, the real DM work is done at the local / regional level, and the organizations are based at that level. The real practitioners needed for the work are there. So for MS maybe it is less important to develop the legislation as it is important to develop the mechanisms for choosing the right people, and having the funding to support their activities”.*

ResiStand notes that

- **as mentioned above in the comments of the respondents, the critical factor in the process of getting end users to participate in standardisation is the required support from the Member States. This could probably be influenced by European policies aiming to encourage the national authorities of the MS to promote this goal and invest in it.**

6.3 Participation of SMEs in Standardisation

6.3.1 ResiStand Research Results

The research conducted by the ResiStand project indicates, that one of the main barriers preventing SMEs from participating in standardisation activities in the DM area is the lack of funds to cover the related costs (payroll, travel costs, participation fees etc.). This leads to a situation, that the SMEs – who normally are a leading source of innovation – are not able to participate, and the industrial domain is represented mainly by large enterprises.

According to the EU Regulation 1025/2012 [17], national standardisation bodies shall encourage and facilitate the access of SMEs to standards and standards development processes. The regulation contains ideas about how this could be done, but none of these actually solve the main problem – costs of participation.

The members of the Industry section of the ResiStand Supplier Community (SUC-I) identified the following main restraints and barrier that prevent them from participating in standardisation activities. More detailed information about the subject can be found in ResiStand deliverable D4.2 [26].

Table 12 Restraints and barriers identified by the Research Section of the SUC

Challenges		Improvements	
Resources			
Participation in standardisation creates significant costs; this is especially problematic for SMEs, who lack both money and highly-specialised personnel.		<ul style="list-style-type: none">• Specific funding for SMEs (government, EU, large industry)	
Lack of expert staff		<ul style="list-style-type: none">• More training and education	
Technical experts and key staff may be reluctant to get involved in standardisation as they are also needed in other operations		<ul style="list-style-type: none">• Motivation through explaining the benefits of standardisation• Better division of responsibilities in the enterprises	
Information and understanding			
No perception of benefits from participation in standardisation		<ul style="list-style-type: none">• Motivation through explaining the benefits of standardisation	
Conflicts of interest			
Sometimes standards can limit innovation and R&D activities, which slows down or destructs future research – this is especially problematic for SMEs		<ul style="list-style-type: none">• Try to keep good balance in standardisation bodies among industry and R&D.• Be "objective" in managing the TC and the standardisation process bearing in mind not to obstruct innovation	
Sometimes the standardisation process calls for significant disclosing of company secrets and sensitive knowledge, which can affect the competitive position of the enterprise		<ul style="list-style-type: none">• Better legal assistance to the working groups	
Due to budget constraints, it is more difficult for SMEs to invest in standardisation and therefore this is dominated by larger industries		<ul style="list-style-type: none">• Mandatory contingent of SMEs in every standardisation project with funding by European Commission (for EU standards)	
Large companies can rule the process in working groups and SME's are walked over		<ul style="list-style-type: none">• More efficient rules for participation and influence of all stakeholder groups	
End-users are not always represented well enough, so standards are not applied in practice		<ul style="list-style-type: none">• More involvement of end-users with EU funding	
Standardisation process			
Standardisation is too time-consuming and the efforts are not easily allocated to a specific		<ul style="list-style-type: none">• This could be solved by more financial support and simpler processes that require less time	

project.	
The process is too slow – especially if the products are already available on the market;	<ul style="list-style-type: none"> The time constraint could be improved by using contracts with payments and deadlines. This could be financed by the industry.
When a standard finally is published, it can be already outdated due to the long preparation time – the market window has already closed	<ul style="list-style-type: none"> Pre-standards with the stamp of the standardisation body, that are prepared very quickly and allow the industry (SME above all) to go ahead with product development and implementation based on key requirements.
The background research for a standard can be long and tedious	<ul style="list-style-type: none"> A pre-standardisation process should be developed
The standardisation process is too complicated	<ul style="list-style-type: none"> The management of standardisation activities should be better and clearer. Excessive paperwork should be cut and times should be shortened
Some ANSI standards (USA) are more advanced – European standardisation is in those cases “reinvention of the wheel”.	<ul style="list-style-type: none"> Try to avoid redundant work through better assessment of new work items in order to identify the best possible way to proceed Decide between European / international standards Check if national standards (even from outside Europe) can be used as the basis or confirmed as European standards

6.3.2 Hypothesis H3.2 - Participation of SMEs

To effectively support the participation of SMEs in Disaster Management (DM) related standardisation activities, factual funding should be available for these small enterprises. This funding should be directed into standardisation projects that relate to EU policies in the area of Disaster Management. The funding could consist of two components:

EU funding could be channelled from the Commission through the ESOs to the NSBs for selected standardisation projects. Projects related to harmonised standards or standards, which are produced as part of a programming initiative or mandate should be prioritized. The second component should come from the national budgets of the member states or associated countries, and it could be managed and channelled by national agencies for funding of innovation.

6.3.3 Survey Results

Similar to End Users, it seems to be broadly accepted that SMEs should receive help in order to participate in the standardisation process, funded by the Council or national budgets. However, this agreement is not absolute – see comments below.

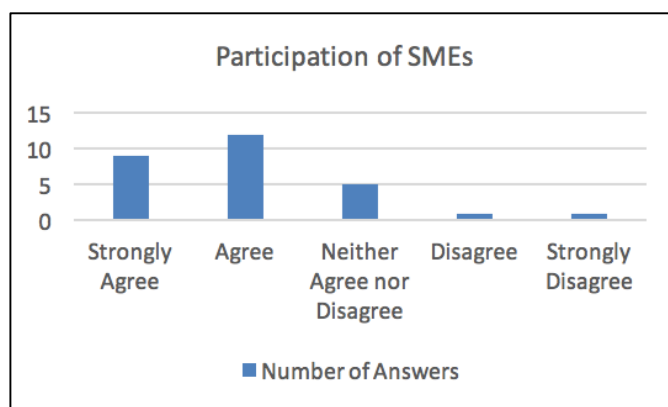


Figure 10

Hypothesis 3.2 - Survey results

- *"As long as the end-user's needs are still on top of mind, partly an option";*
- *"First the added value of the SME's should be proven. This is not clear to me at this time";*
- *"Standardisation projects as such have a built-in disadvantage that they focus on the interests of the companies' members of the consortium (sometimes disregarding the interests of the competitors). A "project" as such will never be able to bring the wider view of the industry. Yes, funding should be available to cover travels, and if an SME is taking an active role (as writing parts of a document) there should be funding to cover that";*
- *"Contribution of SME does not need to be a goal as such. It only needs to be made possible. SME's must not be hindered, so funding availability is good, but if they don't want to participate it should not be forced".*

The comments show that some respondents doubt the value of having SMEs as participants in standardisation activities. ResiStand notes that

- **The policies of the European Union state that *"Small and medium-sized enterprises (SMEs) are the backbone of Europe's economy. They represent 99% of all businesses in the EU. In the past five years, they have created around 85% of new jobs and provided two-thirds of the total private sector employment in the EU. The European Commission considers SMEs and entrepreneurship as key to ensuring economic growth, innovation, job creation, and social integration in the EU."*¹⁴**
- **Therefore, it is of crucial importance to ensure that the European SMEs will be enabled to participate in standardisation activities and that the huge amount of innovation originating from this group is taken into use. This should also include the provision of suitable funding instruments to guarantee that the costs related to standardisation activities are not an obstacle for the small and medium-sized enterprises to participate.**

¹⁴ https://ec.europa.eu/growth/smes_fi

7 Question 4: Relation between Existing / Emerging Standards and Policies

7.1 Thematic Areas and Sendai Priorities / Action Points

This section discusses how the existing and planned standards identified by ResiStand [25] relate to the Sendai Framework for Disaster Risk Reduction. The Sendai Priorities are listed below:

Table 13 The Sendai Priorities

Priority No	Short description of Priority
Priority 1	Understanding disaster risk
Priority 2	Strengthening disaster risk governance to manage disaster risk
Priority 3	Investing in disaster risk reduction for resilience
Priority 4	Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction

To execute this task, the action points under each of the Sendai Priorities as defined in the UNISDR document “Sendai Framework for Disaster Risk Reduction 2015-2030” [14] were numbered, and distributed under the nine Thematic Areas [23] that have been used by the ResiStand project for classification of standards. These action points are presented in Table 14 below. The action points marked with (N) refer to national/local level, while the action points marked with (G) refer to global/ regional level.

Table 14 Action points by Thematic Areas and Sendai Priorities

A. Common Terminology: addresses the need for one operational language, both verbally and graphically

Terminologies are not specifically mentioned within the Sendai Priorities

B. Common Procedures: addresses the need to respond with the same decision support tools and procedures

Priority 2: Mainstreaming and integrating disaster risk reduction within and across all sectors by:

1. Adopting national and local disaster risk reduction strategies and plans across different timescales (N)
2. Forming public policies (N)
3. Coherent implementation of instruments and tools relevant to disaster risk reduction (G)

Priority 3: Investing in disaster risk reduction for resilience by:

4. Promoting the mainstreaming of disaster risk assessments into land-use policy development and implementation, as well as mapping and management into rural development planning and management (N)

5. Supporting collaboration among public and private stakeholders and integrating disaster risk management on all levels to enhance business resilience (where healthcare facilities count as the main priority) and protection of livelihoods (G)
6. Promoting coherence across systems with regard to sustainable development and disaster risk reduction policies, plans programmes and processes (G)

Priority 4: Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction by:

7. Updating disaster preparedness and contingency policies, plans and programmes (N)
8. Promoting cooperation at all levels (N)
9. Developing guidance for preparedness for disaster reconstruction, including the improvement of structural standards (N)
10. Strengthening national laws and procedures on international cooperation (N)
11. Strengthening coordinated approaches (G)

C. Community role and communication: addresses the type of role played by the community within a disaster and how this should be communicated to civilians

Priority 2: Mainstreaming and integrating disaster risk reduction within and across all sectors by:

12. Assigning roles and tasks to community representatives within disaster risk management institutions (N)
13. Empowering local authorities (N)
14. Promoting the development of quality standards (N)

Priority 4: Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction by:

15. Developing emergency communications mechanisms, tailored to the needs of users, including social and cultural requirements, in particular gender (N)
16. Strengthening the capacity of local authorities (N)

D. Best Practice Sharing: addresses the operational ways to evaluate the efficiency of DM and ways to share the ‘lessons learned’

Priority 2: Use research to provide:

17. Assessments of disaster risk management capacity (N)
18. Mechanisms to assess and report progress of national and local plans (N)

Priority 2: Promote and improve dialogue and cooperation on all levels to provide:

19. Shared practices and knowledge on disaster risk-informed policies, programs and investments (G)
20. Mutual learning and exchange of good practices and information (G)

E. Data sharing: addresses the difficulties, due to a variety in internal organizations, in collaboration when collecting and exchanging data information

Priority 1: Promote and improve dialogue and cooperation on all levels to provide:

21. Access to and sharing of non-sensitive data and information (G)
22. Disaster risk communication (G)
23. The establishment and dissemination of good international practices (G)
24. The availability of copyrighted and patented materials (G)

Priority 3: Investing in disaster risk reduction for resilience by:

- 25. Promoting disaster risk transfer and sharing mechanisms (G)
- 26. Promoting coordination between global and regional financial institutions to anticipate potential socio-economic impacts of disaster (G)
- 27. Enhancing cooperation between health authorities (G)

F. Training and Education: addresses the need for training and education of first-responders)**Priority 1: Develop and/or use existing educational/training mechanisms to provide:**

- 28. The incorporation of disaster risk knowledge (N)
- 29. The strengthening of public education and awareness in disaster risk reduction, taking into account specific audiences and their needs (N)
- 30. A culture of disaster prevention resilience and responsible citizenship (G)

Priority 4: Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction by:

- 31. Supporting the role of public service workers in public policies and actions (N)
- 32. Training the workforce and voluntary workers in disaster response (N)

G. Equipment: addresses the need of DM equipment requirements**Priority 3: Investing in disaster risk reduction for resilience by:**

- 33. Allocating the necessary resources for the implementation of disaster risk reduction strategies (N)
- 34. Building (critical facilities) better from the start to withstand hazards through proper design and construction, including the use of standardization of building materials (N)
- 35. Revising and/or developing new building codes and standards with the aim of making them more applicable within the local context. (N)
- 36. Promoting cooperation between academic, scientific and research entities and the private sector to develop new products and services to help reduce disaster risk (mainly to assist developing countries and their specific challenges) (G)
- 37. Promoting collaboration and capacity building for the protection of productive assets (livestock for example). (G)
- 38. Developing social safety nets to ensure resilience shocks at the household and community level (G)

Priority 4: Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction by:

- 39. Promoting the resilience of critical infrastructure (N)

H. Communication equipment: addresses the need of DM communication requirements**Priority 1: Develop and/or use existing information technologies to provide:**

- 40. Location based disaster risk information (geospatial information technology) (N)
- 41. Access to reliable data (incl. geographic information systems) (N)
- 42. Input for disaster risk reduction policies (N)
- 43. Technology transfers (G)
- 44. User friendly systems and services for the exchange of information (G)

Priority 4: Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction by:

45. Further developing regional multi-hazard early warning mechanisms

I. Legal/social issues: addresses the social and legal implications of DM

Priority 1: Develop and/or use existing information technologies to provide:

46. Baseline studies that represent national circumstances (N)
 47. Impact studies; to understand the economic, social, health, education, environmental and cultural heritage impacts (N)
 48. Comprehensive surveys on multi-hazard disaster risks (G)

In the actual mapping (see section 7.2), the above mentioned numbered action points are used as mapping keys for the standards.

7.2 Mapping of Existing Standards into the Sendai Framework

In order to make the work manageable, only the standards developed within the most important TCs (as described in D2.2 [25]) were taken into account. During the mapping process, where the scopes/abstract of each standard were assessed to see which action points were addressed, it became apparent that the available expertise was not adequate to do this assessment for IT standards. Therefore, these were not taken into account. Ultimately, a total of 130 existing and planned standards were linked to the action points, generating the following results.

Figure 11 to Figure 18 below provide an overview of how many standards are related to each Sendai action point under the Thematic Areas B to I. No action points are related to Thematic Area A (‘Terminology’).

Many standards (almost a half of them all) address the Thematic area ‘Common Procedures’ (Figure 11), especially when it comes to creating a ‘Coherent implementation of instruments and tools relevant to disaster risk reduction’ (action point 3.). Other action points are underrepresented; especially those linked to incorporating preparedness for disaster reconstruction in policies, plans and programmes.

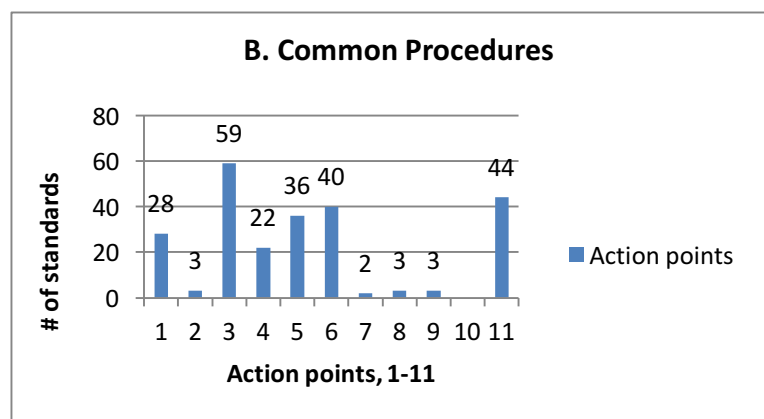


Figure 11 Standards by selected Sendai action points within the thematic area Common procedures.

In the Thematic Area ‘Community role and Communication’ (Figure 12), multiple standards address the importance of assigning roles and tasks to community representatives within disaster risk management institutes. On the other hand, standards addressing actions 13 and 14 (‘Strengthening the capacity of local authorities’ and ‘Developing emergency communications mechanisms’) are not available.

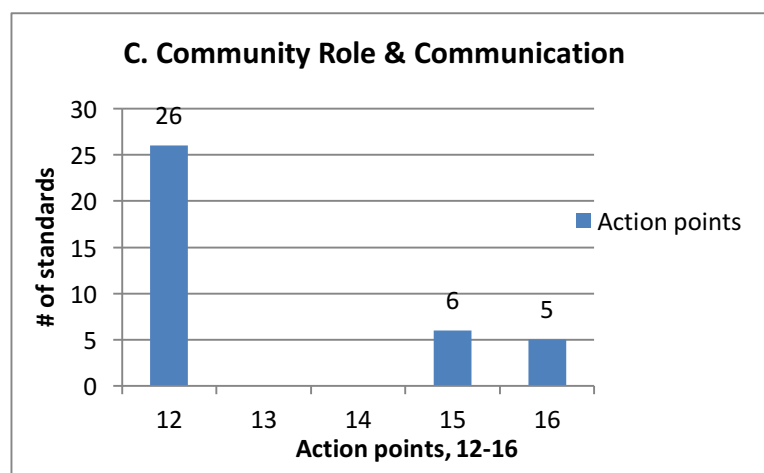


Figure 12 Standards by selected Sendai action points within the thematic area Community Role and Communication.

For the Thematic Area '**Best Practise Sharing**' (Figure 13) standards that touch on the assessment of disaster risk management capacity and report progress of national and local plans (action points 17 and 18) are quite well represented with 49 standards. The situation is different when it comes to those that aim to promote and improve dialogue and cooperation through shared practices and mutual learning and exchange (action points 19 and 20).

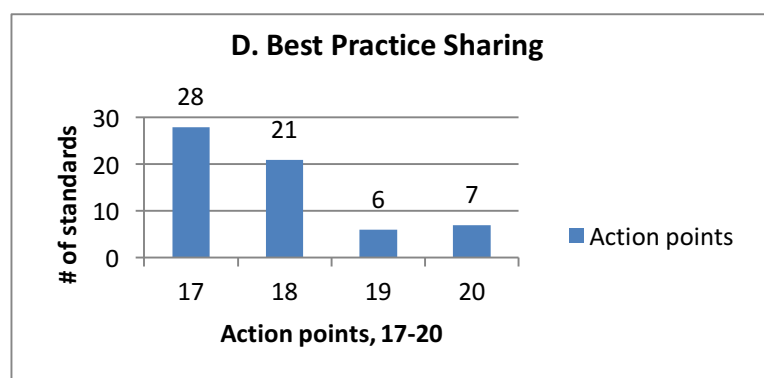


Figure 13 Standards by selected Sendai action points within thematic area Best Practice Sharing.

Standards dealing with disaster risk communication are well represented in the Thematic Area '**Data Sharing**' (Figure 14). Only a few standards aiming to enhance coordination among similar organizations (e.g. financial, health) in order to anticipate potential socio-economic impacts of disasters are available.

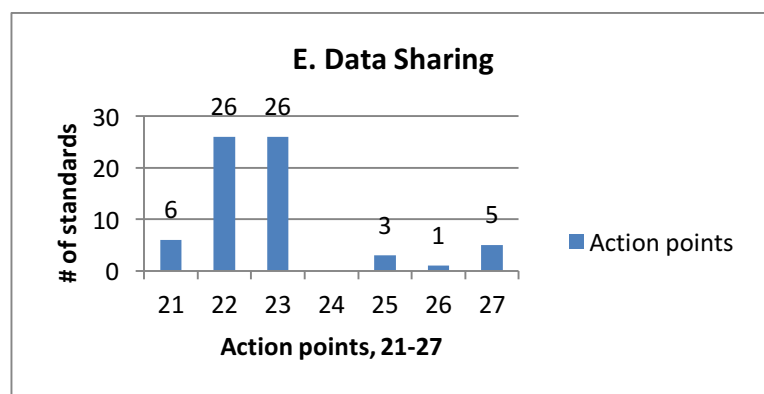


Figure 14 Standards by selected Sendai action points within the thematic area Data sharing.

Figure 15 shows that there are several standards in the Thematic Area ‘**Training and Education**’ that aim to incorporate disaster risk knowledge and strengthen public awareness in disaster risk reduction. Also, there are standards that support training of the workforce and voluntary workers in disaster response.

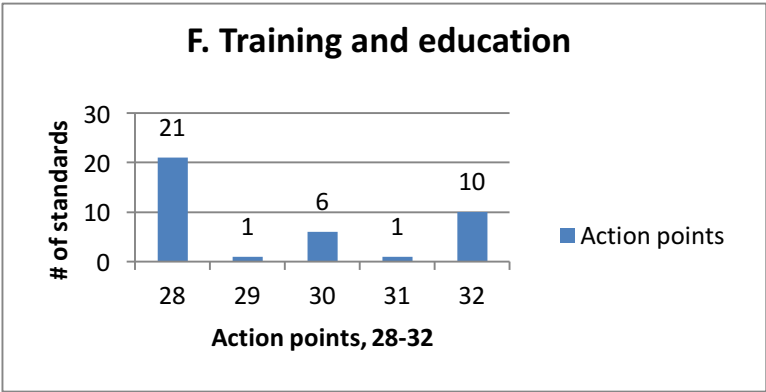


Figure 15 Standards by selected Sendai action points within thematic area Training and education.

On the Thematic Area ‘**Equipment**’, Figure 16 demonstrates that there is a gap in standards related to action points 33 to 38. On the other hand, there are some standards that address the resilience of critical infrastructure in a general manner.

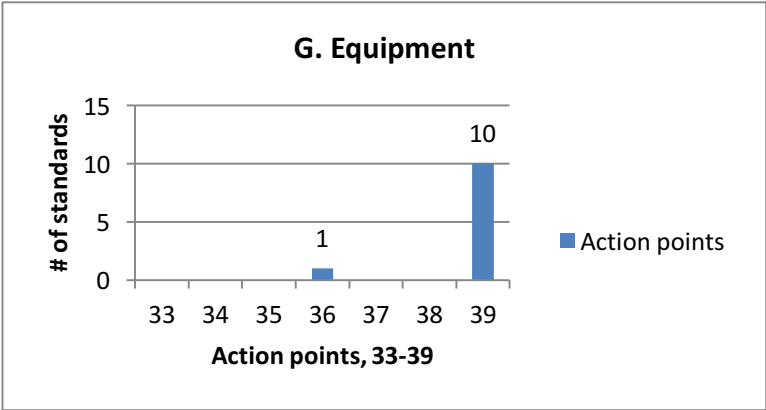


Figure 16 Standards by selected Sendai action points within thematic area Equipment.

Figure 17 shows that the only action point with several standards on the Thematic Area ‘**Communication Equipment**’ is ‘Technology transfers’ (action 43). Only a few standards address the other action points.

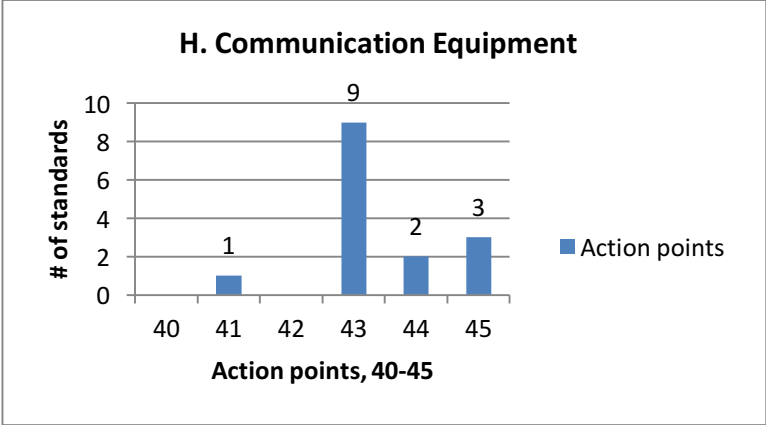


Figure 17 Standards by selected Sendai action points within thematic area Communication Equipment.

The number of standards addressing ‘**Legal/Social Issues**’ (Figure 18) is rather small. This may have to do with the fact that the action points linked to this thematic area discuss the need for baseline and impact studies to understand the national circumstances, and impacts of a disaster, with regard to its social, economic, educational, environmental and cultural domains. These are topics that are not subject to standardisation.

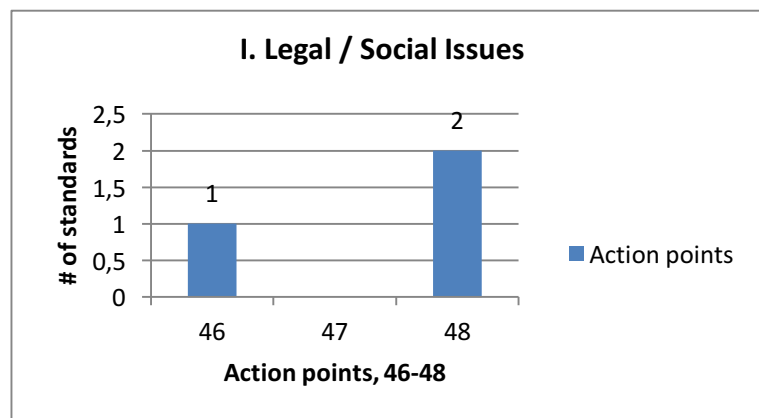


Figure 18 Standards by selected Sendai action points within the thematic area Legal/Social Issues.

Overall, most standards were linked to Priority 2 (38%), a little less to Priorities 1 and 3 (21% and 23%) and the smallest amount was linked to Priority 4 (18%).

Table 15 Overall number of standards related to the four Sendai Priorities

Column1	Priority 1	Priority 2	Priority 3	Priority 4
# of standards	101	178	108	87

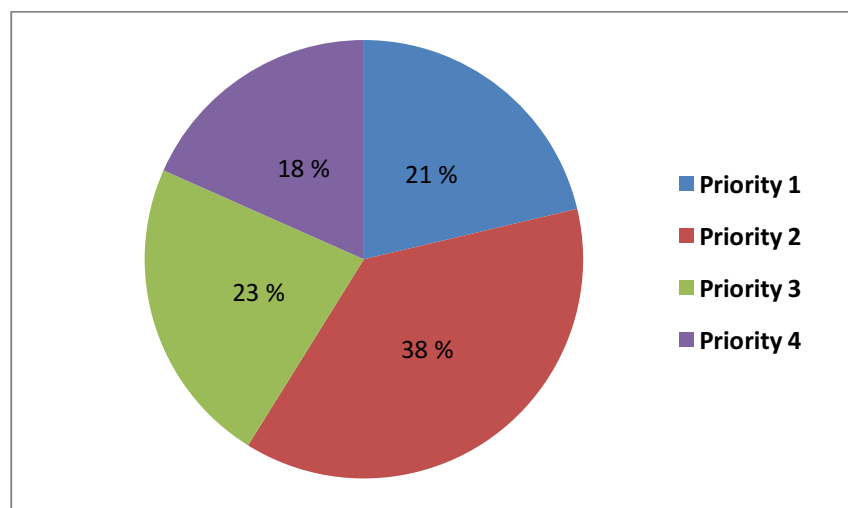


Figure 19 The overall percentage of standards related to the four Sendai priorities.

The examination above clearly shows that the Sendai Priorities form an excellent basis for planning and production of new standards. Therefore, the Sendai Framework should be used as a forum for new standardisation activities – see ResiStand recommendations in Section 2.3.4.

8 Question 5: Relation between Standardisation Needs / Opportunities and Policies

8.1 Thematic Areas and Sendai Priorities

The same Thematic Areas are used in this section as in the study of existing and emerging standards above – see section 7.1. However, the needs and standards are only studied on the level of the Priorities, without addressing the relationship between the needs and opportunities with the detailed action points.

For refreshment of memory, the Thematic Areas and the Sendai Priorities are listed below again in brief:

Table 16 Thematic Areas of standardisation needs and opportunities

A. Common Terminology:	addresses the need for one operational language, both verbally and graphically
B. Common Procedures:	addresses the need to respond with the same decision support tools and procedures
C. Community role and communication:	addresses the type of role played by the community within a disaster and how this should be communicated to civilians
D. Best Practice Sharing:	addresses the operational ways to evaluate the efficiency of DM and ways to share the ‘lessons learned’
E. Data sharing:	addresses the difficulties, due to a variety in internal organizations, in collaboration when collecting and exchanging data information
F. Training and Education:	addresses the need for training and education of first-responders)
G. Equipment:	addresses the need of DM equipment requirements
H. Communication equipment:	addresses the need of DM communication requirements
I. Legal/social issues:	addresses the social and legal implications of DM

Table 17 The Sendai Priorities

Priority No	Short description of Priority
Priority 1	Understanding disaster risk
Priority 2	Strengthening disaster risk governance to manage disaster risk
Priority 3	Investing in disaster risk reduction for resilience
Priority 4	Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction

8.2 Mapping of Standardisation Needs and Opportunities into the Sendai Framework

8.2.1 End user needs and the Sendai Priorities

This section discusses how the standardisation needs identified within ResiStand WP 3 [23] relate to the Sendai Framework for Disaster Risk Reduction. One of the key goals of the Sendai Framework is to urge the

Member States to direct action at the local, national, regional, and global level according to the four priorities.

Figure 20 provides a glimpse of how the standardization needs identified by ResiStand can be categorized under the four Sendai priorities. This descriptive statistic offers several insights: While the lack of needs that fall under priority 3 looks rather stark, this is unsurprising given that this priority focuses on the need for States to invest.

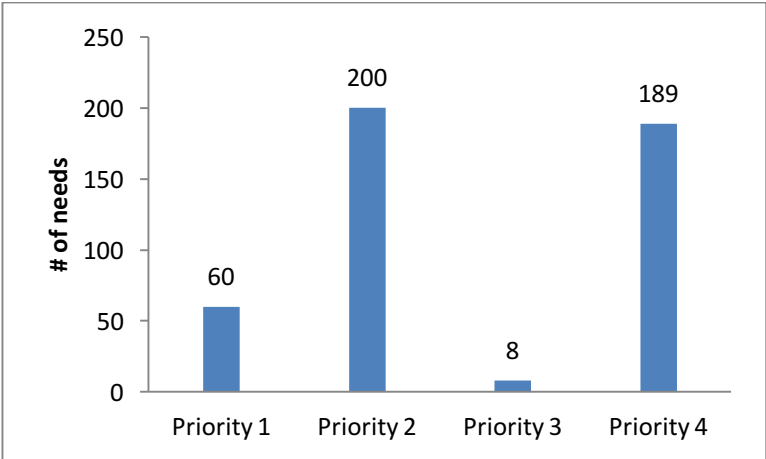


Figure 20 End user standardisation needs by the Sendai Priorities

These eight needs focus on technical, equipment, semantic, and organisational elements. Examples of these are: standardised tools for refugee registration [technical]; standardised biometric equipment [equipment]; standardised self-rescue advice such as exit signs [semantic] and use of recycled material for infrastructure reconstruction [organisational].

Figures Figure 21 to Figure 24 provide an overview of into which thematic area the needs within the four priorities fall. What is surprising though is the discrepancy between the two priorities in the equipment issue where there are only 6 needs in priority 1 but 13 needs in priority 3. Presumably, the focus on building back in priority 4 requires more standardisation efforts than the governance focus in priority 1.

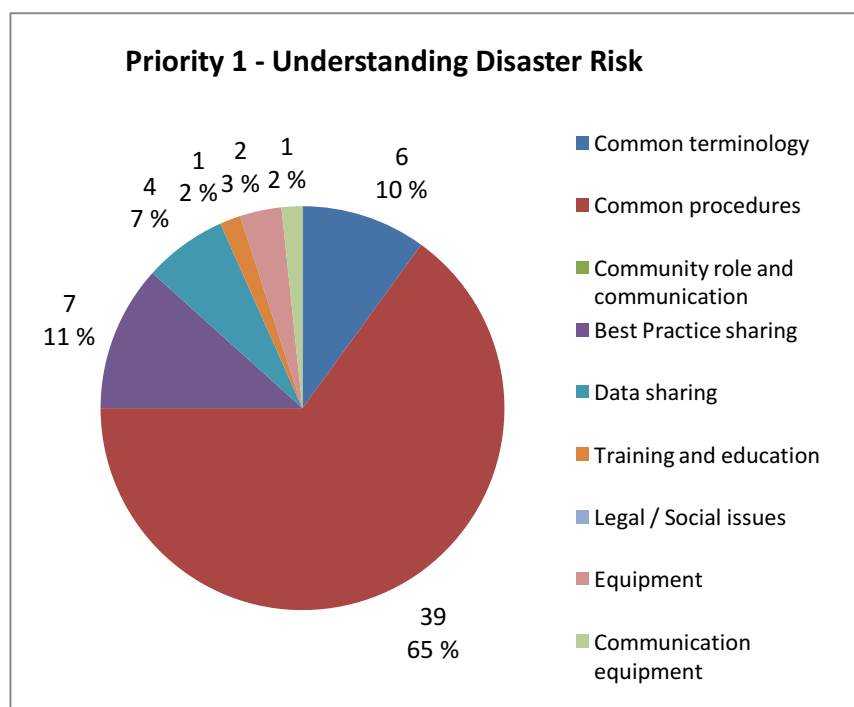


Figure 21 End user needs according to their Thematic Areas within Priority 1

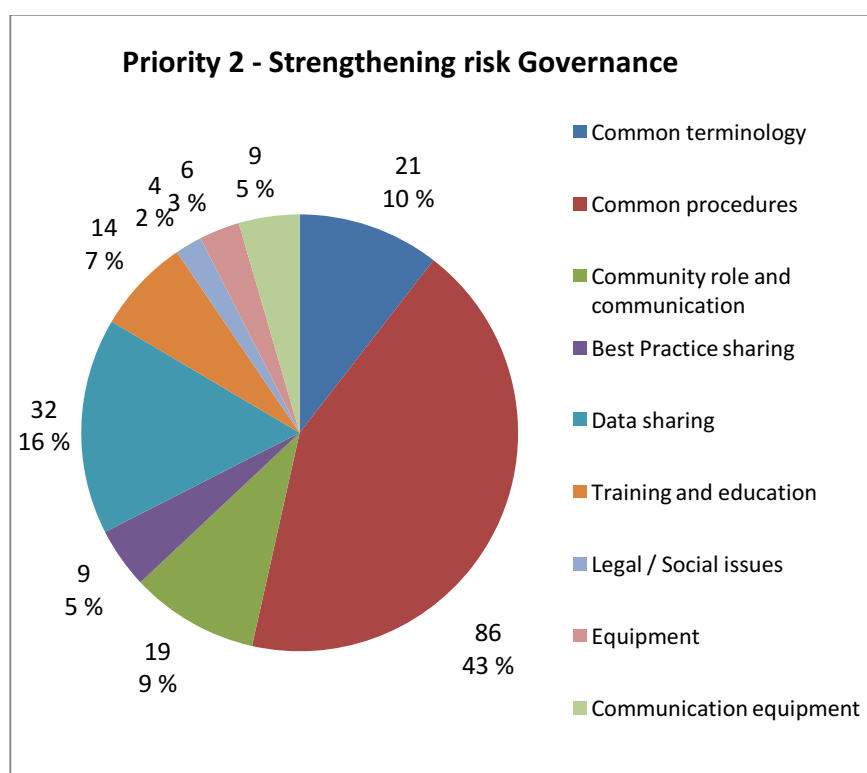


Figure 22 End user needs according to their Thematic Areas within Priority 2

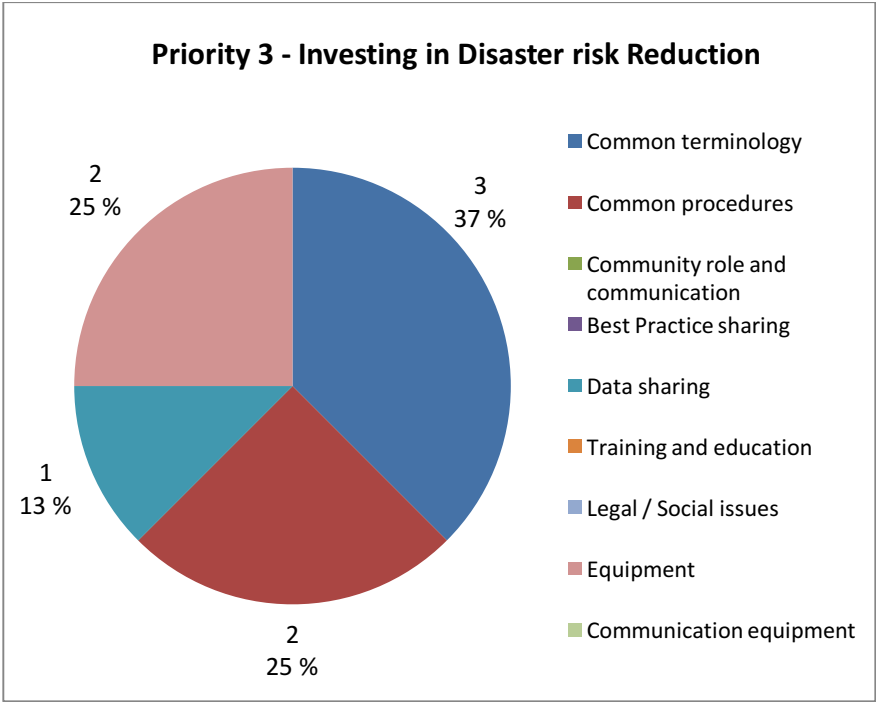


Figure 23 End user needs according to their Thematic Areas within Priority 3

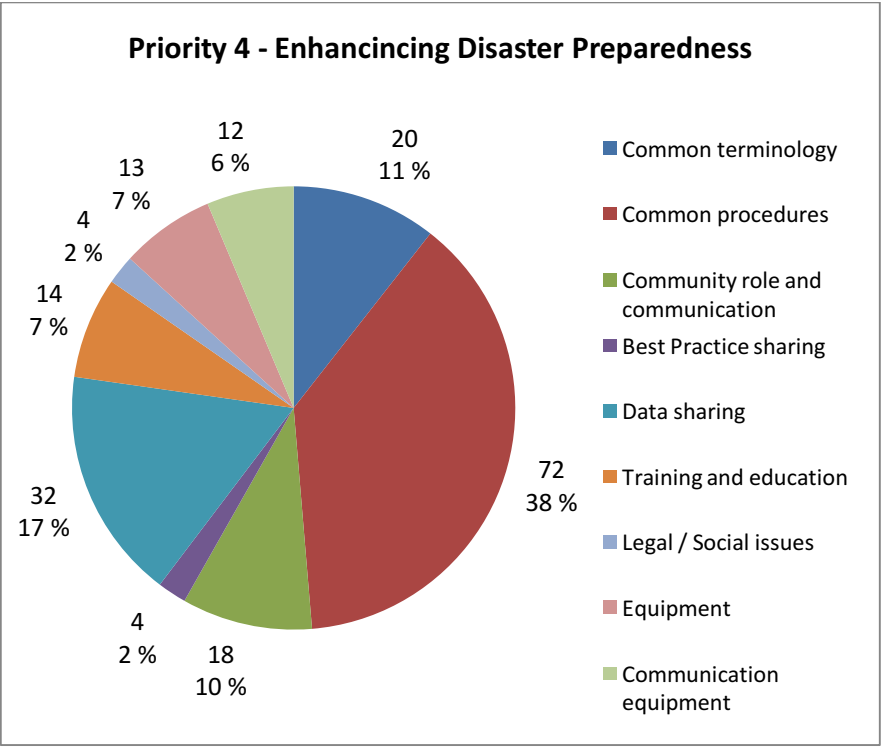


Figure 24 End user needs according to their Thematic Areas within Priority 3

Given the theme of priority 1 – understanding disaster risk – the limited number of needs that deal with equipment is unsurprising. There is just limited use for equipment standards when dealing with

understanding disaster risks. Conversely, standards that address organisational issues play an important role in understanding disaster risk as it requires common methods to measure risks.

With regard to the remaining three priorities, it is noteworthy that nearly all of the needs pertain to priority 2 and 4, whereas a clearly smaller number of needs belong to priority 1. The distribution roughly corresponds to the distribution for all of the needs, only the semantic and the equipment issues appear to be slightly underrepresented and the organisational issue overrepresented.

Given the small number of needs in priority 3, it might be easy to dismiss these as unimportant. Yet, this decision would be ill-fated as the priority relates to investment, which pertains to acquisitions and thus has long-term consequences. It may be easier to, for example, reverse a particular policy or conduct training rather than to change pre-existing equipment and standardize it. Thus, these standards that pertain to investment should all be taken quite seriously and effort undertaken to address them as soon as possible.

The use of the Sendai Framework as a forum for standardisation has been discussed in Section 2.3.4.

8.2.2 Opportunities from the Suppliers and the Sendai Priorities

In ResiStand, standardisation opportunities are potential new items originating from the industry and research sector that could be used as basis for forthcoming standardisation activities. These standardisation opportunities can relate to new technologies, solutions, procedures, best practices, procurement models, regulatory aspects or services in the crisis management and disaster resilience domain. This section provides information on how of the standardisation opportunities identified in ResiStand WP4 [24], a total of 291 opportunities relate to the Sendai Framework for Disaster Risk Reduction priorities.

Standardisation opportunities are linked to various Sendai priorities according to the Thematic Area they relate to. As ResiStand opportunity descriptions are quite technical and specific, and the Sendai priority descriptions are rather wide and more operational ones, each opportunity has been allowed to link to a maximum of two different Sendai priorities.

Figure 25 shows that majority of the opportunities link with Priorities 2 and 3; i.e. strengthening the disaster risk governance, management and reduction. Only 36 opportunities relate to Priority 4 disaster preparedness and recovery, which is natural, as from the business point of view it is more sustainable and easier to focus on risk management and risk reduction than post crisis opportunities.

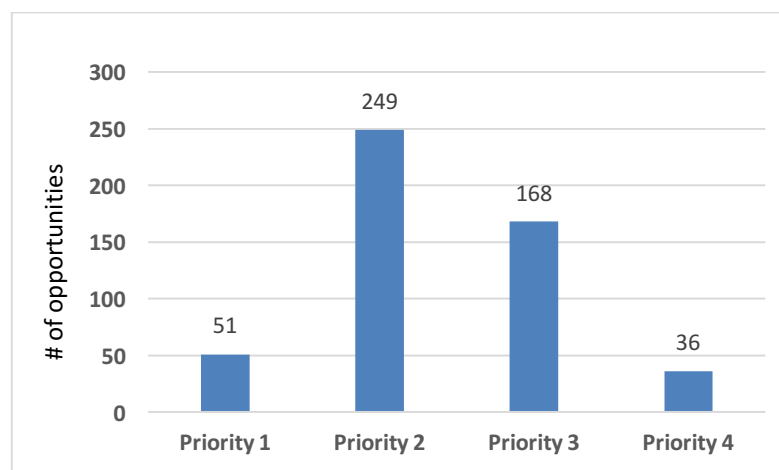


Figure 25 Supplier Opportunities by the Sendai Priorities

A total of 51 opportunities relate to Priority 1 ('Better understanding of risk'). These include mainly new communication and risk assessment methodologies, tools, equipment and early warning systems (41 %) as well as common terminology (29 %) which could help to ensure that the different dimensions of risks and exposure to hazards are understood in the same way in different organisational levels as well as in different countries (See Figure 26).

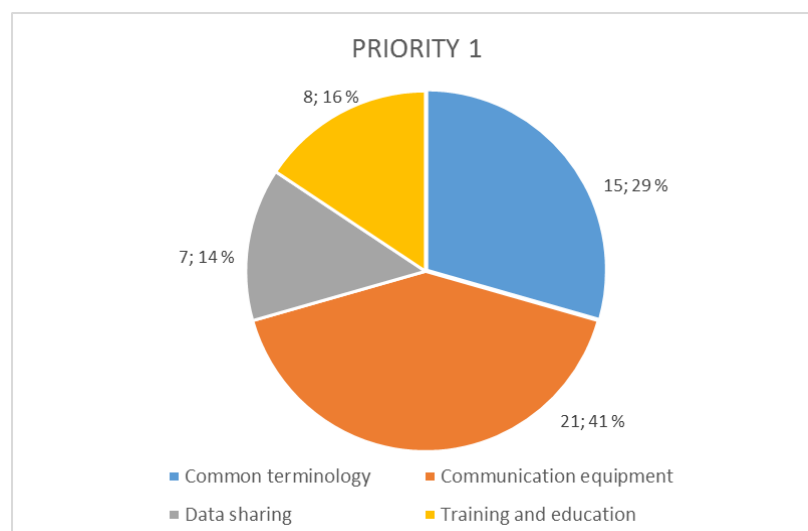


Figure 26 Supplier opportunities according to their Thematic Areas within Priority 1

As presented in Figure 27, the majority of the identified standardisation opportunities that relate to Priority 2 are new technologies and technical equipment (39 %) or development of new practices (30 %), which could provide support for risk management and governance. Only a few Priority 2 related opportunities fall under Thematic Areas 'Legal and social issues', 'Community role and communication' and 'Common terminology'. These categories are more related societal and legal issues, providing less business opportunities.

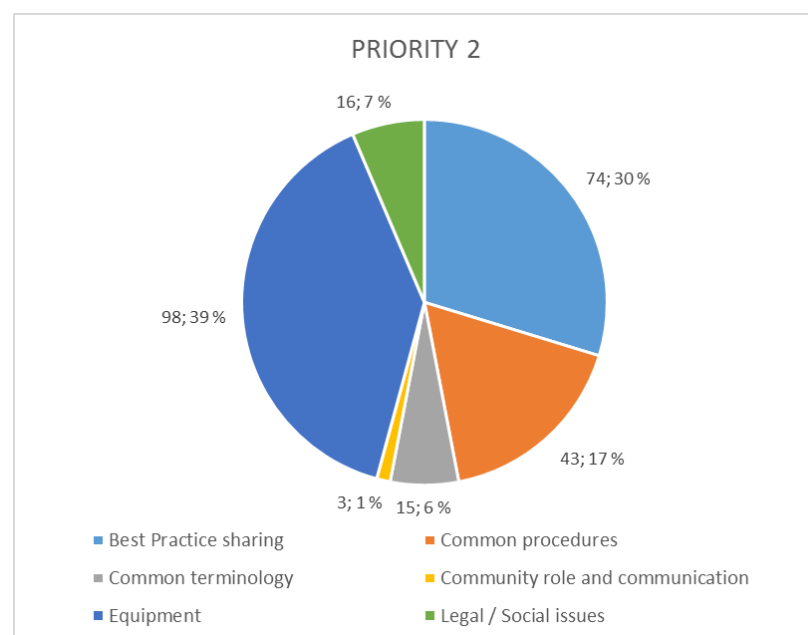


Figure 27 Supplier opportunities according to their Thematic Areas within Priority 2

The same applies also to opportunities linked with Priority 3 (see Figure 28 where the share of Thematic Areas 'Equipment' (58 %) and 'Common Procedures' (28 %) are more than 4/5 of the total number of opportunities.

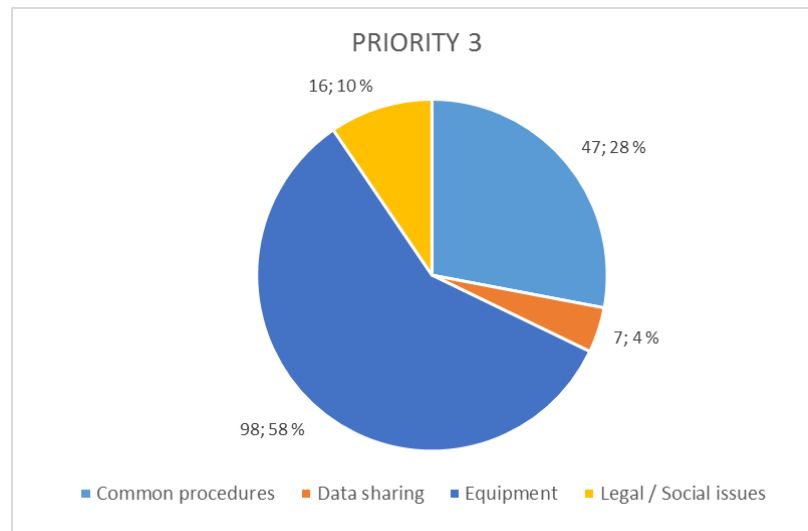


Figure 28 Supplier opportunities according to their Thematic Areas within Priority 3

As already mentioned earlier, Priority 4 pertains the least number (36) of standardisation opportunities. More than half of these (59 %) relate to the improvement of communication equipment and capabilities in crisis situation (see Figure 29). Another dominant category is training methodologies and procedures of first responders (22 %).

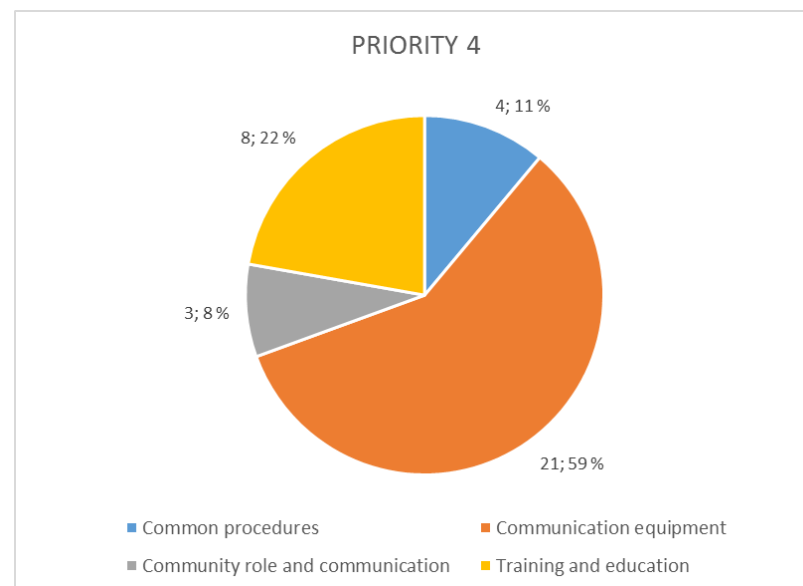


Figure 29 Supplier opportunities according to their Thematic Areas within Priority 4

The use of the Sendai Framework as a forum for standardisation has been discussed in Section 2.3.4.

9 Conclusions

9.1 General conclusions

This section presents general conclusions of the topics addressed by this report. The specific notes and recommendations are included in each section to keep them close to the context and thus make them easier to perceive against the background information and findings. The recommendations are, however, repeated as a table in section

This study has clearly shown that there actually are four stakeholder groups instead of the three ones identified by the ResiStand consortium in the proposal phase of the project. Despite some of the basic principles of standardisation (such as Voluntary use, Voluntary participation and Independence – see Section 3.2.1), standards are an efficient tool for implementing international and European policies related to Disaster Management. On the other hand, policies are needed to give the developed standards power and value. Therefore, the future development of standards in this area should be closely tied to policies.

In several parts of the study, an observation has appeared: There seems to be a significant need of better coordination of activities. This concerns the various DM related policies (Section 2.2) as well as various standardisation bodies (Section 5.3). For a layman (as most participants of standardisation bodies are), the existing structures are rather complicated and the multitude of various organisations and documents can be confusing; sometimes it might even prevent someone from participating in some activities due to lacking understanding of the “big picture”. More information and cross-cutting discussion is clearly needed.

The question about the suitable level of standardisation is not an easy one and there is no clear answer to it. The main advantage of creating and implementing European standards is the strengthening of the European common market, while international standards enable global cooperation between countries and operators from all continents. It might be good to approach this question through the above-mentioned concept of tying together standardisation and policies: European standards should be based on European policies while international standards could be used to implement global policies such as UN and related organisations. There is always also the possibility to create international standards in cooperation between the ESOs and the respective international bodies; this solution would combine the advantages.

The suitability of standards for improvement of Disaster Management has been discussed in Section 4 of this report. The study shows that there are some focus areas (both seen from the DM phase and the standard type points of view), but there are also marginal needs that are rather important for some stakeholders. Probably, the best selection of new standards can be achieved through the involvement of all stakeholder groups in the activities.

The ResiStand project offers a sophisticated tool for the assessment of potential new standardisation items: The ResiStand Assessment Framework [28] has been specifically planned for determining the feasibility and impact aspects of a new standard in the pre-standardisation phase. This assessment tool will be an essential part of the project’s outcome and it will be included in the ResiStand process that will be developed in Work Package 6.

The exploitation of EU-funded research results in standardisation has been discussed (section 5.2); clearly, much more should be done to really take advantage of the new innovations as a basis for new standardisation activities. This, however, is not possible without funding and guiding policies. Discussion between the European Commission and the European Standardisation bodies should be initiated and the resulting ideas should be implemented in the remaining calls of H2020 as well as in the forthcoming framework programs.

Additionally to the researchers, there are two stakeholder groups, whose participation in standardisation has been studied: end users and SMEs. The common factor for lacking participation of these groups is a lack of funding. New ways to provide funding for these groups should be actively searched for – this might also be dependent of clearer policies and ways to implement them.

Finally, the study shows that the globally renowned and accepted Sendai Framework could and should be used as a forum and tool for improvement of Disaster Management related standardisation on an international level – in an optimal case, with Europe as a forerunner.

9.2 Recommendations

Table 18 Recommendations of the ResiStand project

European Disaster Policies (section 2.2)
The European Commission should set up a central point of contact (e.g. an office, a board or a task force) for all matters related to Disaster Management covering and bringing together all DM work done by the various DGs and Agencies.
A person / persons responsible for standardisation of DM should be included in the team managing the above-mentioned point of contact.
A joint study by all above mentioned agencies will be initiated in order to identify the most critical requirements for standardisation of DM. This includes a definition of a schedule in cooperation with the European Standardisation Organisations.
Global Disaster Policies (section 2.3)
The European Commission together with the European Standardisation Organisations (CEN/CENELEC/ETSI) starts to create a strategy for a European initiative of implementing relevant UN policies related to Disaster Management as new standardisation programmes.
The above-mentioned standardisation work should be done on a global level by the international standards organisations or specialised global bodies, with Europe as a forerunner in all activities. The resulting new international standards should then also be confirmed as European standards (e.g. EN ISO) according to the Vienna agreement or other similar instruments.
The National Standardisation Bodies of the Member States should actively support the activities of the 'United Nation Coordination Group' of ISO/TC 292 in order to increasingly include standardisation as part the implementation of the Sendai Framework.
Standardisation and the European Union (section 3.3)
The European Commission should aim for comprehensive planning of new Disaster Management related legislation and respective harmonized standards by initiating new programming initiatives and mandates.
Mandates, if they should become successful and sustainable over the years of execution, require particular attention by all stakeholders involved to a number of critical issues and dependencies.
Sufficient time and funding to execute the mandate work, but also to follow up on the top-down standardisation actions and recommendations, are essential for the success of such work.
Involving the 'right' stakeholders at the 'right time' for the 'right level of involvement' is challenging, in particular for topics in the area of security/disaster resilience, these horizontal subjects are even more difficult to cover with an even wider range of stakeholders that are possibly only partially interested in the work.

A Mandate cannot produce the expected results if legislation that is referring to the developed standards does not exist. This should be taken into account when the European DM related policies are developed further – see section 2.2.9.
In the entire area of Disaster Management, development of new standards on the international level should always be considered as the first option.
The above could be enhanced through joint development of standards, which also gives the European parties an opportunity to be a global forerunner of DM standardisation.
Contribution of standards by standard types (section 4.2)
H1.1: The basis for new Disaster Management related standardisation activities should be the needs of the end users instead of the technological offering of the industry. The focus of standardisation activities should thus not be mainly on technological standards, but the emphasis of future work should look more and more towards standards that improve cooperation and collaboration of organisations through definition of common procedures and practices; especially those helping organisations to collect and share information with each other.
A sentence in one of the comments from a survey respondent crystallizes the need for standardisation in the area of Disaster Management: <i>it is so important to build a minimum common ground that will allow cross sectorial / cross border cooperation during a crisis</i> . This should be the target and the leading driver of future standardisation, and it should be supported by the DM related European policies.
Contribution of standards by Disaster Management phases (section 4.3)
H1.2: The standardisation work for Disaster Management should concentrate in the phases of Response and Preparedness, with emphasis on the former. Standards for the Mitigation phase should still be developed but, as it is already rather well covered by standards, priority should be given to the two other phases mentioned above. No specific effort should be targeted at the Recovery phase due to lacking end user needs. In all cases, the standardisation activities should be based on end user needs and requirements.
The best way of creating a reasonable and sufficient set of standards to cover adequately all DM phases is to ensure that all stakeholder groups are well represented in the standardisation bodies (technical committees, working groups) and that the standardisation work is guided and supported by clear European / international policies.
Standards and research projects (section 5.2)
H2.1: The H2020 calls for topics that could offer a basis for new Disaster Management related standards should include a special condition stating that one of the partners must be either an NSB or an organisation that actively participates in standardisation in the domain related to the exploitation of the project's results. A certain amount of funding from the project's grant should be available for this partner for a period after the project to cover the costs caused by the standardisation activities
The European Commission and the European Standardisation Organisations should initiate a discussion with the goal of finding new, innovative ways to enhance and improve the process of using the research results as a basis for new standardisation work. This includes also securing adequate funding for the standardisation even after the research projects have ended.
Coordination of standardisation (section 5.3)
H2.2: A Security Sector Forum (SSF) should be founded as soon as possible. Its members should contain representatives of all security-related Technical Committees of the ESOs, NSBs, European sector organisations, most relevant directorates of the European Commission (DG HOME, DG ECHO, JRC etc.) and major research projects or research organisations.

<p>A Disaster Management Sub-Forum or similar group of DM experts should be created to work under the umbrella of the Security Sector Forum. It should proactively follow end user needs, look for new standardisation opportunities, assess new ideas and suggestions from the stakeholders, and make proposals to the Forum about potential new standardisation items. The Group should also consider whether the new work should be started on European or International level, and make recommendations about a suitable technical committee that would take over the practical work.</p>
<p>Participation of end users (section 6.2)</p>
<p>H3.1: To effectively support the participation of end users in Disaster Management (DM) related standardisation activities, the Member States should develop their national legislation and other related regulations so that participation in standardisation will be included in the duties of the national authorities working in the area of DM such as practitioners and first responders. This should include also allocation of sufficient national funding in the budgets of the authorities.</p> <p>In addition, the national policy makers should encourage these organisations and the national Standardisation Bodies to cooperate and efficiently aim for increasing participation of the end users into the standardisation work.</p>
<p>As mentioned in the comments of the survey respondents, the critical factor in the process of getting end users to participate in standardisation is the required support from the Member States. This could probably be influenced by European policies aiming to encourage the national authorities of the MS to promote this goal and invest in it.</p>
<p>Participation of end users (section 6.3)</p>
<p>H3.2: To effectively support the participation of SMEs in Disaster Management (DM) related standardisation activities, factual funding should be available for these small enterprises. This funding should be directed into standardisation projects that relate to EU policies in the area of Disaster Management. The funding could consist of two components:</p> <p>EU funding could be channelled from the Commission through the ESOs to the NSBs for selected standardisation projects. Projects related to harmonised standards or standards, which are produced as part of a programming initiative or mandate should be prioritized. The second component should come from the national budgets of the member states or associated countries, and it could be managed and channelled by national agencies for funding of innovation.</p>
<p>It is of crucial importance to ensure that European SMEs will be enabled to participate in standardisation activities and that the huge amount of innovation originating from this group is taken into use. This should also include the provision of suitable funding instruments to guarantee that the costs related to standardisation activities are not an obstacle for the small and medium-sized enterprises to participate.</p>

9.3 Next steps

The results of ResiStand Task T5.1 that are presented in this document will be subject to discussion in the joint T5.1/5.2 Workshop that will be organised on 11 September in Brussels at CEN-CENELEC Headquarters. A set of group discussions will be organised at the workshop, where the participants (members of the ResiStand stakeholder communities) will discuss in groups a few selected recommendations in order to cultivate ideas about their feasibility and implementation.

The results of this report will be taken into account in the work of ResiStand WP6 (*"Towards a sustainable process"*), where the ResiStand pre-standardisation process and its implementation plan will be developed.

We also hope that the recommendations in this report will be taken into account by the various policy-maker organisations involved in the planning of standardisation and Disaster Management.

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Annex 1 – Survey Questionnaire



The European Virtual Institute for Integrated Risk Management
EU-VRI



Copy of Contribution of Standards to Improvement of Disaster Resilience by Type and Sector

Standardisation is a powerful tool to achieve better interoperability. However, it needs to overcome a lack of interest and modest participation from stakeholders. Also, promising research results are not always used as the basis for new standards.

The overall goal of ResiStand is to find new ways to improve the crisis management and disaster resilience capabilities of the European Union and individual Member States through standardisation.

ResiStand contributes to an improved disaster resilience by identifying and analysing the drivers, constraints and expectations of three main stakeholder communities: Standardisation Organisations, End-Users and Suppliers, consisting of researchers, industry and SMEs.

Based on this information, gaps in standardisation are identified and a prioritised roadmap for new initiatives will be created. The roadmap will be complemented by a critical evaluation of standards as a tool to improve disaster resilience.

ResiStand aims at implementing a pre-standardisation process that supports the development of standards. The feasibility of the process will be tested by developing a new work item. The aim is that stakeholders will continuously utilize this "ResiStand Process" in the future, and that the project delivers a better understanding of the potential of standards for contributing to an improved disaster resilience.

ResiStand will support the management of increasing threats to society such as armed conflicts, terrorism, pandemics and natural disasters, which have increasingly cross-border, even global consequences due to the on-going globalisation.

Protection of citizens through anticipation, preparedness, response and adaptation to crisis situations – i.e. maintaining disaster resilience – will be more efficient. Collaboration between national, European and international stakeholders will be improved by unified processes and management systems as well as by technical, procedural, operational and semantic interoperability.

ResiStand has carried out extensive research during the first phase of the project. In WP2, the standardization bodies and existing standards were studied. Similarly, WP3 studied the needs and expectations of end users operating in the area of Disaster Management (public authorities, practitioners, first responders and non-governmental organisations), while WP4 studied the potential new opportunities for standardization offered by the supplier community – industry including SMEs and the research domain.

In this survey, we present several hypotheses which will be tested as part of the project and help developing the ResiStand Roadmap and the Process which will be developed in WP 5 and WP6.

It would be highly appreciated by the ResiStand Team if you could help us by answering the questions below.

1.1 Standardization Activities by Standard Types

Standardization Activities by Standard Types

The ResiStand project has studied the types, thematic areas or interoperability issues of identified end user needs and supplier opportunities, the distribution of which shows that the most frequent Thematic Areas, to which the proposed end user standardization needs were mainly related, were **Common procedures** (needs requiring common decision support tools and procedures to respond coherently at European level in case of a crisis) and **Data sharing** (improvements to problems that multiple collaborating organisations face in collection and exchange of data and information). These two Thematic areas cover 57% of all identified end user needs.

Identified end user needs by Thematic Areas	Common procedures	Data sharing	Common terminology	Training and education	Community role/communication	Equipment	Communication equipment	Best practices sharing	Legal & social issues
Total distribution of end user needs by thematic areas	38%	19%	8%	7%	6%	6%	6%	5%	5%

Further, **Technological aspects** are clearly the most frequent areas when compared both by amongst Opportunity Types or by Interoperability Issues. This is very natural considering that the main mission of the industry and of a large part of the research projects is to produce technologies or technological solutions and systems.

Identified opportunities from the suppliers by Opportunity Types	Technology	Procedure	Best practice	Solution	Service	Regulatory aspect	Procurement model
Total distribution of supplier opportunities by opportunity type	24%	24%	20%	19%	6%	6%	1%

When looking at the Opportunity Types, the next largest contingents after Technology are **Procedures** (new ways to proceed in a specific context that could be adopted as a standard method in a specific task) and **Best practices** (de facto standards or well-known practices that could be formally recognised to be adopted uniformly by a wider number of stakeholders). These two types cover together 44% of all opportunities.

Identified opportunities from the suppliers by Interoperability Issues	Technical / Communication	Organisational	Semantic	Equipment / Physical	Legal
Total distribution of supplier opportunities by interoperability issues	46%	27%	16%	6%	4%

In a similar way, when comparing the Interoperability Issues, the largest share of opportunities address the two next largest contingents of opportunities are **Organisational** (the opportunity allows a better execution of the tasks at an organisation level or between organisations, a common organisational schema, mutual functional mapping, a way to coordinate different organisations, or a way to organise or coordinate temporary multiple organisations during resilience phases) and **Semantic** (the opportunity offers or is strongly related to the semantics of a specific context, such as terminology, meanings of symbols, significance of data, common sensor thresholds, common interpretation of different data about similar events).

From these figures, a conclusion can be drawn that there is both need and existing opportunities for new standards outside the most frequent domain of Technology. Especially, the need for Common Procedures matches very well with the opportunities of type Procedure and Interoperability Issues of type Organisational. Similarly, a match can be seen between the need for Data sharing standards and opportunities of type Best practices that address Semantic Interoperability Issues.

1*.

Please assess how much do you agree with the statement below:

"The basis for new Disaster Management related standardization activities should be the needs of the end users instead of the technological offering of the industry. The focus of standardization activities should thus not be mainly on technological standards, but the emphasis of future work should look more and more towards standards that improve cooperation and collaboration of organisations through definition of common procedures and practices; especially those helping organisations to collect and share information with each other"

- ☐ Strongly agree
- ☐ Agree
- ☒ Neither agree nor disagree
- ☐ Disagree
- ☐ Strongly disagree

2. Comments:

1.2 Standardization Activities by Disaster Management Phases

Standardization Activities by Disaster Management Phases

The ResiStand project has studied existing standards related to Disaster Management (DM). A part of this research has been to determine how these standards are distributed between the DM phases of the crisis management cycle; i.e. towards which phase each standard is in first line targeted.

ResiStand has also researched the distribution of identified end user standardization needs with reference to the DM phases. This has been done through surveys and workshops (ResiStand End-User Community members) and desktop research (EU-funded projects related to DM). Similarly, the new standardization opportunities offered by the Supplier community (the industry incl. SMEs and the research domain) have been researched.

Source of data	Explanation	Mitigation	Preparedness	Response	Recovery
Existing standards	ResiStand deliverable D2.2	35%	40%	20%	5%
ResiStand E-UC	ResiStand deliverable D3.3	14%	34%	47%	4%
ResiStand SUC	ResiStand deliverable D4.4	34%	51%	44%	0%

Until today, the largest number of standards developed by the SDOs have been targeting in first line the first two phases of the Disaster Management cycle, namely the phases Mitigation and Preparedness. The two other phases, Response and Recovery are targeted by only one fourth of the existing standards.

This could lead to a deduction that standardization is mostly needed in the other two areas that are not covered so well with standards; especially the Recovery phase. However, when we look at the results of the surveys conducted by the ResiStand project, we can easily see that the end users don't seem to have a significant need for new standards for the Recovery phase. Same applies also to the opportunities offered by the Supplier community; i.e. the industry and the research organisations. This is easy to understand: the operations during recovery phase can vary very much depending on the type, magnitude and impact of the disaster in question – thus, standardization of the activities is rather difficult.

The largest amount of end user needs as well as supplier opportunities target the two phases in the middle of the cycle, Preparedness and Response. Of these two, the Response phase is targeted by a smaller number of already existing standards despite of the largest number of identified needs.

3*.

Please assess how much do you agree with the statement below:

"The standardization work for Disaster Management should concentrate in the phases of Response and Preparedness, with emphasis on the former. Standards for the Mitigation phase should still be developed but, as it is already rather well covered by standards, priority should be given to the two other phases mentioned above. No specific effort should be targeted to the Recovery phase due to lacking end user needs. In all cases, the standardization activities should be based on end user needs and requirements"

- ☐ Strongly agree
- ☐ Agree
- ☒ Neither agree nor disagree
- ☐ Disagree
- ☐ Strongly disagree

4. Comments:

2.1 Project Results as Basis for New Standardization Activities

Project Results as Basis for New Standardization Activities

The Commission funds annually through various channels (e.g. H2020) a large number of research projects that are related to Disaster Management and matters that could improve and enhance the resilience of our society in crisis situations. The results generated by these projects form an enormous pool of knowledge and information, which should be available for exploitation in any feasible way by the various stakeholders of the society.

Most H2020 research projects are carried out by consortia where all stakeholder groups (the industry incl. SMEs, the research community and end users such as practitioners) are represented. These research consortia invest a large amount of collaborative efforts with a relatively high level of consensus in the research work. This makes the results ideal as basis for new standardisation activities, because consensus is a prerequisite for the approval of any standard.

Despite the general endeavour of using the H2020 projects as a source for new standardisation items, the practical results are not very encouraging. There are many reasons to this: firstly, there is probably not enough understanding about the benefits of standards among the consortia members, and secondly, there is not enough contacts and communication between the standardisation organisations and the research community.

However, the main problem is actually implicitly buried in the temporal differences between H2020 projects on the one hand and standardisation activities on the other hand. The duration of H2020 projects is timely limited; the length of a project seldom exceeds three years. Normally, the final results of a project are presented at the end of the project and can first then be brought into the standardisation funnel.

The standardisation process is, despite significant efforts by the standardisation bodies, rather time-consuming. Only seldom can a standard be approved as a final document in a timeframe shorter than two years. Another problem is, that each new standardisation item has to be proposed and managed by one of the National Standardisation Bodies (NSB), who should understand the work item and be ready to take care of it throughout the process. This is not always so easy, if the NSB has not been involved in the project and does not know the new work item and the reasoning behind it well enough.

Usually, a project presents its results as a new standardisation work item at the end of the project. The first problem is to find someone – in most cases the NSB from the homeland of one of the partners – who can take the proposed item into the standardisation funnel and get the work up and running. Unfortunately, when the standardisation work begins, the project usually ends. As the consortium as a whole does not exist anymore, the synergy of the collaboration for a common goal is lost. In practise this means that the driving force behind the new work item disappears.

5*.

Please assess how much do you agree with the statement below:

"The H2020 calls for topics that could offer a basis for new Disaster Management related standards should include a special condition stating that one of the partners must be either an NSB or an organisation that actively participates in standardization in the domain related to the exploitation of the project's results. A certain amount of funding from the project's grant should be available for this partner for a period after the project to cover the costs caused by the standardization activities"

- ☐ Strongly agree
- ☐ Agree
- ☒ Neither agree nor disagree
- ☐ Disagree
- ☐ Strongly disagree

6. Comments:

2.2 Coordination of Standardization

Coordination of Standardization

The ResiStand project has studied the efforts and activities of international and European standardization committees or similar bodies that produce or have in recent years produced standards related to Disaster Management. These bodies operate under International and European standards organisations, representing general (CEN and ISO), electrotechnical (CENELEC and IEC) and ICT (ETSI, ITU) standardization.

Tens of such bodies have been identified. Some of concentrate entirely in security standards, while others produce security-related standards among others. At the moment there is not much coordination between these committees.

There has been discussion about the creation of a new overseeing body, Security Sector Forum. Sector forums are long-term structures within the European standardization that are founded as a response to the need for an integrated interface amongst a number of Technical Committees in a certain sector. Sector Forums address common problems of the TCs and monitor of progress of standardization in the target business area. They can also be present proposals for new fields of activities within the sector, as well as take initiatives to resolve duplication of work.

7*.

Please assess how much do you agree with the statement below:

"A Security Sector Forum (SSF) should be founded as soon as possible. Its members should contain representatives of all security-related Technical Committees of the ESOs, NSBs, European sector organisations, most relevant directorates of the European Commission (DG HOME, DG Echo, JRC etc.) and major research projects or research organisations .

A Disaster Management Sub-Forum or similar group of DM experts should be created to work under the umbrella of the Security Sector Forum. It should proactively follow end user needs, look for new standardization opportunities, assess new ideas and suggestions from the stakeholders, and make proposals to the Forum about potential new standardization items. The Group should also consider whether the new work should be started on European or International level, and make recommendations about a suitable technical committee that would take over the practical work"

- ☐ Strongly agree
- ☐ Agree
- ☒ Neither agree nor disagree
- ☐ Disagree
- ☐ Strongly disagree

8. Comments:

3.1 Participation of End Users in Standardization Activities

Participation of End Users in Standardization Activities

The research conducted by the ResiStand project indicates, that the end users (especially those representing national authorities in the DM area such as first responders or other practitioners) find it difficult to participate in standardization activities because of two main reasons: firstly, these organisations lack funding to cover the related costs (payroll, travel costs, participation fees etc.). Additionally, the end users often lack a mandate to participate in activities that are not their core responsibilities; for instance standardization.

If there aren't enough end users among the members of Technical Committees and Working Groups of the ESOs and other standardization bodies, the emerging standards do not address the real daily needs of the practitioners but rather only the supplier point of view – mainly that of the industry.

According to the EU Regulation 1025/2012, Member States shall, where appropriate, encourage participation of public authorities in national standardization activities. As long as this regulation is not brought to the national level in practical terms through EU legislation, it does not bring the desired consequences.

9*.

Please assess how much do you agree with the statement below:

"To effectively support the participation of end users in Disaster Management (DM) related standardization activities, the Member States should develop their national legislation and other related regulations so that participation in standardization will be included in the duties of the national authorities working in the area of DM such as practitioners and first responders. This should include also allocation of sufficient national funding in the budgets of the authorities

Additionally, the national policy makers should encourage these organisations and the national Standardization Bodies to cooperate and efficiently aim for increasing participation of the end users into the standardization work"

- ☐ Strongly agree
- ☐ Agree
- ☒ Neither agree nor disagree
- ☐ Disagree
- ☐ Strongly disagree

10. **Comments:**

3.2 Participation of SMEs in Standardization

Participation of SMEs in Standardization

The research conducted by the ResiStand project indicates, that one of the main barriers preventing SMEs from participating in standardization activities in the DM area is the lack of funds to cover the related costs (payroll, travel costs, participation fees etc.). This leads to a situation, that the SMEs – who normally are a leading source of innovation – are not able to participate, and the industrial domain is represented mainly by large enterprises.

According to the EU Regulation 1025/2012, national standardisation bodies shall encourage and facilitate the access of SMEs to standards and standards development processes. The regulation contains ideas about how this could be done, but none of these actually solve the main problem – costs of participation.

11*.

Please assess how much do you agree with the statement below:

"To effectively support the participation of SMEs in Disaster Management (DM) related standardization activities, factual funding should be available for these small enterprises. This funding should be directed into standardization projects that relate to EU policies in the area of disaster management. The funding could consist of two components:

EU funding could be channeled from the Commission through the ESOs to the NSBs for selected standardization projects. Projects related to harmonized standards or standards, which are produced as part of a programming initiative or mandate should be prioritized. The second component should come from the national budgets of the member states or associated countries, and it could be managed and channeled by national agencies for funding of innovation"

- ☐ Strongly agree
- ☐ Agree
- ☒ Neither agree nor disagree
- ☐ Disagree
- ☐ Strongly disagree

12. Comments:

4. Closing Thoughts

13*. *With which field are you associated?*

- ☐ Standardisation Bodies
- ☐ End-users (First Responders, Practitioners, NGOs)
- ☐ Suppliers (Research, Industry)
- ☐ Other, please specify

14. *Please share your thoughts and comments about the topic:*

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