

International Best Practices for the Use of Organized and Technically Trained Volunteers

Zeenat Mackwani and Chris Sullivan
Canadian Red Cross

Prepared By:
Canadian Red Cross
340 Catherine Street
Ottawa, ON, K1R 1C4
Contractor's Document Number: Report2_International_2016-10-20a
PWGSC Contract Number: W7714-166185
Technical Authority: Simona Verga, Operational Research Analyst (Security)

Disclaimer: The scientific or technical validity of this Contract Report is entirely the responsibility of the Contractor and the contents do not necessarily have the approval or endorsement of the Department of National Defence of Canada.

Contract Report
DRDC-RDDC-2017-C126
October 2016

© Her Majesty the Queen in Right of Canada, as represented by the Minister of National Defence, 2016

© Sa Majesté la Reine (en droit du Canada), telle que représentée par le ministre de la Défense nationale, 2016

CSSP-2015-TI-2155

**Understanding and Enabling Volunteer Emergency
Management in Canada**

Component I, Deliverable 2

**International Best Practices for the Use of Organized and Technically
Trained Volunteers**

Thanks and Appreciation

The Voluntary Sector Working Group (VSWG) of Canada's Platform for Disaster Risk Reduction and the authors wish to thank the Voluntary Sector organizations and individuals who participated in this study.

The Voluntary Sector Working Group wishes to acknowledge and thank Defence Research and Development Canada for its financial support for the development of this study.

The authors would like to thank the member organizations of the VSWG and the following people for their support and input: Matt Godsoe, Public Safety Canada; Simona Verga, Defence Research and Development Canada.

Voluntary Sector Working Group Member Organizations:

Canadian Red Cross
Focus Humanitarian Assistance Canada
Mennonite Disaster Service (MDS)
Rescue Volunteer Association of Canada (SARVAC)
Saint-John Ambulance
Salvation Army
Samaritan's Purse
Volunteer Canada

Authors: Chris Sullivan, Zeenat Mackwani
Ottawa, Canada, October 2016

The views expressed herein do not necessarily represent the official policy of the Government of Canada.

Table of Contents

- Executive Summary..... 4
- 1. Introduction 6
- 2. Context and Scope 7
 - 2.1. Significance of the Study..... 7
 - 2.2. Research Questions..... 9
 - 2.3. Scope 9
- 3. Methodology..... 10
- 4. Findings 11
 - 4.1. Australia 11
 - 4.2. Germany - Bundesanstalt Technisches Hilfswerk (THW)..... 15
 - 4.3. New Zealand: New Zealand Response Teams (NZ-RT) 19
 - 4.4. United Kingdom 23
 - 4.5. United States – Community Emergency Response Team (CERT) 26
- 5. Discussion and Conclusions 33
 - 5.1. A Variety of International Models..... 33
 - 5.2. Technical Volunteer with EM Capabilities: Possibilities for Canada 33
 - 5.3. Supporting a Strong Canadian Voluntary Sector in EM 34
- References 36
- Appendices..... 42

Executive Summary

This report presents a comparative analysis of international practices in the integration of organized/technically trained volunteers into EM systems in selected Western countries (Australia, Germany, New Zealand, the United States, and the United Kingdom). It also includes a discussion and recommendations for a model for improved volunteer integration into the Canadian EM system.

This report has been prepared by the Canadian Red Cross, acting on behalf of the Voluntary Sector Working Group. The report is one of the components under the project *Understanding and Enabling Volunteer Emergency Management in Canada* led by the Canadian Safety and Security Program and managed through Defence Research and Development Canada's Centre for Security Science.

In a context of rising disaster frequency, intensity and cost, there is recognition of the operational and economic value of trained volunteers in responding to emergencies and fostering community resilience. Thus, in pursuing its "whole-of-society" approach and its alignment to the Sendai Framework for DRR, Senior Officials Responsible for Emergency Management committed to explore the improved integration of volunteers into the Canadian EM system by training and empowering communities to take a more proactive role in risk reduction and EM.

The following key topics were researched for the purpose of this study: legislation, governance, funding, insurance coverage, employment non-discrimination clauses, capabilities, training, operations, and business case.

This scan shows that the five countries researched have conceptualized and implemented models for tasking citizens in technical EM capabilities that vary from very structured and prevalent to variable and limited. As an example, Australia has invested in a massive trained and certified volunteer workforce in EM supported by strong legislation and secured funding. With THW, Germany has established a federal agency that mobilizes highly trained citizens in the event of emergency situations. THW members are paid by their employers who are, in turn, reimbursed by the federal government.

Despite a national legislation, but without secured funding, New Zealand model remains more limited in capabilities and small in capacity. The US CERT program with its variable governance structures, lack of secured funding, basic curriculum and little support to volunteers, has a limited impact and faces sustainability issues. In the United Kingdom, the Voluntary Sector is mobilized and integrated at the level of "Local Resilience Forums" (LRFs) that also include Category 1 (first) and Category 2 responders. While this arrangement is explicitly articulated in a national legislative act, there is no provision for funding.

The national assessment on Canadian Voluntary Sector Capabilities and Capability in EM (also a component of the project *Understanding and Enabling Volunteer Emergency Management in Canada*) shows that, when taken as a whole, Canada's VSOs in EM provide a wide array of capabilities and strong volunteer capacity except for Mitigation (structural and non-structural), and Critical Infrastructure Resilience and Restoration. The development of a Canadian model would therefore have the greatest value in filling this capability gap. Both of these capabilities coincide with the type offered in highly structured programs focused on technical capabilities in Germany and Australia. These programs are viable because they are supported, among other things, by explicit legislation, highly standardized training and certification programs, and generous governmental funding.

More generally, this research shows that countries concerned with implementing a robust and prevalent model for the integration of citizens in EM have invested simultaneously in multiple strategic areas and, in particular, legislation and specific governance structures that formally define the roles, responsibilities and relationships of the Voluntary Sector/organized citizens with national and regional EM stakeholders. This is observed even in decentralized EM models similar to the Canadian EM system. Furthermore, research indicates that systems of relationships with the Voluntary Sector can be facilitated through a lead organization or agency acting as convener both at the national and local levels. All countries also have established a clear identification of capabilities within EM in which volunteers/citizens can contribute, and upon which training, certification, and recruitment can be based. Duty of care for volunteers by the provision of adequate insurance coverage and training and secured funding are other elements that facilitate the implementation of a robust model.

Therefore, in addition to the development of EM capabilities, it is ultimately the presence of governance structures that clearly define roles and responsibilities that facilitate the effective integration of Voluntary-based resources in national EM systems.

1. Introduction

This report presents a comparative analysis of international practices in the integration of technically trained volunteers into Emergency Management (EM) systems, and recommendations for a model for the Canadian context.

This report has been prepared by the Canadian Red Cross, acting on behalf of the Voluntary Sector Working Group¹. The report is one of the components under the project *Understanding and Enabling Volunteer Emergency Management in Canada* led by the Canadian Safety and Security Program² and managed through Defence Research and Development Canada's Centre for Security Science.

As per the project's Charter, the objective of the project *Understanding and Enabling Volunteer Emergency Management in Canada* is to expand knowledge on current volunteer EM capabilities in Canada and to develop an evidence-based model for improved volunteer integration into the Canadian EM system, focused on technical capabilities in support of existing organizations (e.g. first responders, civil society, NGOs etc.) Federal, Provincial and Territorial (F,P/T) governments have already indicated their intention to develop a new national policy position on these issues to foster communities in Canada that are prepared for, and resilient to, emergency events and violent extremism through risk and evidence based assessments, new technological capabilities, and sociological analyses. Therefore, this comparative analysis of international practices will feed into the pool of information gathered through the project's other research and trials components to support the development of EM policy in Canada.

More particularly, this comparative analysis consists in a scan of current government supported or sponsored programs and practices for the integration of organized/technically trained volunteers into EM systems in selected Western countries. The expected outcome from this research is a better understanding of whether volunteers in Canada can safely be tasked with various technical EM capabilities, as possibly observed in other countries. The report will also offer recommendations for a model for improved volunteer integration into the Canadian EM system.

This report starts by presenting the context, scope (Section 2) and methodology (Section 3) of this study. It then shares findings from secondary data sources including the review of academic, government and gray literature from Australia, Germany, New Zealand, the United Kingdom and the United States (Section 4). The report concludes with a discussion and conclusions (Section 5).

¹ Canada's Platform for Disaster Risk Reduction

² Project: C SSP-2015-TI-2155 Version 1.0 30-July-2015

2. Context and Scope

2.1. Significance of the Study

This section combines information from the Charter document for the project *Understanding and Enabling Volunteer Emergency Management in Canada*³ and additional research to present the context and rationale for conducting this study.

Rising disaster frequency and costs

Disasters are increasing in frequency and severity in Canada. Costs of disasters in Canada are estimated to rise due to climate change, economic development, aging infrastructure and higher concentration of people and assets in exposed areas [1]. The Institute for Catastrophic Loss Reduction warns that large-loss years exceeding \$1 billion in insurable costs are going to become the “new normal” in Canada [2].

Federal, provincial, and territorial (F, P/T) governments bear a significant share of disaster costs through financial disaster assistance programs. The current demand on these programs far exceeds available funding. Public Safety Canada identified in its 2013-2014 Report on Plans and Strategy that the rising cost of disasters is one of the major risks that will increase federal liability under the Disaster Financial Assistance Arrangements (DFAA) program [3].

The economic value of volunteers

Although it remains difficult to assign an economic value to volunteer work, its contribution is considerable. A 2011 study by Salamon et al. estimates that if all volunteers were living in a single country, “Volunteerland”, they would have the second largest adult population in the world and be the world’s seventh largest economy [4].

In Canada, the TD Bank Group has estimated that Canadians gave the equivalent of \$51.1 billion in unpaid hours in 2010 [5]. While there are costs associated to recruiting and mobilizing volunteers, the International Federation of Red Cross and Red Crescent (IFRC) has quantified that volunteers can provide up to eight times the value of the investment back in services to the community [6]. And a 2010 survey of the IFRC has found that Red Cross volunteers contribute USD 868 million worth of services in the US and Canada with an average annual economic value of USD 1,224 per volunteer [7]. Beyond these figures, while donations of time and material resources from citizens and the private sector during disasters are still largely unquantified, they have unquestionably mitigated costs for governments.

Volunteers in disaster

In recent years there has been an increased focus by all levels of government on the role of volunteers in disasters. Indeed, members of the public feel compelled to act when caught in a disaster or witnessing a traumatic event. The simple fact of participating in response often mitigates negative psycho-social effects, by shifting their self-perception from victims to active volunteer responders.

³ Ibid

It is well documented that volunteers are a reliable and committed resource. In the aftermath of a disaster, the first people who naturally respond are the uninjured survivors themselves. Reactions of panic, passivity, or disorderly conduct are generally the exception rather than the norm and, to the contrary, disasters lead to prosocial behaviors [8] [9] [10]. Additionally, the volunteerism spirit moves many people to register with volunteer organizations, some of which focus on disaster response and some which focus on providing on-going support to vulnerable segments of their communities.

For example, the 2013 Alberta flood is remembered for the phenomenal contribution of countless volunteers to relief efforts. From hosting evacuees to cleaning up thousands of homes and distributing emergency supplies, volunteers enabled a swift recovery while minimizing costs for governments and those affected by the flood. The flood highlighted, as previous disasters did, the instrumental role of volunteers and the capacity of the Canadian Voluntary Sector in disaster management which deployed over 15,000 volunteers towards relief and response efforts [11].

Managing complexity: the changing nature of EM operations

While disasters are increasing in frequency and intensity, they are also taking roots in more complex and volatile environments where their consequences are less foreseeable and controllable. Beyond costs, governments alone cannot plan for all the particularities of an emergency situation. This increased unpredictability is accelerating the shift from top-down to bottom-up EM approaches. This shift is both leveraging and asserting response and adaptation mechanisms found at the community level and thus encouraging “whole-of-society resilience” [12].

With their unique knowledge of local conditions, local volunteers and Voluntary Sector Organizations (VSOs) can accelerate disaster assessment and access to immediate emergency resources [13]. The assistance of a dynamic base of volunteers can be significant, particularly when volunteers have training and knowledge that is relevant to the situation to which they attend. Integrating volunteers and voluntary organizations that inherently represent the plurality found within Canadian society is also a way of promoting inclusion by mobilizing the variety of resources needed in an emergency situation.

Understanding and Enabling Volunteers in EM

Disaster costs are increasing, as are the human impacts of disasters in Canada. To improve the long-term viability of the F, P/T emergency management system, and to foster the resilience of Canadian communities, a new approach is required to better manage these disaster risks and costs.

In its 2015-2016 Report on Plans and Priorities, Public Safety Canada reiterates its support to modernizing Canada’s approach to emergency management by strengthening whole-of-society resilience [14]. It is in this context that F, P/T and local governments are increasingly looking at ways to further leverage volunteers and the Voluntary Sector’s capacities to reduce the strains of disasters on governmental fiscal capacity and as a way to foster community resilience.

In the Fall of 2014, Senior Officials Responsible for Emergency Management (SOREM) committed to explore the improved integration of volunteers into the Canadian EM system, as a potential solution to Canada’s escalating disaster risk exposure. This approach represents significant potential value for money for F, P/T governments and also directly supports the development of community resilience by training and empowering communities to take a more proactive role in risk reduction and EM. As such, SOREM established an F, P/T TIGER team (a highly specialized group of EM professionals) to explore

domestic and international models where volunteers are engaged in the EM system. The mandate of the TIGER Team is to pursue research and trials of volunteer integration models and to return within two years to F, P/T Ministers responsible for EM with recommended options.

2.2. Research Questions

The present research study seeks to investigate and provide some answers to the following questions:

- What national models and possibilities already exist in Western countries in terms of tasking volunteers with various technical EM capabilities?
- What is replicable and what can be adapted to the Canadian EM system?
- Is the establishment of a new national technical volunteer organization in Canada possible and necessary?
- Can volunteers in Canada safely be tasked with the various technical EM capabilities?
- What is unique to the Canadian context and may require a different approach?

2.3. Scope

This research and resulting recommendations are solely based on a desk study consisting in researching secondary data sources focused on the review of academic, government and gray literature from Australia, Germany, New Zealand, the United Kingdom and the United States. The research focuses primarily on major country-wide government supported or sponsored programs for the integration of technical volunteers in EM⁴. Therefore this research should be considered as one element in the overall CSSP research project and as an initial diagnosis of international practices for engaging technical volunteers in EM.

⁴ It also include a presentation of Team Rubicon, an independent volunteer-based organized in the United States

3. Methodology

In researching for technical volunteer capacity, “Volunteer” is defined here as an organization comprised of all or a majority of citizen responders. “Technical” is defined as skills involved in providing command, logistical, medical, engineer, and unique or hazardous environment⁵ operations.

The following table (Table 1) lists key topics researched for the purpose of this study and the type of questions asked for each of them. The list of questions is indicative rather than exhaustive.

Table 1: Type of Information Gathered for Study II

Researched Topics	Examples of Questions
Legislation	<ul style="list-style-type: none"> - Alignment to international frameworks (e.g. Hyogo/Sendai) - National/Regional/Local emergency management framework, legislation, policies, strategies, plans
Governance	<ul style="list-style-type: none"> - How is volunteer capacity activated? - Who is the initiating authority? - Partnerships? - Discretionary power?
Funding	<ul style="list-style-type: none"> - What is funded? - What is the funding model? - Equity? Sustainability?
Insurance Coverage	<ul style="list-style-type: none"> - What kind of coverage (liability, accidental, both)? - By whom? - For whom? - How is it funded?
Employment Non-Discrimination Clauses	<ul style="list-style-type: none"> - Are there non-discrimination clauses in place (hiring, selecting, dismissing, etc.)? - Is there a selection process (age, location, employment status, etc.)?
Capabilities	<ul style="list-style-type: none"> - Cf. capability list for Study I and beyond
Training	<ul style="list-style-type: none"> - Are there curricula in place? Are they updated regularly? - Is training provided? Is it mandatory? - Are there certifications processes in place?
Operations (local, regional, national and international)	<ul style="list-style-type: none"> - Under what circumstances? - What is the geographic scope? - Capabilities and capacity deployed?
Business Case (value for money)	<ul style="list-style-type: none"> - Are there any studies available on that? What are the conclusions?

⁵ Unique or hazardous environment access may include: LUSAR, MUSAR, HUSAR, swift water, marine, confined space or HAZMAT capabilities.

4. Findings

4.1. Australia

4.1.1. Overview

Australia has a national technical volunteer disaster and emergency response program called the State Emergency Services (SES). Each of the eight states and territories in Australia has their own organization that oversees and directs local teams at the city or town/village level.

The technical volunteer disaster and emergency response sector is massive. Figures from 2011-2012 indicate 611.2 full time equivalent (FTE) paid positions supporting volunteer organizations of over 26,000 personnel nationally on 943 different teams. [15]⁶ While over 26,000 volunteers are part of the SES, other organizations such as volunteer fire fighters and ambulance services do provide assistance during disaster or emergency. In all, over 500,000 Australians are trained to respond during disasters or emergencies [16, p. 12]. SES holds an annual National SES Week to promote the program and recognize volunteers.

4.1.2. Operations

SES units conduct disaster and non-disaster operations. Examples of non-disaster related operations would be highway traffic accidents, ground search and rescue, cliff rescues, and traffic control for community events. SES teams are deployed for a number of hazard specific disasters such as floods, fires, and earthquakes. While SES teams are mainly deployed locally, some SES teams have been deployed to other states when requested [15].

4.1.3. Capabilities

SES Teams differ in capabilities based on the unique needs of the communities they serve and the terrain they operate in. For example, flat warm areas will not have an alpine capability and coastal areas will have marine capabilities.

Generally, the SES has the following capabilities: disaster response (tsunami, earthquake, flooding, fire), USAR, technical rescue (vertical, cave, mountain, confined space), road crash rescue, first aid, and marine and swift water. The SES is often the lead agency on disaster response and therefore is able to perform major incident command functions (command, operations, logistics, planning, finance, administration, safety).

⁶ Breakdown available by State/Territory and National. Not by individual teams.

4.1.4. Training

The Australian government has created national training and qualification standards for SES personnel. This ensures that volunteers have standardized and nationally recognized training regardless of which SES team they belong to or what State/Territory they reside in. Training.gov.au is the national authority for SES training in addition to other national training standards from diverse areas such as public safety, aviation, and music.⁷ The Public Safety Training Package (PSTP) is the basic SES national recognized training and is delivered by nationally recognized Registered Training Organizations (RTOs). Each team within each of the eight states and territories decides which modules of the PSTP their team will qualify for. This is hazard dependent and no data exists to compare team qualifications across the country. The basic level “Certificate II in Public Safety (SES Rescue) PUA20410” and “Certificate II in Public Safety (SES Operations) PUA20510” is the foundational program [15].

The Certificate in Public Safety curriculum includes training in the following areas: Team work, First aid, Map reading and navigation, Land search techniques, Storm damage repair techniques, Chainsaw operation, Flood boat operations and rescue, General rescue, Radio communications, Leadership, Incident Management, Driving vehicles for emergencies, Road accident rescue, Single rope techniques (abseiling) and Vertical rescue, Observation from aircraft and supply dropping, Ground support for fire services, Traffic management, and Community education [17]. Volunteers progress to increasingly challenging roles and responsibilities by completing the nationally recognized training in these disciplines.⁸ The frequency and length of regular training varies between SES units. However, most units have a weekly training night and 1-2 day field exercises every 1-2 month.

Leadership training is also provided in addition to technical skills. The Australia Emergency Management Institute provides a 3.5 day residential program for SES volunteers [16, p. 11]. In addition, local and state/territorial training opportunities exist, but they are not nationally recognized or standardized.

4.1.5. Governance

The Australian Council of State Emergency Services (ACSES) Operations Group support a platform for sharing information and developing national policies and practices on all aspects of volunteer management. However, the 8 states and territories control their own SES organizations and individual teams. Strategic and operational direction is given at the State level.⁹

⁷ Training.gov.au is the national register for training in Australia and contains the authoritative information about Registered Training Organisations (RTOs), Nationally Recognised Training (NRT), and the approved scope of each RTOs to deliver NRT as required in national and jurisdictional legislation within Australia.

⁸ For an excellent example of training progression, see Australind State Emergency Service Unit training progression flowchart: http://www.australindses.org/images/documents/ses_training_pathway.pdf

⁹ For an example of a strategic operating plan, see New South Wales (NSW) SES <http://www.ses.nsw.gov.au/content/documents/pdf/47777/plan-11-15>

4.1.6. Legislation

The SES are controlled at the State / Territorial level. The legislation governing all functions of their operations is found in eight separate Emergency Management Acts in each of the eight States/ Territories.¹⁰ They are not legislated nationally.

4.1.7. Employment Non-Discrimination Clauses

All SES teams have Equal Employment Opportunities as part of a robust human resources program. However, some volunteers may be precluded from some tasks if they are unable to meet the fitness standard within some SES organizations for specific tasks [15, p. 18].

State and Territory Emergency Services are required to provide their volunteers and staff with modern human resource policies. This table identifies those policies by jurisdiction.

STATE AND TERRITORY EMERGENCY SERVICES HUMAN RESOURCE POLICIES, BY STATE								
	NSW	VIC	QLD	WA	SA	TAS	NT	ACT
Code of Conduct	Y	Y	Y	Y	Y	Y	Y	Y
Criminal History Checking	Y	Y	Y	Y	Y	Y	Y	Y
Equal Employment Opportunity	Y	Y	Y	Y	Y	Y	Y	Y
Honours, Awards and Recognition Systems	Y	Y	Y	Y	Y	Y	Y	Y
Critical Incident Support Program	Y	Y	Y	Y	Y	Y	Y	Y
Exit Interviews	Y	Y	Y	Y	Y	N	Y	Y
Recruiting Programs	Y	Y	Y	Y	Y	Y	Y	N
Retention Programs	Y	Y	N	N	Y	Y	N	N
Worker's Compensation	Y	Y	Y	Y	Y	Y	Y	Y
Protection Against Litigation	Y	Y	Y	Y	Y	Y	Y	N
Cultural and Linguistic Diversity	Y	N	N	N	Y	Y	Y	N
Indigenous Programs	Y	N	Y	N	Y	N	N	N
Fitness Standards	N	Y	N	N	Y	N	N	N

Table 16 Source: State and Territory Emergency Services.

4.1.8. Liability Insurance

SES volunteers are covered under Occupational Health & Safety laws that came into effect in 2012. "Under the new work health safety laws, the term "volunteer" is defined to mean a person who acts on a voluntary basis, irrespective of whether they receive out-of-pocket expenses. A volunteer is a worker if they carry out work for a "person conducting a business or undertaking". All "workers" including volunteer workers, are afforded the same protection under the new Workplace Health and Safety laws [16, p. 23]. SES volunteers cannot be held liable, but rather the state absorbs liability for an SES volunteer. In Australia, states are self-insured entities.

¹⁰ For example, see Tasmania http://www.thelaw.tas.gov.au/linkto.w3p;doc_id=12++2006+AT@EN+CURRENT

4.1.9. Funding

The SES does not have a national framework for funding individual teams and state organizations. Funding comes from national and state/territorial governments, cities and towns, and fundraising efforts by individual teams [16, p. 21]. The majority of the funding comes from the state/territory level. Two states have dedicated levies that completely fund their SES. In 2012, Australia spent \$152,073,000 AUD on the SES. In addition, the Australian Emergency Management Volunteer Forum (AEMVF) conducted a study which found the average cost in cash and in kind per volunteer per annum was \$1,070 [15].

The average operating cost per unit varies due to a number of factors. A 2008 study by the Victorian State Emergency Service is the most current available date. That study found that team size, rural versus metropolitan, capabilities and tasks, and in kind support from local government were factors that contributed to a unit's operating costs. The state provided a subsidy of \$10 430 per year, but a large team's operating costs were on average \$26 876 [18]. Shortfalls were made up by in kind donations by local government of facilities, utilities, and insurance (property, fire, theft, etc.) Additionally, teams may fundraise or receive in kind donations of equipment and services from the community.

4.1.10. Business Case

The Australian Council of State Emergency Services conducted a value for money study with four Australian states. For New South Wales, the annual value of an individual volunteer was estimated as \$15,903. This is far below the cost of hiring a professional disaster and emergency management responder, and therefore demonstrates value for money. "This study shows that the SES in NSW and Victoria provide outstanding value for money, and provides a strong argument for enhanced support. For every dollar spent by governments, the SES contributes between \$1.30 and \$3.73 to the community." [19]

4.2. Germany - Bundesanstalt Technisches Hilfswerk (THW)¹¹

4.2.1. Overview

The Bundesanstalt Technisches Hilfswerk (Federal Agency for Technical Relief, or THW) was founded in 1950 as a civil security organization under the Ministry of the Interior. It is comprised of over 80 000 members, supported by 1, 000 paid employees. The THW has over 668 chapters across Germany. In 2015, the THW contributed over 1.3 million operational hours. THW members are not “volunteers” in the same sense as what is understood in Canada. THW members are paid during training and operational deployment and their wages are reimbursed to their employers by the federal government.

4.2.2. Operations

THW has 1,000 expert groups and 1,440 rescue groups in 722 Technical Platoons and more than 8,400 vehicles at its disposal. The THW conducts both domestic and international operations.

Using data from 2015 as an example, the THW were responsible for responding to the following domestic disasters and emergencies: Assistance to refugees: setting up of temporary and long-term accommodations; specialist advice to federal, regional and local authorities as well as aid organizations; technical and logistical assistance during the G7 summit; technical emergency assistance after storms and accidents.

In addition to domestic operations, the THW undertook the following international deployments: drinking water treatment in Nepal, support of the United Nations in Jordan and the Region of Kurdistan-Iraq in the setting up and operating refugee camps for Syrian refugees and Iraqi internally displaced persons, technical and logistical support for the international mission against Ebola in West Africa, and support of capacity building measures in civil protection in Tunisia and the Western Balkans.

4.2.3. Capabilities

THW capabilities are centered on 6 main groupings: Technical Threat Prevention, Technical Support in the Range of Infrastructure, Command/ Communication, Logistics, Technical Support in the Protection of the Environment, Provision of the Population, and Further Technical Support. Within each theme, specific tasks are outlined. The following is the complete list of THW Capabilities:

Technical Threat Prevention: Search, rescue and salvage; Clearing and blasting; Rescue from water dangers; Fight against flooding and inundation; Lighting of operational areas

Technical Support in the Range of Infrastructure: Electricity supply; Drinking water supply; Waste water disposal; Bridge work

¹¹ Unless specified otherwise, the information for this section has been collected on THW website (<http://www.thw.de>) in the month of April 2016

Command/ Communication, Logistics: Establishment and operation of command centres; Command support; Creation of temporary telecommunication systems; Establishment and operation of logistic bases; Catering and care of operational staff; Maintenance of material, repair and maintenance work for mission equipment; Transportation of consumer items for mission demands

Technical Support in the Protection of the Environment: Fight against oil damage; Water analysis

Provision of the Population: Electricity and drinking water provision; Waste water disposal; Establishment and equipment of emergency accommodation and collecting points with matching infrastructure

Further Technical Support: Technical help on traffic routes; Rescue from heights; Diving; Makeshift road works; Maintenance of civil protection facilities (emergency wells, shelter)

4.2.4. Training

Training takes place in the local THW facilities in each community where the THW operates. These facilities provide vehicle and equipment storage, classrooms, outdoor training spaces, and change rooms. The basic training program is decentralized and delivered locally. It consists of 75 training units, which are 45 minutes long. Classes are a mixture of theory and practice and delivered on evenings and weekends. The curriculum consists of THW & Civil Protection, Safety and Security, Rescue Basics, Operations in general, First Aid etc. Specialized technical training takes place at Training Centre in Hoya and leadership and international training takes place at the THW Training Centre Neuhausen.

4.2.5. Governance

THW is governed by a national office in Bonn. It has 66 regional offices which coordinate regional disaster and emergency response. The national office is the coordinating authority for all international deployments. THW works in collaboration with the European Union / European Parliament as well as UN-OCHA. As this organization is a formal part of the Ministry of the Interior, they provide approval for deployments.

4.2.6. Legislation¹²

In the federative structure of Germany different responsibility-levels are activated depending on whether it is a case of civil defence or civil protection.

According to Article 30 of Germany's Basic Law, in conjunction with Article 70 on the division of legislative powers, the German **states** (*Länder*) are responsible for threat prevention measures (taken by

¹² Information for this section has been provided by the German Red Cross, Disaster Relief Unit

the police and other government agencies), as long as these do not involve defence, as defined in Article 73 (1) no. 1 of the Basic Law.

As a rule, the legal basis for the states to respond to large-scale emergencies is provided through a number of state laws.

Essential provisions are contained in the **legislation on fire prevention and the fire services**, which assign local governments the duty of extinguishing fire and explosion hazards, fighting fires and providing adequate technical support in case of other accidents or emergencies. Fire prevention and fire-fighting, rescue and disaster management may be covered by separate legislation, as in Bavaria (Bavarian Disaster Management Act, Bavarian Fire Services Act, and Bavarian Act to Regulate Emergency Rescue, Ambulance and Rescue Services); or they may be covered fully or in part by a single law, as in the Act on Emergency Response Assistance for the city-state of Bremen and the state of Hesse's Act on Fire Prevention and Fire-Fighting, General Aid and Relief, and Disaster Management. In addition, matters related to threat prevention by the police are regulated in state **legislation on the police** (e.g. the Act on Police and Regulatory Authorities of the state of Rhineland-Palatinate, the state of Bavaria's Act on the Responsibilities and Powers of the Police, and the General Act to Ensure Public Safety and Order in Berlin).

Under German constitutional law (Basic Law, Article 73 (1) no. 1), the **Federation** is responsible for defence, including protecting the civilian population against war-related hazards. National defence is divided into military and civil defence. The latter includes continuity of governance, civil protection, and supplies and civil support for the military.

The Basic Law allows for "emergency laws" to be applied during a state of tension or defence. Emergency laws contain all legal provisions enacted in order to manage an emergency (threat to the existence of the government or to national security and order at home or abroad) and are intended to allow rapid and effective government action to protect the public, democracy and the rule of law. This includes legislation which can be applied only in a state of tension or defence, such as laws to ensure the supply of food or the provision of transport.

To take effective action against the kind of supply shortfalls which can occur during large-scale natural disasters, legislation on provision was enacted which can be applied not only in a state of tension or defence, but also in case of crises affecting key parts of the Federal Republic (e.g. Preparedness (Food Supplies) Act; Transport Services (Provision in Times of Natural Disaster and Economic Crisis) Act). Completing these provisions, Article 35 of the Basic Law allows the states to call for the assistance of police forces of other states and of personnel and facilities of other administrative authorities, such as the Federal Police, the Bundeswehr, or THW. In case of disasters or emergencies affecting more than one state, the Federal Government has additional options for action if needed.

The Ministry of the Interior enacts legislation to operate and fund the THW in cases of war and tensions (Federal Responsibility) and in cases of natural or man made disasters (-only on request to support the local Disaster-Management structures – Länder Responsibility). In addition, legislation exists to allow workers to respond to disasters and emergencies. For training events, employers are requested to allow members to participate in training and their wages are reimbursed by the THW. For operational

deployments, employers are required to allow members to deploy and their wages are reimbursed by the THW.

4.2.7. Employment Non-Discrimination Clauses

The THW has a non-discrimination clause that allows for opportunities for everyone. From their guiding principles, "...we hold the diversity in our society in high regard, promote equal participation of all groups of our society and allow no discrimination at THW. With this principle, THW commits itself to be open to the diversity in our society at all levels. On the basis of these values, THW promotes equal participation by everybody and regards it as beneficial when different people commit themselves to THW, either as an employee or as a volunteer. The differences between people include their ethnic origin, sex, religion or conviction, constitution, age or sexual orientation. The diversity of the society should be reflected by THW as an organization which is based on voluntary work."¹³

4.2.8. Liability Insurance

Insurance is provided to THW volunteers by THW-Helfervereinigung that are registered charitable organizations that support THW. THW volunteers are required to get at a minimum accidental coverage. Volunteers can get additional insurance coverage such as liability insurance, group accident insurance, or car damage waiver. The group accident insurance involves some forms of co-insurance resulting in minimal cost for individual volunteer.

4.2.9. Funding

Funding for the THW comes from the Government of Germany and the Ministry of the Interior. The annual budget is approximately 180,000,000 €.

4.2.10. Business Case

No business case/value for money analysis was identified.

¹³ THW Website (http://www.thw.de/EN/THW/Overview/Identity/Guiding-Principles/guiding-principles_node.html)

4.3. New Zealand: New Zealand Response Teams (NZ-RT)

4.3.1. Overview

The New Zealand Response Teams (NZ-RTs) are 17 independent volunteer response teams located throughout the country. They are identified by “NZ-RT” followed by a number. For example the NZ-RT2 is the Nelson Tasman District. Each team is governed by a parent/credible organization. Examples of a parent organization are: local council, emergency services, NGOs, an established business or industry group, an educational institution, or a charitable trust. The parent organization is ultimately responsible for the team and must assign a team manager who oversees the business functions of the team and ensures compliance with national guidelines.

NZ-RTs appear highly decentralized as they vary in capabilities and size. The average size of a response team is approximately 20 members. Most groups do not regularly recruit new members, but rather do so when members leave the team and the overall numbers drop below a predetermined number.

4.3.2. Operations

All members of the NZ-RTs must be able to travel to their Team’s depot within 30 minutes of a notification. From there, they can be deployed within their local authority to assist with tasks previously agreed upon with the Civil Defence Emergency Management Group (CDEM Group). NZ-RTs can be deployed regionally by request of the CDEM Group.¹⁴ Requests for international deployments are made to the Ministry of Civil Defence and Emergency Management (MCDEM). If approved, the MCDEM will create a composite group drawing from volunteers from across all the NZ-RTs. The federal government will be responsible for all logistical support to the deployed response team.

4.3.3. Capabilities

NZ-RTs can best be explained and described as having many of the functions and capabilities of a Light Urban Search and Rescue (LUSAR) team as defined by the United Nations International Search and Rescue Advisory Group (INSARAG). They have the integral command and control, operations, logistics, communications, and planning functions and are able to operate autonomously in a local area for a short period of time. The NZ-RTs’ capabilities strategy is outlined in the Civil Defence and Emergency Management Competency Framework. While it does not outline specific capabilities, it does explain the framework behind the capability development process. Within this document, Key Result Area 3 states that, “CDEM volunteers are recruited and trained for activities that both fit with their motivations and meet community needs.” [20]

¹⁴ See Governance section for further explanation of a CDEM group.

NZ-RTs provide some of the following capabilities: EOC staffing (all major EOC functions), communications, first aid, welfare (shelter management), evacuation, swift water response, rope rescue, and light rescue. They are specifically precluded from providing medium or heavy urban search and rescue, but can assist in surface rescue. Each team has some unique and varying degrees of capabilities that are based around the skills that members bring to the teams from either employment elsewhere or skills learned at previous jobs or volunteer experience. For example, NZ-RT16 Tauranga Search & Rescue Inc. describes having an advanced medical and other technical capabilities. “The team consists of one team medic (ambulance officer by day), one geo-technical engineer, three fire service trained personnel, one registered nurse, construction experience, commercial and industrial electrical, electronic and instrumentation, mechanics, Land SAR trained personnel (search management & field personnel).”

4.3.4. Training

The Guidance for Establishing and Operating New Zealand Response Teams (NZ-RTs) provides an overview of NZ-RT’s training component [21].

Response Teams undertake regular training and development to enable them to gain the skills, knowledge and experience required to support a CDEM response. General skills include the ability to provide first aid, operate communications systems (including radio), operate in a Coordinated Incident Management System (CIMS) environment, and manage their own stress and support others to manage their stress to ensure well-being. Volunteers are expected to have knowledge of health and safety requirements, key roles and responsibilities of organisations involved in CDEM response, principles of comprehensive emergency management, CDEM-related legislation, and personal preparedness concepts.

Team leaders must also be able to demonstrate knowledge of leadership theory and how to use it in a CDEM context, and also knowledge of operational briefings/debriefings, how to issue operational orders, complete incident reports, and develop and maintain other relevant procedures and processes associated with the team leadership role. Furthermore, each team must have a specialist skill in at least one of the following accredited response capabilities: light/general rescues, communications, flood response, storm response and CDEM response.

The skills and knowledge are offered through CDEM Groups, Tertiary Education Providers or Private Training Establishments. An annual training plan for the team must be prepared in conjunction with the parent organisation. This plan must include relevant CDEM Group or Territorial Local Authority training and exercise activities. The CDEM Group must be advised of this plan, and should create opportunities for teams and other CDEM organisation within their area to work together.

4.3.5. Governance

At the national level, emergency management is coordinated by the Ministry of Civil Defence and Emergency Management in Wellington, NZ. Each council (similar to a Canadian town or municipality) in New Zealand is responsible for the emergency management function within its geographic boundaries. Councils are organized into 1 of 17 'Groups' called Civil Defence Emergency Management Groups (CDEM Groups). All CDEM Groups have volunteer opportunities. Their roles focus on prevention education and public relations for EM and some EOC roles. The deployment of CDEM groups is the purview of the local Civil Defence and Emergency Management (CDEM) controller. While activated locally, the response teams are still managed and supported from their parent organization. Examples of parent organizations are local police, fire, businesses, and NGOs such as the Red Cross / Red Crescent. Additional information on activation outside the local area was covered in the Operations section of this report.

4.3.6. Legislation

The Ministry of Civil Defence and Emergency Management has published a framework for the creation and employment of New Zealand Response Teams. The policies and procedures for NZ-RTs are outlined in Guidance for Establishing and Operating New Zealand Response Teams (NZ-RTs).¹⁵ This document outlines how RT's achieve certification and recertification and it outlines the requirements of parent organizations, CDEM Groups, and teams have to one another.

4.3.7. Employment Non-Discrimination Clauses

As part of their personnel management audit, NZ-RTs must have an equality and anti-discrimination policy that must be taught and reviewed during training. In addition, NZ-RTs are prohibited from discriminating based upon the basis of colour, nationality, ethnic origin, religion, culture, gender, marital status, parental status, property status, disability, age, and sexuality.

4.3.8. Liability Insurance

The parent organization must have a policy in place to protect team members and reimburse them for damages to lost items. In addition, they must also secure public liability insurance for the team and provide proof during certification and recertification periods.

4.3.9. Funding

The overhead, operations and maintenance funding for individual NZ-RTs are the responsibility of the parent organization. Funds can either be allocated from the parent organization or fundraised in the community. Initial costs for a local deployment are also the responsibility of the parent organization. Sustained deployment costs may be captured by the CDEM group in accordance with any cost sharing

¹⁵ <http://www.civildefence.govt.nz/assets/Uploads/publications/dgl-12-12-nzrt-guidance.pdf>

arrangements that are agreed upon at the local level. If a RT is activated to support a neighbouring CDEM group, then financial arrangements must be agreed up between the requesting CDEM group and the parent organization before the RT is permitted to deploy. Costs associated with international deployments will be borne by the federal government; however, responders will not receive any salary or allowances.

4.3.10. Business Case

No business case or value for money analysis was identified.

4.4. United Kingdom¹⁶

4.4.1. Overview

No national technical volunteer training program was found in the United Kingdom. However, there is a Voluntary Sector Civil Protection Forum (VSCPF) whose strategic aim is to identify and maximise the voluntary sector contribution to UK civil protection arrangements. The Civil Contingencies Secretariat in the Cabinet Office and the British Red Cross established the Voluntary Sector Civil Protection Forum (VSCPF) to provide a framework for engagement between the government, emergency services, local authorities and voluntary organisations.

The Forum is comprised of the major Voluntary Organizations of national scope operating in EM (British Red Cross, Salvation Army, Saint John Ambulance, Cruse Bereavement Care, Radio Amateurs Emergency Network (RAYNET), Mountain Rescue, 4x4 Response UK, Victim Support Service, Royal Voluntary Service), and also the Association of Chief Police Officers, Cabinet Office, Department for Communities & Local Government, Local Government Association.

Each county has of Local Resilience Forum (LRF) for a total of 51 in the UK. These LRFs include Category 1¹⁷ and Category 2¹⁸ responders and local and national voluntary organizations.

4.4.2. Operations

Voluntary organizations and their volunteers provide support to category 1 and category 2 responders in the event of an emergency.

Under the auspices of the LRFs, Voluntary Organizations participate in:

- planning and preparing for localised incidents and catastrophic emergencies
- identifying potential risks
- producing emergency plans to either prevent or mitigate the impact of any incident on their local communities
- and engaging in response and recovery activities

4.4.3. Capabilities

¹⁶ Unless specified otherwise, most of the information for this section has primarily been gathered directly by interviewing the Chair of the Voluntary Sector Civil Protection Forum (VSCPF) and the VSCPF website: <https://www.gov.uk/government/groups/voluntary-sector-civil-protection-forum>

¹⁷ Emergency services, local authorities, National Health Services bodies

¹⁸ the Health and Safety Executive, transport and utility companies

Capabilities and capacities vary based on local risks with no minimum requirement for either. However the Civil Contingencies Secretariat has established a list of duties and capabilities. The duties include: risk assessment, maintaining emergency management and business continuity plans, emergency-related communication with the public, sharing of information, and co-operating with relevant bodies. The workstreams within the Resilience Capabilities Programme are [22]:

Food & Water	Site Clearance
Transport	Mass Fatalities
Financial Services	Infectious Diseases
Energy	Central (national) Response
Health	Local Resilience
Telecommunications & Postal Services	Humanitarian Assistance
Animal Diseases	Interoperability
Chemical, Biological, Radiological and Nuclear (CBRN)	Warning & Informing
Flooding	Recovery
Evacuation & Shelter	Community & Corporate Resilience
Mass Casualties	

4.4.4. Training

The LRF have a duty in law to train in partnership with Category 1 and Category 2 responders. Although the training is supposed to be similar everywhere, however it is typically stronger in regions more affected by a lot of hazards. Voluntary actors are expected to meet certain competency requirements and some courses are shared with responders of Category 1 and Category 2.

While every two years the Civil Contingencies Secretariat is sending a survey to update a national database on the capabilities and capacities of Category 1 and Category 2 responders that are part of the 51 LRFs, the same is not yet in place for Voluntary capacity.

4.4.5. Governance/Legislation

The VSCPF and the LRF find their origins in the Civil Contingencies legislation and supporting guidance. “The Act, Regulations and Guidance require Category 1 responders “to have regard” to the activities of voluntary organisations in the course of carrying out their emergency and business continuity planning duties. These developments have created a “climate of expectation”, where voluntary sector organisations will make competent and reliable resources available to Category 1 and Category 2

responders who will make the most effective use of these resources and expertise, putting this partnership on a more robust and long-term footing.”¹⁹

4.4.6. Employment Non-Discrimination Clauses

Not applicable

4.4.7. Liability Insurance

Volunteers belonging to major organizations are typically insured by their voluntary organizations. Where local authorities have the possibility, they do provide both liability and accidental coverage insurance to any volunteer supporting Category 1 and Category 2 responders within a LRF. However this is not guaranteed everywhere.

4.4.8. Funding

Although the VSCPF and the LRFs are legislated, there is no funding whatsoever for these two fora. Their participation is entirely voluntary.

4.4.9. Business Case

No business case is available.

¹⁹ Voluntary Sector Civil Protection Forum Working Party Terms of Reference, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/308507/VSCPF_Working_Party_Terms_of_Reference___Apr_14_.pdf

4.5. United States – Community Emergency Response Team (CERT)

4.5.1. Overview

The Community Emergency Response Team (CERT) is a nationally recognized disaster and emergency management program created by the Federal Emergency Management Agency (FEMA) in 1998. There are now over 2,600 nationally recognized Community Emergency Response Teams in the United States.²⁰ In addition to the traditional CERT program, parallel youth programs like Teen CERT and Campus CERT have been created to engage younger volunteers.

4.5.2. Operations

CERT is a locally organized program that builds upon the local knowledge and relationships of community and neighborhood members. CERT only operates in areas serviced by its parent or sponsoring agency. CERT does not deploy regionally, nationally, or internationally.

4.5.3. Capabilities

CERT teams were designed to deploy locally and provide assistance to community members. Their main capabilities are basic first aid and light urban search and rescue (LUSAR). “CERTs are grassroots community groups with specific goals and levels of expertise determined by their sponsoring organizations to fit community needs and resources. Thus, CERT programs differ in their mix of educational, operational, and community service activities... there is no single CERT program profile.”²¹ Since the program began, additional capabilities and tasks have been added such as, “distribute and/or install smoke alarms and batteries to the elderly and disabled, assist with evacuations and traffic control, promote community awareness of potential hazards and preparedness measures, supplement staffing at special events, such as parades, and act as victims in training exercises.”²² CERT members carry basic Personal Protective Equipment in order to operate in an all-hazards environment and fulfill assigned duties and tasks.

²⁰ Community Emergency Response Teams. FEMA. Retrieved from: <http://www.fema.gov/community-emergency-response-teams>

²¹ COMMUNITY EMERGENCY RESPONSE TEAM (CERT) LIABILITY GUIDE Retrieved From: http://www.fema.gov/media-library-data/1456408593274-55025c570bf0612ab8940cbbab0e8eae/cert_liability_guide_508_111615.pdf

²² Arkansas Department of Emergency Management, CERT. Retrieved from: <https://www.adem.arkansas.gov/aem/grants-funding/cert/>

4.5.4. Training

The Federal Emergency Management Agency has developed a training curriculum designed to deliver the core skills necessary for an effective CERT program. Delivery of the entire training package is considered a best practice, and not a requirement. States and sponsoring agencies identify CERT trainers to deliver the content. They can be either volunteers of public safety professionals such as police officers or firefighters. FEMA recommends that CERT trainers be employees of the sponsoring agency as it encourages closer collaboration and fosters teamwork between volunteers and non-volunteer employees. The following nine units are the core curriculum of the CERT program:

- Unit 1: Disaster Preparedness (2.5 hrs);
- Unit 2: Fire Safety (2.5 hrs);
- Unit 3: Disaster Medical Operations part 1 (2.5 hrs);
- Unit 4: Disaster Medical Operations part 2 (2.5 hrs);
- Unit 5: Light Search and Rescue Operations (2.5 hrs);
- Unit 6: CERT Organization (1.5 hrs);
- Unit 7: Disaster Psychology (1 hr);
- Unit 8: Terrorism and CERT (2.5 hrs); and
- Unit 9: Course Review and Disaster Simulation (2.5 hrs).

In addition to the core curriculum, many CERT teams provide additional training and certifications based on the needs of their communities and the abilities of its CERT members. For example, the City of Los Angeles developed its' own 3 levels of CERT certification. Level 1 is the core curriculum, and levels 2 and 3 are attained with additional courses in shelter management, first aid, and other qualifications.²³

4.5.5. Governance

The governance structure of individual CERT groups varies based on the parent organization and / or state or local laws. In terms of deployment, some parent organizations will be the authority to deploy and in other circumstances, CERT can self-deploy. It is entirely dependent on the Team and parent organizations' standard operating procedures (SOPs).²⁴

4.5.6. Legislation

Legislation governing CERT organizations is at the state and local level. FEMA provides best practices with regards to training and curriculum, but it is not enshrined in legislation. CERT now exists within the Federal Government under the Citizen Corp program which was initiated nationally by President Bush after September 11, 2001 to encourage citizens to actively participate in their community in areas such

²³ For City of Los Angeles CERT levels see: <http://www.cert-la.com/cert-levels.htm>

²⁴ See CERT Trainer's Manual CERT Organization (Pg. 23) http://www.fema.gov/media-library-data/1445532996951-d9b62984ae2cacf3a07d6b7ecceb7fbe/Section_9_BT_IG_Unit_6_508.pdf

as crime prevention, emergency response, and emergency preparedness and mitigation for not only acts of terror, but for all hazards - including natural, man-made or technological disasters. "The goal of the Citizen Corps program is to create a national network of state and local Citizen Corps Councils to tailor volunteer activities and opportunities to the community and to provide a unified approach to recruitment, retention, and public education and awareness. Local Citizen Corps councils, through their component programs, will offer training to citizens and volunteer opportunities for everyone, including those with special skills and interests."²⁵

4.5.7. Employment Non-Discrimination Clauses

Employment Non-discrimination clauses vary between states and cities and counties within states. CERT programs must adhere to laws in the jurisdictions they operate in.

4.5.8. Liability Insurance

The CERT program has no liability insurance requirement, due to the decentralized nature of the United States legal system. Insurance may or may not be necessary depending on jurisdiction. The CERT Liability Guide offers the following explanation and advice. "Unfortunately, there is no simple, complete, and uniform remedy to address liability. Various state laws provide some relief, but many laws have detailed requirements and exclusions. Liability protections differ significantly from state to state, and even within different jurisdictions within a state. Although CERT's operational activities pose greater risk than non-operational activities, operational activities often receive greater liability protection and access to injury benefits. Insurance can be just as unpredictable. CERT members may be covered by their local government or sponsoring agency's liability and workers' compensation insurance in some activities, but not in others. Or they may not be covered at all. Consequently, neither the law nor insurance provides absolute protection to CERT programs and their members."²⁶

4.5.9. Funding

CERT funding comes from a variety of sources in the public, private, and not-for-profit sectors. The CERT Identifying Resources Manual suggests the following ideas: Request a line item in the community budget, charge a fee, solicit donations, solicit in-kind contributions, and apply for a grant.²⁷ States receive funding for their CERT programs and they distribute the funds on behalf of the federal government. Funding varies by year and by state. For example, the State of Michigan received \$402,573 from FEMA in 2004 to distribute in \$10-40k amounts to its teams²⁸.

²⁵ NY State Department of Homeland Security and Emergency Services. <http://www.dhses.ny.gov/oem/public/>

²⁶ COMMUNITY EMERGENCY RESPONSE TEAM (CERT) LIABILITY GUIDE (pg. 8) Retrieved From: <http://www.fema.gov/media-library-data/1456408593274->

²⁷ CERT Identifying Resources Manual. (pg. 3) <http://www.cert-la.com/manuals/Identifying-Resources.pdf>

²⁸ State of Michigan CERT Funding Program. http://www.michigan.gov/documents/CERT_Grant_Announcement_75789_7.pdf

Funding for CERT has diminished over the years since 9/11, notes one of the only three empirical studies ever done on the CERT program. “Large amounts of grants were available to fund volunteer organizations such as CERT following the September 11 terrorist attacks. Over time, however, all forms of grant funding to support CERTs have significantly decreased. As one coordinator stated, ‘Now a lot of those [funding sources] have dried up so there are CERTs failing all over the United States, failing now because they have no money...’ and another ‘There are no future grants that we know of right now, that are going to help us sustain [our team]’ and another ‘I have already told the chief and assistant chief I know the money is going to run out...I am one of the few in the [state] that has actually... kept CERT alive...’.”²⁹

4.5.10. Business Case

No value for money or business cases was found as almost no empirical data on CERT programs and teams exists.³⁰

²⁹ Carr, J., & Jensen, J. (2015). Explaining the pre-disaster integration of community emergency response teams (CERTs). *Natural Hazards*, 77(3), 1551-1571. doi:10.1007/s11069-015-1664-3

³⁰ Ibid.

Exhibit 1: Team Rubicon

1. Overview

Team Rubicon (TR)³¹ is first and foremost a veteran's reintegration organization. Their mission is to assist veterans returning from wars in Afghanistan and Iraq as well as veterans from previous US conflicts. They accomplish this by conducting disaster response operations. It began in 2010 with a team of veterans self-deploying to Haiti.³² When they returned from their mission, they formed a disaster and emergency response organization to provide veterans an opportunity to serve their community again.

2. Operations

Team Rubicon began by conducting international operations, starting with the Haitian earthquake in 2010. They have deployed to many international disasters in Haiti, Sudan, Pakistan, and Chile. Since those deployments, Team Rubicon has expanded to conduct disaster response in the United States. They have deployed to over 100 disasters and emergencies including TR mobilizations for the Joplin, MO, tornadoes in 2011, "Superstorm" Sandy in 2012, and the Moore, OK, tornadoes 6 months later.³³ Recently, Team Rubicon has expanded globally, with Team Rubicon organizations forming in Canada, the United Kingdom, and Australia.

3. Capabilities

Team Rubicon's slogan, "Bridging the Gap", accurately describes their capabilities as their primary mission of providing disaster relief between the moment a disaster happens and the point at which conventional aid organizations respond. The "gap" is primarily time, the crucial window following a disaster when victims have traditionally been without outside aid. When the "Gap" closes - once conventional aid organizations arrive - Team Rubicon moves on³⁴.

TR's capabilities include: Incident management, damage and impact assessments, disaster mapping and work order management, debris management, hazard mitigation (Fire/Flood), emergent/hasty home repair, spontaneous volunteer management, and medical assistance (international only).³⁵ What separates Team Rubicon from other volunteer organizations is that it deploys completely self-sufficient and does not draw on parent or sponsor organizations for logistical needs. In addition, TR provides intelligence gathering abilities fused with the latest technology with Palantir intelligence analysis and mapping suite. This technology, a data fusion platform widely used in the military, allows volunteers to transmit real-time data from the street level to operational and strategic level partners.

³¹ Website: <http://www.teamrubiconusa.org/>

³² For an account of TR deployment to Haiti see Team Rubicon Genesis Video. Retrieved from:

<https://www.youtube.com/watch?v=JLjZsvE2Ge0>

³³ *Vets Who Still Serve: After Disasters, Team Rubicon Picks Up the Pieces* Retrieved from

<http://www.forbes.com/sites/howardhusock/2015/09/10/vets-who-still-serve-after-disasters-team-rubicon-picks-up-the-pieces/#6920c4d74802>

³⁴ The Story of Team Rubicon. Team Rubicon Global. Retrieved from:

<http://teamrubiconglobal.org/about/#liaisons>

³⁵ Team Rubicon Capabilities and Services. Retrieved from:

<http://www.teamrubiconusa.org/response/capabilities-services/>

4. Training

Team Rubicon re-purpose veterans' skills into disaster relief. Team Rubicon volunteers already come trained in first aid, Personal Protective Equipment, teamwork, giving and receiving orders, incident command, and the ability to work long hours with hand and power tools. TR provides Tools, Tactics, & Techniques (T3) Training to refresh members and stay current. Training opportunities are advertised on the Facebook Pages for each of the TR Regions.³⁶ Examples of training may be: heavy equipment operation, chainsaw safety, ICS training, suicide awareness, navigation, social events, and sporting/fitness competitions. From examining the TR Regions Facebook sites, it appears TR does not operate using a traditional volunteer training model with a week night training and monthly weekend training.

5. Governance

Team Rubicon is organized into regions that mirror those of the Federal Emergency Management Agency (FEMA). Each region has a full time administrator and a number of volunteer leadership opportunities. State and local agencies requesting TR support contact the Regional Administrator or the TR international emergency operations centre now opened in Dallas, TX.³⁷

6. Legislation

Team Rubicon is not aligned with any national, state, or local government. It does mandate ICS 100 level qualifications for all personnel and 300/400 level for command staff. TR is also a member of the National Voluntary Organizations Active in Disaster (NVOAD).³⁸

7. Employment Non-Discrimination Clauses

Employment Non-discrimination clauses vary between states and cities and counties within states. Team Rubicon does not discriminate against veterans with physical or mental disabilities including PTSD.³⁹

8. Liability Insurance

Team Rubicon maintains liability insurance in addition to having members sign waivers when participating in Team Rubicon deployments, training, and events.⁴⁰

9. Funding

³⁶ For further information of the Regions, see Governance section. For an example of a Regional Facebook Page, see: <https://www.facebook.com/TeamRubicon1>

³⁷ Team Rubicon Blog. Retrieved from: <http://www.teamrubiconusa.org/team-rubicon-to-establish-dallas-emergency-operations-center-to-increase-global-disaster-response-capabilities/>

³⁸ National Voluntary Organizations Active in Disaster (NVOAD) <http://www.nvoad.org/about-us/>

³⁹ Volunteer with Team Rubicon FAQ. Retrieved from: <http://www.teamrubiconusa.org/join-the-team/down-n-dirty/volunteer/>

⁴⁰ Team Rubicon Liability Waiver. Retrieved from <http://036dcba.netsolhost.com/WordPress/wp-content/uploads/2014/05/TR-Volunteer-Waivers.pdf>

Team Rubicon is funded through donations from individuals and businesses. They also receive funding from Grants and Trusts. Team Rubicon's annual operating expenses in 2014 were approximately \$7.5m USD. Annual reports from 2012-2014 and additional financial information is available on the Team Rubicon website.⁴¹

10. Business Case

No business case or value for money was identified.

⁴¹ Team Rubicon Financials. Retrieved from: <http://www.teamrubiconusa.org/financials/>

5. Discussion and Conclusions

5.1. A Variety of International Models

This scan shows that the five countries researched have conceptualized and implemented various models for tasking citizens in technical EM capabilities. These models range from highly structured and prevalent to variable and limited.

Australia has invested in a massive volunteer workforce in EM with over 26,000 highly trained and certified citizens supported by strong legislation and AUD\$152 millions in secured funding. With THW, Germany has established a federal agency that mobilizes citizens in the event of civil defence (emergency) situations. THW members are paid by the federal government which reimburses time spent in training and deployment to employers. Capabilities are advanced and roles and responsibilities precisely defined. THW is supported by an annual budget of €180 millions. Both Australia and Germany can mobilize their respective citizen workforce for complex operations.

New Zealand Response Teams (NZ-RTs) present a model that organizes, trains, and deploys independent volunteer response teams to support local Civil Defence Emergency Management groups. However, despite national legislation, but without secured funding, NZ-RTs remain more limited in capabilities and very small in capacity. The US CERT program may seem prevalent with its 2,600 response teams. However with its variable governance structures, lack of secured funding, basic curriculum and little support to volunteers, the program has a limited impact and faces sustainability issues.

The UK offers a model that may seem the closest to the Canadian context. However, unlike Canada, the role of Voluntary Organizations is explicitly articulated in national legislative act. Voluntary Organizations are formally part of nation-wide Local Resilience Forums (LRFs) and work in coordination with Category 1 and Category 2 responders. The British Red Cross is the convener through the Voluntary Sector Civil Protection Forum which oversees the role of the Voluntary Sector in the LRFs. This arrangement is however set without any funding mechanism to support any Voluntary Organizations and their volunteers in their contribution to the LRFs.

5.2. Technical Volunteer with EM Capabilities: Possibilities for Canada

The information presented from Report 1 shows that, when taken as a whole, Canada's VSOs in EM currently provide a wide array of capabilities and strong volunteer capacity. The development of a made-in-and-for-Canada model would therefore have the greatest value in filling capability gaps.

With that respect, as per report 1, the two capabilities that are possibly representing a gap in the Canadian Voluntary EM landscape are:

- 1) **Mitigation (structural and non-structural)**, which was defined for the Canadian context as: To take concrete actions to reduce the impact of disasters in order to protect lives, property and the environment, and to reduce economic disruption. Mitigation includes structural mitigative measures (e.g. construction of floodways and dykes) and non-structural mitigative measures (e.g. building codes, land-use planning and insurance incentives.)
- 2) **Critical Infrastructure Resilience and Restoration** which was defined as providing appropriate combination of security measures, business continuity practices and emergency management planning to ensure adequate response procedures are in place to deal with unforeseen disruptions and natural disasters and to ensure the continuation of essential services. Critical infrastructure refers to processes, systems, facilities, technologies, networks, assets and services essential to the health, safety, security or economic well-being of the public and the effective functioning of government. Example: earthquake retrofitting within disaster-resilient hospitals programs.

Both of these capabilities coincide with the type offered in highly structured programs focused on technical capabilities as seen in the example of Germany, and to a certain extent Australia. In these two countries, highly technical programs are prevalent and viable because they are supported by:

- Explicit commitment of the government through dedicated legislation
- Highly structured and standardized training and certification based on comprehensive curricula
- Generous governmental funding to build and sustain the development of capacity, including compensating at regular salary level their citizen workforce (in the case of Germany)
- Comprehensive insurance coverage for members and volunteers

5.3. Supporting a Strong Canadian Voluntary Sector in EM

Countries that are concerned with implementing robust and prevalent model for the integration of citizens in EM have invested simultaneously in multiple strategic areas as shown in this study:

- In all these international models, countries have developed legislations and guiding principles specifically for integrating the Voluntary Sector/citizens in EM
- In addition to legislation, specific governance structures exist to formally define the roles, responsibilities and relationships of the Voluntary Sector/organized citizens with national and regional EM stakeholders. With the exception of Germany, the governance structures are characterized by decentralized arrangements similar to what could be in the Canadian context EM is activated on a decentralized EM system moving from the local to the provincial/territorial and then federal level. The United Kingdom demonstrates that these systems of relationships with the Voluntary Sector can be facilitated through a lead organization acting as convener both at the national and local levels.
- A clear identification of capabilities within EM in which volunteers/citizens can contribute, and upon which training, certification, and recruitment can all be based. The development of a first-ever Canadian capability list to characterize the competencies of the voluntary sector and volunteers represents in line with the international practices observed in this report.

- Duty of care for volunteers by the provision of adequate insurance coverage and training
- And, ideally, secured funding

Canada has a strong national Voluntary Sector in EM whose expertise includes most of the essential capabilities needed in emergency. However, beyond the development of EM capabilities, it is strengthening governance structures that more clearly define roles and responsibilities that will be critical in the years ahead to ensure the effective integration of Voluntary-based resources in the Canadian EM system and whole-of-society resilience approach.

References

- [1] Public Safety Canada, "Fourth Annual Roundtable Canada's Platform for Disaster Risk Reduction," 2013. [Online]. Available: <http://www.publicsafety.gc.ca/cnt/rsrscs/pblctns/pltfm-dsstr-rdctn-2013/index-eng.aspx>. [Accessed 21 05 2015].
- [2] G. McGillivray, "A Coming-Of-Age Year: CATs Get Fierce," *Canadian Underwriter*, vol. Statistical Issue, no. June, 2014.
- [3] Public Safety Canada, "2013-2014 Report on Plans and Strategy".
- [4] L. M. Salamon and W. S. Sokolowski, "Measuring the Economic Value of Volunteer Work Globally: Concepts, Estimates and A Roadmap to the Future," *Annals of Public and Cooperative Economics*, vol. 82, no. 3, p. 217–252, 2011.
- [5] B. DePratto, "The Impact of Volunteerism and Charitable Giving," TD Bank Group, 2014.
- [6] IFRC, "World Disasters Report: Focus on Recovery," Geneva, 2001.
- [7] IFRC, "The value of volunteers," Geneva, 2011.
- [8] L. Fernandez, J. Barbera and J. R. van Dorp, "Spontaneous volunteer response to disasters: the benefits and consequences of good intentions," *Journal of Emergency Management*, vol. 4, no. 5, September/ October, 2006.
- [9] E. Noji, *The public health consequences of disasters*, vol. 15, New York: Oxford University Press, 1997, pp. 147-157.
- [10] E. Quarantelli, "Human and group behavior in the emergency period of disasters: now and the future," Disaster Research Center, 1993.
- [11] Z. Mackwani, "Volunteers and the Alberta Flood: Insight into Voluntary Sector Readiness and Surge Capacity," Voluntary Sector Working Group of Canada's Platform for Disaster Risk Reduction, Ottawa, 2015.
- [12] K. Krieger, "Resilience and risk studies," in *Routledge Handbook of Risk Studies*, A. Burgess, A. Alemanno and J. O. Zinn, Eds., Routledge, 2016, pp. 335-342.
- [13] Voluntary Sector Agencies of Canada, "Voluntary Sector Framework For Health Emergencies," Public Health Agency of Canada, 2008.
- [14] Public Safety Canada, "2015-2016 Report of Plans and Priorities," Her Majesty the Queen in Right of Canada, 2015.

- [15] Australian Council of State and Emergency Services , "State & Territorial Emergency Services National Performance Indicators 2012," [Online]. Available: http://www.ses.org.au/acses_performance_indicators_2012.pdf. [Accessed April 2016].
- [16] Australia, Ministry of the Attorney General, "National Emergency Management Volunteer Action Plan 2012," [Online]. Available: <http://www.pfes.nt.gov.au/~media/Files/Emergency/Funding/National%20Emergency%20Management%20Volunteer%20Action%20Plan%202012>. [Accessed April 2016].
- [17] SES Volunteer Association of Western Australia, [Online]. Available: <http://www.ses-wa.asn.au/node/293>.
- [18] Association of State Emergency Services, [Online]. Available: http://www.ses.org.au/cost_of_running_a_unit__acses_2008.ppt. [Accessed April 2016].
- [19] Association of State Emergency Services, [Online]. Available: http://www.ses.org.au/valueofvolunteertime_final.pdf. [Accessed April 2016].
- [20] New Zealand Civil Defence and Emergency Management Capability Framework, [Online]. Available: <http://www.civildefence.govt.nz/assets/Uploads/CDEM-Capability-Development-Strategy-Presentation.pdf>. [Accessed April 2016].
- [21] Director's Guidelines for the CDEM Sector (DGL12/12), "The Guidance for Establishing and Operating New Zealand Response Teams (NZ-RTs)," April 2012.
- [22] Cabinet Office, "The role of Local Resilience Forums: A reference document," Civil Contingencies Secretariat, 2013.
- [23] CityNews, "Natural disasters by the numbers: Alberta's flood versus Ontario's ice storm," 17 January 2014. [Online]. [Accessed 21 05 2015].
- [24] THW, [Online]. Available: http://www.thw.de/EN/THW/Overview/overview_node.html. [Accessed April 2016].
- [25] UNISDR, "The Sendai Framework for Disaster Risk Reduction 2015-1030," 2016.
- [26] I. F. o. R. C. a. R. C. Societies, "World Disaster Report: Focus on Local Acotrs, the Key to Humanitarian Effectiveness," 2015.
- [27] J. McMurray, "Call for flood recovery volunteers sees overwhelming response at Calgary's McMahon Stadium," Calgary Sun, 24 June 2013. [Online]. Available: <http://www.calgarysun.com/2013/06/24/call-for-flood-recovery-volunteers-sees-overwhelming-response-at-calgarys-mcmahon-stadium>. [Accessed 22 05 2015].

- [28] M. Sinha, "Volunteering in Canada, 2004 to 2013," Statistics Canada, Catalogue no. 89-652-X2015003, 2015.
- [29] Government of Alberta, "The Building Alberta Plan, Budget 2014," 2014.
- [30] A. Cottrell, "Research report, a survey of spontaneous volunteers," Australian Red Cross, 2010 [?].
- [31] Volunteer Canada, "The Canadian code for volunteer involvement," 2012.
- [32] Voluntary Sector Agencies of Canada, "Maintaining the Passion: Sustaining the Emergency Response Episodic Volunteer," Public Health Agency of Canada, 2007.
- [33] The Conference Board of Canada, "Canadian Corporate Community Investment Benchmarking Report," 2013.
- [34] T. E. Drabek and D. A. McEntire, "Emergent phenomena and the sociology: lessons, trends and opportunities from the research literature," *Disaster Prevention and Management*, vol. 12, no. 2, pp. 97-112, 2003.
- [35] K. Tierney, *The Human Dimension of Disasters: Improving Societal Resilience Through the Application of Sociological Research*, Department of Sociology, Natural Hazards Center, University of Colorado at Boulder, [?].
- [36] C. Dreifus, "A Conversation with Kathleen Tierney: A Sociologist With an Advanced Degree in Calamity," *The New York Times*, 7 September 2004. [Online]. Available: http://www.nytimes.com/2004/09/07/science/07conv.html?_r=0&pagewanted=print&position=. [Accessed 20 April 2015].
- [37] UN Volunteers, "Disaster Risk Reduction, Governance and Volunteerism," in *World Conference on Disaster Reduction*, Kobe, Hyogo, Japan, 2005.
- [38] J. K. A. Word and B. S. Ralph, "Volunteers, Nonprofits, And Community Capacity: A Case Study For Preparing For Disaster Response," *Journal For Non-Profit Management*, vol. 15, no. 1, pp. 65-83, 2012.
- [39] J. Ellis, *Best Practices in Volunteer Management: An Action Planning Guide For Small and Rural Nonprofit Management*, Volunteer Canada, 2005.
- [40] Volunteer Canada, "The Canadian Code for Volunteer Involvement," 2012.
- [41] Justice Institute of British Columbia, "ESS 125 Managing Walk-in Disaster Volunteers Participant Guide," 2010.

- [42] Canadian Red Cross, "Disaster Response Team, Human Resources Handbook," 2007.
- [43] American Red Cross, "Event Based Volunteer Engagement Guide Disaster Cycles Services," 2014.
- [44] Swedish Red Cross, "Guidelines for the reception of spontaneous volunteers in emergencies and disasters," [?].
- [45] Points of Light Foundation, "Managing Spontaneous Volunteers in Times of Disaster," 2006.
- [46] California Governor's Office of Emergency Services, "They Will Come: Post-Disaster Volunteers and Local Governments," 2001.
- [47] RGK Center for Philanthropy and Community Service, "Strategic Volunteer Engagement: A Guide for Nonprofit and Public Sector Leaders," The LBJ School of Public Affairs, The university of Texas at Austin, 2009.
- [48] Government of Alberta, "The Building Alberta Plan, 2014-2017 Government of Alberta Strategic Plan," 2014.
- [49] D. Childs, "Implementation of the Hyogo Framework for Action, Summary of Reports 2007-2013," UNISDR, Geneva, 2013.
- [50] UN/ISDR, "Hyogo Framework for Action 2005-2015," in *World Conference on Disaster Reduction (A/CONF.206/6)*, 2005.
- [51] Public Safety Canada, "Canada's Platform for Disaster Risk Reduction," 12 09 2014. [Online]. Available: <http://www.publicsafety.gc.ca/cnt/mrgnc-mngmnt/dsstr-prvntn-mtgtn/pltrm-dsstr-rsk-rdctn/index-eng.aspx>. [Accessed 26 05 2015].
- [52] Ministers Responsible for Emergency Management, "An Emergency Management Framework for Canada," Emergency Management Policy Directorate, Public Safety Canada, Ottawa, 2011 (Second Edition).
- [53] B. Geleta, "Disasters are not a department: to reduce risk, we must empower communities," IFRC, Geneva, 2011.
- [54] A. Scolobig, T. Prior, D. Schröter, J. Jörin and A. Patt, "Towards people-centred approaches for effective disaster risk management: Balancing rhetoric with reality," *International Journal of Disaster Risk Reduction*, pp. 203-211, 15 January 2015.
- [55] CBC, "Alberta flood recovery could take 10 years, says premier," [Online]. Available: <http://www.cbc.ca/news/canada/calgary/alberta-flood-recovery-could-take-10-years-says-premier-1.1303829>. [Accessed 23 04 2015].

- [56] D. Galea, "Come Hell or High Water – How Alberta's Best Responded to its Worst Ever Disaster," Alberta Emergency Management Agency, 2013.
- [57] Calgary Sun, "Flooding in Calgary and Southern Alberta makes list of top insured natural disaster losses in 2013," 29 03 2014. [Online]. Available: <http://www.calgarysun.com/2014/03/29/flooding-in-calgary-and-southern-alberta-makes-list-of-top-insured-natural-disaster-losses-in-2013>. [Accessed 23 04 2015].
- [58] WaterSMART Solutions Ltd., "The 2013 Great Alberta Flood: Actions to Mitigate, Manage and Control Future Floods," Calgary, Alberta, 2013.
- [59] R. Voegrop, "Forewarned and Forearmed, The Calgary Emergency Management Agency And The 2013 Flood," Conference Board of Canada, Ottawa, 2014.
- [60] Calgary Herald, "Timeline: How the great flood of 2013 evolved," 24 June 2013. [Online]. Available: <http://calgaryherald.com/news/local-news/timeline-how-the-great-flood-of-2013-evolved>. [Accessed 26 05 2015].
- [61] Alberta Emergency Management Agency, "Basic Emergency Management," Government of Alberta, 2013.
- [62] Emergency Preparedness Initiative of Calgary, [Online]. Available: <http://getpreparednonprofit.com/>. [Accessed 05 06 2015].
- [63] S. Schreiber and D. Galea, "Emergency Management in Alberta, Making Communities More Resilient," Alberta Emergency Management Agency, 2014 [?].
- [64] M. Eckley and C. Benson, "Emergency Planning: Lessons from High River's 2013 Flood," 2014 [?].
- [65] B. Singh, "The flood has revealed Calgary's spirit of networked humanity," The Globe and Mail, 23 June 2013. [Online]. Available: <http://www.theglobeandmail.com/globe-debate/the-flood-has-revealed-calgarys-spirit-of-networked-humanity/article12762391/>. [Accessed 24 July 2015].
- [66] Province of Alberta, *Emergency Management Act*, Edmonton: Alberta Queen's Printer, 2013.
- [67] CTV News, "More Canadian troops en route to flood-ravaged southern Alberta," 21 June 2013. [Online]. Available: <http://www.ctvnews.ca/canada/more-canadian-troops-en-route-to-flood-ravaged-southern-alberta-1.1336646>. [Accessed 11 08 2015].
- [68] MacLean's, "Canadian Forces cutting back numbers helping in Alberta floods," 24 June 2013. [Online]. Available: <http://www.macleans.ca/news/canadian-forces-cutting-back-numbers-helping-in-alberta-floods/>. [Accessed 11 August 2015].

- [69] The World Bank, "Defining Civil Society," 22 July 2013. [Online]. Available: <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/CSO/0,,contentMDK:20101499~menuPK:244752~pagePK:220503~piPK:220476~theSitePK:228717,00.html>. [Accessed 13 08 2015].
- [70] Volunteer Canada, "Surge Capacity," [Online]. Available: <http://volunteer.ca/content/surge-capacity>. [Accessed 13 08 2015].
- [71] K. Kaminska, P. Dawe, B. Rutten and D. O'Donnell, "Digital Volunteer Supported Recovery Operations Experiment," Defence Research and Development Canada, Centre for Security Science; International Safety Research Inc, Ottawa ON (CAN), 2015.
- [72] Canadian Red Cross, "Ready When the Time Comes," [Online]. Available: <http://www.redcross.ca/about-us/about-the-canadian-red-cross/national-corporate-partners/ready-when-the-time-comes>. [Accessed 18 August 2015].
- [73] Stockholm Resilience Centre, *Applying resilience thinking: Seven principles for building resilience in social-ecological systems*, Stockholm University, 2015.

Appendices