D18. Report on political recommendations to promote a fire risk culture amongst children, youth and teachers

Efficient fire risk communication for resilient societies (eFIRECOM)

Project co-funded by ECHO -Humanitarian Aid and Civil Protection

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Executive Summary

This deliverable aims at giving political recommendations to policy makers on how to contribute to raising awareness among children and youth about forest fires. These recommendations have the overall objective to help developing a culture of risk that can contribute to build more resilient societies against this natural hazard.

Since there are different levels of policy makers influencing children and youth education, this document is structured in a top-down approach. Firstly, giving political recommendations to the European level policy makers; secondly to the national level authorities and finally to the regional and local level institutions and educators. The main outputs of the document are summarised in Figure 1. 1.
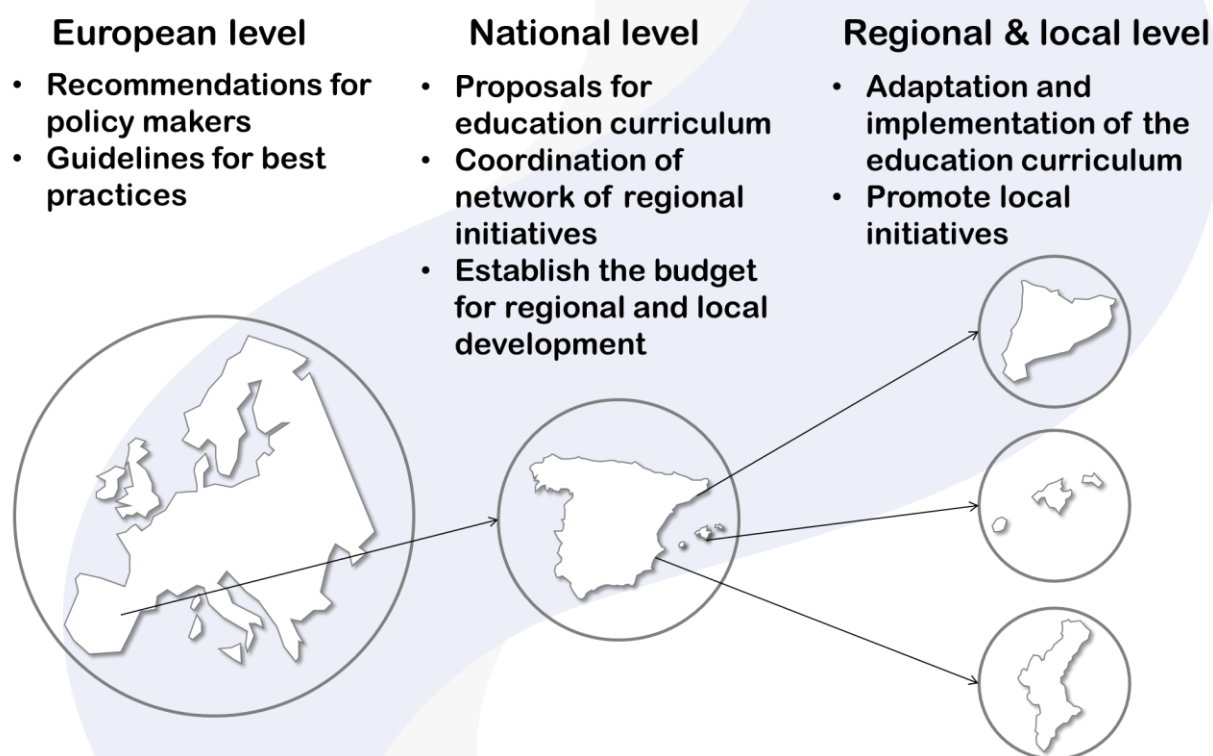

FIGURE 1. 1. SUMMARY OF THE MAIN SECTIONS OF THE DELIVERABLE DISTINGUISHING BETWEEN POLITICAL RECOMMENDATIONS AT THREE GEOGRAPHICAL LEVELS: EUROPEAN, NATIONAL AND REGIONAL AND LOCAL.

1. INTRODUCTION

Forest fires are a common natural hazard in Europe and specially in the Mediterranean region [1]. About 80% of the total burnt area in Europe occurs in the Mediterranean region [2]. Although in recent years there has been a decrease of the number of fires (Table 1. 1**Error! Reference source not found.**). However, the social and environmental challenges related to forest fires have not declined and are expected to continue increasing in the future. Wildfire events will continue to occur during seasonal droughts on abandoned agricultural and forested lands. Moreover, the evolution of the vegetation towards urban areas causes that forest fires are and will be direct threats for the population[3]. In this context, climate change will contribute to aggravate this complex situation.

TABLE 1. 1. NUMBER OF FOREST FIRES IN FIVE SOUTHERN MEMBER STATES (1990-2014). SOURCE: JRC, 2015 [4]

	PORTUGAL	SPAIN	FRANCE	ITALY	GREECE	**TOTAL**
Average 1990-1999	22,250	18,152	5,538	11,164	1,748	**58,851**
Average 2000-2009	24,949	18,369	4,418	7,259	1,695	**56,690**
Average 2010-2014	18,956	13,207	3,416	5,502	1,128	**42,209**

In many countries, forest fires are a recurrent topic on the news and the media during drought seasons. Society is constantly exposed to information inputs about the impacts of fires on forest and urban areas and often feeling that the Fire and Rescue Services are the only safety measure to protect them from the threatening forest fires. Only a little portion of the society knows that they can contribute to their own preparedness and safety. To reverse the paradox, forest fires, their ecology, awareness, population safety and society resilience are concepts that need to be included in the environmental education of children and youth. The **eFIREcom** project aims to raise forest fire awareness and a culture of risk among society in general, but with a particular dedicated focus on children, youth and teachers as they are the pillars for future societies.

The conclusions form the last project meeting in Solsona (Spain, 2015) highlighted the need to produce **political guidelines** in order to raise public awareness about the current situation of forest fires in the Mediterranean region (See deliverable D2.1 [5]). One of the main conclusion was that forest issues and fires (best practices and self-protection) should be added to **the scholar curricula**. A document with

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specific recommendations on how to include the fire ecology and safety in the scholar curricula is soon to be published as a project deliverable (see deliverable D17[6]).

Europe can take example of educational programs from other countries (e.g. United States, Canada, Australia) to **integrate fire ecology and safety education in the existing educational programs** of the member states. However, Europe's compositions of environmental, social and cultural characteristics lead to unique landscapes and forest fire behaviours, not always comparable to other continents. Therefore, the right fire ecology, safety knowledge and good practices shall be introduced to the educational programs with the support of experts in the field of forest fires and education. These concepts shall be included on the **European strategic planning on education** with the objective to provide children and youth with outstanding education to face present and future environmental challenges such as forest fires and the development of more resilient societies. Within this context, we have identified different scales (or levels) where the politicians should play a role (Figure 1. 2): (1) at a European level, by giving recommendations to the member states that legislate about education; (2) at a national level, by developing or giving the tools to develop adequate school curricula; and finally (3) at a regional and local level, by facilitating the implementation of the curriculum and supporting initiatives to promote a fire risk culture. The content of this deliverable has been structured in three parts to give recommendations to policy makers at the three mentioned levels.
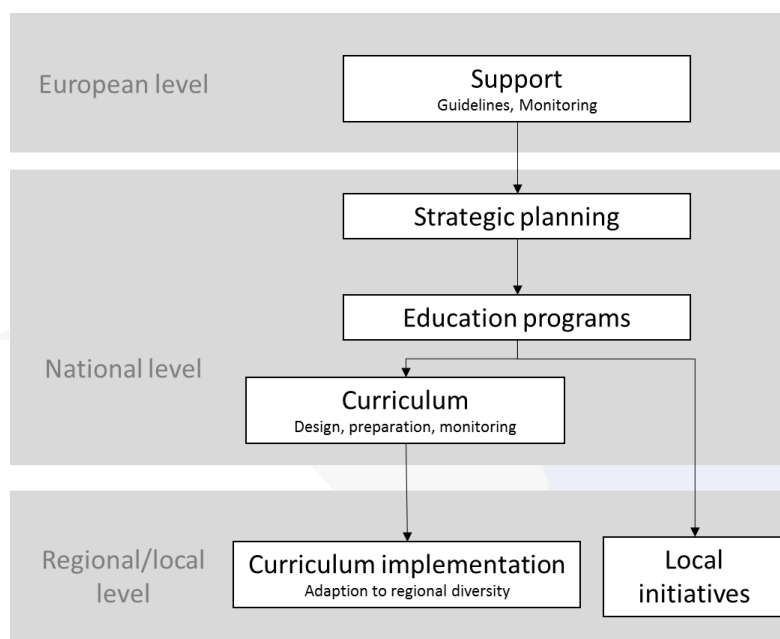
In order to use this report as a practical guide, we have highlighted the recommendations to policy makers as follows:

- **Recommendation.**

These recommendations are found throughout the text.

2. KEY VALUES TO TRANSFER THROUGH FIRE ECOLOGY AND SAFETY EDUCATION

The education on fire ecology and safety should aim to transfer a set of core values. Policy makers at all scales (European, national, regional and local) shall support and promote this transference. The next text box summarise the **fundamental values** that have been identified as the most relevant in the field of forest fires:

- **The value of our forests and their biodiversity;**

- **The value of the services and natural resources that can sustainably obtain from our forest;**

- **The value of environmental education and communicating the knowledge on forest fire ecology;**

- **The value of using the forest as a classroom to study forest management and fire prevention;**

- **The value of forest fire prevention;**

- **The value of local and societal responsibility on fire awareness, fire safety at home and knowledge of evacuation protocols;**

- **The value of building resilient communities, more prepared to live with fire.**

3. EUROPEAN LEVEL RECOMMENDATIONS

The EU should aim promote a fire risk culture by promoting the development of national education programs. Investing on education for future generations is a major step towards building a more resilient society against natural hazards such as forest fires. The development of education programs for children and youth is currently a competence of each EU member state [7]. At the present time, most of the EU countries have not explicitly included environmental education on their programs (See deliverable D4.1. State-of-the-Art [8]). In fact, a large number of initiatives are regional or local and have been developed to address the lack of a fire risk culture from at national, regional and local scales.

> 🔸 **The EU shall gather ideas and lessons learnt from regional and local initiatives on a bottom-up approach to give recommendations to the EU members on how to develop the education programs concerning fire ecology and safety education.**

Since the EU does not have the capacity to regulate the countries educational programs,

> 🔸 **the EU shall provide recommendations in order include fire ecology and safety education on the strategic education planning, provide guidelines and monitoring to assure the environmental education, and more specifically fire ecology and safety education, is properly addressed in the education curricula of each country.**

In the following sections we gather some recommendations for <u>EU policy makers</u>.

3.1. Promote the development of strategic planning on fire ecology and safety education for EU countries

Strategic planning on environmental education is a competence of the member states [7]. With the main goal to support the member states, the EU shall give recommendations to include the appropriate content on fire ecology and safety in the education programs. These recommendations shall be based on:

- Forest fire challenges and threats to future societies,

- Educational needs of children and youth on fire ecology and safety.

These can be transformed into the following recommendation:

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- **European policy makers shall translate the future challenges and needs on environmental disasters education and, more specifically on fire ecology and safety, to recommendations for the EU member states.**

The EU shall support the development of strategic education programs by the member countries. Thus, assuring that children and youth from all the member states reach an adequate level of knowledge on fire ecology and safety. The recommendations shall be done by the EU through the *Education and training division* [9].

- **The recommendations to all member states on education programs shall be based on the key values provided in Section 2.**

- **Political recommendations for member states shall be focused on adding forest fire ecology and safety actions on the strategic education programs in order to build societies more prepared and resilient to forest fires.**

Even though the risk of forest fires has increased in all European countries due to climate change [10], a specific set of recommendations from the EU shall focus on those member states that have been identified to have a high risk of large forest fires that can affect huge population areas (Figure 3. 1). For example, Mediterranean countries such as France, Spain, Portugal, Italy, Greece, Cyprus, Malta, etc. The forest fire ecology and safety on those countries shall be specifically addressed in order to raise the needed culture of fire risk, awareness and build resilient societies.

- **Prepare a specific set of recommendations for the strategic environmental education of countries within the EU predicting that forest fires will be a major threat for their societies, for example Mediterranean countries.**
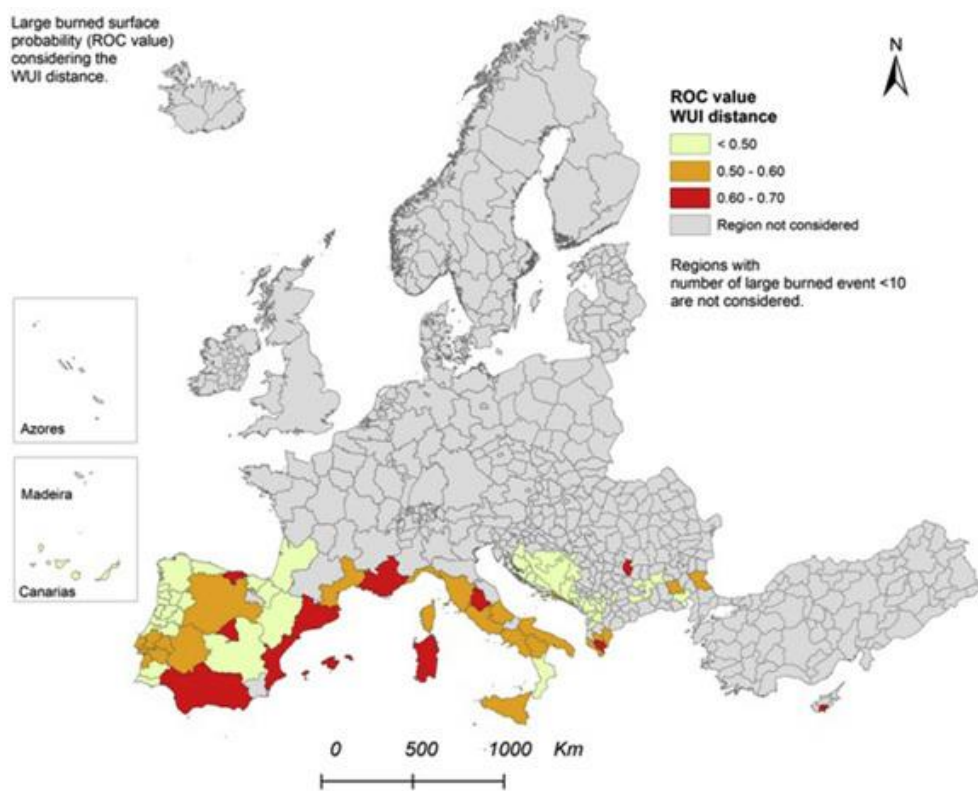
FIGURE 3. 1. MAP OF THE AREAS WITH MORE WILDLAND URBAN INTERFACE AND RISK OF FIRES IN EUROPE [3].

3.2. Promote the goals and objectives of the member states' educational programs

A set of goals and objectives shall be set to assure the educational programs reach the fundamental values that have been identified in Section 2.

> **The goals and objectives shall be clear and use the appropriate terminology to make sure policy makers and educators (parents, teachers, etc.) understand and are able to adapt them to the national and regional challenges.**

3.3. Guidelines for including fire ecology and safety education in the scholar curriculum

The most effective way the EU can contribute to increase children and youth's education on fire ecology and safety is through promoting the integration of these topics in the scholar curriculum.

> **The EU shall encourage the addition of fire safety and ecology on the scholar curriculum of the member states.**

Following the experience from the United States as a reference, the fire ecology and safety education shall be included in the curriculum of school, mainly on subjects such as earth science, geography and environmental science. At each learning stage, children and youth shall learn about different concepts on fire ecology and safety. The more they develop this education the easier will be to apprehend ideas and develop good practices that will contribute to the creation of societies more resilient to the risk of large forest fires.

> ♣ **The EU shall give recommendations about the potential topics to be learned at each grade of the scholar curriculum.**

As a base, EU policy makers can take ideas from the existing current initiatives that have been implemented worldwide (see deliverable D4.1 on State-of-the-Art [8]), and the suggestions done in D17 [6].

3.3.1. Curriculum in forest fire prone regions

An extended curriculum on fire ecology and safety education shall be developed for regions with fire prone environments. For example, local and regional communities from rural areas, WUI areas and peri-urban areas [3](Figure 3. 2). In such regions, vegetation fires are frequent during several months a year. An appropriate education on fire ecology and safety would help the population to better protect their lives and assets, prevent some of the impacts and become more resilient.

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The US scholar curriculum taken as a reference, implemented the fire ecology education in all school grades [6]. This kind of curriculum aims at increasing the student's capacity to apprehend ideas and concepts that range from very basic to advanced understanding of forest fire ecology and safety.

- **The EU shall give recommendations in order to make sure students at primary school, achieve a certain level of forest fire ecology and safety. This includes being able to independently understand basic forest ecology concepts and the role of fire as a natural disturbance, the benefits of forestry management to reduce the fire risk around their homes, perceive the potential impacts of a forest fire affecting their community and all the safety protocols and the potential ways to protect their assets.**

3.4. Provide support

The support given by the EU shall be focused on providing the tools to policy makers, educators and teachers so that education programs can be developed at national, regional and local levels. This

support shall include online resources, materials to provide training and make available a network of experts (educators and fire experts) for queries and clarifications.

3.4.1. Online resources and materials

The EU shall take leadership about the fire ecology and safety education by providing all the resources needed to develop education programs. The dedicated website gathering all the resources and materials on the field could be used as a referent in the EU and internationally. Other materials that shall be available from the website are online videos, presentations, booklets, books, games, quizzes, applications, etc.

- **The EU shall have a repository of online materials to support teachers on the implementation of the education curriculum.**

- **The EU shall have a database with materials available from the different national, regional and regional and local initiatives that can help the development of education curricula and the implementation of regional and local initiatives.**

3.4.2. Network of experts

A strategic planning in education should seek to provide teachers with the knowledge and tools to achieve the educational goals defined on the field of fire ecology and safety that will allow safer societies. Educators need time to get their perceptions, develop the required skills and integrate new methods.

- **A network of experts on fire ecology and safety education shall be set up in order to provide support to policy makers, teachers and educators that are trying to develop and implement education programs.**

To help on this process, the network shall also encourage collaboration between teachers, stakeholders and fire experts among EU member states. The Lessons on Fire platform developed during the FIREfficient ECHO Project could be used for that aim [11].

3.5. Monitoring of the fire ecology and safety education

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The EU shall monitor the implementation of the fire ecology and safety education to the school curricula to assure a homogeneous quality among European countries. The monitoring process, particularly during the initial years, would be useful to:

- **Identify the needs and challenges of including fire ecology and safety in the scholar curriculum.**

- **Gather feedback and experiences on the development of national, regional and local curricula and initiatives.**

- **Provide tools to measure the learning process and help teachers assessing the progress.**

- **Identify best development practices and support their implementation across Europe.**

- **Identify the regions with more implementation challenges and encourage an equal development and implementation to all member states.**

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4. NATIONAL LEVEL RECOMMENDATIONS

The objectives of the recommendations to policy makers at a national level are three-fold: (1) Influence the development of a scholar curriculum that includes fire ecology and education in those countries that the education laws are set at a national level. (2) Facilitate the regional and local development of a curriculum in those countries that the education laws are set at a regional level. (3) Provide the tools for the development of regional and local initiatives regarding education on fire ecology and safety.

4.1. Include fire ecology and safety education in the curriculum

The development of an education curriculum that includes fire ecology and safety education shall be a priority for policy makers at a national level if we are to build more resilient societies.

> ♦ **Policy makers shall use the guidelines and recommendations provided by the EU (see Section 3) and develop the education curriculum according to the national, regional and local needs and challenges.**

In some occasions the policy makers shall give recommendations to the regional government responsible of developing the education curriculum, as not all the national governments from the member states have the competence to develop de curricula. Countries with a high risk of large forest fires, as the Mediterranean region, shall consider including a more extensive fire ecology and safety education on the curricula to adapt to the different forest fire realities (see Section 3.3.1).

4.2. Coordination of a national network and working group of experts

This action shall seek to coordinate a multidisciplinary network and group of experts on education on fire ecology and safety to assist during the development of the scholar curriculum, assist schools on the adaption and implementation process and boost forest fire awareness and resilience for schools and local communities. A similar network has been created in Australia [12].

> ♦ **Support the creation of a group of experts including teachers, experts on forest fire ecology and management to design the appropriate curriculum adapted to the fire ecology and safety needs at national and regional scales.**

Members of regional and local initiatives shall also integrate this group in order to bring their perspective and experiences on fire ecology and safety education. The network shall be used as a platform to disseminate the materials to be provided by the EU and also from regional and local initiatives.

- **Include professional experts from different regions and backgrounds with experience in the design and implementation of actions on forest fire education at a regional and local levels.**

- **This group shall be responsible to identify regions with a special needs of fire safety education due to their forest fire realities.**

- **Support and coordinate a database of regional and local initiatives.**

4.3. Financial support of regional and local initiatives

The development and implementation of local initiatives sometimes has a cost difficult to cover by the local organisations launching education events. Many of those initiatives would be implemented more easily by supporting part of the cost of those initiatives.

- **The financial support shall seek to promote the initiatives that boost the culture of fire risk described in section 2.**

- **Policy makers shall strategically encourage investments on professional and innovative learning environments that help to pursue a broad fire ecology and safety education for children and youth.**

Organisations or entities leading the implementation of education actions at a regional and local scale may also be interested in attracting private investors to cover the deployment of those actions. Nonetheless, these sort of actions often require an initial public investment before getting their own funding.

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5. REGIONAL AND LOCAL LEVEL RECOMMENDATIONS

Traditionally, many initiatives on fire ecology and safety education have been conceived at regional and local scales [8]. Stakeholders and practitioners, are the ones having deep experience on forest fires and are aware of the challenges of local and regional landscapes. They have also identified the potential gaps and needs of the education system regarding fire ecology and safety education. Thus, in some occasions they have developed initiatives to stimulate a culture on fire risk and education to adapt to the environmental reality of the landscape. Local and regional teachers and educators have also realised about those challenges, and all together they have developed some initiatives with children and youth to boost education on fire ecology, safety and how to build resilient societies.

At a regional scale, there are different landscape realities dividing the territory into small areas. For example, large Mediterranean cities with millions of citizens (e.g. Marseille, Barcelona) are surrounded by rural environments with a low population density. Both realities are threatened by forest fires, as recent events have shown [13]. Therefore, the education on fire ecology and safety should be for both, citizens in the rural and in the urban areas. Children and youth from those two realities will both have to get education on fire ecology and safety, however, they will perceive and experience forest fires in different ways.

> 🞤 **As both rural and urban areas are under threat of large wildfires, the education on fire ecology and safety shall be implemented to all children and youth from both realities.**

The involvement of regional and local agents it is fundamental to adapt and implement the education curricula and promote local initiatives. The success of an improved fire ecology and safety education for children and youth relies on the integration and engagement of all the agents on the actions developed, those being (Figure 5. 1):

- Schools

- Local communities

- Fire experts

- Teachers and educators

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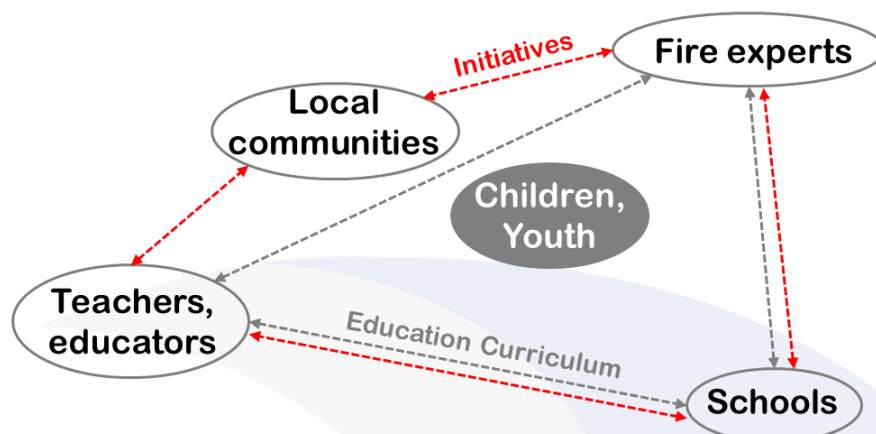
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FIGURE 5. 1. INTERACTIONS AMONG GROUPS OF EXPERTS THAT SHALL WORK TOGETHER AT A REGIONAL AND LOCAL LEVEL IN ORDER TO ADAPT AND IMPLEMENT THE CURRICULUM AND INITIATIVES FOR CHILDREN AND YOUTH.

✚ **Policy makers shall take into account that regional and local initiatives on fire ecology and education must lead the engagement of all the agents that know about the landscape and directly interact with children and youth.**

5.1. Implementation of the curriculum

Education planning is, in some occasions, competence of regional governments (e.g. the regions in Spain). This competence includes the design and development of the education curricula. Independently from the administration that designs the education curriculum, it is always the school that ultimately carries out the implementation of the curriculum.

✚ **Regional and local administrations shall stimulate the implementation of the fire ecology and safety sections of the curriculum as they are the ultimate responsible of the children and youth's education on the topic.**

The school will decide the way a curriculum is implemented. In regions with a high sensitivity to forest fires (e.g. high fire frequency and magnitude), the school shall choose to implement an adapted and extensive version of the fire ecology and safety sections of the curriculum (See Section 3.3.1). The regional administration shall support the implementation of this education with the available means (financial support, allowing using local equipment, purchasing resources for developing actions, funding local experts to participate in the actions (e.g. firefighters), etc.

- **Policy makers shall financially support the implementation of the fire ecology and safety education by promoting innovative learning environments (invest in new technologies and modern facilities, forest as a classroom, etc.).**

Schools shall also get support from the expert network created at a national and European level. These networks can be a good resource to address teachers that are sceptical about the value of the fire ecology and safety education of the curriculum.

5.2. Regional and local initiatives

Current regional and local Initiatives on fire ecology and safety education are highly adapted to the needs and challenges of the territory and the rural population. These initiatives shall complement and be of support to the implementation of a scholar curriculum on fire ecology and safety. It is therefore important that, from a political perspective, all necessary tools are given to facilitate an adequate development and implementation of those initiatives.

- **Regional and local policy makers shall promote the development and implementation of education initiatives that include fire ecology and safety at a regional scale.**

- **Policy makers shall also search for funding to support the initiatives and the deployment of those through the regions' children and youth.**

Apart from the initiatives developed in schools (e.g. as part of the education curriculum), there are also other initiatives that are developed by local communities:

- Fire brigades, firefighter stations,

- Cultural/educational associations,

- Environmental associations,

- Non-profit organisations (Foundations, NGOs).

For the time being, there are many on-going initiatives that are being implemented at regional and local scales (See deliverable D4.1 on State-of-the-Art [8]). Most of these initiatives have been developed by forest fire or/and education experts and have a high value for the community. Some of those are well-known initiatives, developed and implanted for years (e.g. MEFYTU [14]). In some other cases, these initiatives stayed local and are unknown by the people outside the regional or the local community. Due to a lack of transversal communication among some regional or local educators (e.g. between neighbour

towns, between neighbour provinces, between neighbour countries, etc.), the initiatives have not been spread beyond local boundaries.

- **Policy makers shall use a bottom-up approach to promote the best initiatives to a regional and national level, potentially through working groups of experts.**

- **The initiatives shall be transferred to a national database (see section 4.2) to keep inventory of the existing services and regions covered by them.**

5.2.1. Implementation of existing initiatives

The report deliverable D4.1 State-of-the-Art[8] provides details of several regional and local initiatives that have been developed in Europe on fire ecology and safety education. It is important that national and regional-level administrations are aware about the existing initiatives in their own regions in order to provide financial support. The implementation of already existing initiatives shall help to avoid spending resources in developing new initiatives if the existing ones are already successful and valid.

- **Administrations shall identify for organisations that have developed initiatives and education programs on fire ecology and safety.**

- **Policy makers at a regional and local scale shall promote the implementation of initiatives that have been designed to be implemented in certain specific areas.**

For example, MEFYTU [14] is an already existing initiative that was developed by the Consortium member Pau Costa Foundation, and that has successfully been implemented in more than 36 schools from rural areas in Spain (Valencia, Catalonia and Castilla la Mancha regions) and have reached 1500 children between 8 and 12 years old. MEFYTU is a workshop partly deployed in the school and partly in a surrounding forested/burnt area. It requires acquiring materials, rent of transport for the participant scholars and cover staff costs. The experiences from initiatives like that, suggests that the cost of those initiatives is sometimes a reason that slows down the expansion of those initiatives in a larger number of schools.

- **Regional and local administrations shall subsidise part of the deployment of those activities that contribute to educate the youngest and help building resilient societies for the future.**

The engagement of stakeholders (parents, local business, cultural communities, teacher unions) and their support on such initiatives, will also stimulate the implementation of already existing initiatives.

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The implementation of local initiatives shall be particularly supported by communities that perceive forest fires as a natural hazard that can potentially become a threat for their region.

- **Regional and local policy makers shall stimulate the change of the perception of fire risk culture (e.g. fire as the enemy) on local communities and provide support (financial and social) for the implementation of local initiatives.**

FIGURE 5. 2. IMAGE OF THE INITIATIVE MEFYTU DEVELOPED BY PAU COSTA FOUNDATION (PCF) TO EDUCATE SCHOOL CHILDREN ON FOREST ECOLOGY AND SAFETY, GANDESA, SPAIN 2016. PHOTO: PCF.

5.2.2. New initiatives: design, preparation and deployment

Regions with recurrent forest fires, for example rural areas, WUI areas or peri-urban areas, shall aim to have a dedicated education, through applying an adapted curricula and through promoting regional and local initiatives. In some regions, these initiatives have already been implemented, however there are many others that still lack a fire ecology and safety education.

Ideally, a public-private co-funding would be a way to fund regional and local initiatives. Some examples of educational resources to be produced are books, booklets, online materials, videos, games, applications for phones and tablets, etc. Funding is also required to develop certain actions, for example evacuation training, simulations of forest fires or WUI fires, teaching home safety, etc. The development

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of educational resources has a variable cost; nonetheless it should be taken into account that is a long lasting good.

- **Part of the local and regional budget shall be designated to boost indicatives to help the fire ecology and safety education.**

- **Policy makers shall contribute to all the phases of the new initiatives: provide the tools and financial support for the designing and preparation phase, and second facilitate the deployment of those initiatives.**

Up until now, most of the initiatives have been dedicated to develop initiatives that boost education for children (primary school). See examples in deliverable D4.1 State-of-the-Art [8]. Nonetheless, the continuation of the fire ecology and safety education shall continue through the secondary school in order to build more advanced concepts on the topic. As an example, some of the more advanced topics to be develop in the secondary school have been developed in the US Fire ecology curriculum [8].

A fundamental step for long-lasting educational programs and initiatives is to have the support from regional and local stakeholders.

- **Policy makers shall find the way to support and encourage locals (e.g. forest fire experts, parents, business, cultural communities, teacher unions) to contribute in developing local initiatives for their children and youth.**

6. CONCLUSIONS

Previous reports have identified a lack of political measures that can contribute to develop and implement the necessary education for children and youth on the field of fire ecology and safety. Our societies are currently facing, and will continue to face in the future, the thread of forest fires unless we build more resilient societies to this kind of natural hazard. From a political perspective, there are many actions that can be done to support the development of those education actions needed. In this deliverable, we have documented a series of political recommendations for policy makers. These recommendations are mainly measures that politicians can take into account to support the development and implementation of education actions on fire ecology and safety for children and youth.

As within Europe, each institutional level has different rights to regulate on education, we have identified recommendations that can be implemented at each political level: European, National, regional and local. At a more general European level, it will be necessary that a common education frame on the field of fire ecology and safety is set. The tools provided at a European level will provide support to the national, regional and local entities that regulate on education. In parallel the national and regional level policy makers should boost the development and implementation of scholar curricula that include fire ecology and safety. Finally, the regional entities shall promote the implementation of those scholar curricula.

In parallel there should be a bottom-up approach to promote the transfer the knowledge from local entities in contact with the landscape and the forest fire reality, to the regional and national levels. Successful initiatives shall get the political and financial support to be implemented at a regional or national scale.

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7. REFERENCES

[1] Fernández-muñoz, S., & Pausas, J. G. (2012). Fire regime changes in the Western Mediterranean Basin: from fuel-limited to drought-driven fire regime. *Climatic Change*, *110*, 215–226. http://doi.org/10.1007/s10584-011-0060-6

[2] Centre for Research on the Epidemiology of Disasters, CRED, "*International Disaster Database*", available at http://www.emdat.be/disaster_list/index.html (last accessed in October 2016).

[3] Modugno, S.; Balzter, H.; Cole, B.; Borrelli, P. (2016). Mapping regional patterns of large forest fires in Wildland-Urban Interface areas in Europe. *Journal of Environmental Management* 172, 112-126.

[4] JRC (2015). JRC Technical Reports. Forest Fires in Europe, Middle East and North Africa 2014.

[5] CTFC (Ed.). eFIREcom project deliverable 'Conclusions: International seminar on forest fire risk communication and culture' (2015).

[6] Vázquez, I., Borràs, M. (2016). eFIREcom Project deliverable D17. Report on operational recommendations to enhance children, youth and teacher's involvement in wildfire risk management through communication actions.

[7] European Union (2007). Treaty on the Functioning of the European Union, Art. 165.

[8] Ballart, H. (2015). eFIREcom Project deliverable 4.1, State of the art on risk communication to children, youth and teachers.

[9] European Union (2016). Strategic Framework on Education and Training 2020, available at: http://ec.europa.eu/education/policy/index_en.htm (last accessed October 2016).

[10] IPCC (2013). Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D Qin, G.-K. Plattner, M. Tignor, S. K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P. M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1535 pp.

[11] Borràs, M. (Ed.) (2015). FIREfficient project deliverable "LESSONS ON FIRE: A Participatory and Knowledge-based Platform.

[12] Australian Institute for Disaster Resilience (2016), available at: https://emschools.org.au/ (last accessed October 2016).

[13] Le Monde (2016). Incendies dans les Bouches-du-Rhone: 'Des feux exceptionnels par leur caractère périurbain'.

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[14]Pau Costa Foundation (2016). MEFYTU project, available at:

http://www.paucostafoundation.org/ing/single_projectes.php?id=4&categoria=Divulgacio (last accessed October 2016).