

**BACKGROUND PAPER**

Prepared for the 2015 Global Assessment Report on Disaster Risk  
Reduction

**ADVANCES AND CONTINUING CHALLENGES TOWARDS HFA2 AND POST-2015:  
BACKGROUND CHAPTER**

**Commissioned by UNESCO and UNICEF**

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June 2014

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## Abbreviations

CCA	Climate Change Adaptation
CC-DRR	Child Centred Disaster Risk Reduction
CI	Core Indicator
CSS	Comprehensive School Safety
DRR	Disaster Risk Reduction
DRRRE	Disaster Risk Reduction & Resilience Education
EBP	Evidence-based practice
ES	Effect size
GADRRRES	Global Alliance for Disaster Risk Reduction and Resilience in the Education Sector
GAR15	2015 Global Assessment Report
HFA	Hyogo Framework for Action
INEE	International Network for Education in Emergencies
MDG	Millennium Development Goals
MoE	Ministry of Education
NGO	Non-Governmental Organisation
PBE	Practice-based evidence
PFA	Priority for Action
RRR	Risk Reduction and Resilience
RRRE	Risk Reduction and Resilience Education
SDG	Sustainable Development Goals
SME	Small and Medium Enterprise
ToR	Terms of Reference
UNCRD	United Nations Centre for Regional Development
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNISDR	United Nations International Strategy on Disaster Reduction
WHO	World Health Organisation

# Introduction

## Focus of Background Chapter

This paper is part of the larger context of the Global Assessment Report (GAR15), due to be published before the World Conference on Disaster Risk Reduction in March, 2015 and as part of the post-2015 Framework for Disaster Risk Reduction (HFA2). As pointed out in the Terms of Reference (ToR) for this background paper, the larger context is as follows:

“Coming at the end of the ten year cycle of the HFA, GAR15 will: explore the landscape of global disaster risk at the end of the HFA; will analyze how much the HFA has contributed to reducing disaster risk; and will identify risk reduction challenges which have still to be resolved. GAR15 will therefore provide an evidence base to support the design of the successor arrangement of the HFA. To achieve this purpose GAR15 will be structured around four parts:

- I. The global disaster risk landscape
- II. The Impact of the HFA: fit-for-purpose, achievements and gaps
- III. The disaster risk reduction policy landscape and
- IV. Critical policy challenges in disaster risk reduction

The purpose of thematic background papers are to encourage more research investigating the degree to which the HFA has been fit-for-purpose in affecting change in the management of disaster risk, and in so doing, contribute to both the formulation of the successor framework to the HFA (the HFA2), as well as the development of indicators for effectively measuring the impact of the forthcoming framework. Specifically UNISDR seeks background papers to the *2015 Global Assessment Report* (GAR15) that present research, oriented by indicator, addressing the following issues:

- what changes have been observed since the adoption of the HFA in 2005, and what has been the impact in terms of risk to society;
- to what degree has change been facilitated by the HFA or other emerging drivers of effective disaster risk management;
- determine if the change was adequately captured by the indicator in its current form and if not propose an alternative impact indicator;
- what elements will need to be developed for inclusion in the successor framework to the HFA (pp 1-2).”

These organising questions will be embedded within main sections of this Background Chapter, organised first around an introductory section speaking to the nexus between policy/implementation, practice and research that underpins the development of any public initiative. This is followed by a description of the overall methodology for this paper. Then, policy/implementation, practice and research sections follow that describe and summarise findings based on Input Papers, desk review and consultations. The findings presented within each section are related to developments in policy/implementation, practice and research and evaluation, including in relation to the organising questions. Each section will capture changes/impacts since HFA adoption, the HFA’s facilitation of change and future directions for the HFA successor. For the third question in relation to the Core Indicator, an initial discussion occurs at the end of the Policy and Implementation section. A more in-depth discussion occurs at the end of the Research and Evaluation section, in a subsection devoted to this topic. One that takes account of a multitude of policy, practice and research developments and ongoing challenges. The final Summary and Recommendations section that concludes the body of this report summarises input from all major sources of information for this Chapter, focusing on major HFA-facilitated achievements as well as continuing challenges in relation to this PFA Core Indicator. For recommendations for the

successor framework, these are first presented in integrated, summary form, focusing on a small number of major recommendations that bridge the policy-practice-research nexus and gleaned across all sources of input. This is followed by individual sections that speak to more specific recommendations in policy, practice and research areas. The overall structure is as follows:

- Introduction;
  - HFA framework orientation;
  - HFA policy-practice-research nexus: focus on PFA3, CI2;
- Methodology for this paper;
- PFA3, CI2 Policy and Implementation
  - Global progress
  - National developments
    - Nation developments from input papers
    - Other nation case examples
  - Consultations with key actors
  - Summary
    - Global progress, including core indicator progress
    - Regional and national progress
    - Final words
- PFA3, CI2 Practice: Curriculum, Training and Other Initiatives
  - DRR curriculum developments and education materials
    - DRR curriculum: Consultations and case examples
    - DRR curriculum: A role for indigenous practices and cultural custom-fitting
  - Training DRR professionals and teachers
  - Other initiatives
- PFA3, CI2 Research and Evaluation
  - DRR curriculum, materials and education programs
  - DRR professional and teacher training
  - Core Indicator development and future directions
- Summary and Recommendations: Progress and Challenges
  - Summary of progress
  - The challenge ahead: Major summary recommendations
  - Specific recommendations
    - Policy and implementation
    - Practice: Curriculum and training
    - Research and evaluation
      - Ongoing challenges
      - Recommendations
- References
- Appendices I - VIII: specific documents
- Annex: More general focus, including case examples (Annex I) and Compendium (Annex II)

## Hyogo Framework for Action (HFA), 2005-2015: Orientation

To orient the reader, Table 1 below summarises the Hyogo Framework for Action, 2005-2015.



International Strategy for Disaster Reduction

# SUMMARY of the Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters (Hyogo Framework)

## Expected outcome, strategic goals and priorities for action 2005-2015

**Expected Outcome**  
The substantial reduction of disaster losses, in lives and in the social, economic and environmental assets of communities and countries.

### Strategic Goals

The integration of disaster risk reduction into sustainable development policies and planning

Development and strengthening of institutions, mechanisms and capacities to build resilience to hazards

The systematic incorporation of risk reduction approaches into the implementation of emergency preparedness, response and recovery programmes

### Priorities for Action

**1. Ensure that disaster risk reduction (DRR) is a national and a local priority with a strong institutional basis for implementation**

- DRR institutional mechanisms (national platforms); designated responsibilities
- DRR part of development policies and planning, sector wise and multisector
- Legislation to support DRR
- Operationalisation of responsibilities and resources
- Assessment of human resources and capacities
- Foster political commitment
- Community participation

**2. Identify, assess and monitor disaster risks and enhance early warning**

- Risk assessments and maps, multi-risk, elaboration and dissemination
- Indicators on DRR and vulnerability
- Data & statistical base information
- Early warning: people oriented, information systems, public policy
- Scientific and technological development, data sharing, space-based earth observation, climate modelling and forecasting; early warning
- Regional and emerging risks

**3. Use knowledge, innovation and education to build a culture of safety and resilience at all levels**

- Information sharing and cooperation; networks across disciplines and regions; dialogue
- Use of standard DRR terminology
- Inclusion of DRR into school curricula, formal and informal education
- Training and learning on DRR: community level, local authorities, targeted sectors; equal access
- Research capacity, multi-risk, socio-economic application
- Public awareness and media

**4. Reduce the underlying risk factors**

- Sustainable ecosystems and environmental management
- DRR strategies integrated with climate change adaptation
- Food security for resilience
- DRR integrated into health sector and safe hospitals
- Protection of critical public facilities
- Recovery schemes and social safety nets
- Vulnerability reduction with diversified income options
- Financial risk-sharing mechanisms
- Public-private partnership
- Land use planning and building codes
- Rural development plans and DRR

**5. Strengthen disaster preparedness for effective response at all levels**

- Disaster management capacities: policy, technical and institutional capacities
- Dialogue, coordination & information exchange between disaster managers and development sectors
- Regional approaches to disaster response, with risk reduction focus
- Review & and exercise preparedness and contingency plans
- Emergency funds
- Voluntarism & participation

### Cross Cutting Issues

Multi-hazard approach

Gender perspective and cultural diversity

Community and volunteers participation

Capacity building & technology transfer

Contributing to the achievements of the internationally agreed development goals (including the MDGs)

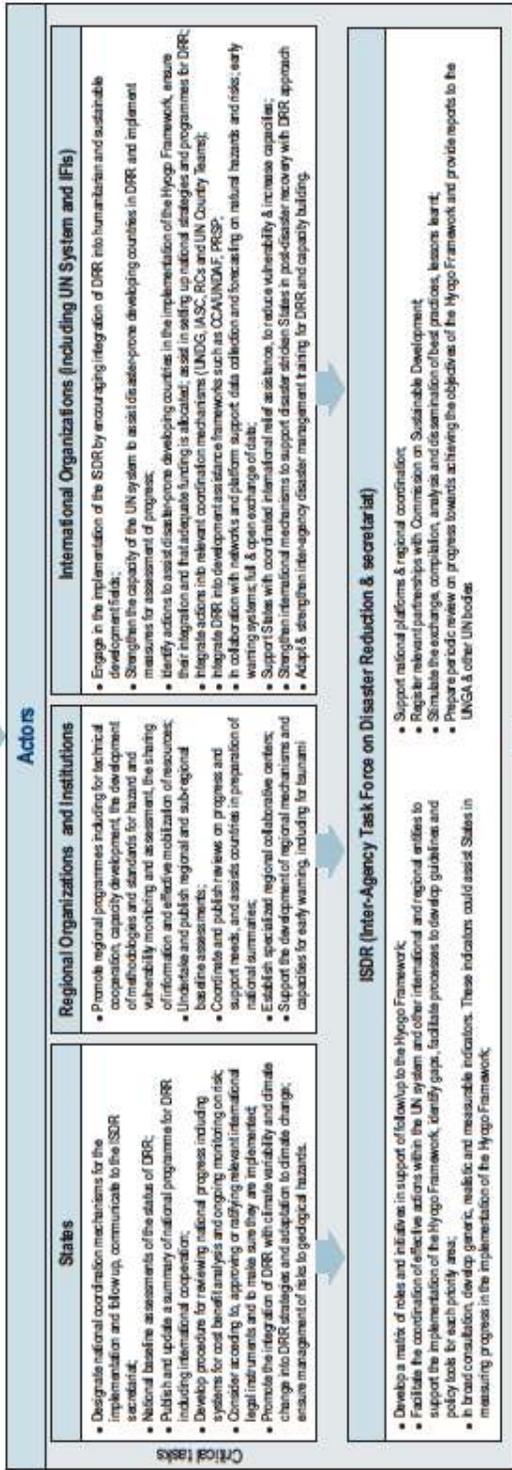
DRR = disaster risk reduction

www.unisdr.org



In order to achieve the goals and act upon the priorities identified in this Framework, the following tasks have been identified to ensure implementation and follow-up by States, regional and international organizations in collaboration with civil society and other stakeholders. The ISDR partners, in particular the Inter-agency Task Force on Disaster Reduction and secretariat, are requested to assist in implementing this Framework for Action.

### Implementation and Follow-Up



Source: Outcome of the World Conference on Disaster Reduction, Hyogo, Kobe Japan, 18-22 Jan 2005

Of the 5 Priorities for Action (PFA), this paper speaks to PFA3: “Use knowledge, innovation and education to build a culture of safety and resilience at all levels.” The Core Indicator (CI2) within this PFA is focused on the following: *School curricula, education material and relevant training include disaster risk reduction and recovery concepts and practices.* It also speaks to Thematic Research Area 5, focused on this Core Indicator, with the following guiding principle:

“Guiding principle: Incorporating disaster risk-related issues into existing education curricula reinforces learning and knowledge about disaster risk reduction. Training activities also provide an opportunity to consider indigenous knowledge and traditional practices for risk reduction and mitigation” (p. 14, UNISDR, 2013b)

## HFA Policy, Practice, Research Nexus: Focus on DRR school curricula, education material and relevant training

Public policy initiatives tend to organise around a set of principles, intentions, values and beliefs that are held and advocated for by various bodies (e.g., advocacy groups, political entities). When there is sufficient support for a set of values, these can then be enacted through various means at local, national, regional and global levels. The enactment of those values then gets codified through a set of actions, including measures and practices, designed to realise the set of principles (Page, 2008). Thus, the HFA first is a set of principles linked to disaster risk reduction and building the resilience of nations and communities to disasters. Then, based on that overriding principle, a set of actions – Priorities for Action – are then designed to realise particular goals and outcome. The major outcome as seen in the HFA table above is “the substantial reduction of disaster losses, in lives and in the social, economic and environmental assets of communities and countries.” The three Strategic Goals to support this outcome are (UNISDR, 2014):

1. The more effective integration of disaster risk considerations into sustainable development policies, planning and programming at all levels, with a special emphasis on disaster prevention, mitigation, preparedness and vulnerability reduction.
2. The development and strengthening of institutions, mechanisms and capacities at all levels, in particular at the community level, that can systematically contribute to building resilience to hazards.
3. The systematic incorporation of risk reduction approaches into the design and implementation of emergency preparedness, response and recovery programmes in the reconstruction of affected communities.

As pointed out in the HFA: “In order to achieve the goals and act upon the priorities..., (a number of) tasks have been identified to ensure implementation and follow-up by States, regional and international organizations in collaboration with civil society and other stakeholders” (see table above, SUMMARY of the Hyogo Framework for Action 2005-2015: Implementation and Follow-Up).

This overall implementation process then is intended to be characterised first by the development of policies/implementation mechanisms, a set of practices reflecting each Priority for Action, and research and evaluation to assess progress in the implementation, development of best practices, and intended outcomes related to DRR and increased resilience. The focus of this Chapter, PFA3/CI2, then follows this progression and is intended to summarise developments in policy/implementation, in the development of curriculum and training practices and in research and evaluation related to this Core Indicator. This Chapter

also follows policy science advice (e.g., Wilson, 2008), keeping in mind that attention to the nexus between these three inter-related areas can motivate and guide future developments. Thus, for example, whereas there have been many documented examples of policy/implementation and practice developments in relation to this PFA/CI area, research on curriculum and training has been lacking. For example, in a seminal document related to this area, it is stated that “assessment of student learning is the least considered and developed element of disaster risk reduction education” (UNESCO/UNICEF, 2012). As another important example, Input Papers and consultations done for this Chapter, detailed in later sections, revealed a number reporting on a disconnection between policy and practice. For example, national policies have been developed in relation to this Core Indicator, representing definite progress. However, owing to a policy-practice disconnection, these policies and the implementation strategies that accompany them may function more as aspirational, versus realised, policies. Various implementation schemes in numerous countries are typically done on more of a voluntary or project basis versus on a national, and scaled, level. Demonstration projects and case examples then may be done that demonstrate successes and the possibilities related to a particular policy and set of practices. However, with no systemic evaluation done that documents HFA-related outcomes/impacts, or no systematic plan in place to move from demonstration project to scaled implementation, progress then stalls. Thus, to assist with movement towards the HFA successor framework, this Chapter keeps the policy-practice-research “triangle” in mind as seen in Figure 1.

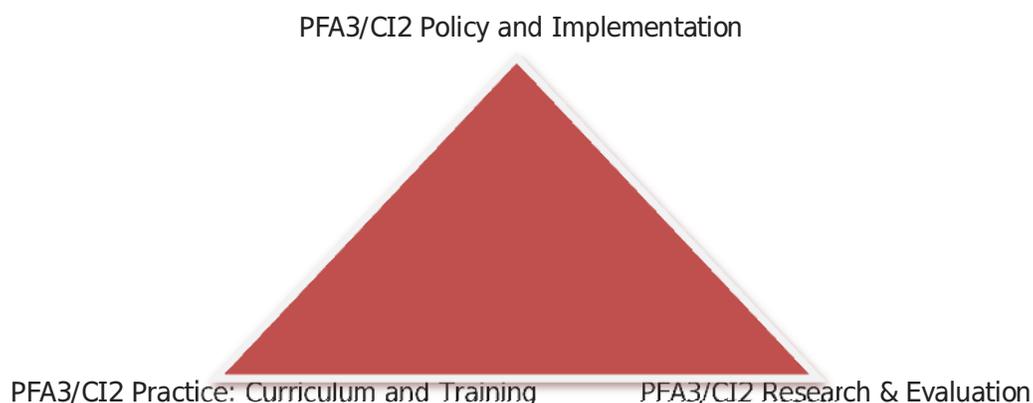


Figure 1. The Policy-Practice-Research Nexus.

To summarise this introductory section, this Chapter intends to document both the considerable progress made over the past decade while addressing the challenges at hand for the HFA successor. According to all input sources for this Chapter, there is much to celebrate here and, equally, there is much to do. To realize the considerable promise this area holds for realising HFA goals and outcomes, it is important to understand the progress made and use these “strengths as foundations” for tackling future challenges.

## Methodology

To achieve the goals of this paper set out in foregoing sections, the Background Chapter is based on the following:

- a review of 13 Input Papers commissioned by UNISDR, UNESCO and UNICEF over the period of December 2013 – April 2014;
- desk review of literature and materials related to the following:
  - HFA Thematic Review/HFA Indicator Research: materials linked to PFA3/CI2 and Research Area 5 (focused on PFA3/CI2 – see <http://www.preventionweb.net/english/professional/networks/private/hfa-thematic-review/>);
  - Implementation of national curricula and training through review of all Global Assessment Reports since 2005 (including Annexes), HFA Indicators of Progress, HFA Progress Reports, and HFA Progress Summaries;
  - National curricula and training implementation including all Compilation of National Progress Reports on the implementation of the Hyogo Framework for Action (HFA Priority 3, Core Indicator 2);
  - Policy/implementation and practice guidance related to DRR education and training;
  - DRR educational curricula and materials including technical and project reports, case examples
  - Compilation of all published research studies, in the academic or grey literature, including on evaluations and implementation of DRR education programs;
  - Training materials including case examples and compilation of data on post-high school training in DRR;
  - Materials related to the development of the Global Alliance for Disaster Risk Reduction and Resilience in the Education Sector (GADRRRES), including documents related to a Comprehensive School Safety agenda and to recommended indicators for the HFA successor framework;
- Consultation with key stakeholders from UN through sub-national/local levels including approaching numerous actors for consultation. Requests for consultation were put out to 33 actors, with consults with additional researchers (n = 3), DRR professionals (n = 6) and teachers (n = 2), each of whom were approached by those who had received initial requests. Across this total of 44 actors, some of whom had overlapping roles, the breakdown is as follows:
  - key stakeholders involved in UN level work, including UNICEF, UNESCO, INEE, IRDR, ISDR, GADRRRES (n = 7);
  - key stakeholders in international and regional NGO's who work in this area, some of whom are also involved in GADRRRES (n = 8);
  - key stakeholders who work, or have worked, at national policy levels in this area (n = 6);
  - key stakeholders in research and evaluation, including DRR, DRR/CC-DRR curriculum development and evaluation, in this area (n = 11);
  - key stakeholders who are trained DRR practitioners (n = 8) and/or teachers (n = 5).

From these requests, consultations were carried out with 28 of these 44 key actors, organized around the four guiding questions in the Terms of Reference discussed at the beginning of the Chapter. Those consulted either provided responses in writing or,

alternatively, were presented the four guiding questions as part of a direct discussion. For direct discussions, and as a source for quotes, notes were taken that tried to capture their actual words in response to questions. These notes were then sent to the consultant to make any relevant changes and confirm as accurate.

Findings from this information gathering are presented in subsequent sections focused on Policy/Implementation; Practices, including curriculum-, training-related and other initiatives; and Research and Evaluation, including current findings on educational program outcomes and methods, DRR professional and teacher training programs and Core Indicator measurement and future development.

## Policy and Implementation

The advent of the HFA was followed by a large number of policy- and implementation-related initiatives aimed at promoting inclusion of DRR knowledge and education in schools. These have occurred at both international and national levels.

### Policy and Implementation: International Developments

At the international level, a precursor to the current Global Alliance for Disaster Risk Reduction and Resilience in the Education Sector (GADRRRES) was formed following the World Conference on Disaster Risk Reduction in 2005. Formed initially as a cluster of like-minded organisations, the cluster was formalized in 2006 as the Thematic Platform on Knowledge and Education (TPKE). In 2013, it then transitioned from TPKE to the Global Alliance with an established Terms of Reference (ToR) aimed at its main purpose:

“The main purpose of the group is to strengthen global coordination, information and knowledge, as well as advocacy on DRR education and safety of educational facilities, and ultimately contribute a global culture of safety and resilience and attitudinal changes through education and knowledge (p.2, ToR).

GADRRRES promotes a comprehensive approach resting on 3 pillars, each with its own thematic working group:

1. Safe Learning Facilities;<sup>1</sup>
2. School Disaster Management;<sup>2</sup>
3. Risk Reduction and Resilience Education.<sup>3</sup>

Objectives of GADRRRES include (1) strengthening global coordination, (2) advocacy for DRR knowledge and education at international, regional, national and local levels and in post-2015 dialogues and (3) improve global information, knowledge and knowledge management on DRR education including collection and generation of knowledge on DRR education, providing guidance and further research aimed at elaborating a comprehensive education sector safety strategy globally. GADRRRES also supports research and the development and

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<sup>1</sup> Working Group I, Educational facilities and construction, led by UNESCO.

<sup>2</sup> Working Group II, School disaster management, led by Save the Children, Plan International (TBC) and INEE (TBC).

<sup>3</sup> Working Group III, Disaster prevention and risk reduction education, led by UNESCO and UNICEF.

dissemination of key educational and training materials, guidelines and standards globally. A fourth working group focuses on collaborative efforts towards advocacy for this comprehensive approach.

A recent document (2014), entitled *Comprehensive School Safety*, brings together the three pillars while spelling out major policy-related initiative advocacy themes.<sup>4</sup> A main overarching theme is the following:

“At the core of these child-centred, child-participatory, and evidence-based efforts are the recognition of children’s rights to survival and protection as well as to education and participation” (p. 2).<sup>5</sup>

Thus, main policy drivers of DRR education are children’s dual rights for protection and participation, including education on preventing and reducing disaster risk. More specifically, DRR education itself rests on the three main pillars already described, with the following goals:

- To protect learners and education workers;
- To plan for educational continuity when faced with hazards;
- To safeguard education sector investments;
- To strengthen climate-smart disaster resilience through education

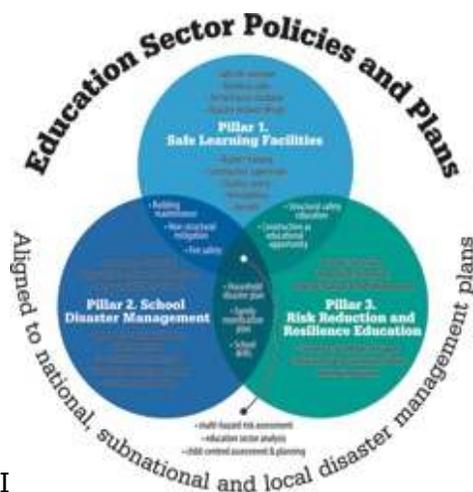


Figure 2. Comprehensive School Safety: The Three Pillars

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<sup>4</sup> These include (1) promoting DRR through the education sector along with education for sustainable development; (2) to assure universal access to quality basic education; (3) to incorporate risk reduction into Millenium Development Goals for education.

<sup>5</sup> These are also part of the four pillars of the Convention of the Rights of a Child (CRC) that include protection, survival, participation and development. While these might be useful indicators for HFA2, it is also the case that the CRC itself is legally binding and, thus, care needs to be taken to differentiate an HFA2 ethos with a legally binding convention.

## Policy and Implementation: National Developments

### Input Papers: Australia, Bangladesh, Cambodia, Indonesia, Iran, Pakistan, Portugal, Serbia

Several Input Papers focused on country-level developments.

Kagawa and Selby (2014) followed up previous work (UNESCO/UNICEF, 2012, 2013; see also Kagawa & Selby, 2012, 2013) and focused on DRR education developments in 4 countries, Bangladesh, Cambodia, Indonesia, Pakistan. Reflecting the diversity of differing governance and policy environments, the authors sum up developments:

"Disaster-oriented curriculum development in each country is happening against a somewhat different, in some cases starkly different, backdrop. Bangladesh offers an example of highly centralized, textbook-led national curriculum development. Cambodia manifests a strong national policy level approach opening up opportunities, still largely to be availed of, for sub-national developments. Indonesia devolves a significant overall level of autonomy and flexibility for curriculum and textbook development to each locality and school with significant space for 'local content curriculum'. Pakistan is in process of activating the decentralization of the curriculum to provincial level while wrestling with the question of how the opportunities offered by decentralization might best be exploited" (p. 7).

Reproduced from the Kagawa and Selby Input Paper, Appendix I contains four Box discussions highlighting developments in each country. Overall, despite variation, and as an encouraging sign of progress affiliated with HFA, all of these countries include DRR education in schools in national policy directives. Another development worth highlighting is that a number of smaller scale, time-limited DRR education programs have been successfully implemented, some more widespread than others (see Appendix I). Another development yet is some countries (e.g., Cambodia) promoting a combined DRR/Climate Change Adaptation (CCA) curriculum. More generally, according to the authors: "There is a very strong case for deepening the integration of DRR education and climate change education...A selling point is that the proper integration of the two initiatives reduces pressure on what is seen as an overcrowded school curriculum (p. 37)." This issue will be returned to in the Practice: Curriculum and Education Materials section.

Across countries, those consulted with for the Input Paper in education, policy and other 'key national players in DRR curriculum development' reported as follows:

'For the most part, research respondents felt that the text of the Hyogo Framework for Action Priority 3 had provided important leverage for national DRR developments in education in their country' (p. 41).

In the opinion of one Bangladeshi respondent to the Kagawa and Selby Input Paper (2014), advocacy on the part of various development agencies have played a "fantastic role" in securing a more prominent place of DRR education in schools and school safety in national government authorities policy and practice awareness. However, according to these

interviews and other analyses done for the Input Paper, these countries have yet to realise universal student access for a number of reasons (e.g., DRR programs carried out in school years after many children drop out of school ; lack of universal, or even widespread, DRR education programs ; lack of teacher training). Thus, the current challenge appears primarily to be threefold (Kagawa & Selby): (1) systematic, large scale implementation of sustainable locally-relevant, inclusive DRR education/safe schools and school/community resilience building programs across school years, including for children in younger years, that invite active student participation,<sup>6</sup> (2) systematic teacher training, and (3) an outcomes- and process-based evaluation strategy. This final point relates to a lack of research and evaluation across important indicators that go beyond assessing in-class, knowledge-based outcomes. This includes a range of additional outcomes assessed longitudinally while also measuring aspects related to the curricula itself (content, delivery, progression, implementation/dissemination ; teacher training effectiveness) (for expanded discussion on research, see later Research and Evaluation section).

According to this Input Paper, such an approach assumes moving from a “project fixation”, time-limited approach to one that develops long-term relationships and a road map for moving from an initial project to large scale, sustainable implementation. In the words of Input Authors (Kagawa & Selby, 2014) and key actors consulted with for that Paper:

“Projects entertain scaling up ambitions but without optimal alignment with the national (and/or sub-national) curriculum development cycle and without a critical path analysis of what needs to happen earlier and later to be best placed to influence that cycle. ‘Agencies do not fully understand the intricacies of specialist sectors of government; their approach to government is incoherent, not strategic enough’ .... Respondents also refer to insufficient attention being paid to conflicting priorities within ministries, to the need to cultivate champions within ministries as a means of effecting greater leverage, and to negotiating the compartmentalized nature of departmental planning and internal power struggles that often characterize and beset how ministries work .... In short, a ‘very strategic approach is needed’ ....international politics and distrust of ‘westernization’ (seen by many as as implicit in development work) can often negatively influence the relationship between government and INGOs/NGOs. In consequence, trust building becomes an especially important element in overall DRR curriculum development work including advocacy.

A key element in astute and attuned advocacy revolves around ‘creating and presenting evidence of what works’...,and what has failed...,namely evidence-based or research-informed advocacy. This speaks to deploying highly professional monitoring and evaluation and case study writing for advocacy purposes, with, preferably, an

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<sup>6</sup> This also includes fusing climate change adaptation with DRR, covering both human-caused and natural hazards, promoting horizontal and vertical integration of DRR curricula across topic areas, adopting a deeper understanding of DRR curricula including integrating emotional learning, inquiry learning, experiential learning, including role play, simulations/practice, community interaction. The authors also stressed promoting low cost initiatives to enhance their uptake and use. Finally, recommendations in policy (e.g., promote DRR competencies/training for public officials and curriculum arms of education ministries) and evaluation (e.g., need for concrete indicators, benchmarks, milestones to assist practitioners focus efforts and to measure impact and outcomes).

ICT clearinghouse of good practice...More importantly, it speaks to opening ministries to first-hand experience of DRR curriculum development through partnerships in projects and other initiatives” (pp. 35-36).

Similarly, practitioners report that short project cycles do not permit long-term engagement in the 5- and 10-year curriculum adoption cycles of education authorities, and that the 'national' focus of HFA goals misses the reality that in many countries curriculum adoption is done at sub-national level, requiring advocacy and support in many jurisdictions simultaneously.

Another Input Paper by Dufty (2014) reviewed developments in the Australian context. This review largely underscores the same set of challenges around lack of widespread DRR formal education implementation (including in younger school years),<sup>7</sup> teacher training and systematic evaluation. On the other hand, the paper reviews the policy landscape noting a switch in educational policy focus in Australia from state-based curricula to a unified national curriculum. The Input Paper, along with a previous curriculum mapping exercise, highlight the fact that a national curriculum now paves the way for a more widespread focus on DRR education infusion and/or integration, including DRR and climate change adaptation. The national curriculum itself has been developed with modules particularly in Geography and Science that focus explicitly on DRR education topics. Appendix II reproduces the main observations from this mapping exercise. Alongside this development, in 2011, an overall national approach to disaster management, through the Australian National Strategy for Disaster Resilience, adopted principles and practices underpinning a national and coordinated approach to Prevention, Preparedness, Response, Recovery.<sup>8</sup> One set of activities recommended within the National Strategy revolves around the principle of “communicating with and educating people about risks.” However, despite these and other promising developments (DRR education in some state policy and plans), Dufty concludes that:

“...although now part of the DRR milieu in Australia, DRR education (and DRR school education) receives relatively small budget and resourcing for development and implementation...school DRR education is only one of numerous risk mitigation options used in Australia and generally has a relatively low priority...in the emergency and disaster risk management agencies across the nation. This severely constrains the development of school DRR education in Australia” (p. 11).

With that said, the Australian federal government, through its Bushfire and Natural Hazards Cooperative Research Centre initiative, recently funded a three year nationally-focused study on “building best practice in child-centred disaster risk reduction.” Part of the impetus of this research is to evaluate across the policy-practice-research nexus to promote increased uptake of DRR education in Australia.

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<sup>7</sup> Additionally, like Kagawa and Selby (2014), Dufty (2014) notes a lack of horizontal and vertical integration and DRR learning mainly in the knowledge-based domain, with much less focus on emotional, experiential, behavioural or social domains.

<sup>8</sup> Disaster phase nomenclature used most often in Australian context.

Another Input Paper by Izadkhah and Hosseini (2014) speak to developments in Iran. The paper speaks to the "evolution of school earthquake education in Iran." Earthquake education is important in Iran given that it is one of the most active seismic areas on earth. The authors describe the development of both in-class (textbooks, multi-media materials) and out-of-class activities (earthquake drills and relevant national preparedness programs, workshop training and competitions, pilot development of School Earthquake Safety Councils), teacher training (including in-service training programs done each year including a 2 hour module devoted to disaster-related issues as part of an overall annual 2 day in-service teacher training). It does appear that some activities have widespread dissemination (textbook-driven education particularly in Science and Defence Preparedness texts; earthquake drills). At the same time, the authors state that "DRR activities should be integrated more systematically in the school curriculum....teachers should be trained more on DRR issues (p. 13) and...no documented assessments have been recorded so far for evaluating...disaster related materials" (p. 12)<sup>9</sup> echoing similar issues in the other countries presented thus far. Nevertheless, earthquake drills appear to have widespread dissemination, with the most recent Earthquake and Safety Drill in Dec 2013 covering 13 million students. Additionally, this drill is a partnered effort involving a number of government agencies, Iranian Red Crescent and Iranian National Television and Radio. Thus, while there has been no formal evaluation, the authors do speak about drilling procedures that recent research discussed in subsequent sections would support. This includes moving from simple "rote-based" activities to coupling a drill with experiential learning and problem-solving/risk mitigation activities (e.g., practicing sheltering, exiting buildings, search and rescue, fire extinguishing). The Practice section of this Chapter returns to this idea in the context of a Comprehensive School Safety (CSS) agenda.

Another Input Paper by Calic and colleagues (2013) speaks to the "non-systematic inclusion of DRR concepts and practices in the compulsory education network, prior to formal inclusion into school curricula." As in many other countries, DRR education is not formally included in the curricula. Therefore, teachers need to be motivated to include DRR education within their curricula, with Geography being the most relevant in Serbia. This is in light of a training program for Geography teachers that attempts to motivate them to include DRR issues into their teaching process and that is described more fully in the paper.<sup>10</sup> Analysis of Ministry of Education approved textbooks in Geography does reveal coverage of a range of hazards but little to no coverage of DRR-related topics. Apart from geography texts, the paper also speaks to a booklet published by the Ministry of Interior Affairs' Sector for Emergency Management called "A family handbook on reacting in emergency situations." While distributed through police and municipal authorities, it is not part of the education system. In this way, as the authors point out, it "reaches a relatively small number of people."

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<sup>9</sup> These authors also speak about a role for climate change awareness and environmental education in the curriculum, reflecting current work by the Ministry of Education.

<sup>10</sup> This training inspired by the HFA is called "Natural disasters and geography teaching."

This Input Paper presents research carried out in 2012, with 839 children, 16 months after a M 5.4 earthquake, to evaluate their knowledge of natural disaster threats carried out in 2012, 16 months after a M 5.4 earthquake (Panic et al, 2013). The research showed that many children (and, by implication of the fact that the earthquake happened at night precluding non-independent child reactions, many adults) reacted to the earthquake "inadequately". Interestingly, when asked if they felt they reacted properly, the majority (51%) thought they had acted correctly (28% said they didn't respond, 21% said they "did not know what to do and I waited for help"). Thus, in Serbia, as documented in other research done internationally, there is a clear need for DRR education in schools. In fact, 65% of participants in this research also endorsed an item "material in geography textbooks needs to be expanded to include instructions on how to behave during an earthquake" (versus 35% who thought material in texts was sufficient). When asked what knowledge children felt they required, 35% needed information on how to behave during an earthquake; 31%, on how to behave during and after an earthquake; 17%, on needing a practice session on required behaviour; 17%, needing all forms of knowledge (before, after, practice). Clearly, children in this study endorse the idea of wanting more DRR-related information. Additionally, 94% of teachers attending the DRR-geography teacher training either mostly (14%) or completely (80%) agreed with the item "Is this program applicable in practice, in schools?" A primary reason teachers gave in follow-up interviews for not implementing such a voluntary initiative was "overwhelmed with formal limitations...insufficient pupils' motivation, and sometimes even by their own demotivation" (e.g. strictly adhering to the compulsory curriculum, not ready for innovation). Despite this set of findings, the HFA appears to have encouraged and guided a series of "nuts and bolts" scoping and sequence steps in Serbia that are leading towards the increased possibility of inclusion of formal DRR education in the Serbian educational curriculum (see Appendix III for a summary of those steps).

Another Input Paper that is focused on national issues, Portugal in this case, is one by Carvalho and Leitao (2014). This paper suggests a similar state of affairs in Portugal with respect to limited attention to DRR in the school curriculum. At the same time, it is advocating for joint action by the Ministries of Interior and Education, respectively, "...so that developed programs become incorporated in school textbooks....and effective implementation at local level" (p. 9). While there is an official Recommendation from the Portuguese MoE "that schools should promote risk education by including in the curricula the theme of DRR...this is done very sporadically" (p. 10). When it is done, like a number of other countries, it tends to be in Geography,<sup>11</sup> particularly in 7<sup>th</sup> and 9<sup>th</sup> grades as part of a "Natural Risks and Catastrophes" and climate change sub-themes, respectively. In the Grade 7 module, anywhere between 2-9 hours is afforded that does include some interactive group work aimed at "identifying risks and evaluating consequences of disasters" but "...does not offer reference to the explicit basic concepts of risk and disaster." This includes "prevention...mitigation ...(and) creating a culture of prevention". The same themes appear to be present in a climate change module in Grade 9. The other main theme in this paper is to document a case study in Amadora that joined the Building Resilient Cities 2010-2015 en

<sup>11</sup> Across numerous countries, Science appears to be the other major topic area.

campaign, calling their own campaign “Always in Motion, Amadora is Resilient”. As of 2014, the 5 year whole of community initiative has 40 stakeholders and has the involvement of numerous schools (as of the 2012-13 school year, 10 schools, with about 2000 students). While no outcomes are presented, the initiative itself quite clearly embodies some of the principles advocated for in DRR education models (e.g., UNESCO/UNICEF, 2013; Ronan & Towers, 2014; see also next section): experiential interactive learning and DRR activities, links to households and communities within a whole of community approach, starting in the earlier years of schooling (starting in a 4-9 year old cohort).

Additional Input Papers in subsequent sections speak to issues linked to curriculum, training, research and evaluation. Thus, the final Input Paper in this section, though it has a larger focus on DRR in higher education (see more in the Practice section on DRR Training), an Input paper by Sinkamba and Maripe (2014) nevertheless do speak to issues related to DRR education policy, including safe schools/DRR education policies, in Botswana. Botswana itself developed a National Disaster Management Office in 1996 and, more recently in 2009, produced a national disaster risk management plan in partnership with UNDP, having identified the hazard and disaster risks common to various villages and districts in Botswana the year before. However, there appears not as yet to be any formal policy around DRR education in schools and that “DRR ... has to be mainstreamed into policies, programmes and curricula....As a result, students do not have enough knowledge on disaster risk reduction...(and while there has been a focus on) curricular inclusion for students with special needs such as disability...Botswana has not tailored its education policies to be inclusive of disaster risk reduction” (pp. 5-6).

## Policy and Implementation: Other National Case Examples

Owing to space and time considerations, this section is brief and refers the reader to Annex I that (1) lists numerous published documents with case, demonstration & best practice examples related to DRR curriculum and training policy and practice implementation in many countries and (2) contains published case examples (UNESCO/UNICEF, 2012, 2013) across numerous countries globally. PreventionWeb also has a repository available (<http://www.preventionweb.net/go/edu-materials/>). Other examples that have been subjected to more systematic evaluation are included in the Research and Evaluation Section.

## Policy and Implementation: Consultations with Key Actors

Consultations for this Background Chapter and other key actor consultations reported on earlier (Kagawa & Selby, 2014) document progress and challenges. For this Chapter, key actors at the international/regional/national/sub-national/local levels (n = 28) report observable progress but, typically in consultations, would then qualify that by pointing out remaining challenges.

In terms of progress, the HFA process overall, and this specific Core Indicator, has produced in the words of one, a “mindset” and “strengthened awareness ...(many) are taking much more action...and it “has been a catalyst for national governments acting”. All consultants here reported more policy action in many countries, more attempts at national, and local, implementation of DRR curriculum (including some (n = 4) citing case example successes),

and some (n = 5), a perception of becoming more organized globally through a DRR and Comprehensive School Safety (CSS) agenda, along with its 3 Pillars.

In the words of another of the consultants, "(there is now the) possibility to have a common framework, common understanding of DRR profile...in many different ways. Awareness, knowledge...(we have now) a completely different situation now around the world (since HFA inception)." More specifically linked to a CSS agenda, another consultant said "ISDR is really endorsing this (CSS) work, ...(and) common work on DRR/CCA...(CSS is) useful as a lobbying mechanism as well." Another said: "The striking components that we can observe is the abundance of education materials in the form of guidelines, teachers guides, curriculum guides, and many others, that have been produced by many agencies in many countries. Most of these materials are available online."<sup>12</sup>

A collection of DRR professionals, and a researcher, in Australia, Bangladesh, and Indonesia (n = 8) noted numerous changes including more prominent inclusion of DRR in curricula, more higher education focus and numerous DRR-related activities happening in the community and in government. This group also reported that children are getting DRR topics" more readily in their learning and "are also acting as disseminators of knowledge to their parents and community." This then also includes more generally, "People are more aware of DRR issues and are more prepared and, active and responsive during the period of response and recovery phases of disaster, especially cyclone and flood" (in Bangladesh).

In terms of challenges, as seen also in consultations reported in an Input Paper reviewed above (Kagawa & Selby, 2014) as well as those consulted for this Background Chapter spoke about a major challenge being a project mentality versus one that supports scaled implementation of both DRR curriculum development and training. One consultant spoke about both "bottom up" and "top down" problems:

"Our colleagues from NGO's often have problems with governments at national level - getting their attention, getting them on board .... Cooperation needs to be sought to help them overcome these difficulties... Our job is developing guidelines but translating them in the local context is maybe more important than developing the indicators...asking the question in any project about 'who else needs to be involved?' here to render a full (policy and implementation) translation of practice and scientific knowledge...Example of developing a package that is useful: do they have human capacity, do they have finances, do they have the many means to scale up that package? Won't happen unless bottom up pressure... Take top down approach: does government have a mandate ...? Do they have both the will/authority and the ability/capacity to do it? Then, have to see if money available, personnel, etc (is available)...using basic wisdom of project management...that can translate into a country calling a new program/initiative its own and adopt as its own."

In the words of another:

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<sup>12</sup> See Practice: Curriculum and Education Materials section for a discussion, and listing, of the plethora of materials available online.

“Door needs to be opened to a sector-wide approach to implementation. If we want to make progress at a national level, we need to take a sector-wide approach... We need to get into MoE’s directly through a holistic approach, from top to bottom.... (through) getting access to MoE (Ministry of Education) higher placed (strategic planning) folks who then in turn bring together all those connected to CSS planning, policy and practice from national through to local school level...”

On this topic, another recommended a developmental progression that starts with DRR training at university level being combined with curriculum development that produces more organic growth:

“we need...(a) more consistent approach to national capacity-building through curriculum development and teacher training college trainers etc. rather than school level...but we can’t just push current field folks to do this... they don’t have the expertise, and we already have a (a lack of capacity) ... we need investment in both MoE and NGO capacity to push this forward.”

Another two focused on low uptake of DRR education at the local level, including issues also reported in Input Papers about voluntary inclusion of DRR curricula, with one highlighting additional problems with country CI self-reporting mechanisms:

“In some cases, the distribution of voluntary teaching resources or programs are being characterized as curriculum inclusion. For example, (a particular country) currently distributes a voluntary teaching resource to secondary schools and has rated themselves as achieving inclusion in the national curriculum even though uptake and use of the resource is low. (This country) is not currently able to measure the level of children's exposure to DRR education because it is not mandatory or consistently taught.”

A number (n = 4) talked about both value and challenges associated with demonstration projects. The value reported on is that they can demonstrate successes and exemplars, including for those locally and at national policy levels. A weakness of a project mentality echoes consults done in one Input Paper (Kagawa & Selby, 2014). In the words of one consultant for this Chapter:

“Another built in weakness of the whole system is the timeframe: (a) project mentality does not allow time to discuss what you want to do with the stakeholders. More planning and attention to process factors are critical....(with one of these being the need to) start developing more science-based tools – that support decision making irrelevant of the educational background of the decision maker. . Average policymaker is not a scientist, doctor, MBA – s/he is an ordinary local person from a variety of backgrounds...”

This consultant emphasised planning and resources being provided up front to “develop critical/key relationships that can create and fuel a project □ long-term, sustainable implementation pathway.... (ensuring) indicators (to) capture move from framework to translation to sustainable practices...”

Another consultant advocated for “longitudinal research” to support a longer-term implementation pathway. Related to policy implementation, quoting again feedback from consultations for the Input Paper reviewed earlier (Kagawa & Selby, 2014), key actors there recommended “evidence-based policy”, translating research for policy-makers and increased partnerships:

“A key element in astute and attuned advocacy revolves around ‘creating and presenting evidence of what works’ ... and what has failed..., namely evidence-based or research-informed advocacy. This speaks to deploying highly professional monitoring and evaluation and case study writing for advocacy purposes, with, preferably, an ICT clearinghouse of good practice...More importantly, it speaks to opening ministries to first-hand experience of DRR curriculum development through partnerships in projects and other initiatives” (Kagawa & Selby, 2014, pp. 35-36).

Thus, from the views of those consulted with working at international, regional, national and local levels for an Input Paper (Kagawa & Selby, 2014) and for this Background Chapter, a major challenge for the future is moving from a focus on generalities, principles, time-limited demonstration and one-off research projects. Put together, advocacy here is for more concrete actions, moving away from policy platitudes to creating long-term policy-practice-research partnership relationships and more evidence-supported mechanisms (“nuts and bolts” like policy development that includes curriculum scoping and sequence planning). Ones that support large scale implementation and evaluation of DRR curricula and training. For those consulted with at the international/regional/national/local levels for this Background Chapter, there was a consensus view expressed that large scale implementation of sustainable DRR curriculum across all relevant settings (i.e., primary, secondary, university, professional programmes) is a priority. In the words of one consultant for this chapter, this would include “developing a full set of model standards, with skills and competences and learning outcomes to cover both a general all-hazards approaches to risk reduction, as well as the range of specific action-oriented key messaging that households, families, schools and local communities can implement. Another consultant referred to “a long-term, sustainability focus”. Thus, for example, for those doing time-limited projects, taking time to develop relationships that can help take a “project mentality” and transition it to a longer-term implementation mentality. At the same time, a major theme of consultations was the significant set of obstacles that key actors identified blocking national-level policy and, more so yet, large scale implementation and uptake of fully infused, integrated curriculum at both national and local levels. These include:

- Lack of long-term policy-practice-research partnering relationships developed with key national and local actors to move beyond projects to longer-term implementation plans that includes local buy-in;
- Lack of policy-to-practice mechanisms that can assist moving DRR curriculum and training from “aspirational policy” to an agreed upon plan for longer-term, larger scale implementation and related evaluation;
- Lack of research-to-policy translation to support policy and curriculum infusion including providing enhanced rationale that better sells advocacy for larger-scale implementation with policy-makers;

- Lack of research and evaluation on a variety of necessary policy-practice-research fronts (see Research and Evaluation section);
- Lack of DRR training programs at university level, and the lack of technical expertise overall, that can lead the way on systematic infusion of DRR curricula in the other three sectors (primary, secondary, professional programmes);
- Too many different agendas competing for space in educational settings as a deterrent for educational policy makers. Rather than focusing on singular areas, there is value in combining DRR with other agendas, including CCA, and others that can enhance the possibility of more integration and more sustainable implementation. A Comprehensive School Safety agenda has potential for a more inclusive approach to helping children learn about managing a variety of “risks and uncertainties” and “shocks and stresses” that life brings with it.

### Policy and Implementation: Summary

In terms of progress to date, it is beyond the scope of this Background Chapter to systematically document progress country by country in detail.<sup>13</sup> However, it is possible to look at the measurement of indicators meant to reflect progress since HFA to date, including globally across the 146 countries who have reported (of the 168 who adopted the HFA) (UNISDR, 2014) and within each of the major world regions.<sup>14</sup> For PFA3-CI2, there are indicators that each country is meant to self-report on that organise around the indicator itself. Thus, here, countries are meant to self-rate progress on a 1-5 scale on the extent to which they have made progress with the indicator. They are also meant to indicate whether DRR education is included in the national curriculum (yes/no) and, if yes, endorse which of four curricula/programmes include DRR education (primary school, secondary school, university, professional DRR education programmes). Additional space is provided for (1) describing key contextual reasons for the country’s ranking/assessment and (2) highlighting key challenges and how they can be/will be overcome in the future. The template for reporting on this indicator can be seen in Appendix IV.

### Global Progress Summary

When looking at progress, across the first three Global Assessment Review intervals (07-09; 09-11; 11-13), progress has been tracked across all five of the PFA’s. Mirroring the progress across the PFA spectrum, there have been improvements seen, including a modest upward trend as seen in the following Table (UNISDR, 2007, 2009a, b, 2011a,b; 2013a, b, c; 2014):

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<sup>13</sup> Country by country data is available at the PreventionWeb website (<http://www.preventionweb.net/english/hyogo/progress/?pid:22&pil:1>).

<sup>14</sup> Main HFA page for Progress Reports at: <http://www.preventionweb.net/english/hyogo/progress/?pid:223&pil:1>; for Regional Progress Reports, see: <http://www.preventionweb.net/english/hyogo/progress/reports/regional.php?pid:222>

Table 2. Core Indicator 2(PFA3):  
 School curricula, education material and relevant training include disaster risk reduction and recovery concepts and practices.

Average Reported Progress Level: Core Indicator 2 (PFA3)  
 (average progress across all PFA's in parentheses)

<u>2007 – 2009</u>	<u>2009 – 2011</u>	<u>2011 - 2013</u>
3 (3.1)	3.1 (3.2)	3.3 (3.3)

A rating of 3 signifies "Institutional commitment attained, but achievements are neither comprehensive nor substantial." Thus, while a rating of 4 (Substantial achievement attained but with recognized limitations in capacities and resources) or 5 (Comprehensive achievement with sustained commitment and capacities at all levels) is of course preferable, movement is in the desired direction and mirrors the average change seen across all PFA's taken together as well as individually (i.e., gradual stepped change). As seen in Table 2, progress for PFA3/CI2 has followed the trend seen across all five PFA's and their Core Indicators. As with PFA3/CI2, ratings averaged across all PFA Core Indicators have increased steadily across reporting periods to an average level of 3.3 in the most recent reporting period, mirroring the same level for PFA3/CI2.

In terms of DRR inclusion in the national curriculum, the most recent GAR (11-13) reported that 72% of reporting countries indicated that DRR was included in some way in the national educational curriculum. As for which specific level of curriculum DRR education was included, percentages range from 55% (professional programmes) to 65% (primary school curriculum) with secondary and university inclusion in between (56% and 61%, respectively). However, as pointed out in consultations, the extent of the DRR inclusion is largely unknown in light of a self-reporting process and given the nature of this core indicator (e.g., national implementation that includes voluntary uptake at the local level might get rated as included when there is low actual uptake versus in another country where there is greater uptake).

#### Regional and National Progress Summary: Overall but Uneven Progress

While there is overall progress at the global level, at Regional level, there is disparity across the different regions. First, many countries do not report, with reporting rates across HFA Priorities for Action in 11-13 ranging from 51% (Europe) to 70% (Oceania). However, participation in Europe, the Americas and Asia remained relatively stable across reporting periods (51%, 59% and 67% in 2011-2013 reporting period, respectively). Africa's reporting rate fell from 70% in the 2009-11 review period to 52% in the 2011-2013 period. By contrast, Oceania's reporting rates increased dramatically across these two periods from 38% to 70%.

For those countries that have reported, and as summarised in the 2007-2013 HFA Summary of Reports (UNISDR, 2014), levels of self-assessed progress in this area "vary significantly, indicating there is still much to be done..." (p. 24). Across all four levels of implementation (primary, secondary, university and professional programmes, "only 30% of reporting countries describe having been able to include disaster risk reduction in curricula at all

education levels, primary, secondary and tertiary, as well as professional education programmes” as noted in the summary of Thematic Research Area 5 (UNISDR, 2013b, p. 15) and in the HFA 2007-2013 reporting summary document (UNISDR, 2014, p. 24). However, it is noted in the 2013 GAR report (2013a) that “only 20% of reporting countries were delivering DRR to all of the HFA target groups” (p. 28). Regardless, whichever figure is correct, there are between 70-80% of reporting countries not delivering DRR curriculum to all four target groups. In addition, only 4% of countries reported a rating of 5 (i.e., comprehensive achievement/sustained commitment) in 2013, dropping from 6% in 2009. On the other hand, across that same interval, those reporting a score of 4 (substantial commitment/some recognized limitations) increased from 25% in 2009 to 38% in 2013. Those scoring 3 (institutional commitment/non-substantial achievement) rose from 39% to 41% across that same interval. Thus, while the rate of sustained commitment is quite low and its drop from 2009 a concern, overall increases in scores continue to be seen. This is particularly seen in the increase of those who reported a score of 4 in the most recent reporting period.

Similarly, the 2013 HFA reporting summary (UNISDR, 2013a) and the summary of Thematic Research Area 5 (UNISDR, 2013b) both note areas of overall progress across the HFA. Similarly, Input Papers and consultations summarized also converge on a two part story, noting many challenges but also noting clear areas of progress that most likely wouldn’t have occurred without the HFA process being in place. Moreover, many case examples and demonstration projects are available that document successes in many countries. Further yet, as detailed in the next section on Practice, in both curriculum- and training-related areas, further developments are apparent in curriculum, curriculum infusion guidance, the increased numbers of DRR training programs available at university-level, and innovative, integrated ways to move forward the DRR curriculum and training agenda. Finally, as detailed later in the Research and Evaluation section, a growing number of research projects also report evidence-produced successes, including DRR curriculum demonstrating effectiveness in producing risk reduction- and resilience-related outcomes for children, families and communities. Thus, there is much to point to in terms of progress since the HFA that has been facilitated by the HFA process, triangulated across all input sources for this Chapter.

Nevertheless, the input for this Background Chapter agrees with the UNISDR Summary that indicates “uneven progress” and “much to be done” in this area (UNISDR, 2014). At a national level, as documented in relevant summaries provided by UNISDR (2013a, b):

“The extent to which school curricula, education material and relevant training include disaster risk reduction and recovery concepts and practices varies significantly. While there are successes in developing and delivering DRR curricula material in education, progress is uneven across countries, as is targeting relevant groups of students and professionals” (p. 24, UNISDR 2013a; pp. 14-15, 2013b).

The summaries (UNISDR, 2013a,b), Input Papers and consultations also point to multiple reasons underlying uneven progress, including:

- Devolving curriculum development and delivery to state or provincial levels;

- Attempts at scaled implementation tend towards emphasizing voluntary uptake at the local level that then runs into crowded curriculum, lack of teacher training and other obstacles;
- Few countries describe having been able to include DRR in curricula at all education levels, primary, secondary and tertiary, as well as professional education programmes.
- Placing with already busy teachers the responsibilities for using DRR curriculum and for DRR content;
- Lack of school and university curricula and professional and government training modules as specific means for building capacities, including a lack of systematic teacher training at pre- or in-service levels (see also later subsection of Practice section on Training DRR Professional and Teachers);
- A lack of data on outcomes that can be translated in user-friendly ways for policy-makers about the merits of scaling up DRR curriculum infusion and training (see also later subsection of Research and Evaluation section on DRR Curriculum and Programs);
- Advocacy, lobbying and other efforts (e.g., demonstration and research projects), often do not contain all necessary elements, including a vision, necessary relationships and concrete mechanisms, for how the project fits into a longer-term plan for scaled, sustainable implementation that can incrementally, or wholly, be carried out and evaluated at local levels and with local ownership. One that adopts an approach, and associated “languaging”, that is seen by national- and local-level actors as solving relevant problems, or removing obstacles (e.g., crowded curriculum), to policy and practice implementation efforts.

Related to this last point, and given developments to date supporting incremental disaster-focused policy-infusion (Heazle, Tangney, Burton, Howes, Grant-Smith, Reis, & Bosomworth, 2014), such an approach and its value for promoting future developments might get more attention. An incremental policy approach is one that not only is capable of emphasising evidence-based policy but can additionally account for policy and political realities in any given country (Heazle et al., 2014). What this translates to in more concrete terms is that progress, according to this view, is one that best moves forward through building on the foundation of current accomplishments, locating places in the relational dialogue where next steps can occur. As one consultant for this Paper emphasised, a long-term view for CSS/DRRE infusion is actually an advantage rather than disadvantage. From a staged, or incrementalist, policy view, there is a similar emphasis, one that sets both longer-term, aspirational targets alongside more achievable short- and intermediate-phase goals. At the same time, with the definite progress made over the past decade, it is worth setting not modest but quite lofty goals for the next 10-15 years. The final Summary and Recommendations section of this Chapter expands on this idea by way of specific recommendations linked to a main goal of a fully integrated curriculum as a first consideration and, where appropriate, alternative, short- and intermediate-term stepped strategies that best fit a national or local context and a shared vision (see also UNISDR, 2007).

## Policy and Implementation: Final Words

A theme that has stood out across Input Papers, consultations and desk review (e.g., of curriculum advice, case examples, research, see later sections) strongly endorsed the view of a current project mentality as both a help and a hindrance. As five key actors pointed out, the fact is that projects are a necessary stepping stone to larger developments. Many projects over the 05-15 HFA timeframe have moved the agenda along. This includes demonstrations that many educational practices recommended are indeed feasible, have scope for large scale implementation, are capable of producing important outcomes and, overall, have a growing theory and research basis (see Research and Evaluation section).

With this sturdier platform in place, next steps in project development include strategic advocacy and project management involving five elements: (1) prior to projects commencing, relationship, trust-building and longer-term partnerships with key government actors, curriculum developers, teacher-training college professors, in-service training leaders, teachers, researchers and with other important stakeholders (including children themselves); (2) research and evaluation planning that builds in important indicators related to DRR education that can also meet the needs of government officials and their policy initiatives; (3) in-depth analysis of current curriculum for points of entry and carrier subjects for infusion; (4) projects that develop and include a "road map" from demonstration/pilot stage through to implementation at scale (e.g., UNESCO/UNICEF, 2013). Thus, as discussed later in the Research and Evaluation section of this Background Chapter, evaluating important implementation road map indicators linked to both DRR education practice and policy development would be thought to assist here. A final element here of course is (5) DRR program content should be developed and delivered according to DRR- and education-based theory and research and which are shown to work to (a) produce increases in DRR- and resilience-related indicators and (b) translate into primary, "ultimate" outcomes during Response and Recovery phases of hazardous events (e.g., lives saved, injuries reduced, psychosocial consequences reduced; children "bouncing back" faster; demonstrated cost savings; building a "DRR and resilience mindset" in the adults of tomorrow).

## Practice: Curriculum, Training and Other (CSS) Initiatives

### Introduction: Moving Towards Scale and Prospective Research

This section speaks to curriculum development and teacher training necessary to support DRR-related principles and practices. This includes sections focused on the following: (1) curriculum development and education materials, (2) teacher and DRR professional training and (3) other initiatives linked to a CSS and CCA agenda.

### Curriculum Development and Education Materials

There is a body of work that speaks to curricula and education materials that is detailed, based on sound theory and pedagogic research and that should be disseminated more widely. In particular, the document "Towards a Learning Culture of Safety and Resilience:

Technical Guidance for Integrating Disaster Risk Reduction in the School Curriculum” (UNESCO/UNICEF, 2013) is an excellent resource, reviewed, used and advocated for use in practice and research contexts focused on risk reduction and resilience education curriculum development, implementation, delivery and evaluation. Combined with the other UNESCO/UNICEF “30 case studies” publication (2012), many Input Papers source these documents as the basis for assertions and recommendations. Consultations with some of the main actors in this area also cite these two documents as foundational. Numerous other documents reviewed for this Chapter reflect similar infusion- and integration-supportive principles. A listing of sources for a plethora of additional case examples is also available (see Annex I). Another resource is the Compendium, reproduced at the back of this document in Annex II, which includes DRR education materials and resources that have been compiled both pre- and post-HFA. Thus, this section is intended to amplify, extend or supplement points made in these documents.

As part of this amplification and supplementing process, a recently published article promotes a systems approach to DRR education curricula integration, one that starts simple and builds and integrates over time (Ronan & Towers, 2014; see also Ronan et al., 2014 Input Paper), an approach quite compatible with the recommendation for a more integrated curriculum (UNESCO/UNICEF, 2013). Menoni, Weichselgartner and colleagues (2014) in their Input Paper also speak to the need for systems thinking in DRR and DRR education, including helping children (and others) understand systemic links between natural disasters and climate change adaptation, links between scientific disciplines and knowledge transfer into various settings including DRR educational settings. These authors are the developers of the Know-4-DRR EU funded project and knowledge management (and transfer) system, described in the paper alongside 12 case studies, and related concepts, which could be used in more intermediate to advanced education programs.

However, despite calls for a more systemic, integrated curriculum, DRR education programs are rarely integrated in a school’s curriculum, either horizontally or vertically (Johnson et al., 2014; Kagawa & Selby, 2014). That is, many DRR education programs are not part of the formal school curricula but characterised as more one-off programs that are part of demonstration or research projects. The Towards a Learning Culture document (UNESCO/UNICEF, 2013) itself speaks to four key approaches to DRR education integration (Chapter 2). In some ways, the move from the first to the fourth of four approaches represents a developmental sequence that starts with an easier-to-start approach (Approach 1, Concurrent/Time Coordinated Programme Delivery) all the way through one that represents a full integration of DRR-blended learning across the curricula (Approach 4, Interdisciplinary Cross-Curricular Blending of DRR Learning). The easier to start Approach 1 appears to represent the most common type of educational programming. It is noted that a number of the education program evaluations included in a recent systematic review of DRR education research (Johnson et al, 2014) reflected education programs much more of this sort than of the sort that reflect an integrated curriculum. Similarly, Approach 3 (Special Subject) reflects an approach where government/education authority backing can lead to quicker implementation and resourcing to try to secure that the program a dedicated space in the curricula. Seven of the 35 evaluations compiled in this review were evaluations of educational program development and roll-out using elements of Approach 3 as well as

Approach 1. Unlike Approaches 2 (Multidisciplinary Programme Delivery) and 4 (Interdisciplinary Cross-curricular Blending of DRR Learning), Approaches 1 and 3 typically have less potential for blended learning and curricular cross-cutting (UNESCO/UNICEF, 2013).

While moving towards integrated, experiential and interactive curricula is the goal,<sup>15</sup> there is value in working with, and building from, the reality. The first reality is that DRR education practices have clearly grown over the past decade. This growth is in no small measure owing to the role of the HFA through advocacy and the work of development agencies in tandem with UN-affiliated organisations like UNESCO, UNICEF, INEE, UNCRD, WHO, United Nations University (and the UNISDR platform) and various national governments and education authorities. In the opinion of one Bangladeshi respondent to the Kagawa and Selby Input Paper (2014), advocacy on the part of various development agencies have additionally played a “fantastic role” in securing a more prominent place of DRR education in schools and school safety in national government authorities’ policy and practice awareness. Consultations for this Background Chapter also endorsed this view, with the explicit noting of progress in additional countries (e.g., El Salvador, New Zealand, Phillipines, Turkey, Vietnam; see also listing of publication sources with many case examples in Annex I).

Given the tendency for special topic-related educational programming and time-limited projects, and working with the reality first, it is important that we collectively do not “throw the baby out with the bathwater”. As expanded on in the Research and Evaluation section, DRR curriculum and programs now have begun to be evaluated, a number of them demonstrating research-supported outcomes, whether in the classroom (Johnson et al., 2014), in the wider school context (e.g., Johnston, Tarrant, Tipler, Coomer, Pedersen, & Garside, 2011) or in a trusted community setting (e.g., Webb & Ronan, 2014).<sup>16</sup> However, what appears largely across Input Papers, desk review and consultations is a shared longer-term aim of helping regions and countries develop more integrated curricula. Thus, the work of Kagawa and Selby appears to be most prominent here, including their Input Paper (Kagawa & Selby, 2014) and numerous other sources (input papers, consultations) that

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<sup>15</sup> One Input Paper (Huertas & Morales, 2013) describe an interactive online game “Riskland” for school children described as “an innovative way to include disaster risk reduction in the education system by promoting ...the need not only to protect themselves but also to protect their animals...” (p. 8) and describe in the paper two “validation” activities carried out by the World Society for the Protection of Animals; more generally, Selby and Kagawa (2012) describe many different types of experiential and interactive educational curricula and activities across 30 different countries as well as in some selected case studies in their “technical advice” publication (Selby & Kagawa, 2013). See also Annex I of this Chapter for access to these publications and additional curriculum-related and other case examples.

<sup>16</sup> Non-classroom school education includes school drills (Johnston et al., 2011), school field trips, school visits to museums and other settings. It also includes DRR education programs carried out in community settings (Johnson, Ronan et al., 2014). Non-classroom entities can be an important source of DRR education for children and families because they may be trusted sources of community-based information on science and hazards (e.g., museums) and may have relationships developed with local schools (DRR professionals). More generally, another advantage of education delivered outside the school setting is that it can attract a subset of children not engaged with school (Webb & Ronan, 2014). A future focus for research should be to develop and execute a series of evaluations of non-classroom education programs for children.

reference their work. In addition to the numerous recommendations made in previous UNESCO/UNICEF produced “technical guidance” and “30 case study” publications (UNESCO/UNICEF, 2012, 2013), more up to date recommendations from these authors related to “key dimensions” of an integrated DRR education curricula are as follows (Kagawa & Selby, 2014):

- Understanding the science of natural hazards including links to climate change;
- Learning and practicing protective and safety behaviours;
- Understanding drivers of risk and how do hazards become disasters?;
- Linking horizontally/vertically integrated DRR education to larger community DRR initiatives and capacity building;
- Building an inclusive culture of resilience and safety at school, child, family and community levels.<sup>17</sup>

As reviewed in more detail in the Research and Evaluation section, additional elements, including some that overlap with the list above, have evidence-produced support:

- Specific action-oriented, DRR-infused key messages that are supported by research and/or expert consensus;
- Promoting single actionable behaviours is preferable to a longer list of lesser important, unprioritised, messages;
  - There appears to be some large scale agreement that a most important, doable behaviour is learning and practicing protective behaviours in the context of a flexible risk reduction/emergency plan, at school, at home, in the community;
- People need to know that the action they take will be effective in keeping them safe or mitigating risk in other ways;
- Promoting stressful and risk-related events, including disasters, as “challenges” versus “threats” has evidence-based support. This includes research that has shown that DRR curriculum can reduce children’s disaster-related fears while equipping them with increased problem-solving and risk reduction capacity (see Research and Evaluation section);
- Individual and collective problem-solving (and collective helping) have been shown to produce benefits, including in relation to disaster risk reduction and resilience;
- Learning how to manage arousal in risk-related situations promotes more effective problem-solving and enactment of safety plans;
  - While true for people of all ages, this is particularly true for children who typically have disasters as one of their major fears;
- Interactive, engaged, experiential, participatory forms of education have been shown to produce better outcomes than “passive”, traditional, one-way forms:

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<sup>17</sup> This “inclusivity lens” is important in light of some indications that that issues like gender, disability, socio-economic/livelihood considerations, child protection and participation are not considered in any depth in DRR curriculum development or policy (e.g., Boon et al., 2014; Kagawa & Selby, 2014).

- An interactive, DRR-focused curriculum was found to be superior to a more traditional classroom reading and discussion format in producing important DRR-related outcomes in a randomised trial. This included children’s knowledge of important protective behaviours and home-based DRR and preparedness activities. Another study replicated, and extended, those findings in a study done in a community in a lower socio-economic strata (see Research and Evaluation section);
- A factor found to predict parent-reported home-based preparedness and risk-reduction activities is an increased number of child and parent discussions about what the child learned in a DRR education program;
- Thus, supporting child protection through child-participatory forms of education has evidence support (see Research and Evaluation section).
- Other empirically-identified predictors of beneficial outcomes of DRR education programs, and discussed in more detail in the Research and Evaluation section include:
  - Children’s DRR-related knowledge;
  - Involvement in a greater number of DRR education programs;
  - Involvement in more recent DRR programs (versus those in the past).

### DRR Curriculum: Consultations and Case Examples

In terms of consultations, five of those consulted with for this Chapter spoke about specific curriculum and education content and materials, two from international level, one from a regional level and, one a teacher (i.e., taught in Kenya) and the final one a CC-DRR researcher. One of the two international-level consultants stated that curriculum advice too often focuses on “generalities” versus “how specifically do people reduce their risk.” In the latter category, this should include “the teaching of skills that saves lives.” One that emphasises both the messages supported by research or expert consensus alongside education programs that emphasise “children thinking for themselves” in DRR-related ways. Both of the international-level actors advocated for the DRR “key messages” document developed the International Federation of Red Cross and Red Crescent Societies (2013) as being part of future curriculum planning and development of education materials. Based on desk review, this document does appear currently to be the most authoritative piece on DRR activities aimed at the household level that can save lives, reduce injuries and improve psychosocial outcomes, both generally and in relation to specific natural hazards. The key messages document is based on what appears to be a rigorous, stepwise development and validation process that included subject matter experts globally and that is documented in the publication. The teacher said that “if you brought me a DRR package, I would take a look at what (the children) needed to learn...(and not emphasise a) “sit down and do this assigned work” format. Rather, she would plan a “combination of instruction and participation” that balanced “adult guidance” with children’s “active participation.” She would start with a “reading, writing and research project to start off”, including each child developing a “booklet/portfolio that develops over time”. She would emphasise “hands on activities...(like) creating a model of the earth (or whatever would be appropriate” and have a “combination of protection versus participation.” This would include protection- and participatory-based “activities that show safety-related outcomes.” An issue emphasised by

this teacher was that implementing DRR curriculum was quite possible, even in the face of “too crowded, too busy classrooms with very few resources.”

Supplementing this response, the regional actor put it like this:

“Measuring the integration of DRR concepts and practices into school curricula is useful to know the level of integration. However, from my observation, it is not just a matter of integrating the concepts to the curricula or education material. The key of success in introducing DRR messages to children lies with the teachers....Teachers need to be trained (systematically) on how to introduce DRR concepts and practices in a child friendly way, which is fun, simple, and in an age-appropriate way.”

In the words of the CC-DRR researcher:

“...there are countless opportunities for teachers to infuse DRR: however, the extent to which they do so is going to depend largely on their own interest, knowledge and awareness of DRR issues. Thus, to a large extent the inclusion of DRR in curriculum is dependent on a teacher's capacity to identify the areas in the curriculum where DRR concepts and theories can be appropriately included.”

On the other hand, as introduced previously, and described in more detail in the Training section below, a lack of teacher training and other issues (e.g., a crowded curriculum) are seen as an obstacle in many countries. This includes a lack of training in particular being seen by these consultants, and by teachers themselves (Johnston et al., 2014), as a deterrent to a DRR curriculum focus.

Additionally, desk review indicated numerous case studies being available that are listed in Annex I that document exemplar DRR educational and safe schools practices. Finally, as introduced earlier in this section, research studies have also begun to examine the “active ingredients” in DRR curriculum and related educational initiatives (e.g., risk communication, public health), including those that produce intended DRR- and other risk reduction-related outcomes.

## DRR Curriculum: A Role for Indigenous Practices and Cultural Custom-Fitting

A number of DRR curriculum and educational materials have at least some support, whether in theory, research, and based on multiple demonstration projects/case examples. Consistent with the guiding principles of Thematic Research Area 5, these practices should include indigenous knowledge and practices. In addition, whereas there are some principles supported by theory and/or research (e.g., participatory forms of education being superior to passive forms; learning how to manage arousal as important to decision-making in crises), these principles require assessment by local actors as to their appropriateness. If deemed appropriate, additional “custom-fitting” is then needed to promote uptake within a specific cultural and community context. That is, DRR education programs need to deliver curriculum and materials in a way that suits the indigenous, local context and its way of learning, interacting, living. In fact, a group of DRR professionals (n = 6) noted in their consultation submission that there should be an explicit place for local/indigenous knowledge in the next

set of Core Indicators: fostering local knowledge that is every so often (is) rejected as being less important than those from experts...the indicator should have a space to mention 'local/ indigenous knowledge'." At the same time, they also appeared to endorse the custom-fitting idea proposed as follows: "If an international curriculum for different level of education and training manual for different professionals and general people are proposed and designed which may be refined according to social, geographical and climatic position will be very helpful to determine the effect and changes (of this curriculum)."

## Training DRR Professionals and Teachers

Focus group discussions with strategic planners from national education authorities done by one of the actors consulted with for this Chapter and consultations with numerous GADRRRES members, researchers, DRR and teaching professionals done for this Background Chapter, and written materials related to HFA and to the Core Indicator, indicate a number of priorities. Scalability is a major issue. However, large scale implementation of teaching training first rests on the same premises that large scale implementation of DRR curricula and CSS programs rest on. That is, they need to be developed reflecting theory and research and they need to produce measurable competency-based outcomes.<sup>18</sup>

Input Papers, consultations and desk review emphasised that efforts developed through capacity-building within the institutions that countries rely upon for DRR (e.g., Ministries of Civil Defence) and for teacher and school administrator practices (e.g., Ministries of Education) are obvious sources for developing training approaches. Other possibilities exist for large-scale pre- and in-service training models, including those that are mindful of resource limitations (see later in this section for example). Gleaned through desk review and Input Papers, and emphasised in consultations with numerous GADRRRES members, it is only by embedding the important subjects that underpin DRR and Comprehensive School Safety within these training programs that sufficient expertise can be developed to support long-term infusion of DRR principles into curriculum and school disaster management. New thought, efforts, and program design must involve the education sector and DRR professionals in this effort, rather than being primarily pushed from external actors as it is now. Similarly, most DRR classroom or non-formal programs tend to be developed and delivered by teachers or DRR professionals. However, as consultation in particular underscored, whether these professional groups have demonstrated mastery of evidence-informed competencies, including knowledge and skills in DRR and in curricula development, delivery, implementation and evaluation more generally, is unknown. In focus group research, teachers themselves have expressed hesitancy about teaching DRR topics without training (e.g., fearing they will scare children, too busy with core curriculum, Johnson & Ronan, 2014). Consistent with the message in earlier sections, research and theory knowledge is critical for DRR training development and delivery, evaluation and implementation.

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<sup>18</sup> For teacher training, both educational- and DRR-related theory and research are obvious central sources from which to produce training-related curricula and materials. However, in addition, from a systems and holistic view, infusion of other disciplines (e.g., public health, psychology, sociology, engineering, geography, geology) would be thought to add value.

A number of Input Papers speak to the issue of teacher training, some of them as part of a larger focus on a range of topics linked to DRR education and reviewed earlier in this Chapter (e.g., Calic et al., 2013; Dufty, 2014; Izadkhah & Hosseini, 2014; Kagawa & Selby, 2014). Briefly, all of these Input papers discuss national developments around teacher training, each of them recommending more systematic inclusion of teacher training. This includes moving DRR education training to a more university-based, comprehensive focus versus a workshop-based, limited focus. In addition to these papers, four other Input papers have a more explicit focus on the issue of teacher training. These are now summarised.

Holloway (2014) writes from a South African perspective and has a focus on “strategic mobilisation of higher education institutions in DRR capacity building”. Holloway uses the case example of one university-based consortium (Periperi U).<sup>19</sup> She advances the premise that benefits are to be derived from “the contribution of purposive, collective higher education engagement in advancing disaster risk reduction education regionally...” (p. 4, Holloway, 2014). More generally, Holloway advances the notion that increased engagement with higher education will derive significant benefits for not only the HFA and DRR-related matters but also for other agenda yet (e.g., MDG and post-2015 progress). Couched within the larger platform of “new knowledge relationships” that higher education can offer development agendas – particularly through “mode 2 knowledge relationships” emphasising inter- and trans-disciplinary efforts – Holloway stresses this as “paving the way for new cross-disciplinary curricula...” (p. 5). This includes DRR and DRR education curricula.<sup>20</sup>

According to an “indicative desk review”, Holloway identifies about 100 masters-level programs that are related to DRR as can be seen in Appendix V. Regions/countries that have over 15 programs include Asia, Europe, Africa; between 10-15, Latin America, UK; 5-10, North America, Oceania; under 5, Middle East. In the African context, Holloway (2014) speaks to the successes of the Periperi U collaborative through case examples, elucidation of different degree programs on offer and on the horizon, signalling the impact of HFA and related developments.<sup>21</sup>

“These (masters-level) programmes would have been simply unthinkable ten years ago, when African students keen to strengthen their knowledge in the disaster risk field were obliged to study in northern institutions at prohibitive costs. By the end of 2013, there were more than 600 under-graduate and postgraduate students enrolled in disaster risk-related academic programmes across the consortium” (p. 14).

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<sup>19</sup> Periperi U = *Partners enhancing resilience for people exposed to risks (with a focus on universities)*. Another university consortium Holloway cites is based in Asia – the Asian University Network for Environment and Disaster Management (AUEDM).

<sup>20</sup> It also includes increased potential for other curricula in climate change adaptation, sustainable development and other areas linked to development and humanitarian agendas (Holloway, 2014).

<sup>21</sup> This includes a case study in Mozambique where cholera-related deaths were limited to under 1% (versus 4.35% in Zimbabwe) following senior Ministry of Health officials attending the Technical University of Mozambique school public health’s Public Health in Complex Emergencies annual course. This course included a specific focus on cholera outbreaks, including early identification and management (Holloway, 2014).

Given these promising developments that appear quite clearly to have been facilitated by the HFA process, only one of the consortium partners has developed a masters-level qualification linked to DRR education specifically, a MSc Education and Development that includes a DRR component (Technical University of Mozambique (UDM)). In fact, of the around 100 DRR-related masters programs, only this one appears to have a specific education focus. That of course is not to say that other DRR-related programs won't be implementing training around DRR education practices and programs. That is, given that DRR professionals regularly engage in developing and promoting public safety campaigns, ensuring that training is done in development and delivery of educational initiatives appears commonsense. However, it is also to say that there appears to be plenty of scope for more specific DRR education-focused training in the higher education sector focused on education in schools. One that builds on the useful momentum created through the development of other DRR higher education training programs in the past decade. Thus, in higher education, DRR education delivery should figure more prominently in primary and secondary teacher training programs. There is scope also to include it as part of other DRR training programs. The successor HFA framework might track developments in these training spheres (see later section, Research and Evaluation: Indicator Development and Future Directions).

In another Input Paper, spanning a wider range of training, Menoni, Bonadonna and colleagues (2014) evaluate a listing of academic programs listed at PreventionWeb. From 260 listings, they determined that 140 programs "clearly still exist", with some additional ones that may exist. These courses run from Certificate/Diploma level (n = 36) through Bachelor-level (n = 25), masters-level (n = 122; this is more than the approximately 100 indicated in the Holloway (2014) desk review described just above) and doctoral-level (n = 10). In terms of discipline within which the program is offered, the breakdown is as follows: 32% (technical), 22% (social science/humanitarian/public policy), 14% (health/public health), 11% (military/policy/emergency professionals), 9% (geology), 7% (geography), 5% (environment). Note that education is not represented in this breakdown.

The authors go on to describe three example programs: specialisation certificate in assessment and management of geological and climate related risk (CERG-C), University of Geneva; a civil engineering program (Civil Engineering for Risk Mitigation master of science program) at the Politecnico di Milano; a master of science program (Geography of Environment Risks and Human Security), a joint effort between the United Nations University Institute for Environment and Human Security and the Department of Geography, University of Bonn. Across these programs, and more generally yet, the authors hone in on four themes in DRR training in the higher education sector: (1) Open to professionals including teachers and other disciplines; (2) Focused – develop specialties while ensuring an "ample interdisciplinary perspective"; (3) Cross-cutting – in learning specialty knowledge, ensure that there is cross-cutting knowledge inculcated to "fully understand the...context in which (the student) will operate" (p. 16); (4) Shared – opportunities for "co-learning", marrying theoretical understanding with practical real-world realities to assist in closing various research-practice gaps. This includes their emphasising the importance of research-practice collaborations. Finally, in line with a post-2015 agenda, the inclusion of sustainability themes in DRR higher education programs is emphasised.

Sinkamba and Maripe (2014) present the social work program at the University of Botswana and efforts to inculcate the DRR principles and practices into its social work curriculum along with some companion research with 54 3<sup>rd</sup> year students to assess their knowledge and understanding of disasters and DRR. Half of the participants claimed to know something about DRR whereas the other half “had no idea what it meant (p. 10).” Despite this and other findings (e.g., had only reactive, versus proactive, DRR knowledge and skills), the University of Botswana, and the authors, are champions for more inclusive DRR education policy and practice across differing levels in that country, alongside using research and evaluation to support its increasing implementation over time.

Nyberg and colleagues (2014) describe three higher education initiatives in Europe, two based in Sweden, the third a joint effort across universities in Europe and the UK. Across all three, analysis was done according to HFA principles and previous UNESCO/UNICEF findings (e.g., UNESCO/UNICEF, 2012). The goal was to identify potential new indicators for DRR education. Findings from that analysis can be seen in the table located in Appendix VI. According to the authors:

“The criteria from (that table) can be used for new indicators for progress in DRR education. This could for example be:

- The integration of natural and social scientific aspects of disaster risks and reduction (interdisciplinary and holistic perspective)
- The inclusion of professionals at all levels in DRR education and training activities
- The use of spatially distributed on-site education” (p. 12).

Moving beyond Input Papers, it is worth highlighting a recent example of a resource-friendly attempt to develop an evidence-supported teacher training model and implement it at scale. This attempt represents a collaborative effort led by by the Ministry of National Education (MoNE) in Turkey (Petal & Sanduvac, 2012). DREAMS for Turkey is a case study of “scale and reach of distance-learning self-study for individual and household preparedness and school disaster management” (p. 1, Petal and Sanduvac). Two modules have been developed, each with separate lessons and exam: (1) The School Disaster Management Course (9 lessons and exam) and (2) The Disaster Preparedness for Individuals and Families Course (DPI&F; 10 lessons and exam). For the development of these DREAMS courses, after an inter-departmental group developed DRR content “consistent with international best practices...best practices in e-learning were (next) researched” (p. 2). This included accessing DRR and educational theory and research across multiple areas of content, delivery and assessment. Based on identification of 57 design factors, designers scored 80% on a self-assessment of their application of each design factor. In addition, 20 lead instructors were trained to help facilitate uptake and training in their home provinces. The DREAMS publication presents a good amount of data on uptake. However, to summarise briefly, during the first year (from Sept 2011), more than 1 million individual lessons were completed. Over 50,000 users successfully completed the entire School Disaster Management course and exam; 40,000, the DPI&F course and exam. It is worth noting that costs are minimal (e.g., .35 USD per lesson). Next steps here include a survey of users to evaluate “the impact of the training on actionable risk reduction at the school (and home) level...(and) “Partnerships are in development to build on the assets created and to develop

similar programs in other countries” (p. 6). Other case examples related to teacher training and materials is located in Annex I.

Certainly, challenges remain.<sup>22</sup> At the same time, this example is one that was planned from its inception to move beyond a time-limited “project mentality” labelled in previous sections. This planning stressed the promoting of an interface, key relationships and a set of mechanisms linking HFA/DRR principles with national government policy directions and priorities. The development of longer-term relationships with important sectors (both Ministry and sub-national level) appears to be one key. Another appears to have been the supporting of government policy direction through solutions seen as achievable by both national and local level actors.<sup>23</sup> Importantly, in future teacher training, including in-service ones like DREAMS represents, the development of low-cost, wide-reach, sustainable training (and learning) mechanisms as an alternative to much higher cost scoping and sequence analysis and full curriculum infusion may assist, or even be key, to getting buy in. The identification of champions (i.e., the 20 lead teachers identified in earlier trainings as committed to promoting wide scale DRR training) also appears to have assisted as there were indications of a “strong word of mouth phenomenon at work” in relation to uptake. Thus, DREAMS combines both top down and bottom up strategies that promote a shared vision, supported by key, ongoing relationships between international agency actors, key Ministry actors and, perhaps quite importantly, local champions.

## Other Initiatives

This section looks at two directions for a DRR curriculum agenda, one through a Comprehensive School Safety approach and the other linking with a Climate Change Adaptation, and other, agendas.

Comprehensive School Safety. As introduced earlier, within the three pillars of the Comprehensive School Safety (CSS)\_framework, and linked to this Core Indicator, there are important areas of overlap between DRR in school curricula/Risk Reduction and Resilience Education (Pillar 3) and the other major aspects of a CSS agenda. Firstly, looking at Safe School/Learning Facilities (Pillar 1), as framed by one NGO consultant, and as articulated in an Input Paper by Ronan and colleagues (2014), it is important not to think of students and staff as merely passive users of school facilities. Disaster resiliency embedded in safe school design and construction is usually opaque to users. This is something that can be changed. Construction is an inherently fascinating human undertaking, and using school construction as an educational experience, cooperative curation with school designers and builders can be

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<sup>22</sup> Turkey has just under 750,000 teachers from preschool (c. 17,000) through primary (c. 500,000) through secondary education (c. 220,000). Thus, while 50,000 trained teachers is an impressive figure, it also is worth noting that it represents less than 10% of teachers in the country.

<sup>23</sup> Turkey is a seismically active country, with numerous areas also at risk for flooding, and government policy supports DRR initiatives particularly in relation to the seismic risk but also endorses an all-hazards approach. The Ministry of National Education also through this initiative demonstrated a shift in DRR-in-schools policy direction: from “school disaster management practices (that) were based on a Cold War model of civil defense” (p. 2) to one that promotes more of a social inclusion, participatory model based more on a CSS approach.

one important way to link this with children's lives and experience. Moreover, disaster resilient design and construction are skills that can and should be introduced in primary school, in preparation for fuller treatment in vocational and post-secondary education. More practically, learning good practices in risk assessment and building maintenance, carried out in schools on a regular basis is equally important for maintaining school safety from hazards and for promoting children's learning.

On this topic, an Input Paper by Kjaergaard et al., (2014) speaks to UNICEF-led "child-centred risk assessment" in the Asia and Pacific. What is described in the paper is a risk mapping tool that links "child vulnerability data with natural hazard and climate change information" (p. 3). Through incorporating children in DRR risk assessments, it can highlight their vulnerability for policy-makers while capturing the views of children themselves. Thus, "consultations with children are an important field methodology to empower them to play a role as agents of change. However, in most national and non-field based assessments, participatory approaches are absent and replaced with vulnerability indicators based on secondary data" (p. 6). The paper goes on to describe child-centred risk assessments in various countries including Nepal, Lao PDR, Indonesia, Solomon Islands, India across the major areas of the "risk formula (hazard, vulnerability, exposure, capacity)". Such a tool has several benefits, including in advocacy on child rights, risk-informed country (and sub-national/local) programming, and on child participation and "multi-sectoral interventions." One of these multi-sectoral areas (of seven) is safe infrastructure in relation to promoting DRR and climate change adaptation in site selection and building design. At the same time, linking "safe schools" risk mapping with Pillar 3, children themselves can with increasing development participate, and be taught, safe schools (and other forms of) risk mapping while learning and acquiring more basic risk assessment knowledge and skills.<sup>24</sup> More generally yet, the Input Paper provides a good level of detail, uses for, and varieties of, the risk assessment/mapping tools. In particular, from a UNICEF perspective, child-centred risk assessment is useful "to promote child-centred and risk-informed development and humanitarian interventions...(including that) it helps initiate dialogue with government counterparts and partner organizations to bridge development and humanitarian action, brings children into the risk equation and integrates child vulnerabilities in existing risk assessments" (p. 25). On a more school-based/community level, it has clear potential within a participatory and CSS framework, including through links between Pillar 1 and 3.

On another CSS linkage, between Pillar 2 (School Disaster Management) and 3 (Disaster Risk Reduction and Resilience Education, Pillar 2 provides an obvious, and critical, space for experiential learning. By moving away from "plans" to "planning", two very important themes can be conveyed: firstly that disaster risk reduction is an ongoing and participatory endeavour that can be integrated into our normal lives (and normal school-based management) through an ongoing progression of small, linked steps. Secondly that the knowledge and theory discussed in formal education are put into practice in real life, where we are: in schools, at home, in communities. Student engagement in school disaster management, beginning with risk assessment (in and around school), active problem-solving

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<sup>24</sup> The Input Paper makes numerous recommendations about how to get the most out of child-centred risk assessments linked to their use in multi-sectoral/sectoral interventions.

and implementation of seemingly modest and incremental risk reduction efforts lays a foundation for critical thinking and active problem-solving. One that promotes an increasing willingness to actively take on challenges, including skills and confidence to deal effectively with the range of risks that life, and localities, bring.

Learning both the theory and actions linked to standard operating procedures for emergencies and disasters is important. However, so too is understanding when standard operating procedures might require flexibility and problem-solving abilities. Mastering skills necessary through the practice of school scenario drills can then help bring this learning, and an increasing sense of confidence, to life. The initial link to home and family learning becomes apparent when it comes to planning and implementation of safe family reunification procedures, which requires parent engagement for success. Linking school-based learning to home with, first and foremost, a simple family disaster plan becomes important both for students (who equally need to be safe at home and in the community) as well as for staff. Their well-being is essential for educational continuity planning, children's well-being in class, and on its own merits. Engaging students and families themselves in planning for educational continuity, and the health-promoting value of returning to consistent, predictable routines, may also be a factor in reducing school drop-out when emergencies and disasters do strike.

Recent research (Johnson, Johnston, Ronan, & Peace, 2014) has demonstrated that positive DRR-related outcomes can be achieved through linking DRR education with school disaster management practices. In this research, a ShakeOut drill<sup>25</sup> was evaluated in a sample of 574 6<sup>th</sup>-12<sup>th</sup> grade students. A number of positive outcomes were seen.<sup>26</sup> At the same time, there were findings that "challenge the theory that routine schools drills result in learning outcomes that will effectively mitigate injuries or deaths..." (Johnson et al., 2014).<sup>27</sup> Findings showed that significant proportions of children endorsed both correct protective actions and incorrect ones, demonstrated uncertainty in unfamiliar scenarios (e.g., when not next to a desk; being outside) and had other responses that indicated a lack of full clarity about the most important protective actions to take. Given that disasters tend to heighten arousal and uncertainty in decision-making, it is essential that children have well drilled solutions to a range of possible scenarios in local hazard events. Thus, bringing the findings of this research together, simple rote learning and enactment of disaster-related drills that "go through the motions" and only comply with 'standard operating procedures' is inadequate. From this research done under conditions of low arousal and quiescence, they are not going

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<sup>25</sup> [www.shakeout.org](http://www.shakeout.org)

<sup>26</sup> Familiarity and high levels of correct knowledge of protective actions for earthquakes and tsunamis, including in familiar and less familiar contexts; an increase in correct answers for protective actions from before to after the drill; most understood that the head was essential to protect; both children and teachers indicated low levels of fear-related distress when being exposed to DRR-related thinking and discussions.

<sup>27</sup> Significant portions of children had combinations of both correct and incorrect knowledge and risk perceptions (e.g., Approximately a third choosing incorrect protection actions or uncertainty in situations not practiced in schools drills (e.g., when outside); 80% not aware of the risk of falling in an earthquake; a significant proportion not recognising incorrect protective actions like standing in a doorway or moving outside or inside during an earthquake; more than a third believing building collapse is a more common risk than flying objects/glass).

to prepare children to protect themselves most effectively when under the duress of a hazardous, and stressful, event. On the other hand, more links to Pillar 3 and the infusion of DRR-related learning within such exercises, including promoting enhanced knowledge, planning flexibility and drilling unfamiliar scenarios that invite children's active participation would be thought to maximise DRR outcomes (Johnson et al., 2014).

Importantly, another consideration here that many Input Papers, consultations and research identify are various issues that are current obstacles to full infusion of integrated DRR education: a crowded curriculum; lack of policy will; teacher reticence to implement DRR curriculum in the classroom (e.g., fears of upsetting children; too busy with core curriculum; Johnson & Ronan, 2014); and, as discussed previously, lack of an interface and set of mechanisms that connects more successfully HFA/DRR principles with national policy, and local, implementation. Given such obstacles, the linking of Pillar 2 with 3 makes some sense from a number of these perspectives, including helping solve a problem for policy-makers and others (local school officials). That is, policy makers, and local actors, may well support a DRR agenda but lack the resources or ability to implement full-scale, infused DRR/CSS programs. In other words, linking school disaster management practices that already are occurring in many schools (e.g., drills) with the experiential and interactive learning of DRR-related principles and practices might solve policy and practice problems. That is, this linkage might be seen by policy-makers, school officials and others as an already available, even natural, vehicle for more DRR/CSS infusion that doesn't impact unduly on a crowded curriculum nor require a large resource investment. In this way, promoting links between pillars can be stepping stones to a more infused and integrated DRRE curriculum over time as part of a 'whole-of-school' approach to Comprehensive School Safety. At the same time, as the ShakeOut drill research demonstrates, moving beyond standard, rote drilling is necessary to ensure that intended outcomes are realised. Other information related to a CSS agenda, including case examples, guidance and materials, is available in the Comprehensive School Safety Toolkit (see Annex I).

Climate Change Adaptation and other Educational Initiatives: A Role for Resilience Building. A number of Input Papers reviewed earlier in the Policy and Implementation section discuss linking DRR curriculum with CCA (Carvalho, 2014; Dufty, 2014; Izadkhah & Hosseini, 2014; Kagawa & Selby, 2014) as does the Menoni, Weichselgartner et al. (2014) and the Kjaergard et al. (2014) Input Papers summarised earlier in this Curriculum and Training section. Consultations also revealed advocacy around not only climate change but linking DRR curriculum with other initiatives, such as with conflict/peace-building, with sustainable development, with other common, localised risks, and with the underlying social, economic and political drivers of risk. Numerous international-level consultants spoke about combining different initiatives making sense given obvious overlaps in terms of knowledge and skills targets. One in particular stressed the "crowded curriculum" and that it "may be prudent to link with other shocks and stresses...(including) CCA, conflict/peace-building, other areas." However, as also pointed out, the "post-2015 agenda currently ...isn't promoting a bringing together of (these areas)." One area that might provide an organising framework according to this consultant was "by focusing on underlying drivers of risk, that could allow one cut through." Another cut

through stressed was the linking of issues within a resilience-building theme including “resilient school systems and building resilient communities.”

## Research and Evaluation

### Background: Risk-related Education Research Summary

Prior to summarising research on DRR school-based education, it is worthwhile reiterating what the larger body of research on risk reduction/risk communication and other related areas (e.g., public health; psychology; sociology) has learned, over several decades, about the factors that enable positive behavioural change at individual, family and household, and collective levels (Ronan & Johnston, 2005; Wood et al., 2012): People need clear, specific action-oriented messages around which there is clear consensus across trusted agencies and community stakeholder groups. People want to know that the measures they take are going to be effective (referred to as adjustment efficacy). Also, people need to feel that they personally are capable of taking these measures, having the knowledge and skill as well as the confidence (self-efficacy) to enact. Specific guidance messages also need repetition over time and across multiple, trusted messaging platforms, including those that promote increasing social acceptability for taking these actions (Wood et al., 2012). Another research supported principle worth highlighting is that promoting single doable behaviours (Lee & Kottler, 2011) is preferable to a long list of lesser important, or unprioritised, behaviours. For example, there is consensus through research review and considerable consultation that one priority DRR-related action for children and their families, and for local communities more generally, is around response-preparedness planning and practice (including drilling, exercises and simulations).

We also know that some risk perception and productive anxiety (i.e., concern sufficient to encourage focused, effective action) is necessary to motivate people, but we need to be careful not to provoke unproductive levels of fear. This is particularly important for children who typically have a local natural or other hazard as one of their major, perhaps unspoken, fears (Ronan & Johnston, 2005). Thus, for children, it is thought to be more useful to help reduce fears such that they are able to be in a more productively aroused range whereas increasing “productive concern” (e.g., a sense of personalised risk) might be more important for adults. Thus, discussing hazards and disasters as “problems to be solved” with children has evidence-supported appeal. For example, people have been found to be more proactive when risks are framed in terms of (surmountable) challenges and perceived as problems to be solved as opposed to insurmountable threats (see Blascovich, 2008).

Messaging must also be two-way, preferably interactive and experiential, and developed with those at risk in order to meet the knowledge gaps, perspectives and capacities of the target groups and ensure trust (Haynes et al, 2008). Finally, as stressed in post-2015 Framework discussions, the wider socio-cultural, economic and political barriers to behaviour change and underlying drivers of risk must be considered when delivering any education program (Ronan & Towers, 2014). Despite the success of the delivery of an education program and an increase in knowledge, actions and other important indicators, these wider factors may impact significantly on any real outcomes to reduce risks (Haynes & Tanner, 2014).

## Research and Evaluation: DRR Curriculum, Materials and Education Programs

Against this more general backdrop, this section looks at the body of published research done to date on DRR education for children and youth that has been carried out in schools and other community settings that children, youth and families congregate (see Input Paper by Ronan et al., 2014). Despite much activity worldwide in relation to Child-Centred Disaster Risk Reduction (CC-DRR) programming and practices since the HFA (UNESCO/UNICEF, 2012, 2013; see also next section), no comprehensive review of research, including outcomes and evaluation practices, has been done to date. In fact, a UNICEF/UNESCO-supported review of school-based disaster education practices in 30 countries noted that “assessment of student learning is the least considered and developed element of disaster risk reduction education” (UNESCO/UNICEF, 2012). Another largely unexamined feature is the link between practices (education program elements) and student learning and other outcomes. Thus, whereas we do know about a number of the practices that are being conducted worldwide (UNESCO/UNICEF, 2012), we don’t have systematically collected data to support reports of desirable outcomes for a number of these elements. While there is some preliminary research here summarised earlier and detailed later, we largely don’t know which specific features of DRR education programs represent more “active ingredients” (i.e., curricula or materials empirically linked to measurable impacts and outcomes).

Thus, to promote increased knowledge about the effectiveness of educational programming, including those along the continuum of informal, one-off programs through to those that reflect formal curricula integration, research is required on a number of fronts. Numerous program evaluation-focused research questions can be categorised in relation to three main themes linked to risk reduction and resilience education programming for children and youth as follows:<sup>28</sup>

1. Evaluating curriculum and educational materials and their content/fidelity: Are they informal, formal, what specific content and mode(s) of delivery are being used?. Is the curriculum being delivered as intended; that is, does it have evidence-supported content and fidelity? Have developers and deliverers had formal training in DRR and/or curriculum development and delivery (Dufty, 2014; Ronan et al., 2014; UNESCO/UNICEF, 2013)?
2. Evaluating a program’s impact and outcomes: Is the curriculum contributing to student learning, to risk reduction, to increased resilience; if so, how so and to what extent? Is measurement being conducted that is reliable, valid and sensitive to the effects of curriculum elements across time, including effectiveness during and following hazardous events? Is the curriculum linked to other contexts outside the

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<sup>28</sup> It is worth noting that these three research themes are typically main guiding questions in any program of research evaluating and disseminating education or intervention programs that are aimed at promoting beneficial outcomes for human beings. Cast in experimental terms, the first category revolves around the independent variable (i.e., the education or intervention program itself, including both its content and delivery) ; the second, the dependent variable (i.e., outcomes intended to be produced by the education or intervention program) ; the third involves implementing programs and evaluating the implementation process, to ensure successful outcomes, sustainability and to support larger scale dissemination.

classroom (in households, in the larger community)? What are the measurable links between curriculum elements (content, delivery, fidelity, implementation) and outcomes? Do evaluation measures reflect curriculum targets as defined by contemporary, evidence-based learning models and by behaviour and risk communication/DRR curriculum theories?

3. Evaluating a program's implementation and dissemination: How have the curricula been implemented and disseminated and are implementation indicators (e.g., key relationships, mechanisms) being used as feedback for next step planning? Do these indicators reflect the growing "implementation science" research literature that identifies factors and provides tools that have been shown to facilitate successful implementation of education, training and other programs? Are they implemented on local or larger scales? If local and demonstration-based, is there a pre-scoping process, and set of relationships, in place to facilitate larger implementation, emphasising both top down and bottom up strategies?

A fourth theme is added linked specifically to HFA processes:

4. Developing a next set of indicators: Whereas a PFA Core Indicator is typically a macro-level indicator, there is value in considering a hierarchy of indicators that includes research-based indicators to document progress in the three categories just described: curriculum policy and practice development, curriculum materials and delivery, teacher training, instrumental and ultimate outcomes, and local and large-scale implementation practices.

To begin to fill this gap, and starting with DRR curriculum and its effectiveness, selected Input Papers (Ronan et al., 2014), desktop research and consultations reveal that in the past decade and a half, since the turn of the millennium, formal evaluations of DRR school- and community-setting education programs for children and youth have begun to be conducted. A recent systematic review has brought these evaluations together (Johnson, Ronan, Peace, & Johnston, 2014). Since 2001, 34 child-centred disaster education program evaluations have been published in the scholarly and grey literatures. Importantly, only one study was published prior to this point (in 1993), making a total of 35 research studies focused on DRR curriculum, materials and education programs. Thus, in relation to the terms of reference for this Chapter, considerable progress has been made in relation to growing a publicly available research and evaluation database and literature.

The focus of the Johnson et al. review was to "characterise the current state of the evaluation of disaster education programs for children" (p. 2). Thus, the aim was to "categorise and examine the operational components of the existing body of research, including the types and sources of evaluations, research methods and designs, research participants, outcome indicators, approaches to analysis, and research limitations" (p. 2).

Most of the 35 studies (94%, n = 33) assessed program impact and outcomes (i.e., student learning, attitudinal, behavioural and other outcomes) and 34% assessed process features (i.e., implementation and delivery factors). Of the 35 evaluations identified, 13 (37%) used experimental (n = 1) or quasi-experimental designs (n = 12) with 10 of these 13 including some form of pre-test and post-test. In terms of sampling, most studies had sample sizes of

less than 300 children and youth (n = 20; 57%), with 6 studies having sample sizes greater than 1000 (17%).

Programs evaluated in 10 studies (29%) were identified for the review as "non-specific" (i.e., some form of unspecified DRR education). Of specific programs evaluated in 19 studies (37%), 9 were developed by academic researchers and 10 were developed by educational authorities and government agencies. Of the 10 developed by educational authorities and government agencies, 7 were developed by national government agencies, 3 by schools. Most programs being evaluated were small in scale and represented demonstration-type projects. Ones implemented on a larger scale included the 7 developed by national government agencies.

In terms of *impact/outcome findings*, 23 of the 33 reported mostly positive findings (70%), indicating positive outcomes for a child or adolescent being involved in a risk reduction, disaster education program. This included the one experimental study and 6 evaluations using quasi-experimental designs indicating statistically significant increases on a range of knowledge, risk perception and preparedness indicators. Across studies, the main reporters were children themselves (86% of studies) who reported on the main outcomes of interest, which were typically knowledge-based (e.g., of hazard risks, of protective, mitigation and preparedness actions). Other indicators included whether children discussed hazards and learning with teachers, peers, household members; socio-emotional factors (e.g., anxiety in themselves or perceived in parents; coping confidence & self-efficacy; helpful people and networks); and attitudes (e.g., on perceived knowledge and preparedness; risk perceptions; interest in the subject). In terms of home-based DRR/preparedness activities, a significant minority of evaluations assessed indicators there (n = 16). However, of these 16 studies, only 2 included parents as additional reporters of home DRR/preparedness activities. In these 2 studies, both indicated parent reports of home-based activities to be positively related to children's education involvement, including 1 of the 2 indicating experimentally-measured change (i.e., with beneficial changes seen from pre-test to post-test). It is also worth noting that impacts measured were limited to short-term timeframes, though a couple of studies used time lag, correlational designs across different cohorts. However, overall, no study evaluated effectiveness over a time interval that included a disaster nor assessment of an education program to assist with adaptive coping during (or following) some event. As opposed to the 23 studies that reported mostly positive findings, 12 of the 35 evaluations reported no effect, mixed findings or were inconclusive (34%). These included 2 of the 12 quasi-experimental evaluations.

More analysis is underway to begin to examine possible reasons underpinning beneficial versus lesser effects, including statistical aggregation (i.e., meta-analysis) and more in-depth analysis of study findings. Thus, we don't know to date what the overall statistical effect size (ES) of disaster risk reduction and resilience curriculum and education programs.<sup>29</sup> We do

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<sup>29</sup> An effect size is a metric that assesses the magnitude of an effect, change or difference between two groups (e.g., those who received a disaster resilience education program versus those who did not; the status of a group at the end of an education program versus before the program began). They are a standardised, numerical measure that allows findings from different studies in an area to

know that the majority of studies, including the majority of studies using a pre-post design, have produced positive outcomes on important indicators. Only one study to date (Ronan, Crellin, & Johnston, 2012) has reported ES's to document the magnitude of change from pretest to posttest as a function of an education program. That study used a benchmarking design to compare that study's findings with findings from a previous quasi-experimental study. For changes in student knowledge outcomes and for changes in their disaster-related fears (i.e., their own and their perception of parent's disaster fears), the within group ES's (i.e., the magnitude of change from pre- to post-test) were all found to be in the small to medium effect size range. On the other hand, the within group ES's found for changes in hazards adjustment actions taken at home was in the large range. Thus, while encouraging, with these effect size calculations limited to two studies only, more research is needed here. We would also add that more in-depth qualitative analysis of study findings is also needed to generate hypotheses and signposts for practice and for future research.

While we have preliminary data on the general effectiveness of education programs, we don't know *which specific ingredients of programs are responsible for producing which benefits*. Thus, in addition to evaluating effectiveness of education programs, we need to understand what specific elements within these education programs are mechanisms of learning, emotional, behavioural and social change. Various qualitative and quantitative research strategies are available for identifying which education program components produce benefits for children of different learning abilities and at varying developmental stages. Only three quantitative studies to date have attempted to empirically identify "active ingredients" of disaster risk reduction and resilience education programs. The first two studies were cross-sectional and correlational in design (i.e., case control design; Ronan & Johnston, 2001; Ronan, Crellin, & Johnston, 2010). Thus, through correlational analysis (i.e., multiple regression), aspects of risk reduction and disaster resilience education programs that were statistically (and significantly) linked to beneficial outcomes were identified (i.e., child- and parent-reported home DRR/preparedness activities). Those that predicted an increased number of child-reported DRR/preparedness activities done at home were (1) the child's knowledge of protective behaviours and (2) involvement in a greater number of disaster education programs. Additional predictors identified in one of the two studies (Ronan et al., 2010) were (3) more recent program involvement, (4) an increased perception of injury caused by a hazard and (5) encouragement to talk with parents about what was learned in a DRR education program.<sup>30</sup> In the one of the two studies that included additional reports by parents (Ronan & Johnston, 2001), those factors predicting an increased number of parent-reported home DRR/preparedness activities were (6) the child's

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be compared against each other directly. Once calculated, there are then typical ranges which allow for categorising the effect as small, medium or large.

<sup>30</sup> In previous research, the idea that children perceiving injury risk are more prone to being fearful has not been supported. In fact, research has demonstrated that children who participate in DRR education programs tend to have reduced disaster-related fears, including in instances where they have an increased perception of disasters causing injury. Theory would suggest that an increased sense of confidence and learning DRR skills would allow children to see potential injuries not in a fearful way but, rather, in a way where a potential injury is seen as a problem that has various solutions that the child feels increasingly capable of carrying out (Ronan & Johnston, 2005).

involvement in a recent disaster education program (within past 2 years) and (7) child and parent discussions about what the child learned in a disaster education program.

The third study was a quasi-experimental study (Ronan & Johnston, 2003). Children between the ages of 11 and 13 (n = 219) were randomly assigned (based on classroom) to one of two conditions. The "usual condition" was a 6 week classroom-based program based on traditional reading and discussion classroom format focused on the topic of disasters. The "emergency management" condition included reading and discussion but also included theory-based components, including children learning specific DRR-related competencies and increased interactivity between the child and parents. In terms of the latter, this included a child-parent interactive homework exercise focused on motivating, and doing, home-based DRR/preparedness activities). Findings supported both types of formats, with children significantly benefitting in both conditions. However, while both conditions produced significant benefits, the DRR-related/interactive education program produced significantly greater benefits from pre- to post-test on (1) child- and parent-reported home-based activities designed to prepare for and reduce disaster risk and (2) increased child knowledge of important protective behaviours. Across both conditions, children's disaster-related fears were seen to reduce significantly from pre- to post-test, as was their perception of their parents having disaster-related fears.<sup>31</sup>

Across all three studies, findings fit with theory about ingredients of programs that should be considered: help children increase their DRR knowledge, encourage them to interact with others, including with each other, with teachers, and with parents and caregivers about their learning. Promote experiential activities aimed at disaster-related risk reduction and resilience. Do DRR education more than once (Ronan & Johnston, 2005; see also UNESCO/UNICEF, 2013).

Apart from the research just reviewed, one area that has remained virtually unstudied is the *actual content of disaster risk reduction educational materials*. Some research is underway on this topic including work which is evaluating program content and proposing methodologies for analysis of the quality of DRR education materials (Johnson, Peace, Ronan, & Johnston, 2014; Towers and Petal, 2014). Recent research from the International Federation of Red Cross and Red Crescent Societies (2013) has compiled and synthesized more than a dozen international sources of consensus-based expert-reviewed public DRR education "key messages".

As a recent example of movement in the direction of theory- and evidence-driven programming, a study not included in the Johnson et al review is described (Webb & Ronan, 2014). A DRR education program for children and youth in a lower socio-economic area in Canberra (Australia) was designed according to theory and intended to extend previous DRR education research (Webb & Ronan, 2014). Specifically, it was:

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<sup>31</sup> Research supports the idea that parents are a main source of disaster-related fears for children. Alternatively, research also supports their role in helping children cope more effectively. In fact, because of the strength of some findings, the adage that "as parents go in disasters (or other stressful events), so too their children" has a good deal of research support (Ronan & Johnston, 2005).

- more CC-DRR focused, including being more participatory and interactive; more child and youth input into the planning and delivery was included;
- included a focus on a demographic linked to underlying drivers of risk (i.e., lower socioeconomic groupings; and involvement of some children and adolescents not engaged with school or vocational activities);
- incorporated DRR- and behaviour-change theory within the program (e.g., was experiential, participatory and interactive; included a focus on key messages, knowledge, attitudes/emotions, behavioural/action-oriented learning; included an “information-searching” component in between sessions; included a friendly competition to promote increased engagement);
- compared to previous research, which primarily has focused on a relatively narrow range of knowledge indicators, evaluation in this Webb and Ronan study included an expanded range of knowledge, attitudinal/emotional and behavioural/action-oriented outcomes, including those supported by key messages, and included assessment measures for both child/youth participants and their parents.

Main findings of that study included significant increases in both child- and parent-reported action-oriented indicators (i.e., child- and home-based preparedness/DRR activities), and child-reported increases in knowledge and emotion-focused/attitudinal indicators. For example, from pre- to post-test, parents reported an average increase of approximately 6 home-based preparedness/DRR activities. In that same interval, children reported a 39% increase on DRR and resilience knowledge indicators. They also reported significantly lower levels of both generalised and specific disaster-related fears and anxieties. The main limitation of this study was that it was a demonstration pilot study like almost all other published (and unpublished) evaluations and demonstration projects.

Of course, as already established, very few countries have delivered DRR education programs in schools or related settings on any large scale. However, as noted in the Policy section, there are encouraging developments noted in Input Papers about particular countries paying increased policy attention to safe schools practices, including increased DRR education practices. Coinciding with these developments, increased research and evaluation is now occurring more regularly. However, more research is necessary across the spectrum that will underpin future developments to facilitate and document progress in many areas: policy development, curriculum content and delivery, instrumental and ultimate outcomes produced by DRR curriculum, teacher training, and local and large-scale implementation practices. The focus needs to include both a short- and longer-term perspective, including tracking CSS/DRR education policy and practice developments globally, at both national and local levels. In addition, longitudinal and time series research is necessary to assess the effects of DRR education and other safe schools practices over time, in all phases of an event as well as in the shaping of a “DRR mind-set” in the adults of tomorrow. More specific recommendations are provided in the last section of the Chapter (Summary and Recommendations).

## Research and Evaluation: DRR Professional and Teacher Training

Apart from the Turkey DREAMS project described earlier, there is no published research that could be located on the effectiveness of training DRR professionals and teachers. There are data on the number of training programs available, documented in a previous section (see Practice subsection on Training DRR Professionals and Teachers; see also Appendix V). The data show an increase in tertiary-level DRR professional training whereas there are very few teacher-specific training programs at this level. Further, as documented in the Practice section, in-service training is often done for various projects in different countries, with some countries attempting larger in-service training. However, like with DRR education curriculum and programs, they typically lack large-scale implementation across many countries and tend to be more workshop-based and time-limited. In addition, there are no data that could be located in the published literature on the effectiveness of any DRR professional or teacher training program, with the exception of the Turkey DREAMS project presenting data on successful teacher training completion rates related to (1) school disaster management (CSS, Pillar 2) and (2) disaster risk reduction and resilience education modules (CSS, Pillar 3). The authors indicate that a recent survey of users has returned more than 5,000 responses that will be used to measure impact, in terms of adoption of both household and school-based actions, stimulated by participation in the training.

Overall, here, a large increase in tertiary training programs for DRR professionals is a change at least in part facilitated by the HFA. Given an increase in more DRR professionals in a given country, this then will quite likely create momentum for future developments, including of the workforce.<sup>32</sup> On the other hand, major challenges for the successor framework include the problem of how to increase teacher training programs, whether at tertiary level (i.e., pre-service) or as part of larger scale implementation of DRR education programs (i.e., in-service training). Another challenge is around better ensuring quality control of training – are training programs delivered in ways that support DRR and curriculum best practices, including in teaching environments?

## Research and Evaluation: Indicator Development and Future Directions

As reviewed in earlier sections, there have been a number of important developments in the HFA 05-15 timeframe, including increases in the Core Indicator (CI) rating (from a rating of 3 in the 2007-2009 reporting period to 3.3 in the 2011-2013 period, see Policy Summary section for more detail) and a solid majority of reporting countries reporting DRR being included in some way and at one or more levels across the national curriculum (from 55% reporting DRR inclusion in professional programs to 65% at primary school level with secondary (56%) and university (61%) inclusion in between).

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<sup>32</sup> Four of the DRR professionals consulted with reported taking their original training and applying it in policy and school settings to promote policies and practices reflecting HFA principles. In each case, they also report then wanting to be educated more in DRR policy, practices and research specifically related to this area, including one finishing a PhD several years ago, another recently completing a PhD focused on CC-DRR (having been a national government disaster policy analyst) and the other two building on Masters degrees in DRR through enrolling in PhD programs focused on CC-DRR research, practice and policy.

While there are concerns with a self-report process noted (e.g., Kagawa & Selby, 2014), it is nevertheless an attempt to gather important metrics to document progress. Thus, it is encouraging to see stepwise movement, even if it appears relatively modest through a singular focus on metrics. Nevertheless, as direct consultations with key actors emphasised, a primary problem in interpreting data is that it is self-reported. Another more specific problem for this indicator is that, even if the reporting mirrors the reality in each country, the data itself is difficult to interpret, particularly for the key question "Is DRR included in the national educational curriculum?" Importantly, if endorsed yes, we don't know to what extent DRR is included, is it partial or is it universal, is it taken up voluntarily by a school or is it part of a comprehensive policy-driven, universal implementation process? Thus, getting more specific information for this key question – useful to retain to benchmark progress post-2015 and across HFA2 against progress thus far – is also possible. In fact, it could be done by using the same overall format to support benchmarking but also getting additional information through expanding a yes/no response.

For a next set of indicators, consultations have revealed that the most work in this space has been tended to by the Global Alliance (GADRRRES). Current GADRRRES discussions appear to be promoting a hierarchy of proposed, draft CI's that span across the CSS agenda and span from global to school level. They are built on two foundational premises: universal child rights (for safety and survival; educational continuity; child participation) and CSS goals. CSS goals are both primary (preventing deaths and injuries; ensuring educational continuity) and secondary (safeguarding schools; building a culture of safety and resilience). Across these two foundational areas, indicators are recommended for the following:

- Global/national CSS indicators, 2 per Pillar;<sup>33</sup>
- National/subnational/programmatic levels, across CSS Pillars;
- School levels;
- Local/indigenous knowledge and practices.

The hierarchy is currently in a draft stage, awaiting elaboration. More information on this hierarchy and recommended/under consideration indicators are located in Appendix VII. Given a hierarchy spanning global to school level, this moves indicator development from macro-level to including more "within country" indicators, including programmatic and local indicators, and related inputs necessary to make progress across these indicators. In addition, Save the Children (2014) is piloting a 15-question survey designed for annual self-

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<sup>33</sup> Pillar 1: every new school built is a safe school; prioritisation scheme being implemented for identification, retrofit and replacement of unsafe schools; Pillar 2: national guidance and capacity-building programs and tools exist for all-school participatory risk assessment/reduction, response preparedness and educational continuity; educational continuity planning includes identification of temporary education facilities and limited use of schools as shelters; Pillar 3: a set of key action-oriented messages for household and family disaster risk reduction have been adopted at a national level for incorporation into information and education materials; a set of skills and competencies in DRR has been identified for all grades and is being infused over the course of the curriculum adoption cycle. See also Appendix VII.

assessment of DRR-learning by schools implementing on-going participatory school disaster management or DRR education programs (See Appendix VIII).

Coinciding with the fact that published research on effectiveness of CC-DRRE programs has increased markedly in the past 15 years, it does appear that a next logical step over the next 15 years will be to “drill deeper” to track progress on a variety of fronts. However, it is also the case that research in health/mental health service delivery has documented the facilitative effect of regular monitoring of local delivery mechanisms in producing increasingly potent outcomes (e.g., Lambert & Shimokawa, 2011), including for children, adolescents and families (Ronan, Davies et al., 2014). In other words, regular tracking can produce increased feedback loops that can then be used to make improvements more effectively and more efficiently. A point to emphasise here is that regular monitoring measures have demonstrated value as “input” tools that, if used in that way, promote discussions between actors, promote feedback loops, and enhance progress.

On the other hand, while the foregoing discussion points to the value of increased, and more regular, monitoring of a hierarchy of indicators, the critical issue of capacity needs consideration. Monitoring indicators can be difficult and time consuming work. Thus, innovative strategies are necessary for collecting and analysing a larger set of data, providing regular performance-based feedback to stakeholders, producing reports and so forth. One of the key actors consulted with suggested the value of accessing databases already available and linking them together. Another suggestion in Input Papers was to get university level involvement in research, either through university consortiums, through DRR-related training programs, from entry through postgraduate levels (including masters and doctoral levels). While research has markedly increased in the past 15 years, there is also some consensus that progress in research and evaluation – compared to other areas in relation to this Core Indicator – continues as a weak link.

At the school level, reasons for not doing research, monitoring and related activities include resource and time limitations, crowded curriculum and other reasons. In fact, of the 35 published evaluations of DRR education programs, none were carried out by those locally but rather by either academics or professional evaluators. Thus, either assisting local professionals to engage more often in evaluation or getting more assistance through higher education/professional evaluation expertise is strongly needed. As the Input Paper from Ronan et al. (2014) suggested, providing a “data warehouse, repository and tools” to assist those from national to local levels would be a welcome addition to the HFA2 landscape. So too would the development and involvement of DRR research and training higher education consortia as discussed in the Input Paper by Holloway (2014). Additionally, monitoring of a small number of Pillar 2 and Pillar 3 indicators through existing Education Management Information Systems (EMIS) also has the potential to stimulate greater awareness and attention to this area of learning.

# Summary and Recommendations: Progress and Challenges

## Summary of Progress

Clearly, for this Core Indicator, and more generally, HFA has stimulated a tremendous amount of progress globally. For this Core Indicator specifically, documented progress has been achieved across all major areas: policy and implementation, curriculum and training, research and evaluation. The advances documented in this Chapter are worth not only celebrating but can also provide a platform for enhanced gains in the next 10-15 years. Some of the developments gleaned from all inputs, including Input Papers, consultations, desk review, and available research include the following:

1. Well over half of reporting countries report DRR included in the national curriculum at one or more levels (primary, secondary, university, professional programs);
2. Progress made on the indicator rating, currently at a 3.3/5 for the 146 countries reporting;
3. Increased prominence of DRR curriculum and training in national policy across an increasing number of countries;
4. Development and guidance related to curriculum frameworks;
  - a. Technical Guidance document (UNESCO/UNICEF, 2013);
5. Through the promising development of the Global Alliance (GADRRRES), the development of a whole-of-school framework and related sets of indicators;
  - a. Comprehensive School Safety model (GADRRRES);
  - b. CSS and its 3 Pillars and a hierarchical set of proposed indicators;
  - c. Incorporating a strengths focus, including a resilience metaphor, to accompany a risk reduction ethos;
6. Increased proliferation of DRR in school curriculum in many countries (e.g., UNESCO/UNICEF, 2012; see also Annex I);
  - a. While these tend to be project-focused, they have potential through the use of, in the words of one key actor consulted, “basic project management wisdom” that moves them from project-based and time-limited to explicit steps towards longer-term, wide-reach, sustainable implementation;
  - b. Progress also includes an much increased number of DRR in education materials available at PreventionWeb (see Annex I);
7. Increase in research and theory, including:
  - a. Published evaluations of CC-DRR education programs have increased 34 fold since 2000. Those that use pre-post designs have typically found positive changes in knowledge, risk perceptions, child and family interactions and

DRR/preparedness activities (as reported by both children and parents), reductions in children's disaster-related fears and other risk reduction and resilience-enhancing improvements;

- b. Other developments in research and theory development have occurred through other means, including an increase in masters- and doctoral-level training programs, and resultant theses produced, and through other literature, including other scholarly products promoting research, practice, theory development (e.g., Ronan & Johnston, 2005);
8. Attempts at larger scale implementation of features of DRR curricula/CSS initiatives (e.g., Cambodia (Year 8), Iran (drills), New Zealand (primary school all hazards), Turkey (CSS Pillar 2 and 3)) and attempts at larger-reach teacher training (e.g., Turkey DREAMS project; Mozambique masters-level teacher training program; from case examples in Annex I, curriculum infusion of DRR Lao PDR, Philippines, Fiji, Madagascar, Peru; DRR across the curriculum in Georgia; DRR integration with CCA and other approaches in Madagascar/Africa, Myanmar, Cook Islands, France, Costa Rica; examples of CC-DRR/student actions in Haiti, Thailand, Brazil, Indonesia, Sierra Leone, France, Philippines; teacher training/materials exemplars, Georgia, Vanuatu, Lao PDR, New Zealand; teacher training guidance from ASEAN/ISDR).
  9. Thus, it is quite clear that the vast majority of reporting countries have demonstrated some will to start moving down a DRR curriculum/CSS path, with documented progress being variable but overall progressive.

### The Challenge Ahead: Major Summary Recommendations

The many developments to date predict future developments.<sup>34</sup> However, promise is still yet to be realised in a number of important areas. While these represent significant challenges, progress is more likely with increased relationships and cooperation across the sector, including UN-level, NGO's, universities, national, sub-national, and local levels. Drawing together input from across sources for this Background Chapter, three major fronts are signalled as major priorities, as follows:

1. Promoting integrated, participatory, experientially-based DRR/CCA curricula, within a CSS framework, engaged by and custom-fitted to local cultures and communities, delivered at scale by systematically trained teachers that
2. are capable of producing documented outcomes across a range of indicators including primary/ultimate outcomes (life savings, reducing injury, improved psychosocial outcomes and longer-term resilience indicators) and secondary/instrumental outcomes (resiliency indicators, risk reduction competency indicators, safe school/school disaster/risk management outcome indicators) and
3. moving beyond the type of time-limited demonstration/research projects typically carried out by singular agencies/universities to those that inculcate a longer-term vision and set of concrete mechanisms that are "custom-fitted" to a particular country and its political, policy and local contexts and also involve bottom-up mechanisms including buy-in and custom-fitting; that are supported by national/sub-national/local

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<sup>34</sup> An well-known maxim based on much research in psychology and related areas is "the best predictor of future behaviour is past behaviour."

political, policy and practice mechanisms and involve more cooperation across the policy-practice-research sectors; that are capable of effectively translating guidelines and principles into “on the ground” CSS-related programs that can be progressively implemented within a crowded curriculum and policy context. Projects themselves are a vital part of this process but their utility needs to be considered and framed differently: for example, one way is using projects as part of a “piloting stage” in the context of a larger multi-actor vision, and plan, for scaled, staged, sustainable implementation.

A number of other challenges and issues revealed themselves in each of the major areas. Thus, specific sections that follow summarise input sources in relation to additional, supplementary recommendations in each of the major areas: policy and implementation, practice (curriculum, training), and research/evaluation/indicator development.

## Specific Recommendations: Policy and Implementation, Curriculum and Training, Research

### Policy & Implementation Recommendations

1. Ensuring children’s rights to inclusion and participation, to protection and safety (including to participating in safe learning facilities), to educational continuity, and to equity principles are reflected in policy discussions. Related to this set of principles is promoting a discussion about the relative balance between child protection and child participation in DRR/CCA curriculum and broader CSS initiatives. At one end of this argument, there is more emphasis on child protection; at the other, more emphasis on a child participatory approaches. In between these are various gradations focused on balancing child protection and participation, one that balances adults’ responsibility for protection and guidance, with children’s rights to increasing participation, autonomy and discovery;<sup>35</sup>
2. Promoting a whole-of school approach through a Comprehensive School Safety framework. Within this framework, promote the linking of DRR and CCA in policy, curriculum and training programs. Additionally, numerous consultations recommended bringing together not only DRR and CCA but other areas linked to “risk and uncertainty”, “shock and stress” in life. That is, in this way, DRR and other specific areas of risk should be considered under a larger CSS and general ‘risk reduction and resilience’ framework. One that aims to equip children, as tomorrow’s adults, with an increased set of abilities to negotiate and manage a range of problems linked to risk and uncertainty in life, including not only intensive disasters but also climate change, and extensive and more hidden risks such as frequent flooding, and air and water pollution, conflict and a multitude of other adaptations to

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<sup>35</sup> There was a difference of opinion represented in consultations. While there was consensus on a child’s right to participation, the disagreement was how that is balanced against child protection and, its corollary, adult guidance. One end of the argument advocated for more purely “child-led” initiatives, that children should be empowered to “lead the way”; another argument advocated for more for a balance between adult guidance and child participation, with participation being strongly promoted from young ages but also, at these ages, balanced with some adult guidance that, as the argument goes, younger children look for and need.

risks such as road and water safety, social cohesion and peace-building, and other “life skills”;

3. Linked to Major Recommendation 3 in the previous section, promoting an increasing interface and set of mechanisms between international developments (e.g., CSS advances) with policy and larger-scale curriculum development and implementation at national and sub-national levels. This would include long-term, multi-agency, multi-actor relationships that are developed (including prior to, or early in, a project’s lifecycle to consider the role of the project for larger aims), encouraging both national and local ownership of a longer-term policy and implementation plan, encouraging both bottom-up (e.g., identifying champions) and top-down strategies (national policy development supporting long-term, wide-reach, sustainable implementation); the process should also avail itself of published implementation guidelines (e.g., UNESCO/UNICEF, 2013) and a growing set of research findings on developing, enacting, and measuring the effectiveness of implementation policies and practices;<sup>36</sup>
4. Related to the previous recommendation, understanding the context within a particular country, from national through local levels, is critical. Policies and implementation plans need to be owned especially by all education sector actors and, thus, fit within the unique political, policy and practice context of any particular country or locality. Thus, in one context, all three pillars of the CSS framework may be seen as a legitimate goal around which a multi-actor implementation plan is drawn up. However, in another context, this goal may be seen as more aspirational, with other achievable, priority steps in one or another, or a combination of pillars, may be considered to be more possible;
5. One area that has potential for building on current practices in many countries is through Pillar linkages. For example, linking DRR/CCA curriculum and an emphasis on risk reduction and resilience education (Pillar 3) with school disaster management policy and practices (Pillar 2) is one such coupling. School drills may be an ideal fulcrum/strength from which to leverage off of to get more DRR/CCA curriculum embedded/integrated/infused. Recent research reviewed earlier demonstrates both the potential and needs when connecting Pillar 2 and 3 in this way. Similarly, routine use of school construction (Pillar 1) as an educational opportunity (Pillar 2) may be a quick and low-cost way to stimulate primary physical protection by broadening understanding of disaster-resilient construction, risk assessment/mapping and other competencies.
6. Other lower cost, wider reach initiatives that can also solve national/local problems and build on existing national/local strengths should also be considered as next steps toward a whole-of-school CSS approach. In some countries, this might include lower cost internet platforms that present self-study curriculum (and training) with wide reach but also combine with local efforts and champions (e.g., Turkey - DREAMS project). In other countries, there will be other wider reach pathways that fit those

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<sup>36</sup> An open access, high impact journal, *Implementation Science*, is particularly recommended as a useful resource here.

contexts, including building on existing strengths (e.g., large scale national day for simulation drilling, and related possibilities, in Iran and a number of other countries; New Zealand - through a relatively low cost primary school DRR curriculum disseminated to every school; Australia - moving from a state-based to national curricula and resultant opportunities; Cambodia - building on larger scale Year 8 initiatives; Bangladesh - building on current strengths of large scale textbook coverage of some aspects of DRR/CCA; see earlier discussions from Input Papers, and case example sources listed in Annex I for additional examples in other countries and regions, including Georgia, Costa Rico, Lao PDR, Philippines, Fiji, Madagascar, Myanmar, France, Cook Islands, Peru, Vanuatu, ASEAN/ISDR).

7. Sustained, multiple actor relationships are critical for long-term policy and implementation to occur. These relationships are the main vehicles through which policy and implementation tasks can be considered, facilitated and achieved. Relationships are also the vehicles through which a particular context's needs and wants can be discerned and through which custom-fitting mechanisms can be identified and developed.

## Curriculum and Training Recommendations

The main recommendations here are as follows:

1. Large scale teacher training as critical, whether pre- or in-service; pre-service to institutionalise this for future generations; in service, to cover existing teachers and for subsequent reinforcement;
2. Moving from a sole focus on DRR education to a whole-of-school framework, that includes CSS and Pillars 1-3;
3. Linking CCA and other risks with DRR in the curriculum. Relatedly, consistent with a CSS strategy, consider moving beyond "disaster risk reduction" education to the more general idea of "risk reduction and resilience" (RRR) education, whether to do with DRR, CCA or other risks, uncertainties, stresses and shocks. Of course, these include disaster-specific principles and practices as necessary for helping keep people safe, including IFRC's Key Messages (2013). However, risk reduction for a variety of problems in living also require a set of more widely applicable knowledge, attitudes and skills. These are best learned through experiential, interactive learning formats and involve learning and acquiring a range of knowledge, attitudes and skills (e.g., science of hazards and risk; risk assessment, mitigation and reduction skills; flexible problem-solving; self-efficacy; connecting with others/collective problem-solving; emotional coping ability/arousal management; well-practiced but flexible plans and "in the moment" ability to deal with a range of specific, localised risks);
4. Focusing on curriculum principles and education materials that have theory- or research-based support but also, importantly, in keeping with the guiding principle of Thematic Research Area 5, need also to be assessed by and fitted to

a particular context, including within a particular cultural, indigenous and community milieu;

Based on these main curricula and training recommendations, a list of basic recommendations across any level of a CSS-related program (from Approach 1 through Approach 4; UNESCO/UNICEF, 2013) is as follows:

1. When developing curriculum and training programs, plan the program according to theory and research and develop a longer-term plan for combining the evaluation of important indicators with larger-scale and longer-term implementation, in partnership with key actors in and out of government and those in local and school settings;
2. In education programs, interactive and experiential learning appear to be essential elements;<sup>37</sup> not only classroom instruction and knowledge, but interacting and doing, including engagement in school, home and family disaster risk reduction, through discussion, homework and service projects involving parents/caregivers and others in a school and community;
3. Promote children learning about and integrating risk reduction into their lives (Ronan & Towers, 2014; UNESCO/UNICEF, 2012, 2013);
  - a. A conceptual foundation should include risk analysis and active problem-solving to reduce risk exposure and for developing and practicing skills for response: at school, home, and when away from home including in unfamiliar settings;
    - a. Risk reduction and preparedness messaging sometimes suffers from providing too much information, lacking in priority and without clear action points;
    - b. Risk analysis, risk reduction planning and response-preparedness tend to have reasonable consensus as a set of key priorities and outcomes;
    - c. Planning and practice of response skills invite an increased ability to respond in an emergency and override the human stress tendency towards “flight or fight (or freeze)”;
  - b. Knowledge development
    - a. Start simple and build over time and across different subjects in the curricula (horizontal and vertical integration, UNESCO/UNICEF, 2013);
    - b. A multi-hazard/multi-risk approach: Understanding the science of natural disasters and climate change, including physical mechanisms as well as additional social mechanisms that can turn a hazard into a disaster;
    - c. Knowledge and understanding of hazards and risk including specific effective, action-oriented risk reduction measures that children, families and the wider community can undertake and a

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<sup>37</sup> While there appears to be consensus for this idea, and some emerging research support, more research, particularly longitudinal, is required to substantiate the promise.

- clear understanding of what is the responsibility of others – emergency managers, governments and others; knowledge promotes an increased sense of control and confidence for being able to manage oneself in an emergency or risk-related situation;
- d. Knowledge of key messages for risk assessment and planning, disaster risk reduction and resilience, and protective response behaviours (e.g., IFRC Key Messages, 2013). This would include not only knowledge of specific actions but knowledge about the rationale, or theory, underlying these key messages;<sup>38</sup>
  - e. With increasing age, and in line with a post-2015 emphasis, knowledge of a larger pool of risks that might include conflict/peace-building and other common, localised risks and include the underlying social, economic and political drivers of risk.
- c. Helping children develop emotional, behavioural, cognitive and motivational coping tools and confidence/self-efficacy
- a. Promote children's participation and active involvement in the learning process;
  - b. Helping children see disasters as challenges versus threats; as problems to be approached and solved versus avoided and ignored
    - 1. Perceptions of a situation as a challenge versus a threat have been found to promote different arousal configurations that promote successful versus less successful performance on tasks, respectively (Blascovich, 2008)
  - c. Promote children learning risk assessment skills and flexible problem-solving approaches. These can start with simple situational assessment and problem-solving approaches and moving to more systemic approaches with age and development;
  - d. Dealing directly with emotions as important;
    - 1. Research findings support education programs as capable of helping children reduce their hazard-related fears, including in the face of increased active coping efforts (e.g., actively preparing at home with parents);
    - 2. Being able to problem-solve and act effectively and safely under high arousal conditions is more difficult than under low to moderate arousal conditions. Thus, planning and practice, alongside direct assistance with "arousal management" (e.g., relaxation strategies) can help children and others be more confident and capable of carrying out effective actions in stressful circumstances;

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<sup>38</sup> Similar to effective parenting that supports children's healthy development and active participation, children need not only to know the "what" and "how", they also need to know the "why" that underpins recommended actions and behaviours (Ronan & Towers, 2014).

3. Knowledge and mastery reduce negative affect and are known promoters of positive emotions, including self-efficacy and coping confidence; in combination with planning, practice and other coping strategies, these can promote adaptive responses under stress;
  4. Helping teachers feel more confident to deal with emotions in risk reduction education with children is important. Focus group research (Johnson & Ronan, 2014) has demonstrated that some teachers feel uncomfortable promoting classroom discussions focused on issues linked to DRR and disasters for fear of upsetting children;<sup>39</sup>
4. Protection, participation, educational continuity, equity: building an inclusive culture of safety that promotes
    - a. Child protection and safety;
    - b. Child participation;
    - c. Educational continuity;
    - d. Equity including based on gender, disability, cultural diversity, socioeconomic/livelihood considerations;
  5. Move education for children beyond the classroom and bringing the community to the classroom through whole-of-school approach
    - a. Embrace a CSS approach;
    - b. Linking education and other school initiatives with the home and with whole-of-community initiatives;
    - c. Promote volunteer and community participation in CSS/DRR and resilience education programs;
  6. Promoting DRR/CSS educational initiatives that provide national policy directions while solving development and implementation challenges
    - a. Linking pillars to promote CSS while also solving crowded curriculum challenges;
    - b. Promoting long-term, low-cost, wide-reach, sustainable DRR/CSS educational initiatives;

## Research and Evaluation Challenges and Recommendations

Challenges: Linking to the discussion on indicator development earlier, the ability to “drill deeper” with a larger set of hierarchically-related indicators is strongly supported by both Input Papers and consultations. GADRRRES has developed a proposed hierarchy (see Appendix VII). Alongside and coupled with this hierarchy, a next set of indicators should also

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<sup>39</sup> However, research to date does not support the idea that DRR curricula is upsetting for children. In fact, research shows either no increase in fears or reductions in fears. A number of studies show hazard-related and other more generalised fears reducing from before to after a DRRE program (e.g., Webb & Ronan, 2014; see also Ronan & Towers, 2014).

include extant research findings. That is, as advocated for by Input Papers and consultations, moving beyond a solely self-reporting approach to CI progress will likely yield benefits.

Given the research findings that have been published over the past decade and a half, we now have a body of work that can assist in signposting, and tracking, future developments. At the same time, the review of research described in the body of the Chapter noted that, the vast majority of DRR education programs have either not been evaluated or perhaps have been evaluated but the findings have not been disseminated. Additionally, all of the published evaluations were carried out by academic or professional evaluators. A main signal here is the potential value of extending policy-practice partnerships with research expertise. Alternatively, providing tools for local actors to engage in more systematic evaluation is another possible pathway.

As a result of this overall state of affairs, recommendations here stem from a combination of two main issues. The first issue is the fact that there are now 35 documented evaluations of disaster education programs for children. In addition, the majority of studies that assess impacts and outcomes reported positive findings across indicators that matter for children's preparedness and for increased resilience.

The second main issue is that – perhaps by virtue of a research area in its infancy but that is growing relatively quickly – evaluations themselves overall have numerous limitations. These include:

1. a lack of demonstrated long-term outcomes including the role that risk reduction and resilience education for children plays in producing life savings, injury reduction, psychosocial coping and resilience in the face of, and following, hazardous events;
2. a lack of overall design and methodological rigour and documentation;
3. a lack of specification of program content, delivery and larger-scale implementation plans and attempts;
4. limitations in the measurement of outcomes and impact; this includes education program indicators being primarily knowledge- versus emotional- or behavioural/action-oriented;
5. a lack of knowledge about the role that such education plays in the context of larger community-based initiatives;
6. a lack of an evaluation culture in those who develop and carry out education programs – published evaluations have been done almost exclusively by academic researchers; and
7. a lack of research dissemination / research utilization; research results are published primarily in English, in academic journals to which policy-makers, educators and practitioners have little access. There are no research-into-policy or research-into-practice publications available in either English or other languages of use to DRR and education sector leaders/teachers.

On these last critical points, several options present themselves. One is to help motivate and equip national and local policy and program developers themselves to be more able and willing to evaluate implementation, fidelity and outcomes/impact of the programs they plan and develop. Schools or agencies should be encouraged to include formal evaluations. The second option is to provide outside assistance for evaluations to be done. On this latter option, getting outside assistance might help particularly based on time and resource/capacity limitations that policy and program developers typically report as a major barrier to undertaking evaluation. Of course, while the two options are not mutually exclusive pathways, providing direct assistance and/or easy-to-use tools for national and local policy and program developers may be necessary if we want to see a genuine lift in the number of evaluations conducted worldwide. Equally, partnerships can be a gateway through which important research is done and findings are shared for use in policy/implementation, curriculum/CSS development and training contexts. Furthermore, academic institutions, and funders must establish the expectation that researchers present the results in language and formats designed for decision-makers and practitioners, and must arrange for these friendly summaries to be translated into relevant national languages.

**Core Indicator, Research and Evaluation Recommendations:** Overall, recommendations that follow are intended to help further the momentum generated since the early 2000's while helping those who do develop programs consider the value of a culture of evaluation and quality improvement, perhaps with some outside assistance and tools. Recommendations are as follows:

1. Celebrate the large increase in research conducted on children's DRR and resilience education programs over the past decade and a half through disseminating their existence, their findings and to encourage policy and program developers at national and local levels to source research findings to support their efforts while additionally encouraging them to undertake their own evaluations: to see the value of combining "evidence-based practices" (EBP) with gathering "practice-based evidence" (PBE).
2. Include a larger set of indicators from macro- through policy/implementation/program/school/local/indigenous-custom-fitted levels that are capable of assessing the many factors linked to CSS initiatives, including DRR/CCA policy and curriculum development, delivery, effectiveness, training, and implementation;
  - a. The hierarchy proposed by GADRRRES and the tool being piloted by Save the Children are useful starting points for a larger discussion with researchers and national/local actors. With wider agreement, such a hierarchy can then guide research and monitoring (and policy/practice) developments (see Appendix VII);
  - b. Move beyond a solely self-reporting mechanism for the next set of Core Indicators;
3. Include research advice and actors in larger teams that are promoting policy, curriculum and training uptake at national and local levels. At the policy and implementation level, there is a growing literature on "implementation science" that can help with policy development, implementation planning and evaluation. One major finding from implementation science is that implementation that is not well

- planned and “too hasty” can predict failure whereas those which involves more key actor cooperation, concrete, stepped plans, building on existing strengths, and inviting local participation have a better chance of success;
4. Continue to develop the global guidance work begun on risk reduction and resilience education, including making more prominent the link between practice and evaluation;
  5. Help those involved in DRR/CCA policy and program development and delivery (e.g., educational, DRR personnel) see the value in establishing a strong evidence-driven culture and how it can be translated in policy and curriculum/training contexts;
  6. Systematically train teachers in university in evidence-driven disaster risk reduction and resilience teaching practices and in systematic evaluation. For those who are actively evaluating programs, promote both the description and measurement of the program and the measurement of its short- and longer-term knowledge-, attitudinal/emotion-focused, and action-oriented outcomes
    - a. Consider the value of using mixed methods approaches, a combination of quantitative and qualitative research design and methods;
    - b. Describe implementation, program content and delivery and intended outcomes in detail;
    - c. Measure program implementation and fidelity: are implementation, development and delivery done in evidence-supported ways?; are important aspects of the programs measured to ensure content and delivery are being done as intended?; are stakeholders, including children, given a chance for input, including a genuinely participatory role, and are they satisfied?; does the education program link to households, to the larger community?
    - d. Measure impact and outcomes with reliable, valid and intervention-sensitive tools<sup>40</sup> that assess knowledge, behaviour, emotions/attitudes and other important indicators of resilience: Are primary, ultimate outcomes and secondary, instrumental outcomes being gathered over time and across a community or collective? Are programs and outcomes capable of producing cost savings?;
  7. To support large-scale implementation and evaluation of DRR/CCA programs/CSS initiatives, and for those who experience obstacles to evaluating programs, promote and provide tools and assistance through universities, university consortia (Holloway, 2014), research centres, and other forms:<sup>41</sup>
    - a. Provide a step-by-step “implementation road map and evaluation” toolbox that is easy-to-use and helps policy and program developers see the value of drawing from research knowledge while also developing an evaluation culture;
    - b. Include tools that provide for increased consistency in measurement and methodological rigour, including easy- and free-to-use measures;

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<sup>40</sup> Intervention- or treatment-sensitive measures are those that have been shown to reliably reflect the effects of documented interventions.

<sup>41</sup> An example of a research-to-policy and research-to-practice initiative would be the Australian Bushfire and Natural Hazards Cooperative Research Centre, a federally-funded initiative intended to support DRR-related research and, importantly, end user infusion to ensure translation of research findings into implementable programs, tools, resources.

- c. Include tools that reflect updated benchmarks to measure changes against, including benchmarks derived across published and other available evaluations;
- d. Include a tool that includes direct assistance including a consultation service and a data repository that local evaluators can use to send their data and get it analysed.

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## Appendix I: Developments In Bangladesh, Cambodia, Indonesia, Pakistan (KAGAWA & SELBY, 2014)

### Box 1: DRR Curriculum Development in Bangladesh: Synthesis

- DRR is increasingly embedded in school textbooks but the problem of student access to DRR curriculum remains because of significant levels of drop out from school after grade 5 and teacher avoidance of disaster-related chapters given their lack of DRR training
- Cross-curricular integration of DRR is not happening and progression through the grades of DRR learning and learning outcomes is more or less absent
- DRR learning focuses on facts and memorization, not skills or attitudes
- Although some excellent active learning materials are available, the predominating pedagogy is frontal (lecture) style teaching
- The centralized 'one text fits all' approach to curriculum is poorly calibrated to meet the diversity of hazard in different parts of the country
- While there are excellent project-based examples of student involvement in safe school and school/community resilience-building initiatives led by development agencies, such involvement has, so far, not been systematically embedded in the formal school curriculum
- While small-scale teacher capacity building in facilitating DRR curriculum has happened, there is no systematic pre-service and in-service DRR training provision

### Box 2. DRR Curriculum Development in Cambodia: Synthesis

- ✓ A thoroughgoing policy framework for DRR curriculum development has been put in place
- ✓ DRR has been mainstreamed into the national grade 8 Geography and Earth Studies curriculum but not elsewhere leaving the likelihood that the many students dropping out of school before lower secondary level do not receive any DRR education
- ✓ There has been a series of innovative curriculum development projects reaching out to an impressive number of schools but that have fallen short of being mainstreamed
- ✓ National safe school guidelines are close to publication offering, budget allowing, real leverage and purchase for advancing the systematic mainstreaming of integration, infusion and interdisciplinary approaches to DRR, as well as stand-alone, dedicated programs
- ✓ A recent MOEYS-backed project offers the prospect of local and school-based curriculum development through teacher capacity building
- ✓ While there are excellent project-based examples of student involvement in safe school and school/community resilience-building initiatives within the national child friendly schools framework and through development agency projects, such involvement has, so far, not been systematically embedded in the formal school curriculum

#### Box 4. DRR Curriculum Development in Indonesia: Synthesis

- ✓ The decentralized and autonomous education system in Indonesia means that DRR education initiatives are diverse and implementation is left up to each school.
- ✓ The national DRR education strategy and safe school guidelines are mutually reinforcing milestones but systematic implementation and reinforcement remains a challenge.
- ✓ There are active national platforms for DRR education and safe school involving development agencies.
- ✓ It is up to schools to make a link between DRR classroom learning and extra-curricular and community-based DRR learning and the links are not generally being made
- ✓ Schools and teachers have so far not taken full advantage of DRR curriculum opportunities to address locally specific hazards and vulnerabilities
- ✓ While small-scale and time-bound school-based DRR curriculum development initiatives exist, the scaling up and sustainability of initiatives remains a challenge
- ✓ There is no systematic pre-service and in-service DRR training provision

#### Box 5. DRR Curriculum Development in Pakistan: Synthesis

- ✓ Pakistan curriculum development is currently in a transition state as the country moves away from a national curriculum and towards devolved provincial curricula; this has significant implications for the role of development agencies in DRR curriculum support
- ✓ DRR education is taking place in isolated pockets, and systematic, regular and sustained DRR teaching and learning opportunities are currently lacking
- ✓ To develop provincially framed DRR curriculum, key stakeholders and multipliers at provincial level require capacity development support especially in the more disadvantaged provinces within the country
- ✓ There are national policies that support DRR integration into curricula at all levels
- ✓ The action-oriented aspirations of DRR education are expressed in some policy documents but, generally speaking, are not manifest in practice
- ✓ After recent mega-disasters, many development agencies have started to collaborate to promote DRR education, although coordination mechanisms still need to be developed.
- ✓ While project-based and short-term teacher training opportunities exist, there is no systematic pre-service and in-service DRR training provision

## Appendix II : Australian Curriculum Development Opportunities (DUFTY, 2014)

1. The main curriculum development opportunities for disaster resilience learning are in Science and Geography.
2. Science - the main opportunities are in Year 6 Science (geological changes, extreme weather) and in Year 11-12 Earth and Environmental Science (the cause and impact of Earth hazards).
3. Geography - the main opportunities are in Year 5 (impact of and response to bushfires and floods), Year 7 (causes, impacts and responses to atmospheric or hydrological hazards), Year 8 (causes, impacts and responses to a geomorphological hazard), Year 9 (challenges of climate change) and Year 11-12 (natural and ecological hazards including a depth study).
4. History - the main opportunities are in studies of the Black Death plague (Year 8) and relating to environmental disasters such as Chernobyl (Year 10).
5. Health & PE - the main opportunities are across all years and relate mainly to personal resilience in adversity, safety measures in emergencies, and decision-making for safety.
6. From Year 5 onwards there are generally good opportunities for disaster resilience learning across the curricula.
7. Other than a few elaborations, there are no direct opportunities for disaster resilience learning in Foundation to Year 4.

## Appendix III: Developments In Serbia

From p 13 of Input Paper (Calic et al., 2014):

"Being aware that the full inclusion of hazard and disaster risk-related issues into existing education curricula is a time-consuming process, we started with small and relatively easy, yet effective steps in that direction. Following the recommended steps stated in the "Words into Action: A Guide for Implementing the Hyogo Framework" (UNISDR, 2007), a number of actions have been taken. Within the step (1) a working group was established in our research institute, to prepare a teachers' professional training program; within the step (2) the survey among schoolchildren was performed, as well as the analysis of geography curricula; within the step (4) education material (particularly geography textbooks) was thoroughly analysed; within the step (5) training for teachers has been provided; within the step (9) the dialogue among researchers and policymakers has led to the formal initiative for curricula adaptation, which will probably be formally enacted in two years time.

In the meantime, the great majority of teachers who positively responded to the question on applicability of the program in schools indicate that it is possible to take the responsibility and the initiative, and to include the elements of disaster risk reduction in a number of other lessons, regardless of the fact that they are not yet in the formal curricula. The fact that in this phase the process depends solely on the personal readiness and good will of teachers makes this approach non-systematic by default. However, despite the fact that this is a partial limitation, at the same time it is a good opportunity in a given situation."

## Appendix IV: HFA Monitor For PFA3, CI2 (FROM HFA MONITOR TEMPLATE, 2013-2015)

### b. Core Indicator 2: **School curricula, education material and relevant trainings include disaster risk reduction and recovery concepts and practices**

Incorporating disaster risk-related issues into existing education curricula contributes to continuous learning and reinforces knowledge for disaster risk reduction. Training activities also provide the opportunity to consider indigenous knowledge and traditional practices for risk reduction and mitigation.

#### **Level of Progress**

The levels of progress will enable a self-assessment of the extent to which the policies, programmes and initiatives are sustainable in achieving the indicated risk reduction objectives.

- 1 – Minor progress with few signs of forward action in plans or policy
- 2 – Some progress, but without systematic policy and/or institutional commitment
- 3 – Institutional commitment attained, but achievements are neither comprehensive nor substantial
- 4 – Substantial achievement attained but with recognized limitations in capacities and resources
- 5 – Comprehensive achievement with sustained commitment and capacities at all levels

#### **KEY QUESTION AND MEANS OF VERIFICATION:**

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##### **Is DRR included in the national educational curriculum? Yes/ No**

- primary school curriculum
- secondary school curriculum
- university curriculum
- professional DRR education programmes

##### **Description** (300 words max.)

Describe some of the *key contextual reasons* for the country's ranking / assessment at the indicated level

Please use additional space if required.

##### **Context and Constraints** (300 words max.)

*Highlight key contextual challenges* encountered by the country / national authorities and partner agencies; and recommendations on how these can / will be overcome in the future.

Please use additional space if required.

## Appendix V: Universities With A Masters Program (reproduced from Holloway, 2014)

COUNTRY	UNIVERSITY	PROGRAM
Algeria	University of Mostaganem	(Masters) Disaster Risk Management
	University of Science and Technology	(Masters) Earthquake Risk Reduction & Disaster Risk Science
Austria	University of Natural Resources and Life Sciences	(Masters) Alpine Natural Hazards
	Australian National University	(Masters) Natural Hazards and Disasters
	Royal Melbourne Institute of Technology (RMIT)	(Ph.D.) Disaster research
	University Western Sydney	(Ph.D.) Disaster Response and Resilience
Bangladesh	University of Dhaka	(Masters) Disaster Management
Bolivia	Universidad Andina Simón Bolívar	(Masters) Management for Risk Reduction and Disaster Response
Bangladesh	BRAC University	(Masters and Ph.D.) Disaster studies
Canada	Royal Roads University	(Masters) Disaster and Emergency Management
	York University	(MA.) Disaster and Emergency Management
	Universite du Quebec a Montreal	(Masters) management of major risks
Chile	Academia de Guerra	(Masters) Planning and Disaster Risk Management
Colombia	Antioquia University	(MSc.) Sustainable Development with Emphasis on "Prevention and Attention to Disasters"
	Universidad del Valle	(MSc.) in Sustainable Development Emphasis on Prevention and Disaster
	Central University	(MSc.) in Management for Risk Reduction and Disaster Prevention
	Escuela de Ingenieros Militares	(Masters) Risk Management and Development
Costa Rica	Universidad Central de Costa Rica	(MSc.) Management for Risk Reduction and Disaster Prevention
Denmark	University of Copenhagen	(Masters) Disaster Management
Ecuador	University of Guayaquil	(Masters) Disaster Risk Management
Ethiopia	Bahir Dar University	(MSc.) Disaster Risk Science & Sustainable Development
France	University of Nice Sophia-Antipolis (UNS)	(Masters) "Climate Risk, Environment, Health"
	Université Paul-Valéry Montpellier	(Masters) Management of disasters and natural hazards
Germany	Technical University of Dreden	(MSc.) Flood Risk Management (The Erasmus Mundus Programme)
	Universitat Bonn	(Masters) disaster preparedness and disaster management
	United Nations University	(Ph.D. block course) "From Vulnerability to Resilience in Disaster Risk Management"
Ghana	University of Ghana	(Mphil) Integrated Disaster Risk Reduction Urban Ghana
Greece	Harokopeion University	(Masters) Management of natural and human induced hazards
Guatemala	University of San Carlos of Guatemala	(MSc.) in Management for Risk Reduction
India	Guru Gobind Singh Indraprastha University (GGSIPU)	(MBA.) Disaster Management

COUNTRY	UNIVERSITY	PROGRAM
India	Tata Institute of Social Sciences (TISS)	(MA./MSc.) Disaster Management
	Madras University	(Masters and Ph.D.) Management Studies Research (Disaster Management)
	University of Pondicherry	(MSc. and Ph.D.) Coastal Disaster Management
	The Indian Institute of Information Technology Allahabad	(Ph.D.) Disaster Management
	Annamalai University	(MA.) Disaster Management
	Indian Institute of Remote Sensing	(MSc.) In Natural Hazards And Disaster Risk Management
Indonesia	Gadjah Mada University	(MSc.) Geo-information for Spatial Planning and Risk Management
Iran	Tehran University of Medical Sciences	(Masters) public health and disasters
Italy	Institute for Advanced Study in Pavia	(Masters) in Earthquake Engineering and/or Engineering Seismology
	Politecnico di Milano	(MCiv.Eng.) Risk Mitigation
Japan	National Graduate Institute for Policy Studies	(MSc and Ph.D.) in Disaster Management Policy Program
Kenya	Moi University	(MSc) Disaster Management
Madagascar	University of Antananarivo	(MSc.) Disaster Risk Management
Malaysia	Universiti Kebangsaan Malaysia (SEADPRI-UKM)	(Masters and Ph.D.) Disaster Mitigation
Mozambique	Technical University of Mozambique	(Masters) Technical Education, Risk Reduction & Development
Nepal	Tribhuvan University	(MSc. and Ph.D.) Disaster Risk Management
Netherlands	University of Twente	(MSc.) Earth Sciences: Specialization in Natural Hazards and Disaster Risk Management
	Wageningen UR	(Masters and Ph.D.) Disaster Studies
New Zealand	University of Auckland	(Masters) Disaster Risk Management
	University of Canterbury	(MSc. and Ph.D.) in Hazard and Disaster Management.
Nicaragua	National Autonomous University of Nicaragua	(Masters) Risk Assessment and Disaster Reduction
	National University of Engineering	(Masters) Environment, Disaster Prevention and Mitigation
Nigeria	Federal Univeristy of Technology	(Masters) Disaster Risk Management
	Ahmadu Bello University	(Masters) Disaster Risk Management
	University of Maiduguri	(Masters) Disaster Risk Management
	University of Ibadan	(Masters) Disaster Risk Management
	University of Port Harcourt	(Masters) Disaster Risk Management
	University if Nigeria	(Masters) Disaster Risk Management
Pakistan	University of Peshawar	(Masters and Ph.D.) Disaster Management
	Military College of Engineering	(Masters) Disaster Management
Peru	National University of Engineering	(Master) Disaster Management for Sustainable Development
	Catholic University of Santa Maria	(Master) Disaster Risk Management and Sustainable Development
	Santiago Antunez de Mayolo National University	(Master) Science and Engineering "Minor in Risk Management and Climate Change"

COUNTRY	UNIVERSITY	PROGRAM
Peru	Univeridad Continental	(Master) Disaster Risk Management
Philippines	Central Bicol State University of Agriculture	(MSc.) Disaster- Risk Management
Portugal	University of Coimbra	(Ph.D.) Territory, Risk and Public Policies
Senegal	Gaston Berger University	(Masters) Disaster Risk Reduction
South Africa	University of the Free State	(Masters) Disaster Management
	North-West University	(Masters) Disaster Risk Studies, Development and Management
	University of Stellenbosch	(Mphil) Disaster Risk Studies
Spain	University of Catalonia	(MSc.) Flood Risk Management
	University of Alicante	Master in Planning and Management of Natural Hazards
	University of Lleida	(MSc.) Masters in Forest Fires: Science and Management
Sweden	Lund University, (in association with Copenhagen University)	(MSc.) Disaster Management
Switzerland	Swiss Federal Institute of Technology	(MSc.) advanced studies in natural hazards management
Sri Lanka	University of Peradeniya	(MSc.) Disaster Management
Taiwan	National Yunlin University of Science & Technology	(Masters) Disaster Prevention and Environmental Engineering
Tanzania	Ardhi University	(MA./MSc.) Disaster Risk Management
Thailand	Chulalongkorn University	(Masters) Disaster risk reduction in Civil Engineering
	Pathumthani	(Masters) Disaster Preparedness, Mitigation and Management Program
Turkey	Istanbul Technical University (ITU)	(Masters) Disaster management
UK	Northumbria University Newcastle	(MSc.) Disaster Management and Sustainable Development
	Cranfield University	(MSc.) Resilience
	University of Manchester	(MA.) International Disaster Management
	Durham University	(MSc. and Ph.D.) in Risk & Environmental Hazard
	Kingston University	(MSc.) Hazards and Disaster Management MSc.
	University of Glamorgan	(MSc.) Disaster Healthcare.
	Salford University	(Masters and Ph.D.) Disaster Management
	University of Portsmouth	(MSc.) Crisis and disaster management/(MSc) Geological and Environmental Hazards
	Kings College	(MA.) Disasters, Adaptation and Development
	University College London	(MSc.) Risk and Disaster Reduction/ Earthquake Engineering with Disaster Management
	University of Huddersfield	(MSc.) Risk, Disaster and Environmental Management
University of South Wales	(MSc.) Disaster Management for Environmental Hazards	
USA	Colorado state University	Masters and Doctoral Research in Disaster field
	University of Delaware	(MSc. and Ph.D.) Disaster Science and Management
	Harvard University	(Masters) Design Studies : Risk and Resilience
	University of Washington	(Masters) Infrastructure, Planning and Management
	VirginiaTech	(Masters) Disaster Resilience IGEP
Zimbabwe	National University of Science and Technology (NUST)	(MSc.) Disaster Management

Appendix VI: Table 1: A characterization of the three education initiatives based on a number of aspects of DRR education in Sweden (Nyberg et al., 2014).

Aspects of DRR education according to HFA, UNESCO and UNICEF, and DESD	Local level: Flood walk	Sub-national level: "Big Lake" courses	European level: Masters course IFRM
Integration of perspectives/interdisciplinary and holistic learning	Different perspectives of flood hazards, the full spectrum of vulnerable objects and structures, and potential risk-reducing measures and strategies are presented and discussed.	Flood risk management, climate change adaptation, land use planning, etc, were the basis for the courses. Different authorities, experts and problem-owners presented their views in an open exchange.	Different aspects of Flood risk management were presented in lectures, excursions, etc. Synergies and conflicts with neighbouring management fields such as management of the aquatic ecology and land use planning were included in the course.
In-the-field education	The city centre of Karlstad is used as classroom. Several stations/stops are visited during a walk, each with a specific topic.	Each of the education days, distributed in the lake area, included excursions and study visits.	Excursions were carried out in four European countries. Video-recordings of these excursions have been used for later course events.
Engagement of youth and professionals	High-school pupils and experts from local/ regional/national/ international levels have participated.	Professionals from authorities and private sector participated both among the students and as experts/ lecturers, yielding a mutual	A mix of younger students and professionals has participated in the three course events. Several professionals have

		exchange of knowledge.	acted as teachers.
Creation of formal and informal networks	Each walk is also a meeting between people. During the walk there is time for exchange of knowledge, values and perspectives.	The repeated education days created informal networks among participants (which mainly were professionals), teachers and visiting experts.	Each course event created a strong network among the participants and teachers. Especially the exchange during excursions is of large importance.
Interaction and empowerment of communities and local authorities	Local and regional authorities, responsible for DRR, have been using the walk for knowledge transfer among the staff, and have acted as guides for the public and other groups.	Each education day were hosted by a municipality. Their flood problems were addressed based on their problem formulation. Alternative perspectives were given by invited experts and researchers, and discussed by the course participants.	Several local and regional authorities, as members of the SAWA project, contributed to case studies and study visits during excursions.

## Appendix VII: GADRRRES Proposed Hierarchy of Indicators

<b>FIRST ORDER</b>	<ul style="list-style-type: none"> <li>CHILDREN'S RIGHT TO SAFETY AND SURVIVAL ARE PROTECTED IN SCHOOLS</li> <li>CHILDREN'S RIGHT TO EDUCATIONAL CONTINUITY IS PROTECTED</li> </ul>
<b>GOALS AS OF 2016:</b> At least 10 WISS Lead countries will commit to:	<ul style="list-style-type: none"> <li>Every new school facility will be safe from known hazards [P1]</li> <li>National education authority will have a national level committee and full time focal point leading comprehensive school safety: safe school facilities, school disaster management and disaster risk reduction and resilience education. [P1,2,3]</li> </ul>
<b>AS OF 2030:</b> All signatory countries agree to:	<ul style="list-style-type: none"> <li>Every school facility (both new and existing) will be safe from known hazards. [P1]</li> <li>National education authorities will lead implementation of common approach to school disaster management (policies, mechanisms and guidance) for ongoing participatory risk assessment, risk reduction, response preparedness, and educational continuity planning at all levels of the education sector. [P2]</li> <li>School management will incorporate risk reduction and resiliency knowledge skills and competencies.</li> <li>Set of key action-oriented messages for DRR/CCA, and skills and competencies for risk reduction and resilience are adopted at national level and integrated into formal school curriculum at all levels of the education sector, with leadership capacity in teacher training institutes, and supported with quality learning materials. [P3]</li> <li>Quality basic education will include knowledge and skills for risk reduction and resiliency.</li> </ul>

OUTCOME INDICATORS					QUESTIONS FOR GROWD-SOURCING AT SCHOOL LEVEL	
OUTPUT INDICATORS	SUB-CATEGORY	NATIONAL LEVEL	SUB-NATIONAL LEVEL	SCHOOL LEVEL	ADDITIONAL SCHOOL LEVEL INDICATORS	
ALL-HAZARDS CHILD-CENTRED ASSESSMENT	INFORMATION-SHARING	Hazard and vulnerability information is readily available to national education authorities	Hazard and vulnerability information is readily available to sub-national education authorities	Hazard and vulnerability information is readily available to school community		
	VULNERABILITY ASSESSMENT RESEARCH	School vulnerabilities and capacity data is collected at the school level and used for risk reduction planning		School vulnerability and capacity is assessed regularly		
	COMPOSITE	# safe (vs. unknown) schools/classrooms constructed # days of school closure, not made up # classrooms destroyed (\$) # classrooms damaged (5)				
SAFE SCHOOL FACILITY	A) LOCATION Assessed safe environment			1. All-hazards assessment 2. Performance objectives 3. Site assessment (topography, soil, proximity to faults /water bodies, vegetation) 4. mitigation measures 5. access, egress, safe assembly area	1. all-hazards assessment (including natural, man-made, conflict, etc. 2. site assessment (as needed) 3. functionality (access, egress, suitability of safe area)	Which of these hazards could hurt children or cause serious damage to your school: [ ] floor or other water [ ] wind [ ] ground shaking or landslide [ ] violence [ ] other [ ] don't know [ ]
	B) CONSTRUCTION Structurally compliant	Performance level: legislated building codes or international standards or guidelines	Compliance mechanisms (institutional framework): a) design and site inspections and b) certification	1. Construction methodology 2. Building configuration 3. Building modifications 4. Structural capacity 5. Structural deterioration 6. Non-structural elements		Do you know if your school building has been constructed to building codes or with disaster resilience in mind? [ ] yes [ ] no [ ] don't know
	C) OPERATION Secure non-structural elements	Local, regional or national guidelines on NSE or international standards (include adequate water, sanitation and hygiene facilities). Guidance, monitoring, and facilitation is provided for routine maintenance, non-structural mitigation, and to safeguard equipment and supplies. Local, regional or national guidelines on NSE or international standards		1. Repair and maintenance 2. Protect school equipment/supplies 3. TLS and temporary shelter where needed	1. Daily, monthly, and annual maintenance is completed at schools 2. Equipment and supplies are protected from water, wind, and shaking damage where needed.	Does your school have any serious damage to columns, beams, walls, ceilings, or [ ] yes [ ] no [ ] don't know
	D) SCHOOLS AS TEMPORARY SHELTERS	Where necessary, schools are designed as temporary community shelters, including for educational continuity.				Does your school make efforts to safeguard equipment and supplies from wind, water, or ground-shaking damage [ ] yes [ ] no [ ] not sure
	E) RETROFIT & REPLACEMENT PLANNING	1. Cascading approach: desktop, rapid visual assessment, full engineering		1. Construction methodology 2. Building configuration 3. Building modifications 4. Structural capacity 5. Structural deterioration 6. Non-structural elements*		Does your school have a safe, clear and open space outside, to assemble in case of emergency? [ ] yes [ ] no [ ] not sure
		2. Prioritization plan for retrofit and replacement 3. Incorporation of retrofit into remodelling and modernization systems				

	<p>National risk reduction and resilience committee and full time focal point are in place in education authorities.</p> <p>National and sub-national contingency plans are in place for educational continuity.</p>	<p>Sub-national, education sector, risk reduction and resilience focal points are designated for sub-national planning and monitoring.</p> <p>Education sectors have operational mechanisms and institutions, technical capacities such as disaster committees and focal points, in coordination with corresponding disaster authorities. (structures and people with training)</p>	<p>(%/#) School based risk reduction and resilience focal point is identified to support school-based implementation of school disaster management.</p> <p>(%/#) School committee guides ongoing all-school participatory risk assessment, risk reduction, response-preparedness and recovery.</p>	<p>1. Education personnel are aware of procedures for information-sharing and reporting to work post-disaster.</p> <p>1. School has risk reduction and resilience focal point</p> <p>2. Ongoing School safety committee guides the school disaster management process</p> <p>3. Assessment and Planning for Disaster Mitigation takes place continuously</p> <p>4. Early warning messages for anticipated hazards are received and acted upon appropriately</p> <p>5. Physical protection measures are taken to protect students, staff and facilities</p> <p>6. School facilities are maintained for safety</p>	<p>Does your school have an ongoing committee that is responsible to guide school disaster management? [ ] yes [ ] no [ ] not sure</p> <p>Does your school regularly re-assess your dangers, and take steps to reduce them? [ ] yes [ ] no [ ] not sure</p>
<p>• National education authorities lead implementation of common approach to school disaster management at all levels of the education sector.</p>	<p>SCHOOL DISASTER MANAGEMENT</p>	<p>POLICIES, MECHANISMS, GUIDANCE FOR SDM for SAFETY and EDUCATIONAL CONTINUITY</p> <p>Guidance policies and procedures for risk assessment, risk reduction, and standard operating procedures for early warning and rapid onset events and post-disaster division of labor and educational continuity planning are provided.</p>	<p>(%/#) School personnel and learners know their risks and how to reduce them, practice disaster and emergency response skills (including standard operating procedures), and have access to emergency provisions.</p> <p>(%/#) Schools have educational continuity and recovery plans (including alternative school sites, flexible calendar, alternative modes of instructions, teacher retention and recruitment).</p> <p>(%/#) Staff have access to quality educational programs for school disaster management training.</p>	<p>7. School personnel have disaster and emergency response skills</p> <p>8. Schools have emergency provisions (water, fire suppression, first aid)</p> <p>9. Schools learn and practice standard operating procedures for building evacuation, safe assembly, shelter-in-place, and earthquake and evacuation to safe haven (if applicable).</p> <p>10. Families know procedures for safe family reunification</p> <p>11. Students learn about disaster risk reduction by participating in school disaster management</p> <p>School is prepared to submit damage assessment report following hazard impact</p>	<p>Do some school staff have skills in first aid, or other disaster response skills? [ ] yes [ ] no [ ] not sure</p> <p>When is the last time that you did a fire or other hazard drill at school? [ ] within the last year [ ] more than a year ago [ ] never</p>

<p><b>RISK REDUCTION EDUCATION</b></p> <ul style="list-style-type: none"> <li>Disaster risk reduction and resilience education are infused into formal curriculum and informal education.</li> </ul>	<p><b>CONSENSUS-BASED KEY MESSAGES</b></p>	<p>Set of key action-oriented messages for DRR/CCA, and skills and competencies for risk reduction and resilience are adopted at national level.</p>	<p>Students engage in experiential learning about hazards and risk reduction</p>	<p>Most students are aware of hazards and risks in their community</p> <p>Most students know the various things that can be done to reduce risks at home, school and community</p>	<p>Are most students and staff at your school aware of how to make a family risk reduction plan?</p> <p><input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> not sure</p>
		<p>Consensus-based action-oriented key messages are integrated into formal and informal education</p>	<p>Students learn key messages for disaster risk reduction through formal curriculum</p>	<p>At your school do most students learn about the disaster risks you face, how to reduce impacts and how prepare for them?</p> <p><input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> not sure</p>	
<p><b>FORMAL CURRICULUM</b></p>	<p>Climate-aware risk reduction and resilience education is infused into regular curriculum</p> <p>Leadership capacity in teacher training institutes, and supported with quality learning materials.</p>	<p>Curriculum infusion is supported with inservice training</p> <p>Teacher training institutes include disaster risk reduction and school disaster management in their core curriculum for teachers and administrators.</p>	<p>School has teachers trained in risk reduction and resilience education</p>		
	<p>High quality education materials on risk reduction and resilience are available in national language(s) for all learners at all levels.</p>	<p>School has access to high quality educational materials on risk reduction and resilience.</p>			
<p><b>INFORMAL EDUCATION</b></p>	<p>Disaster risk reduction and resilience education is infused into informal education through participation in school disaster management, and through after-school clubs, assemblies and extra-curricular activities.</p>		<p>Schools have risk reduction and resilience activities annually</p>	<p>Most students have skills and competencies for understanding and response to early warnings and standard operating procedures for safe building evacuation, safe assembly, shelter-in-place, evacuation to safe haven, lockdown, and safe family reunification (as appropriate).</p>	

# Appendix VIII: Save the Children Monitoring Tool for Risk Reduction and Resilience Education

## Disaster Risk Reduction Education - Monitoring Checklist

School \_\_\_\_\_ Date \_\_\_\_\_

### 1. Hazard awareness

	Yes	Somewh at	No
Are most students aware of the various hazards faced in the local community?			
Have most teachers had training about hazards and risk reduction?			

### 2. Risk reduction understanding

	Yes	Somewh at	No
Are most students aware of the various things that can be done to reduce risks at home?			
Are most students aware of the various things that can be done to reduce risks at school?			
Are most students aware of the various things that can be done to reduce risks in the community?			

### 3. Risk reduction involvement

	Yes	Some	No
Are most involved in efforts in home or community to reduce risks?			

**4. Standard operating procedures knowledge and practice**

	Yes	Somewh at	No
Are most students familiar with and able to carry out safe building evacuation procedures for fire? (don't talk, don't run, don't push, don't go back)			
Are most students familiar with and able to assemble in safe assembly area or safe haven?			
Are most students familiar with and able to participate in silent lockdown procedure?			
Are most students familiar with and able to participate in shelter-in-place procedure?			
Are most students familiar with and ready to comply with safe family reunification procedures?			
Are most families familiar with and ready to comply with safe family reunification procedures?			
Are inputs from the evaluation integrated into next drill practices?			
Are the individual needs and the safety of young children, girls, and persons with disabilities considered and planned for?			

**5. Where students learn and participate**

In which of these settings do children learn about disaster risk reduction?	Regular curriculum	Teacher initiatives	School Assemblies	After-school Clubs	Other

# Annex I

## CURRICULUM, EDUCATION MATERIALS: CASE EXAMPLES AND GUIDANCE

### UNESCO/ UNICEF 30 Case Studies and Technical Guidance:

Selby, D. and Kagawa, F. 2012. Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries. Geneva/Paris: UNICEF/UNESCO. 47

<http://www.unicef.org/education/files/DRRinCurricula-Mapping30countriesFINAL.pdf>

Selby, D. and Kagawa, F. 2013. Towards a Learning Culture of Safety and Resilience: Technical Guidance for Integrating Disaster Risk Reduction in the School Curriculum (Pilot Version). Geneva/Paris: UNICEF/UNESCO.

<http://unesdoc.unesco.org/images/0021/002194/219412e.pdf>

### COMPREHENSIVE SCHOOL SAFETY TOOLKIT

Comprehensive School Safety Toolkit: Resources for All 3 Pillars Including Curriculum & Education Materials

[http://www.preventionweb.net/files/29491\\_29491comprehensiveschoolsafetytoolk.pdf](http://www.preventionweb.net/files/29491_29491comprehensiveschoolsafetytoolk.pdf)

### PreventionWeb: Educational Materials Publications Searchable Database

Education and School Safety Materials (740 documents): See also Annex III for complete listing

[http://www.preventionweb.net/english/professional/trainings-events/edu-materials/index.php?o=ent\\_datepublished&o2=DESC&hid=0&tid=36&cid=0&aid=0&lid=0&x=8&y=11](http://www.preventionweb.net/english/professional/trainings-events/edu-materials/index.php?o=ent_datepublished&o2=DESC&hid=0&tid=36&cid=0&aid=0&lid=0&x=8&y=11)

General Education Materials (2063 documents)

<http://www.preventionweb.net/english/professional/trainings-events/edu-materials/>

### Additional Sources: Received from Key Actors

Global Education Cluster (2011). Disaster risk reduction in education in emergencies: a guidance note for education clusters and sector coordination groups. Plan International; Save the Children International; UNICEF.

<http://www.preventionweb.net/english/professional/trainings-events/edu-materials/v.php?id=20366>

Kellett, J. & Mitchell, T. (Eds.) (2014). The future of disaster risk reduction. Climate and Development Knowledge Network (CDKN)/Overseas Development Institute (ODI).

<http://cdkn.org/2014/06/future-framework-for-drr/>

Mitchell, T., Tanner, T., & Haynes, K. (2009). Children as agents of change for Disaster Risk Reduction: Lessons from El Salvador and the Philippines. Working Paper No. 1. Institute of Development Studies: Brighton.

[http://www.childreninachangingclimate.org/database/ccc/Publications/MitchellTannerHaynes\\_AgentsForChange-WorkingPaper1\\_2009.pdf](http://www.childreninachangingclimate.org/database/ccc/Publications/MitchellTannerHaynes_AgentsForChange-WorkingPaper1_2009.pdf)

Petal, M., Critical Reflections on Disaster Prevention Education, Ch. 11 in Egner, H., Schorch, M., & Voss, M. (eds) Learning and Calamities: Practices, Interpretations, Patterns. Taylor & Francis, Routledge. 2014.

Petal, Marla 2008. Ch. 1 Disaster Risk Reduction Education: Material Development, Organization, Evaluation, in Kelman, I. ed. Regional Development Dialogue Journal, Kobe, Japan.

Petal, Marla 2008. Ch.19 Disaster Risk Reduction Education, in Shaw, R. and Krishnamurty, R. eds. Disaster Management: Global Challenges and Local Solutions, Universities Press, India.

Petal, M. & Sanduvac, Z. T. (2012). DREAMS for Turkey: A case study of scale and reach of disaster-learning self-study for individual and household preparedness and school disaster management. Risk RED: London.  
<http://www.riskred.org/index.html#publications>

Seballos, F., Tanner, T., Tarazona, M., & Gallegos, J. (2011). Children and disasters: Understanding impact and enabling agency. Institute of Development Studies: Brighton.  
[http://www.childreninachangingclimate.org/database/CCC/Publications/IMPACTS%20and%20AGENCY\\_FINAL.pdf](http://www.childreninachangingclimate.org/database/CCC/Publications/IMPACTS%20and%20AGENCY_FINAL.pdf)

Save the Children/UNICEF (2012). Comprehensive School Safety: A toolkit for development and humanitarian actors in the education sector.  
<http://www.preventionweb.net/english/professional/trainings-events/education-materials/v.php?id=29491>

UNICEF-DIPECHO (2011). Education children to reduce disaster risks: An innovative practice on disaster risk reduction and education in Georgia.

UNICEF-DIPECHO (2011). Education children to reduce disaster risks: An innovative practice on disaster risk reduction and education in Kazakhstan.  
[http://www.unicef.org/ceecis/ru/Innovative\\_Practice\\_Kazakhstan.pdf](http://www.unicef.org/ceecis/ru/Innovative_Practice_Kazakhstan.pdf)

UNICEF (2012). Disaster risk reduction and education technical note.  
<http://www.unicefinemergencies.com/downloads/eresource/docs/DRR/FINAL%20DRAFT%20DRR-Education%20Technical%20Note%2021%20May%202012.doc>

UNICEF-DIPECHO (2013). Disaster risk reduction in education: Good practices and new Approaches.  
[http://www.unicef.org/ceecis/DRR\\_Good\\_Practices\\_and\\_New\\_Approaches.pdf](http://www.unicef.org/ceecis/DRR_Good_Practices_and_New_Approaches.pdf)

UNISDR (2013). Assessing school safety from disasters: A global baseline report.  
<http://www.unisdr.org/we/inform/publications/35274>

UNESCO (2011). Integrating conflict and disaster risk reduction into education sector planning: Guidance notes for planners.  
[http://www.iiep.unesco.org/no-cache/en/news/single-view.html?tx\\_ttnews\[tt\\_news\]=973&tx\\_ttnews\[backPid\]=262](http://www.iiep.unesco.org/no-cache/en/news/single-view.html?tx_ttnews[tt_news]=973&tx_ttnews[backPid]=262)

## Education Curriculum/Materials and Teacher Training Case Examples: A Global Perspective from Selby and Kagawa (2012, 2013)

### Examples of Infusion of DRR into Curriculum Subjects: Asia, Oceania, Africa, South America

Cambodia, Lao PDR and The Philippines: Under the Regional Consultative Committee (RCC) on Mainstreaming Disaster Risk Reduction, these three countries implemented a Priority Implementation Partnership to mainstream DRR in the education sector. During phases one and two of the project, DRR curriculum integration took place in grade 8 Geography and Earth Studies in Cambodia, in grade 6 Natural Science and Social Science in Lao PDR, and in grade 7 Natural Science and Social Studies in the Philippines.

Fiji: DRR has been incorporated in the school curriculum at both primary and secondary grade levels across a number of subjects. For example, Health Science, primary classes 3-8, addresses the topics of sanitation, safety and first aid in emergencies, and infectious disease prevention. Social Science, primary class 8, addresses decision-making skills and topics including risk management strategies, place and environment. Geography, secondary class 6, includes topics on detecting and monitoring hazards, hazard mitigation and prevention. Biology, secondary class 6 highlights human influences on ecosystems.

Madagascar: DRR themes and topics have been introduced in grade 7 French, Science and Technology, and Mathematics in the new national curriculum launched in 2009. Environmental awareness is one of the topics in French (e.g., brush fires, recycling of waste, new sources of energy, climate change, deforestation and the threat to indigenous species). One of the themes in Science and Technology concerns the degradation of the quality of the regional environment (e.g., degradation of soil quality, rice field flooding, disappearance of local forests, mineral exploitation). In Mathematics, lessons on measurement and scale include working upon the area of forest devastation on the east coast of Madagascar and on the area of drought-induced devastation caused by climate change in the Androy region of the country. The unit also includes consulting maps on the impact of climate change on agriculture and asks learners to examine levels of carbon consumption. DRR has also been introduced in a two-month unit on the management of water in the grade 6 Science and Technology curriculum launched in 2008.

Peru: DRR has been infused into a range of primary and secondary subjects. For primary education, Geography at grades 1-6 addresses natural and anthropic phenomena, emergency preparedness and prevention among others. For secondary education, DRR appears in Geography (grades 7 and 8) and Science, Technology and Environmental Education (grades 7-11). For the latter, the development of environmental consciousness in risk management is specified as an objective.

Source: Adapted from UNESCO/UNICEF F. 2012. Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries. p. 88, 94, 104, 110, 122, 166. Reproduced from Selby & Kagawa (2013).

### DRR Across the Curriculum: Georgia Case Study

The incorporation of disaster risk reduction in the national curriculum of Georgia is a recent development that has been implemented within the framework of the April 2010 to June 2011 *Supporting Disaster Risk Reduction amongst Vulnerable Communities and Institutions in the Southern Caucasus Project* funded by the Disaster Preparedness Programme of the European Commission for Humanitarian Aid and Civil Protection (DIPECHO).

The flagship curriculum development initiative has been the mandatory Head of Class Hour programme covering grades 1-9. Under the programme, the Head of Class, the coordinator of all teachers teaching at a particular grade level, has responsibility for conducting a one-hour lesson per week throughout the school year on cross-curricular topics that the Ministry of Education considers could not be easily accommodated in existing core subjects. The Head of Class also has responsibility for organizing programme-linked activities outside school.

Disaster risk reduction figures considerably in the Head of Class Hour programme from grades 5-9. The themes and topics covered include:

- Natural hazards and global disaster trends (causes, effects, climate change and disasters, the links between development and disaster)
- The role of DRR in building a culture of safety and resilience
- Natural hazards and their prevalence in Georgia
- Role of education in DRR
- Basic DRR concepts and tools (hazard, disaster, disaster risk reduction, risk management, vulnerability, prevention, mitigation, hazard and vulnerability mapping, school emergency preparedness and response, family emergency planning)
- Natural hazards in Georgia (earthquakes, flooding/flash flooding, landslides, avalanches, wildfires, droughts, wind storms, hail, thunderstorms)
- Natural hazards at the global level (cyclones, typhoons, hurricanes), volcanic eruptions, tsunamis)
- Dealing with disaster-induced distress and trauma
- Developing the concept of volunteerism
- Parental/community involvement and awareness

The programme is organized around sixteen thematic modules, each devoted to a particular natural hazard, with most modules including activities for a range of grade levels for which the topic is held to be appropriate. For example, the Earthquake module has activities for grades 5, 6 and 7, the Climate Change module covers grades 8 and 9, and the Volcanic Eruption module is for grade 9. Multiple opportunities for parental and community involvement and fieldwork are offered. To guide Head of Class teachers in their teaching, a manual, *Teaching Disaster Risk Reduction with Interactive Methods*, is available.

The programme encompasses interactive learning in the classroom and a range of practical in-community activities such as excursions and environmental campaigns. Children participate in school hazard, risk and vulnerability mapping and developing school disaster preparedness plans, giving them opportunities to learn by doing and put newly-acquired knowledge into practice alongside parents and community members.

The Head of Class Hour programme belongs to no discipline but draws on all. Learning in the programme is reinforced through the integration of DRR learning into a number of school subjects. There are DRR-related themes and topics in: Natural Science, grades 1-6 (emergency, safety and health-related life skills); Social Science, grades 1-6 (human/nature relationships, environmental protection, sustainable development); Geography, grades 7-9 (natural and human-induced hazards, disaster events in Georgia, global geo-ecological problems); Civic Education, grades 7-9 (sustainable development for survival); Biology, Physics and Chemistry, grades 7-9 (geo-physical processes, stability of ecosystems, ecology and health, human-caused environmental change and its health impacts). Additionally, in January 2011 the Georgia Ministry of Education introduced a stand-alone Civil Protection and Safety programme for grades 4 and 8 dealing with everyday safety, security and life skills, and including disaster risk reduction and safety in emergencies.

Sources: UNICEF. 2011. *Educating Children to Reduce Disaster Risks: An Innovative Practice on Disaster Risk Reduction and Education in Georgia*; UNICEF/National Curriculum Centre (NCC). 2011. *Teaching Disaster Risk Reduction with Interactive Methods: Book for Head of Class Teachers (Grades V-IX)*. Tbilisi: UNICEF/NCC. Reproduced from Selby and Kagawa (2013).

### **DRR Integration with Other Approaches: Climate Change, Life Skills, Sustainable Development, Environmental Education<sup>42</sup>**

**DRR and Climate Change in Philippines and Madagascar/Africa.** As part of DRR being integrated into grade 7 subjects (Natural Science and Social Studies) through making learning support materials available, this includes curriculum, materials and assessment focused on climate change awareness and adaptative (CCA). As pointed out by Selby and Kagawa (2012) in their fuller description of this case study: "In the Philippines, DRR mainstreaming in the school curriculum has run alongside and complementary to the integration of other governmental initiatives on global warming and food security into the school curriculum" (p. 111). In Madagascar, as introduced in the curriculum infusion case example above, Selby and Kagawa's (2012) mapping exercise noted that climate change curriculum is

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<sup>42</sup> Reprinted or adapted from Selby and Kagawa (2012, 2013).

quite predominant in Madagascar. In Madagascar, climate change and DRR are part of a longer tradition of environmental education in that country. CCA is included in the primary curriculum: "Climate change is thus a leitmotif of the grade 7 primary curriculum, exploring the connection between climate change and the environment, analyzing the causes of climate change, identifying the consequences, and taking action by way of mitigation and adaptation... Introduced into the curriculum in 1999, the programme now includes DRR and climate change in the fourth and fifth years of the primary curriculum in particular...(and) involves some simulation exercises" (p. 123, Selby & Kagawa, 2012). Moving beyond Madagascar to African developments more generally, in the words of Selby and Kagawa (2012): "Climate change education figures quite predominantly, a trend discernible in DRR developments in a number of African countries (p. 122)."

**Life Skills Education in Myanmar:** Life Skills is the principal DRR carrier across the primary and lower secondary grade levels. After the 2008 Cyclone Nargis, integration of DRR components in the Life Skills curriculum started. The process included a needs assessment involving head teachers, teachers, students and communities followed by lesson development, field-testing and modifications of the lessons by head teachers, teachers and students. DRR is integrated within a strand called 'Environment and Sanitation' within Life Skills. For example, grade 5 includes a unit on Caution in Emergencies (primarily covering floods, tsunami, earthquakes and forest fires); grade 6 has a unit titled *Emergency! It's Flooding!*; grade 7 addresses Disaster Preparedness (including disaster family plan, emergency kit, evacuation map); grade 8 has a topic covering earthquakes, landslides and safety in the event of fire.

Sources: ASEAN/ISDR. 2011. Disaster Resilience Starts with the Young: Mainstreaming Disaster Risk Reduction in the School Curriculum. Jakarta: ASEAN Secretariat; Khun Dee, ADPC (personal communication, 27 June 2012). Reprinted from Selby and Kagawa (2013).

**Education for Sustainable Development in the Cook Islands:** The Cook Islands is one of 35 countries participating in the Sandwatch project ([www.sandwatch.org](http://www.sandwatch.org)), one of the UNESCO good practice projects. The project aims at addressing problems and conflicts around beach environments by enabling children, youth and community members to work together to better manage coastal environments. It also aims at building ecosystem resilience so as to contribute to climate change adaptation. The Sandwatch project was first introduced to the country (Rarotonga Island) through a teacher workshop in 2003, and it has gradually expanded to a number of schools on other islands. The Curriculum Unit of the Ministry of Education has been coordinating the project. In 2006, curriculum integration efforts were made (this was not a part of the normal MoE curriculum review process). The Curriculum Unit identified curriculum opportunities where the project best fit:

- Science: Living World (Aim 4, research and investigate local ecosystems and understand the relationship between the living and non living features of the ecosystem)
- Social Science: People, Place and Environment (Aim 2, people and the environment interact and influence each other).

The Curriculum Unit provided special teacher training on each island. Teachers are encouraged to integrate Sandwatch project components into their teaching plan very flexibly, going beyond science and social science. Grades 7 to 10 were mainly targeted but some schools involved grade 6 while others schools had year 4 and 5 students join the senior classes. Students have been involved in various activities such as the planting of new palm trees to reduce sand erosion and monthly measurement of beaches to identify any changes. Examining the history of beaches and biodiversity in the coastal areas as well as interviewing the local community on the impact of new development around beach areas are also part of the project.

Sources: UNESCO. 2009. Second Collection of Global Practices Education for Sustainable Development. Paris: UNESCO; Jane Tauranii, Cook Islands Ministry of Education (personal communication, 16 June 2012). Reprinted from Selby and Kagawa (2013).

**Education for Sustainable Development in France:** ESD does not constitute a new discipline in the French curriculum but is held to be an approach integral to each discipline and disciplinary field as well as a means for cross cutting disciplinary unification. It is seen as 'integrating certain dimensions of health, risk and citizenship education and, more generally, solidarity in development,' enabling students to measure the consequences of their environmental actions. A 'Desire to Act' programme has been developed at collège and lycée level to support young people's thirst for engagement in actions of solidarity, citizenship and sustainable development.

Source: Taken from UNESCO/ UNICEF. 2012. Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries. Paris/Geneva: UNESCO/UNICEF. p. 136. Reprinted from Selby and Kagawa (2013).

**Environment Education in Costa Rica:** In 2000 the Education Council approved environmental education as a 'transversal theme' in education with disaster risk prevention and mitigation as one of its main components. Although DRR topics and themes appear in various subjects and grade levels, disaster prevention is being introduced in grades 1-3 Science and grades 4-9 Social Studies, in particular. For example, grade 1 Science activities include developing prevention measures for risk situations in dry or wet seasons. Grade 4 Social Studies includes group activities to elaborate a risk management plan linked to earthquakes.

Source: Adapted from UNESCO/ UNICEF. 2012. Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries. Paris/Geneva: UNESCO/UNICEF. p. 152. Reprinted from Selby and Kagawa (2013).

## CC-DRR : Child and Youth Action in the Community

### *Planting Trees, Haiti*

Local children in Thiotte took part in a 'Risk Reduction Day' and planted trees in order to help reduce the risk of mud/landslides during flood incidents.

Source: ActionAid. 2009. Disaster Risk Reduction through Schools: A Groundbreaking Project. Reproduced from Selby and Kagawa (2013).

### *Child-Led Emergency Drill, the Philippines*

During the Children's Summer Camp, a student-led emergency drill was conducted using a drill scenario of a 7.5 magnitude earthquake and an incipient fire with mass casualties.

Source: Save the Children. 2010. Living with Disasters and Changing Climate. Reproduced from Selby and Kagawa (2013).

### *Community Map, Thailand*

As part of a Disaster Risk Reduction training programme, students in Phayao province created a community map identifying risks and safe areas. The map also identified families with children and elders in the community. They learned how to help them in case of a disaster.

Source: Save the Children. 2010. Living with Disasters and Changing Climate. Reproduced from Selby and Kagawa (2013).

### *School Relocation, the Philippines*

When students in San Francisco municipality learned that their high school was going to be relocated to a landslide risk area, they debated whether and where to relocate the school. A community-wide referendum was held. Students organized a campaign and their proposal for relocating the school to a safer location won in the vote.

Source: Plan International. 2007. Case Study: The Power of Children's Voices in School Relocation. Reproduced from Selby and Kagawa (2013).

### *Student Risk Ambassadors, France*

In order to motivate students to understand and be involved in helping solve local risks (e.g., floods, industrial accidents), a programme of 'Student Risk Ambassadors' was launched in a local high school and was later replicated in other schools.

Source: UN ISDR TPKE. 2008. Disaster Prevention for Schools Guidance for Education Sector Decision-Makers. Consultation Version. Reproduced from Selby and Kagawa (2013).

### *Measuring Rainfall, Brazil*

Children are taught to measure rainfall to give an early warning of floods or landslides.

Source: Save the Children. Undated. Reducing Risks, Saving Lives. Reproduced from Selby and Kagawa (2013).

### *Song: 'Qasidah's', Indonesia*

Children's group in Rembang adapted Qasida (a form of poetry from pre-Islamic Arabia used for religious poetry along with chanting and percussion in Rembang district) for a DRR and climate change adaptation campaign. Children performed at village gatherings.

Source: Plan International. 2010. Child-Centred DRR Tool Kit. Reproduced from Selby and Kagawa (2013).

### *Child-Led Community Radio Programme, Sierra Leone*

The Moyamba District's Children's Awareness Radio is a child-led and community based radio station. It produces a weekly one-hour radio programme on DRR by reaching out about 250,000 community members.

Source: Plan International. 2010. Child-Centred DRR Tool Kit. Reproduced from Selby and Kagawa (2013).

## Teacher Training and Materials Case Examples: Georgia, Vanuatu, Lao PDR, New Zealand

Georgia: DRR teacher training for the Head of Class Hour Programme (see above) was a one-day (7-hour) workshop given in two parts:

- Disaster risk reduction: global disaster trends and statistics; disaster prevalence in Georgia; role of educational system in disaster risk reduction – the need to teach DRR; disaster prevention and rules of behavior before, during and after disasters; consideration of the 16 thematic modules; importance of community involvement in the learning process.
- Interactive teaching methods: encouraging and exemplifying engagement of students with DRR through mini-lectures, discussions and debates, group brainstorming exercises, games, interactive presentations and discussions as well as a variety of practical activities (such as simulations, competitions).

The training program was organized in a highly practical and interactive manner. Participating teachers were guided through using the teacher's guide: Teaching Disaster Risk Reduction with Interactive Methods: Book for Head of Class Teachers (Grades V-IX).

Reproduced from Selby and Kagawa (2013).

### Vanuatu: Vanuatu: Disaster Risk Reduction Teacher Education Workshop

Prior to the pilot testing of grade disaster risk reduction curriculum in 2012 for grades 4, 5 and 6 in the Republic of Vanuatu organized by Save the Children, some thirty teachers from ten piloting schools underwent three days of training, with principals and regional education officers also in attendance.

The basic programme is given on the next page. The unifying and consolidating elements in programme delivery listed below make the training particularly distinctive.

1. Throughout the first two days of the programme in particular, teachers were required to experience for themselves the activities they would be conducting in class on the principle that effective facilitation of activities calls for prior immersion in different learning approaches and activity types.
2. The training introduced teachers to disaster risk reduction and the idea of introducing disaster risk reduction across the curriculum and also trained them in DRR learning and teaching and learner assessment.

Reproduced from Selby and Kagawa (2013).

Lao PDR: A three-day DRR Training of Teachers and Trainers programme was carried out by the Lao Ministry of Education, in conjunction with the National Disaster Management Office, ADPC and UNDP in November 2009.

The two objectives of the training were:

- To build the capacity of teachers and of the regional centre training officers of the MoE National Teacher Training Institute in leading the integration of a DRR training module during the annual pre-service and in-service training of teachers in their area of jurisdiction
- To serve as a guide in the conduct of pre-service and in-service training for teachers so as to enable them to transfer DRR knowledge and create a culture of prevention and safety in their schools.

Day one of the programme covered the following topics: disaster management policy/strategy and concepts; disaster impacts in the region; integration of disaster in the curriculum; the range of natural and human-induced hazards. Day two focused on teaching, learning and assessment aspects, introducing DRR materials (modules, teacher's guide, student's textbook, booklets, posters). A group exercise to create a lesson plan closed the day. Day three included another group exercise concerned

with creating a lesson plan. Plans were then shared and discussed. A final group exercise involved first devising and then sharing and discussing follow-up plans.

Source: Information provided by ADPC; Reproduced from Selby and Kagawa (2013).

New Zealand: What's the Plan Stan? (WTPS) is a teaching and learning resource package developed under the auspices of the Ministry of Civil Defence and Emergency Management (MCDEM). The resource features the cartoon figures of Stan the dog and five children who model best practice in disaster preparation and response. It is aimed at:

- Teachers, offering guidance in incorporating disaster awareness and preparedness into their teaching and learning practices.
- Principals, school managers and Boards of Trustees, offering advice on school emergency management.
- Students (aged 7 to 12) and their families, offering interesting and user-friendly DRR materials.

The WTPS package is available in printed and CD-ROM form and through a website (<http://www.whatstheplanstan.govt.nz/earthquake.html>).

WTPS addresses multi-hazards including earthquakes, tsunamis, volcanoes, storms, floods and non-natural disasters (e.g. pandemics, wildfires, biohazards, transportation accidents, terrorist bombs and threats).

The teacher section of WTPS includes a comprehensive and very user-friendly *Teacher's Guide* that:

- Includes handout and worksheet templates, unit plans, additional resources, and ideas for using the CD-ROM with students.
- Is closely aligned with the New Zealand National Curriculum (especially with the following subjects: Health and Physical Education, Social Studies, Science, and English).
- Provides diverse pedagogical instruction on 'inquiry learning' that emphasizes student engagement in community, questioning and reflection.
- Offers practical advice on using formative assessment techniques.

The student section of WTPS includes facts on disasters most relevant to New Zealand, maps and historical accounts of disasters in New Zealand, photographs and video clips, an audio CD, interactive stories, quizzes and games.

Reproduced from Selby and Kagawa (2013).

## Teacher Training Guidance: ASEAN/ISDR DRR Teacher Training: Goal and Checklist of Questions

Goal: Teachers and relevant educational personnel are properly trained in teaching DRR as part of the school curriculum

- Are curriculum changes linked to training and continued support of teachers to ensure that changes are supported at classroom level?
- Are there resources to coordinate and support necessary training, orientation, or re-orientation of trained teachers?
- Are there immediate programmes for skills development for specific areas such as pedagogy, educational modalities, and content done through workshops, online, study visits, and other alternative forums?
- Is there a long-term capacity development programme for teachers and relevant education personnel for the purpose of teaching DRR?

Source: Taken from ASEAN/ISDR. 2011. Disaster Resilience Starts with the Young: Mainstreaming Disaster Risk Reduction in the School Curriculum, p. 16. Reproduced from Selby and Kagawa (2013).

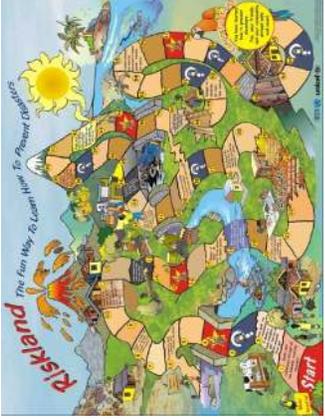
## Annex II

### Disaster Risk Reduction and Resilience Education: An overview of relevant materials for the Compendium

The following DRRE materials were screened and analysed, and informed the criteria established for the draft outline of the Compendium:

Nr	TYPE OF MATERIAL	ORG.	DATE / COUNTRY	DESCRIPTION	TARGET GROUP	PERTINENCE
X	DRR	UNESCO & UNICEF	Pilot Version (2012/2013) Global	"Towards a Learning Culture of Safety and Resilience – Technical Guidance for Integrating Disaster Risk Reduction in the School Curriculum"	The author of the Compendium	This publication is a pertinent support material to the author who will write the Compendium, as it contains chapters on formulating DRR learning outcomes and competencies, developing DRR learning programs, activities and material etc.  <b>LANGUAGE:</b> English.
1	DRR Resource Pack / Capacity Building Package	UNESCO Bangkok	2010  Myanmar	Resource Pack including - Training Modules; - Glossary Book; - Awareness materials: activity book & posters.	Trainers Teachers Children	The training modules are addressed to an adult audience (especially trainers and teachers);  The activity book is for children to gain awareness on disasters prevalent in Myanmar (some exercises are pertinent, some not; the layout is great).  <b>LANGUAGE:</b> English.
2	Educational kit	UNESCO Cairo & UNISDR	2010/ 2011  Arab States region	Goals: - enhancing the coping capabilities of disaster prone communities in the Arab States region; - dissemination of the technical knowledge in natural disaster reduction to build the capacities of educational institutions, students,	Teachers Parents Students (9-18)	The book exclusively covers the scientific explanations of how different disasters happen (it does so very well by using pictures, images and drawings);  The children's booklet has some good ideas on how

3	Board Game	UNESCO Bangkok in collaboration with UNESCO Jakarta	2007 Global	<p>and teachers, associations working in disaster issues, NGOs and trainers.</p> <p>It comprises: an overview book on natural disasters, a booklet on preparedness and response, a children's booklet, and a poster on the content of a first aid emergency bag together with two posters on how to mitigate earthquakes and flood risk.</p>	<p>Teachers Parents Students (12-18) Community members</p>	<p>to get children involved in DRR via a comic illustration; there could have been more games, drawing pages etc.</p> <p>The posters are a valuable tool.</p> <p><b>LANGUAGE:</b> Arabic ONLY.</p>
				<p>The game provides both youth and adults with a fun and engaging media through which to learn about and prepare for natural disasters.</p> <p>Disaster Master is an educational board game that conveys messages through answer cards to help players understand what natural hazards are and what actions can be taken to reduce the impact of natural disasters. The game covers six kinds of natural hazards: earthquakes, tsunamis, floods, landslides, volcanic eruptions and hurricanes. Coordinated by an Indonesian team under the "Education for Natural Disaster Preparedness in Asia-Pacific in the Context of Education for Sustainable Development" project, Disaster Master was developed in close consultation with Indonesian school teachers as a participatory educational material for secondary school students. The game also contains a reference booklet to provide additional information on how natural disasters occur and how to be prepared. Understanding</p>	<p>Very useful game and reference document (explains in a simple manner how to behave before, during and after a specific disaster); includes a short quiz on testing one's knowledge.</p> <p><b>LANGUAGE:</b> English, Urdu.</p>	

4	Board Game	UNICEF & UNISDR	2004 Global	<p>natural disaster mitigation activities leading to preparedness will reduce the loss of lives and property when disasters strike, and improve sustainability in the locality.</p> <p>Players learn about what they can do to reduce disaster impacts by answering questions and advancing along the board's winding path. The kit and game may be adapted according to the different hazards communities face.</p> 	<p>Students (8-16) Teachers Parents Community members</p>	<p>Very useful resource; the board game can be adapted to specific contexts; available in several languages already.</p> <p><b>LANGUAGE:</b> English, Haitian Creole, Maya, Nepali, Portuguese Spanish; 15 other languages currently underway.</p>
5	Booklet	UNICEF & UNISDR	2004 Global	<p>"Let's learn to prevent disasters!"</p> <p>This booklet aims to provide the educational community and children with an innovative and interactive tool for risk management. This booklet is aimed at children between the ages of 8 and 12, as a supplement to materials already available in schools. Its contents can be used in the teaching of social studies, science and environmental studies, as well as in any other studies that relate to other human groups or countries.</p>	<p>Children (age 8-12)</p>	<p>Gives a clear overview of the basic concepts of DRR and how children can take action in their communities (e.g. community risk maps; family plan for disaster management; means of expressing oneself); it includes many interactive games.</p> <p><b>LANGUAGE:</b> English, Spanish, Bangla, Urdu, German, Greek.</p>

6	Curriculum/ Lesson Plans	The American Red Cross	2000 USA	<p>The Masters of Disaster® curriculum is centered on a series of ready-to-go lesson plans that help both organizations and parents educate children about important disaster safety and preparedness information.</p> <p>Masters of Disaster contains lessons, activities, and demonstrations on disaster-related topics that organizations can incorporate into daily or thematic programming. The curriculum is non-sequential, allowing organizers to choose the lesson plans that best fit into their topics of interest.</p> <p>The series of topics is of the highest quality and most comprehensive available with almost 200 lesson plans. The curriculum materials cover safety and prevention for injuries and damage from hazards in the United States with topics on:</p> <p>Preparing for any disaster with Be Disaster Safe; Coping with tough issues like terrorism, war and pandemic flu with Facing Fear; Recovering and rebuilding from any disaster with In the Aftermath; Preventing injuries that happen at home with Home Safety; Earthquakes; Fire; Prevention and Safety; Floods; Hurricanes; Lightning; Tornadoes; Wildland Fires.</p>	Teachers in lower elementary (K–2) upper elementary (3–5) and middle school (6–8)	Lesson plans for teachers to educate students and families on what you need to KNOW and DO before a disaster strikes (Hurricane, Flood, Tornadoes, Lightning, earthquakes).  <b>LANGUAGE:</b> English.
7	School manual on emergency preparedness	UNESCO Windhoek	2010 Namibia	A “School Manual on Emergency Preparedness and Response” is a practical guide for teachers and other education personnel on how to prepare and involve the learners, parents, school	Teachers and education personnel	Targets teachers but also other education personnel. Puts forward a clear and strong argument why children should participate in DRR and gives some hands-on examples for teachers to

				boards, community members and local authorities in school level preparedness and response initiatives. The goal is to enable a culture of disaster risk reduction, and to enhance disaster risk management and knowledge management in Namibia.			assure their participation. Gives some short but strong examples of good practices of children in DRR. Gives some ideas on how teachers can psychologically support themselves and their students. Gives examples of DRR integration into various subjects. <b>LANGUAGE:</b> English.
8	Cartoon / Reading Book Theme: Floods	UNEP & UNISDR & IGAD Climate Prediction and Application Centre (ICPAC)	2004 - 2012 Africa	UNISDR AFRICA Educational Series: - "Safari's encounter with a landslide" (2003) - "Safari's encounter with floods" (2004) - "Safari's encounter with drought" (2006) - "Safari's encounter with coastal and marine hazards" (2012) These booklets target primary school children to sensitize them to the causes, impacts and mitigation of landslides, floods, drought and coastal and marine hazards.	Primary Students (6-11)		Very useful material; format of a reading book for young children. Targets African countries. <b>LANGUAGE:</b> English, French.
9	Educational Series: School Guides	UNISDR	2004 Africa	A Series of School Guides on different DRR issues: 1. vol. 1, issue 2: "Water & Risk in Africa: A school's guide" (The Guide aims to help students and teachers to know more about risks and disasters related to water, and also about what to do to protect lives and property. It seeks to help teachers to help students to be risk aware and learn to protect their own lives and property. It also seeks to help students to help their family, relatives and friends to protect their own lives and property.) 2. vol. 1, issue 3: "Environmental protection and disaster risk reduction: a school's guide" (This	Students Teachers		Useful but the guides concentrate more on the <i>what</i> than the <i>how</i> of DRR; good part on risk assessment. <b>LANGUAGE:</b> English, French.

10	Children's handbook (comic/ cartoon/ coloring book)	Save the Children	2008 Thailand / Global	<p>booklet describes what can be done to protect the environment and in turn reduce the impact of disasters. It also provides definitions and explanations in school-friendly language, supported by success stories providing inspiration for others to contribute to disaster risk reduction, by protecting their local environment.)</p> <p>3. vol. 1, issue 4: "Land use, disaster risk and rewards: a school's guide" (The present booklet seeks to help school teachers and students understand how land becomes degraded, what to do about it, and the link between good use of land, disaster risk reduction and sustainable development.)</p> <p>"The Alert Rabbit":</p> <ul style="list-style-type: none"> <li>- provides knowledge to children about what they can do to prepare for a tsunami if it were to happen;</li> <li>- empowers children and young people to become actively involved in their community – especially in areas that affect them such as emergency preparedness and disaster risk reduction.</li> </ul>	Children (4-8) Students Teachers Parents	Very useful material; gives ideas of different community/ school-based actions to take; focus is on child-lead DRR; full of inter-active games and plays, coloring pages etc.  <b>LANGUAGE:</b> English.
11	Booklet	Save the Children	2010 Southeast Asia / Global	"Living with disasters and changing climate: Children in Southeast Asia telling their stories about disaster and climate change"	Students (secondary) teachers Parents	Gives ideas on how children can take action in DRR; gives children's perspectives on DRR.  <b>LANGUAGE:</b> English
12	Children's book	UNISDR	2002 Global	"Volcano Daily" is intended to make young people around the world aware of the dangers that volcanoes represent and, in particular, all	Children Students (Teachers)	Children's book (comic) including a very short part for teachers and parents; less useful.

13	Lesson Plans	School Earthquake Safety Initiative provided by the United Nations Centre for Regional Development	2007 Uzbekistan	the measures that can be undertaken to prevent and protect against volcanic disaster. “Study guide on preparation of school children to emergency (earthquakes) actions”: This guide was developed for conducting six lessons. The guide provides the concepts of disasters, explains the reasons of earthquakes and steps for preparation to them, aiming at decreasing risks and mitigation. At the end of each lesson there are test questions and tasks for school children.	(Parents) Teachers for grades 5-9 in secondary schools	<b>LANGUAGE:</b> English. Less useful as focused on the <i>what</i> and on Uzbekistan. <b>LANGUAGE:</b> English.
14	Teachers handbook	Sustainable Environment and Ecological Development Society	India & Asia-Pacific	“Teachers handbook on DRR - Reducing vulnerability of school children to earthquakes in Asia-Pacific Region”	Teachers Parents	Useful checklist for teachers and parents on what to do before, during and after an earthquake and ideas on a disaster safety plan; however, the information covered is vast and only gives an overview, not detailed advice. <b>LANGUAGE:</b> English.
15	Training Course/ Participant Workbook	Asian Disaster Preparedness Centre (ADPC)	2007 Thailand	“Child focused DRR: Community Based Disaster Risk Management Course” - teaches the importance of children’s participation in DRR; - Case presentations featuring child-focused DRR.	Teachers Community members	More of a paper, than training course material; it does provide background information on child-lead DRR and case studies, which are useful. <b>LANGUAGE:</b> English.
16	Disaster Awareness Handbook	USAID	2002 Turkey	“ABCD Basic Disaster Awareness Handbook” Topics covered: Disaster awareness, earthquake hazards vs. risks, before an earthquake, during an earthquake and after an earthquake.	Teachers Parents	Focuses only on earthquakes. Practical part on how to act before, during and after an earthquake. <b>LANGUAGE:</b> English.
17	Activity Guide and Handbook for	IFC	2010 USA /	Disaster and Emergency Preparedness Activity Guide for K to 6th Grade Teachers: The booklet offers suggestions for a range of	School personnel (pre-school)	Very useful! <b>LANGUAGE:</b> English.

18	Teachers Head Teachers Guide	UNICEF & ECHO	Global  2012  Georgia	<p>classroom and community activities to teach elementary school students (Kindergarten through 6th grade) about natural and man-made hazards, how to protect oneself and respond to them, and how to help reduce their impact and prevent them from becoming community disasters.</p> <p>Teaching Disaster Risk Reduction with Interactive Methods, Grades V – IX:</p> <p>This guide will help teachers provide students and their families with valuable information about natural hazards, disasters and reduction of the associated risks. The guide covers the following topics: the role the education system in disaster risk reduction, the methodical instructions necessary for proper usage of the guide, interactive teaching methods, and sixteen thematic modules which we hope will provide schoolchildren an opportunity to improve their knowledge. This guide will also help students to develop a sustainable behavioral culture and the life-skills required to prevent natural hazards from turning into disasters and to better protect themselves in case of such an event.</p>	Teachers Students (grades 5-9)	<p>Gives good ideas on ways teachers can integrate DRR in the classroom (via debates, mini-lectures, excursions, case studies, role plays, learning by doing etc.) as well as specific classroom activities for different hazards. Also includes tests/quizzes.</p> <p><b>LANGUAGE:</b> English.</p>
19	A guide for teachers, including unit plans and activities	Government of New Zealand	New Zealand / Global	<p>“What’s the Plan Stan?”</p> <p>An initiative which aims to support teachers to develop their students’ knowledge, skills and attitudes to respond to and prepare for an emergency.</p>	Teachers	<p>Includes pertinent activities for teachers to prepare children in case of a disaster through classes, such as ‘Health and Physical education’, ‘Social Studies’ and ‘English’; very good homework ideas and activity sheets (multi-hazard); gives some examples of how to integrate parents/community members</p>

				<p>It includes:</p> <ul style="list-style-type: none"> <li>- a teachers' guide, including unit plans and activities;</li> <li>- a CD-Rom with activities for students and downloadable worksheets and unit plans for teachers (upgraded in 2007);</li> <li>- a poster outlining the What's the Plan Stan resource, and promoting the materials available;</li> <li>- an illustrated storybook containing five stories (added in 2007);</li> <li>- an audio CD of the stories in the storybook (added in 2007).</li> </ul> <p><a href="http://www.whatstheplanstan.govt.nz/">http://www.whatstheplanstan.govt.nz/</a></p>		<p>in school DRR activities; gives three simulation examples (emergency response practice; evacuation exercise; disaster simulation).</p> <p><b>LANGUAGE:</b> English.</p>
20	Practical Guide	Ceridian Corporation	1998/2000 Global	<p>"Preparing for Natural Disasters: Floods, Hurricanes, Tornadoes, and Earthquakes"</p> <p>Overview: Steps to take to prepare your home for possible disasters:</p> <ul style="list-style-type: none"> <li>- Possible disasters</li> <li>- Disaster-proof your home</li> <li>- Create an emergency plan</li> <li>- Create a disaster supplies kit</li> <li>- What to do during a flood or hurricane</li> <li>- What do during a tornado</li> <li>- What do during an earthquake</li> <li>- What to do after a disaster strikes</li> </ul>	Parents	<p>Practical guide for parents to prepare for possible disasters.</p> <p><b>LANGUAGE:</b> English.</p>
21	Checklist	Risk Red	Global	Family Disaster Plan Checklist	Parents	<b>LANGUAGE:</b> English.
22	Compilation of lessons learned in psychosocial	European Confederation of Psychologists	2009 EU	Lessons learned in psychosocial care after disasters (floods, earthquakes, tsunami, maritime disaster, landslides...).		The material is more addressed to psychologists than to teachers, parents or children.

	care after a disaster	Association (EFPA)		Lessons learned in Austria, Belgium, Cyprus, Czech Republic, Denmark, France, Finland, Germany, Greece, Italy, Luxembourg, Netherlands, Norway, San Marino, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom.		<b>LANGUAGE:</b> English.
23	Handbook	Associazione Volontari per Il Servizio Internazionale (AVSI) & USAID	2003 Global	Psycho Social Support Handbook for Teachers and the corresponding Training Guide	Teacher Trainers & Teachers	Rather a manual for facilitators who train teachers through workshops; can nevertheless give some good ideas and practices/exercises that are useful for teachers.  <b>LANGUAGE:</b> English
24	Training / Guide	International Rescue Committee (IRC)	2004/ 2006 Global	“Creating Healing Classrooms: Guide for Teachers and Teacher Educators / Psychosocial Teacher Training” - Introduce teachers to the range of emotional responses of children in conflict situations and enable them to better understand and empathically respond to the child in conflict and post-conflict situations; - Engage teachers in reflection and recognition of the importance of the teacher-student relationship in helping children heal; - Provide some concrete lessons and activities teachers can use in the classroom to promote healing and good classroom management; - Recognize the stresses teachers themselves are facing and help facilitate discussion and support for those teachers.	Teachers	The guide is very valuable and addresses important issues and gives pertinent hands-on approaches.  The training includes some very valuable background information and pertinent ideas to draw on but it needs to be paid attention to and taken into consideration that the manual focuses on psychosocial support in conflict and post-conflict settings, not post-disaster settings per se.  <b>LANGUAGE:</b> English.
25	Guidebook	John H. Ehrenreich	2001	“Coping with Disasters – A guidebook to psychosocial intervention”	Teachers /	Appendix C is useful (it gives practical information on the type of stress children may experience after

26	Training Manual	(PhD)	Global	<p>This manual is a guide to psychosocial interventions to help people cope with the emotional effects of disasters.</p> <p>“The Psychosocial Care and Protection of Children in Emergencies – Teacher Training Manual”</p> <p>The overall goal of this training is to support teachers in improving the psychosocial well-being of children exposed to emergency and post-emergency situations, enabling them to pursue or resume a healthy life through ongoing development.</p>	<p>Parents</p> <p>Facilitator / Teachers</p>	<p>a disaster and how to address these symptoms).</p> <p><b>LANGUAGE:</b> English.</p> <p>Can be used for taking ideas but it is mainly for facilitators to conduct a training.</p> <p><b>LANGUAGE:</b> English.</p>
27	Webpage	The National Child Traumatic Stress Network (NCTSN)	Global	<p><a href="http://www.nctsn.org/trauma-types/natural-disasters">http://www.nctsn.org/trauma-types/natural-disasters</a></p> <p>Exemplary Materials:</p> <ul style="list-style-type: none"> <li>- Teacher Guidelines for Helping Students after an Earthquake/ Hurricane...</li> <li>- Guidance for Caregivers: Children or teens who had a loved one die in an earthquake.</li> </ul> <p>Exemplary relevant information:</p> <ul style="list-style-type: none"> <li>- What Parents Can Do to Help Their Children;</li> <li>- What Parents Can Do to Help Themselves;</li> <li>- What Teachers Can Do to Help Students.</li> </ul>	<p>Teachers</p> <p>Children</p> <p>Students</p> <p>Parents</p>	<p>This webpage is extremely useful. It gives practical hands-on information and guidance on psychosocial assistance to teachers and parents for a variety of natural disasters. It also includes materials for children.</p> <p><b>LANGUAGE:</b> English + others depending on material.</p>
28	Manual / Training	University of Oklahoma	2005 USA / Global	<p>“Healing After Trauma Skills (HATS): A Manual for teachers and families working with children after Trauma/Disaster”</p> <p>For children from kindergarten to middle school</p>	<p>Teachers</p> <p>Parents</p>	<p>Useful as it includes practical examples of exercises and activities in the classroom.</p> <p><b>LANGUAGE:</b> English.</p>

29	Handbook	International Centre for Water Hazard and Risk Management under the Auspices of UNESCO (ICHARM) & Public Works Research Institute (PWRI)	2013 Global	“World Handbook on local disaster management experiences (for beginners)”  The handbook combines Disaster Management with experiences of disasters worldwide.	Children	Useful but confusing layout.  <b>LANGUAGE:</b> English.
30	Compendium of Handbooks	Kyoto University & Church World Service & Mercy Malaysia & (UNESCO)	2012 Japan / Asia	1. East Japan Earthquake and Tsunami – Key lessons for the Education Sector; 2. School Recovery – Lessons from Asia (different schools present their individual lessons learned); 3. Tohoku Research 1 (draws on research and announces the production of different materials, e.g. a study on building school-centered disaster resilient communities).	Students Teachers Parents	Primarily on school safety; detailed account of schools in disaster but little emphasis on lessons learned.  <b>LANGUAGE:</b> English.
31	Workbook	EU UNISDR Kyoto University	2009 Global	“1-2-3 of Disaster Education”  The workbook gives concrete examples of how students can take action in their community to prepare for typhoons, floods and earthquakes.	Students	Very useful! Gives concrete ideas on student activities to promote DRRE in their surroundings.  <b>LANGUAGE:</b> English.
32	Booklet	Plan International	2012	“Climate extreme: how young people can respond to disasters in a changing world”	Students (12-18)	Useful, as it is a booklet for secondary children providing them with ideas on activities to conduct

33	Book	United Nations Centre for Regional Development (UNCRD)	Global	2009 Asia Pacific	<p>“Educational materials for school earthquake safety: from guidelines to practices”</p> <ul style="list-style-type: none"> <li>- presents educational guidelines and practices on earthquake preparedness and disaster management in Fiji, India, Indonesia and Uzbekistan.</li> <li>- It describes teacher’s guides and handbooks, and student workbooks that have been prepared in order to assist in creating earthquake resilient schools and to ensure school children and local communities in seismic regions have the capacities to cope with earthquake disasters.</li> <li>- It also discusses how to create evacuation plans and how to do an earthquake drill, and presents examples of disaster safety plan, community earthquake safety plan and emergency utility kit.</li> </ul>	Primary Teachers Children (6-11)	<p>in DRR.</p> <p><b>LANGUAGE:</b> English.</p> <p>Useful for teacher’s booklet but only focused on earthquakes.</p> <p><b>LANGUAGE:</b> English.</p>
34	Activity Sheets	Australian Emergency Management Institute (AEMI)	Global		<p>“EMA school education: Tsunami activity sheets 1-7”</p> <p>This series of fact sheets for young students covers the basic questions about tsunamis: what is a tsunami, how do tsunamis work, tsunamis in history, impact of tsunamis on people and the environment, early warning systems and more. Each unit includes questions for classroom discussion and exercises and activities.</p>	Teacher Students (secondary level)	<p>Useful but only focus on tsunamis; moreover, more focused on the <i>WHAT</i> than the <i>HOW</i>.</p> <p><b>LANGUAGE:</b> English.</p>
35	Hand Out	National		2005	<p>“Helping children after a disaster: A children’s</p>	Teachers	<p>Short but useful, as different ages of children are</p>

		Institute of Mental Health (NIMH)	USA	mental health guide for educators” This is a children’s mental health guide for educators, who can play an important role in helping children who have witnessed or survived a disaster to cope. Educators need to be informed and ready to help if they observe signs and reaction to stress in children. Different approaches are discussed for different age groups and maturity levels, and practical advice is offered for adults who accompany children as they emerge from a difficult experience.	Parents Children	addressed. <b>LANGUAGE:</b> English.
36	Photos	International Institute of Earthquake Engineering and	2007 Iran	“Ninth national earthquake and safety drill in Iranian schools” Collection of photos from the Ninth National Earthquake and Safety Drill.	Teachers Students	Useful, as it gives detailed pictures of an evacuation drill. <b>LANGUAGE:</b> English.
37	Guide	UNESCO & Caribbean Disaster Emergency Management Agency (CDERA)	2004 Caribbean	“Family Emergency Plan - A comprehensive guide to disaster preparedness in the Caribbean”	Teachers Students Parents	Useful and straightforward. <b>LANGUAGE:</b> English.
38	Guidelines / Models	International Federation of the Red Cross (IFRC)	2010 Global	“Children in disasters - games and guidelines to engage youth in risk reduction”	Teachers Parents	Only part 2 is relevant. <b>LANGUAGE:</b> English.
39	Survey	Plan International &	2009 Global	“Children on the frontline: children and young people in disaster risk reduction”	Parents Teachers	Can be useful for messages to teachers and parents why children need to be involved in DRR.

40	Hand Out Brochure	World Vision UNESCO & UNEP	2004 Global	<p>“APELL for earthquake risk: a community-based approach for disaster reduction”</p> <p>The brochure gives some background information on earthquakes and highlights options for making communities better prepared through a bottom-up, community-based, participatory approach known as APELL (Awareness and Preparedness for Emergencies at the Local Level). APELL is a process designed to create public awareness of hazards and to ensure that communities and emergency services are adequately trained, coordinated and prepared to respond to and cope with disaster.</p>	Parents Teachers	<b>LANGUAGE:</b> English.  <b>LANGUAGE:</b> English.
41	Booklet	GIZ & Ministry of Education & Sri Lanka Education Institute	2011 Sri Lanka	<p>“Disaster safety education – booklet”</p> <p>This is an educational booklet on disaster safety developed for students from grade 6 to 9 to learn about 8 main hazards affecting Sri Lanka - flood, landslide, cyclone, lightning, earthquake, tsunami, drought, and fire. Basic concepts of disaster risk reduction, school safety and fire safety are presented including student’s learning material, safety guidelines, stories, do’s and don’ts, survival tips, and more.</p>	Teachers Students (secondary level)	<b>LANGUAGE:</b> English.
42	Board Game	EU & The Pacific Islands	2008 Pacific	<p>“Survival island”</p> <p>The notes and activities in the Survival Island kit take the issue of six major natural disasters in</p>	Children	Very nice layout and useful ideas on games.  <b>LANGUAGE:</b> English.

43	Drill Scenario Simulation	Sri Lankan Ministry of Education	2008 Sri Lanka	the Pacific to the classroom so students can relate to them and learn how to tackle them. “Simulation activities for disaster risk management” This simulation for use in schools and camps, brings to life the scenes of real disaster response operations, which students may have only previously seen on television. Students role play the response after a disaster strikes the mythical town of Sea town. The type of disaster and number of casualties are not previously revealed to the students who will be asked to respond appropriately. Those conducting the exercise need to customize the simulation with maps that correspond to the area used. Detailed instructions are provided in order to maximize a realistic effect.	Teachers Students (secondary level)	Very useful tool to include as a simulation.  <b>LANGUAGE:</b> English.
44	Handbook	USA	2000 USA & Global	“Crisis Counseling Guide to Children and Families in Disasters”	Parents	Useful, gives some tips to parents on how to prepare for a disaster and how to address psychosocial needs of their children.  <b>LANGUAGE:</b> English.
45	Coloring Book	UNDP & Government of India	2005 India / Global	“Disaster preparedness: coloring activity book” This coloring book is designed for children to help them learn how to protect themselves from fire, earthquakes and floods while colouring. Each colouring page is accompanied by action	Children	<b>LANGUAGE:</b> English.

			steps to take.			
46	Practical guidebook	Global Facilitators Service Corporation (GFSC)	2006 Global	<p>“And now what? - a helping hand for children who have suffered a loss”</p> <p>This publication aims at supporting parents and teacher in helping children after a loss event, providing methods and activities to make their psychological recovery easier.</p>	Teachers Parents Students	Uncertain of psychosocial support quality of exercises; Includes practical exercised to do with the kid.  <b>LANGUAGE:</b> English
47	Brochure	Action Aid UK	2005 Global	“Disasters, my government and me: disaster reduction through the eyes of a child”	Students	Very practical; it translates the Hyogo Framework to children.  <b>LANGUAGE:</b> English.
48	Comic	Asian Disaster Reduction Centre (ADRC)	2005 Japan and 7 other countries	<p>“Tsunami, lessons learnt from Japanese story: inamura no hi”</p> <p>“Inamura no Hi” is a story of a man who noticed a precursor of a large tsunami at the earliest stage and led village inhabitants to a high ground by burning harvested rice sheaves. “Inamura no Hi” booklets have been produced in 9 languages in 8 countries.</p>	Students	<b>LANGUAGE:</b> English.