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Raising Young People's Awareness on Preparedness and Self Protection – YAPS

Report on ACTION B.2

"Identification of the existing curricula for target groups in partner countries related to action B.1"

Federal Office of Civil Protection and Disaster Assistance

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Content

REPORT ON THE

Identification of the existing curricula for target groups in partner countries related to action B.1

1. INTRODUCTION

Education is among the most long-term efficient strategies for disaster risk reduction because it provides communities with the necessary tools (information, skills and knowledge) to cope with hazards and risks (Bernhardsdottir et al., 2015). Building community resilience to disasters is the main outcome and goal of the Sendai Framework for Disaster Risk Reduction (DRR), set for the next 15 years. Education is a core part when speaking about disaster resilience and an important approach in attaining the expected outcomes of the Framework.

Building human capacity can be achieved by incorporating disaster risk knowledge in formal and non-formal education and in civic education at all levels, starting with the youngest members of the society. Capacity building in the field of risk education deals with promoting positive attitudes and practices, which leads to a better management of an emergency situation. This can be carried out at several levels: individual, community, institutional. At an individual level, risk education pursues the acquisition and understanding of knowledge and achievement of skills to properly act during an emergency event, doubled by the ability to critically analyse information. Children are a vulnerable social class in case of a disaster, but their vulnerability can be mitigated by educating them from an early age (Rajib et al., 2011). Children and youth also contribute to societal changes and influence their environments, passing on information to the adults around them. Therefore, attention should be given to providing them with space and modalities to contribute to disaster risk reduction, in accordance with legislation, national practice and educational curricula (UN, 2015), with the final goal of raising responsible citizens (Komac et al., 2010).

To achieve efficient capacity building in risk education, three important stages need to be addressed, developed and improved. The first step is to improve knowledge and skill transfer (education methods), then improve the performance of the education systems (evaluation) and finally address the issue of program management (curricula) (Komac et al., 2010).

The term “curriculum” first appeared in the United States in the beginning of 20th century and initially had a much broader meaning than “syllabus”. Nonetheless, the latter meaning has recently become more commonly used in European school practice. In addition to teaching methods and means, curriculum is the key to transmitting knowledge about natural hazards in schools.

When designing risk education curricula it is important to take into consideration the stage of children development. At the age of 6-12, children start to gain independence in decision-making and problem solving, taking into account multiple aspects of a problem. This stage, referred to by Dr. Maria Montessori as “Construction of Intelligence” is described as “calm period of consolidation” of knowledge, when children show an intense thirst for knowledge and want to explore the universe, beside their own environment. At this point they start to think individually and to reason with imagination and logic. It is a proper age to teach children aspects of disaster risk reduction, safety measures in a formal or/and non-formal educational environment. While for children under 5 the risk is not high due to constant supervision from an adult, the risk increases as children grow up and become more independent. Statistics show that children and young people take more risks with their safety than adults mostly because they come across an unfamiliar situation, they lack the ability to correctly assess the risk, they are not aware of the risk, or, if they are, they might wrongly consider that benefits of an action are worth taking that risk. As children grow up, usually around the age of 10-11, they begin to feel that they can take care of themselves and keep themselves safe. This age also coincides with the highest rate of accidents (McWhirter, 1997). Therefore, teaching children pertinent information and developing their skills reduce the number of events when they are at risk or help them make a correct analysis of the situation.

Building knowledge on various processes and phenomena around us is based on data and information, but also on skills and abilities which are formed after analysing and processing data and information. This is done mainly in school, especially in recent years, with the risk education learning objectives being increasingly compulsory in the science, technology and physical education core curriculum subjects. However, specific risk and disaster risk reduction learning and abilities should be developed in children, with a broader and more integrated approach of the learned issues, to avoid limitation to skills that are traditionally associated with subjects like Natural Science and Geography. Previous studies have shown poor evidence that risk reduction learning in various subjects is conducted in an interdisciplinary and systematic manner so that what children learned in one subject was

linked to, built upon and fed into what they have learnt in other subjects, i.e. lacking comprehensive and systematic approach (Selby and Kagawa, 2012).

The type of risk education curricula also depends on the type of learning it addresses. Hence, risk education curricula should be directed towards deep learning, with its specific processing procedures: understanding, transformation, generation and application of knowledge, rather than towards surface learning (learning, retention and rendering of information) (Chiş, 2009). In embedding risk education across the curriculum, the proposed activities should be tailored to curriculum, policy and teaching methods, while pursuing specific learning objectives.

Moreover, teaching risk reduction is not limited only to teachers and students, but it also implies the involvement of parents, other members of the family and the communities, with activities conducted in a joint manner. Teachers should be more than mere sources of information, but should engage pupils in critical thinking, dialogue and practical application, in order to develop their information-processing and problem-solving skills. Parents also play a very important role in identifying the changing needs of their children, in indicating the main dangers and explaining the safety measures. On the other hand, parents learn from their children, as children are "excellent emissaries" between school and home (Cardona, 2004). In this way, the educational process becomes bidirectional.

The review of European risk-related curricula below provides an overview of the different approaches of risk-, disaster- and safety- related topics in European schools, found in formal education, directly, through a dedicated subject approach, or indirectly, by addressing some issues within various subject matters. This report focuses on formal education and does not address the non-formal risk-related education, which will be subject of a separate report.

The methodology used within this research includes content analysis of the curricula classified into educational levels and subject matters addressing the risk-related topics. The main aspects highlighted in the study were the development of skills in different educational settings and the available educational materials. The legislative framework fostering the risk-related curricula in schools was also addressed.

2. RISK-RELATED CURRICULA IN PRIMARY AND SECONDARY SCHOOLS ACROSS THE EUROPEAN UNION – A CLASSIFICATION ACCORDING TO THE HYOGO FRAMEWORK FOR ACTION (HFA)

The importance of risk education as a community resilience-building approach was stipulated in many international strategies beginning with the ´90s. The Hyogo Framework for Action 2005–2015 (HFA), for instance, contained several references to disaster risk reduction through education (HFA National Progress Reports, 2015). Building awareness regarding risk was one of the main priorities of the HFA, promoting the use of knowledge, innovation and education to build a culture of safety and resilience at all levels, arguing that disasters can be reduced significantly if people are informed about hazards, vulnerabilities and capacities and stimulated toward a culture of safety. In this sense, a special attention was given to the need to include the subject "disaster risk reduction" in formal and non-formal education activities.

2.1. Formal educational landscape before and after the implementation of the Hyogo Framework for Action 2005-2015 across the EU

Implementing a risk-related curriculum is a long-term process, which can last up to 10 years in a well-developed educational system (International Federation of Red Cross and Red Crescent Societies, 2011). Some of the EU countries had risk-related subjects embedded in their school curricula before the HFA has started, which demonstrates a general interest among the countries of the EU for implementing risk-related education either in their formal or non-formal educational system to build human capacity in face of a disaster. For example, in Greece, special information courses were organised in elementary schools to raise pupils' awareness, preparedness and response skills regarding hazards like earthquakes, severe weather conditions, floods and forest fires. During these information courses focus fell on basic response guidelines and prevention activities (Alexandris, 2004). In Germany, primary school children were taught about fire safety protection and first aid in school (DKKV, 2004). Optional informative education and training program on personal and mutual protection for kindergarten and elementary school children was available in Slovenia in 2004 and schools that opted for implementing this program were provided help by the Administration for Civil Protection and Disaster Relief (Ministry of Defence of the Republic of Slovenia, 2004).

Tools to support formal risk-related education, such as textbooks or teacher manuals, were also created prior to the beginning of HFA. For example, in Hungary, the National Directorate General for Disaster Management published a teacher's guide that supports elementary school teachers in giving lessons in civil defence and fire safety (Tatar, 2004). The Directorate aim was to make school children aware of everyday life risks and in their view the teacher who interacts with the children on a daily basis is the most certified to introduce these subjects to the classroom. Alongside the teacher's guide the Directorate General for Disaster Management also published worksheets for children.

An abundance of approaches and strategies regarding the implementation of risk-related topics into the school curricula across the EU countries can be observed, highlighting a lack of a standardized approach to embed these topics into school curricula in a systematic and vertical way. This amplitude of methods points to the fact that there is a lack of understanding of the complex development and integration of a school-based curriculum and the amount of resources needed to achieve a long-term progress. This was also proven by the midterm review on the HFA - the curriculum indicator revealed that, despite the willingness of governments to adapt risk-related curriculum to their formal educational system, some countries struggle to achieve sustainability in this sense (Selby and Kagawa, 2012).

Last year the 10-year international disaster risk reduction plan, HFA, came to an end and the majority of the countries that employed the framework reported on the progress they made over the 10 years. Progress reports from this last reporting cycle (2013-2015), submitted by the member countries of the European Union, were gathered from the preventionweb.net portal and the curriculum indicator (Priority for action 3, Core indicator 2) from each report was analysed to answer the following research questions:

- How many EU countries have declared the existence of primary and secondary school curricula for disaster risk reduction?
- How is risk education implemented in different countries of the EU?
- What difficulties appear when a country tries to implement a national curriculum on disaster risk reduction?
- What kind of educational methods are applied for teaching children about risk?

Twenty (20) progress reports were included in the following document review submitted from the following 20 member countries: Austria, Bulgaria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Poland, Portugal, Romania, Slovakia,

Slovenia, Spain, Sweden, The Netherlands and the United Kingdom. Progress reports from Belgium, Cyprus, Estonia, Ireland, Latvia, Lithuania, Luxembourg and Malta were not available through the prevention.net (Figure 1).

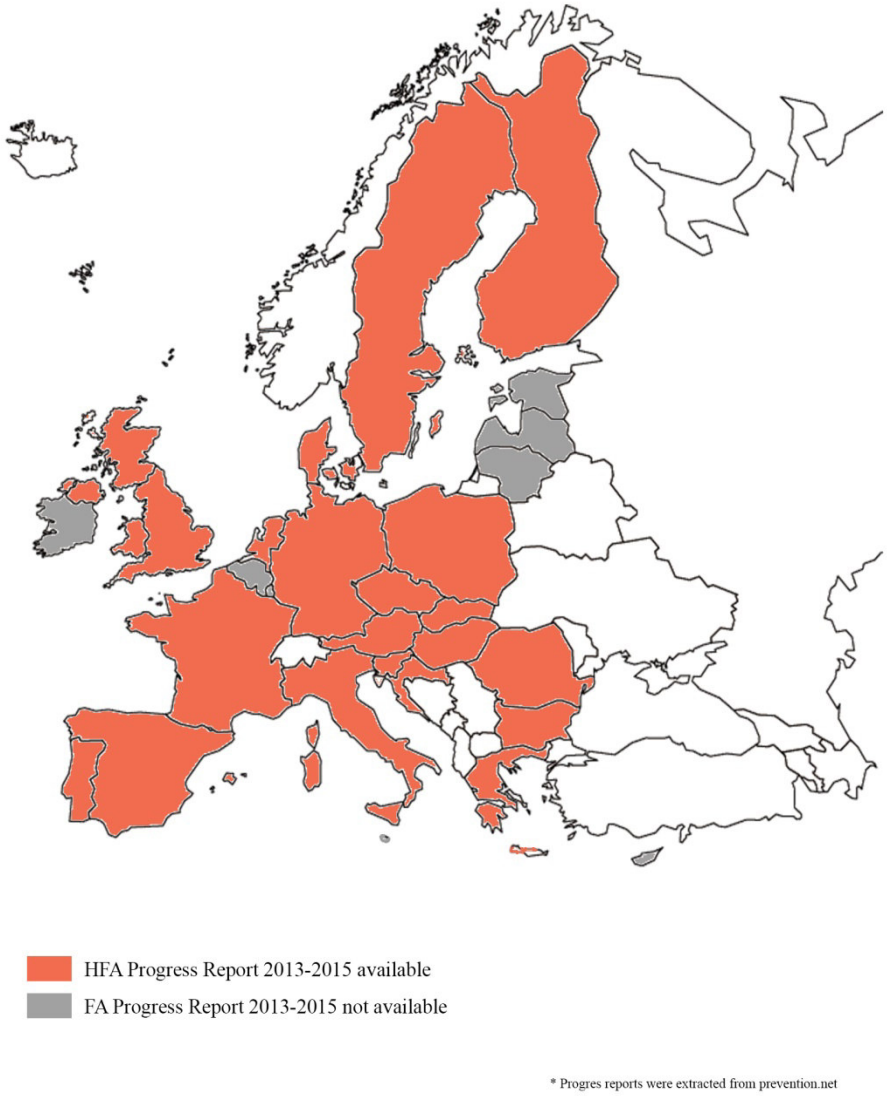

Figure 1. The availability of HFA Progress Reports 2013-2015 in EU Countries (Source: HFA National Progress Reports, 2015)

Twelve (12) EU countries out of the 20 countries which submitted their final report stated to have national risk-related curricula at the end of 2015. Austria, Finland, Hungary, Bulgaria, Czech Republic, Croatia, France, Greece, Slovenia, Spain and the Netherlands have declared having curricula for primary as well as for secondary schools, while Poland stated having a

primary school curricula and Portugal a secondary school curricula. The remaining 7 countries, out of the 20 which have submitted the final report, namely Italy, Romania, the United Kingdom, Denmark, Germany, Slovakia and Sweden announced not having a national curricular arrangement for risk-related subjects in their formal educational system (Figure 2).

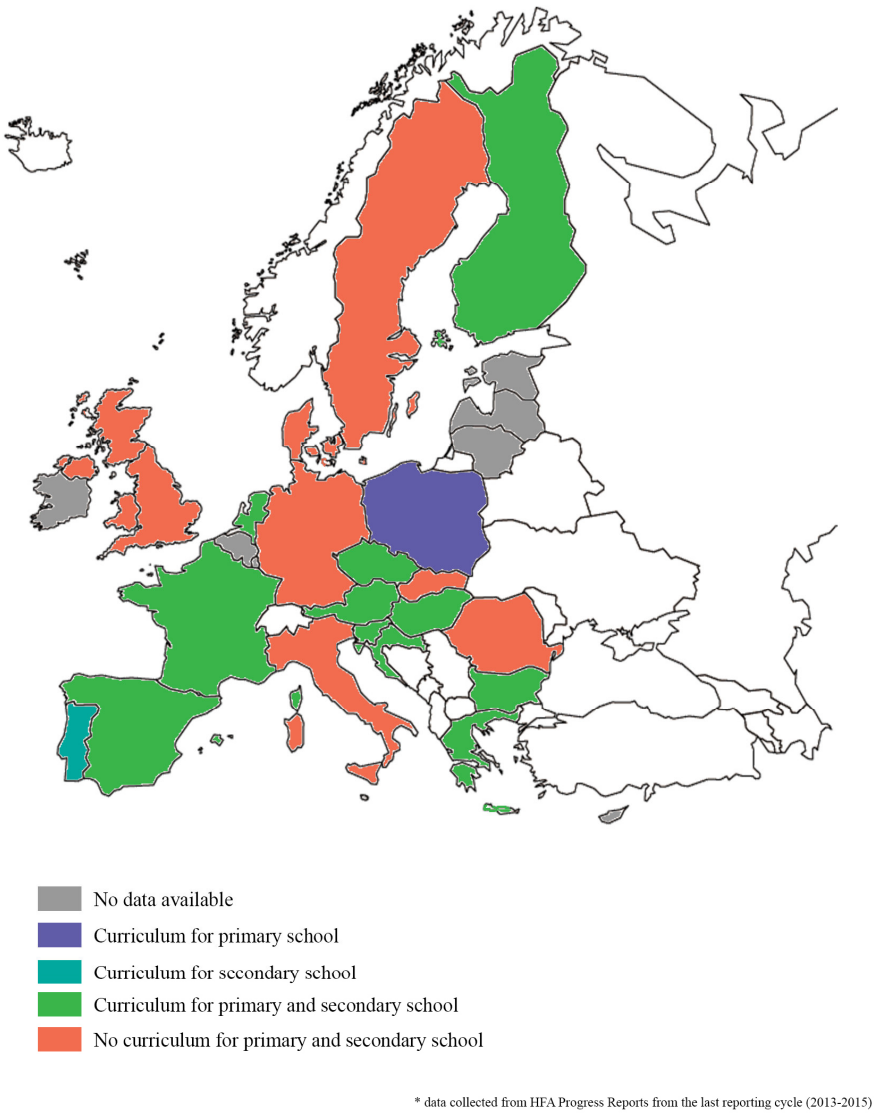

Figure 2. The availability of risk-related primary and secondary school curricula in EU Countries (Source: HFA National Progress Reports, 2015)

Countries that declared having national curricula on the subject have different approaches to introduce risk-related curricula into the school. For example, in Croatia there is a National

Curriculum Framework for primary and secondary school education. Topics included in the framework are: safety measures to mitigate and limit the impact of natural disasters and threats; the role of technology in disaster risk; social and environmental responsibility to reduce the risk of disaster and how to act in case of a disaster. In France it is compulsory for every student to learn about risk prevention, the mission of emergency services and the basics of first aid, according to the educational code. In Hungary, risk-related curricula are integrated on national level into the school curricula as independent subjects since 2011. Slovenia has introduced for primary school children the optional subject *Protection against Natural and other Disasters*. In Spain the Ministry of Education promotes the inclusion of practical training for the topics related to appropriate behaviour in the case of disaster.

In some of the countries, like in the United Kingdome or Germany, schools have the autonomy to decide if they include or not risk-related subjects in their curricula. Usually, schools from high risk areas opt for embedding disaster risk reduction in their program.

Beside educating the children on risk-related matters, teachers also receive training sessions in some EU countries to become familiar with risk-related subjects, to learn interactive and appealing teaching methods to become efficient multipliers for risk-related knowledge. For example, Hungarian authorities organise twice a year disaster management training courses for teachers. Course participants gain insight on disaster management, teaching methodology, environment protection, consumer protection, energy security, first aid and panic treatment. In Slovenia teachers can find useful materials in an e-classroom and they have at their disposal also an e-book on methodological teaching.

Beside teachers, governmental or non-governmental experts are sometimes also included in the teaching process. In Greece for example, beside experts from the General Secretariat for Civil Protection, who hold training program for secondary school children on self-protection, volunteers of the Hellenic Red Cross also provide nationwide classes for primary and secondary school children on disaster prevention and preparedness at citizen and household level. The German Red Cross also offers national training sessions regarding disaster risk reduction for school children and teachers.

School competitions are a preferred educational tool used by some EU countries to familiarise children with risk-related subjects. For example, Austrian Civil Protection Association organises since 2000 the yearly competition Children's Safety Olympics-Safety Tour to teach children safety awareness and knowledge through play and sport. The National Training

Centre of the Ministry of Emergency Situations from the Republic of Bulgaria together with other organisations are responsible for the annual competition entitled the National Children's Drawing Competition "MISSION: RESCUER", a competition that appeals to children's creativity to promote safety measures. Drawings submitted by children should be based on the preparedness and adequate response to emergency situations, promoting the image of the rescuers of the Ministry of Emergency Situations who fight disasters on a daily basis. The Hungarian Civil Protection Association together with the disaster management professionals organise team-competitions every year for the 10-18 year old members in the circle of primary and secondary schools, associations, organizations, and clubs. The competitions are organized on local, regional and national level and their aim is to give students account of their knowledge acquired during the year in disaster reduction, self-rescue and rescue of fellows, about their cleverness and physical preparedness in theory and practice according to age characteristics.

This review shows that there are many creative and efficient approaches to integrate risk-related topics into school curricula. However, no standardised approach regarding the information included in the educational curricula related to risk is to be observed. While in some countries teaching focuses on the dissemination of safety knowledge, in Finland for example focus fells on the mechanism behind the natural disasters rather than on the safety measures that children could apply before, during and after a disaster. Another aspect is the lack of the cooperation between EU countries when it comes to curricula development. Few educational approached, mentioned in the HFA progress reports from 2013-2015, have international dimensions, such as the International Children's Drawing Competition "MISSION: RESCUER" (National Training Centre, 2009). In this regard it would make sense to advance cooperation's across EU countries, to share best practices, creative and innovative approaches and existing teaching materials in order to establish standardised disaster-related curricula at least at the EU level.

2.2. Constraints regarding the implementation of national risk-related curricula according to the latest HFA progress reports

One of the most important holdback when it comes to the sustainable implementation of a national risk-related curriculum is the lack of sufficient financial resources. Countries that reported limited financial resources for curricula implementation are Bulgaria and Poland and

Slovenia. The lack of human resources can also hinder the implementation of sustainable curricular arrangements as it is reported by France.

Some EU countries regard lack of necessity as a hindering factor. In some cases there is no program established for natural disaster reduction in primary and secondary school, as for example in Sweden, where teaching young children about risk-related subjects in a formal educational setting is not a priority because the probability of the occurrence of a life threatening event in Sweden is low. In other cases, like in Finland, even if a curriculum exists it covers mainly national needs and more about the mechanism of disasters and not possible safety measures.

Another hindering factor is a weak safety culture on national level, as in Germany. There is no awareness of the importance of disaster risk reduction on the national level; therefore, the subject was not included in the curriculum. Deficiency of safety culture on individual level can also impede the teaching process. For example in Romania some teachers tend to neglect risk-related subjects in favour of other subjects, which they consider more important.

Other hindrances can have political roots, such as the change of the government (Czech Republic) or difficulties of coordination at national or local level (Croatia, France).

3. RISK-RELATED CURRICULA IN EUROPEAN COUNTRIES

The curricula review conducted within the project revealed that risk-related topics are most frequently found as infusions in the specific school subjects. Even if these themes are approached at a certain grade level, horizontal synergies between subjects are not usually achieved. Vertical reinforcement of risk-related learning is also exceptionally achieved, e.g. the case of France (BRI & GRIPS, 2007).

Risk-related themes and issues are usually found at the primary level in Natural Science subject matter (emergency, safety-related and health-bringing life skills, human impact on nature, and environmental impact of disasters) and Social Science (humans and nature, sustainable development). At the secondary level, risk-related themes and issues are found in Geography (hazards and their cause and effects), Civic Education (active participation for a safe environment) and Natural Sciences (ecosystems, environment and health).

The European curricula employ a wide range of interactive methods: role-playing, case studies, excursions, interactive presentations, mini-lectures, learning by doing, discussions, brainstorming, critical thinking (the Socratic method).

Integrated approaches, i.e. whole school approach to safety is recommended, such as the case of Källby Gård - A Safe School in **Sweden**, which includes formal risk-reduction education and safety measures, provides a logical and comprehensive scope and sequence to the large amount of information that children receive and it is consistent in assuring the education. Involving pupils in hazard spotting and decision-making gives them ownership and develops the necessary skills to cope with a dangerous event.

The risk reduction skills intended for primary and secondary school children are related to everyday life risks, natural risks and health risks. In most European countries, the everyday life risks are addressed and developed first, starting with road safety, household risks, and accident risks.

In **Belgium**, common base skills regarding safety, the perception and control of risk are not integrated in the primary or secondary schools programmes, but teachers (in partnership with the Red Cross, Police force, firemen, Civil Protection and other organisations in the health and hygiene fields) are free to insert information on safety prevention in their lessons (French Red Cross, 2010). Belgium is among the countries that did not submit a report on the HFA

priority for action 3, core indicator 3.2 (*School curricula, education material and relevant trainings include disaster risk reduction and recovery concepts and practices*). However, Belgium is involved in international actions regarding risk reduction and capacity building of communities, as well as in enhancement of children and their families' resilience to disaster risks in third world countries by numerous UNICEF projects and initiatives (de Bassompierre, 2015).

In **Bulgaria**, the Disaster Protection Act stipulates the training and education for both authorities and response teams, as well as for the population. The Ministry of Emergency Situations, together with the Ministry of Education and Sciences, are responsible for and take measures to facilitate training in the field of civil protection at all levels of the national education system, with a major focus on secondary and higher schools (UNISDR & Word Bank, 2008). Risk prevention education in elementary and secondary schools is stipulated in Article 16(1) of the Law on Disaster Preparedness, which states that risk prevention and first aid education is to be conducted in schools and universities. In elementary school this education includes basic knowledge about risks and behaviour to adopt during disasters, whereas in secondary school the training deals with defence skills according to the education profile and the specialty of education.

In terms of competencies achieved, the Bulgarian educational framework stipulates that by the end of the elementary school the students need to have acquired knowledge on life protection and how to react in critical situations, knowledge on road safety, knowledge on what course of action to take and whom to contact in the case of life and health threatening situations (disasters, incidents). This education is carried out in several forms: class system (in a special weekly period dedicated to the class), after class and extracurricular activities. Disaster risk reduction education in schools is delivered according to the 2002 regulations of by the Minister of Education and Science, which provides training extending over 5 academic hours annually. This also includes two all-school drills for the implementation of the school disaster protection plan (CEI, 2015).

In **Croatia,** the National Curriculum Framework includes, to a great extent, topics on disaster risk reduction, such as: mitigation measures of the adverse impact of natural disasters and threats, in order to create a safe environment; prevention or elimination of damage caused by natural disasters by means of technology; responsible ways to act in order to reduce disaster risk. The Croatian curriculum pays particular attention to the subject of safety and how to act

in the event of a calamity or a disaster. Yet, although institutional commitment has been attained, achievements are not comprehensive and substantial (HFA National Progress Reports, 2015).

In **Cyprus**, the primary and secondary school children are taught safety and health practices through the Health Education or the Environmental Education Program. Programs are implemented by the Ministry to raise pupils' awareness on health issues and to develop positive attitudes towards the environment and its sustainable development. The Office of Civil Defence, Health and Safety ensures by its officers, the safe and healthy environment for all the participants in the Cyprus Educational System, including the pupils who attend public schools. At the same time, they are involved in actions in case of an emergency in a school (Cyprus Ministry of Education and Culture, 2014).

Czech Republic has risk-related school curricula in the primary and secondary levels. According to the Framework Educational Programme for Basic (i.e. Primary and Lower Secondary) Education with amendments as of 1st September 2007, the risk-related topics are taught throughout the curricula in several educational areas: Natural Sciences, Geography, Health Education, doubled by the cross-curricular subjects such as Personal and Social Education, Humans and their World and Environmental Education. The Environmental Education subjects are directed towards sustainable development and acknowledging the importance of taking responsibility for the actions of society and of each individual. The educational area Humans and Health addresses the issue of the environment's influence on personal health and on others' health (Research Institute of Education, 2007). Among the skills that children acquire throughout these educational areas we mention: observation of basic safety rules prescribing working and coming into contact with animate and inanimate nature; proper assessment of geographic objects, phenomena and processes in the landscape, their specific regularities, laws and dissimilarities, mutual contexts and conditionality; comparison of the actions of internal and external natural processes and their influence on nature and human society. In the *Geographical Fieldwork, Practice and Application* activities, children are taught to evaluate natural phenomena and indicators, with the outcome of addressing human safety in case of threats to life and health – natural disasters; measures and conduct during natural disasters using example situations. In the *Health Education* area of teaching, the children receive information on how to behave responsibly during situations which threaten their health and personal safety and during emergency situations and, if necessary, to provide appropriate first aid. This educational area also includes the subject of

Health Risks and Their Avoidance, where children are taught safe conduct (conduct in high-risk environments and conflict and crisis situations), observation of the safety and health protection rules (safe school environment, health protection during various activities, traffic safety, and knowledge of traffic rules) and personal safety in extraordinary situations (natural disasters).

The **Denmark** health and road safety education is a compulsory part of the primary and secondary school curricula. These are not separate subjects with a centrally allocated teaching time. The Danish Ministry of Education sets the overall aims and expected outcomes of health and safe traffic education, while schools have the autonomy to decide when and how to introduce these topics into the classroom. Health-related topics are covered by the compulsory subject of *"Health, sexuality and family life education"* and can be introduced into home economics, science or physical activities (Simovska et al., 2015). Children learn to promote health and well-being in their private life (third grade - age 8-10), at school (fourth to sixth grade - age 9-13) and to promote health and well-being based on democracy and rights (seventh grade - age 12-14). In this sense, health education has taken a socio-ecological approach (Simovska et al., 2015). Road safety education has two teaching aims: children have to learn appropriate traffic behaviour and accident handling. In the former, children are taught how to move safely in traffic and what are their responsibilities in traffic. In accident handling, children learn at first to help in case someone is injured in their immediate surrounding (third grade - age 8-10) and later on they learn life-saving first aid techniques (sixth and seventh grade - 9-14). Disaster risk is not stipulated in any direct way in the national school curricula. However, beginning with the fourth grade, when children start to understand the world around them they learn about natural disasters and weather conditions in an interdisciplinary manner. For example, according to the local curriculum for Nature/Technology studies from Taarbeck (**Annex 1**), in the fourth grade children develop skills to exemplify how mass-media disseminates knowledge about nature, weather and natural disasters. In the sixth grade, they acquire skills to explain how natural disasters occur and affect plants, animals and living conditions.

The **Estonian** curricula aims at developing pupils' skills regarding health and safety, developing their ability of following healthful lifestyles, act in a safe manner and take part in developing a health promoting environment. Among the general competencies aimed by the Estonian educational system, we mention "self-management competence – the ability to understand and evaluate oneself, one's weaknesses and strengths; to analyse one's behaviour

in different situations; to behave safely and adhere to healthful lifestyles" (Republic of Estonia Ministry of Education and Research, 2014). The Subject Field Natural Science includes the cross curricular topic "Health and Safety". All science subjects promote skills and competencies associated with aspects of safety not only for the individual, but for the society in general. Moreover, these skills and competencies are doubled by the values and morality skills, in order to develop in children values necessary for preservation of life and the living environment, according to Appendix 4 of the above mentioned regulation.

In **Finland**, the educational system enrols children in the pre-primary education at the age 6, and between the ages 7-16 there is a compulsory education – basic education. The basic compulsory educational system in Finland is the nine-year comprehensive school (age 7 to 13 - primary and age 13 to 16 - secondary school) (Finnish National Board of Education, 2004).

The national educational curriculum does not systematically include natural risks. Various types of hazards are addressed in primary and secondary school curriculum, but the focus is more on the generation mechanism of these hazards rather than on prevention and reduction measures. Considering the low prevalence of natural hazards in Finland, the current education does cover the needs. However, since Finnish families often travel to disaster-prone countries and considering that there have been more severe storms in Finland, the inclusion of more risk-related education materials to school curricula might be necessary (HFA National Progress Reports, 2015).

France is among the countries where risk education is stipulated by law. The Parliament has made the following issues mandatory: awareness training for school children, based on Section 5 of the Law of 13 August 2004 modernising civil security, which is part of the Education Code: "As part of their compulsory schooling, all pupils shall be informed about risk prevention and the tasks of the emergency services and shall be taught basic first aid" (Dauphin, 2007). In compliance with the legislation, over the last years the French school syllabus was improved to include road safety, major risk reduction education and teacher training. Consequently, the French primary and secondary education system is designed in such a manner that the students are taught and prepared to face a certain number of risks in order to adapt their behaviour to ensure their survival, as well as that of that of the communities they live in. This is clearly stated in the code of education: Article L. 312-13-1: "Each student through compulsory schooling is to be made aware of risk prevention, and the work of the emergency rescue services. He must also receive elementary first aid lessons"

(French Red Cross, 2010). During his compulsory schooling, the 6 to 12 year old students are taught about the following risks: everyday life risks, natural and technological major risks, as well as health risks. In the primary level, the awareness building on risk issues is not compulsory, but it becomes mandatory throughout the secondary school within Life and Earth Sciences, Geography and in the multidisciplinary theme of "security" ("sécurité"). In addition, French associations develop exemplary local actions in cooperation with schools, while firemen work together with the local authorities to set up school activities in this field.

In **Greece** risk related topics are included in the national educational curriculum (primary and secondary school curriculum). In the Teachers guide for Risks and Protection (for age 7-9) the children are familiarized with the basics of safety.

The General Secretariat for Civil Protection, following an official permission by the Ministry of Education, has started a programme of secondary school training by experts on self-protection guidelines against natural and technological disasters. Fire and earthquake drills are a regulatory requirement for primary and secondary schools nationwide. On this occasion, instructors both from public institutions and volunteer organizations are often invited to talk to students about disaster prevention and preparedness at the citizen and household level.

In **Hungary**, disaster management studies became part of the national core curricula long ago, but in 2012 the inclusion of risk-related subjects was intensified through the *Government Decree 110/2012 (VI. 4.) regarding the adoption, implementation and application of the national curriculum.* This change occurred after the implementation of a 3x3 Action Plan for the Preparedness of Children and Youth in the field of disaster management by the **Hungarian** National Directorate General for Disaster Management in 2011. The plan was designed to involve disaster management issues into all levels of education and integrate disaster management related topics into the core school curricula. As a result, the **Hungarian** National Directorate General for Disaster Management published in 2011 the national curriculum proposal from kindergarten to the eighth elementary school grade on disaster management knowledge (**Annex 2**). A lifelong learning approach is promoted through the curricula proposal, highlighting age-appropriate teaching objectives: children in the first and second grade (age 6 to 8) learn about safety threats in their immediate surrounding and the basics about fire and water safety and the main actors of the emergency services. In the third grade (age 8-9), the notion of natural disasters is also introduced and children learn to distinguish on a basic level between different national and international natural risks. In the

fourth grade (age 9-10), children learn about environmental pollution and technological disasters. At this point, the students will have a basic understanding about natural and technological risks, prevention measures in case of different types of emergency situations and they will know about the risk in their immediate surroundings. In the following years, disaster management teaching will focus on more detailed information such as the interpretation of Hungary's disaster maps (fifth grade - age 10-11), the mechanism of fire and electricity and the risk of explosion of dangerous substances (sixth grade - age 11-12), issues related to environmental protection (seventh grade - age 12-13) and the national structure of national disaster management bodies, the role of volunteering in civil protection (eighth grade - age 13-14). In the curricula proposal, teachers can also find indications on how to integrate risk-related subjects in classroom activities for different subjects such as social, environmental, art studies, and informatics or language classes. Furthermore, suggestions on how to integrate age-appropriate activities organized by the civil protection agencies are also emphasized in the proposal to support teachers in the teaching process of emergency management. Civil protection and disaster management agencies and fire brigades have a legal obligation to show their support risk education according to article 5 of the *Decree 44/2007. (XII. 29) of the Ministry of Education and Culture on the sectorial responsibilities of the Disaster Management and the Civil Defence*.

The educational system in **Ireland** is able to deliver a junior cycle education structured in such manner so that students acquire the necessary skills to take action to safeguard and promote their wellbeing and that of others, being able to assess and manage risk and understand the impact of risk-taking behaviour (Department of Education and Skills, 2012).

The school curriculum in Ireland includes aspects related to personal safety and natural environment in the following subjects:

- Social, environmental and scientific education
- Social, personal and health education.

Within the former subject, children’s abilities for environmental awareness and care are pursued, based on knowledge of natural environmental features in the locality and wider environments, weather phenomena and the setting of the Earth in space. The latter subject is intended to nurture the child’s respect and care for his or her body and an appropriate concern for safety (Government of Ireland, 1999).

The Social, environmental and scientific education curriculum (**Annex 3**) for both primary and secondary classes is directed towards skills development such as: questioning, observing, predicting, investigating and experimenting, estimating and measuring, applied within strands like *Energy and forces*, *Materials*, *Environmental awareness and care*. In the strand unit *Myself*, the child is taught to use all the senses to become aware of and explore environments. In the strand unit *Heat*, the child is enabled to become aware of different sources of heat energy, while in the strand unit *Magnetism and electricity* the child is enabled to become aware of the uses of electricity in school and at home, to identify some household appliances that use electricity and to become aware of the dangers of electricity.

The Social, personal and health education curriculum (**Annex 4**) includes a special strand unit *Safety and protection*. In this strand unit, the child is enabled to explore appropriate safety strategies such as knowing how and when to seek help, identify situations and places that are safe and those where personal safety might be at risk, realise and understand that rules are necessary in order to protect people and keep them safe, explore how accidents might be prevented at home, in school, on the farm, or in the water (items in the home or school environment that are unsafe to play with).

In **Italy** risk education is not included in the school curricula. National guidelines for the formation of curricula are provided, but no mention of 'risk' is included. Therefore, the initiative of risk education activities to natural hazards is left to individual schools. In the region Friuli Venezia Giulia, the first article of regional law no. 64 of 1986 encourages the promotion of education of citizens for the creation of a diffused awareness and responsibility in civil protection matters. The national civil protection offers activities of risk education that schools can chose to integrate in their curricula. These are undertaken by volunteers of local units of civil protection (Komac, 2010).

In January 2005, the Ministry of Education published directives on secondary school reform. One of the changes was the suppression of a traditional subject – Earth Science – which included Astronomy, Geology and Physical Geography. The reason for this change was that school was only partially dealing with pure environmental themes, while primary and middle school teachers covered marginally subject matters like Geography and Natural Science with only brief sections regarding the human-environment relationship (Varaldo, 2006).

The UN ISDR reports several good practices: the 2006–2007 international risk reduction campaign *Disaster Risk Reduction Begins at School* has raised awareness of the importance of

the educational agenda across certain countries like Italy. Education also has an important impact on shaping the social capacity for natural hazards.

A study published in 2015 revealed that in Italian schools, the earthquake preparedness to reduce non-structural hazards was low. This study also concluded that most of the schools (70 %) carried out drills at least once a year, and they appear to have emergency plans in case of disasters (Bernhardsdottir et al., 2015).

Education in **Latvia** is free and compulsory until the age of 15 or through the completion of primary school. In Latvia the term for ISCED 1 and 2 levels is *pamatizglītība* ("basic education" or integrated primary and lower-secondary education, from 7 years old to 16). This is compulsory. Basic education is part of general education (*vispārējā izglītība*) which is implemented at the following levels: 1) pre-school education; 2) basic education; 3) secondary education.

The National Centre for Education is responsible for a comprehensive curriculum reform for 5-11 year old pupils. The reform promotes pupil-centered teaching, reading literacy and skills for working with information. Regulations regarding basic education standards and subjects of basic education curriculum are presented in **Annex 5**.

Primary Education includes the following fields of education, where some aspects regarding risks are presented: natural sciences, technology and science basics, man and society.

The pupils from Latvia study Natural Sciences (standard subject) in the 1 to 6th grade (age 7-13) as follows: in the 1st and 2nd grade – 1 hour / week; in the 3rd grade – 2 hours/week; in the 4th and 5th grade 1 hour / week; and in the 6th grade 2 hours/week). They learn about the following subjects related to risks: information on the possible injury or poisoning agents (poisonous substances, corrosive substances, asphyxiating substances, venomous plants, poisonous mushrooms, animals, energy, noise, radiation) and how to avoid risk situations; to assess risk situations and take appropriate action in the event of emergencies. They also learn about the household risk situations, how to comply with safety regulations and how to call first aid in case of accidents (Grade 3), if necessary, provide first aid (for example, in case of fire, corrosive substance to skin) (Ministers' Cabinet, 2014).

In **Lithuania** the risk-related topics in primary and secondary school are covered by the General Programme on Human Safety, approved in 2012 by the Order No. V-1159 of the Ministry of Education and Science of the Republic of Lithuania. The programme is aimed to

strengthen the national safety culture advocating the values of responsible behaviour and of self-protection and the protection of others among students. The Order No. V-1159 is translated in a set of age-appropriate learning objectives (**Annex 6**). Primary and secondary *Human Safety Education* should provide children, along with first-aid and road safety skills, also with the following special competencies: understanding the importance of human security and safe conduct principles, developing a strong sense of self protection, psychologically preparing to behave properly in dangerous situations and being able to identify, assess, avoid and mitigate the most important risk in everyday life. The topics introduced by the General Programme on Human Safety can be discussed during subjects like Moral Education, Language - Teaching, Mathematics, Science Education, Social Sciences, Arts, Information Technology, Technology or Physical Education. During the *Human Safety Programme* children develop skills in the following five areas (**Annex 7**): psychological preparedness for threats and hazards, safe behaviour at home and outdoors, safe behaviour in traffic, safe behaviour during emergency situations and first aid. Children in primary school learn about safety in different environments, like home or outdoor safety, or different aspects of safety, like electrical safety, fire safety, road safety and safety around animals, and basic first aid measures they can take. Children also learn to ask for help in dangerous situations and to make an emergency call. Furthermore, effects of natural disasters on human life are also taught to the children and they are made familiar with basic safety measures in case of severe weather conditions and floods.

In secondary school children learn to take responsibility for their actions, their own safety, to control their possibly harmful emotions and to take effective security measures during their daily activities. More complex safety issues are covered during secondary education, like household chemical safety, numerous evacuation techniques, the health impacts of air, water and soil pollution and solar radiation and so on. Beside natural disasters, children also learn about technological disasters and the socio-economical component of such events. They learn not just how to behave to protect themselves, but also how to protect others and how to reduce the effect of such disasters. Children will be able to perform more complex first-aid measures and they will be able to recognise also acute illnesses and seizures. Health-related topics in primary and secondary education are covered separately through the *Health Educational Programme*. The programme aims to contribute to students' spiritual, physical, mental and social capacity and well-being.

In **Luxembourg,** the curricula drew up by the Ministry of Education makes some reference to health and safety. Health and wellness features represent one of the five educational topics proposed on the official site of the Ministry of Education, promoting the physical and mental health of children. Road safety is also a compulsory topic within health education in primary and secondary school (European Commission, 2015). Safety issues are not explicitly mentioned in most of the school subjects (European Agency for Safety and Health at Work, 2009). Standardised life skills education, which help children make informed decisions, communicate effectively, and develop coping and self-management skills are taught in school. However, injury prevention education is ranked as fair in the performance grade scale and first-aid education is rather poor in Luxembourg (MacKay and Vincenten, 2012).

In **Malta** general learning outcomes in Primary and Secondary educational cycles are specified in the National Curriculum Framework. Each school has the autonomy to design its own curricula as long as the learning outcomes indicated in the National Curriculum Framework are reached. Risk-related learning objectives in primary school are stipulated in the Health and Safety module, which is a part of the Personal & Social Development subject (**Annex 8**). Learning aims according to the curriculum of the subject is to develop children's necessary skills to keep themselves safe and free from danger with a significant emphasis on safety at home, in the street and playgrounds. The subject *Personal & Social Development* is included also in secondary education. Risk-related modules are *Personal safety and me*, where children develop skills to identify and mitigate dangers at first in their immediate environment and later at the workplace. They are also taught self-protection skills, like how to provide basic first aid, what should a first-aid kit contain and how to make an emergency call (European Agency for Safety and Health at Work, 2009). In the secondary educational cycle, children also learn about natural disasters. In the eighth year, students learn during *Geography* class about volcanoes. They become aware of the risk of living in a volcanic area and participate in an earthquake drill (**Annex 9**). In the ninth year, children learn about different types of floods, their causes, effects and responses to it at a local and global level (**Annex 10**). Topics regarding environmental pollution and their effects on human health are also covered during the secondary educational cycle in the subject *Integrated Science* (**Annex 11**).

In **the Netherlands** the Ministry of Education sets the goals for education. How to reach them is part of a long-term process in the educational system with a lot of supporting guidelines and tools. One of these tools is the supportive website *School en Veiligheid (School and Safety)*. Specialized material is used to deal with 'self-help in emergencies'. Since 2013 there is at

National level an Academy for Crisis Management (DRR) that fulfills a standardizing and educational role. Additional related documents and links - School and Safety (Dutch) - Basic vision on selfhelp in emergency situations (Dutch) - National Academy Crisis Management (Dutch) (HFA National Progress Reports, 2015).

The education system in the Netherlands is decentralised. Between the ages of 4 to 12 (*elementary education*), children attend elementary school (basisschool; literally, "basic school"). This school has eight grades, called groep 1 (group 1) through groep 8. School attendance is not mandatory until group 2 (at age five). Around the age of 12, pupils opt for one of three types of secondary education. Primary education is regulated by the Primary Education Act (WPO) (UNISDR, 2016b).

In December 2011 it was decided to appoint the National Steering Committee for National Safety and Security ("Stuurgroep Nationale Veiligheid", SNV) as National Platform for Disaster Risk Reduction (NL NPDRR) and its secretariat as National Focal Point for the Hyogo Framework for Action (NL FPHFA).

According to **Poland**'s National progress report on the implementation of the Hyogo Framework for Action (2013-2015), DRR is included in the national educational curriculum in primary school curriculum (age 7-13). Over the period 2009-2012 a new curricula was introduced. Education in primary school is based on the core curriculum which defines the learning outcomes and some general requirements for the organization of teaching at this level of education.

Core curricula have to be followed by each school, but school curricula are determined at the school level. Stage II of the 6-year primary school covers grades 4, 5 and 6. According to the new Core Curriculum of 2009 the following subjects (related to risks) are mandatory: *History and civics* (130 hours), *Natural science* (290 hours) at the Stage II of primary education (Polish EURYDICE Unit, 2012).

Despite the not comprehensive and unsubstantial achievements, good examples of activities within the area of education already exist due to Institute of Meteorology and Water Management National Research Institute, local and regional self-governments. Research programmes for risk reduction and mitigation are conducted also by the Main School of Fire Service.

A research conducted on school curriculum concluded that some of the significant issues are duplicated and some are left out of the syllabuses due to the vagueness of curricula. The fact that one term is added to the curricula, namely natural disasters, implies its inclusion in study programmes and afterwards its occurrence in the textbooks and atlases with a different level of detail. Due to the fact that the curriculum is formulated in a general manner, the texts in textbooks are selected very freely, and still the gaps are not eliminated. Information on dangerous natural events is presented very differently in nearly each of the many textbooks containing such information (Rucińska, 2011).

In **Portugal**, risk-related education is conducted with the support of the National Authority for Civil Protection (ANPC). According to its declared level of progress in HFA, Portugal's risk reduction education begins only with the secondary school level. In 2010 the Portuguese National Platform for Disaster Reduction was established, being composed of delegates of the Ministries responsible for the related areas (Environment, Defence, Education, Scientific Research, Social Security, Health and others), representatives of municipalities, main authorities, agencies and organizations. Among the main target activities of this Platform the following are related to: improving non-university curricula in the field of DDR; promoting training of teachers in the area of civil protection, accrediting these actions along with the Ministry of Education; preparing manuals to support training (UNISDR, 2016a). In Portugal there are also local initiatives to build the resilience of urban residents, such as the Campaign "Making Cities Resilient" which is implemented in four main cities of Portugal: Lisbon, Amadora, Cascais and Funchal. The main risks covered by this campaign were alluvions, flash floods, landslides and forest fire (ANPC, 2015).

Ministry of Internal Administration and the National Authority for Civil Protection provide educational materials for children for the following risks: floods, earthquakes, fires in schools, fires in the forest, and fires in the house (**Annex 12**). For children in the 1st to 4th grade, the curricula provides also other educational materials in multimedia format such as the video entitled "Quando a terra tremer...", designed for children from 5 to 10 years, primary school mainly (https://www.youtube.com/watch?v=osHnrb-dSvY).

The future challenges for Portugal would be to have risk information included in all education levels. At national level, more than 250 of civil protection clubs for children aged 6 to 10 have been implemented so far in schools and exercises are mandatory every year. However,

responsible authorities intend to largely increase the number of risk awareness activities for the students.

In **Slovakia**, risk-related education is not included in the national educational curriculum at primary school and secondary school level. It is included only in the university curriculum. Slovakia does not have professional risk reduction education programmes. They make public education campaigns for enhanced awareness on disaster risk management (preparedness and emergency response), and prevention risk management (HFA National Progress Reports, 2015).

In **Slovenia**, protection against natural and other disasters is a non-mandatory subject that was introduced in the regular elementary school curricula in the autumn of 2010 in 67 schools (primary school –age 6-15 and secondary school age 15-19). The subject provides knowledge on how to identify and mitigate threats, in particular those involving the environment. Additionally, kindergartens and elementary schools organize yearly educational activities with fire-fighting units that include evacuation drills.

Every year, the Administration of the Republic of Slovenia for Civil Protection and Disaster Relief (ACPDR) organizes training courses for teachers. Additionally, an e-classroom is established for teachers, in which they could find seminar material, a proposal for the annual preparation of the course syllabus, and other useful learning material. A Methodical Teachers' Handbook in the form of an e-book was prepared, together with different educational materials which are introduced also in secondary schools (**Annex 13**).

In 2004, the Ministry of Education and Sports with the help of other institutions (Fire-Fighting Association of Slovenia and the education sector and Training Administration of the Republic of Slovenia for Civil Protection and Rescue) started the preparations to introduce in the curriculum topics related to risks. These institutions agreed to prepare a joint curriculum for the elective course, which will include protection against natural and other disasters with an emphasis on the functioning of firefighters. In the year 2009 the syllabus "Selection object of protection against natural and other disasters in primary schools" was adopted. At the end of 2009 the curriculum (**Annex 14**) was reviewed by Ministry of Education and Sport and at the beginning of 2010 it was included in the list of social and human sciences (Andrejek, 2010).

In the school year 2010/2011, the elective entitled *"Protection against Natural and Other Disasters"* was introduced in primary schools. It is taught for one school year in the 7th, 8th or 9th grade. The content of this subject encourages pupils to adopt a proactive approach towards the environment, natural and other disasters, other people in need of help, and voluntary work.

In **Spain**, the primary and secondary school curriculum includes contents related to security, civil protection and the development of responsible attitudes towards the environment. The Ministry of Education has also promoted the inclusion of a subject that brings together content associated with different risks preparedness, self-protection and emergencies, including first aid training practice.

Primary education in Spain (grades I - VI) is mandatory and free. It consists of three cycles of two years each: Classes I and II of primary education age 6 to 8; Classes III and IV of primary education age 8 to 10; and Classes V and VI of primary education age 10 to 12.

Knowledge of the natural and social environment is a subject that treats issues related to risks. *Primary education curricula* incorporate curricular elements related to sustainable development and the environment, the risks of exploitation and sexual abuse, situations of risk arising from the use of Technologies Information and Communication, as well as protection against emergencies and disasters (**Annex 15**) (Real Decreto 126/2014).

In **Sweden**, children aged 6-11 and 9-13 are taught about accidents related especially to everyday life risks, fires, sports accidents, alerting the emergency teams, etc. It is the task of the Swedish Civil Contingencies Agency (MSB) to provide training for crisis/ emergency/ disaster preparedness and in this regard MSB publishes and disseminates educational materials about accidents for children between the ages of 6-11 (**Annex 16, Annex 17**). Information about natural disasters such as floods is available only to children between the ages of 12-19. As support to teachers there is a teacher's manual for all the educational materials. This manual contains suggestions for discussions, group work and other activities (HFA National Progress Reports, 2015). Although Sweden does not have a special disaster risk reduction curricula, comprehensive and integrated activities are carried out in particular schools, focusing on eight risk areas: 1. ventilation; 2. lights; 3. heat/cold; 4. school design; 5. details of work environment; 6. play-ground; 7. atmosphere/social relationships; and 8. other issues, including fire protection, and allergies. Such school is Källby Gård, which was the first school in the world to be awarded in 2003 the title of Safe and Secure School, according to the criteria set by the World Health Organisation.

In the **UK**, safety related learning objectives are placed in science, design and technology, information and communication technology, art and design, and physical education. The pupils are taught procedures for assessing and controlling risks to themselves and others, and they are given and explained simple and concise definitions of hazard, risk, risk control, and risk assessment.

The first 3 Key stages of the UK educational system overlap the target group of our project: key stage 1 (age 5-7), key stage 2 (age 7-11) and key stage 3 (age 11-14). In the *Geography* subject matter, in the first 2 stages pupils acquire general geographical knowledge, while in the third stage, they are taught to develop this knowledge into more complex approaches and concepts and geographical skills in analysing and interpreting different data sources, in order for them to enrich their spatial and environmental understanding. In the *Science* subject matter pupils develop scientific knowledge and conceptual understanding by means of specific disciplines (Biology, Chemistry and Physics). They also develop understanding of the nature, processes and methods of science through different types of analyses that help them answer scientific questions about the world around them (Department of Education, 2014).

Personal, Social, Health and Economic (PSHE) education is an important part of the national education in UK. The aim of this curriculum subject is to make sure that pupils acquire the appropriate understanding of risk, the knowledge and the skills necessary to make safe and informed decisions. Although this is mainly focused on other types of risks the pupils might be subjected to (drugs, abuse, etc.), it also includes aspects related to personal safety and healthy lifestyle.

4. RISK-RELATED CURRICULA IN PARTNER COUNTRIES

4.1. Austria (Republic of Austria)

The Austrian Educational System

Legal framework

In **Austria** the Federal Ministry of Education and Women's Affairs is responsible for the school system. The ministry has the overall legislative and implementation responsibility for primary and secondary education (OECD, 2015). The legal framework for the Austrian school system consists in the School Organisation Act (Schulorganisationsgesetz) and the School Education Act (Schulunterrichtsgesetz) (IBE, 2011). Curricular arrangements for different school types are a subject of the former Act. According to section 6 of the School Organisation Act, the curricula should consist of the general educational goals, didactic principles and teaching task for individual subjects, subject matter, the division of subject matter into individual school levels, overall number of teaching units and the extent of school autonomy regarding curricular regulations. The teaching material, used by teachers to achieve the general educational goals for each subject matter, is regulated in section 14 of the School Education Act - teachers can decide autonomously what kind of teaching methods and materials they want to use, as long as those comply with the curriculum.

Compulsory education

In **Austria** compulsory education lasts nine years. Children are required to attend primary school (*Volkschule*) from the first day of September following their sixth birthday. Primary education lasts four years and its main objective is to provide children with a basic and well-balanced general education which fosters their social, emotional, intellectual and physical skills and abilities. Compulsory subject matters are: German language, reading, writing, mathematics, music, drawing, crafts and textiles, movement and sport, general science and religious instruction. Furthermore, compulsory practical exercises consist in modern foreign language and road safety. After the children promote primary education, they can choose between two types of secondary education, both covering a period of four years: new secondary schools (*NMS*) or the lower cycle of the academic secondary school (*AHS - Lower Level*). The New Secondary School curriculum combines quality that is found in the

Academic Secondary School Lower Level with a new learning and teaching culture, focusing on the potential and the talents of the children. Lower cycle of secondary academic schools have the opportunity to introduce their own modified curricula. By doing so, schools may specify in certain areas such as modern foreign languages, sports, fine arts, science and technology, ecology or computer science. Compulsory subjects for secondary education are German, Foreign Language, History and Social Studies, History and Political Studies, Geography and Economics, Mathematics, Biology and Environmental Education, Chemistry, Physics, Music, Drawing, Technological work/textile work, Nutrition and home Economics, Physical Education and Sport, nutrition and household and religious instruction.

Risk-related topics in the Austrian education

Risk-related topics in the Austrian education are taught using an integrative approach. For example, teachers can choose the teaching materials on risk-reduction to meet the learning objectives regarding the compulsory subject German. Some safety aspects however are present as learning objectives indicated by the curriculum of compulsory subjects.

Risk-related topics in primary school curricula

Children at primary school develop basic self-protection and first aid skills during the compulsory subject *Movement and sport.* Children learn to recognise and mitigate risk in everyday life and to behave properly in an emergency situation. At the 1st level of primary education (grade 1 and 2 - years 6 to 8) children learn to recognise the possible risk factors of everyday life. At the 2nd level (grade 3 and 4 - years 8 to 10) they also learn to take mitigation measure to reduce risk in everyday life, to act correctly in case of an emergency situation and to be able to perform age appropriate basic first aid.

Safety-related topics are present also in the curricula for general science. Children have to learn about the bodies of public order and security and correct behaviour in an emergency situation (to make an emergency call, apply basic first aid for lifesaving and to secure a danger zone).

Another compulsory safety aspect in primary school is road safety (**Annex 18**). General road safety including road rules is taught at level 1. In the third grade children learn about the correct behaviour on public transportation and about the bicycle safety. In the fourth grade

children can already take responsibility for younger children in traffic and they can safely apply cycling safety on the public roads. They also learn about environment and health considerations in traffic.

Risk-related topics in primary school teaching materials

The Federal Fire-Brigade Federation also prepared teaching materials for level 2 of primary school on the subject fire safety and emergency management. The material consists of an informational booklet for teachers (**Annex 19**). The booklet helps teachers integrate fire safety and disaster management in their teaching. Teaching objectives and methods are feathered to strengthen the children's safety culture. Children will learn about these topics in an interactive, game-based mode, developing not only risk-related skills, but also secondary skills such as social, reading, writing and speaking skills, which are compulsory skills according to the school curricula promoted by the Federal Ministry of Education and Women's Affairs. An exercise book for school children was also developed (**Annex 20**). The protagonists of the exercise book are Flori and Anne, two children who are volunteers at the fire services and will accompany the children through their learning process. The exercise book contains comics, experiments and puzzles. Four topics are featured in the book: *fire prevention, what to do during fire, everyday risk and disasters* and *fire-fighters for us.* Fire prevention covers topics like: the properties of fire, how to follow fire safety rules in different everyday life situations (i.e. at a birthday party) and fire safety rules at school and at home. *What to do during fire* covers the appropriate behaviour during fire, the role of smoke detectors and the correct way to behave to avoid smoke intoxication, possible methods to extinguish a fire, how to make an emergency call, emergency exits route at the school, emergency exit signs. The *everyday risk and disasters* subjects like the mission of the fire fighters, dangerous material, personal safety, and safety during severe weather conditions (storm, thunderstorm, flood, snow pressure and avalanche) are dealt with. *Fire-fighters for us* teaches children about the equipment used by the fire fighters, the importance of volunteering, the meaning of the logo and the patron of the Federal Fire-Brigade Federation. Comments on these topics and the correct answers to all the puzzles can be found in the teacher's booklet. The possible subject during which fire safety and disaster management education can be implemented is that of general science (due to the fact that some of the topics coincide with the learning objectives set by the curriculum for general science) or during German (because many of the exercises and puzzle require reading or writing, thereby promoting learning objectives indicated by the curriculum for German).

National school competition to learn about disaster risk reduction

Safety-Tour is a primary school competition, organised country-wide since 2010 by the Austrian Civil Protection Association on a yearly basis, where children can test their safety knowledge. The competition has three phases (selection phase, state phase and national phase) and children have to put their skills to the test at different exercises (cycling, fire extinguishing and other interactive puzzles). They can prepare themselves for the competition using the material made available at the official website of the competition (http://www.safety-tour.at). Online games are also available on the site. Additional topics present on the site are safety at home, safety outside and internet safety. Information on emergency numbers and emergency exercises are also provided for the children.

Risk-related topics in secondary school curricula

Civil protection is a topic covered by three subjects during secondary school: chemistry, physics and nutrition and household. *In chemistry classes* the educational aim is to promote health education, the civil defence concept and the safety-conscious behaviour leading to a responsible free time and consumer behaviour. During *physics classes* children learn about education, civil defence, radiation protection and other safety-related topics based on their own scientific and technical knowledge, making them conscious of the complexity of environmental and safety concepts. Civil protection measures in the household are taught *during nutrition and household classes*. Topics regarding natural disasters are covered during geography and economics classes.

Risk-related topics in secondary school teaching materials

Educational materials prepared by the Austrian Federal Fire-Brigade Federation are also available for second school. In second school subjects such as German, English, Chemistry, Physics, History and Social Studies, History and Political Studies, Geography and Economics are appropriate subjects to incorporate safety-related topics. The Austrian Federal Fire-Brigade Federation published six exercise sheets for children, each projected to different subjects. The first one is a general exercise sheet on fire safety and general notions of emergency management (**Annex 21**). With the worksheet for German classes teachers can enhances children's communication skills while teaching them about the particularities of a fire brigade emergency response (**Annex 22**). Using the worksheet for English classes, teachers encourage the children to play the role of a news reporter and cover stories of a

natural disaster using correctly the passive tense (**Annex 23**). Using the worksheet for Chemistry and Physics, children learn about different alarm systems and how these function, about fire extinguishing technologies, about smoke detectors and their operation, about the Globally Harmonised System of Classification, Labelling and Packaging of Chemicals and the correct behaviour when seeing one of the labels and about the properties of gasses (**Annex 24**). The history of firefighting services can be covered using the worksheet for history and social studies/political studies (**Annex 25**). Natural disasters are discussed during Geography and Economics classes with the help of the corresponding worksheet. Children are encouraged to learn about mitigation techniques to reduce the impact of natural disasters (**Annex 26**).

Conclusively, topics regarding disaster risk reduction have no separate curriculum in Austria, but the topics are included in several subjects' curricular arrangements. Teachers have at their disposal a number of interactive, age appropriate and engaging teaching material to introduce safety-related topics into their classroom activities. Besides classroom teaching, teachers can also collaborate with public institutions, who also involve themselves in school children's safety education. For example, the Austrian Federal Fire-Brigade Federation prepares for children interactive and age appropriate activities about fire safety and disaster management at their fire safety offices. Austrian Civil Protection Association takes also active part in school children's safety education.

4.2. Germany

The German Educational System

Legal framework

In **Germany**, each Land Ministries of Education, Cultural Affairs and Science is responsible for its educational legislation and administration according to the Constitution of the Federal Republic of Germany (Grundgesetz). Land Ministries of Education, Cultural Affairs and Science determine the curriculum, recommend teaching methods and approve textbooks in each of the 16 Länder. That means that in Germany there are 16 different school landscapes.

Compulsory education

In **Germany,** compulsory education lasts 9 to 10 years depending on the regulation of each Land. Children are admitted to primary school (Grundschule) from the age of 6 to the age of 10 or 12. The compulsory subjects in primary school are different in each Land, but there are also some common subjects present in each Land curriculum, such as German, foreign languages, mathematics and general science. Sport, art and music education are also present in some form. After finishing primary school children undergo the transition to secondary school. Secondary school consists of two levels: lower secondary level (children aged 10 to 15 or 16) and upper secondary level (aged 16 to 19). There are more forms of secondary level education: Gymnasium (schools providing more in-depth general education), Realschule (schools providing more extensive general education), Hauptschule (basic general education school) and Gesamtschule (comprehensive school). Children are admitted to these levels of education based on their performances and interest during primary school. The subject taught in secondary school also differs from one Land to another. Compulsory core subjects in lower secondary education in each Land are: German, Mathematics, one foreign language, Natural Sciences (Geography and History) and Social Sciences (Chemistry, Biology and Physics). Teachers in Germany have to comply with the instructions regarding didactic and methodological implementation offered by the curricula in each Land for each subject, but they can decide in many causes how to fill the content of the class as long as the learning objectives are met.

Risk-related topics in the German education

There is no separate curriculum for disaster risk reduction in the German primary and secondary educational system. However, safety related topics are covered in different subjects.

Risk-related topics in primary school curricula

Risk-related subjects are taught in general within general science classes. Topics and educational tools and methods can differ from one Land to another, but some aspects like fire safety, traffic safety and first aid are commonly included in primary school core curricula for general science.

Fire safety is covered in general during the module about *Nature, environment and man* (the name of this module can differ in the various Länder). The extent to which the topic is addressed depends on the curricular regulation in each Land. For example, in the Land of Berlin fire safety is introduced in the module for natural phenomena and some of the relevant topics are the characteristics of fire, safe use of candles, making an emergency call (first and second grade), possible extinguishing techniques, correct behaviour during fire (third and fourth grade). In some Länder a visit to the fire services is also planned according to the core curricula (for example in Berlin, Hessen, Brandenburg).

Traffic safety is introduced in the primary school core curriculum in general during the module on *Mobility*. The only land with a standalone curriculum for traffic safety is Berlin. However, educational goals set by the curriculum for *Traffic and mobility education* are considered within other classes, especially in general science. Minimum number of teaching hours for the subject is 10 hours in Berlin and children at the end of primary school will be able to behave correctly in the traffic in different situations (as a pedestrian, bicyclist and passenger of private and public transport), to know the traffic signs and to consider the impact of traffic on the environment.

First aid education is a compulsory topic in the core curricula for general science in many Länder. The age-appropriate educational objectives are different in the some of the Länder. For example, in Bremen children who promote the second grade should already be familiar with basic first aid techniques and how to call for help if someone is injured, while in Brandenburg the same learning objectives should be reached once children graduate the fourth grade.

Electrical safety is another safety topic present in the core curricula for general science in Schleswig-Holstein, Bavaria or North Rhine-Westphalia.

Some topics regarding natural hazards are also present in the core curricula for general science in a few Länder. Sever weather conditions are the most common natural hazard-related topics taught in primary school. For example, in Sachsen, primary school children learn about weather phenomena such as rain, storm and fog in the third and fourth grade. In Schleswig-Holstein primary school children learn also about floods and volcanic eruptions.

Risk-related topics in primary school teaching materials

In Germany there are various educational materials on safety-related subjects for primary schools. Due to the fact that interdisciplinary teaching and learning are strongly promoted in the German educational system, teachers can insert topics regarding self-protection and emergency situations in many subjects, beside general science. By doing so, primary school children develop subject appropriate secondary skills by learning about risk-related topics. This approach is also promoted by the Federal Office of Civil Protection and Disaster Assistance (BBK). BBK published worksheets and didactic comments regarding civil protection topics. The worksheets can be used during different subjects, such as German, General Science, Ethics, Mathematics or Art, in grades two to six, and the didactic comments support teachers in integrating and presenting the topics in the class. Each worksheet starts with a little story, featuring the protagonists Max and his dog Flocke, who accompany children in their learning process about civil protection-related topics. The short story introduces the main topic for each of the five teaching modules. It is followed by interactive game-based exercises design to develop children self-protection skills. For example, children who complete the worksheet on fire learn how to make a difference between the correct and incorrect behaviour during fire, learning to handle fire in a correct manner, to make an emergency call alone, to recognize the most important fire safety signs and to understand school policy regarding fire safety precautions (**Annex 27; Annex 28**). Beside the worksheets and didactic comments, BBK also published story books and an online computer game to offer children a more playful way of learning important self-protection skills, not just at school but also at home. The online game focuses on fire safety and some aspects of electrical safety while the story book contains six stories, each presenting a different aspect of self-protection. The stories are "*Max and Flocke detedt a fire*", "*Max and Flocke during an emergency*", "*Max and Flocke in a thunderstorm*", "*Max and Flocke are rescued in the*

mountains", "*Max and Flocke at the rescue dogs*" and "*Max and Flocke are thirsty*". All these materials are free of charge. There are also several other materials which can be implemented in primary school to teach risk-related topics. For example, in 2014, the National Fire-brigade Federation from Bavaria, together with the Versicherungskammer Bayern (an insurance group) and the Bavarian teachers association published an exercise book for primary school on fire safety. The protagonist of the exercise book *"Alles über Feuer und Rauch" (Everything about fire and smoke)* is a dragon and the document is composed from worksheets for children and methodological didactic comments for the teachers. These documents are subject to a charge. Worksheets on first-aid for primary school are also available through the German Red Cross. The aim of the workbook *"Kinder helfen Kinder" (Children help children)* is to encourage primary school children to help others in an emergency and to assess realistically their own first-aid skills. Topics covered in the worksheets are how to make an emergency call, how to treat small wounds, burns, head injuries, factures, poisoning and what to do if someone is unconscious.

Beside the use of worksheets during General Science classes teachers also conduct experiments to teach primary school children about fire safety (Schmidt, 2014). For example, on the website of the State Institute of School Education and Educational Research of Bavaria teachers can find age appropriate experiment ideas for the first and second grade (**Annex 29**) and for the third and fourth grade (**Annex 30**). In the first and second grade children test the combustion characteristics of different materials. In the third or fourth grade children experiment how a foam extinguisher works. Further experiments are proposed in a collection of worksheets, didactic materials and games called Feuerideen-Mobil (Fireidea-Mobil) published in North Rhine-Westphalia in 2003. The Feuerideen-Mobil is designed to inspire teachers to include fire-safety regarding topics into General Science, Language, Art, Music, Mathematics, Sport and Religion classes in a playful manner.

Implication of public services in risk education

A visit to a fire service is a compulsory objective of the curricula for General Science in many Lands. Teachers can also rely on the help of public institutions, who also engage themselves in school children safety education. For example, the fire service from Dortmund offers 3 teaching modules for school children. These modules have to be taught one after another, each of them adding some additional fire safety related knowledge. In module 1 children learn about theoretical concepts concerning fire-related risks, emergency calls and proper behaviour

during a fire. During module 2 children are helped to translate their previously acquired theoretical knowledge into practical skills by the means of exercises. The third module consists in a visit to the fire services to show children how function the fire services.

The topic of natural hazards in lower secondary school curricula in Germany

In Germany, topics regarding natural risks and natural hazards are discussed during Geography classes. In a recent study, authors Zecha and Trappe (2015) have carried out an in-depth quantitative and qualitative analysis of current Geography curricula for lower secondary education across the 16 Lands. They analysed a total of 60 curricula in their study and came to the conclusion that the inclusion of natural hazards differ from one Land to another. The topic is mainly introduced in the seventh or eighth grade, Sachsen Anhalt being the only Land where education on natural hazards is continuous, from the fifth grade to the eighth grade. The lessons are mainly focused on causes of risk, impact of hazards (Komac et al., 2010). Earthquake and volcanism are the most comprehensively treated natural hazards. Other hazards which may occur in different curricula across the Länder are tsunamis, typhoon, monsoon, flooding, tornado, hurricane, avalanche, storm and storm flood. The fact that some of the natural hazards which are specific to Germany have a low presence in the curricular arrangements for lower level secondary Geography education is alarming – as the authors, Zecha and Trappe, conclude.

The topic of natural hazards in lower secondary school teaching materials

As for teaching materials, teachers in Germany have different textbooks available for use. In a study from 2010, 10 German geography textbooks were examined for natural hazard-related content. The results of the research show that 4.72% of the total number of pages of these textbooks include information on natural hazards (Komac et al., 2010). Beside textbooks such as *Praxis Geographie*, Volume 36, Number 12 from 2006 on *"Naturgefahren" (Natural hazards)* or *Praxis Schule* 5–10, Volume 18 Number 1 from 2007 on *"Umwelt- und Naturkatastrophen" (Environmental and Natural Disasters)* teachers have other teaching materials at their disposal. For example, the German Committee for Disaster Reduction published in 2000 some teaching materials on volcanos (for upper secondary school children), tsunami and flood (for lover secondary school children). Both of the latter worksheets are based on case studies. The worksheet *"Unterrichtsreihe Entstehung, Wirkung von Tsunamis und Katastrophenvorsorge in Japan" (Teaching series on the genesis and effect of tsunamis and disaster prevention in Japan* – **Annex 31)** has four teaching units, each has defined

teaching goals and proposed teaching materials for the teachers as well as separate working papers for students. In the first unit children find out how tsunamis are generated and which regions of the world are the most vulnerable to tsunamis. The second module is focused on the mechanism of tsunamis while the third and fourth module address structural and non-structural mitigation measures to reduce tsunami risk. The worksheet on *"Hochwasser und Katastrophenvorsorge in Deutschland am Beispiel des Rheins" (Flood and disaster prevention in Germany - the example of Rhine River* – **Annex 32**) is based on a more nationally relevant case study from Germany. The topic is divided in two parts, the first part is about how flooding occurs and how do societies through their activities amplify the flood risk. In the second part children discuss structural and non-structural flood mitigation measures and also the economic impact of floods on their country. The German Committee for Disaster Reduction suggest the use of multimedia contents (short films on the subject) and internet-research for the learning modules for a more interactive and engaging learning experience. In this sense, they provide at the end of the worksheet on tsunamis a list of websites suitable for the topic.

In conclusion, the development of self-prevention skills of primary and secondary school children seems to be a priority in the German educational system. Risk-related subjects are included especially during General Science classes during the primary school, but due to an interdisciplinary teaching approach teachers can also integrate risk-related topics in other subjects as well. It can be observed also the abundance of teaching materials designed according to the learning objectives present in different curricular arrangements, in a manner that makes it easy for teachers to use them during their lessons. However, some of these materials are subject to a charge. As for lower secondary school, in the near past some research was conducted to assess natural hazard-related contents in the core curricula and textbooks for the subject Geography. This shows a general interest in disaster risk education at national level. However, there are still some shortcomings in education regarding natural risks and hazards – namely disaster risk specific for the country – as not widely discussed during Geography classes in many of the Lands.

4.3. Romania

The Romanian Educational System

Legal framework

In **Romania**, the educational system is governed by different types of laws, of which the most important are: the *Constitution* of Romania (passed in 1991) and the *organic law of education* (National Education Law no. 1/2011), the Act regarding the Statute of the Teaching Staff no. 128/1997 and Orders of the Minister of Education.

The 2011 National Education Law strengthens the legal and institutional framework that creates a coherent, transparent and flexible national framework and opens new perspectives for the development and recognition of this framework by all stakeholders.

Compulsory education

Education in Romania is free and compulsory for children aged 6-16, including one mandatory year of pre-primary education. Upper secondary education, which starts in grade 9, is composed of two consecutive two-year cycles. Upper secondary schools are operated and funded by central government, with municipalities contributing to some capital costs. Recent reforms mean that entry to vocational schools has been postponed by two years, as from 2012. Students can now choose to enter Vocational Education and Training (VET) schools at the age of 15-16 (grade 9), after two years in comprehensive general lower secondary education (Figure 3).

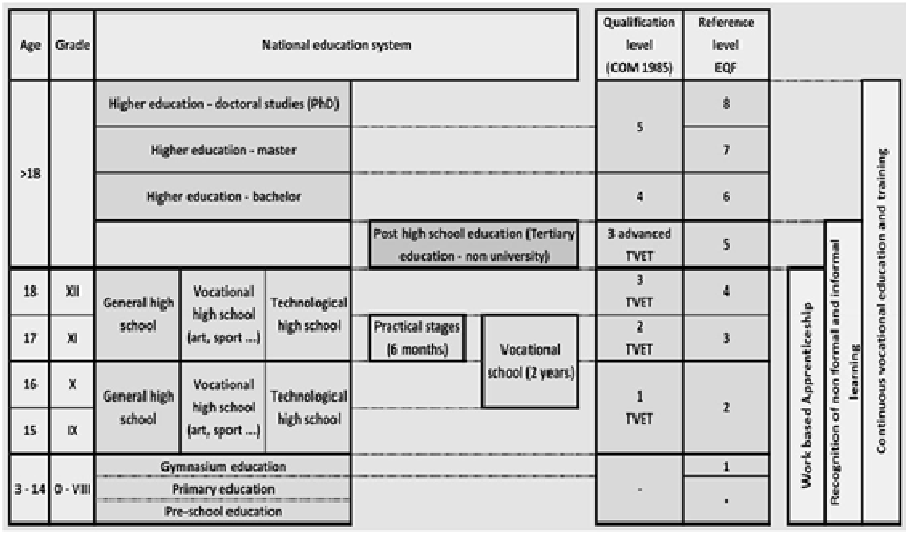

Figure 3. The Romanian Educational System (Source: NCDTVET Romania, 2013)

Hence, young people leave compulsory education at the age of 16 when the law allows them to be integrated in the work market. The secondary school structure give young people the opportunity to choose, within the compulsory frame, the vocational education – the art and trades school.

The learning of Romanian language, as the official language, is compulsory for all Romanian citizens, irrespective of their nationality. The frame-curricula shall ensure the necessary number of classes and conditions for mastering the official language. In Romania, like the majority of Europe, curriculum through eighth grade is considered to be general education, upon completion of which students choose a track or course of study to follow when they begin the ninth grade at the approximate age of 15. The track system acknowledges that nobody can study everything; that different students have different preferences, and that educational diversity is valued (ANPCDEFP, 2016).

Once a class is formed, it functions as a cohesive unit and remains together either through lower secondary (grades 5-8) or high school (grades 9-12). Both upper and lower secondary students study a broad curriculum usually including Romanian Language and Literature, History, Geography, Mathematics, Chemistry, Biology, Physics, Religion, Physical Education, Art or Music, and two foreign languages (most often English and French, although German, Russian, Italian and Romanian as a second language are also taught depending on the region). Each year the class collectively decides on one or two electives, usually an additional hour from one of the core subject areas, which is intended either to better prepare them for further study, or to gain favour from the subject teacher (Pierson and Odsliv, 2012).

Pre-school education (age 0 – 6) consists of: pre-pre-school for children aged 0 – 3 and pre-school or kindergarten for children aged 3 – 6 organized in groups: lower group, middle group, upper group.

Primary education is made up of the kindergarten preparatory group and grades 1 to 4. Pupils can enrol in the first grade of primary school if they turn 6 or 7 during the respective calendar year.

Secondary education is made up of:

Lower secondary (gymnasiums) which includes grades 5 to 8 and ends with the taking of a "*national test examination*". The examination tests pupils' knowledge in the fields of Romanian language and literature and Mathematics.

For de primary school and gymnasium education the creation activity is a general objective. Communication competences are obtained by training pupils to elaborate compositions, poems, essays, stories, etc. In mathematics and sciences curricular area pupils are trained to create and solve various problems. In arts area pupils are taught to draw, paint, and create collages. Evaluation is done by adjectival marks: unsatisfactory, satisfactory, good, very good. The educator is a schoolmaster (pedagogical high school/pedagogical college graduate or primary school teacher).

Upper secondary (high-school) includes grades 10—12 and has the following branches: theoretical, technological and vocational (art, sport, theology). Enrolment is made on the basis of the results in the national test exam and the average degree of the gymnasium. High school studies end with a "*baccalaureate examination*". After passing this examination, the graduates get the "*baccalaureate diploma*". Only students in the technological and vocational branches must take in addition a "*qualification examination*" and get a "*qualification certificate*".

During the secondary compulsory education (grades 9 - 10) the curriculum includes the arts curriculum area, ICT classes, and in the non-compulsory education level (grades 11 – 12) creativity is developed also by extracurricular activities, international projects, and educational programs.

The Romanian education system has three levels of administration: the Ministry of Education, County-level Academic Inspections, and schools. The Ministry sets the core curriculum for primary and secondary schooling. Every year academic inspections assess and develop a management plan at a county level, discussed with the heads of the school, parent and student representatives, local authorities, economic agents and other social partners (Order of the Ministry no. 4682/28 September 1998). At a school level, management is in the hands of the head teacher, the teachers' council and the board of directors in which parental representatives participate. Schools decide their own teaching methods and schedules.

Risk-related topics in the Romanian education

Risk-related topics in primary school curricula

Risk-related topics in the Romanian educational are taught mainly using an integrative approach. Risk-related subject are also taught in the frame of optional school curricula.

Hence, according to the framework plan of schooling approved by Ministry Order 3371/12.03.2013, for the primary education, notions regarding the threats induced by nature are presented within the curriculum of *Mathematics and Natural Sciences*, subject matter of *Natural Sciences*, while in the curriculum area entitled *Man and Society (Om și Societate),* the subject matter *Geography*.

The list of electives approved at national level that can be proposed by schools (curriculum at the school's decision) and then chosen by the students in the primary level of education includes the elective entitled *Education for the traffic risk prevention* (*Educație pentru prevenirea riscului rutier)* (**Annex 33**).

When developing this curriculum offer, the provisions of the following national and international documents were used: the National Road Safety Strategy 2013-2020; the EU action program for road safety 2011-2020; the European Commission's Communication "Towards a European road safety area: policy orientations on road safety 2011-2020".

The curriculum of the *Road risk prevention (Educaţie pentru prevenirea riscului rutier)* subject matter aims at preparing students for life by developing the following skills: identification by students of the risks present on the road; recognition by students of the dangers and serious consequences arising from non-compliance with traffic rules; - the correct application of the basic traffic rules on public roads and the formation of good habits in this respect; - development of preventive conduct, respect for their life and for the lives of others. The proposed curricular program introduces novelty by focusing on traffic risk prevention, road safety, as well as by creating a road safety culture.

On a regular basis, the teacher may work with the Traffic Police representatives for presentations, demonstrations, applications, partnership work. It is also recommended to involve parents to participate in activities such as workshops, exhibitions, open lessons on traffic-related topics, parents-children team projects, discussions based on students' portfolios. The teacher's role is to organize and provide learning opportunities that enable the

students to discover and experience their own skills and attitudes, to achieve their transfer in real life. The use of interactive and attractive teaching tools and materials and the use of virtual sources of information will lead to more effective teaching approaches. The recommended teaching strategies for the traffic risk prevention classes are the active - participatory ones. The discipline has a highly exploratory and practical nature, which requires the direct involvement of students. The tasks can be performed individually, in pairs/team, independent or facilitated by the teacher. Various resources will be used for projects (pencils and sheets of paper, scissors, glue, recycled materials, natural elements, pieces of fabric, plastic or wood, etc.).

Another elective is *Health Education (Educaţie pentru sănătate)* (**Annex 34**), which is listed within the three educational levels.

By developing a curriculum offer entitled *Health Education (Educaţie pentru sănătate)* as an optional subject matter, the aim was to promote correct knowledge on various aspects of health and to develop vocational attitudes and skills essential for a responsible and healthy behaviour.

The national education program and curriculum of Health Education aim: to provide public education in schools for a healthy lifestyle; to facilitate the access to reliable information, both in urban and in rural areas; to achieve, indirectly, adult education; to decrease the number of disease cases and to mitigate risky behaviours to health; to improve the quality of medical care. From the implementation perspective, the national program entitled *Health Education in Romanian schools (Educaţia pentru sănătate în şcoala românească)* ensures the development of the health education component both within the curriculum and besides the official curriculum by extracurricular activities.

In higher primary schools of Romania, risk-related topic is indirectly taught to school children by different initiatives of the Government of Romania. The disaster prevention and protection is presently recognized as a component of the government general policy to preserve the life safety and quality. Training the students on prevention and mitigation of disasters aftermaths is one of the most important tasks of the Civil Protection Command. According to the Prime Minister Decision no. 139/1999, the training of the population, decision makers and members of professional and voluntary civil protection formations is conducted through various and complex training forms (drills, exercises, meetings, briefings, symposiums, papers, sessions, seminars, workshops, training). At the local level, the County Inspectorate for Civil Protection

and the Fire Fighters, County Group train the population according with the external emergency plans to familiarize with the possible actions undertaken in case of accident. The access of the media and public are made at request, and is free for the industrial sites, which are considered nonstrategic. There have been elaborated and implemented programs of anti-earthquake education or in case of radiological or nuclear emergencies, in case of floods, chemical accidents, epidemics, animal epidemics.

Earthquake education started in Romania after the Vrancea earthquake of May 30, 1990, under Government Decision no. 644/1990, together with the revision of the Design Code p.100/1991, 1992. Since 1990, the National Institute of Research and Development in Construction, Urbanism and Sustainable Territorial Development (URBAN-INCERC) and other collaborators developed in Romania earthquake preparedness manual (practical guides) for children and school staff, staff of kindergartens and nursery schools and short documentary films, available as video products, presenting the main earthquake safety and preparedness rules for not only student, for citizens and school staff, too. One of the most recent program is that of school earthquake education, developed as a partnership between Ministry of Transportation, Construction and Tourism, URBAN-INCERC, the Ministry of Education and Research and the Ministry of Administration and Interior.

Risk-related topics in primary school teaching materials

The teaching materials used within the elective entitled *Health Education (Educatie pentru sanatate)* are: The information guide for teachers on the following topics: anatomy, personal hygiene, activity and rest, environmental health, mental health, violence, accidents, methodological guide, newsletters on *Health Education (Educatie pentru sanatate)*, edited with the approval of the Ministry of Education (MEdC) and other materials developed by MEdC or MEdC-approved.

In terms of earthquake education, in 2005-2006, the National Institute of Research and Development in Construction, Urbanism and Sustainable Territorial Development (URBAN-INCERC) drafted a set of colour booklets and associated colour posters for schools, classified into 3 age categories: primary school students (grades 1 to 4), lower secondary school students (grades 5 to 8), and upper secondary school students. The knowledge included in these booklets and posters is gradual in terms of complexity, according to the age and learning capacity of the students.

According to an Agreement between the Ministry of Transportation, Construction and Tourism (MTCT) and the Ministry of Education and Research, the school staffs explain the content of booklets during classes and twice a year, the feedback is analysed during some practical exercises about how to react when an earthquake strikes. Each student is advised to prepare an emergency sack for earthquake situations.

For primary school grades 1 and 2, only posters are used as means of visual communication and the rules of behaviour were first of all emphasised. For primary school grades 3 and 4, the knowledge is provided by specific rules of preparedness and behaviour before, during and after earthquakes, as a booklet and posters. The family support is achieved through a family plan. Students are given also a short text as an essay about earthquake impact and correct conduct.

For grades 5 to 8, the booklet starts with knowledge about origin and patterns of earthquakes, specific scientific terms, scales of magnitude and intensity. This material is characterized by a greater implication in understanding risks and active individual protection or protection of family members and within school groups.

5. CONCLUSIONS

This review indicates a wide variety of creative and efficient approaches to integrate risk-related topics into school curricula. The risk reduction skills intended for primary and secondary school children are generally related to everyday life risks, natural risks and health risks. In most European countries, the everyday life risks are addressed and developed first, starting with road safety, household risks, and accident risks. However, it is important to mention that there is no standardised approach of the risk-related information included in the educational curricula. While in some countries teaching focuses on the dissemination of safety knowledge, in others the highlight is placed on the mechanism behind the natural disasters rather than on the safety measures that children can take before, during and after a disaster. Safety notions are usually present across the curricular arrangements in the EU countries, but there is no general consensus about the topics covered. Therefore, curricula vary greatly from one country to another and it is very difficult to make comparisons. Some of them may contain only a few pages, while others cover several dozen pages.

Another aspect is the lack of cooperation between EU countries when it comes to curricula development. Few educational approaches, mentioned in the HFA progress reports from 2013-2015, have international dimensions, such as the International Children's Drawing Competition "MISSION: RESCUER". In this regard cooperation across EU countries is necessary in order to share best practices, creative and innovative approaches and existing teaching materials to establish standardised disaster-related curricula.

Some drawbacks in developing and/or embedding risk-related education in the school curricula may include, but are not limited to: lack of sufficient financial and human resources, deficiency of safety culture at individual level, lack of continuous funding to support curricula development, lack of political commitment from the key stakeholders, failure to conduct the comprehensive research required for curricula development, isolated initiatives not capable of creating the necessary synergy to bring relevant changes or the unsuccessful cooperation between the main partners of this undertaking.

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Annex 3 – Science - Social, Environmental and Scientific Education Curriculum (Ireland)

Annex 4 - Social, Personal and Health Education Curriculum (Ireland)

Annex 5 – Regulation No. 468 from 12 August 2014 on State Basic Educational Standard, Basic Educational Subject Standards and Sample Education Programmes (Latvia)

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Annex 34 - Curriculum for the optional subject Health Education for primary and secondary school (Romania)

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