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

Title: 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	**Wildfire prediction activity**
Description *[1 sentence]*	**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.**
Country, location	**Italy, Sardinia**
Date	**23th.05.2017 last update**
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Institution	**Regione Autonoma della Sardegna - DG Civil Protection**
Net Risk Work Partner	**DGPC RAS**
Document type	**Best practice**
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 behaviour patterns and typologies ☐Fire ignition and spread models ☐Wildland urban interface	☐Fuel management ☐Fire service needs ☐Prescribed burning ☒Other *[Wildfire prediction]*
	☐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 [*Perception, culture of risk and communication*]
	☐Avalanches	☐Technical protective measures ☐Maintenance of protection forests	☐Other [*Introduce which ones*]
	☐Floods	☐Prevention through land use management ☐Technical protective measures	☐Other [*Perception, culture of risk and communication*]
	☐Other		[*Introduce which ones*]

net risk work
Funded by European Union Humanitarian Aid and Civil Protection

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: [Wildfire prediction]
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?]*

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.
According to Regional Plan for Fire Prevision, Prevention, and Firefighting (PRAI) and to the National Law 353/2000, the Regional Civil Protection produces a daily bulletin containing the wildfire hazard prediction in a specific zone.
[free text – 5 lines max]

Goals and achievements *[Objectives, goals and the achievements of the Good Practice]*

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 allows to the firefighting apparatus to identify the most suitable location and arrangement of the strategic staff (i.e. patrols) and resources necessary to face potential wildfires.
[free text – 5 lines max]

Actors involved *[Explain who is involved in the development: practitioners, stakeholders, educators, …]*

Actors involved are:

- Region Sardegna Civil Protection staff members from the three Services 1) Risk forecasts and information systems, infrastructures and networks 2) Emergency planning and management Service 3) Programming, legal and financial affairs, communication and training Service;
- Agency of Environmental Protection - Meteo-Climatic Department (ARPAS-DMC);
- Forestry Corp (CFVA);
- Forestas Agency (Forestas);

- Fire Department (VVF);
- Local municipalities;
- Civil Protection associations and local volunteers.

[free text – 5 lines max]

Implementation stage *[Is it operational? Since how long? Is it a pilot experiment?]*
The wildfire prediction is currently in place and it is reviewed annually. The bulletin is published every day during the period of high risk (usually in Sardinia it's from June 1th up to October 31th) since 2012. *[free text – 5 lines max]*

State of technical knowledge *[state of the art and technical background of the Best Practice]*
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 of these models are daily provided by the Regional Agency of Environmental Protection - Meteo-Climatic Department, which delivers information about weather forecast, particularly focused on the weather variables temperature, wind and humidity. The models output show a scenario of forecast events for the entire region. 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.
[free text – 5 lines max]

Context *[regulatory, socio-economic, political]*
The PRAI plan is updated every year by regional government and contains the thematic knowledge framework specifically designed to forecast, prevent and activate the fire fight, as established by the National law on forest fires no. 353/2000 and forest law of Sardinia no. 8/2016.
The current PRAI doesn't contain an analysis of the socio-economic context.
[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]*

1) to define zones with homogenous climate characteristics and similar behaviour in case of fire;
2) to implement and calibrate a wildfire hazard prediction models;
3) to define the layout of the bulletin;
4) to implement a daily weather forecast service and activate a daily procedure to evaluate wildfire prediction;
6) to spread bulletin to stakeholders.
[free text – 5 lines max]

Governance *[responsible authority and roles of the different actors involved]*
Responsible authority for hazard prediction is the risk forecasts and information systems, infrastructures and networks Service, DG Civil Protection.
The Regional Agency of Environmental Protection - Meteo-Climatic Department (ARPAS-DMC) delivers daily input of fire hazard models and provides information about weather forecast, particularly focused on the weather variables (temperature, wind and humidity) that affects fire spread.
[free text – 5 lines max]

Necessary means to implement the Good Practice in efficient conditions *[human resources, materials, financial...]*
- Meteorologist staff
- Experts on wildfire behaviour
- funds to study regional subdivisions in zones with homogenous climate characteristics and similar behaviour in case of fire

[free text – 5 lines max]
Challenges encountered during implementation and solutions incurred The wildfire hazard models are not perfectly calibrated and their output depends on the meteorological model output. The solutions to these problems is to use more than one wildfire hazard model and to compare more than one meteorological model. *[free text – 5 lines max]*
Priorities identified for successful implementation of the Good Practice Wildfire prediction activity needs financial and competent human resources. The main goal is to improve the prediction process and to determine the wildfire hazard in more detail. *[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.] The institutions and the organizations involved in the wildfire fighting, make use of the bulletin to activate programmed actions, depending on the severity of the situation predicted. The bulletin helps also municipalities to apply their own local civil protection plan. In the plan, the Mayors, local authorities responsible for civil protection, can anticipate actions to cope with the threats posed by wildfires and organize responses, structures, modalities and administrative procedures to coordinate and manage responses immediately. The population benefits from measures of emergency planning aimed primarily at people's safety and increases and improves its own resilience. *[free text – 5 lines max]*

Future developments *[Objective: understand the follow-up perspectives]*
[*Continuation, future improvements,]* It will be useful a hazard wildfire prediction for the day after tomorrow. I's necessary to integrate the prediction model with information about fuel map. At the moment is used the CORINE land cover inventory update in 2008. *[free text – 5 lines max]*

External resources *[Objective: provide further information]*	
Attached materials	*[include format (document, photo, video…) and name of the file]* Document in pdf format http://www.sardegnaambiente.it/documenti/20_467_20170526123038.pdf
Web links	http://www.sardegnaambiente.it/index.php?xsl=2273&s=20&v=9&nodesc=1&c=7093
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[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) An informal review is generally discussed between officers every year in order to improve performance of predictions. *[free text – 5 lines max]*
Assessment of results (quantitative and qualitative) and comparison with main goals Performance of models and predictions are evaluated with special regards to days in which big fires occurred. *[free text – 5 lines max]*
Negative aspects identified Pyromaniacs could be supported by prediction bulletin. *[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 The Regulatory Framework are the Regional Plan for Fire Prevision, Prevention, and Firefighting (PRAI) and the National Law on forest fires n. 353/2000 *[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]* In Sardinia, the wildfire prediction activity is governed by Regional Civil Protection since 2012. *[free text – 5 lines max]*			
Financial requirements *[business model]* This activity is funded by regional funds. *[free text – 5 lines max]*			
Success factors *[political, technical, human, financial...]* The success factors of this activity are that it permits a greater effectiveness of the intervention in case of fires, in order to safeguard and save public money and to reduce the environmental damages. *[free text – 5 lines max]*			
Risk factors *[legal, financial, safety…]* Inadequate fire fight formation due to bad weather forecast and/or to bad wildfires model interpretation. *[free text – 5 lines max]*			
Additional and non-formal experiences contributing to the implementation of Good Practice. *[free text – 5 lines max]*			