net risk work

Funded by
European Union
Humanitarian Aid
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Networking for the European Forest Risk Facility initiative

Report on tools and best practices on risk planning and management for wildfires, storms, floods, and avalanches (deliverable nº 4)

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VALABRE ANTICIPER VOTRE PRÉSENT

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Key information

NET RISK WORK Project

Networking for the European Forest Risk Facility Initiative (NET RISK WORK) is a two-years Project (2017-2018) funded by the EU Civil Protection Mechanism, promoting the knowledge exchange and networking around four major European forest risks and their interactions; wildfires, storms, floods and snow avalanches.

NET RISK WORK wants to perform a best practices capitalization and knowledge exchange process on risks planning and management capabilities for a better comprehension on how are these hazards interacting in a changing climate context all across Europe, and what can be used from lessons learned between regions and other risks experience.

The Project is also giving continuity to the Risk Facility Initiative started in 2014 (www.friskgo.org) encouraging networking under informal and permanent multi-actor platforms seeking for a better transfer of knowledge into practices and policy making.

Further information of the project is available at the website: http://netriskwork.ctfc.cat/

Abstract

This report presents the methodology and achievement of the work carried out as part of Action B1 of the NET RISK WORK project. This first action of the project aims at identifying the best practices and operational tools for risk assessment and management. With the baseline of establishing a state of the art on best practices and operational tools for the upcoming actions of the projects, such as identifying cross-cutting lessons learnt and providing a risk interaction assessment.

This report, fully open to the public and available online, explains the methodological approach developed to meet the following objectives:

(1) providing a template to collect best practices and operational tools in a standardized format;
(2) providing a general overview of the best practices or operational tools;
(3) allowing a classification of the cases to be easily searchable in a repository;
(4) allowing to compare best practices and tools.

The 41 cards collected by the partners are presented in a summarized version in the document while the complete version of each card can be downloaded online. A brief analysis of the best practices and tools collected is presented in the second part of the document in order to provide a wide view of the collected cases. The main cross-sectoral topics represented in the tools and best practices gathered by the partners are Risk vulnerability and assessment mitigation, Civil protection and post disaster

management, and Community involvement and risk communication. Most of them are applied at local and regional scales.

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Reference

Prat N., Vendrell J., Clémenceau A., Plana E., Font M., Serra M., Hengst-Ehrhart Y., Hartebrodt C., Held A., Capula M-T., Cinus S., Tola F., Visani C. 2017. *Report on tools and best practices on risk planning and management for wildfires, storms, floods, and avalanches*. NET RISK WORK Project. 44p.

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I. Introduction

The interactions between natural hazards due to the current climate change scenario are a likely situation that requires proactive measures in order to minimize natural and humanitarian disasters. The experts in each field of expertise included in this project, wildfires, storms, floods and avalanches, have gained experience and learnt lessons mostly by facing each of those risks. Sharing and capitalizing those experiences and lessons learnt from each risk can provide a better comprehension on how natural hazards are interacting between them under a climate change scenario.

This document is a report on the operational tools and best practices that have been collected on wildfires, storms, floods, avalanches and other risks in the frame of the NET RISK WORK project. The main objective of this data collection is to share knowledge of different risks with the partners and the expert community beyond on the topics such as risk assessment and planning for the three domains of the disaster risk management: policy making, early warning systems and disaster response. Overall, this knowledge sharing will provide a broad view of the best practices and operational tools that have been successfully implemented in order to foster adaptation for potential implementation in other risks and other regions.

As part of Task B, partners identified a set of best practices and operational tools available on their field of expertise and in their networks. Those best practices will be then used to feed a database needed in subsequent tasks of the project (Task C and D). To ease the collection of those best practices and operational tools, Action B1 has included the following points that are reported in this document:

(1) The creation of a template to standardize the collection of best practices and tools. The methodological steps followed to design and create this template to fulfil the expected requirements is detailed in section II Methodology.
(2) Feed the database with 41 examples of best practices and operational tools collected by the partners of the NET RISK WORK project. A summary of the best practices and operational tools collected in this initial stage of the project can be found in section III. Collection of tools and best practices.

The collection of the best practices is a work-in-progress that will continue during the lifetime of the project through the RISKPLATFORM that is being developed (Action D3). It will be continued in the European Forest Risk Facility, where a case study library will be available. The collection of best practices and operational tools will also be extended to the network of experts that will be invited to participate in the nodes (Action D2).

II. Methodology

Although the whole consortium is responsible for identifying, collecting and describing case studies, two partners (Research Center of Valabre – EPLFM and the Pau Costa Foundation – PCF) are specifically in charge of coordinating the action and managing the whole process.

The Table 1 below presents the successive steps carried out by the consortium for the realization of Action B1.

Actions	Date	Responsible partners
Preparation of action plan	Early February	EPLFM + PCF
1st discussion on the approach to and objectives of Action B1 during the kick-off meeting (Barcelona)	8 February 2017	All
Preparation of the shared template	Early March 2017	EPLFM + PCF
1st version of the template shared with the partners	14 March 2017	All
Implementation of comments and development of the template	End March 2017	EPLFM + PCF
Updated version of the template sent to partners	10 April 2017	EPLFM + PCF
Deadline for testing the template with a few cases (template test)	8 May 2017	All
Feedback on the use of the template and on the selected topics during the pre-assessment meeting (Freiburg)	11 May 2017	All
Implementation of the final version of the template	29 May – 16th June	EPLFM + PCF
Final discussion on the template during the project progress meeting (by Skype)	8 June 2017	All
Deadline for uploading the completed cards in the shared folder	19 June 2017	All
Drafting and submission of the *Report on tools and best practices on risk planning and management for wildfires, storms, floods, and avalanches*	30 June 2017	EPLFM + PCF

Table 1 Action Plan for Action B1

The co-leading partners started by developing a standardized description of the template card (Section A) in order to organize the process of identifying and collecting the operational tools and best practices (Section B), in collaboration with all the NET RISK WORK beneficiaries.

A. Developing a standardized description record card

1) Rationale

As planed in the description of work, and in order to meet the objectives of Action B1 presented in the introduction of this report, it was necessary to develop a common frame for:

(3) ensuring that all information is filled out to provide a general overview of the best practice or operational tool;
(4) allowing a classification of the cases (by topic, phase, domain, etc.) in order to be easily searchable in a repository;
(5) allowing to compare best practices and tools among different risks, phases of the DRM cycle, etc.

To allow an effective process of information collection, the template needed to include the following characteristics:

- **User friendly**: The various parts are organized in boxes dividing it in two parts, with a clear distinction between mandatory and additional fields. The document offers the possibility of multiple selection of boxes, etc.
- **Understandable**: Each question/field must be self-explanatory or be accompanied by a sufficient description of what is expected in each box.
- **Manageable**: The document should not be too long (risk of discouraging people) yet it should allow for the right level of detail to be provided.
- **Processable**: The collected data should be easy to treat, for instance to facilitate information search, to derive statistics, or to be uploaded on a platform.
- **Useful**: The template ought to provide the necessary information and the possibility to get further information using external sources (internet resources, experts contacts, etc.).

In order not to start from scratch as other projects that have implemented similar processes, and to benefit from their lessons learnt, the partners carried out a brief benchmark of methodological approach of similar projects. In particular, they have carefully examined the approach developed for collecting transferable best practices in the context of EUFOFINET project [1], of which Valabre was a partner and FRISK-GO project [2], which EFI and FVA were partners.

The idea was also to promote interoperability with other online platforms so that the NET RISK WORK best practices and operational tools description cards can be uploaded and integrated in such repositories and therefore made available for a larger audience. This starts by using the already existing lists of topics (to facilitate classification and search queries) that can be found in online repositories such as the “Lessons on Fire” [3] platform in the case of forest fires risk.

Regarding the list of cross sectoral topics, it was maintained as originally identified and detailed in the Description of Work. In addition, it seemed crucial to add the Sendai

Framework for Disaster Risk Reduction priorities and targets [4] as it is a common reference both at national, EU and international levels.

With all those characteristics and examples in mind, a first version of the NET RISK WORK template was developed. The template was shared and discussed back and forth between the co-leaders and other partners. The partners then started to fill in the template with first best practices and operational tools. Based on the feedback received at this stage, practical improvements were brought to the template into the final version.

2) Template structure

The final version of the template, available in V. References

[1] EUFOFINET – European Forest Fire Networks (2010-2012) – INTERREG IVC project, funded under ERDF priority 2 Environment and Risk Prevention. (For more information, see : http://www.interreg4c.eu/projects/project-details/index-project=120-european-forest-fire-networks&.html)

[2]http://www.friskgo.org/

[3] LESSONS ON FIRE: A Participatory and Knowledge-based platform (2015). Action A3 and A4 of the Firefficient project, http://www.lessonsonfire.eu/, http://firefficient.ctfc.cat/wp-content/uploads/2014/03/D4.3.PlatformDevelopement_v3.pdf

[4] UNISDR (2015). Sendai Framework for Disaster Risk Reduction 2015-2030; http://www.preventionweb.net/drr-framework/sendai-framework

Appendices of this report, is organized around three main parts:

- **Classification**: providing all the basic information necessary to understand the document context (What? When? Who? Where? How? Why?) and position it in the right place in a data-base;
- **Description and analysis**: is the main part of the document, where the operational tool or best practice is explained. A summary is available in this section as well as detailed elements providing information about implementation and a first analysis of the impact;
- **Additional information**: this part is optional and provides more elements, particularly in terms of lessons learnt. It is notably useful when it comes to transferring the best practices to another location, risk or context.

In addition, a short explanatory text is placed at the beginning of the document providing the wider context. Also, a line of explanation is given to illustrate the expectations under each field.

B. Identifying and collecting the tools and best practices

In order to facilitate the collection of best practices and tools, and also, to follow the progress of the action by the partners, a specific database has been created to collect and centralize all the best practices and operational tools and keep track of the topics currently being tackled.

Besides, the list of best practices and operational tools has been discussed repeatedly between the partners. The choice made by the consortium is to favor the expertise and core business of the partners in place of seeking a perfect balance between risks or Disaster Risk Management (DRM) cycle phases or domains, or any other classification item. The reason of this choice at this initial stage of the project is to test the functioning of the best-practice collection based on the expertise of each partner. This is reflected in the variety of the best practices and operational tools collected, as explained in Section III of this report.

The type of content to be collected throughout this process was also discussed. Although some partners suggested to advertise key publications, it was decided that this would not bring added value as scientific papers have their own platforms (like Research Gate) and NET RISK WORK should rather focus on sharing operational knowledge between practitioners.

The cards have been either totally completed by the partners or with the support of external experts. For instance, EPLFM has sought the support of the forest fire adviser of the General Directorate for Civil Protection to run an accuracy check on the content of the documents as well as provide further ideas of best practices to be shared.

III. Collection of tools and best practices

C. *General overview of the collected material*

A total of 41 best practices and operational tools were collected from the partners between January and June 2017 (month 1 to 6 of the project) on different risks, see Figure 1.

The category *other* includes the following risks:

- Climate change and derived risks
- Erosion
- Landslides
- Rock falling

Most of the best practices were applied to only one risk, however there were a few cases identified that the best practice contributed to manage more than one risk.

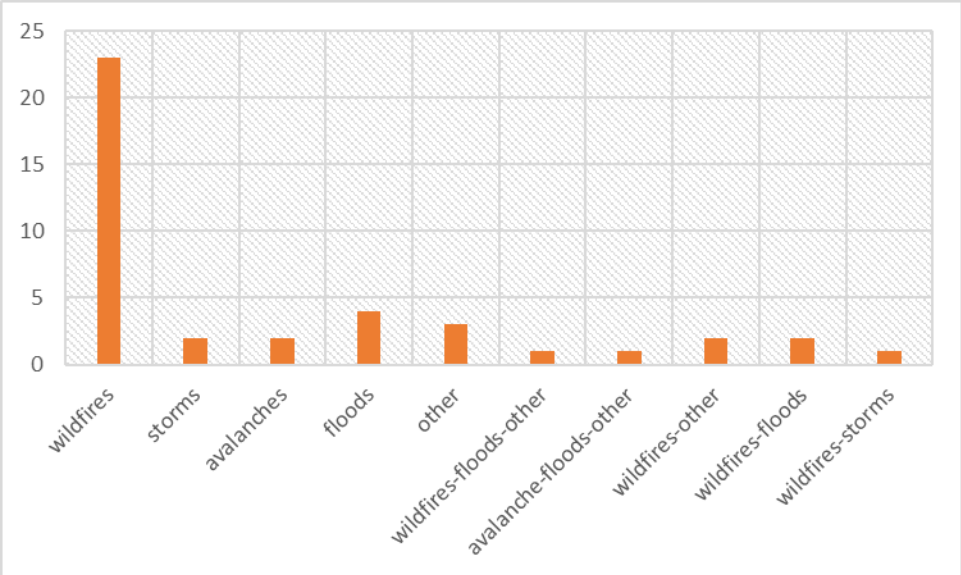

Figure 1. Distribution of best practices collected by risk.

Most of the best practices and tools were examples used for more than one cross-sectorial topic and type of risk (Figure 2). Best practices on wildfire risk were used in each of the cross-sectorial topic, whereas only a few examples were gathered on the further risks (storms, wildfires, avalanches and floods). The cross sectorial topic with more examples of best practices gathered was *Risk vulnerability and assessment mitigation*, *Civil protection and post disaster management* and *Community involvement and risk communication*.

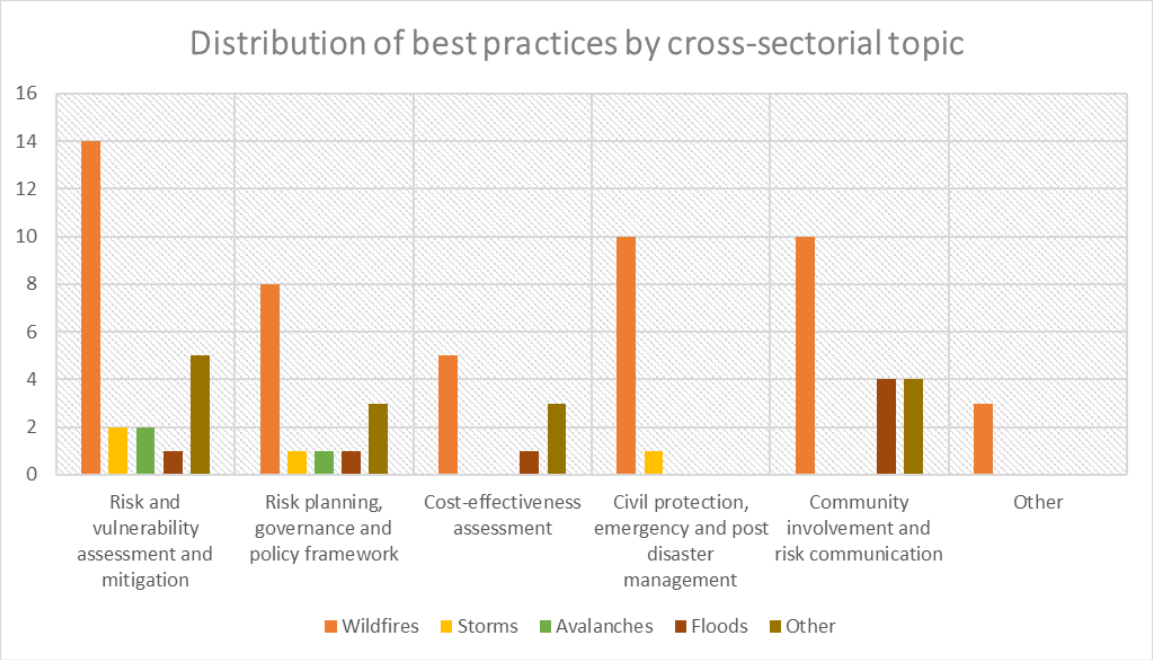

Figure 2. Best practices and operational tools distributed by cross-sectorial topic and type of risk.

Most of the best practices and operational tools examples had a local and regional-scale application (Figure 3). Most of the best practices that can be applied at a local scale, can also be applied at a regional scale. However, only a few examples of the best practices identified were found to tackle risks at a national, cross-border, EU and global scale.

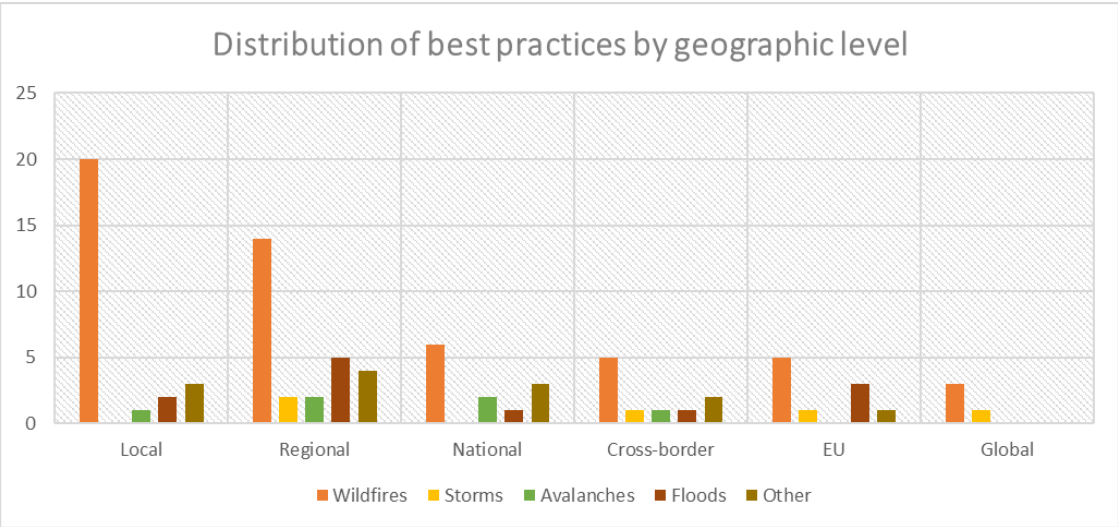

Figure 3. Best practices and operational tools distributed by geographic-scale application.

A 63% of the best practices can be applied to deal with more than one phases of the DRM cycle (Figure 4). Most of those are related to prevention actions, whereas less best practices have been identified for the recovery phase of the disaster risk management cycle.

Most of the best practices and operational tools identified covered more than a unique Sendai priority and target (Figure 5 and Figure 6). The least covered Sendai targets were the best practices to *reduce global disaster mortality* and to *enhance international cooperation to developing countries*.

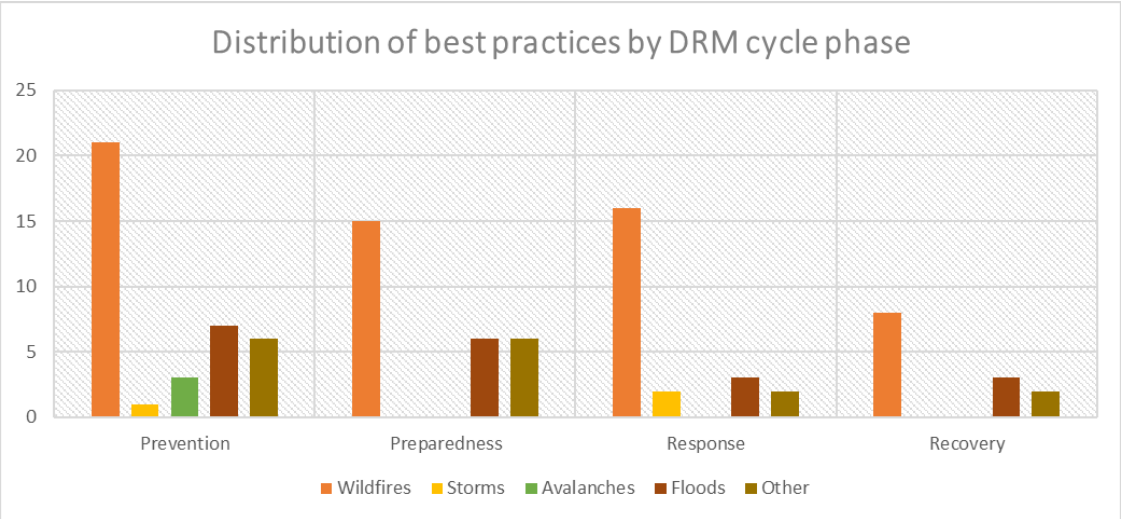

Figure 4. Best practices and operational tools distributed by four phases of the DRM cycle.

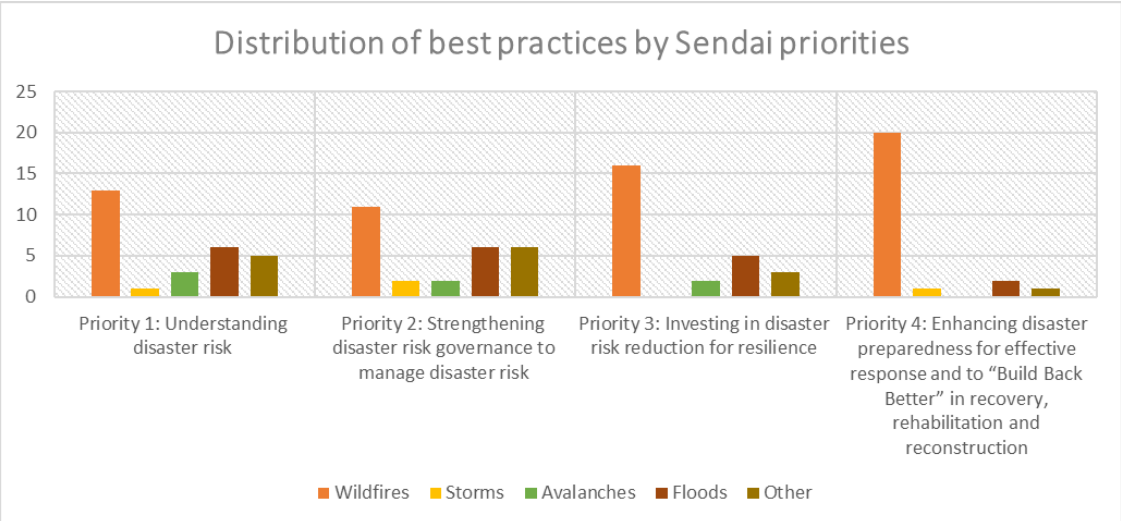

Figure 5. Best practices and operational tools distributed by the four Sendai priorities.

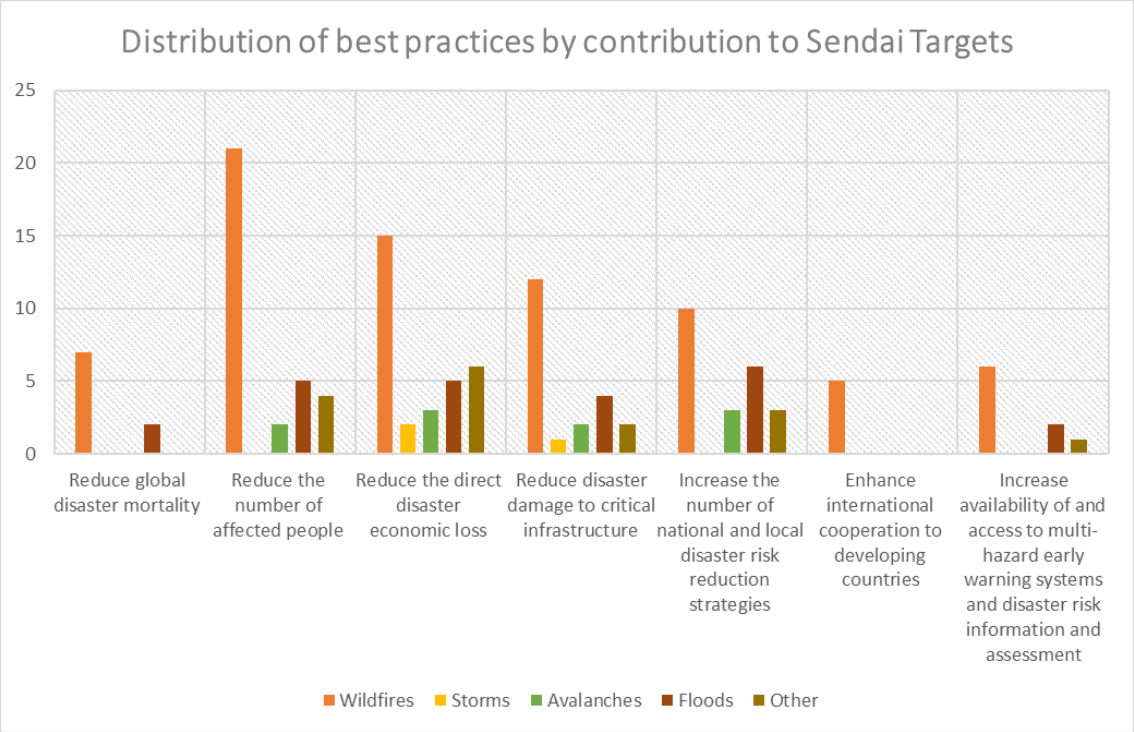

Figure 6. Best practices and tools distributed by Sendai targets.

D. Detailed information

This section provides summaries of the tools and best practices that are analyzed and described in greater details following the template presented in the methodology related section of this document. The complete descriptions of the best practices and tools are available on the NET RISK WORK website.

The summaries are organised by cross-sectoral categories. Most of the cases that are presented here can be classified in several categories. However, it was decided not to duplicate them in each category to simplify reading.

3) Risk and vulnerability assessment and mitigation

Avalanche risk vulnerability mapping (case of Switzerland - SilvaProtect-CH)	CTFC
Many avalanche events leading to more than 100 casualties in 1961 evidenced the need to have an avalanche risk cartography to identify the spatial vulnerability of settlements in order to interact with the required protection and prevention measures which will minimize future catastrophic events. Nowadays it becomes one of the countries with more influence in avalanche risk knowledge and assessment across Europe. Municipalities, “canton” and national environmental administration identify and classify the avalanche risk vulnerability of the urban land and life lines according to	

the avalanche risk intensity (high, medium, mild). The risk cartography is linked with the urban land planning at the regional level (canton). For each dangerous zone, there is a specific regulation according to the infrastructure type and its vulnerability degree. In this sense those areas affected by avalanche risk without any human infrastructure exposed are minimally considered in this cartography.

Forest management by natural risks (case of France) CTFC

The tool is a methodological guide to apply forest management into the black pine forest taking into account the natural hazards, specifically falling rocks, avalanches, landslides, erosion and floods.

The guidelines have been written by Geie-Forespir, Centre Regional de la Propriété Forestière Languedoc-Rousillon, Parc naturel regional des Pyrénées Catalanes, Centre Tecnològic Forestal de Catalunya, Departament d'Agricultura de Catalunya, forest managers, land owners; in the framework of Project POCTEFA n° EFA82/08 UNCI'PLUS «La gestión de las poblaciones y la valorización de la madera de pino negro».

KlimafolgenOnline (ClimateimpactOnline) portal FVA

The portal (online since 2012) is a climate information website that visualizes the changing climate conditions and their impact on land use sectors for different scenarios from the past to the present and the future in 2100.

The portal provides a visualization of climate change data offering a full overview from past measurements to climate projections of the future combined with several related impacts for land use. The portal makes climate change data accessible and understandable for everybody by visualizing changing climate conditions via colored maps. The portal further visualizes several impacts like fire danger ratings according to the underlying scenarios.

The portal is based on the RCP scenarios 8.5 and 2.6 as described in the Fifth IPCC assessment report.

Tree species suitability maps (Baumarteneignungskarten) FVA

Tree species suitability maps are a decision support tool to help forest managers during tree selection for climate adaption. These maps -(scale of 1:50.000) are available for every district of the German federal state of Baden-Württemberg for the tree species Norway spruce, European beech, sessile oak and silver fir. The projections are based on the IPCC scenario B2 and cover the situation today (2010) and in the future (2050). The suitability of the tree species is assessed via four categories: "suitable", "possible", "less suitable" and "unsuitable" based on the following criteria: competitive pressure of the species, maintenance intensity,

damage likelihood and yield. The maps are relying on statistical models based on tree species distribution, phytosociological backgrounds and the assessment of the respective risk for the species due to climate change.

The maps are based on the IPCC SRES-scenario B2 and cover a situation with an assumed annual average temperature increase till 2050 of 1,95°C and a decreased annual precipitation of 25mm.

The maps are the outcome of the project "Effect of climate change on forests in Baden-Wuerttemberg" and used as decision support in the state-owned forest stands as well as part of the forestry consultancy by the district foresters as guidelines. The maps are available and in use on a voluntary basis.

Clearing legal obligations CEREN

In France, clearing is the main prevention measure against forest fires. It aims at limiting the damage due to forest fires and facilitating fire-fighters operations. Clearing and maintenance in cleared conditions is not a clear-cut, meaning it does not aim at removing all the vegetation. Rather, clearing must allow for a normal development of existing forest stands. It includes the operations aiming at reducing the fuel volume in order to limit wildfire intensity (horizontal discontinuity) and propagation (vertical discontinuity):

The Forestry Code states that there is a legal clearing obligation in the three following cases:

- around buildings, worksites, and any type of installation, with a depth of 50m
- around private roads providing access to building sites and any type of installations, with a depth of 10m on each side and a minimum height of 4m
- on all urban areas characterized as such in urban planning documents (PLU, POS)

Clearing legal obligation work is incumbent upon the owners of the goods to be protected. The mayor must control the implementation of such obligations.

Operative exchanges to implement fire analyst methodologies PCF

The exchange of lessons learnt, knowledge and methodologies through expert technicians have been proved as the most useful way to build an efficient network of end-users in Europe.

The shared knowledge and methodologies for fire dynamics and fire weather analysis developed in Catalonia, after adapted and translated into each fire service, contribute to increase preparedness and efficiency of response phase, as well as to provide more accurate and efficient response to answer "request for assistance" situations or during cross-border events.

The exchange is made among end-users, usually fire services, but could be

implemented trough civil protection entities or forest services. PCF has done three main exchanges in Portugal, France and Italy. The experiences are implemented, fully operative and running, especially in France.

At least 1 experienced technician in fire dynamics and fire weather analysis will visit the fire service interested in implementing these methodologies. The technician will identify needs and particularities of the fire service and will adapt the methodologies to it. The technician should visit and participate in as many as possible wildfire emergency response situations, where will assist and asses fire officers during the emergency response. The exchange should be carried out during the fire season, or fire risk period. The duration should be at least 1 month.

Tactical fire course	PCF

The use of fire as a tool for suppression operations and as a tool for fuel reduction trough prescribed burning programs, has been proved as very efficient and more cost-effective than other technics. The organization of international courses of the use of fire as a tool is an opportunity to share knowledge and technics that contributes to build a strong European network of fire practitioners.

Also, the use of prescribed fire has been recognized as ecologically beneficious for forest ecosystems, and contributes to reduce fire risk and CO2 emissions. Regional policy recognizes fire as a tool to be used during suppression operations and as a tool for fuel management.

The objectives of the course are to disseminate the advantages of using fire as cost-effective and more efficient tool than other technics; to train fire fighters in using fire as fuel reduction tool; to contribute on implementing prescribed burning programs; to increase preparedness and training of firefighters for forest fire events.

PCF has organized 6 international fire courses. The experiences are in full operation in Northumberland, Scotland, Navarra region, Denmark and south of France. However, each region has their own fire regulations, and must be understood before implementing prescribed burning programs.

Wildfire prediction activity	DGPC RAS

The wildfire prediction activities are summarized in a daily bulletin processed from June 1th up to October 31th by Decentred Functional Centre (CFD)- General Directorate of Civil Protection. The purpose of prediction is to evaluate every day the probability, in case of fire, that the fire spreads more or less rapidly in a given area due to forecast weather conditions.

Primary objective of wildfire prediction is to alarm about the type of events expected in a given area, in order to allow the Civil Protection to define regional operational

phase. The regional operational phase supports allows to the operational de the identification of the most suitable location and arrangement of the strategic staff (i.e. patrols) and resources necessary to face potential wildfires.

The prevision phase is scientifically based on Sardinia based models application, such as IFI Index (Ichnusa Fire Index), and RISICO Model (RISChio Incendi Coordinamento). Input to these models are provided on a daily basis by the Regional Agency of Environmental Protection - Meteo-Climatic Department. The prevision output is split into 26 areas and into four levels: low, average, high and extreme.

These outputs constitute a Decision Support System to experts in order to find the correct fire hazard prediction and consequently support Forestry Corp (CFVA), Forestas Agency, Fire Department (VVF) and Municipalities.

4) Cost-effectiveness assessment

KoNeKKTiW project (competence network climate change, crisis management and transformation in forest ecosystems)	FVA

KoNeKKTiW project (2014-2018) is the umbrella for a Community of Practice funded by the German forest climate fund and composed of 17 partners sharing information about education on climate change related forest risks. It develops target group oriented cost-free activities from presentations and lectures to risk management consulting and online manuals. A proper risk management firstly needs risk aware forest owners and managers. The network stretches over all ownership types and provides reliable information and references beyond usual political barriers. All activities are reviewed and transported by the network behind the project.

The main goal of the project activities is to build a bridge between existing knowledge and directly applicable knowledge. Practitioners often lack to find applicable information for risk management decisions.

The idea and products of the project are based on the recognition named in the IPCC SREX report, that there is a sufficient knowledge base on risks driven by climate change, but adaption actions fall far short of this knowledge.

Adaptation workbook	FVA

The Adaptation Workbook is a structured process to consider the potential effects of climate change and design land management and conservation actions that can help prepare for changing conditions. The process is completely flexible to accommodate a wide variety of geographic locations, ownership types, ecosystems and land uses, management goals, and project sizes.

The workbook is part of the Climate Change Response Framework launched by the U.S. Forest Service. The Framework is a collaborative, cross-boundary approach

among scientists, managers, and landowners to incorporate climate change considerations into natural resource management. The focus lays on cooperation to bridge the gap between science and practice. The use is not mandatory.

The workbook is available (including online) since 2012 and, a 2nd edition was published in 2016.

Goal oriented risk management with the Influence-Change-Exposure method FVA

Multi-Risk assessment and management tool for forest practitioners and decision-makers based on management objectives. The ICE-method is a criteria-based risk assessment based on the factors “natural incident”, “vulnerability” and “exposure” (common definitions of risk determinants by the IPCC and UNISDR).

The method aims to help forest owners or enterprises to assess their individual risk factors based on their management goals and priorities. The method is based on the idea that different management goals require different measures since the vulnerability and exposure of a forest enterprise is dependent on those goals. Furthermore, efforts to adapt to climate change will emphasize prevention rather than crisis management.

The method is usually implemented as follows: (1) A first informational interview to discuss the analysis method and the individual situation of the forest enterprise; (2) a first assessment phase conducted by a staff member of the KoNeKKTiW project based on enterprise data; (3) a second interview to evaluate the data and to discuss unclear points; (4) a second assessment phase; (5) a final meeting and handover of the final printed product and the individual database (MS Access). The full process takes a net time of approximately two to four weeks.

Wildfire Investigation in Northern Ireland EFI

After a severe fire season, some of the most prominent and sensitive fires should be investigated for cause and origin.

Understanding causes of fires is the first key information for any prevention work or fire management strategy. 90% of wildfires are human caused…. Northern Ireland hosted an investigation workshop in March 2017 and had to asked for assistance to investigate suspected arson fires, based on USA and AUS fire investigation standards, cause and origin determination. The FRISK network could provide experienced investigators from 2 countries and form a team to be sent over to Northern Ireland.

The issue of receiving an international team for investigation demanded a political process in the ministry of environment. This boosted the whole fire management policy approach and development a great step ahead. The overall goal was to show

that connect-collect-exchange FRISK motto is working and that it can deliver support in the form of expert exchange.

IDEA Project: Improving Damage assessments to Enhance cost-benefit Analyses CTFC

IDEA project (funded under the 2014 call for proposals for Prevention and Preparedness in Civil Protection) aims at providing fundamentals for undertaking a cost-benefit assessment in case of floods and earthquakes.

The project aims at:

- supporting more effective mitigation measures in the aftermath of a disaster, by analyzing damage data according to a forensic perspective;
- showing how improved data may better inform pre-event risk modelling, so as to develop more reliable cost-benefit analysis of measures that are taken today to prevent a future disaster;
- addressing data on damage to critical infrastructures and economic activities;
- developing tools that will enable public administrations to manage damage and loss estimation.

It started by selecting and meeting relevant stakeholders responsible for damage data collection and management; then analyzed the already available data. Based on this, specific and relevant case studies will be selected. The main drivers of the disaster will be identified according to forensic analysis. Finally, it will provide the logic architecture of an information system enabling stakeholders to carry out the activities of forensic investigation, compensation to victims and reconstruction, and pre-event modelling using improved damage data.

Storm Handbook – Coping with Storm Damaged Timber (www.waldwissen.net) FVA

The storm handbook offers a web based collection of best practices regarding guidelines for coping with storm damaged timber. It covers the following topics: first measures and survey of damages, strategies and personnel management, salvage logging and work safety, timber storage, forest protection, timber transportation, regeneration and afforestation as well as subsidies and public relations.

The collection of instructions, checklists and leaflets encompasses the whole process of coping with storm damaged timber and provides basic information. The handbook therefore creates a basic standard of knowledge, providing staff with a compendium for future storm calamities, enabling them to handle the damage in a well-equipped, calm and efficient manner.

Due to an increased likelihood of storm damage under climate change, storm damages can cause severe economic losses, a proper work strategy salvage logging

and timber storage based on profound knowledge can save lives and mitigate economic damages.

The guidelines are oriented to the sequence of work stages after storm damage in forest stands from first measures to regeneration and afforestation.

5) Civil protection, emergency and post-disaster management

Personal protective equipment for wildfire fighting (testing & standardization)	CEREN

CEREN has carried out a study to find the best compromise between thermal protection, physical tolerance and ergonomics for wildfire fighting. The French standards for wildfire equipment exist, expect for undergarments. More importantly standards exist for each piece of cloth separately but there is none for the full outfit. A study was therefore needed to improve the first responders' safety (prevent burns) and increase the fire fighters comfort during intervention. It suggests recommendations and advices for the choice and purchase of equipment.

The innovative testing approach encompass studying not only the thermal performance but also the physical tolerance; testing the whole equipment, not piece by piece; assess the performance of existing equipment and prototypes; and search for the best compromise between thermal protection, physical tolerance and ergonomics.

In France, Fire and Rescue Services are autonomous in terms of public procurement of equipment. However, the endowment for clothing does not provide for both an urban fire outfit and a forest fire outfit. Therefore each service has to make a choice. The urban fire outfit provides a better thermal protection, and is therefore chosen in most cases over the forest fire outfit. The problem is that this equipment is not adapted for wildland terrains. During wildfire fighting, main burns are localized on lower members and forearms.

The 4 following parameters were tested: pain threshold, delay before burn, burn duration, highest internal temperature under the cloths. Physical constraint was evaluated by measuring three parameters during a calibrated effort: central temperature, heartbeat, hydric loss.

Classification of the risk of forest wildfires (Classification of regional and municipalities forest fire risk)	DGPC RAS

Definition of hazard and risk indices for the classification of regional and municipal fire risk is a forecasting activity set out in the Regional plan for prediction, prevention and active fight against forest fires valid for the three-year period 2017-2019. It is subject to annual review by the Regional Council.

The analysis and assessment of fire risks aim to depict potential risk scenarios and determine expected levels of risk. They are necessary to evaluate the regional and municipal risk indices and emergency response models, through the previous assessment of the effects (damage) on the territory, people, things, property, and essential services caused by fires.

The Regional Plan is a reference for municipal civil protection planning for fire risk of the interface. It defines guidelines to secure the population in case peri-urban fires threaten settlements or infrastructures located in municipal territories. The calculation and classification of regional and municipal fire risks, with hazard index and municipal risk, are updated annually.

Since 2013 fire risk evaluation has been applying in Sardinia as predictive analysis of risk defined as "the expected value of the damage associated with a given system at a predetermined time". The fire risk index is referred to the entire regional territory divided into squares of 10.000 m2 (1 hectare) and reclassified into four classes: very low, low, medium and high. The municipal fire risk is similarly calculated. Each of the 377 municipalities of Sardinia is classified in one of the four classes of wild fire risk previously defined.

Journal Club Program	PCF

The Journal Club Program opens debate spaces for stakeholders and local communities on fire risk prevention and awareness. It provides review and recommendations for the regional fire prevention policy. It aims at disseminating challenges of fire resilient landscapes among policy makers and land manager, at fostering fire risk awareness among population and land owners and at engaging local population.

It was implemented for the first time after a remarkable fire event. The Journal Clubs are organized by professional staff, experts of forest fires. They are held on the field “post-fire”. Each Journal Club has a topic related to a local/regional remarkable event (wildfire event, forest management issue, etc.). Guest experts on the topic of the Journal Club are invited to actively present their knowledge on the topic to foster discussion.

The need for such discussion space emerged because of non-adapted fire prevention policies to fire behaviour context and wildland-urban interface areas, only basic dissemination actions about fire risk awareness and lack of intersectoral discussion spaces among policy makers and technicians.

Post fire platform database	PCF

Based on the observation of a lack of quality information about the fire events that can be provided to actors interested in analysing a wildfire event, the database

gathers information on fire behaviour and effects to the ecosystem of multiple fire events. This information is then available to scientists, land managers, fire analysts, etc. A quality check is performed on the data. Users are encouraged to also provide data inputs on wildfire events from other regions.

The goals are to provide in a centralized way the data needed to analyses wildfire events, to gather all the resources that are available online in different websites, to gather survey data and multimedia resources that are not available elsewhere in other websites, to provide information about multiple wildfire events that can be compared and analyzed.

It is a pilot experiment that will be operational by the end of 2017.

It can be used to provide recommendations for regional and national policy.

Stodafor Technical Guide on Harvesting and Conservation of Storm Damaged Timber FVA

The technical guide is the main result of the European STODAFOR project (Storm Damaged Forests). It describes best practices for first measurements after storm events by providing information on mainly harvesting systems and log conservation.

The main objective of this project was to contribute to answering the questions addressed to foresters and wood-industry managers facing storm-damaged forests:

- How can wind-fallen or broken trees be harvested safely to prevent fungal or insect attack and fire risk and to allow for reforestation in ways that are economically and ecologically viable?
- How can wood quality be maintained by efficient log storage and conservation methods in order to preserve supplies to the wood industry and foresters' incomes?

The best practices described in the guide are based on the experiences of the massive storm events Lothar and Martin in 1999, which caused huge damage all over Europe and in particular in Denmark, France, Germany, Austria and Switzerland.

The guide highlights the increased likelihood of storm damage due to climate change. Under those circumstances, storm damages can cause severe economic losses, salvage logging and timber storage based on profound knowledge can mitigate economic damages.

The use of various types of chemical additives in suppression operations CEREN

The use of chemical additives (i.e. chemical substance capable of decreasing forest fire intensity or slowing down its spread) for wildfire suppression operations is recommended in the French national Forest Fire General Strategy both on fire

ignitions and on large fires. They are ordered in 3 categories: short term retardants, long term retardants, and water enhancers or polymers.

Chemical additives have been used for more than 40 years in France at the response phase (to reduce speed and intensity of the fire), but also at the preparedness phase, as protective barriers to protect specific points of interest. Chemical additives are used by both aerial and terrestrial means.

Public procurement regulates the selection of chemical additives. At national level, the Homeland Ministry is responsible for the purchase of chemical additives used in national means while the departmental director manages the procurement for local means. Tests are regularly performed and protocols are updated.

The main challenges when using chemical additives are: corrosion, long term stability, environmental impact and user friendliness.

The use of tactic fires in France CEREN

Direct attack through terrestrial and aerial means is preferred as far as possible. Tactic fires are rather considered as indirect attack methods, requiring an adequate anticipation. The aim of a tactic fire is to suppress or reduce vegetation fuel using fire, during a forest fire event, to either: limit, and perhaps prevent fire spread; align border on a previously chosen area; reinforce the efficiency of an area used as support for fighting operations; create a refuge zone for personnel safety. Suitable extinguishing media are disposed along the support line to ensure the monitoring of the ignition phase and prevent fire leaps.

During summer 2003, large wildfires have been managed with the use of tactic fires in 7 departments. Since then, tactic fires have been regulated by the Law.

30 to 40 tactic fires are decided on average every year in France. This is an increasing practice in the South of France. For instance, during last summer (2016), tactic fires have been put in practice in several departments of the South of France: Gard, Aude, Bouches-du-Rhône, Corse, Pyrénées Orientales.

The Incident Commander takes responsibility for lightning the tactic fire.

Mobile App Forest Fire prevention CEREN

“Prévention incendie” mobile application aims at saving time for forest fires alerts (quicker phone call, better localization, exchange of data) and providing basic advice to people confronted with forest fire. It targets hikers, inhabitants, tourists and fire fighters and is used on a voluntary basis. This is the only mobile application to be fully dedicated to forest fires alert in France.

It provides an interactive map, information on the risk level, information on the authorization to access some parts of the territory, GPS and specific positioning

system (DFCI grid), rescue services alerts, testimonies, and pictures. It facilitates the exchange of information with the fire and rescue services: it provides the exact geo-localization of the user (notably using the grid DFCI which is the reference for fire services), and lists the information that the rescue call center will ask and that the person need to check before calling. It enables to collect pictures, to be used for prevention activities in the future.

It is easy to get the app, just by typing fire & prevention keywords on app stores, or using a dedicated QR code. A communication campaign was set up to promote the app (website, posters, specific events, …)

The Regional List of Voluntary organizations	DGPC-RAS

Volunteer associations are an operative structure of the Civil Protection system and one of its most vital components in supporting disaster response, risk prevention and population protection

Voluntary associations integrate with other members of the regional civil protection system, ensuring a rapid response across the regional territory and protecting communities in collaboration with other entities on the principle of horizontal subsidiarity. They provide relief and assistance to populations in the event of disasters and contribute to the management of emergencies with their competencies and areas of expertise such as rescue and health care, forestry fire fighting, telecommunications, hosting camps, heritage conservation, and territory monitoring. Volunteer organizations work daily for risk forecasting and prevention and carry out training activities.

In Sardinia, volunteering has grown strongly in qualitative and quantitative terms in recent years as a result of increasingly widespread local emergencies. Currently in the regional list are registered 167 organizations with more than 7,000 members. Regional volunteering also intervenes in national emergencies and in extraordinary activities.

6) Risk planning, governance and policy framework

Space-based Information Support for Prevention and Recovery of Forest Fires Emergency in the Mediterranean Area	DGPC-RAS

PREFER is a terminated project funded in the EU FP7 whose main objective was to set up a space-based end-to-end information services, based on satellite remote sensing data, to support prevention/preparedness and recovery phases of the Forest Fires emergency cycle in the European Mediterranean Region.

The project delivered many products, based on the pre-assessment and post assessments of a forest fire evolution and forest damages. The project achieved the

following goals: 1) provides timely multi-scale and multi-payload information products based on exploitation of all available space borne sensors; 2) offers a portfolio of Earth Observation (EO) products focused both on Pre-crisis and Post-crisis forest fire emergency cycle in the EU Mediterranean area; 3) prepares the exploitation of new space borne sensors available by 2020 and 4) contributes to the definition of User requirements for the new EO missions

Training courses have been organized at partner's locations to learn how to use the system. Several meetings followed the training course to better understand the applicability of the models.

Considerable priority is focused on moving from a warning map to a risk map. In order to develop and improve a new evaluation tool is necessary to assess the time of reaching places, under threats, by rescue teams. The teams should be strategically located where a high risk is geographically identified. The location-allocation model should detect areas where they make the travels easy for the rescue teams.

PPRIF – wildfire risk prevention plans - municipality level (methodology) CEREN

Risk prevention plans (planning documents) exist for different types of natural or technological risks in France. The PPRiF is the declination of this document specifically focusing on forest fire risk. It is the unique specific procedure concerning forest fire risk in urban and land planning. This measure is adopted at national level but is mainly used and applied in the Southern part of France.

The formulation of a PPRiF allows for a better inclusion of the forest fire risk in the development project of a municipality. It has the following objectives:

- Identify the risk prone areas and raise the public awareness;
- Limit the number of fire outbreaks;
- Reduce the vulnerability of people and goods already at risk;
- Prevent new establishments of people, buildings or activities in fire prone areas.

Up until April 2016 (last assessment), 195 PPRiF are in effect in 17 departments, of which 190 are approved and 5 have been made effective against the public in advance. In addition, 69 PPRiF have been ordered and are being instructed.

Unlike other natural risks, the "natural disaster" guarantee does not apply in the case of forest fires. The compensation for damages caused by forest fires can be claimed to fire insurance.

Forest fire weather danger forecast and real time fire weather danger monitoring CEREN

Operational oriented meteorological support for forest fires in the Mediterranean area started more than 45 years ago and has constantly evolved over time to reach

its actual state.

It was formalized with the setup of a Météo-France branch within the South Defence Zone Headquarters, where specialized forecaster engineers from the Aix en Provence inter-regional weather service intervene. The measure is now fully operational, and activated every year throughout the fire season.

This measure serves two purposes:

- Anticipate: limit access to specific parts of the territory, pre-position fire-fighting needs, organize the loaded (i.e. with retardant products) aerial monitoring
- Support the suppression operations providing real time monitoring to support incident commander decision making

The forest fire weather danger is evaluated for the departments of the South Defence Zone. Each department is divided into 6 to 9 areas of 400 to 800 km² classified into 4 categories. Forecasters use a forecast database elaborated by « upstream forecasters » who process parameters provided by numerical models and by a network of more than 250 automatic real time weather stations.

Forest fire weather danger forecast is established twice a day during the summer season. Real time fire weather danger monitoring is carried out by the forecaster at the EMIZ Meteo-France branch all throughout the day using weather parameters (wind, temperature, humidity…) and specific forest fire indexes: FWI, propagation indexes and Drouet ignition thresholds. This enables to update forecasted dangers (upgrade but also sometimes downgrade them which can save up aerial surveillance means) and meet immediate forecast needs during a fire.

Use and classification of the land according to flood risk (case of Catalonia) CTFC

The flood risk in Catalonia is the only natural risk with a specific zoning and normative framework. The Water Agency (inside Department of Territory and Sustainability) undertakes flood risk zoning and vulnerability cartography. This reference cartography is the frame for establishing urban regulations. Zoning is divided at different risk levels according to the “return period” (10, 50, 100 and 500 years). The possible use and classification of the land according to the different risk zone defined is stated.

At the time the law came into force, the urban and land plans had to be adapted to the provisions of the law.

This is consistent with a Spanish law which can be enlarged at regional level.

Use and classification of the land according to avalanche risk (case of Andorra) CTFC

The land planning law specifies that the limits of urban development are defined

according to the avalanche risk information. The Decree on classification and use of land according to the danger of avalanches, and mapping of regulatory zoning of the danger of avalanches contributed to create an official cartography at national level (avalanche risk zoning), to provide delimitation of different levels of hazard, to create a specific regulation for each level (conditions for urban development, establishing technical issues, etc.), and to identify the key actors involved. The Decree:

- States the classification and use of land as well as technical and administrative conditions for the regulation and protection of urban development and affected land by avalanche risk.
- Gives a new protection classification for the "avalanche defense forest" and conceives it as a "natural prevention". Therefore, protecting them from other natural hazards (i.e. forest fires), urban development or any action that reduce significantly their surface is necessary.

It has come into force in 2016. The regulations must be applied before building or modifying the buildings.

WALD-WIKI – Platform for Your Knowledge, Forest and Region FVA

WALD-WIKI (Eng. Forest-Wiki) is a wiki for private forestry associations that enables them to organize operations and establish a system to compile, generate, share, disseminate and continuously update expertise and empirical knowledge on climate change, crisis management, and transformation in forest ecosystems.

It is initially filled by the project partners (funded by the German forest climate fund) and shall be supported be the community itself after the end of the project by independently sharing and maintaining the information base of the platform.

The wiki shall inform private forest owners and sensitize them about topics like, good forestry practices, associated risks and climate change. Warning, reporting and help structures for fast self-aid is supported by the platform and practical information to cope with emergency situations.

The platform is currently under development with a planned launch date in 2019. When the platform will be established, it will be open to the public. Everybody will be able to add content, reviewed by the hosting forest owner association.

Assessment of biomass availability in the town of Calonge PCF

The objective is to assess the biomass availability to supply the heating network of local public equipment while taking into account the reduction of fire risk in Calonge, Spain. The improvement of the forestry sector is at stake in a high fire risk wildland urban interface area.

It provides recommendations for the forest management of the municipality as well as for regional policy.

This assessment is based on accessibility, the growth of the forest mass and the reduction of the fire risk, in order to make a rational and sustainable use that does not endanger the resource and perpetuates it over time.

The analysis was carried out in 2014 and is now waiting for implementation.

FRISK Assistance in Slovenia EFI

Presenting a case study on good practice of cooperation, connect-collect-exchange for crisis support.

Snow and Ice break of magnitude hit Slovenia, overwhelming local forest authorities. FRISK Secretariat did send C Hartebrodt of FVA / PUMA network to Slovenia on a reconnaissance mission, damage evaluation. Following that mission, a delegation from Slovenia, funded through EoE programme, could visit Baden Württemberg for a knowledge exchange visit.

Goal was to support Slovenian decision makers in managing the response activities after the ice sleet / snow break. Baden Württemberg could provide the experiences from two major storm events, and the management of crisis response as well as lessons learned.

Basically, the whole forestry sector of Slovenia was represented, from university to forest administration, owner associations, ministry, etc.

The big lesson was that it needs a combination of Coordination, network and budget to make things happen. The motivation of people is high, the willingness to share is there, but it needs someone to drive the process and to cover costs.

Course of webinars for fire risk situation assessment PCF

PCF organizes periodic webinars as a tool for sharing lessons learnt, and situation of fire risk assessment during fire season among different regions and countries. Indeed, fire behaviour may be comparable among many Mediterranean regions depending on the weather situation and level of drought of forest fuels. Participation to the webinars is open to targeted audience (e.g. responsible from the fire services in different regions).

The goals are to assist other regions with the lessons learned and assessment of fire risk, to identify upcoming risk situations and asses fire weather events, to share lessons learnt and to make more accurate forecasts of fire weather risk situations.

This initiative could be developed towards EU periodic program of webinars and towards multi-risk program of webinars.

7) Community involvement and risk communication

CUIDAR Project: Cultures of Disaster Resilience among children and young people	CTFC

CUIDAR is a European project (H2020) about Cultures of disaster resilience among children and young people. It aims at creating dialogues with youngsters and children through workshops in weekly sessions during school schedule (20 hours per workshop).

"Lots of policies and emergency plans developed in Europe, homogenize people affected by disasters as "victims" and don't observe the different needs and particularities of different population groups affected. This situation is particularly serious in children and young people case, because that population group is one of the most affected by disaster situation." The official emergency plans take into account technical and operational issues about disasters, but don't integrate technical knowledge about children and young people needs.

Therefore, CUIDAR promotes awareness raising and communication campaigns using national level dialogues with policy makers to communicate the needs, priorities and capacities of children and young people in disasters and influence policy and practice.

Flood/fire groups – national flood forum (case of UK)	CTFC

The National Flood Forum is a British independent charity organization, with some links with the National Environmental Agency. The implementation comes from a public-private collaborative partnership.

The National Flood Forum aims to give support to individuals and communities at risk of flood, to enable people to take control of their own flooding concerns (increasing the social resilience to the flood risk). To reach this main objective, several sub-objectives are implemented such as helping communities to prepare for flood risk (community involvement and risk awareness), representing people at risk so that decision making accounts of local knowledge, common concerns and grassroots expertise, and working to put flooding issues at the center of policy making arena.

The role of UK Government has a permissive duty to alleviate flooding. "A more cynical view may be that cuts in UK Government funding for flood risk management are necessitating the need to look to "the big society" for greater support in reducing local flood risk.

This initiative can be replicated in other natural hazards, like wildfires (case of Wildfire groups), whose proper nature needs citizens' involvement to increase

resilience.

PRoNTI project ("Ready" - acronym for "Protection in your Island") - Building a culture of civil protection through schools	DGPC-RAS

The project aims to raise public education and awareness regarding the system and the activities of Civil Protection and disaster risk reduction, informing pupils at schools and young citizens and contributing to change attitudes toward risks and the perceptions of risk. The main focus is on the development of expert knowledge at graduate and post-graduate level. Both undergraduate and graduate courses in environmental engineering are offered by most faculties of engineering, with several, especially at post-graduate level, specializing in the management of natural and technological hazards.

Since citizens' perception (and response) to disasters is influenced by local cultures and previous experiences with disasters, local context and histories are important elements in project's training modules construction. That's also why the project will try to attempt a two-way, more inclusive communication mode, based on the understanding of local youngsters risk perceptions and capacities.

In the school year 2016 - 2017 the project started its implementation: a pilot training course in a high school for Agricultural Sciences was organised. Civil Protection staff defined with the teachers a tailor-made training program in 4 training sessions, based on the school's specific needs. The school was chosen to take advantage of student's suggestions for possibly improved agricultural practices to mitigate and manage disaster in this sector, central for regional economy.

Multiplatform alert system to deliver bulletins of meteorological and hydrogeological risk.	DGPC-RAS

The alert system framework states the transmission mode to deliver the meteorological bulletin, the hydrogeological and hydraulic criticality bulletin, the meteo and hydro alerts through the civil protection website. Moreover, the hydraulic and hydrogeological bulletin is also uploaded on the national website.

On the basis of Regional plan for prediction, prevention and active fight against forest fires valid for the three-year period 2017-2019 is implemented a similar procedure to spread the wildfire hazard bulletin.

The aims of this resolution are to facilitate the spread of alert messages. So, mayors can alert citizens quickly about potential risks and alert civil protection operational teams. For these reasons, the resolution provides also the list of the actors to be alerted. To achieve in time this goal, at least six hours of advantage is scheduled.

The implementation phase is ongoing. The multiplatform is based on three systems:

– Institutional web page alert

- Sirsam (this software permits to send sms, e-mail and pec)
- ZeroGIS (even this web portal permits to spread alert bulletin)

The technical implementation is crucial to maintain and update the system.

MEFYTU PCF

MEFYTU is a fire risk education and awareness program addressed to children, scholars and tea places, to enhance societal risk awareness, improve societal resilience against fire-crisis events, engage teachers and schools to risk awareness actions, foster knowledge – sharing actions among society and emergency responders, and to develop an overall risk awareness program to enhance resilience and acceptance of society against all kinds of hazards.

It is implemented at local level (60 schools, 3,000 children). The implementation at national level is experimented through as pilot-site in Castilla-La Mancha region.

The content of the workshop has been validated for both technical (fire ecology, emergency management, self-protection, etc.) and pedagogical objectives. Professionals from the regional emergency response system are invited to provide their knowledge during the workshop.

A typical workshop is organized around the following steps:

- Preparation and training session for teachers (1/2 day)
- Classroom session for children: fire as natural disturbance
- Real fire demo on-site. Scenario prepared by the fire responders, addressed to children: differences between high-intensity fire and low-intensity fire.
- Outdoor activity: visit to the burned site, educational games, talks and demos.

PCF Clips PCF

PCF has launched a ccommunication campaign on 15th of June 2017 on wildfires, based on a set of art videos, to communicate in a friendly way the knowledge on wildland fires, by a fusion of image, music and texts (around 50min videos) and to reach the community in a calmer way that encourages reading and reflection.

Various artists have contributed to the fund of drawings 'Art&Fire', remarkably Josep Serra i Tarragon. The texts have been selected from conferences, communications, interviews, publications and social media posts of various authors recognized by the wildland fire community.

The video will be broadcasted every day during June, July and August 2017 through the PCF social media. All the videos will be available (public access) in PCF YouTube Channel.

Lessons on fire	PCF

LESSONS ON FIRE is a platform which allows generating debates, sharing quality information, finding documents in an organized way, finding expert people, and asking a professional opinion about the integration of forest fires risk in the European landscape. LESSONS ON FIRE promotes and facilitates experiences and knowledge exchange among professionals in a local, regional, national and international level.

This platform allows creating expert communities to generate debates about specific subjects, upload documentation in an organized way to create a reference library and know, localize and contact other professionals through a directory. Lessons on Fire wants to capitalize documents and materials (videos, articles, publications) in order to be an online hub of wildland fire information.

The 1st phase of the platform development has been implemented, so the platform is currently in use. During the 2nd phase, some functionalities will be improved to make the platform more user-friendly. The functioning of the platform has been thought to be self-managing and invigorated by the users – always under conditions of use.

As the users will be mostly professionals of the wildfire sector, it is expected that the contents of the documents and discussions will be of high-quality. In the edge of information and social media, digital users need to have some sites of reference to find high quality and organized information.

Project eFIRECOM (Efficient fire risk communication for resilient societies): Risk communication toolkit	CTFC

eFIRECOM (European project funded under the 2014 call for proposals for Prevention and Preparedness in Civil Protection) aims at enhancing the resilience of citizens to wildfires in interface areas from the Mediterranean region, through effectively promoting and increasing awareness and participation on the culture of risk with updated knowledge and best practices.

The two main results are:

- Development of different types of communication resources addressed to 3 target audiences (citizens in WUI areas and municipalities, scholars and their teachers and journalists and communication professionals) and 3 transvers communication resources addressed to society in general, technicians and practitioners and policy makers. The set of documents generates a communication toolkit for transferring technical knowledge on forest fires to society.
- Edition and dissemination of operational and strategic recommendations for the improvement of the communication on risk and reduction of social vulnerability

to wildfires in Mediterranean areas, transferred to the relevant authorities.

All the outputs are available on the web page and in printed edition.

Organisation of a forest picture contest to support awareness raising and prevention about forest fires	CEREN

This is a new prevention measure to raise awareness among the larger public.

This photo competition aims at revealing and promoting the beauty and diversity of Mediterranean forest areas. Three topics are put forward: forest and diversity, forest and landscape, forest and habitat. The selected pictures will be used during prevention campaigns and an exhibition is planned.

The opening and closing dates of the contest correspond with the fire season dates (15 June to 15 September) to raise awareness about the fire-prone period.

Valabre is the organizer of the contest and an insurance company (MACIF) is the co-organizer, financing the prizes. The contest is open to all citizens.

IV. Conclusion

A total of 41 cards have been collected by the NET RISK WORK project partners in this initial six months. A template for recording in a standardized way the cards have been produced as part of Action B1. This template has been designed to record relevant information about each best practice and operational tool that can serve two main purposes. Firstly, to clearly identify useful information from each best practice. Secondly, the template will ease the creation of a standardized database of best practices and operational tools to be used in subsequent actions of the project.

The set of 41 cards containing examples of best practices and operational tools that have been recorded from each natural risk (wildfires, storms, floods and avalanches) is made available on the project's website to all interested actors, from experts to the larger public. They will additionally be uploaded on the RISKPLATFORM as soon as it becomes available.

The partners will continue to collect good practices and operational tools throughout the whole project and other experts from the partner's network will be invited to provide other best practices and operational tools in order to enlarge the database and contribute to create a sustainable RISKPLATFORM for exchanging experiences and lessons learnt on different risks. It might also be an option to add an interactive user-friendly card template on the platform to stimulate contributions. The development into the online platform will also serve the purpose of clustering experts around concrete actions of the project to develop and promote the nodes on forest related risks that are a crucial part of the NET RISK WORK project.

The process and outcomes of Action B1, creation of a card-collection template and compilation of a set of best practices and operational tools as detailed in this report, have been a fundamental step to proceed with the other actions of the project. The results of Action B1 will be presented during the workshop on assessing crosslink risk interactions in Solsona in October 2017. Some cards, when corresponding to the agenda topics, will be used to prepare the discussions in this same workshop. Afterwards, more cards will continue to be collected by the partners and their networks, and used to preparing the second workshop in Sardinia in 2018.

Last but not least, this action can be seen as a representative illustration of the added value of the overall NET RISK WORK project which is to connect experts, collect knowledge and experience, and based on both of these, foster exchanges.

V. References

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VI. Appendices

E. Template

Common template for risk assessment and management operational tools and best practices identification (Action B1)

Operational Tools and Best Practices for Risk Assessment and Management

The identification of tools and best practices on risk assessment and management helps providing an idea of the state of the art in the field. By completing this form, the best practice will be included in the knowledge repository platforms and available for the practitioner community to use. We encourage the user to complete as many fields as possible from the template in order to provide the most relevant information needed to apply the best practice to other practitioners. Instructions:

- **Blue boxes are mandatory fields**
- **More than one item can be selected in multiple choice boxes**

Document classification

Title	
Description *[1 sentence]*	
Country, location	
Date	
Contact e-mail	
Institution	
Net Risk Work Partner	Choisissez un élément.
Document type	Choisissez un élément.
Language	☐Catalan ☐English ☐French ☐German ☐Italian ☐Spanish ☐Other
Source/origin	☐Partner's expertise ☐Expertise from the network ☐Other (internet)

Topic

Area	☐Risk assessment ☐Risk Planning ☐Risk Management		
Risk	**☐Wildfires**	☒Fire behavior patterns and typologies ☐Fire ignition and spread models ☐Wildland urban interface	☐Fuel management ☐Fire service needs ☐Prescribed burning ☐Other *[Introduce which ones]*
	☐Storms	☐First measures after storm ☐Work safety during salvage logging ☐Timber storage and cost containment ☐Forest protection and pest control	☐Regeneration and afforestation ☐Preventive sylvicultural measures ☐Other *[Introduce which ones]*
	☐Avalanches	☐Technical protective measures ☐Maintenance of protection forests	☐Other *[Introduce which ones]*
	☐Floods	☐Prevention through land use management ☐Technical protective measures	☐Other *[Introduce which ones]*
	☐Other		*[Introduce which ones]*
Cross-sectoral topics	☐Risk and vulnerability assessment and mitigation ☐ Cost-effectiveness assessment ☐ Civil protection, emergency and post-disaster management	☐ Risk planning, governance and policy framework ☐ Community involvement and risk communication ☐Other: [Introduce which ones]	
Level	☐Local ☐Regional ☐National ☐Cross-border ☐EU ☐Global		
DRM cycle phase	☐Prevention ☐Preparedness ☐Response ☐Recovery		
DRM domain	☐Policy making ☐Early warning system ☐Disaster response		
Sendai priorities	☐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
Contribution to Sendai Targets	☐Reduce global disaster mortality ☐Reduce the number of affected people ☐Reduce the direct disaster economic loss ☐Reduce disaster damage to critical infrastructure ☐Increase the number of national and local disaster risk reduction strategies ☐Enhance international cooperation to developing countries ☐Increase availability of and access to multi-hazard early warning systems and disaster risk information and assessment

Description and analysis

Summary: quick presentation of the Good Practice *[Objective: summarize in a few lines the key elements of the good practice]*
Place in national/regional policy *[Mentioned in the law/regulation/guidelines? Mandatory? Recommended?]* *[free text – 5 lines max]*
Goals and achievements *[Objectives, goals and the achievements of the Good Practice]* *[free text – 5 lines max]*
Actors involved *[Explain who is involved in the development: practitioners, stakeholders, educators, …]* *[free text – 5 lines max]*
Implementation stage *[Is it operational? Since how long? Is it a pilot experiment?]* *[free text – 5 lines max]*
State of technical knowledge *[state of the art and technical background of the Best Practice]* *[free text – 5 lines max]*
Context *[regulatory, socio-economic, political]* *[free text – 5 lines max]*

Detailed Characteristics [*Objective: detail the implementation conditions of the Good Practice]*
Description of the implementation steps *[different stages in the implementation process, duration]* *[free text – 5 lines max]*
Governance *[responsible authority and roles of the different actors involved]* *[free text – 5 lines max]*
Necessary means to implement the Good Practice in efficient conditions *[human resources, materials, financial...]* *[free text – 5 lines max]*
Challenges encountered during implementation and solutions incurred *[free text – 5 lines max]*
Priorities identified for successful implementation of the Good Practice *[free text – 5 lines max]*

Impact of the Good Practice *[Objective: evaluate the impact of the Good Practice].*
[Added value on decision processes, on national policies or regulations, on relationship with stakeholders, etc.] *[free text – 5 lines max]*

Future developments *[Objective: understand the follow-up perspectives]*
[Continuation, future improvements,] *[free text – 5 lines max]*

External resources *[Objective: provide further information]*	
Attached materials	*[include format (document, photo, video…) and name of the file]*

Web links	
Contacts	

[Additional information - optional]

Lessons learnt [*Objective: compare the results obtained to the objectives set at the start of the Good Practice]*
Evaluation process, if exists (internal or external) *[free text – 5 lines max]*
Assessment of results (quantitative and qualitative) and comparison with main goals *[free text – 5 lines max]*
Negative aspects identified *[free text – 5 lines max]*
Unexpected consequences (short / mid / long term) and corrective measures implemented *[free text – 5 lines max]*

Durability and transferability [*Objective: evaluate the integration of the Good Practice and its sustainability, give recommendations for transferability]*			
Is this information:	**Replicable** ☐	**Measurable** ☐	
Regulatory Framework *[free text – 5 lines max]*			
Stability of the human environment *[Stability of partnership, structures, population enabling successful implementation and positive impact in the long term]* *[free text – 5 lines max]*			
Financial requirements *[business model]*			

[free text – 5 lines max]
Success factors *[political, technical, human, financial...]* *[free text – 5 lines max]*
Risk factors *[legal, financial, safety…]* *[free text – 5 lines max]*
Additional and non-formal experiences contributing to the implementation of Good Practice *[free text – 5 lines max]*

F. Complete list of Best Practices and Tools description cards by type of risk (available on the project website)

WILD FIRES
Communicative documents about forest fires risk (toolkit of eFirecom Project)
CUIDAR Project: Cultures of Disaster Resilience among children and young people
Goal oriented risk management with the ICE (Influence-Change-Exposure) method
ClimateimpactOnline / Klimafolgenonline
PPRIF – wildfire risk prevention plans - municipality level (methodology)
The use of various types of chemical additives in suppression operations
Personal protective equipment for wildfire fighting (testing & standardization)
The use of tactic fires in France
Clearing legal obligations
Mobile App Forest Fire prevention
Calculation and use of Fire Weather Index by MétéoFrance
Forest picture contest
Space-based Information Support for Prevention and Recovery of Forest Fires Emergency in the Mediterranean Area
Classification of the risk of forest wildfires (Classification of regional and municipalities forest fire risk)

Wildfire forecast bulletin
The Regional List of Voluntary organizations
Multiplatform alert system
Journal Club Programme
Post-fire platform database
MEFYTU
Assessment of biomass availability in the town of Calonge
Operative exchanges to implement fire analyst methodologies
PCF Clips
Lessons on Fire
Tactical fire course
Webinars
Wildfire Investigation in Northern Ireland
FRISK Assistance in Slovenia
STORMS
Stodafor Techical Guide on Harvesting and Conservation of Storm Damaged Timber
Storm Handbook – Coping with Storm Damaged Timber (www.waldwissen.net)
Tree species suitability maps (Baumarteneignungskarten)
FRISK Assistance in Slovenia
AVALANCHES
Use and classification of the land according to avalanche risk (case of Andorra)
Avalanche risk mapping (case of Switzerland)
Forest management by natural risks (case of France)
FLOODS
Use and classification of the land according to flood risk (case of Catalonia)
CUIDAR Project: Cultures of Disaster Resilience among children and young people
IDEA Project: Improving Damage assessments to Enhance cost-benefit Analyses
Flood/fire groups (case of UK)
Forest management by natural risks (case of France)
PRoNTI project (“Ready” - acronym for “Protection in your Island”) - Building a culture of civil protection through schools
The Regional List of Voluntary organizations

Multiplatform alert system
OTHER
KoNeKKTiW project
Adaption Workbook
WALD-WIKI – Platform for Your Knowledge, Forest and Region

NB. 3 cases are both in the flood and the wildfire categories and 1 case is in the avalanche and flood categories.