

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	Classification of the risk of forest wildfires
Description <i>[1 sentence]</i>	Regional and municipal fire risk classification for predicting and managing forest fire risks in order to protect people, settlements and environment in Sardinia
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	Other
Language	<input type="checkbox"/> Catalan <input type="checkbox"/> English <input type="checkbox"/> French <input type="checkbox"/> German <input checked="" type="checkbox"/> Italian <input type="checkbox"/> Spanish <input type="checkbox"/> Other
Source/origin	<input checked="" type="checkbox"/> Partner's expertise <input type="checkbox"/> Expertise from the network <input type="checkbox"/> Other (internet)

Topic

Area	<input type="checkbox"/> Risk assessment	<input type="checkbox"/> Risk Planning	<input type="checkbox"/> Risk Management
Risk	<input checked="" type="checkbox"/> Wildfires	<input checked="" type="checkbox"/> Fire behaviour patterns and typologies <input checked="" type="checkbox"/> Fire ignition and spread models <input checked="" type="checkbox"/> Wildland urban interface	<input type="checkbox"/> Fuel management <input type="checkbox"/> Fire service needs <input type="checkbox"/> Prescribed burning <input type="checkbox"/> Other <i>[Introduce which ones]</i>
	<input type="checkbox"/> Storms	<input type="checkbox"/> First measures after storm <input type="checkbox"/> Work safety during salvage logging <input type="checkbox"/> Timber storage and cost containment <input type="checkbox"/> Forest protection and pest control	<input type="checkbox"/> Regeneration and afforestation <input type="checkbox"/> Preventive silvicultural measures <input type="checkbox"/> Other <i>[Introduce which ones]</i>
	<input type="checkbox"/> Avalanches	<input type="checkbox"/> Technical protective measures <input type="checkbox"/> Maintenance of protection forests	<input type="checkbox"/> Other <i>[Introduce which ones]</i>
	<input type="checkbox"/> Floods	<input type="checkbox"/> Prevention through land use management <input type="checkbox"/> Technical protective measures	<input type="checkbox"/> Other <i>[Introduce which ones]</i>
	<input type="checkbox"/> Other		<i>[Introduce which ones]</i>

Cross-sectoral topics	<input checked="" type="checkbox"/> Risk and vulnerability assessment and mitigation <input type="checkbox"/> Cost-effectiveness assessment <input checked="" type="checkbox"/> Civil protection, emergency and post-disaster management	<input checked="" type="checkbox"/> Risk planning, governance and policy framework <input checked="" type="checkbox"/> Community involvement and risk communication <input checked="" type="checkbox"/> Other: [Increasing summer drought and agricultural water supply]
Level	<input checked="" type="checkbox"/> Local <input checked="" type="checkbox"/> Regional <input type="checkbox"/> National <input type="checkbox"/> Cross-border <input type="checkbox"/> EU <input type="checkbox"/> Global	
DRM cycle phase	<input checked="" type="checkbox"/> Prevention <input checked="" type="checkbox"/> Preparedness <input type="checkbox"/> Response <input type="checkbox"/> Recovery	
DRM domain	<input checked="" type="checkbox"/> Policy making <input checked="" type="checkbox"/> Early warning system <input type="checkbox"/> Disaster response	
Sendai priorities	<input checked="" type="checkbox"/> Priority 1: Understanding disaster risk <input checked="" type="checkbox"/> Priority 2: Strengthening disaster risk governance to manage disaster risk <input checked="" type="checkbox"/> Priority 3: Investing in disaster risk reduction for resilience <input checked="" type="checkbox"/> Priority 4: Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction	
Contribution to Sendai Targets	<input checked="" type="checkbox"/> Reduce global disaster mortality <input checked="" type="checkbox"/> Reduce the number of affected people <input checked="" type="checkbox"/> Reduce the direct disaster economic loss <input checked="" type="checkbox"/> Reduce disaster damage to critical infrastructure <input type="checkbox"/> Increase the number of national and local disaster risk reduction strategies <input type="checkbox"/> Enhance international cooperation to developing countries <input type="checkbox"/> Increase availability of and access to multi-hazard early warning systems and disaster risk information and assessment	

Description and analysis

<p>Summary: quick presentation of the Good Practice <i>[Objective: summarize in a few lines the key elements of the good practice]</i></p>
<p>Place in national/regional policy <i>[Mentioned in the law/regulation/guidelines? Mandatory? Recommended?]</i></p> <p>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 (PRAI) approved by Resolution of the Regional Council no. 25/8 of 23th.05.2017. PRAI is subject by annual review by the Regional Council and it is drawn up in accordance with the national framework law on forest fires (Law 353/2000 - Article 3), guidelines issued by the Minister for the Coordination of Civil Protection (D.M. 20 December 2001) and Regional Law no. 8 of 27th.04.2016.</p> <p><i>[free text – 5 lines max]</i></p>
<p>Goals and achievements <i>[Objectives, goals and the achievements of the Good Practice]</i></p> <p>The analysis and assessment of fire risks, a section of PRAI’s, 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.</p> <p><i>[free text – 5 lines max]</i></p>
<p>Actors involved <i>[Explain who is involved in the development: practitioners, stakeholders, educators, ...]</i></p> <p>Members of regional fire fight system, such as Forestry and Environmental Protection Corps - CFVA, Forestas Agency, ARPAS (Regional Environment Agency), fire brigade with regard to the interface fires, entities engaged in scientific research on forest fires, Regional Departments for their areas of expertise, Municipalities and technical office Emergency Planning and Management Service of DGPC RAS.</p> <p><i>[free text – 5 lines max]</i></p>
<p>Implementation stage <i>[Is it operational? Since how long? Is it a pilot experiment?]</i></p>

This methodology for regional and municipal risk evaluation is currently in place and it is reviewed annually. It is a predictive tool for municipal planning for interface fire risk.

[free text – 5 lines max]

State of technical knowledge *[state of the art and technical background of the Best Practice]*

Qualified technical expertise and knowledge by regional officers, experienced technicians, local executives, universities and research centres are supporting a further evaluation methodology, deployed during work. Fire risk calculation methodology was refined by using GIS tools.

[free text – 5 lines max]

Context *[regulatory, socio-economic, political]*

The PRAI plans and coordinates activities against forest wild fire and contains the thematic knowledge framework specifically designed to forecast, prevent and activate the fire fight, as established by the law no. 353/2000 and LR no. 8/2016 (forests defence).

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 periurban fires threaten the settlements or infrastructures present in municipal territories (obligation provided by Law no. 100/2012 that reforms Law no. 225/92). The calculation and classification of regional and municipal fire risks, with hazard index and municipal risk, are listed in the PRAI (2017-2019), which is updated annually. There is currently no 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]*

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" (Combination of probability of an event and its negative consequences, , UNISDR - United Nations Office for Disaster Risk Reduction - 2009). The risk assessment, **R=PxVxE**, is based on:

P= Hazard (pericolosità) probability that a calamity can potentially damage the exposed goods; it results by the sum of the following 6 parameters: inflammability, slope, exposure, altitude, road network, inhabited centres.

V = Vulnerability: propensity of an element (people, buildings, infrastructures, etc.) to suffer damage as a result of the stress caused by a calamitous event. It results by the sum of the following 8 parameters: territorial distribution of aircraft, territorial distribution of forestry stations of CFVA, of sites of the FoReSTAS Agency, of volunteer organizations, of sighting spots, number of rural local organizations working for the municipalities, accessibility of roads and urban centres.

E = Exposure Value: "Unit" or "Value" number of each of the risk elements present in a given area, such as human lives or settlements, etc.

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 377 Municipalities of Sardinia is reclassified in one of four classes of wild fire risk previously defined.

[free text – 5 lines max]

Governance *[responsible authority and roles of the different actors involved]*

Responsible of the governance is the Emergency planning and management service of DG Civil Protection RAS. The service has to collect information, analyse data, classify fire risk, elaborate maps, produce deliverables and annually review the methodology to sharpen municipal index calculations and so contributing to prevent fire risk. During summer the Service coordinates the operational room to cope the seasonal summer wild fires (SOUP) with the other operational and institutional members of Civil Protection (h 24 if necessary).

[free text – 5 lines max]



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Necessary means to implement the Good Practice in efficient conditions *[human resources, materials, financial...]*

A thorough knowledge of areas of interest (fire dynamics and scenarios, hazard factors and their correlation, etc.), statistical analysis, theoretical models, Geographical Informational Systems and effective collaborations among institutional partners are needed. These commitments require financial resources and skilled human resources.

[free text – 5 lines max]

Challenges encountered during implementation and solutions incurred

The currently absence of detailed land use maps to estimate fuel load, an effective criterion for assessing fire hazards, is a limiting factor (in use CORINE land cover, 2008). The constraints are represented by difficulties of retrieving the data set, due to the lack of communication between the regional departments. Sometimes municipal engineers and Mayors do not handle planning tools well, so last year the Emergency Planning and Management Service RAS organized a series of meetings to help local authorities improving their fire risk planning.

[free text – 5 lines max]

Priorities identified for successful implementation of the Good Practice

The predictive approach needs financial and competent human resources. The main goal is to improve the fire risk assessment process and to determine the risk and hazard indices of wild fire in more detail. It is necessary to have proactive cooperation among regional governments, public agencies, scientific research institutes, local organizations in order to set up a feasible support for the safety design of civil protection community.

[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 severity of fire risk calculated in PRAI helps municipalities to develop their own local protection planning. In the plan the Mayors, local authorities responsible for civil protection, can anticipate actions to cope with the collective threat posed by a wild fire 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,]

For the governance, it would be desirable a systematic investigative activity and in-depth analysis of the causes of each regional fire that would allow for targeted risk prevention and reduction policies for analysed areas. The Regional Rural Development Plan could envisage subsidies for agricultural measures designed to modify the fire risk factors (type and distribution of vegetation, improvement of forest cover and vegetation ecosystems, use of fire resistant species to reduce flammability and combustibility, and set up suitable areas cleaned by fuel both in agricultural lands and in uncultivated lands).

It could be useful involve socio-economic criteria to assess how those refer to fires of human will. Latest available GIS technologies are needed and also skilled human resources, often more effective than material and financial tools to achieve practical goals. Finally, a continuously updated map of detailed land use will be required (the CORINE land cover, 2008 is unfortunately the current available map).

[free text – 5 lines max]

External resources <i>[Objective: provide further information]</i>	
Attached materials	<i>[include format (document, photo, video...) and name of the file]</i> http://www.sardegnaambiente.it/documenti/20_467_20170526123038.pdf http://www.sardegnaambiente.it/documenti/20_467_20170526124018.pdf http://www.sardegnaambiente.it/documenti/20_467_20170526124114.pdf
Web links	http://www.sardegnaambiente.it/index.php?xsl=2268&s=20&v=9&c=12435&es=4272&na=1&n=10 http://www.regione.sardegna.it/i/v/68?s=1&v=9&c=9571&na=1&n=10
Contacts	Emergency Planning and Management Service - DG PC RAS <ul style="list-style-type: none"> - Maria Antonietta Raimondo maraimondo@regione.sardegna.it - Michele Chessa michessa@regione.sardegna.it - Silvestro Frau sfrau@regione.sardegna.it - Luca Manca lucmanca@regione.sardegna.it

[Additional information - optional]

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

Durability and transferability <i>[Objective: evaluate the integration of the Good Practice and its sustainability, give recommendations for transferability]</i>			
Is this information:	Replicable <input type="checkbox"/>	Measurable <input type="checkbox"/>	
Regulatory Framework			
<i>[free text – 5 lines max]</i>			
Stability of the human environment <i>[Stability of partnership, structures, population enabling successful implementation and positive impact in the long term]</i>			
<i>[free text – 5 lines max]</i>			
Financial requirements <i>[business model]</i>			
<i>[free text – 5 lines max]</i>			
Success factors <i>[political, technical, human, financial...]</i>			
<i>[free text – 5 lines max]</i>			
Risk factors <i>[legal, financial, safety...]</i>			

[free text – 5 lines max]

Additional and non-formal experiences contributing to the implementation of Good Practice

[free text – 5 lines max]



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