Developing School-centered Disaster Resilient Communities in the Aftermath of the East Japan Earthquake and Tsunami

A Thesis Submitted for the Fulfillment of PhD

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List of Acronyms

BoE	Board of Education
CC	Community Center
DRR	Disaster Risk Reduction
E-HFA	Hyogo Framework for Action for Education Sector
EiE	Education in Emergencies
EJET	East Japan Earthquake and Tsunami
EOC	Emergency Operation Centers
ES	Elementary school
HFA	Hyogo Framework for Action
INEE	Inter-Agency Network for Education in Emergencies
IPCC	Intergovernmental Panel on Climate Change
JHS	Junior High School
JICA	Japan International Cooperation Agency
JEOC	Joint Emergency Operation Center
MAFF	Ministry of Agriculture, Forestry and Fisheries
MEXT	Ministry of Education, Culture, Sports, Science and Technology
MLIT	Ministry of Land, Infrastructure, Transport and Tourism
MDG	Millennium Development Goals
NTME	Nankai Trough Megathrust Earthquake
NIER	National Institute for Educational Policy Research
OECD	Organisation for Economic Co-operation and Development
PAR	Pressure and Release (Model)
SREX	Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation
UNICEF	United Nations Children's Fund
UNISDR	United Nations Office for Disaster Risk Reduction
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs

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Executive Summary

1. Background and purpose of the study

The East Japan Earthquake and Tsunami (EJET) was the largest natural disaster that Japan had experienced since end of World War II. The 9M earthquake triggered tsunamis that brought extensive infrastructural damages and human causalities over a wide area in North East Japan. In the education sector, 6,211 educational facilities were damaged displacing over 25,000 students from their original schools. The damages that the EJET brought upon the education sector did not only affect teachers and students, but also significantly impacted the whole community because communities in Japan commonly perceive their schools as a central public facility that are also used as evacuation centers during emergencies. Approximately a year into the EJET recovery process, the Cabinet Office presented the damage projections for the Nankai Trough Megathrust Earthquake (NTME) that is anticipated to occur within the next 30 years with 60% probability alerting schools and communities to further strengthen their DRR measures.

With this background, this study aims to investigate the possibilities of realizing "School Centered Recovery and Community Building" in Toni District of Kamaishi, Iwate Prefecture in which its elementary (ES) and junior high schools (JHS) received total damage by EJET. With objectives to propose an efficient and effective approach in implementing the concept, the study looks into the potentials and challenges faced in Toni. The study also refers to good practices in other areas, including Saijo, Ehime Prefecture, which has been active in implementing its city wide DRR education program to prepare for the anticipated NTME and other possible future disasters. Surveys were conducted in selected cities and organizations to identify the key elements required in strengthening school – community linkage for building School-centered Disaster Resilient Communities.

2. Scope of the study

The scope of the study is based on the "School Centered Community Building" concept that was introduced by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) in October 2011. The objective of the concept is to promote school recovery by: (1) Ensuring safety and security of schools, (2) Strengthening schools as Disaster Risk Reduction (DRR) hubs, (3) Incorporating sustainable eco-friendly features and (4) Combining schools with other public facilities and functions to facilitate interactions among different community

members. As this study focuses its discussions to facilitate school centered recovery and community building, the attention will be placed more on the fourth component that is directly linked with reinforcing school and community linkage through structural and non-structural measures that is expected to positively impact the overall community recovery.

Under this scope of study, interview and questionnaire surveys, group discussions and workshops were conducted with local government, community members and schools (teachers and students) that covered the following topics.

1. Experiences and lessons from responding to EJET
2. Relationship between schools and communities before and after EJET
3. Social/Regional and DRR school education and activities with communities
4. Perceptions on school centered recovery and community building
5. Educational governance

3. Key findings

In recovering Toni ES/JHS, the idea of integrating new schools with other public facilities and functions received positive response from residents. The questionnaire survey targeting all households in Toni showed their keen interest for adding child raising support (32%) and DRR functions (23%) to the new schools. From the start, the Toni School Reconstruction Consultative Committee had been firm with the idea of making the new ES and JHS to become a joint school, anticipating that the student number will continue to decrease in the future. On the other hand, interview surveys revealed that City Board of Education (BoE) and schools felt apprehensions in making the new schools to become a multi-functional facility that will be open to the public as a platform for community engagements, primarily due to concerns in management and security issues. Improving safety and DRR function of schools to become an effective evacuation center also posed challenges for BoE because the tasks are beyond its ordinary mandates.

Community engagement in school activities through joint social/regional and DRR education through school events (38%) and integrated education program (35%) has been perceived as an effective way to facilitate recovery, community building and strengthening disaster resilience by the Toni ES/JHS teachers once the schools are able to recover their basic functions. The reason given for this is because such education can nurture students' understanding and consciousness for their hometown in preparing them to become

responsible citizens of their communities. For implementation, it was revealed that Toni communities possess abundant human resources, such as elder group and local fishermen that are able to provide students with "real-life" education that compliments academic education provided in the school classrooms. With regards to DRR education and activities, it was found that although there is high community perception of schools as being a DRR hub, there was limited school – community engagements for disaster preparedness before EJET. For example, this was shown in the questionnaire survey results of students in which only 27% have experience participating in the regional DRR drills prior to EJET. For DRR knowledge, while local/traditional knowledge has been a significant part in maintaining residents' awareness about disasters (37%), incorporation into school DRR programs has been limited.

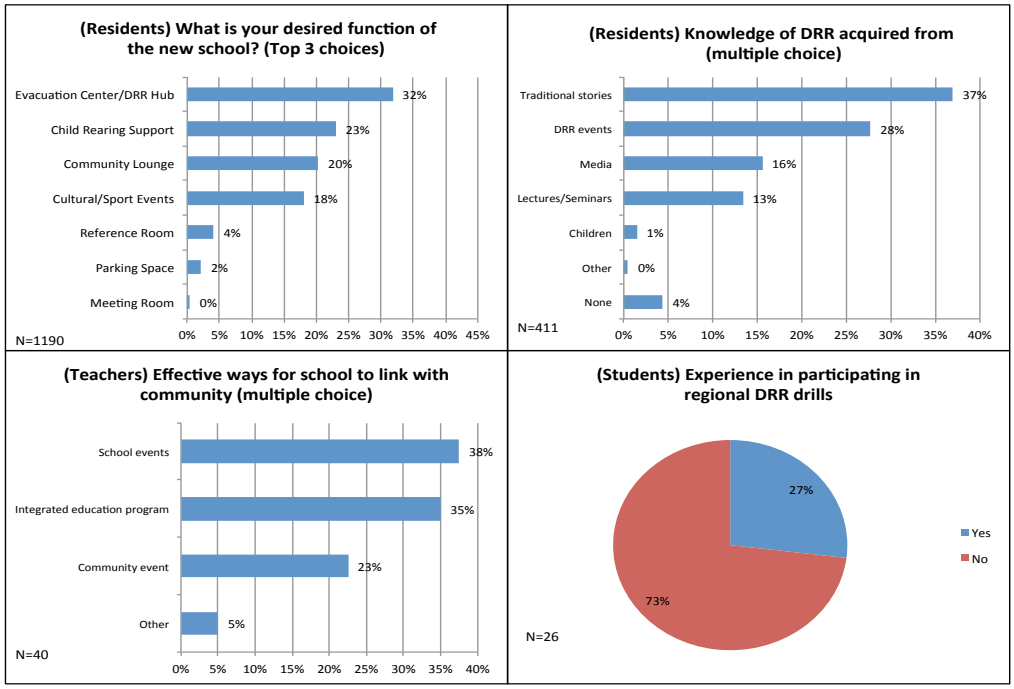

Figure 1 Key results from Community and school survey (questionnaire survey)questionnare survey in Toni, Kamaishi

From the surveys conducted in Saijo through direct interviews and focused group discussions with representatives of three target school districts, it was found that schools have numerous school based networks, which can help identify the key stakeholders for realizing school centered disaster resilient community building. Building partnerships with these actors can be further developed to enhance support systems that will help communities better respond, recover and prepare for large-scale disasters. Commonly, schools are first connected with their communities through students' parents while other community members are also

linked through participation to school events, such as sports and cultural festivals. Specifically by means of DRR activities, the city wide Town Watching activities conducted in Saijo in its 12-year old DRR Education Program, which calls for close school – community collaboration, can be seen as an effective way in building school based networks. Saijo has also been endeavoring on building new partnership in DRR with private companies and informal networks that exist in the community, such as Saijo Festival groups that may not be at present directly linked with schools through education or DRR. These practices can be suggested as references that can benefit Toni's efforts in recovery and community building.

Issue on education governance has also been highlighted in this study for creating enabling conditions to effectively and sustainably implement school-centered recovery and community building. During EJET, issues in coordination and communication within and among different administrative levels (central – prefectural – city) in the education sector became a major problem for providing timely assistance to affected schools and communities. While the Disaster Countermeasures Basic Act stipulates the city level authorities to be the main agents for initial response, EJET had overwhelmed the City BoEs and schools with numerous tasks that necessitated extended support from higher administrative levels. However, MEXT have shown shortcomings for not knowing their contact person at the local levels. Surveys also found that Prefectural BoEs, with their mandate and capacity to coordinate disaster management efforts, could do more to support affected City BoE and schools not only in disaster response, but also for recovery and preparedness. In some cases, lack of coordination and communication has created inequality among affected city governments for receiving needed support in responding to and recovering from EJET. At the city level, breakdown in the decision making process posed great challenges for local authorities to make prompt planning and implementation for school recovery and community building.

4. Conclusion and way forward

With the challenges and key elements to effectively implement School Centered Recovery and Community Building identified through interview and questionnaire surveys, focused group discussions and workshops, the following are provided as the possible way forward for implementation.

1. Rebuilding new schools as a multi-functional facility can be pursued for economical efficiency that is adaptable to future demographic changes. More importantly, flexible use

of school facilities allows strengthening of schools to become a hub for school – community interactions in recuperating weakened ties. Possible utilization of school facilities should be considered through joint multi-stakeholder consultations to grasp various needs that will ultimately determine the design and usage of the new schools. DRR features of schools should also be further strengthened for them to function effectively as a community evacuation center. Such structural and non-structural integration of school with other public facilities and functions can provide the platform that will help facilitate the overall recovery and community building process.

2. Local human resources and knowledge should be fully utilized in conducting programs such as social/regional education and DRR education because teachers may not possess all of the knowledge and experiences, especially those of local context, required to provide practical learning for nurturing students to become contributing citizens of their hometowns. This sort of community participation in educational activities can compliment academic school education provided by teachers. Collaboration between schools and communities to jointly take tasks to resolve common social issues that exist in the respective communities can create mutual benefits that will not only be valuable in terms of recovery, but also helpful to boost measures on issues such as population drainage and revitalization of rural communities that had existed prior to EJET.
3. School based networks can be mapped out to identify the key stakeholders for implementing school centered recovery and community building. In addition to formal networks that are linked with schools, there are also informal networks that may not be necessarily connected through education or DRR, but can be looked into for identifying new partners. These may include private companies, NGOs and other informal networks such as social groups that may exist within and outside of the region. A system to institutionalize these kinds of partnerships can be realized thorough the establishment of working group or committee, but may require an intermediary that can initially connect and coordinate the different stakeholders.
4. Enhancing the governance system through institutional strengthening can improve coordination and communication that enables better support for affected schools and communities. Specifically, re-alignment of roles and responsibilities of national, prefectural and city BoEs (and schools) that is adaptable to damage levels and recovery process can significantly improve effectiveness and efficiency in supporting local levels. In particular, Prefecture BoE could utilize more of its intermediary role and human

resource management authority for supporting troubled local cities. Such improved governance system can create an enabling environment for various stakeholders of different administrative levels, regions and sectors to work together, making streamlining of recovery, mitigation, preparedness and community building process possible for School Centered Recovery and Community Building.

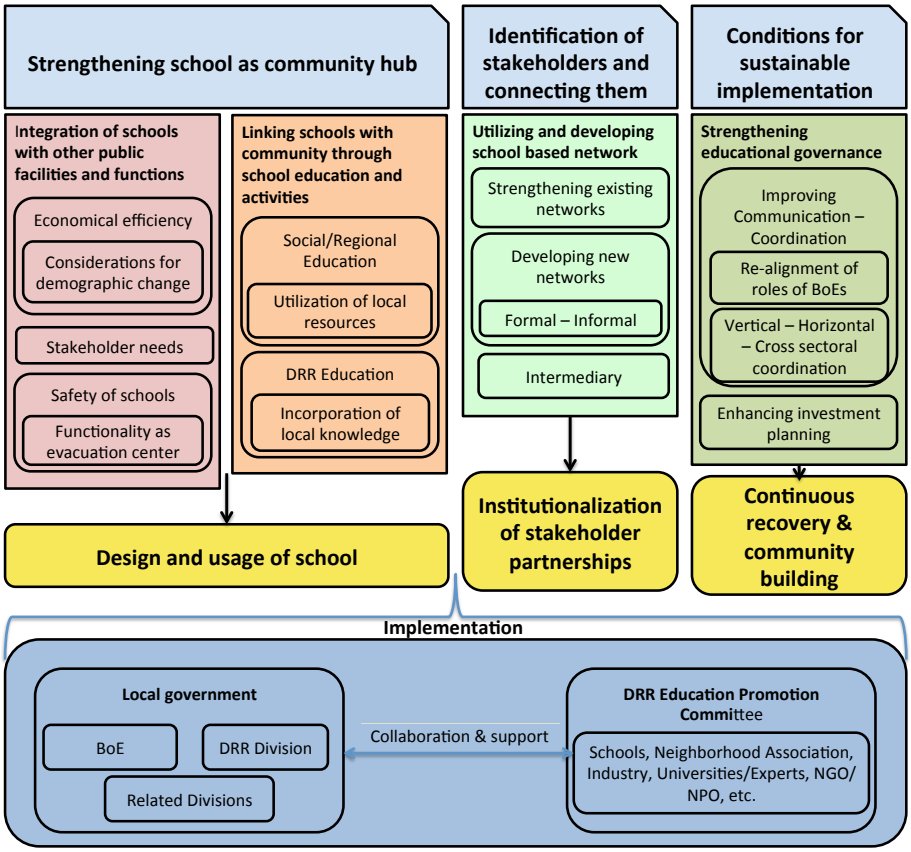

Figure 2 Suggested components for developing School-centered Disaster Resilient Communities

The overarching elements to make School-centered Disaster Resilient Communities feasible are continuous multi-stakeholder consultations with community participation and monitoring and evaluation of achievements and accountability in which tools such as checklist can be developed. Although the contents for disaster recovery and community would differ depending on local contexts, the key findings from this study may be used as a reference to allow the concept to be applied in other disaster prone communities with different public facilities that are central to the communities.

PART I

Chapter 1. Introduction

1.1 Problem Statement

1.1.1 Trends of natural disasters in recent years

Although varying from year to year, convincing evidence shows that there is a rising trend of natural disasters occurring globally. The Annual Disaster Statistical Review 2013 released by The Centre for Research on the Epidemiology of Disasters (CRED) reported that the average number of annual disaster events from 2003 to 2012 remained significantly high at 388, killing 106,654 and affecting 216 million people worldwide. Hydrological disaster continues to compose the largest number of disaster event at 52.1% out of total disasters as well as number of victims accounting for 52.1% (139.8 million people) of the total victims. There is no clear verification that earthquake hazards have been or will be increasing (Shearer and Stark 2011), but major earthquakes such as the 2004 Sumatra-Andaman earthquake, 2008 Sichuan earthquake, 2010 Chile earthquake and the 2011 East Japan Earthquake and Tsunami (EJET) have continued to greatly affect the world.

The extensiveness of the damages from these natural hazards significantly depends on the exposure and vulnerability shaped by the socio-economical status of the subject locality. It is known that more than half of the world's population lives in urban areas today and the urbanization trend is expected to continue, with the greatest potential for disasters affecting the most populous mega cities that have population of more than ten million (Gencer 2013). On this, Pelling (2007) states that rather than the rising trend of population and concentration, it is the increasing pace of urbanization that has established practices and values for planning and development of cities have lead to an accumulation of disaster risk over time. While urban areas may enjoy better infrastructures such as roads, housing and public utilities and critical public facilities such as schools and hospitals, building them in improper locations and managing these facilities without considerations for disaster risks may lead to higher vulnerability for the people who utilize these facilities. For example, when health facilities suffer severe damage as a result of natural disasters, the victims will be unable to receive medical treatment that will be urgently needed during and after disasters due to interruption of health service. Schools that often function as community evacuation centers will not be able to provide a safe place during emergencies if they are partially or totally damaged.

Regardless of the urban or rural setting, it is important that components that reduce

disaster risks is considered for development planning, especially in maintaining safety of public facilities. However, it is a fact that while existing knowledge of building engineering are sufficient to produce disaster-proof buildings, the economical feasibility of implementation may not fit for every cities and communities (Hosseini 2007). It is therefore essential that different aspects of structural and non-structural factors be taken into consideration in keeping safe facilities to reduce disaster risks. In this context, it is useful to refer to the Pressure and Release (PAR) Model suggested by Wisner et al. (2004) to trace back and identify the root causes that create unsafe facilities, which can become one of the major vulnerability factors for the communities. The comprehensive approach in identifying the underlying causes of vulnerability that may not necessarily be directly linked with disaster events, in turn, is useful in seeing public infrastructures not only as mere structures, but also as powerful symbols of social progress, which contribute to the stability and economic development of communities, cities and nations that must be protected. This viewpoint will be the key in discussing extended usage of public facilities for building disaster resilience, facilitating recovery process and brining communities together after disasters.

1.1.2 Disasters and effect on the education sector

As noted, when cities and communities are faced with natural disasters and important facilities such as schools and hospitals get affected, the whole social system can get paralyzed from disruptions of basic public services. Particularly for schools, when education is interrupted due to disasters, it will significantly affect the development of children in becoming adult citizens and on the long run, can influence the prosperity of the community. In addition, school houses children, which is commonly known to be in the most vulnerable group to disasters, so it is important to take measures to protect them. Studies show that 50-60% of the victims of disasters are children. Specifically, in the late 1990s, the number of children affected by disasters was estimated at 66.5 million a year and with the impacts of climate change, the number is projected to increase to as many as 175 million per year by 2020 (UNICEF 2010). Disasters also place tremendous burden on the teachers, who are responsible for ensuring children's safety if a disaster occur during school hours. They may also take part in the initial set up and operation of evacuation centers if their schools become one. On the long run, when disasters affect schools continuously, families may consider to move out of their neighborhoods to pursue better educational opportunities elsewhere. In recognition of these risks and needs when the education sector is faced with disasters, there

have been global initiatives, such as "Disaster Risk Reduction Begins at School (2006-2007)" and "One Million Safe Schools and Hospitals Campaign (2010-2011)" by United Nations Office for Disaster Risk Reduction (UNISDR).

1.1.3 Damages to education sector and its effect on communities

When schools are affected by disasters it does not only impact the education sector, but also the whole community. This is because schools are commonly a symbolic facility that different generations of community members have attended and are familiar with. It can be said that schools have always been the training grounds to nurture future workforce that will contribute to the continuance and development of communities. Schools are also connected with the community through their students to the families, relatives, friends, former students and so on. As the case, when a school organizes its regular events, such as sports and cultural programs, they usually become community events that are participated by various people. During disasters, many schools often become evacuation centers for having basic facilities that include large rooms, toilets, water facility and cafeteria, which is able to accommodate evacuees from the surrounding areas. Moreover, schools have the organizational capacity that is needed to operate an evacuation center during disaster response. In this context, when schools are significantly damaged by disasters, it does not only affect the education sector, but can also devastate the whole community, drastically reducing its disaster resilience at the same time. Again, in case a disaster affected school cannot be rehabilitated or reconstructed, it could possibly threaten the survival of the communities itself because they will most likely to lose students in such an uncertain environment. It is therefore essential to recognize the impact of schools having on their societies and that proper steps are taken to build disaster resilience of the education sector, especially their linkage with the communities from normal time.

1.1.4 East Japan Earthquake and Tsunami (EJET) and effect on the education sector

The East Japan Earthquake and Tsunami (EJET) was a magnitude 9.0 mega thrust earthquake, which occurred at 2:46pm on 11 March 2011. It was the largest earthquake recorded in Japan in the recent years, which triggered tsunamis and caused extensive infrastructural damages and human causalities over a wide area in North East Japan. The disaster recorded 19,074 deaths and left 2,633 missing. Approaching four years after EJET, there are still 240,000 people in evacuation with majority of them living in temporary housing (Fire and Disaster

Management Agency 2014; Reconstruction Agency 2014). In the education sector, a total of 6,211 public kindergarten, elementary, junior high and high schools and special needs school have been damaged at different levels. MEXT has classified 205 of the schools as Damage Level I (requiring complete reconstruction or major repairs), 785 as Damage Level II (requiring repair works) and 4,980 as Damage Level III (requiring minor repair works). Rehabilitation or reconstruction costs, including those of private schools, are estimated with a sum of JPY245 billion (or about USD2.45 billion) (MEXT 2011). At peak, 25,516 students were displaced from their original schools in which 14,263 were from the most affected prefectures, Iwate, Miyagi and Fukushima (MEXT 2012).

1.2 Research location and rationale

The primary location of this research is Kamaishi City, Iwate Prefecture (39° 16′ N 141° 53′ E), which is one of the coastal cities in northeast Japan (or Tohoku Region) that was heavily affected by EJET. One of the rationale for selecting Kamaishi as the case study site is because of its adoption of the concept, "School Centered Community Building" in the Kamaishi Basic Recovery Plan or "Scrum Kamaishi Recovery Plan" to recover city's four damaged schools. its The concept, proposed by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) aims to quickly recover disaster affected schools and at the same time, facilitate recovery and community rebuilding through school recovery. In Kamaishi, there were one kindergarten, two elementary schools and one junior high school that received total damage, requiring complete reconstruction. Out of the two most affected districts of Toni and Unosumai in which these schools are located, Toni was selected as the research site because it was able to initiate discussions on school recovery from an early stage with the establishment of School Reconstruction Consultative Committee.

Additional field survey is conducted in Saijo City, Ehime Prefecture, which has been designated by the government as one of the cities that is expected to be severely affected by the anticipated Nankai Trough Mega Thrust Earthquake (NTME). From the expereince of getting severely affected by the 2004 typhoon disaster, Saijo has already been taking actions to promote a city wide disaster preparedness program called the 12-year-old Education Program, which was started in 2006. As the said program has several key elements in connecting schools with their communities thorough participatory DRR education that are promoted by the School Centered Community Building concept, the good practices in Saijo can be referred to as one of the options to effectively implement the concept in Kamaishi. The study areas

above are shown in Figure 1.1 below, followed by demographic information of the two cities (Table 1.2).

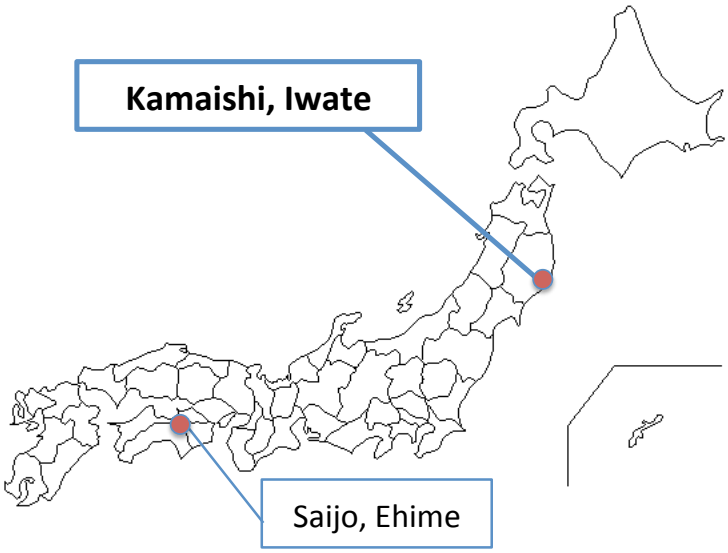

Figure 1.1 Map of study areas

Table 1.1 Demographic profile of study areas
(based on Iwate Prefecture 2013, Kamaishi City 2014, Saijo City 2014)

Target city	Total population (household) 2012 Oct	Change 2011→2012	% Age groups		
			Juvenile 0-14	Working 15-64	Elder 65-
Kamaishi, Iwate Pref.	37,578 (17,145)	-366	11.2%	54.0%	34.8%
Saijo, Ehime Pref.	114,766 (49,476)	+382	13.6%	59.2%	26.8%

1.3 Research objective

The objective of this research is to discuss on the potential of school-based recovery and community building as one of the effective ways to facilitate the overall disaster recovery of disaster affected cities and communities. Through specific cases study and analysis from the target study city, Kamaishi City, Iwate Prefecture (post-disaster city) and Saijo, Ehime Prefecture (pre-disaster city) to support the discussions, the research attempts to identify the key elements and challenges to effectively implement the school centered concept. In addition, for the purpose of replicating the concept in other disaster-prone communities, prospective for realizing the concept in any given community attempting to implement similar efforts is

suggested as the way forward.

1.4 Research scope and questions

Under the hypothesis that "School Centered Community Building is an effective option to facilitate the overall community recovery and community building through school recovery," three research questions are raised (Figure 1.2). The first question is, "What can be done to further strengthen schools to function as a community (DRR) hub?" As MEXT's School Centered Community Building concept suggests, possibilities of integrating schools with other public facilities or functions to make schools a multi-functional facility will be considered and discussed. Integration does not only concern the physical aspect, but also on the non-structural features in exploring flexible use of school facilities. Because such integration will demand schools to take on new responsibilities beyond their conventional roles, schools and Board of Education (BoE) may initially be hesitant in opening up the schools to the communities. Therefore, it is critical that through consultations are held to understand the various demands that exist in the community. With this in mind, the study will attempt to suggest specific means for planning integration school facilities that would be mutually beneficial for all stakeholders, further strengthening schools as community hubs.

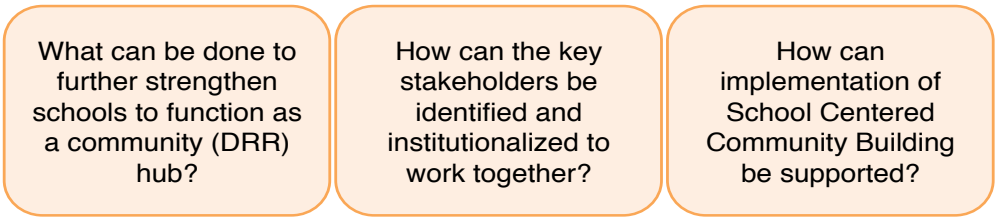

Figure 1.2 Research questions

Another question is, "How can the key stakeholders, essential for the implementation of school centered recovery and community building, be identified and institutionalized to work together?" Principle stakeholders in the education sector at the local level are teachers and students who are under the leadership of the school principle. The PTA, comprised of representatives of students' parents may also be considered as part of the school because of their important role in the school management. Different administrative levels of the education sector, especially the City BoE and its secretariat also take an important part in directing and supporting schools. Stakeholders for recovery and community building can become extremely diverse, ranging from local government offices (e.g. Recovery Promotion

and Disaster Management divisions), neighborhood associations, local industries and community based organizations such as NGO/NPOs. These stakeholders can be first sought out by looking into the school networks that may already exist within and outside of the region. Experiences from EJET revealed a whole new span of non-traditional partners that extends beyond existing networks, which can be identified in the process of developing new networks with people and organizations that may not be currently directly connected with schools. In this perspective, this study will look into ways to identify key stakeholders through network building and suggest how partnerships can be institutionalized for continuous collaboration.

Lastly, for creating conditions to effectively implement and sustain the outcomes of School Centered Community Building, the question, "How can implementation of School Centered Community Building be better supported for sustainability?" is asked. Facilitating implementation of the concept in post-disaster situation will entail institutions to be flexible and adaptable to the changing environment that surrounds the recovery process. This will require sufficient level of governance in which appropriate decisions can be made even under uncertain circumstances. In this study, options for strengthening the educational governance system is first examined to enhance support system affected schools and communities, especially after large-scale disasters. Then it will discuss how recovery efforts that tend to be short-term oriented can be sustained for achieving long-term goals of the concept that lead up to the community building process. Specifically, this study will look into educational governance issue pertaining to the unique characteristics of the BoE system and the roles of different administrative levels to suggest for building a system for better coordination and communication with actors within (vertical and horizontal) and outside (cross-sectoral) of the education sector.

1.5 Research methodology

The research is carried out using four methodologies: (1) literature review, (2) direct interviews, (3) questionnaire surveys and (4) focused group discussions (including workshops). Because the uniqueness of the school centered recovery and community building concept, wide variety of literature reviews on topics ranging from linking schools and communities, community disaster risk reduction, disaster education and educational governance are conducted. Data and documents related to damages and recovery progress have also been continuously collected throughout the study period to obtain the latest information. Direct interviews were conducted to key stakeholders in different periods during

the period from April 2012 to March 2014 to capture the changing situations and perceptions. Questionnaire surveys were also conducted in early 2013 to confirm the information attained in the interviews with quantitative data. A series of workshops and group discussions were organized with selected stakeholders to get information that have helped in developing and

Table 1.2 Research methodology

Literature review	Selected sources	
Direct interviews	Kamaishi	Kamaishi government divisions, schoolteachers and PTA members of Toni ES/JHS, representatives of Toni Regional Council
	MEXT	Department of Facilities Planning and Administration
	Miyagi Prefectural BoE	Facilities Planning and Administration Section
	Saijo	Disaster Management Division
Questionnaire Survey	Toni District	Residents (N: 224) Schoolteachers (N: 20) Students in 6th grade and 1st grade JHS (N:26)
Group discussion	Saijo	Stakeholders in 3 school districts (Shonai, Nyugawa, Tamatsu): Schoolteachers, PTA, Director of Community Center, Syobo dan leaders, DRR experts, Town Association Leaders)
	Participants	Workshop of Building Disaster Resilience in the Education Sector (MEXT, BoEs, ES/JHS, NGOs, UN, universities, etc.)
	Participants	Joint workshop with Kesennuma and Saijo on educational governance (BoEs and schoolteachers)

recommending concrete and tangible options to implement the concept in various situations.

1.6 Structure of the thesis

The structure of this thesis consists of three parts with a total of seven chapters (see Figure 1.3). Part I: Introduction consists of two chapters (Chapter 1 and 2) that essentially describe the background of the study and the conceptual framework that the study bases its arguments on. MEXT's "School Centered Community Building" concept is explained in detail and reviews of existing social issues and practices related to the components of the concept are provided. Part II covers the case study from Toni District in Kamaishi (Chapter 3), which original data relevant to the implementation of the School Centered Community Building concept have been obtained through a series of interview and questionnaire surveys. Additional field survey was conducted in three school districts in Saijo (Chapter 4) to capture the city wide DRR education program, which can be used as a reference for school – community collaboration in effectively building community disaster resilience. Chapter 5 looks into and analyzes the governance issue in the education sector that could be improved for creating conditions to strengthen

disaster response, recovery, preparedness and sustainable community building. Chapter 6 and 7 in Part III discuss on the key findings form the study and provide prospects for next steps.

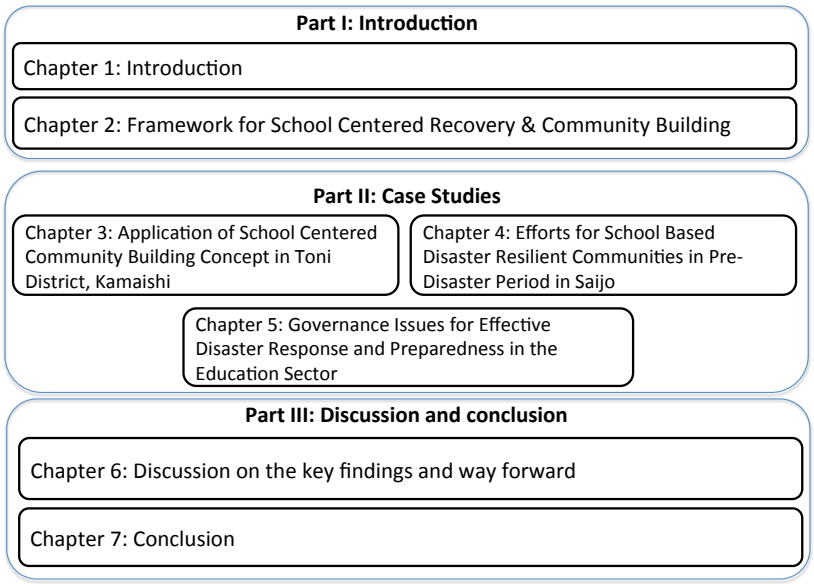

Figure 1.3 Structure of the thesis

Reference

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Chapter 2. Framework for Building School Centered Disaster Resilient Communities

2.1 Overview of disaster risk reduction (DRR) for the education sector

Since the turn of the 21st century, the Asia Region has experienced major natural disasters, including the 2001 Gujarat Earthquake, 2004 Indian Ocean Earthquake and Tsunami, 2005 Kashmir Earthquake, 2008 Cyclone Nargis in Myanmar and Sichuan Earthquake, 2009 Sumatra Earthquake and 2011 East Japan Earthquake and Tsunami (EJET). A report by the United Nations Office for Disaster Risk Reduction (UNISDR) states that the Asia-Pacific is the most disaster-prone region in the world with more than 1.2 billion people exposed to hydrometeorological hazards alone in the past decade. Other regions around the world have also experienced increasing numbers of natural disasters with the effect of climate change further exacerbating the damages. Table 2.1 shows some of the major disasters in the recent years and their effect on the schools. While 50-60% of these disaster victims are presumed to be children, through disaster education, they can become powerful advocators in DRR who can influence their communities in strengthening disaster resilience (Ronan and Johnston 2005; Shaw 2011). In post-disaster situation, because the recovery of schools can send a strong message to the affected residents that their communities are recovering as observed after the 2005 Hurricane Katrina (Chamlee-Wright 2010), recovery planning should be in place for all schools with high risks prior to disasters.

In building resilience for the education sector, several principle measures should be taken. One of them is to develop and regularly conduct disaster risks assessment to ensure that schools are properly disaster-proofed to the best of their capacities and to understand the risks that they face in accordance to their locations. Routes to and from schools should be also assessed, especially for schools that are designated as evacuation centers. Plans for disaster response, particularly for education continuity in post-disaster should be coordinated with communities, local government and nearby schools that could accommodate students from disaster affected schools. Disaster education is commonly conducted at schools, which can be reviewed, revised and conducted together with activities including drills that will foster DRR culture of students and community members. Finally, there should be sufficient budget provision and legal basis to sustain these efforts to endure DRR strengthening in the education sector.

Table 2.1 Recent disasters and effect on schools

Events	Year	Location	Affected schools	Affected students
Great Hanshin Awaji earthquake	1995	Japan	3,883(a)	376(a)
Indian Ocean Tsunami	2004	Indonesia	750 destroyed 2,135 damaged	150,000
Hurricane Katrina	2005	USA	56 destroyed 1,162 damaged	372,000
Kashmir earthquake	2005	Pakistan	10,000 destroyed	300,000 (17,000 killed)
Sichuan earthquake	2008	China	7,000 destroyed	10,000+ killed
Cyclone Nargis	2008	Myanmar	2,740 destroyed (b)	410,000 (b)
Haiti earthquake	2010	Haiti	4,200 destroyed (c)	110,000 (c)
East Japan Earthquake and Tsunami	2011	Japan	6,211 destroyed or damaged (d)	25,721 displaced 639 killed

(a) MEXT (1996), (b) UNICEF (2009), Carlson et al. (2011), (d) MEXT 2012a

2.1.1 Global initiatives for building disaster resilience in the education sector

There are numerous global initiatives for resilience building of the education sector. For example, UNISDR's "Disaster Reduction Begins at School (2006-2008)," which emphasizes the significance of community participation in DRR education and "One Million Safe Schools and Hospitals Campaign (2010-2011)" that calls for practical and technical measures in building safe schools through a participatory manner with support from a range of community stakeholders. Approaching the Third UN World Conference on Disaster Risk Reduction in 2015, UNISDR continues with "Worldwide Initiative for Safe Schools" that aims for in making every new school safe from disasters by 2016 by assigning at least ten national governments to become "School Safety Country Leaders." Under the four key components for achieving school safety, which aim to enhance: (a) Safe Learning Facilities, (b) School Disaster management, (c) Disaster Risk Reduction and Resilience Education and (d) Building Political Advocacy and Facilitating Overall Monitoring and Reporting on School Safety, the Country Leaders are expected to take actions on the below.

1. Commit actions and resources to school safety at the World Conference on Disaster Risk Reduction.

2. Allocate national budget for school safety implementation and in partner countries.
3. Mobilize Ministries of Education and Planning in the development of national strategies for school safety.
4. Assess the status of school safety implementation at country level.
5. Share experiences and good practices in school safety implementation.
6. Foster the development of national strategies for school safety as part of national disaster risk reduction strategies.

Similarly, since 2013, UNESCO has been advocating the "Three Pillars of Comprehensive School Safety" to promote disaster risk reduction throughout the education sector along with education for sustainable development, to assure universal access to quality basic education and to incorporate risk reduction into MDGs for education. The three pillars consist of the following.

1. **Safe Learning Facilities:** Involve education authorities, architects, engineers, builders and school community members in safe site selection, design, construction and maintenance (including safe and continuous access to the facility).
2. **School Disaster Management:** Establish via national and sub-national education authorities and local school communities (including children and parents), working in collaboration with their disaster management counterparts at each jurisdiction, in order to maintain safe learning environments and plan for educational continuity, conforming to international standards.
3. **Risk Reduction and Resilience Education:** Programs designed to develop a culture of safety and resilient communities.

One of the more recent initiatives in building disaster resilience in the education sector is the concept of Education in Emergencies (EiE) in which the Minimum Standards for Education: Preparedness, Response, Recovery has been set forth by the Inter-Agency Network for Education in Emergencies (INEE) in 2010. As in the mission statement of INEE states, the Minimum Standards aim to ensure that all persons the right to quality education and a safe learning environment in emergencies and post-crisis recovery. At the country level, the Education Cluster, co-chaired by UNICEF and Save the Children Alliance, which usually works with the relevant authorities to develop EiE policies that are suitable for each country. For

implementation, the education ministry and departments take the lead in coordinating the stakeholders, including humanitarian agencies and community based organizations. Recognizing that active community participation is one of the essence for effective emergency education response, the Minimum Standard notes specifically on how schools can be the entry point for the provision of essential support beyond the education sector such as protection, nutrition, water and sanitation and health services (INEE 2010). Community participation is raised as one of the foundational standards in which transparent involvement of community members, including children, in analysis, planning, design, implementation, monitoring and evaluation for both disaster response and preparedness are requisite. For DRR capacity building, it also states that the community should also be included as the target group and the program should build on existing education activities. The participatory approach is expected to identify and maximize usage of local resources that may be available, such as traditional DRR knowledge, human resources, help networks and funds.

2.1.2 Hyogo Framework for Action (HFA) and application to education sector: E-HFA

The HFA is composed of 5 priority actions for reducing disaster risks, namely: (1) Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation, (2) Identify, assess and monitor disaster risks and enhance early warning, (3) Use knowledge, innovation and education to build a culture of safety and resilience at all levels, (4) Reduce the underlying risk factors and (5) Strengthen disaster preparedness for effective response at all levels. While commonly, the education sector is referred in priority action 3 for its role in providing disaster education to school children and the public, the extended roles that the schools can contribute to the response, recovery and preparedness processes of their respective communities can identify roles that the education sector can take for all five HFA priority actions. Gwee et al. (2011) has called the application of HFA priority actions to the education sector as E-HFA. They have also identified and adopted 16 tasks that are relevant to the education sector from the original 22 tasks raised in the UNISDR handbook, "Worlds into Action: A Guide for Implementing the Hyogo Framework," which introduces practical methods for implementing the HFA. For the purpose of analyzing the "School Centered Community Building" concept, it is significant that E-HFA mentions on the linkages between schools and the community and that school recovery is also plays a crucial part in influencing community recovery. The following picks up some of the E-HFA concepts that are related to the school – community linkage (Figure 2.1).

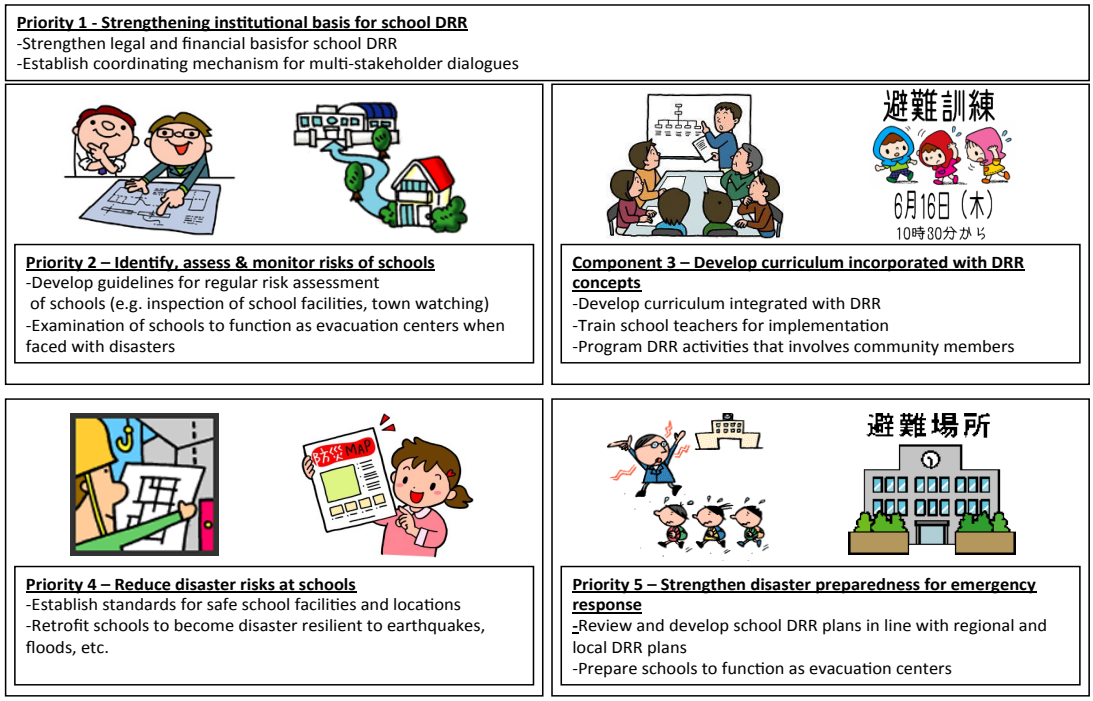

Figure 2.1 Example of adopting Hyogo Framework for Action (HFA) to the education sector

- **Priority 1: Strengthen institutional basis for building disaster resilience of schools**

  Actions may be taken to strengthen legal and financial basis for DRR measures. A system to facilitate coordination and collaboration with multi-stakeholders in the community through dialogues can also be developed. Community participation in school activities and management from non-emergency time can be an effective option.

- **Priority 2: Identify, assess and monitor disaster risks of schools**

  Guidelines can be developed to conduct school risk assessments with community participation on a regular basis. Assessment should not only examine school as an educational facility, but also as an evacuation center. Earthquake Early Warning System equipped at school can also be used to warn the community.

- **Priority 3: Building a culture of safety through DRR/regional education**

  DRR concepts can be incorporated to the school curriculum and extracurricular activities in which teachers can be trained to administer them. Importance of regional education should also be recognized. Some of the DRR education and drills should be conducted with cooperation from the communities, under assumption of real disaster situations.

- **Priority 4: Reduce underlying risks factors in the education sector**

Specific actions to reduce disaster risks at schools may include making standards for disaster proofing schools and selecting safe locations. Ensuring accessibility to and from schools is also critical for effective evacuation of school children, teachers and evacuees from surrounding communities.

- **Priority 5: School DRR planning for effective disaster response**

  Schools need to have an effective disaster response plan to ensure that appropriate actions are promptly taken during disasters. As schools also need to prepare to function as evacuation centers, pre-arrangements with stakeholders within and outside of communities will also be needed, for example, in promptly receiving relief goods.

Through the lens of E-HFA, Shaw et al. 2012 have analyzed 25 school recovery case studies from 12 countries on six different hazards. In the key lessons, 15 out 25 of them had direct connotation to the importance of school – community linkage for having a common risk perception, considering school as a central community facility and an evacuation center during emergencies, sustaining recovery and building disaster resilient communities. The lessons observed are summarized in Table 2.2 (key lessons related to the education sector are marked in yellow). Moreover, Shaw and Takeuchi 2012 have complied six case studies of schools that was affected by EJET that touched upon several social issues, rather typical in rural coastal communities, which could greatly influence the course of school recovery. Specifically, these include low-birth, super-aging trends and drainage of working age group from rural areas. The key findings from both studies show how disaster damaged schools not only affect students and teachers, but also the whole community in which disruption of education may not allow families to concentrate on returning their lives to normalcy. The studies also find significance of school – community linkage in contributing to acceleration and sustainability of the recovery process and that school facilities could take on the role to function as community platform for enhancing DRR and education quality in general. On the long run, prompt and appropriate recovery of the education sector will influence the economy and the well being of the affected communities.

2.2 Concept of "School Centered Community Building"

On October 11, 2011, then MEXT Minister, Masaharu Nakagawa, announced the concept, "School Centered Community Building," addressing on prompt recovery of schools and the opportunities it may bring to facilitate the overall recovery of EJET affected communities. On

Table 2.2 Recovery lessons from 25 case studies (with those related to education sector marked in yellow) (adopted from Shaw et al. 2012)

Disaster	Country	Key message 1	Key message 2
1. EQ	China	Teacher's training is key factor in making decisions in emergencies	Importance of drills and prompt evacuation is emphasized
2. EQ	India	Community participation in recovery process is essential	Children's disaster awareness and sanitary issues should be fostered
3. EQ	Indonesia	Corporate sector's involvement in school reconstruction is important	Community participation in recovery process is important
4. EQ	Pakistan	CSR is important for both school construction and education	Recovery program can initiate EFA (Education for All)
5. EQ	Philippines	Remembering past disasters is important	Evacuation drill is most important and effective
6. EQ	Taiwan	Good understanding of DRR by both school and community is necessary	Disaster education can be enhanced through recovery experiences
7. TS	India	Mega disaster experience prompted school disaster education	Participatory education through school – community linkage is important
8. TS	Indonesia	Private sector involvement is important for both infrastructure development and education continuity	School – community linkage is important
9. TS	Japan	Disaster education and drills are important for building proper evacuation behavior	Participation of community in recovery decision making is crucial
10. TS	Japan	Depending on the area topography, school can become a vital community infrastructure	School recovery is dependent on city recovery process
11. TS	Japan	As school become community shelter, it needs to be properly equipped	Education in Emergency is important for continuity of school education
12. TS	Sri Lanka	Multi-stakeholder participation is important for recovery process	Disaster experience can influence decision to build school in safer location
13. V	Indonesia	Teachers are key agents in recovery process	Joint recovery efforts has helped in building sustainable school – community linkage
14. V	Japan	Passing on disaster experiences to future generations is important	Damaged school buildings can become museum or learning centers
15. V	Philippines	Pre-emptive evacuation can be life saving for predictable hazards	Education in Emergency is important for prolonged disasters
16. F	Malaysia	For less disaster prone countries, school disaster drills can be effective in awareness raising	School – community linkage is important
17. F	Pakistan	Post disaster damage assessment is important	PPP through community based organizations (CBOs) is important
18. F	Thailand	Resilience, adaptation and cooperation are essential for school – community linkages	Environment – disaster linkage is crucial for DRR education
19. TY	Bangladesh	School – community linkage is important for sustainable recovery	Emergency education is important for educational continuity
20. TY	China	School location is important for educational continuity	School become hub for coordinating relief and recovery
21. TY	Philippines	Provision of calamity fund is effective for prompt recovery of education sector	Emergency education is important for educational continuity
22. TY	Taiwan	Location of school is important for it to function as central infrastructure	Education leading to awareness and action is important
23. TY	Vietnam	Pre-disaster planning for recovery is effective for prompt recovery of education sector	Location of school is important
24. L	Japan	Quick recovery of educational facilities is important	Local community information should be known to students and teachers
25. L	Philippines	Students with high DRR awareness can take appropriate preventive actions	Hazard risk assessment is important part of school disaster education

EQ=Earthquake, TS=Tsunami, V=Volcano eruption, F=Floods, TY=Typhoon, L=Landslide

the same day, Vice Minister Takashi Kii sent a notification entitled, "For the Rehabilitation and Recovery of Public School Facilities Affected by the East Japan Earthquake and Tsunami," to 15 Prefectural and 1 Municipal Board of Education (BoE) in suggesting specific measures to

rehabilitate and recover affected public schools. The announcements referred to schools as an important hub of the regional communities, especially as evacuation centers, and that quick recovery of schools would be essential for revitalizing community ties that have been weakened because of EJET. MEXT believes that school recovery will become one of the key elements that will encourage evacuees to return or stay in their communities in order for them to contribute to the recovery process. The concept originates from the many discussions among such groups as, MEXT Commission on Improving School Facilities Based on Damages Caused by EJET and Working Group on Concept Building for Recovery From EJET, organized by Cabinet Secretariat among others.

2.2.1 Overview of the concept's four pillars

MEXT's concept of "School Centered Community Building" is based on four components that is targeted to accomplish two main objectives for school recovery. One of the objectives is to rehabilitate or reconstruct school buildings that were affected by EJET to quickly resume normal educational activities. The other objective is to recover schools in realizing a longer plan to make schools a community hub that would contribute to recovery and community building. The concept of "School Centered Community Building," which this research is mainly based on is comprised of four main pillars (see also Figure 2.2):

1. Strengthening safety of schools from disasters and relocating them to safe areas as necessary,
2. Retrofitting schools to improve their functions as evacuation centers and disaster management hubs,
3. Making schools eco-friendly and sustainable facilities and
4. Making schools a multi-functional facility that the whole community would benefit from.

Ensuring the safety of school from future disasters is of all things required with urgency. This is not only about improving structural features of the school facility, but also the location of the school itself. For this, schools located in plain land areas may need to incorporate high-rise design, those in mountainous region could be relocated to higher grounds. Disaster proofing, especially to earthquakes, is another factor in making schools a place to seek safety during emergencies. At the time of EJET, MEXT reported that 80% of public elementary and junior high schools have been retrofitted to be earthquake-resistant. Since

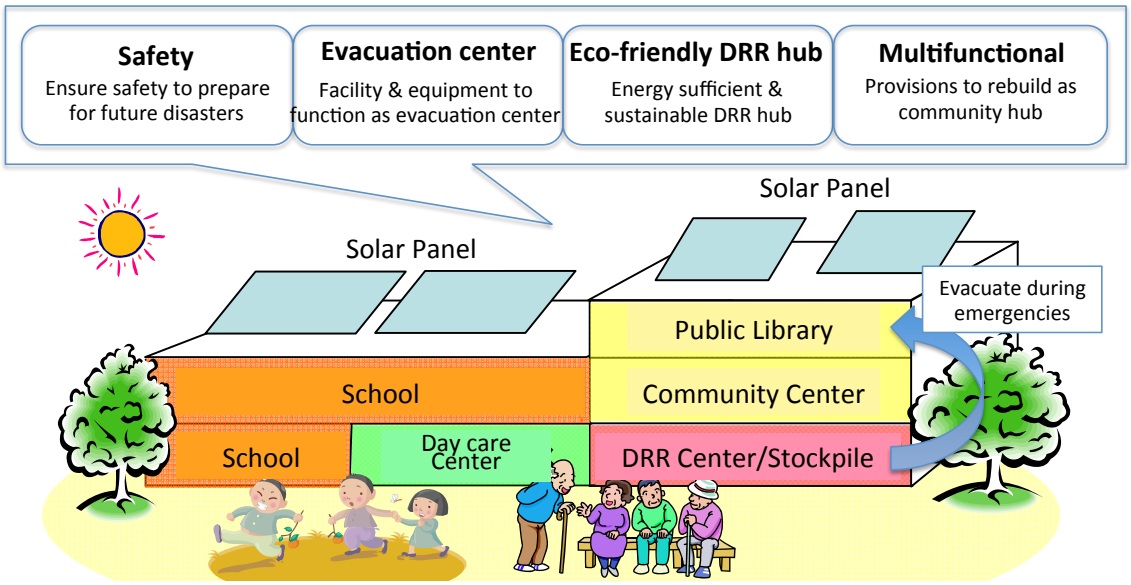

Figure 2.2 Image of School Centered Community Building
(adopted from MEXT notification on October 11, 2011)

EJET, MEXT has added an annual budget to immediately retrofit 1,200 schools (MEXT 2011). Retrofitting the schools is not only important in ensuring safety of students and teachers for education, but it is also vital for schools to function as evacuation centers. As the case, schools need basic infrastructures such as storage for emergency provisions, adequate number of toilets, communication system and equipment to provide electricity and water during blackouts and suspension of water supply. For the sustainable use of the facility and for environmental education, ecofriendly features should also be improved, such as by installing solar panels.

The last component calls for rebuilding schools by combining other public facilities to make them multi-functional facilities. This research observes the significance the school centered concept in giving schools larger role in the communities that will strengthen community ties that are much needed for sustainable disaster recovery and community building. Specifically, the new schools could be joined with such facilities as child daycare center, public library, community center and DRR center, which are facilities that the whole community can utilize and would benefit from. Even though these facilities may not all become physically together, schools can become a platform to administer various public services. Through this process, different community members, including those with no school children in the household, will have more opportunities to visit their schools that may increase interactions with students and teachers. As schools are rather a large facility, especially for

small communities, there is also economical benefit in being able to rebuild several public facilities in one building.

Although the "School Centered Community Building" concept was suggested in the aftermath of EJET specifically for the recovering affected schools, the issues raised in each of the components have existed before the disaster and can be seen as a continuing process. However, if the recovery process can be considered as an opportunity to boost measures to tackle chronic problems such as school management for low birth – aging communities, the ongoing course of action can help school diversify its role in their communities to revitalize people as well as the society. In this sense, the concept is well applicable in other regions and countries seeking to build disaster resilient communities or simply to realize sustainable community development. While schools are commonly known to be a central public facility, not only in Japan, but also in many parts of the world, other important facilities such as church, social welfare facilities and community centers may utilize this concept, depending on local situations.

2.2.2 Implementation of the concept

Actual implementation of the concept has been limited so far, because of budgetary reasons, screening and process of projects and coordination among the line agencies, local governments, schools and communities. Bridging the different line agencies and local government departments to implement the fourth component of the concept have been proven a challenge, but required as different public services come under jurisdictions of separate agencies and departments. Building consensus within various stakeholders has also been a time consuming process because people have been affected differently and future visions varies depending on the age group. In some cases, finding enough plot of land to relocate schools to safer location has been the biggest challenge. Despite of this, MEXT has taken several steps in providing special provisions to fast track the recovery of EJET affected schools by simplifying administrative procedures, such as adopting a system that allows local governments to commence recovery projects before making the conventional application and field survey processes required by MEXT. Table 2.3 is a list of memorandums and notices that MEXT has released in Japanese Fiscal Year (JFY) 2011 regarding school rehabilitation and recovery.

The third revised budget of JFY2011, allocated to newly construct, rehabilitate or relocate public schools totaled around JPY47.6 billion (about USD476 million). In JFY2012 the budget plan, allocated mostly for relocation of schools, amounted up to JPY14.7 billion and for

Table 2.3 List of notification regarding rehabilitation of public school facilities affected by EJET

(Rehabilitation process)
1. "Regarding early implementation of rehabilitation of public school facilities"
Memorandum on August 10, 2011

(Advance start of construction)
2. "Implementation of rehabilitation work for early resumption of school education"
Notice 23-2 on April 4, 2011
3. "Regarding early rehabilitation of school facilities damaged by East Japan Earthquake and Tsunami in 2011, Memorandum on 15 and 17 March, 2011.

(Simplification of application procedure)
4. "Notice regarding implementation design of building rehabilitation/repair, construction management of new construction – repair – rehabilitation and rehabilitation of land of East Japan Earthquake and Tsunami", Memorandum on August 1, 2011
5. "Regarding processing of national budget support to rehabilitate school facilities from disasters of East Japan Earthquake and Tsunami", Notice 23-15 Department of Facilities Planning and Administration on June 7, 2011.
6. and 7. "Regarding procedures to survey budget to rehabilitate public school facilities under jurisdiction of MEXT from the East Japan Earthquake and Tsunami" Notice 23-13 Department of Facilities Planning and administration and 15 on June 7, 2011
8. "Regarding damage situation report, plan of national budget support operations and handling of photographs of disaster situation from the field" Notice 23-8 of Department of Facilities Planning and Administration on May 20, 2011.

(Tsunami Disaster)
9. "Handing of rehabilitation of public school facilities affected by tsunami"
Memorandum on September 2, 2011.
10. "Partial revision to guideline in disposing hazardous waste utilizing national budget support"
Memorandum on August 19, 2011.

(Temporary school buildings)
11. "Procedure to survey budget to rehabilitate public school facilities under jurisdiction of MEXT from East Japan Earthquake and Tsunami" Notice 23-30 of Department of Facilities Planning and Administration on September 2, 2011.

(Management of soil)
12. "Addendum to the guideline for budget support to rehabilitate public school buildings and handling of guideline to survey budget to rehabilitate public school facilities under jurisdiction of MEXT"
Noteice 23-21 and 23 of Department of Facilities Planning and Administration on June 20, 2011.
13. "Strategy to reduce air dose in school grounds of schools based on field survey", Memorandum on May 11, 2011.

JFY2013, totaled to JPY21.2 billion (MEXT 2011, 2012b, 2013). The purpose of this disaster restoration budget is for the national government to bare 2/3 of the total construction cost to rehabilitate affected schools back to their original state and also for constructing temporary school buildings, as stipulated in the Act 3 of Law Concerning National Liability for Expenditure on Rehabilitation of Public School Facilities. Although in principle, this budget is to be used to rehabilitate the schools back to their original state, the local government is able to use the budget to relocate schools to a safer area in case it is not possible to be reconstructed in the original location. Additional budget may be available to strengthen DRR function of the schools (MEXT 2011). MEXT has also allocated JPY162.7 billion in the same

budget to retrofit school facilities that are still not earthquake proofed and to strengthen their DRR functions. In addition, school recovery grant aid, administered by prefectural government, is also accessible to city governments that have made applications to initiate school recovery projects.

As noted, making school the community hub by combining several public facilities will address issues beyond the education sector. Because of this, MEXT has joined hands with Ministry of Land, Infrastructure, Transport and Tourism (MLIT) and Ministry of Agriculture, Forestry and Fisheries (MAFF) for implementing the concept calling it, "School Recovery and Community Building" (NIER 2014). This collaboration utilizes the strength and capacities of the three line ministries to recover disaster affected communities to become more integrated through schools and at the same time, revitalize communities for sustainable development taking in account the social issues such as population drainage from rural communities and aging population. In detail, while MEXT will be responsible for the recovery or reconstruction of the damaged school facilities and resumption of educational activities, MLIT will look over the DRR aspects, including construction of access roads, parks used for assembly areas, rezoning plans and elevating low-lying residential areas, which will be inhabited by some of the families of the school children. As many of the coastal fishing communities were affected by EJET, MAFF will take part in rehabilitating fishing ports and farmlands, which would be important for regional education and connecting with the local industries for the schools. Although the collaborative tasks of the three line ministries initially would concentrates in rehabilitating damaged structures, it also simultaneously addresses the non-structural components that will be required for sustainable community building. Figure 2.3 shows the coordinating structure of the agencies and departments at the national and local levels for implementing the concept. Since the establishment of the Reconstruction Agency in February 2012, the new agency with its regional bureaus has taken the coordinating role to facilitate cooperation among the agencies.

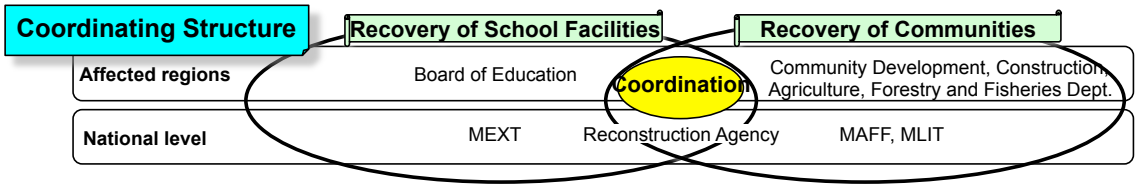

Figure 2.3 Coordinating structure for implementation (adopted from MEXT 2011)

2.3 Rationale of School Centered Recovery and Community Building in Japan

The rational of School Centered Recovery and Community Building in Japan is explained by first looking at educational governance, specifically on the history of decentralizing the educational administrative system, which has provided city level administration with the autonomy to incorporate the local context to school education and its role in the society. Second refers to the roles that Japanese schools commonly take in their respective communities that include their functions as community hubs for education and DRR. Some of the social issues, noted in the later section (e.g. "2.5 Social factors encompassing schools and communities in Japan"), also should also be mentioned here, as they have great influence in shaping the educational governance and schools' role in the communities.

2.3.1 Educational Governance in Japan

-History of administrative system of the education sector in Japan

The modern Japanese education system took its form after the Second World War in the education reform under the democratization and decentralization policies. With the US educational system as the basis, the Fundamental Law of Education and the Board of Education Law were adopted in 1947 and 1948 respectively, giving the local levels almost complete autonomy and political neutrality. However, the Board of Education Law was soon revised in 1956, which recentralized the system with the national government regaining some of the control over educational administration. Since then, there has been a series of tug-of-wars of higher levels gaining and releasing control and influence over the local levels through the BoE system (Muta 2000). The current system maintains the national – prefectural – municipal level administrative set up, but with the three levels seen as equals and not in a commanding - receiving order relationship (Muta 2000; Komatsu 2013).

-National level (MEXT)

The national agency for the education sector in Japan is MEXT. Primary responsibilities of MEXT includes, (1) administration of international initiatives, (2) development and implementation of national policies and (3) supporting and advising local BoEs. Specifically, under the leadership of the Education Minister, the Elementary and Secondary Education Bureau looks over the national issues, such as development of school curriculum and approval of textbooks, while the Department of Facilities Planning and Administration is responsible for the safety of school facilities, such as earthquake proofing of school buildings and the Sports

and Youth Bureau promotes health and safety of students, including planning for school disaster education. One of the important functions of MEXT is ensuring that there are equal opportunities for schools and students of all regions to receive the same level of education and other services (Koyama 2008). Also, as MEXT bears a major portion of the costs for compulsory education, including half of the costs for constructing public school facilities and 1/3 of the salary of schoolteachers, its influence over the whole education system remains significant (Komatsu 2013).

-Prefectural level (Prefectural BoE)

At the prefectural level, the BoE is established in which five members are selected by the prefectural governor with the approval of the prefectural assembly. The BoE, in principle, stands independent from other city departments and does not belong under the authority of higher administrative levels for the purpose of political neutrality, continuity and stability of the system (Koyama 2008). The superintendent is selected among the five members by the Board and manages the BoE secretariat (which itself is often referred to as BoE), which takes the roles that include, (1) budgetary support (e.g. bearing 2/3 of the salary of public schoolteachers), (2) human resource management (e.g. appointment of school principles and reshuffling of teachers) and (3) direct management of public high schools. In addition, Prefectural BoEs take roles in bridging MEXT and Municipal BoEs, such as disseminating national policies and screening budget plans for various project implementations.

-City level (City BoE) and schools

The city level is also required to establish a municipal level BoE under the same principles and functions with that of the prefecture. The responsibility of the City BoE includes, (1) establishment of school districts and public elementary/junior high schools, (2) providing guidance to the school teachers and (3) support in operation and administration of schools. The day-to-day school operation is entrusted to the school principle, which by law is authorized to make final decisions for the school on issues including admissions, class organization and selection of textbooks. It is the shared responsibility of BoE and schools to make certain that the local context and needs are reflected in the educational programs, ideally through a participatory process with the local communities. Because the Municipal BoE and the schools are educational professionals that work on site, they are the main actors in delivering educational service, while MEXT and Prefectural BoE are experts in educational

administration, shaping the educational policies and providing support to the local levels for issues that are beyond local capacities (Aoki 2013).

2.3.2 Role of schools in their communities

-School as a central community facility

In many countries, schools are familiar place for different generations of community residents because most of them have attended the same schools. Schools are part of the legacy of the communities they belong by helping teachers, students and parents carry on the culture and customs of the region (Sakagawa 2004). Therefore, it can be said that schools are spiritual centers of the community that they belong to (Takeuchi et al. 2011). Schools also function in providing community events, lifelong education programs and other public services that are vital to community life and identify. In this context, as suggested in OECD's study, "Under One Roof: The Integration of Schools and Community Services in OECD Countries," integration of basic education, adult education and community services that are normally associated with separate facilities can be considered. The study also notes on the fact that the schools nowadays are demanded more to provide "real-life" education that will prepare students to for the real world when they become adults. It is becoming widely recognized that confining education behind school walls is not beneficial for this transition and schools need to connect more with their communities (Ikeda 2001). Adults are also in demand to better their lives through professionalizing themselves through continuous education in which schools can be the ideal venue because of their existing facilities and administrative capacity. In the growing trend of educational administration getting decentralized, local governments are faced with more pressure to use their resources efficiency and to avoid unnecessary duplication. Although previously, the purpose of integrating schools with other public facilities together was more for economical reasons, considering that the schools in many countries and cultures traditionally possess characteristics of functioning as a central community facility that provides various public services, this is an applicable policy for school recovery in the post-disaster situations.

In Japan, it is common that communities perceive school as a central public facility, firstly because many schools are physically located at the center of communities. This is because with the adoption of the School Ordinance (*Shogakko Rei*) in Meiji Era, local resident's associations were tasked to build schools in their neighborhoods. This has not only made schools geographically central and accessible by all residents in the district, but also made

school districts the basis for providing public service to the community. Even where actual schools do not exist anymore, many communities still function by school district units. This may be because the establishment of school districts had been the starting point for many regional residents, particularly in rural areas, to come together to build a community. Indeed, schools have long been providing various public services, such as social welfare service, health consultations and venue for voting (Saito 2011; Sakagawa 2004). Schools also host numerous school events for parents who visit school for open school day as well as other residents that would participate and help organize school's volunteer events and annual events such as sports and culture festivals.

-School as a community DRR hub

As mentioned in the introduction, schools are one of the critical public facilities that are used as evacuation centers during disasters and DRR hubs during non-emergency time. In Japan, two fundamental laws, Disaster Countermeasures Basic Act and the Disaster Relief Act stipulate local governments to designate and prepare evacuation centers for their communities in which many are public schools. For its central geographical location and functionality, schools are ideal to become community evacuation centers provided that they are earthquake proofed and own proper facilities, such as toilets and water supply facility, needed to accommodate evacuees and equipment including emergency radio system for communication. It is known that around 89.3% or 30,513 public schools are designated as evacuation centers (NIER 2011). However, this tasks schoolteachers to be responsible for taking initial response actions in setting up their schools as evacuation centers and attending to the evacuees from the communities while looking after the safety of the students (Fujioka 2008). Because BoE and Disaster Management Division that are officially mandated to operate the evacuation centers may not be available to provide their service, it is critical that the schools work closely with the communities to assist in the initial operation.

As for school's function as an effective hub for DRR, a report by the Central Council for Education in March 2012 that note on the experiences from the Great Hanshin Awaji Earthquake or Kobe Earthquake reveal how the school – community linkage that was nurtured prior to the disaster was the key element for operations of evacuation centers to function smoothly. The report continues to claim that disaster preparedness gained through DRR education that promotes community ties, will empower communities with not only knowledge, but also close bonds that could stand up to hardship during disasters and take initiatives in the

rehabilitation process (UNCRD 2004). In practice, this can be observed in the idea of voluntary/community based Disaster Welfare Community or BOKOMI that was established and mainstreamed in the city of Kobe in 1997 in which school – community linkages that existed before the earthquake disaster was utilized (Matsuoka 2011). After the Kobe Earthquake, BOKOMIs were established in every elementary school districts by integrating the DRR component to the existing welfare community groups. Utilizing existing structure will not only make the forming process easier, but also sustainable because such community groups are already infiltrated in their communities. BOKOMI has shown that the schools can play a key role in combining the functions in supporting communities in DRR and concurrently backing welfare activities that are needed by the aging communities during non-emergency times (Kaneyoshi 2004). Numerous literatures have touched upon the significance of school as a DRR hub that connects school with the community through various DRR activities (Takeuchi et al. 2011; Ronan and Johnston 2005; Petal and Izadkhah 2008). With the variety of services and events that school provides, including its significant role in DRR, it can be said that school is not only a place that provides education, but also a community hub that can build connects people and organizations, especially when they have a common objective in developing their community.

-Schools as venues for community DRR education

DRR education may begin from schools, but should not be confined in schools. Students must learn to protect themselves not only in schools, but also at their homes and also on their way to schools and for this, partnerships with communities to receive their support becomes crucial. At the same time, communities can benefit from using schools as venues for DRR education and conducting related activities at once, instead of organizing separate programs. Because most disasters, however the impact might be, are of low probability, non-daily events, even people in disaster prone regions do not have all the knowledge to completely mitigate their risks. As noted above, because school children need to protect themselves from disasters anywhere and anytime – at school, at their homes and en route to schools –schools cannot shoulder all the responsibilities in DRR education. Moreover, memories of disasters from experiences and lessons from past disasters often remain and possessed more by the local communities (Takeuchi et al. 2011) rather than with the schools due to regular rotation of teachers and students. Hence, it is to some degree logical for students to learn about local DRR wisdom directly from their communities for understanding local perceptions of disaster risks.

In turn, school DRR education programs have considerably contributed in enhancing disaster preparedness and resilience of communities (Dufty 2009). In Japan, MEXT has been supporting this standpoint that school DRR education can help DRR capacity building of the whole community. Katada and Kanai (2008) shares their experience in promoting DRR education, shifting the original target audience who were adults to students to become advocators of DRR. The idea takes advantage of parents' nature of them listening more to their child instead of others outside of the family. Because adults in the community usually are concerned of what their children are being taught in schools, students have become effective promoters of DRR awareness raising through interactions with their family and community. Involvement of students in this process in cooperation with other actors in the community brings both short and long term impacts to recovery and disaster preparedness (Ronan and Johnston 2005). Because traditionally, DRR knowledge was passed on to other family members through these kinds of daily activity at homes (Takeuchi et al. 2011), the approach is somewhat of a revisit to how DRR education was conducted in the past. In addition, when school DRR education are integrated with DRR programs of the community, they become more efficient than having two separate programs and more importantly, create a multiplying effect if synergies in conducting DRR activities jointly by schools and communities can be achieved. The organizational capacity and educational expertise of schools is another reason that schools take a central role in promoting the DRR culture to students, teachers, parents and communities.

-Roles of school for social/regional education

At the end of World War II, the Japanese educational system was decentralized the education responsibilities from national to local levels. When educational programs are operated at the local levels, schools can better respond to the demands of the local communities in providing education that is unique to the locality. In this regard, the decentralization trend in the sector has made education based on regional characteristics more important than ever. Such regional education is commonly conducted at schools to help students better understand the historical, cultural and socio-economical qualities of their hometown so that they will be able to build pride for its uniqueness and at the same time, embrace its problems. As a segment of social education, it helps students engage more with their communities and to prepare to live in their societies as responsible citizens (Israel et al. 2001). In providing such education, there are numerous regional resources that can be utilized, including human resource, public facilities,

local organizations, natural environment and community networks. For schools, local resources can be beneficial to better understand about their region because schoolteachers may not necessarily be from the locality, thus not experts of the region. Communities are also take an instrumental part in assisting schools to provide real life education to students in order for them to imagine their future jobs and life in the larger society (Corter and Pelletier 2005). Senior community members may be able to give students with advice on everyday life, setting social norms, crime prevention and opportunities to interact with people of different age groups (Miller 1995).

In Japan, MEXT has a history of developing participatory school – home – community education policies from the recommendation of Central Education Committee's first report, "Japanese Education in The Perspective of The 21st Century (1996)." In 2002, schools adopted the Integrated Study Program (Sougotekina Gakushu no Jikan) in which school – community linkage, experience based study and problem solving study have been established as its principal concepts. The contents of integrated study may include issues ranging from health, social welfare, local industry, culture, history and environment with aim to let students experience and better understand their communities and see how adults are living and taking roles in the community. Through this program, many of the DRR and regional/social education, specific to the region have been conducted throughout Japan (Arizono 2006; Sasai 2011). These different forms of out-of-classroom education, developed after the adoption of *Yutori* education (translated as "relaxed education") in the late 1980s, provide multiple entry points for community to participate in educational activities of the school.

2.4 Examples of Linking Schools and Communities

There are existing examples of linking schools and communities in Japan that can be used as references for School Centered Recovery and Community Building. These examples can be utilized to reinforce the school's role as a community hub by maintaining the its main function as a education facility, but giving it additional functions and opening school facilities to various community members. Also for school management, the example below shows a specific way for school – community relationship to transform from that of coordinating to collaborating partnership. It is important to remember that School Centered Recovery and Community Building should not only be aimed to reviving schools and communities to their original state, but also to see it as a continuous effort in tackling chronic social issues to build a better society beyond disaster recovery.

2.4.1 Transformation of school as community facility

In Japan, since the 1990s, around 400–500 public elementary, junior high and high schools have been either temporary or permanently closed down every year due to lack of student number due to low birth rate and merge of cities and towns from administrative reforms. In 2009, there were some 2,254 classrooms are left unused because there are not enough students to fill the classrooms up (MEXT 2009). MEXT has been making suggestions to convert or combine these schools with community centers, cultural and sports facilities and even private companies so that they will have integrated functions. With this, MEXT started implementing an initiative called, "Project to Connect Abandoned School Buildings for the Future," which MEXT works as a matchmaker in connecting local government, which commonly manages public schools, with interested entities such as private companies, NPOs and social welfare offices. Through this project, MEXT and the local government have been able to transform former school buildings into community centers, healthcare centers, child daycare centers, nursery homes, special needs schools and office for private companies while others have been converted into facilities that support school activities, lifelong education programs and venue for community events. As many of the closed down schools were originally designated evacuation centers, some of these new facilities have continued to function as evacuation centers or have been retrofitted to become warehouses for stock pile and emergency equipment. Some of these transformations were proven successful in benefiting the well being of the communities because community consultations were thoroughly conducted to meet their needs. Figure 2.4 and 2.5 are some examples from Sakata City, Yamagata Prefecture and Itsuka City, Iwate Prefecture in which city governments have effectively revived facilities of closed down schools to be used by both students and community members.

Although the examples here are of schools that had been closed down due to low number of students, these success stories can be referred as models for recovering disaster affected schools that need to be rebuilt by configuring them to become a multi-functional facility that will be utilized by the whole community. Planning new and creative utilization of schools facilities by such measures should be considered and adopted before constructing new schools or permanently closing down existing school facilities. Transforming schools as multi-functional facilities may become the starting point to build a system to strengthen the school – community linkage that will allow the whole community to jointly take part in child rearing and community building that are much needed in post-disaster situations. However,

considering only the structural aspects is insufficient in facilitating school – community interactions and community's involvement in supporting schools. The following discusses some of the issues faced when communities attempt to get involved in supporting schools and some examples in which communities can effectively take roles in school education and management.

Former school gymnasium is used for DRR activities and for integrated study programs

Preschool – Senior Citizen's Club Joint Sports Festival

Figure 2.4 Ueda Community Disaster Management Center
(former Ueda Elementary School, Sakata City, Yamagata Prefecture)
Source: MEXT

Former Itsukashi Elementary School Building

Social welfare facility opened in 2006 and operated by former School Management

Figure 2.5 "Kibou no Oka" Social Welfare Facility
(former Itsukashi Elementary School, Itsuka City, Iwate Prefecture)
Source: Organization for Urban-Rural Interchange Revitalization

2.4.2 Community participation in education and school management

The importance of enhancing school – community linkage has been marked in principle documents, including the Fundamental Law of Education (*Kyoiku Kihonho*). Act 13 of the

revised law states, “Schools, homes and community are responsible to put effort in coordinating and cooperating with each other.” One principal document that supports this idea is a policy paper released in 1996 by the Central Council for Education of Ministry of Education (currently MEXT) entitled, “Education of Japan Envisioning the 21st Century” that introduces the concept of “Open Schools” in which adults in the community take active part in educational activities to help schools; particularly in teaching students “Zest for Living” to foster the humanity aspect of children to become responsible citizens of the society (Sasaki 2009). This idea does not merely focus or set goals in educational achievements, but envisions improvement of community ties through participation of the community in school management and education.

Despite of the policies, Ikeda (2001) observes that in the recent years, the school – community relationship has still been significantly weakened. Some of the issues raised are as below:

1 There are fewer places and opportunities for students and community members to interact.
2 Information on issues of the community is not shared among community members.
3 Interactions among different age groups are being lost.
4 Only teachers who are assigned have interactions with the community.
5 Due to constant reshuffling of teachers, continuity of educational activities is difficult.

In this situation, Ikeda (2001) suggests to build a system in which school – community linkage can be developed from mere coordination to substantive collaborations by building an “Education Community" that will allow community members to get involved in school education and management. From this concept arose one concrete step for the community to legally participate in school management, which is the formulation of Community Schools that was stipulated when the Law on Regional Educational Administration was revised in 2004. Community Schools are schools in which the voice of parents and community is reflected in school management through their participation in the School Management Committee (SMC). The major difference between conventional schools and Community Schools is that while the PTA of the former is able to provide advise to the school principle regarding school affairs, the SMC of Community Schools are accredited to take part in school management by law (Kainose 2012). Specifically, SMC is able to take part in the decision making of school management,

including HR issues and education programs as well as voice their opinions directly to BoE. Figure 2.6 shows a model organizational structure of School Management Committee that manages a Community School. A report of the Central Council for Education (2004) expresses expectations of Community Schools taking an effective role in improving communication among schools, households and community and encouraging various community members to engage and contribute in school affairs. An example from a school in Mitaka in Tokyo shows an additional step in the process of formulating Community Schools by establishing a joint elementary and junior high schools aimed to strengthen linkages among students of different age groups that extend to their parents, teachers and community. One of the advantages of joint school is that they can maintain consistency and avoid gaps in education when students advance from elementary to junior high school. Joint school also allows the school and the community to look over the students throughout their adolescence in a streamlined manner. While success stories of Community Schools come mostly from schools with strong existing community ties, more schools are considering in adopting this concept because they feel the need to reinforce their ties with the community (Kainose 2012).

Community Schools has been catching attention of educational administrators in Japan for two reasons. One of the reasons is that the some communities are less involved in child rearing and leave the responsibilities to the schools and their teachers. This indifference may lead to incidents such as bullying in classrooms, in which parents would not aware of their children's problems until serious incidents occur. On the other extreme, there are the so-called, "monster parents," which overly demand to be involved in school affairs and make unreasonable demands to the schools. These and similar problems associated with schools and students are often beyond what schools can cope with and provides negative impacts to the school – community linkage. Currently, there are 1,183 schools designated as Community School in Japan, which the majority consists of elementary and junior high schools (Kainose 2012). MEXT recently has also proposed a new education reform policy on "Building Schools Together With Regional Community," with the purpose to strategically increase the number and regionally expand the formulation of Community Schools with the goal of 3,000 elementary and junior high schools by 2016 (Japanese Council of Community Schools 2012). As the case, there are still relatively few Community Schools in Japan, schools and communities are gradually understanding the benefits and opportunities of placing a system that Community Schools can bring for managing schools.

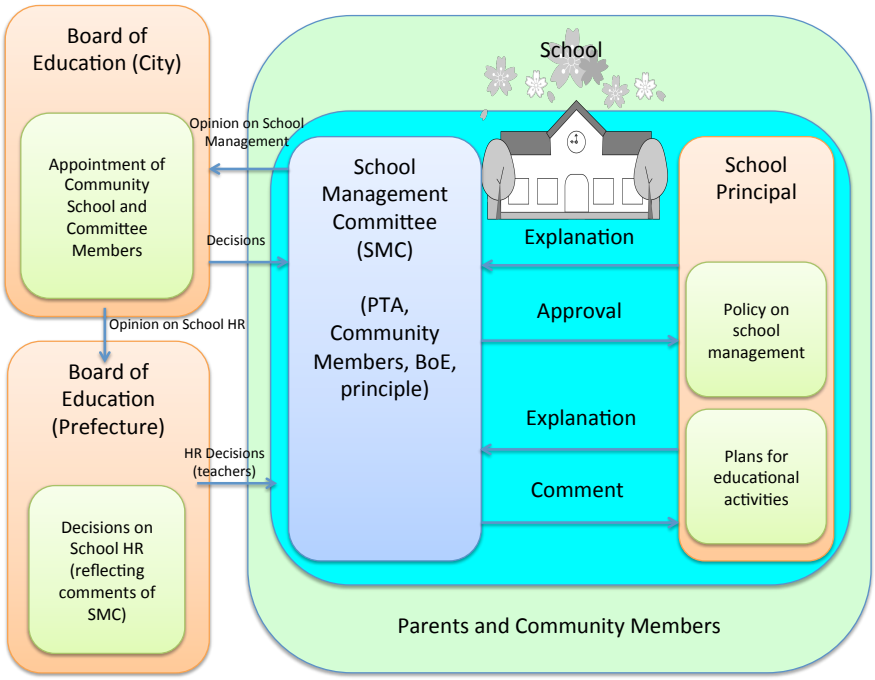

Figure 2.6 Organizational structure of School Management Committee of Community Schools

2.5 Social factors encompassing schools and communities in Japan

The importance of looking at the social factors when considering school recovery and community building after disasters lies in the fact that school recovery will be influenced by projected demographic changes, especially with the chronic problem in Japan of low-birth, super aging societies. Continuous population decline, particularly with the juvenile age group that composes the student population, has been a serious concern that has been threatening community survival. Rural communities with increasing percentage of elder group will pressure local governments with more public spending for social welfare and extra efforts to protect them during disasters. For example, around 65% of the fatalities of the EJET were reported to be people over 60 years old (Cabinet Office 2012). On the long run, changes in demographic profile with fewer children due to low birthrate and increase of age group over 65 years of age will also gradually seriously impact to the DRR capacities of the society. Another factor is the migration of working age group (age over 15 and under 65) moving out from the non-urban areas to urban cities with their children to seek job and educational opportunities, leaving the elderly people in small cities and communities. Regarding the population drainage from non-urban to urban areas, the National Statistic Report in 2010

shows population in 9 prefectures (mostly urban areas, including Tokyo and Osaka) has had population increase while 38 prefectures and cities lost their population. Although the population decline problem had existed before EJET, the after effect of the disaster is expected to further accelerate this situation. The combination of the three factors, low birth, aging population and migration, occurring concurrently will further accelerate polarization of age groups in different regions and pose a major threat to the regional social and economic vitality.

2.5.1 Low birth, aging population in Japan and Tohoku Region

To briefly provide an overview of the low birth and aging population issue in the EJET affected Tohoku Region, statistics show that since the population peaked in the region at 9.83 million in 1995, it has steadily declined to 9.34 million in 2010. The National Institute of Population and Social Security Research projects that the population will further decrease to 9.06 million in 2015, 8.29 million in 2025 and 7.43 million in 2035. As for birthrate in the post-war period, the average in the Tohoku Region peaked at 4.38 (295,940 births) in the 1950s and since then continuously declining to 2.07 in the 1970s, 1.66 in the 1990s and 1.41 (70,047 newborns) in 2010, meaning that the number of newborns in the Tohoku Region is less than 1/4 compared with the peak in the 1950s. As for the percentage of age groups, which is divided in three groups, juvenile age group (under 15), working age group (from 15 to 65) and elderly age group (age 65 an above). The ratio of these age groups and the characteristic of the demographic changes of the Tohoku Region in the recent years can been seen in Figure 2.7 below. Students of elementary and junior high schools are represented in the juvenile age group.

Low birth and aging population is noted as an alarming issue that will become a major obstacle for community prosperity. For example, from a DRR standpoint, Ishiwatari (2012) mentions on an example that the declining population of younger age group has been reducing the number and capacity of voluntary community based disaster management groups, such as Syobo-dan (firefighting), Suibo-dan (flood fighting) and Jisyubo (earthquake disaster management), weakening disaster resilience of communities. Likewise, population drainage, especially the juvenile and working age groups, will poses a serious threat for the education sector. In small cities in non-urban regions, schools may be forced to closed down or be merged with other schools, because there will not be enough students for schools to operate. For the same reason, there has been a series of discussions in post-disaster communities on whether affected schools should be rehabilitated or rebuilt to its original state, scaled down or

be abolished all together. This has been rather a sensitive issue because the existence of school will determine if households with children will stay or return to their communities or not. This is to show that school recovery is one of the key factors closely linked with survival of the communities.

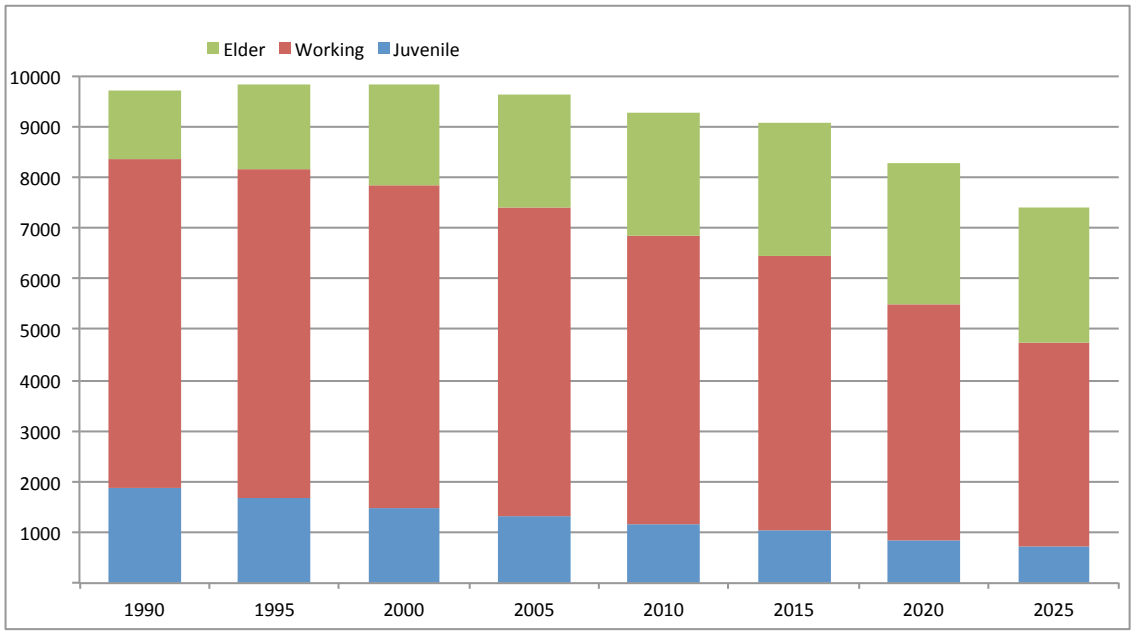

Figure 2.7 Transition of age groups in the Tohoku Region (1990-2025)

Created from National Statistics (2010) and National Institute of Population and Social Security Research (2010)

2.5.2 Displacement and migration of Tohoku communities

As noted, displacement and permanent migration of disaster affected population are significant factors that can greatly change the demographic profile of communities. Figure 2.8 shows the movements in the population in the three most affected prefectures of Iwate, Miyagi and Fukushima from EJET. The figure shows a considerable drop immediately after EJET and again a year after. This may be showing a sign in which affected people awaited for a substantial progress in the recovery process for about a year, but became less hopeful on the development. As the figure does not include those who have moved within their prefecture, possibly from the coastal areas to the inland areas, it is likely that there are actually more people who have moved to live either temporary or permanently away from their original cities of residence. In detail, Miyagi Prefecture have shown major population decline in the coastal areas. For example, the coastal city of Ishimaki has shown rapid decline in its population (-6.55% or -10,508 people) during March 2011 to February 2012, whereas inland

cities of Sendai (+0.68% or +7,076 people) and newly developed cities such as Rifu, has experienced striking increase in their population (Tohoku Bureau of Economy, Trade and Industry 2012). Although it is assumed that these displaced people will eventually return to their respective communities, if the recovery process becomes overly extensive, these population movements could be permanent in changing the demographic profile of the region. The low birth and population drain phenomena that Japanese societies are facing will greatly influence the structural aspect of school recovery as well as affect the relationship of schools and communities.

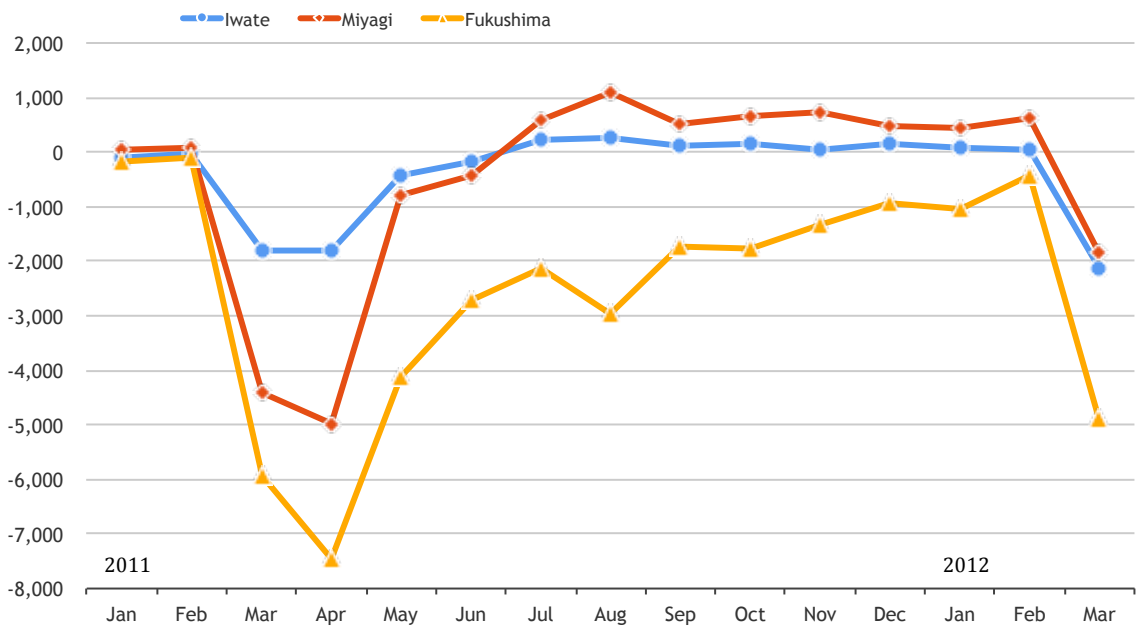

Figure 2.8 Number of population moving out minus moving in (Iwate, Miyagi and Fukushima)
Adopted from data and information from the Ministry of Land, Infrastructure, Transport and Tourism White Paper (2011)

2.5.3 Effects of demographic changes on students

A report by the Central School Council (2000) states that communities with fewer juvenile age group have shown negative consequences for school children including:

1. Fewer opportunities for children to develop discipline in the society through challenges
2. Overprotection of children by their parents
3. Difficult for parents to pass on knowledge and experience of child raising to others
4. Schools face difficulties in organizing school and club activities that requires a certain

number of students to conduct (such as sports festival and regional events)

5. Loss of sense of competitiveness because of fewer students

Among the negative impacts above, the most crucial problem that declining student population will bring for them is the lessened opportunities for children to interact with different groups of community members. In the past, children's social maturity was fostered through various kinds of friendship, rivalry and mutual learning through connections with different age groups in the community (Central School Council 2000). However, these kinds of interactions are less observed nowadays, especially for children in small schools with fewer classmates, resulting in lack of social adaptability, such as in ability to express oneself for large group of people, friendly competition and willingness to cooperate with others has been recognized (Hayo 2012). Overprotectiveness of the parents, who are less concerned with other children and parents in the community, is another factor that distance their children in conversing with various people in the community. Another pragmatic effect is the difficulty in organizing school events, such as group learning classes and sports festival, cultural festival and after school club activities, which has been one of the main reasons for schools to close down or be merged with other schools.

There needs to be quick measures taken to tackle the issue of declining student population, especially in post-disaster situation, because it will affect the processes of school recovery community building. Until now, most of the measures taken so far have concentrated on supporting parents in their child rearing as seen in the 2003 Basic Act for Measures to Cope with Society with Declining Birth Rate. Policies for taking measures to aging communities are also focused on improving social welfare and job creation and none so far has addressed linkage with younger age groups, education or schools. With the absence of policies that harness ties among different age groups or provide roles to the various stakeholders to aim for a common goal, opportunities are lost to utilize the "hidden" resources in which most communities possess.

2.6 Enhancing School – Community Linkage for School Centered Recovery and Community Building

This chapter has provided an overview of DRR of the education sector in the global context by first reflecting on the Hyogo Framework for Action (HFA), then the E-HFA, which is an adoption of the five priority actions for the education sector. It also touched upon a recent

concept specific for building resilience and preparedness in the sector, Education in Emergencies (EiE), that education ministries around the world have been developing in partnerships with international organizations. Following the global concepts, the concept of School Centered Recovery and Community Building, suggested by MEXT for the recovery of education sector from EJET was introduced. Among its four main pillars, strengthening the role of schools as community hubs that would function as evacuation centers during disasters was highlighted. Expanding these functions by combining other public facilities, such as community centers, children's daycare center and library, for maximizing investment efficiency to rehabilitate or reconstruct damaged schools and strengthening school – community linkage through facilitating community interactions was also discussed. The rationale for placing schools at the center of recovery and community building was argued by referring to their significant characteristics as central community facilities, DRR hubs and venues for DRR education and regional education. With note on the fact that these characteristics can only be regained and enhanced with support from the communities, several examples of making schools beneficial for the whole community and systematically attain their participation in school education and management were also presented. The main components for enhancing school - community linkage are summarized in Table 2.4 below.

Table 2.4 Key components for enhancing School – Community Linkage for School Centered Recovery and Community Building

Component	Contents and expected effects
School management	Consideration for building Community Schools in which decisions by community members take part in school management, including decisions on human resources, school activities and policies. While schoolteachers are transferred to other schools in 3-4 years, community can continuously be involved in their community's school management. It also raises common interest of the community to educate and raise children.
Education	Strengthen community participation and utilize community members in integrated study programs and after school programs by incorporating concepts such as ESD. School children will be able to receive "real life" education in the context of their community and will have better understanding of their community. Community members will be able to build a sense of having roles in contributing to their community.
DRR activities	Encourage school – community cooperation in DRR activities/education and build common understanding that school is a safe DRR hub. Schools that are designated as evacuation place will be strengthened as DRR hub. Schoolchildren will be able to build DRR capacity not only in schools, but also outside of schools and become advocator for DRR.

Finally, chronic social issues encompassing schools and communities in Japan, low birth rate and aging communities, were mentioned as important factors that will influence the pathway for school recovery and community building. Also in the post-disaster situation, displacement and migration of evacuated residents were stated to become a crucial problem for survival of communities in case they decide to permanently leave their hometowns if the recovery process prolonged over an extensive period of time. Here again, closer collaboration among various residents of different age groups has been cited as a critical factor to encourage displaced people to return to their communities to take part in school recovery and sustainable community building.

2.7 Sustaining the efforts and results gained from School Centered Recovery and Community Building

Although the School Centered Recovery and Community Building concept is initially suggested as a vehicle to promote recovery process of the education sector, it must be continued to realize the ultimate goal in building a prosperous, disaster resilient community. In order to achieve both short-term prioritized goals and long-term goals, it is important that the all levels of government set the financial, political and administrative conditions to be able to consult and support affected schools and communities to meet their needs throughout the different stages of disaster management. Shaw (2014) mentions that after disasters, significant amount of financial, technical and human resources become available that can contribute to the long term development of the affected region. The recovery period also provides opportunities to strengthen local capacities to facilitate economical, social and physical development (Berke et al. 1993), which probably have been on the agenda of most local planning authorities to achieve. However, to take advantage of these opportunities, good governance that can be characterized with factors including participation, rule of law, transparency, responsiveness, consensus orientation, equity, effectiveness, efficiency, accountability, and strategic vision need to be in place or be redeveloped in the post-disaster process (Ahrens and Rudolph 2006).

Nevertheless, it is a reality that emergency response requires an “extraordinary” set of governance system that persists on top down decision making that is outside of ordinary bureaucratic system due to urgency to take measures to unpredictable and uncertain chain of events (Ferazmand 2007). On the other hand, disaster management still does tend to place its focus on response and recovery aspects in which significant amount of effort concentrates on short-term and ad hoc measures. Opportunities to take on long-term goals may be lost in the

process because tremendous amount of financial resources that were originally allocated for recovery and rehabilitation are often taken away from budgets that were originally intended for community development (Guzman2003). From the standpoint of supporters, taking part in disaster relief and recovery is somewhat more appealing due to its humanitarian characteristics. Decision makers also rapidly lose interest in taking steps to accelerate policy development and political response for better disaster management as disaster experiences fades in memory as situation proceeds towards normalcy (Birkland 1996). While it is understandable that there is immediate need of community for their survival and well being, incapacity to link the short-term efforts with those of long term goals takes away the opportunities available to simultaneously take effective and efficient measures to both issues.

In order to sustain implementation of the school based recovery and effectively build on the achievements for rebuilding affected communities, streamlining response, recovery, mitigation, preparedness and community building will be important to maximize the effectiveness and efficiency of actions taken in each process. For planning a holistic approach, disaster managers often refer to the Disaster Management Cycle (DMC) as the framework to identify individual activities required for each disaster management phase and their relationship with one another. Yet the most important perception that the DMC can offer for policy makers, planners, implementers and the communities involved is that the DMC allows better understanding of the relationship between disaster management and sustainable development planning (Guzman 2003). The incorporation of sustainable development into disaster management planning allows its deviation from the ad hoc tendencies that are commonly observed in disaster management and enables long term planning possible for community building. The idea also encourages actors engaged in different phases of disaster management as well as various professionals in disaster (e.g. disaster planners/managers) and development (e.g. urban planners and engineers), that often come from different professional practices (McEntire et al. 2002) to sit on one table to discuss about disaster management and community building for the mutual goal in saving lives and contributing to sustainable prosperity of their communities. Integration of measures under different disaster management phases can also reducing costs and increasing effectiveness of building disaster resilient communities.

From a global perspective, integration of DRR and sustainable development has started to be widely addressed thorough such major events as United Nations Conference on Sustainable Development (Rio+20). In the outcome document, "The Future We Want," the

need to incorporate DRR concepts for any future framework for sustainable development has been clearly marked. In the upcoming 3rd UN World Conference on Disaster Risk Reduction, which will be held in Sendai, Japan in March 2015, considerations of incorporating DRR issues into the sustainable development agenda will again be discussed in the course of adopting the new post-2015 DRR framework. Expectations for these global initiatives are that the environment will become more favorable for placing efforts in disaster management and community building, including those of School Centered Recovery and Community Building.

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PART II

Chapter 3 Application of School Centered Community Building Concept in Toni District, Kamaishi

3.1 Effects of EJET in the Three Tohoku Prefectures

The East Japan Earthquake and Tsunami (EJET) was the largest natural disaster that Japan had experienced since end of World War II. EJET, which occurred at 2:46pm on 11 March 2011 with magnitude of 9M, left 19,074 dead and 2,633 missing (Fire and Disaster Management Agency 2014; Reconstruction Agency 2014). Damages caused by EJET is estimated at US$ 210.0 billion or 57.4% of all disaster damages reported for 2011, marking it the most costly natural disaster in terms of economic damages in the recent years (Guha -Sapir, et al. 2012). Among the five prefectures of Aomori, Iwate, Miyagi, Fukushima, Yamagata and Akita located in Northeast Japan or Tohoku Region, the most heavily affected prefectures were Iwate, Miyagi and Fukushima with death tolls reaching 5,155, 10,496 and 3,352 respectively (Fire and Disaster Management Agency 2014). Table 3.1 below displays some basic information of the effects of EJET, Table 3.2 shows a more detailed breakdown of the causalities and the damages incurred in the three most affected prefectures. Figure 3.1 provides some photos of the actual damages from the three prefectures which showing the diversity of the disaster effects.

Table 3.1 Effects of EJET (figures) (FDMA 2014)

Time of occurrence	March 11, 2011 14:46 (JST)
Magnitude	9.0 (Mw)
Casualties	19,074
Missing	2,633
Injured	6,219
Damaged buildings	Residential: 127,361 (total damage), Public facilities: 14,345 Other facilities: 82,892
Evacuated people (out of prefecture)	55,636

Table 3.2 Overview of causalities and damages from EJET of three prefectures (FDMA 2014)

Prefecture	Casualities	Missing	Injured	Completely collapsed homes	Damaged public buildings
Iwate	5,115	1,132	211	19,107	500
Miyagi	10,496	1,271	4,145	82,992	9,948
Fukushima	3,352	226	183	21,224	1,269

Figure 3.1 Effects of EJET

Top left: Natori, Miyagi (Kyodo/AP), Top right: Sendai Airport (Kyodo), Bottom left: Miyako, Iwate (Miyagi City), Bottom right: Kesennuma, Miyagi (Keichi Nakane/AP/Kyodo)

Even though the three prefectures share the same eastern coastline of Japan, the they each received contrasting tsunami damages that depend on the geographical features in which Iwate and northern area of Miyagi having a mountainous and zigzag shaped ria coastline while southern area of Miyagi and Fukushima having a flat plain. Table 3.3 shows an indicative figure in comparing the three prefectures in tsunami run up height and inundation area (table made from Cabinet Office 2011 and Geospatial Information Authority of Japan 2011). Instead

Table 3.3 Estimated tsunami run up height and inundation area of three prefectures
(based on document by the Cabinet Office 2011; Geospatial Information Authority of Japan 2011)

Prefecture	City/location	Tsunami runup height	Inundation area
Iwate	Miyako	40.5m	58km2
	Kamaishi	32.4m	
Miyagi	Kesennuma	20.6m	327km2
	Minami Sanriku	15.9m	
Fukushima	Souma	21.6m	64km2

of tsunami height, the run up height is displayed here to show what people might have actually experienced in their respective locations owning different geographical features. Accordingly, response actions also differed between these areas in which evacuees in the northern mountainous region had to quickly identify routes that would take them to elevated areas, whereas for evacuees in the southern plain lands had to find high-rise structures to escape the tsunami waves. While actual situations would depend on the geographical features of specific locations, the figure does suggest how disaster management planning can be further strengthened through improved building design and reviewing existing evacuation routes in the process of recovery and community building for better response to future disasters.

As the media often refer to EJET as a triple disaster that affected the Tohoku population with earthquake, tsunami and the nuclear power plant failure, the extensiveness of the effects of EJET displaced a significant number of survivors in locations outside of their former residential cities and regions as others are still living in temporary shelter after four years since the disaster. At peak, 470,000 people were displaced from their homes. Currently, 188,127 remain in displacement in which 55,012 are living outside of their original prefecture of residence in such places as relative's homes, temporary housing facilities, public housing and hospitals (Reconstruction Agency Japan 2014). From a livelihood standpoint, considerable damages to the fishery industry has been one of the major factors influencing the migration of affected people is the region because it accounts for 15% of the business and 17% of the employment in all of Japan (Demura 2011). Although fishing ports and processing plants have already been in the rehabilitation stage, the radiation issue in Fukushima will most likely to

interrupt fishery activities for a prolonged period. Chapter 2 has mentioned on displaced evacuees, its effect on the education sector, and the down spiral effects of population drainage on the recovery and community building process. Indeed, such large-scale displacement was an unprecedented case in Japan in which people became scattered all of the country, which brought considerable physical, psychological, institutional and socio-economical consequences to the disaster affected people.

3.2 Effects of EJET on the education sector in Iwate, Miyagi and Fukushima prefectures

The education sector in the most affected prefectures of Iwate, Miyagi and Fukushima Prefectures reported 653 deaths, 91 injuries and 75 missing of students and teachers (including public and private kindergartens, elementary, junior high and high schools, special needs school, vocational schools and universities). Among the 6,434 damaged school facilities reported nationally with 202 classified as Damage Level I (requiring complete reconstruction or major repairs), 764 as Damage Level II (requiring repair works) and 5,023 as Damage Level III (requiring minor repair works), over 2,400 educational related facilities had been damaged in the three Tohoku prefectures, displacing 25,516 students to other schools in which 14,000 transferred to schools outside of their former residential prefectures at peak (MEXT 2012a).

Damaged school buildings	**6,250** Damage Level I (202), Damage Level II (764), Damage Level III (5,023)
Deaths (students/ faculty)	**506** Iwate (84), Miyagi (348), Fukushima (74)
Injury (students/faculty)	**115**
Displaced students (from original school)	**25,516**
Schools functioned as evacuation center (at peak)	**622**

Table 3.4 Overview of EJET damages on the education sector (MEXT 2012)

Over 80% of the students who transferred outside of the original prefectures are from Fukushima where the 20km radius exclusion zone was established to avoid the possible effects of radiation. Table 3.4 provides an overview of the effects of EJET on the education sector in the most affected three prefectures of Iwate, Miyagi and Fukushima. Figure 3.2 are photos of schools affected by EJET from Iwate Prefectures.

Figure 3.2 Schools affected by EJET: a. Miyako Technical High School, Iwate (top left), b. Kamaishi Higashi JHS, Iwate (top right), c. Kadonowaki ES, Miyagi (bottom left) and d. Okawa ES, Miyagi (bottom right)

a. http://www2.iwate-ed.jp/myt-h/shinsai.files/DSCF4579_4.JPG
b. By author
c. http://nisi93.exblog.jp/14733028/
d. http://img.47news.jp/47topics/images/0324-7-1.jpg

Among the 90% of public schools that has been designated as evacuation centers, 622 of them functioned as evacuation centers during the response phase of EJET (NIER 2011). In addition, temporary housing facilities are frequently built on the school grounds, especially in areas where safe flatlands are limited. For example, Rikuzentakata City, which 80% of the homes were swept away by the tsunami, 733 units or 34% of all temporary housing units were built on 10 out of 15 public elementary and junior high schools within three months after EJET (Fujiga et al. 2012). This has negatively impacted both school children, for not being able to conduct physical education classes and sports club activities, and evacuees for being encroached in a single area with the schools. Simultaneously, merging some of the affected schools with non-affected schools was in discussion, making full recovery of schools and educational activities questionable in the near future. Despite the situation, educational activities resumed fairly quickly in which close to 100% of the affected public schools resumed classes in earliest cases after about a month after EJET in which many were held in temporary settings, such as borrowed space from unaffected schools, gymnasiums and other public facilities. For example, in Kesennnuma City, with support from both government and private

sector were able to take emergency measures in providing school lunch and transportation within two months after EJET. Mechanism to financially support orphaned school children and families with financial difficulties through new scholarship programs (Oikawa 2012).

Situation and needs of the education sector are expected to transform dynamically in the recovery and community building process. A study by Shaw and Takeuchi (2012) mentions on the diverse roles that schools in Japan has been and can take; first for being a center for leaning and living for children and a community hub for hosting different community events such as sport festivals. Also, school disaster education does not only raise DRR awareness of children, but also their family and community members, which is another important role of schools. In addition, as stipulated by Basic Act on Disaster Control Measures as noted above, schools are often take role as evacuation centers, even if they are not officially designated as one. Recovery or the development of these school's roles is therefore indispensible, especially in recovering the school – community linkage, which could start by reviving the functions of PTA as they are central in organizing school events that call for community participation, such as sports/culture festivals and social/regional education conducted through integrated education programs. Yet, these recovery issues usually remain unthinkable by the affected schools and communities in the period that follows immediately after the emergency relief phase.

3.3 Target city of study: Kamaishi, Iwate Prefecture

3.3.1 City profile

Kamaishi City (39° 16′ N 141° 53′ E) (Figure 3.3 (location), Figure 3.4 (photos before EJET) known as the "City of Steel and Fisheries" is a historical coastal city in Iwate Prefecture that has been a part of northeast Japan's major fishery production and marine product processing base that also flourished with the introduction of modern steel production industry in the 1960s. The city has a rich history of culture, including the well-known Tiger Dance that was started during the Edo Period to pray for the fishermen's safety and big catch from the ocean and the Sakura Festival, that still attracts tourists to visit the city. During the city's most prosperous time, the population of Kamaishi peaked at 92,123 (20,419 households). However, since the decline of steel production in the 1980s, the city the population gradually decreased down to 39,574 (16,094 households; 2010) and with the effects of EJET, the population in 2012 declined to 37,578, which is almost half the number from its peak in the 1960s (Kamaishi City 2014). As in other rural cities in Japan, the communities had started to show decrease in

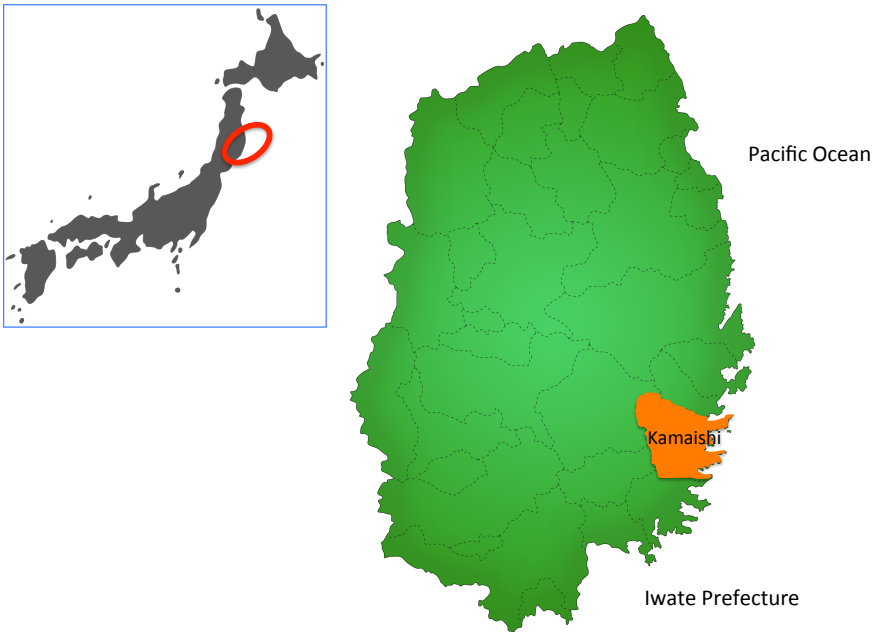


Figure 3.3 Location of Kamaishi City, Iwate Prefecture

Figure 3.4 Photos of Kamaishi City before EJET
Left: Steel industry in Kamaishi (http://blog.id-izumiya.jp/archives/2013/11/29-181445.php)
Middle: Kamaishi Festival (Kamaishi Tourist Association)
Right: Kamaishi Daikannou (National Diet Library)

juvenile and working age group population since the mid-1990s in which population of elder age group (over 65) exceeded the number of the younger age groups. The current demographic profile and school/student status are shown in Table 3.5. Kamaishi geographical feature consists of the eastern area facing the Pacific Ocean and western side having a mountainous topography reaching up to more than 1,000m. Plain land is mostly limited to the coastal areas and narrow valleys sandwiched between the mountains that can be used for residential and public areas. It can be said that because of these features, the lives of the Kamaishi people and their culture has always been close with the ocean, despite of the fact that

it has historically been significantly affected by major earthquakes and tsunamis.

Table 3.5 Current demographic profile and schools of Kamaishi (Iwate Prefecture 2013)

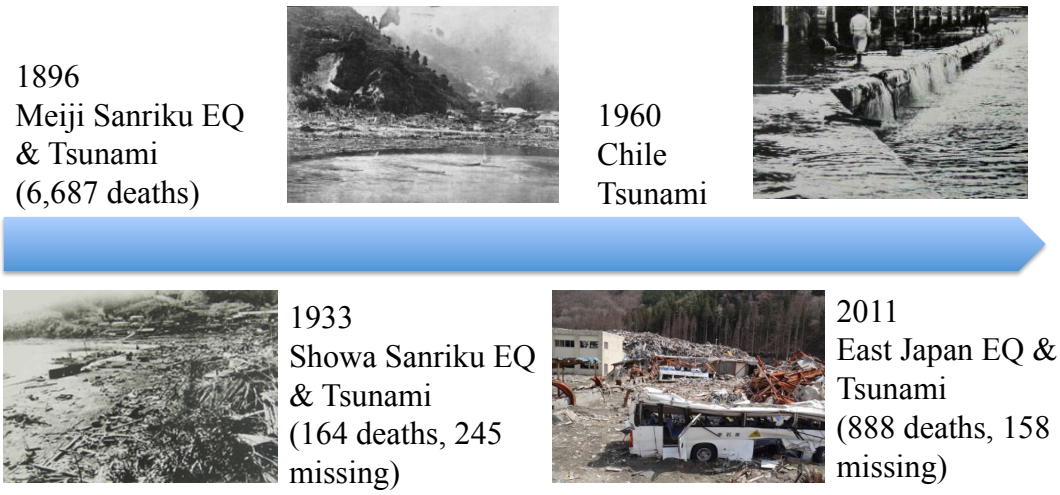
Total population (household)	Population by age groups				Number of students		Number of schools	
	Juvenile 0-14	Working 15-64	Elder 65-	Unknown	ES	JHS	ES	JHS
36,244 (17,108)	3,838	19,623	12,786	7	1,693	947	9	5

3.3.2 History of natural disasters and DRR measures in Kamaishi

As part of the Sanriku coast with a ria coastline, Kamaishi has been historically prone to tsunami disasters, including the major tsunamis, Meiji Sanriku Earthquake and Tsunami occurring in 1896, Showa Sanriku Earthquake and Tsunami in 1933 and Great Chilean Earthquake in 1960. Aside from these major tsunamis, several earthquakes over 8M have been recorded in the recent years, causing less damaging tsunamis (Figure 3.5). For having a set of conditions for tsunami occurrence, seismologists have often referred to this region as the "most frequent area to be hit my tsunamis not only in Japan, but the world" (Yamashita 2011).

Because of city's history with earthquake and tsunami disasters, the government had invested heavily in structural disaster prevention measures, including the massive 2km wide, 60m deep seawall (recorded in the Guinness World Records) built on the coast of Kamaishi bay that took three decades to build and costing 1,200 billion yen. Coastal dykes were also built on the bay of Otsuchi, Ryoishi, Kamaishi and Toni Districts with heights up to 12m. As for the lessons left from each major tsunami events, it is known that there are at least 22 stone monuments that were built after every tsunami disaster, showing the height of where the tsunami reached with inscriptions stating, "Do not build any houses below this monument." Likewise, there are various traditional DRR knowledge in the region that have been passed on throughout different generations represented by such teaching as "Tsunami Tendenko" that states, "when you are expecting a tsunami, you should escape without thinking about your parents and children; think only of yourself not to be sacrificed, and even if your loved ones die, no one can blame you." As merciless as this teaching may sound, the purpose is to save many lives as possible without families and friends being sacrificed by trying to look for each other in disasters. With both substantial structural investments for disaster prevention and high DRR awareness of the communities through non-structural DRR measures, disaster preparedness in Kamaishi would have generally been considered at good stance. However,

EJET that left 888 dead and 153 missing in Kamaishi became another lesson to prove that DRR measures are never sufficient and there are always opportunities to further strengthen preparedness and risk reduction measures to disasters (Figure 3.6).



★Other EQ over M8: 1952 – Tokachi EQ, 1978 – Miyagi, 1994 – Sanriku Haruka EQ
2003 – Miyagi Coastal and Northern EQ, 2008 – Iwate Northern EQ

Figure 3.5 History of earthquake and Disasters in Kamaishi

(photos from Kamaishi City website except 2011 EJET)

Figure 3.6 Photos of Kamaishi after EJET

3.3.3 Effects of EJET to the education sector in Kamaishi

Kamaishi owns nine elementary schools (ES) and five junior high schools (JHS) in which two elementary schools (Unosumai ES and Toni ES) and one junior high school (Kamaishi Higashi JHS) were located in low lying coastal areas and received total damage from the tsunami (Table 3.6). Toni JHS, although did not get affected by the tsunami, received damage by the earthquake and now is planned to be demolished. Despite of the extensive damage to the schools, most of the students who were at the schools at the time of tsunami survived, being able to evacuate promptly with assistance of teachers and local residents (5 students who were absent became causalities out of total 2,923 students). Japanese media, including the Sankei Newspaper, referred to this as the "Kamaishi Miracle" citing on the high awareness about disasters of the residents from traditional DRR teachings that had been reinforced by school DRR education that is based on the 2010 Handbook for Tsunami Disaster Management Education of Kamaishi.

Table 3.6 Schools damaged by EJET in Kamaishi

Total damage (tsunami waves reaching 3F, gymnasium inundated)	Unosumai ES, Toni ES, Kamaishi Higashi JHS
Total damage (inundated)	Unosumai Kindergarten
Damaged by earthquake	Toni JHS
Partial damage	Kuribayashi ES, Koshi ES, Osano ES, Futaba ES, Kamaishi ES, Shirayama ES, Heita ES, Koshi JHS, Kamaishi JHS, Otaira JHS, Ogawa Kinder, Daiichi Kinder, Heita Kinder, school meal center
Damaged school bus	5 out of 9 school buses

On the other hand, it took the City BoE of Education (BoE) close to one week to confirm the status of all students, teachers and school facilities because arterial road to and from the city center to the townships had been disconnected from the disaster damages and BoE officials had to visit the schools on foot. It also took working parents around the same time to be reunited with their children. As the case, even though the school in Kamaishi had been relatively better prepared for major disasters compared to other cities, the EJET experience posed many issues that could have worked better and for this reason, Kamaishi has pledged in its recovery plan to build a safer and assuring society by further strengthening DRR measures

to provide an environment to quickly proceed with the recovery process and build disaster resilient schools and communities for its future.

3.3.4 "Scrum Kamaishi Reconstruction Plan" and recovery of the education sector

Kamaishi is one of the disaster affected cities that has incorporated the MEXT's school centered recovery and community building concept (see Chapter 2) in its recovery plan and for this, Kamaishi City BoE had been tasked to lead and facilitate in realizing the concept by first establishing the in December 2011, in which the members consist of leaders from the local government, school principles and community representatives. BoE had been responsible in explaining the benefits of school centered recovery and in consulting with the Committee on what facilities and functions should be incorporated into the new school. Subsequently, as different facilities and functions fall under various agencies and departments, BoE had been required to coordinate with relevant departments to meet the needs of the community, particularly for land use and peripheral infrastructures that will be necessary to operate the new school.

The Kamaishi City Government announced the Basic Plan for Recovery and Community Building of Kamaishi or the "Scrum Kamaishi Recovery Plan" on 22 December 2011 (Table 3.7). It is rather clear that the plan places great importance on school recovery, early resumption of education and child raising support for parents as noted on MEXT concept of school centered recovery. The plan targets implementation in Unosumai and Toni Districts in which two elementary and two junior high schools received total damage. The plan annotates on both short to medium term goals in rebuilding disaster affected schools into multi-functional facilities and longer term issues, such as system to support child raising for working parents, enhancing DRR functions for schools to be utilized as evacuation centers during emergencies and hub for conducting DRR education and drills during normal times and additional functions in providing social welfare and community education for the whole community (Kamaishi City 2011a).

The Recovery Plan expresses concerns over the population drainage, which is caused by both the immediate effects of EJET and chronic factors of low birth rate and aging society. Figures in the recovery plan state that Kamaishi has already been facing annual population loss of around 600 to 700 and in only six months after EJET, the city has lost more than 5% or 2,000 of its population in which the majority belongs to the juvenile (0-14 years old) and working (15-64 years old) age groups. For this, Issue of Concern for Recovery 2 in the

Table 3.7 "Scrum Kamaishi Recovery Plan"
Related sections from on school centered recovery

- Basic policy 2: Building community that places importance in community ties and support
  (2) Ensuring conditions for better child raising
  Build temporary facilities for affected Child Raising Club (child day care centers) to enrich after school programs, provide support for working parents and build new facilities in conjunction with Unosumai and Toni Elementary schools (…).

- Principle goal 6: Building community that nurtures children to survive
  Elementary (ES) and junior high schools (JHS) of the city were reconfirmed to carry an important function as evacuation centers after disasters. The affected ES (2) and JHS (2) need to be moved to safer places and rebuilt so that they will have new functions as hubs for supporting everyday lives and disaster management.

- Scrum 11*: Supporting the region by providing new functions to schools
  New ES and JHS schools will be built on safe, common land to provide educational environment for better coordination and for strengthening DRR functions. In addition, provisions to make the school a hub of community building by combining functions of social welfare and community education facilities and community centers should be considered.

*"Scrum" is a terminology used in rugby, but in the Recovery Plan refers to the community action plans that are aimed to achieve the goals.

Recovery Plan intends to provide better conditions for child raising to support working parents by building child day care centers together with the new elementary schools. In this way, preschoolers and ES school children will be able to join the after-school activities until their parents finish work. This support is much needed for households under difficult economic conditions after the disaster.

Principle Goal 6 of the recovery plan refers in further enhancing the DRR functions of the schools by first relocating the four disaster affected schools to safer high rise areas and providing them with proper facilities to function as evacuation centers, such as water supply facility, electric generators and portable toilets, and equipment including emergency goods (blankets, water, etc.) and communication system. Because schools will become community hubs in which various community members will utilize on daily basis, schools must be known from non-emergency time as a place to seek for safety during emergencies to the communities. This goal also calls to further enhancements to existing DRR and environmental management education by incorporating the lessons learned from EJET, so that children will have better knowledge and skills to survive future disasters using their own judgment.

Scrum 11 under the Principle Goal refers on making affected schools into

multi-functional facilities as well as newly constructing joint ES and JHS schools. Following the MEXT concept, the initial proposal is to combine the schools with other public facilities, such as social welfare facility, usually used by the elder age group and community center, which are used widely by community members of all age groups for administrative paperwork and for conducting community culture and educational events. Joint ES/JHS schools are becoming more common in Japan as both urban and non-urban communities are losing their students, thus making school operation difficult with fewer students (Kainose 2010). Joint schools do not only allow for efficient school operation, but also beneficial in planning education programs to be better streamlined throughout ES and JHS.

With these plans and goals as basis for Kamaishi's school recovery, the School Construction Consultative Committee started active discussions on the ways to implement and realize the school recovery plans. However, issues such as budget availability, finalization of land use planning, consensus building of the community and the sequence of implementation had considerably delayed the implementation process. As recovery and community building issues go beyond the conventional responsibilities of BoE for schools and education, coordination with related government departments and a systematic method to capture community needs and consensus to confirm the implementation plan soon became a major issue.

3.4 Target communities and schools in Toni District

For an in-depth study, Toni District (Figure 3.7) was selected as target case study area. Toni consists of seven townships, Kerobe, Oishi, Arakawa, Yamaya, Katagishi, Kojirahama and Hongo that encompass the Toni Bay. Kojirahama is the main administrative and economical center of Toni and the only township that owns a Minami Rias Line train station, community

Figure 3.7 Photos of Toni District in 2012-2013

center, post office and public schools. Population accounts for 1,820 (742 households) in which 10% belongs to the juvenile age group, followed by 52% in the working age group and 38% in the elder age group (Table 3.8). Aging population of the community has been a worrying issue in Toni in which its main fishery industry and processing business are forced to come up with measures to reinforce the workforce with younger generations. Historically, Toni, before merging with Kamaishi in 1955, belonged to an area in northern Miyagi

Table 3.8 Demographic profile of Toni District (Toni Town Council 2013)

Population	Total	1,820
	Male	876
	Female	944
Population by age groups		
Juvenile 0-14	Total	152
	Male	72
	Female	80
Working 15-64	Total	959
	Male	499
	Female	460
Elder 65-	Total	709
	Male	305
	Female	404
Households		742
Town Associations		7

Prefecture, which had given Toni residents a distinctive identity among other districts of the city. Toni is also known for its strong passio n for culture, history and education with the first school being established in Kamaishi in the Meiji Period.

As for disaster history, Toni had been repeatedly affected by natural disasters, including the Meiji Sanriku Earthquake that washed away 332 houses and took lives of 1,585 residents and the Showa Sanriku Earthquake took away 259 houses and 359 lives (Figure 3.8). Both disasters are accounted for affecting around 50% of the population (Iwate Community Building Network 2012). EJET destroyed 390 out of 956 houses and causalities totaled 21 and left 2 missing out of 2,106 people (Kamaishi City 2011a). Damages to public infrastructures were extensive, which included facilities for fishery, water supply and cultural heritage sites. With regards to Toni ES and JHS, the ES was originally located in the higher ground together with the Toni JHS until 1982, then it was relocated to Katagishi community in an area only

Figure 3.8 Photos of past disasters in Toni (photos: Kamaishi Folk Museum)

about 100 meters from the bay coast, surrounded by the 11.8-meter dyke competed in Toni in 1981. According to a teacher who was present at the school during EJET, the sea could only be seen from the upper floors of the school. The tsunami, estimated around 10 meters in height, breached the dyke and flooded the school up to the third floor. The ES building received devastating damage, leaving only the foundation and frame of the building remaining, thus difficult to rehabilitate the building for future use. Currently, plan to build back the new ES to its original location together with the JHS is under consideration (Figure 3.9). Because safe highlands are limited in Kojirahama, the central commercial and administrative area in Toni, efficient use of land is required when considering new buildings. Hence, building the new ES together with JHS is seen as the most feasible option, as according to the discussions held in the School Construction Consultative Committee in Toni.

Figure 3.9 Location of Toni ES and JHS and current situation in Kojirahama, Toni District
Map on shows affected areas inside red lines and National Highway No.45 in green line
(adopted from map provided by Kamaishi City Government, photos by author)

3.5 Educational governance in Kamaishi

In principle, it can be said that the Kamaishi educational administration owns a common set up as described in Chapter 2, "2.3.1 Educational Governance in Japan." Under the BoE with members that include the superintendent, the secretariat consisting of Administrative Division, School Education Division, Lifelong Learning Division and Sports Promotion Division manage and support the educational facilities (public [9 ES, 5 JHS and 2 kindergartens], community centers, Kamaishi Folk Museum, etc.), affiliated organizations and other related sporting facilities. In the aftermath of EJET under the city's recovery plan, BoE has been setting forth four principle policies in which items related to school centered recovery and community building have been extracted below.

(1) **Enriching school education**

Enhancing students' ability to "live life through" by closer cooperation with parents and related organization in DRR education that is aimed to nurture self-help capacities (Education to Live) and to build their fondness for their hometowns. Prompt recovery of damaged schools in which the construction of new schools is to commence in 2014, is also an important factor to enrich school education.

(2) **Promotion of life-long education**

In order to protect and foster development of the students with all the community, regional coordinator is to be appointed to bridge schools with their communities and local authorities. In order for all citizens to be able to learn throughout their lives anywhere, community centers are to take a central role to coordinate and implement programs that can promote life-long education.

(3) **Promotion of arts and culture**

In order to maintain the unique history and culture of Kamaishi as well as to pass on the experiences of tsunami disasters including EJET, the Kamaishi Folk Museum will be continued to be further enriched and fully utilized.

(4) **Promotion of sports**

Because watching or taking part in sporting events can inspire people in the current situation, quick reconstruction of sporting grounds of affected schools and other sporting facilities is be expedited.

In realizing the four principles above with actual project implementation that

includes Kamaishi Community School Promotion Project (JPY2.8 million), Mental Healthcare Project (JPY8.2 million) and Regional Education Promotion Coordinator Project (JPY5.7 million), largest investments so far have been allocated to infrastructural measures, such as improving temporary learning facilities, repairs to sporting facilities that are to be used as evacuation centers, maintenance of temporary school buildings and reconstruction of new school buildings. For JFY2013, budget plan totaled to about JPY85.5 million (general budget) and JPY1.4 million (education budget), while actual disbursement amounted to around JPY75.6 million and JPY1.3 million respectively (Kamaishi City 2014).

While the construction of new schools is expected to commence by the end of JFY2014, the focus is anticipated to shift more for the non-structural aspects of school recovery and community building, which will entail both BoE and schools to coordinate and cooperate more intensively with the communities and other stakeholders that includes various divisions in the city government. However, as will be discussed more in detail in the sections later, this will become a challenge for the education sector to take measures to due to the common characteristics of the BoE system in Japan. In detail, the education administration system in Kamaishi follows the principles of BoE's independence from the other divisions. For this, Kamaishi BoE office is even physically located in a separate building and location, away from the main city hall. This may prove to become one of the main reasons for BoE to face difficulties when it is required to closely coordinate with the other divisions for school recovery. Also, within the Kamaishi BoE, as structural safety and recovery of affected schools are the responsibilities of the Facility Section in the Administrative Division and DRR education is under the agenda of Education Affairs Section of the Education Division, structural and non-structural measures for school recovery may necessitate additional efforts by the BoE sections to fully harmonize their actions. In an attempt to better coordinate with the relevant stakeholders and city government divisions, BoE has established the School Construction Consultative Committee consisting of Toni ES/JHS, key community stakeholders and Recovery Promotion Division of the city government under the guidance of external experts, including Kyoto University.

3.6 Stakeholder survey (interview survey)

Following the review of MEXT's concept and initial discussions held with several key local government officials, a series of direct interviews were conducted to Toni's 25 community leaders to get a grasp of community's perception on school recovery and recovery of Toni in

general. The interviewees were selected from the Toni Regional Council, which consists of community leaders representing the town associations, industries, schools, community groups (e.g. Women's Association, Child Support Club, etc.), religious groups and district welfare commissioner. The primary function of the Council is to discuss on various issues for the development of Toni communities and to consult with the city government on matters that would require additional assistance. Since EJET, most of the issues concentrated on the recovery process, particularly on consultations regarding recovery plans that have been drafted by each township. As the case, targeting the Council members is relevant in acquiring a general insight of community perception of the school based recovery and community building.

3.6.1 Methodology of interview survey

The interviews were conducted from July 11-15, 2012 at a meeting room of Toni Community – Life Support Center. Each interview lasted with time ranging from 45-120 minutes. To ensure that the questions are fully understood and answered in the same context, background information on MEXT's concept of Building School Centered Community and its relationship with Basic Plan for Recovery and Community Building of Kamaishi were fully explained before the interview. The interviewees are categorized into three groups as below:

(1) Local government (BoE, Recovery Promotion Division, Toni Community Center, etc.),
(2) Schools (Toni ES and JHS, PTA representatives and preschool principle) and
(3) Community leaders (Toni Regional Council, town associations, temporary housing associations, Seigan temple, fishermen's association and volunteer fire fighting squad).

The reason for targeting different stakeholders in Toni that may not be directly related to schools is based on a prior interview and questionnaire survey (Suda 2012) that was presented at the Toni School Construction Consultative Committee meeting in October 2011, which showed that even though 76% of Toni households do not have children, close to 80% of them have some sort of connection with the schools. The same survey was referred to in order to compare the changes in the community perceptions between the first six months and one year after EJET. The contents of the interview that was conducted can be sorted into three main issues below (interview sheet attached in Appendix 1):

(1) Profile of the stakeholder,
(2) Roles in emergency response, recovery and DRR (preparedness),

(3) Connections with schools and views on school centered recovery and

(4) Comments on the current recovery process and next steps.

The results of the interviews survey are shown in Table 3.9 and 3.10. Based on the survey results that are explained in detail in the following section, a SWOT analysis that picks up the common issues extracted from different stakeholders is provided in Figure 3.11, which will become the basis for identifying some of the key elements for realizing the school centered community building concept.

3.6.2 Result of stakeholder survey

The following is the result of the interviews conducted on stakeholder roles and status in response, recovery and DRR, relationship with schools and perspectives of school centered concept with the methodology above.

City government and community leaders

-Board of Education (BoE)

BoE is responsible for the management of public ES and JHS and related facilities. During emergency response, BoE's principle role is confirming the status of schools and students from the school principle. After disasters, BoE is responsible for rehabilitating damaged school buildings and ensures that educational activities are quickly resumed and continued until situations are back to normal. For DRR preparedness, BoE has been instructing schools to implement DRR education and activities based on the Handbook on Tsunami Disaster Management Education that was adopted by the city in 2010.

In the post-EJET recovery process, BoE has established the School Construction Consultative Committee and have been conducting meetings to coordinate and consult with multi-stakeholders from relevant city government departments, school principles and PTA and other community leaders regarding recovery of damaged schools and for the implementation of the school centered recovery. In the first year of the meetings, BoE was able to indicate a concrete schedule in building the new school and budget planning, including budget application to MEXT through the prefectural BoE. It has also looked into revising the Handbook on Tsunami Disaster Management Education incorporating the lessons learned from EJET by receiving advices of experts from universities and research institutions.

-Toni Community Center (CC)

CC functions as both branch office of the city government, center for community's lifelong education programs/events and other community service, including healthcare consultations. Equipped with wireless disaster radio, CC can be used as a temporary evacuation place during emergencies, but there are no facility or stockpiling to accommodate evacuees for long period. CC does not organize any DRR activities itself, although it has previously assisted community based groups as Women's Association in organizing "soup-run" demonstrations.

Currently, CC has no joint activities with the schools, but is indirectly connected with the school through students' participation in the annual CC Festival and Toni Day Festival. As a public facility engaged with the community on daily basis, CC is positive to be sharing space with the new school building. In addition, CC wishes to organize community events with the schools to encourage interactions between schoolchildren and elder people. CC in becoming an integrated facility with the school is a good option in realizing the school centered community building concept.

Schools and PTA

-Toni Elementary School (ES) and Junior High School (JHS)

Toni Elementary School (ES) and Junior High School (JHS) have been heavily affected by EJET and in need for full reconstruction. Both schools are planned to be built in the former location of the JHS, where the temporary school buildings are currently standing. As school ground on JHS is one of the evacuation areas designated by the city government, the new school building will be utilized as an evacuation center for future disasters in which school staffs will be required to take initial response actions. During emergencies, the school principle is responsible for securing safety of students and reporting status to BoE, but may also be required to support other evacuees from the community. For DRR measures, both schools have conducted six evacuation drills since EJET, changing the disaster scenario each time. DRR education based on the Handbook on Tsunami Disaster Management Education has also been regularly conducted in the classrooms. However, the actual contents and how the prescribed DRR education program will be conducted are decided by teachers of each school who implement them.

Regarding implementation of School Centered Recovery and Community Building, the principles and teachers of both ES and JHS feel that the responsibilities are too large for schools. For them, main concern is on the immediate issues, such as psychological care of

students and recovery of school building. As both principles of ES and JHS and half of teachers had been newly appointed in April 2012, it is assumed that the apprehensions in engaging with the communities come from their unfamiliarity with the community. On the other hand, schools have a history of interacting with the communities through joint education programs, such as with local industries such as Fishermen's Association and Seigan Temple. Since EJET, only part of these activities has resumed, but restarting the activities may encourage both schools and communities to regain their will in actively engaging with each other.

-PTA members of Toni ES and JHS

The PTA functions to work in bridging students, parents and school in discussion school affairs. In addition, PTA gives requests to the school management regarding various issues on school operation and management. Since EJET, the PTAs have not been active, mostly because parents have been busy in recovering their own lives and securing jobs. At the time of EJET, many of the students' parents worked in city center and could not return to Toni for several days because of road blockages caused by the tsunami. Prior to EJET, most PTA members have not been able to participate in school DRR activities because they are out of Toni working during school hours. Despite of this, most of the parents who could not reunite with their child for several days after EJET trusted and remained confident that the school will safeguard their children from the disaster. As for PTA's role in school recovery, they have been expressing their wishes to the city government for the prompt recovery of Toni ES/JHS, but most are not aware of the school centered recovery concept. A PTA leader noted that in case school is joined with other public facilities, such as CC, the school should have a separate entrance to ensure safety of the school children.

-Pre School (PS)

The preschools in Kamaishi are operated by Kamaishi Council of Social Welfare under the contract of Child Division of the Kamaishi City Government. In Toni, there are two facilities, one for preschoolers (3-5 years old) that was washed away by the tsunami and the other for elementary to high school students called the Child Raising Support Club, now operating in a temporary building next to Toni JHS. PS have been conducting evacuation drills three to four times per year based on DRR manual that they have developed. Videos on DRR were also occasionally shown to the children. Since EJET, new evacuation routes have been identified through town watching activities carried out by PS staffs and community members.

PS is well coordinated with ES because many of its users are ES students who come there after schools. PS and its After School Program has become an essential service to support child raising for double income households, because parents are not able to pick up and take care of their children during working hours. As of now, there is no immediate funding for to recover damaged PS and therefore, joint facility with the new ES would be beneficial for both PS and its users. PS may also help strengthen the school – community linkage because most PS possess good linkage with its neighboring residents, because they are understaffed and commonly requires support from the communities for operation. This will provide opportunities for community members, particularly the elder people, to interact with school children.

Town Associations

-Regional Council, Town Associations, Temporary Housing Associations

Toni Regional Council is a coordinating body that connects the Town Associations and communities with the local government, but does not plan or implement specific programs itself, as they are left for each town associations to decide.

There are seven townships in Toni, all with their own Town Associations. During emergencies, association members are tasked to collect information on the disaster situation and assist any residents who are in need for food and shelter. Response to EJET varied from townships and depended on the community profile. For example, because Kojirahama has the newer residents in which many work in the city center, they have responded rather sporadically while Kerobe has a close-knit community of elder people and therefore reacted more collectively and systematically to EJET. As some association members are also members of the community volunteer fire fighting corps (Syobo-dan), these members enabled their town associations to work closer together with the Syobo-dan during emergency response. Similarly, participation to the citywide DRR drills that is held annually on 3 March had been varying from town to town, heavily dependent on the population profile. According to association leaders, DRR awareness in Toni has generally been high, as seen from the traditional DRR knowledge in the region, but consciousness in taking actual actions may be low, possibly because of their confidence in the colossal seawalls and river dykes that protect the bay areas. As for decision making process for recovery town associations are tasked to compile the demand of their residents and submit as recovery plan to the city government. Some town associations have already submitted their recovery plan, but most of them have are

still under review.

Although town associations and schools have no mandate to work with each other, association members are connected with the schools through other channels, such as school committees, PTA or involvement in community events. For this reason, town association members are positive with the idea of School Centered Recovery and Community Building because they understand the importance of school – community linkage that could recuperate community ties by allowing different community members to take roles in child-raising. In order to maintain the young population in the city, town association members are eager to see the new schools be built in a speedily manner. They also expect that the new interchange of the Sanriku Coastal Highway will provide better access to Toni, attracting students outside of Toni.

Currently, there are also Temporary Housing Associations for each of the five facilities in Toni, each belonging to the town associations of their respective locations. Their main function is the operational management of the housing facilities that includes safety management and organizing small events for the residents. The association leader noted that in the prolonged lives in the temporary housing, each facility has become new communities, already building ties among its residents.

-Fishermen's Association

There are currently 439 members with age ranging from 20-60 years old in the Fishermen's Association. 90% of the facilities that included cultivation facilities, refrigerated warehouses and food processing plants were destroyed by EJET. Unified disaster preparedness is difficult as the fishermen are usually dispersed out in the sea, but association members are required to buy proper insurance and carry wireless radios on their boats. They are also instructed to reach the nearest shore, abandon ship and escape to high ground when tsunami warning is issued. As for recovery status, most of the cultivation facilities have been recovered and production of seaweed and scallop has resumed since end of 2011.

The association has been active in assisting Toni schools before EJET by cooperating in the school's experience education programs, including seaweed making and salmon hatchery, releasing and food processing. Experience education programs have been providing invaluable experience for the students to understand how the economy of their own communities is being supported. They expect that some of the students themselves will be engaged in the fishery industry in the future. Although part of experience classes have resumed since end of 2011, the association is keen in further supporting School Centered Recovery and Community Building

concept in building closer relationship with the schools and continue assisting in these kind of social/regional education.

-Seigan Temple

Seigan Temple owns a long history of 400 years and is one of the symbols of Toni. The head priest has been active in educating the local history, culture and DRR through its *Terakoya* or "temple school" activities. The first ES in Toni was established at Seigan Temple during the Meiji Era. Although premise of the temple was once one of the evacuation areas in Toni, the tsunami caused by EJET reached beyond the main road in which the temple is located, damaging the entrance gate and main building. Donations from current and former residents were received immediately after EJET to repair part of the damages, which depicts how the temple is an important spiritual symbol of the local people. Seigan Temple hopes that the rehabilitation of the temple will encourage Toni residents to overcome the difficulties in the recovery process.

Before EJET, the temple had supported Toni ES and JHS to conduct experience education programs in history and ethics. The head priest, who is also one of the members of the School Construction Consultative Committee, is also looking forward to resuming educational activities to support the schools (Figure 3.10).

Figure 3.10 Seigan Temple after EJET

-Community Fire Fighting Squad (Syobo-dan)

Syobo-dan is a community volunteer fire fighting corps in which the members usually have other jobs and voluntarily participate to conduct fire prevention awareness drills. In Kamaishi, each community would have around 15-20 members taking part in safety and disaster management activities in their respective communities, working closely with the town associations and Disaster Management Division. When disasters occur, they warn the local residents by sirens and loud speakers and when a tsunami is expected, they close the coastal

Table 3.9 Highlights of stakeholder roles and status in response, recovery and DRR

		Roles and status in Response – Recovery – DRR			
		Emergency Response	**DRR**	**Changes after EJET**	**Rehabilitation – Recovery – DRR (Roles and issues)**
Local Government	**Board of Education**	・Status confirmation ・Confirmation of whereabouts of students and teachers	・Making school related facilities safe e.g. (earthquake proofing) ・Promoting Tsunami Disaster Education Handbook, providing advice to schools	・Reviewing schools' function as evacuation centers and DRR points ・Renewing measures of schools for blackouts/suspension of water supply stock piling during emergencies ・Revision of Tsunami Disaster Education Handbook (after completion of revised city DRR plan)	・Building new school building ・Continuing with earthquake proofing of schools
	Toni Community Center (CC)	・Able to use center as temporary evacuation space (have communication equipment and warning alarm speakers	・Participation to March 3 City-wide evacuation drill ・Previously, women's group "Scrum Mates" conducted emergency cookouts and AED demonstrations at CC	・Considering stockpiling for emergencies (even though CC is not a designated evacuation center)	・Considering planning more events that will facilitate community linkages
School related	**Toni Elementary School (ES)/Junior High School (JHS)**	・Confirming safety of students (primary responsibility) ・Operation of evacuation center is responsibility of city government, but may be able to support evacuees during emergencies ・Use operation manuals of city and prefectural BoE, but the details are decided by the school	・Conducts evac drills 6 times/yr ・Considers 3 stages of DRR (at school, on way to school and at home) ・Referring to advice provided by Iwate and Gunma University, implemented according to context of each schools by teachers	・Necessary revisions under review, but not major changes expected	・Psychiatric care for students who need it is priority ・Counselors for students and parents visit school periodically
	ES/JHS PTA	・Support school in ensuring safety of students if possible (however, during 3.11, many parents working in city center could not enter Toni for several days)	・PTA members do not participate in school evacuation drills (but some members are community fire fighting members)	・No major changes in DRR activities expected	・Will be discussed as necessary
	Pre-school, Child Raising Support Club	・Act accordingly with ES	・Conduct evacuation drills 3-4 times/year, sometimes with support from surrounding residents ・Show DRR videos depending manager of each facility	・New evacuation routes under consideration	・As many students need psychiatric care, the city government dispatches counselors ・Old facilities and lack of staff are big issues ・Relationship with surrounding community is good because operation is supported by them (events for pre-school by the community)
Regional/Town Associations	**Regional Committee/Town Associations**	・Confirming safety of residents and disaster situation of town, information collection and dissemination to residents ・Rehabilitation of lifeline ・Procurement and distribution of relief goods	・March 3 city-wide evacuation drill is implemented in all towns, but the details are decided by each town (participation rate varies greatly according to town) ・Some towns have well established DRR organizational setup and knows where the vulnerable people reside ・Some towns have indigenous knowledge of observing the sea to predict tsunami ・Self help DRR group have been established from request of city gov. since 2-3 years ago	・New designation of evac centers under request to city gov. Stockpiling is still not done (Kojirahama) ・New evacuation center is planned to be built in the new public housing area (near foot of mountain) ・Privacy of information became an issue when confirming safety of missing residents – need to consider taking measure for next event	・Improvements of access road to/from town to other cities and smaller community road needed ・Purchase of new residence cannot be decided because price of original land is not decided by city gov. ・Difficult and slow to realize recovery plan suggested by town associations ・Hoping that recovery funds can be utilized with more flexibility to accelerate recovery process
	Association of Temporary Housing Facility	・Ensuring safety of residents	・Safety management of residents ・Plan and conduct stretch classes, singing sessions for residents to connect with each other (hoping that sports experts and/or NPOs will be able to assist in this)	・For mega events as 3.11, response need to be sometimes improvised because DRR plans is only made under assumption of past disasters	・Many residents are not aware of the overall recovery process ・There are opinions that the budget for rehabilitating seawalls should be used for community recovery ・Schedule to acquire and build new public housing is not clear so many residents are worried when they will be able to move to new house
Local Industry	**Fishermen's Association**	・When EQ occurs, fishing boats are recommended to harbor to the nearest shore and evacuate to high lands	・Members join the March 3 drill individually as it is not possible to organize a joint drill with fishermen ・Boats are recommended to carry communication radios and insurance	・Strong recommendation to fishing boats to carry communication radios and insurance, but further measures are difficult	・Operations are gradually commencing as most of the fish farming facilities have been recovered
Temple	**Temple**	・Have been used as temporary evacuation area in the past	・Have been talking to visitors on Showa Sanriku EQ disaster ・Cooperated in emergency cooking drills of Women's Association		・Currently under rehabilitation from donations (such as from former Toni residents) ・Need to consider location of new public housing for maintain market price of apartments in the future
Shobodan	**Community Firefighting Squad (representative)**	・During emergencies, operate warning alarm, close water gates and assist evacuees when possible ・There is manual, but measures were improvised during 3.11	・Assist March 3 evacuation drills ・Inspection of fire extinguishers ・Take part in DRR activities of students (at school, on the way and at home) ・Shobodan members are aware of the community profile and locations of where most vulnerable reside	・During mega disasters, measures must sometimes be improvised, therefore, depending too much on DRR plan is not suitable for all cases	・Planning community events

Table 3.10 Highlights of stakeholder relationships with schools and perspectives of School Centered Community Building concept

		School Centered Community Building		
		Linkages with school	**Comments on School Centered Community Building**	**Next steps**
Local Government	**Board of Education**	・Toni ES/JHS	・Prioritize recovering fundamental functions of schools ・Need to discuss the details on the management of multi-functional facility ・Further discussion needed for ES/JHS joint school	・Conduct Q&A survey targeting all of Toni residents on Building School Centered Disaster Resilient Community ・Planning coordinating meeting with relevant divisions of city government ・Firming up of schedule to measure, design and start new school ・Revising Tsunami Disaster Education Handbook
Local Government	**Toni Community Center (CC)**	・Does not have direct linkages with schools (although indirectly connected through community events)	・Positive on joining school (but both admin/community service functions?) ・May need to consider improving access road to and from school	・Since community events have not fully recovered would like to consider planning more community events for interactions)
School related	**Toni Elementary School (ES)/Junior High School (JHS)**	・ES has connections with pre-school (Gakudo Ikusei Club) for after school activities	・Would like to prioritize recovering basic functions of school ・Decisions on making school a multi-functional facility is up to the government ・Entrance of school and community center should be separated for safety ・New school should have simple design so that it can be rearranged in the future as necessary ・Further discussion needed for ES/JHS joint school	・Taking care of students is first priority
School related	**ES/JHS PTA**	・Conduct BBQ events with garbage collection, grass cutting, window cleaning activities (ES) ・Aside from school events, interact through community events	・Recovering basic function of the schools should be prioritized ・Need to secure safety of school if it becomes multi-functional facility ・Need to ensure School Centered Community Building does not become too much of a burden for the schools ・Joint facility or building pre-school near ES is understandable	・Hoping for quick recovery of school
School related	**Pre-school, Child Raising Support Club**	・Good connections with ES because many students utilize the facility for after school activities	・There is no concrete plan to rehabilitate pre-schools, therefore joint facility with ES is desirable	・Waiting for recovery plan/budget from city government
Regional/Town Associations	**Regional Committee/Town Associations**	・Hoping to further strengthen community – school ties	・Need to build new school as soon as possible by prioritizing fundamental function of schools ・ES/JHS joint school need to be decided quickly as it affects design of new school ・Need to improve access road to school ・Expecting school – community ties will be strengthened ・Building school that shows the uniqueness of Toni is important for community recovery	・Economical effect and better accessibility to Toni ES/JHS are expected when Sanriku Coastal Highway is built ・Improvement of community road within towns is expected ・New school need to be built quickly
Regional/Town Associations	**Association of Temporary Housing Facility**	・Residents with students	・Idea of ES/JHS existed before 3.11 (at former ES site) ・New community was built in Katagishi area when Toni ES, pre-school and Toni Station were built in the area ・Building good school in Toni is important to avoid further population drain in the area	・Quick implementation of Recovery Plan is expected to city government (especially building new public housing)
Local Industry	**Fishermen's Association**	・Sell school PE uniforms ・Experience Classes (Wakame making, Salmon incubation, release and processing) are conducted in cooperation with schools (gradually commencing since end of 2011)	・Ideal to designate a facility that different groups of residents will use on a daily basis	・Upon request from school, would like to continue more experience classes for students
Temple	**Temple**	・Experience Classes (meditation, grass cutting and Terakoya)	・Making school multi-functional has been considered before 3.11 ・Land area in JHS is limited and access road needs improvements, so design should be carefully considered	・Upon request from school, would like to continue more experience classes for students
Shobodan	**Community Firefighting Squad (representative)**	・Upon request from school, assist in safety and disaster management activities	・School should be a simple place where students study and meet their friends and teachers ・Worried that School Centered Community Building will become burden on the schools	・Local residents are too busy to rebuild their lives (secure jobs, housing) so thinking too much about the future is difficult at this stage

water gates. Although Syobo-dan conducts drills for these operations based on their manuals, the unprecedented magnitude of EJET forced them to improvise many of the response actions. As Syobo-dan members are well aware of the community profile, they are able to efficiently prioritize in reaching and assisting the most vulnerable residents for evacuation. Occasionally, they assist schools to conduct DRR drills.

3.6.3 Analysis of interview survey (SWOT Analysis)

With the results of the interview survey, a SWOT analysis was conducted to evaluate the internal factors (Strengths and Weaknesses) and external factors (Opportunities and Threats) of Toni to identify the strengths and challenges that Toni District possesses for implementing school centered recovery and community building.

-Internal factors (Strength/Weakness)

The strength of Toni primarily lies in its strong community linkage. Historically, Toni residents have a strong identity of belonging to the Date Clan (*Date-han*), a feudal clan that existed in Miyagi and southern Iwate prefectures in the 19th century, while other districts of Kamaishi belonged to the Nabu Clan (*Nanbu-han*). The two clans often had border disputes and for this, guard towers of both clans existed in Toni. A former BoE official also noted on the fact that because majority of Toni residents were born and have spent most of their lives in Toni, they have strong pride of their hometown. Therefore, community ties and trust have been very strong even among other Kamaishi districts. Toni is also known for its dedication to education, history and culture and has owned Kamaishi's first elementary school (former Toni ES which was located at Seigan Temple in Meiji Era). This dedication can be also seen from the fact that Toni residents refused the city government's request to build temporary housing facility on Toni JHS's school ground to avoid delays in school recovery. DRR awareness has also been high due to the lessons from past disasters passed on from generation to generation. In addition, as parents know that DRR activities have been extensively been conducted at the schools, most trust that the schools will ensure their child's safety during disasters. The combined elements of community's mutual trust, devotion to education and high DRR awareness that existed in Toni before EJET have been seen as the preconditions of making *Tsunami Tendenko* culture feasible during emergency response (Yamori 2012). The reevaluation of social capital through disaster experience, such as this, provides an ideal cycle of further strengthening community ties to better cope with future disasters (Matsui 2011). As for DRR functions of the schools,

both ES and JHS have already conducted six evacuation drills since EJET with assistance from Syobo-dan. The schools have quickly stared to revise the Emergency Response Manual that includes provision to assist evacuees outside of the schools.

On the contrary, as indicated in the results from the interviews, EJET considerably weakened the school – community linkage. For this, measures must be taken to rebuild and strengthen community ties of Toni residents to move forward in the recovery process. As noted by the school principles, there is also anxiety for the psychiatric conditions of their students, parents and teachers from the traumas of EJET experience. While posttraumatic stress disorder (PTSD) is more visible in adults, the conditions could vary among students causing difficulties in identifying students that are in need of assistance and for this, schools can be a practical place where large scale screening and interventions are possible (Ronan and Johnston 2005). Therefore in implementing the school centered recovery plan, management of new school facilities must be carefully considered as not to place too much expectation on the schools in the initial stage. As for school's function as DRR hubs, there are still opportunities for enhancing DRR functions of schools with better facilities and equipment in addition to exploring the possibilities of joint school – community DRR activities to enhance the DRR capacity of the whole community.

-External factors (Opportunities/Threats)

In Kamaishi, general account budget plan for JFY2012 amounted to JPY38.29 billion JPY or about USD380 million of recovery budget has been approved with additional budget to be approved for relocation and land readjustment project with supplemental budget (Kamaishi City 2012). Toni residents have high expectations for the construction of new interchange of the Sanriku Coastal Highway that will improve access to Kamaishi city center, cutting the current travel time by half (10 minutes). The interchange will not only bring economical benefits, but may also attract new residents and students to Toni if living conditions would be appealing to them. There are also opportunities to receive support from community based organizations, including NGO/NPOs, as well as funds with special preference that are available for recovery projects that can materialize some of the community building plans. There are also opportunities to build new networks in receiving outside assistance, which can be critical in the initial stages of relief and recovery stages, especially for aging communities, because they may not able to cope by themselves (Matsui 2011).

As for possible threats, as mentioned in the previous section, Kamaishi has been

experiencing population drainage due to low birthrate and aging of communities and the situation is likely to worsen due to forced displacement of communities from the effects of EJET. With fewer children in the community, schools may have to be temporarily or permanently closed or merged with other schools in the city. Closing of schools will disconnect students with adults in their communities because learning opportunities with local resources will be lost and they will not be able to interact with the local community members (Sakagawa 2004). Availability of good education will be a major factor that will influence families to decide to either remain or move out of Toni for better opportunities elsewhere, leaving the elder residents behind. This could become a threat to the survival of not only schools, but also the community itself. Another threat is the unpredictability of the overall recovery process, which has been causing both worries and frustration among Toni residents. Delays in recovery, such as land use planning and construction of new housing may indeed hinder school recovery and hamper community building on the long run.

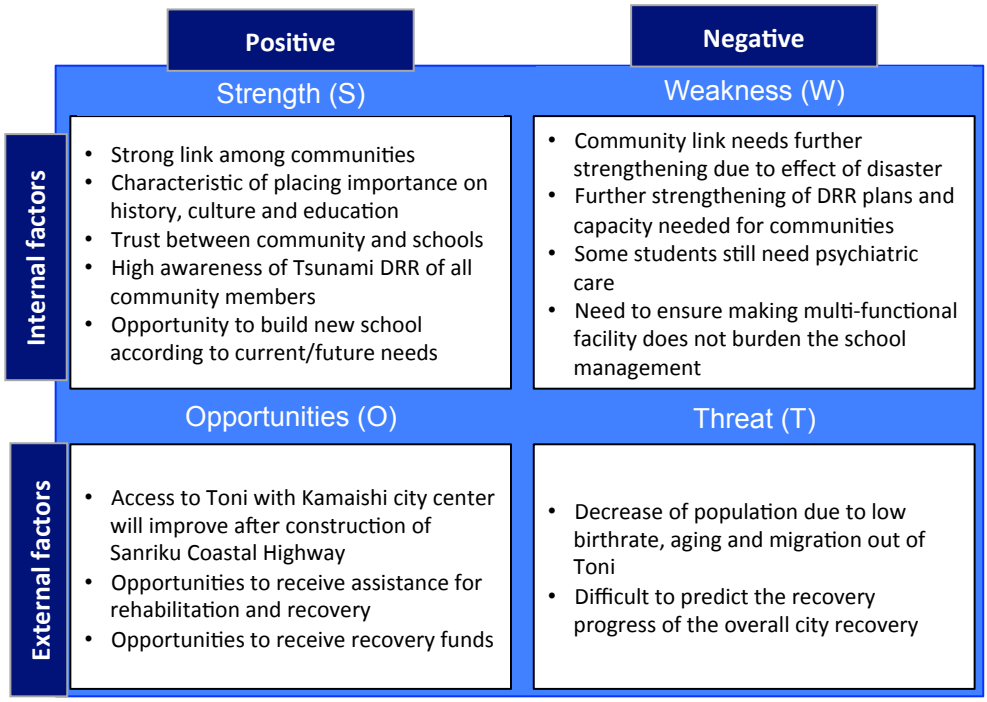


Figure 3.11 SWOT Analysis of Stakeholder Survey

3.6.4 Initial idea for joining school and other public facilities/functions

The following highlight the main public facilities in Toni in which the representatives were interviewed. Initial idea is provided below on how some of these facilities or their functions

can be combined for school centered recovery and community building from the results of the interview survey.

-Toni Community Center (CC)

As a branch office of the city government that provides administrative service and as one of the first "Life Support Centers" in Kamaishi that provides various community services, such as health consultations and organization of community events, Toni CC is utilized by Toni citizens of different age groups on a daily basis. Because of its function of connecting the communities and the local government, CC can be classified as having the administrative - institutional role in the school centered recovery scenario. CC also serves as window for town associations, community clubs and external stakeholders (e.g. NGO/NPOs), joining facilities with the school will help school connect with both internal and external networks. A good example of joint facility can be seen in Shiki ES in Saitama Prefecture in which the new school was merged with CC and public library in 2001. This facility is not a mere joint building, but had become a community hub for co-learning and interaction among residents of different age groups (Saito 2011).

-Preschool/Child Raising Support Club (PS)

Toni residents, especially double income households, rely on the PS to look after their children during their working hours. For this, PS can be classified as a child raising support mechanism that is vital for families with children. In the unstable conditions after EJET, it is essential that these facilities be quickly restored so that parents can concentrate in recovering their normal lives. Furthermore, the support for children and child raising parents is essential to put a stop or reduce the pressures of population decline rural communities such as Toni. In this respect, Kamaishi has been continuing to provide child raising support through its "Action Plans for Assisting Strategies in Raising the Next Generation" since 2005, aiming to improve child raising conditions, enhancing educational contents and providing more opportunities for utilize facilities as PS to ease both economical and time constraints, especially for working parents (Kamaishi City 2011b). Because PS are commonly well coordinated with ES in Kamaishi, integration of the damaged PS with the new Toni ES/JHS will enhance support for children and parents in the district. For this, BoE must coordinate with the Child's Division of the Health and Social Welfare Department because PS is under its jurisdiction.

-Local industries and religious/cultural organizations

As a spiritual symbol of Toni residents, Seigan-ji temple plays an important role in rebuilding community ties. Chamlee-Wright (2010) notes on how religiosity is one of the valuable set of socially embedded resources for bringing people back to their community and encourage them to contribute in rebuilding their own neighborhoods. With regards to local industries, the benefits of making use of local human resources and the importance of school children to understand how the local economically functions has been mentioned above. Particularly for school education, involvement of local industries and religious/cultural organizations of the community is essential in providing students with understanding, pride and love for the communities they live in. Through activities such as experience class programs, students can receive "real life" education in which schoolteachers are not always able to provide. Therefore, local industries and religious - cultural organizations in Toni can be classified as having a role in providing regional education. It is worth noting that these industries and organizations also receive benefits from their involvement with the schools because they will be making a social contribution to nurture their children who may become the future workforce of their communities.

***-Community Volunteer Fire Fighting Corps (*Syobo-dan)**

As observed in EJET response, Syobo-dan plays an important role in maintaining safety through disaster management of the community. In the case of Toni, a Syobo-dan member had worked effectively in instructing schoolteachers and students, who were not able to see the tsunami waves coming because of the 11.8 meters sea dyke, to evacuate to the high grounds while they remained on the school grounds waiting to receive directives. Coincidently, because this Syobo-dan member was the father of a Toni ES student and a member of school PTA, the school had trusted his instructions and were able to take actions immediately. As this story illustrates how Syobo-dan's activities become more effective when there is more familiarity with its community, schools should also maintain close relationship with Syobo-dan members. In a small community like Toni, with less than 1,000 households, many of the Syobo-dan members are family members of students. If fathers or mothers who are Syobo-dan members can regularly conduct DRR activities at schools, it may make students proud of their family. This by itself can become a very effective DRR awareness raising method. Syobo-dan can also benefit from engaging with schools and Toni residents in DRR activities as the opportunity will enable them get a better grasp the community profile that will be helpful in assisting the

community during actual emergencies.

3.7 Community and school survey (questionnaire survey)

3.7.1 Methodology of questionnaire survey

Community and school survey was conducted in February 2013, approximately two years after EJET. The objective is to follow up on the stakeholder survey to confirm the contents directly with community residents with quantitative data and to understand the issues in more detail. The survey targeted all Toni households, schoolteachers of Toni ES and JHS and students in 6th and 7th (first year JHS) grades. The survey was conducted by questionnaires, which was distributed by the seven town associations through cooperation from Toni Community Center. The questionnaires were distributed with return envelopes in which the respondents were given one month to reply and post back to the author. Questionnaires targeting schoolteachers and students were complied and sent from the schools. The actual questionnaire sheet is attached in Appendix 2.

For the questionnaire targeting the residents, 607 sets of questionnaires were distributed in which 224 were returned (collection rate of 36.9%). The questionnaire for residents contains twenty questions in which the main issues are as below:

1. Profile of the respondents: Place of residence, sex, profession, number of children in household, number of years living in Toni.
2. Community's linkage with schools: Relationship with the schools before and after EJET.
3. Experiences from EJET: Evacuation place, desired improvements for evacuation place, people who provided assistance to/from during and 1-2 weeks after EJET.
4. DRR knowledge/skills: How it was acquired and how to further strengthen.
5. Perceptions on the future of community building in Toni.

For the schoolteachers, the questionnaires were distributed through the school principles. All twenty teachers, including the principles, responded. The questionnaire have 19 questions which includes the main issues below:

1. Profile: sex, responsible class, years in Toni ES or JHS, years of experience as teacher.
2. Experience during EJET: Person or organization who provided assistance to/from.
3. DRR education and activities: Cooperators in DRR activity implementation.
4. Linkage with community: Activities to further strengthen ties.
5. Community building: Roles that schools can take to contribute to Toni's recovery and

community building.

All 26 students in 6th and 7th (first year JHS) grades responded to the questionnaire. Among the six questions, the following two issues have been picked up for this paper:

1. Experiences of DRR activities in schools and community.
2. Desires for new school and possible roles for Toni's community building.

The questions were designed so that the focused topics can be analyzed by extracting various perceptions among different age groups and between teachers who were in Toni before EJET and those who came after EJET. Moreover, information on the gaps between people's perceptions on DRR and actual actions taken during EJET, changes in DRR activities and education after EJET and general perceptions in recovery and future of community building in Toni have been collected. It is also worth mentioning the limiting conditions that had to be considered for designing the questions in that the majority of the residents still were not fully aware of school centered community building concept and households without children in schools may have felt that the topic may not be of much concern to them. In addition, as half of teachers were appointed to work in Toni ES/JHS after EJET, there will be difference in the interpretation of the questions among the teachers. For the students, there was a request from the schools to avoid sensitive questions regarding EJET, as some of the students are still mentally unstable to answer such questions. At the time of the survey, the new location of the schools still have not been officially decided by the city government, although there was already a consensus to build both ES and JHS on the former JHS premises. However, discussions were still limited to hardware aspects of school recovery and not much had been discussed on the software issues.

3.7.2 Result of questionnaire survey for residents in Toni

-Results of the questionnaire survey (Residents)

Regarding the profile of the residents, 70% of the respondents are over 60 years old which are likely to be pensioners (29%) and/or self-employed (5%). For the working age group, around half is in the fishery/agricultural industry, while the other half are office staffs, employed in central Kamaishi. Over 70% of the residents have lived in Toni for more than 40 years, which

conceivably shows that people have spent most of their adult lives in Toni. As for percentage of households with children, only 21% of the respondents have children in kindergarten up to high school.

-Community's linkage with schools

As the interview survey results mentioned above shows, Toni residents have shown strong enthusiasm for education, culture and history that stands out even among other districts in Kamaishi. This has been the main factor that has encouraged the community members, including those with no children, to actively get engaged with the schools. Specifically, Figure 3.12 shows results on how they were linked with the schools before EJET and how they would like to be connected with the schools in the future. Before EJET, majority of the community members were connected with the school through school events, such as culture and sports festival. Others were linked through education activities, such as experience classes and DRR drills. After EJET, community's perception of schools has become much stronger as a DRR hub,

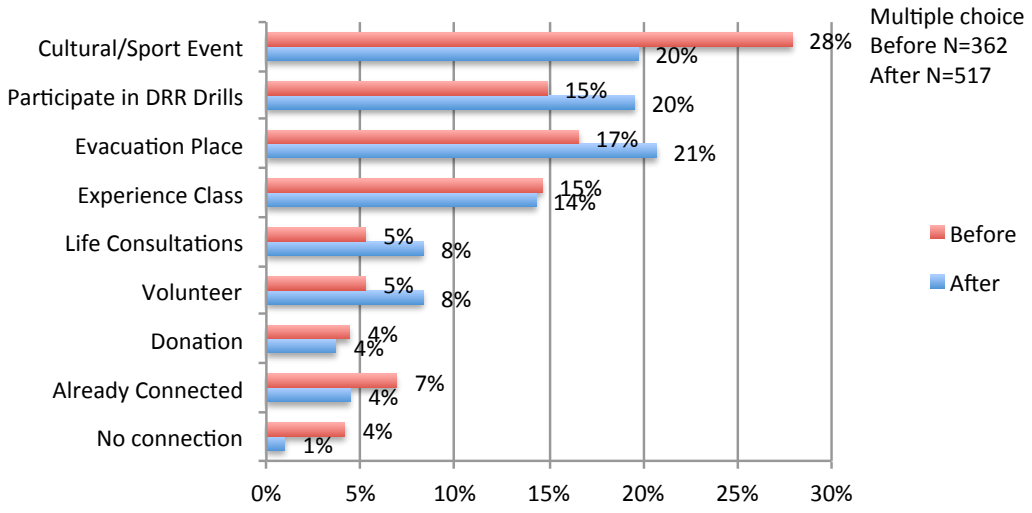


Figure 3.12 Community's linkage with schools before and after EJET

which is comprehensible considering Toni JHS is a designated evacuation place. On the other hand, because school events that were frequently conducted with community participation before EJET have not resumed after EJET, therefore, perceptions of community's connection with the schools have changed. The post-EJET perception of the community may continue to evolve in accordance with the status of recovery and how community building proceeds.

-Experience in responding to EJET

Looking into the response actions taken by Toni residents during EJET, the primary and final evacuation places during the disaster were surveyed. Although Toni JHS is one of the city's designated evacuation places, the result is shown separately with other places to highlight the school's functionality as evacuation place (Figure 3.13). Results show that most residents did evacuate to the designated evacuation place, but much less evacuated to Toni JHS (+30.2m) and even for those who did, continued to evacuate to higher grounds. In fact, a significant percentage of the evacuees fled to the social welfare facility on National Road 45 (+47.9m) fearing that the tsunami will reach the school grounds. A follow up question revealed that that over half of the respondents sought for safer locations with sufficient stockpiling and facilities as their primary and final evacuation places, which gave another reason why residents did not evacuate or stay at Toni JHS. Kamaishi BoE confirmed that because Toni JHS was not properly stockpiled with items such as blankets and stoves, evacuees did not stay at the school to avoid the cold March weather.

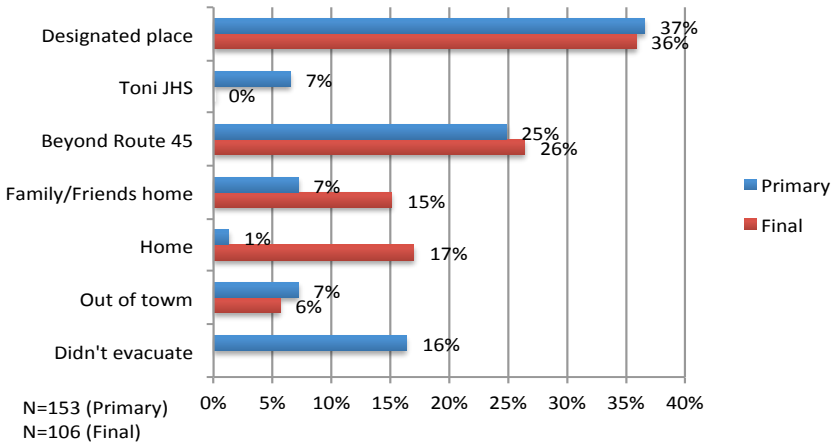


Figure 3.13 Primary and final evacuation place during EJET

Figure 3.14 is the result of question regarding assistance received during evacuation and one to two-week period after EJET. Results show that both during and after EJET, most of the assistance came from family members, neighbors and neighborhood organizations (town association and firefighting volunteer corps) because Toni became isolated with roads connecting the districts and city center were damaged. Since it took about a week for the first official relief goods to arrive in Toni, mutual help within the communities played an essential role for people to survive the emergency situation. From the previous

interview, the town association leader in Kerobe town revealed that the community members voluntarily brought food and fuel to the evacuation place, allowing all residents to have warm dinner on the night of the EJET.

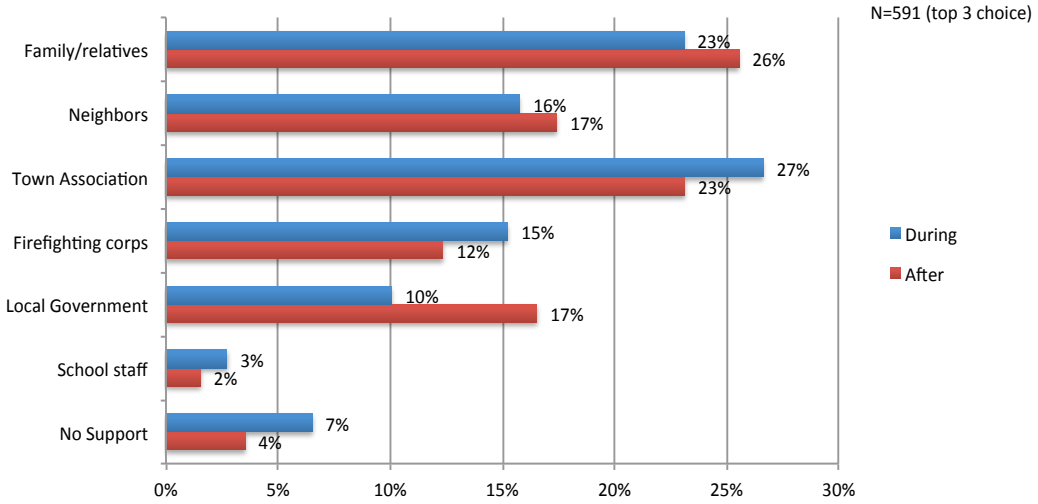


Figure 3.14 Assistance received during EJET response

-Perceptions of community building beyond recovery

For the question on what is most needed for community recovery and community building in Toni, Figure 3.15 shows that enhancing security and safety of communities was regarded the most important, reflecting the high concern of DRR in the region. In a related question, it became apparent that many of the local residents acquired their DRR knowledge and skills from local traditional stories that had been passed down from their parents or elder person in the community. 13% of the respondents answered that building good schools as most

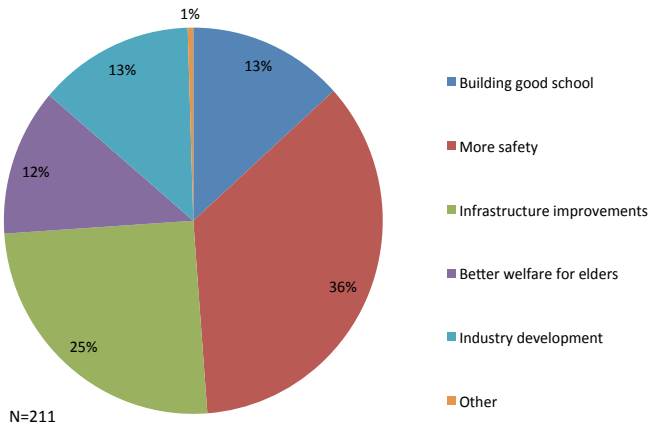


Figure 3.15 What is need for recovery of Toni

important and although this may not appear to be a significant percentage, considering that the households in Toni with schoolchildren only accounts for 21%, this shows a strong indication for Toni's interest for education and child raising that corresponds to the outcome of the interview survey. Recovery of industries, particularly in fisheries, also came out as an important issue to support employment and economy of the region. Finally, improvement in social welfare for the elderly was mentioned, indicating the needs of the increasing aging population in the communities.

-Results of the questionnaire survey (Teachers)

Twenty teachers responded to the questionnaire in which twelve had already worked in the Toni schools before EJET, while eight were assigned after EJET. Half of the teachers came from non-coastal cities in Iwate prefecture and possibly less conscious and knowledgeable about tsunami disasters compared to those from the coastal cities.

-Disaster response experience

Findings concerning to experience of schools in disaster response (Figure 3.16), local residents and town association were major cooperators of the schools in providing immediate assistance during EJET. Local firefighting volunteer corps members took a vital part in directing ES teachers to immediately evacuate all students to higher grounds. While the schools received assistance from their neighbors, the school also took roles in accepting and taking measures to people who evacuated to Toni JHS. Comparable to the initial response experience of the

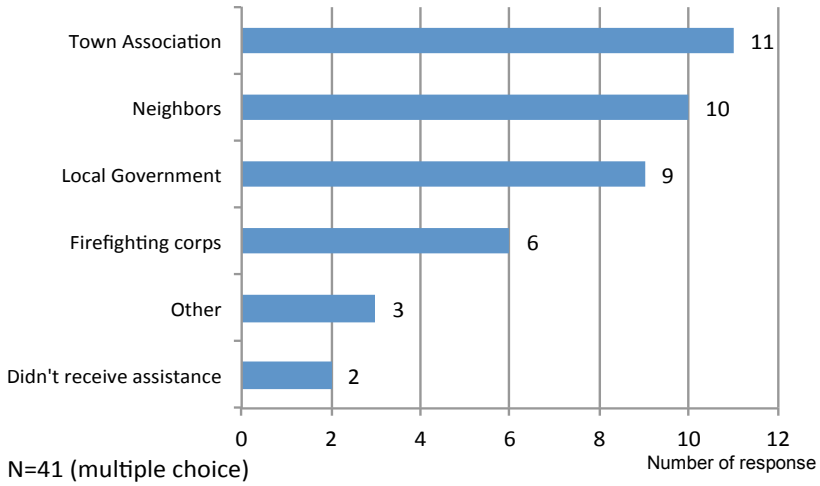


Figure 3.16 Assistance received from outside of school during EJET

residents, mutual assistance with the surrounding neighbors and organizations was crucial for the schools to respond effectively to EJET before official assistance became available.

- DRR education and activities

Toni schools have been very active in conducting various DRR activities and drills, especially since Kamaishi BoE adopted the Handbook for Tsunami Disaster Management Education in 2010. Figure 3.17 shows the result to the question regarding the actors in which the schools cooperated to conduct DRR activities. As the implementing agency of the handbook, the BoE has been providing technical support to the schools on a needed basis, although they do not directly participate in DRR activities. On an ad hoc basis, the experts and local volunteer firefighting corps has assisted the school in DRR drills. The figure shows less involvement of community residents and organizations in school DRR activities. Because actual implementation of DRR activities are decided by each school and its teachers, it is essentially up to them to develop the DRR program content and determine from who and how much involvement they would like to receive in implementing the DRR activities.

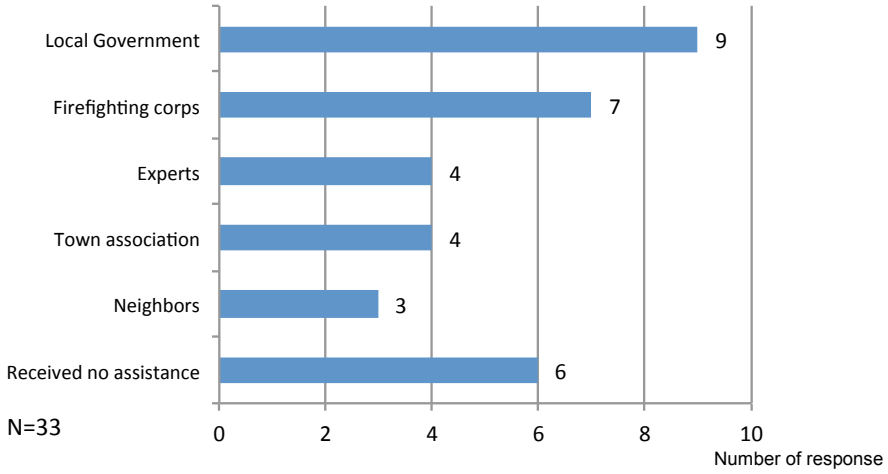


Figure 3.17 Cooperation received by school to conduct DRR activities

-School's role in recovery and community building

With regards to schools' perception on the role they can take to further strengthen the school – community linkage, the results between teachers who were assigned to Toni in the pre- and post- EJET are highlighted to present the different perceptions between them. Figure 3.18 shows that a significant number of teachers, especially those who had been in Toni before EJET,

responded positively in opening up the school facility to the community. In contrast, none were positive on planning new school events, mentioning on the difficulties in exploring with new activities before resuming normal school operations. As for perceptions on how the school can contribute to community recovery and building, majority of teachers noted the importance in incorporating regional education into the school activities so that the students would better understand the history, culture and industry of the region to strengthen their connection with their hometown.

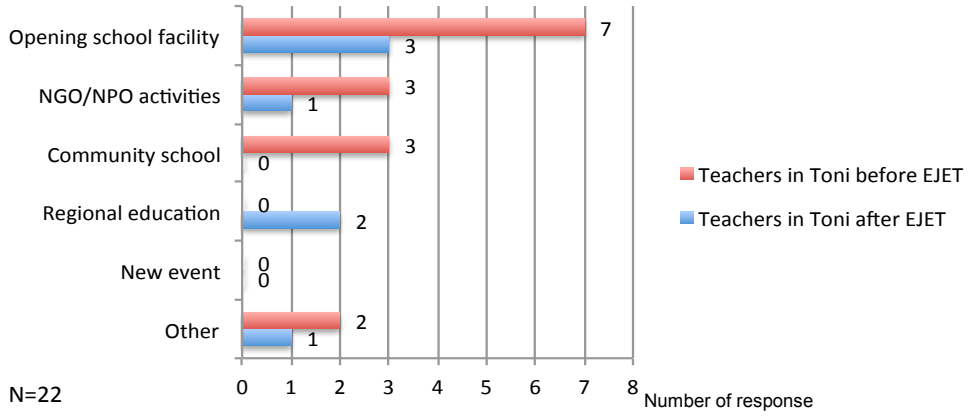


Figure 3.18 Options in which schools can strengthen links with

-Results of the questionnaire survey (Students)

26 students from sixth grade (six year ES) and seventh grade (first year JHS) were chosen as subjects for the questionnaire survey. Due to the small sample number and the limited questions allowed by the schools, the results may not show much significance as statistical data. However, some of the results did display several important facts the revealed possibilities for schools to help the students to take more active part in recovery and community building process. The first point touched upon their interest in taking part in recovery education, which consists of activities associated with the construction of their new school. In response, only 34% were willing to take part in such activities, possibly reflecting their weak psychological status of not wanting to remember the disaster through such activities. In part, this is confirmed through the interviews with the school principles in that schools are still not able to conduct school DRR education program considering the unstable mental conditions of the students. Another key fact shown was that only 27% have taken part in DRR activities with their communities, even prior to EJET. Although the students well

understand the importance of DRR through schools DRR programs, a significant number of students have not taken advantage of their community/regional DRR efforts that may very well protect them from disasters when they are outside of schools (e.g. at home, on the way and from schools). This concurs with the questionnaire result from a similar question asked to the teachers. While the surveys have shown that the schools and community members helped each other during actual response to EJET, if such exercise was carried out before the disaster, improvised response actions could have been better controlled. Finally, the students have shown enthusiasm in volunteering, helping with infrastructure building, joining community activities and greeting people in the community in response to questions on how they might be able to contribute to the recovery and community building of their own communities (Figure 3.19). This result is encouraging in that the students may indeed become a major workforce who will be contributing to the development and resilience building of their hometowns.

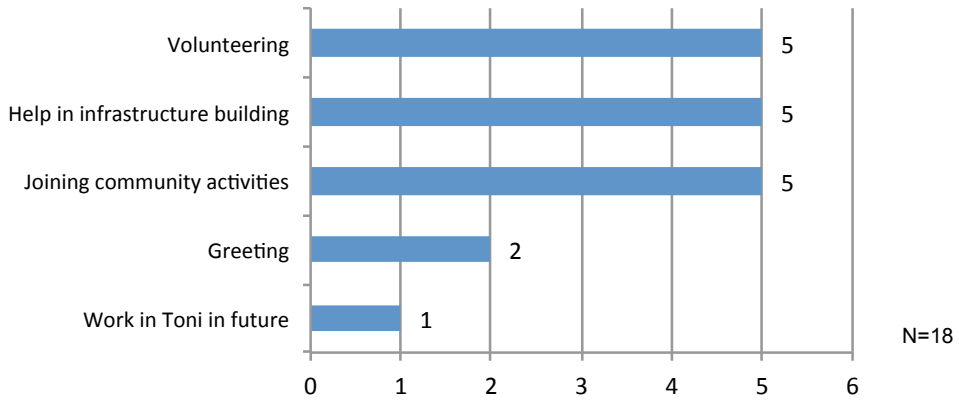


Figure 3.19 How students want to contribute for recovery of Toni

3.8 Summary of questionnaire survey results

The results of the surveys conducted in Toni District are consolidated and summarized below. Although the contents of the result may be commonly seen in other coastal Tohoku communities, the in-depth survey that looks into community recovery/building through the lens of school recovery as well as school – community linkage is perhaps unique to this research. The survey results were shared with School Construction Consultative Committee as a reference to be used as grounds for planning and implementing school recovery.

3.8.1 Community profile

The profile of the residents in Toni is of significance in understanding the context of the responses, especially in suggesting the way forward for school recovery. In addition, as the discussions expand to community building and strengthening disaster resilience of communities, school recovery and school DRR education need to reach beyond school premises. For example, Takeuchi (2011) notes on the fact that school DRR activities need to be connected with the communities even though community members may not experts in disaster management or DRR per se. One of the key challenges for connecting schools with communities is getting the community members who do not have children in their households thus are not directly attached to the schools. This was one of the concerns for conducting the surveys on school centered recovery in Toni because only 21% of the residents have children in their households. More than half (51%) of the residents are pensioners, unemployed or housewives, so the majority may not even have engagements with other community members on a regular basis. The profile of the teachers is also an important factor because at the time of the survey, half of the teachers including the principles that experienced EJET in Toni, had already been replaced with new teachers. As new teachers are inevitably unfamiliar with Toni and its residents, it will certainly affect the views for implementing the school centered recovery and community building concept. Gaps in DRR awareness among teachers have also been seen as an issue because some of the teachers are not originally from a coastal city. On the other hand, although teachers who have been in Toni before EJET have the connections with the communities, many expressed reluctance in experimenting new ideas that would thrust school recovery beyond situations before the disaster due to possible traumatization from the disaster. It is critical that survey results are seen through the lens of these stakeholder profiles.

3.8.2 Perceptions of school – community linkage in pre- and post- EJET

With regards to school – community linkage, both pre- and post- perceptions of the residents were surveyed to look into the possible changes after the EJET experience. The results showed two significant points. One of them is the residents' clear perception of schools (former Toni JHS, new Toni ES/JHS) as a DRR hub for acquiring DRR skills and for evacuation had been high (32%) and increased after EJET (41%). This perception is also shown in the response for the question on what the residents want as the main function for the new schools aside from education in which DRR function received high percentage of replies for both households with

children (38%) and without children (43%). The other point is that both groups placed emphasis of new schools to become a child raising support center. While it is understandable that households with children would prioritize this function (32%), households with no children also responded with high percentage (28%). These results reconfirmed the keen interest of Toni for education and child raising observed from the interview and questionnaire survey. While most residents were connected with schools through events before EJET, such as sports and culture festivals, these events still have not been resumed at the time of the survey. Eventually in the recovery process, as school organized events recommence, other activities including social/regional education and DRR drills in which teachers believe to be the most effective ways that have been connecting for linking schools with their communities. The teachers also feel that opening the school facilities to the communities can help reconnect with the communities and further strengthen the linkage. The schools should also assist students' aspirations to contribute to this process through volunteer work and being a part of the recovery process. Very much so, this is the purpose of School Centered Recovery concept that is aimed to help of schools and communities reintegrate to facilitate school and community recovery.

3.8.3 EJET response experience

As for EJET experience and ideas to further improve DRR measures in Toni, it is important to note that despite of Toni residents' strong perspective of schools as being a DRR hub of the community, most of those who evacuated to the designated evacuation place, including Toni JHS, did not stay, but continued to evacuate to higher locations. On this, although the evacuees may have took precautions to ensure their safety, 20% of residents feel that the school is not in a safe enough location. Another 17% think that there is need for substantial improvements in stockpiling, equipment and facility for it to function as community evacuation center. This situation agrees with the 2011 report released by National Institute for Educational Policy Research (NIER), which revealed that only 78% of designated schools have toilets in the gymnasium, 65% have toilets accessible from outside, 35.2% have disaster prevention and stockpiling warehouse, 29.7% have water supplying facilities during suspension of water supply, 18% have electric generators and 30.2% have emergency communication equipment. Moreover, the study also showed striking fact that only 32.7% of the schools owned an evacuation operation manual despite of the fact that they will become evacuation centers during emergencies (NIER 2011). As the case, it is essential to ensure that DRR functions will

be sufficient in the new Toni ES/JHS, which should be planned and checked with the communities so that the schools will be able to meet their needs during emergencies.

In responding to EJET, surveys showed that majority of the residents received support from town association members, relatives and neighbors (66%) displaying strong evidence of "mutual help" playing a significant role for the survival of Toni residents. Due to damages to roads and tunnels that connected Toni with the city center, many of the townships were isolated for about a week after EJET. As the case, it had been vital for the community members to support each other without help from the government. Although the role of the local government (e.g. BoE, firefighting corps, etc.) gradually increased in supporting affected residents passing two weeks after EJET, mutual help among local residents remained high. Likewise, a greater part of the assistance for the schools came from the local communities and not the local government (51%) and in turn, schoolteachers also attended to community members that evacuated to Toni JHS. The limitation of government's "public help" and the importance of local communities to respond effectively as first responders had already been widely recognized and reemphasized through the EJET experience (Cabinet Office 2011). Many municipalities have declared that local government will not always be able to provide timely assistance during emergencies and therefore, the communities themselves need to strengthen disaster preparedness from normal time. MEXT has also started a project, "Support for Revitalization of Disaster Affected Regional Community Through Study" which assigns a regional coordinator to develop community programs that include DRR education and drills with other activities that are intended to boost school – community engagements. Such efforts are expected to maintain and reinforce what had worked in responding to EJET and remove any bottlenecks that may exist in building "mutual help" capacities of communities.

3.8.4 Acquirement of DRR knowledge and skills

While it became apparent that most of the response actions of community and schools in Toni had to be improvised due to the magnitude of EJET, high awareness for DRR that existed before the disaster have most likely helped them to make appropriate on the spot decisions. In this context, the survey attempted to look at the details of where the residents and schools acquired their DRR knowledge and the activities they have been implementing prior to the disaster. As the results show, 37% of the residents responded that traditional local knowledge in addition to DRR events (28%) and lectures/seminars (13%) have been the basis for their knowledge, showing lessons (e.g. *Tsunami Tendenko*) passed down from different generations

within families and communities significantly effective in actual disaster situations. Hence, in order for Toni to maintain its DRR knowledge and skills, it would be most effective if such informal DRR knowledge can be incorporated into former education and official DRR programs. The residents also stated that for improving DRR capacity of Toni, enhancing cooperation among community members (28%) and participating in community events (24%) as some of the important factors. As the case, it is more fitting for Toni to acquire DRR knowledge together instead of attempting to attain it individually.

The schools teachers, on the other hand, have no options but to acquire DRR knowledge other than from receiving formal training or information from their predecessors, as they are not from the locality. Because disaster experience of individuals is commonly limited (Dufty 2009), the school should fully utilize the local DRR knowledge by incorporating them into the school DRR education and in turn, disseminate the knowledge back to the community (Morrow 1999). Moreover, as 34% of the teachers relied on their superiors for making first response decision during EJET, it is also critical to ensure that the school principles are capable to play their key functions during disaster response through proper training and working with the communities to understand the local context for DRR. In this sense, there are still opportunities for school – community collaboration in DRR as only a small percentage of community members (9%) and town association (12%) has taken part in school DRR activities. It would also be ideal for schools to either encourage their students to take part in the regional DRR drills or invite the communities to join the school DRR drills so that the students and communities can get familiarized with each other that would be advantageous during actual disaster events.

3.8.5 Prospects of School Centered Community Building in Toni

Perceptions of the community regarding the needs for strong recovery and sustainable community building for the future of Toni range from various viewpoints that reflect the status of post-EJET. While most response touched upon improving safety of communities (36%) as the way forward in the aftermath of experiencing EJET, other replies such as improvements to infrastructures (25%), better social welfare for elders (12%) and strengthening of local industries (13%) had been issues that existed in Toni before the disaster. In this respect, much of community disaster recovery is actually a continuation of efforts that would have carried on even if the disaster did not occur. However, it is for a fact that the recovery process can provide opportunities for more financial and human resource support to expedite the efforts

to build back better. For example, while 13% of the residents perceive reconstructing of damaged schools as an opportunity, if they can be designed to become community hubs, it will not only be economically efficient for communities, but also can bring added impact in reconnecting community ties that have been weakened by EJET. The highly anticipated construction of Toni Sanriku Coastal Highway Interchange, being planned under the slogan of leading project for early recovery, is another opportunity for attracting new families with students to Toni from other areas. Plans to maximize such recovery opportunities can become a powerful development opportunity for small communities like Toni. Still, many challenges remain for Toni in which the progression of the aging population has been a major cutback for communities to have a vision and make decisions about their future. On this note, majority of Toni teachers envisions that providing education for students to better understand and build pride on the history and culture that constitute the uniqueness and charm of the region is the role that the school can take to contribute to the overall recovery process. Supporting ideas of students (e.g. volunteering, joining community activities) and getting them more involved in the recovery and community building process is also essential in maintaining momentum for realizing both short and long term goals of Toni communities. However, at the time of the surveys, questions on making students as actors for recovery had been difficult to pursue because teachers and students still suffered from trauma of EJET experience. Perhaps as situations approach closer to normalcy in the recovery process, this can be an important issue to be considered for investigation. To further purse on this and other factors raised for Toni's recovery and community building, individuals and organizations such as local experts (e.g. former superintendent from Toni) and local community based organizations (e.g. NGOs contracted by BoE) may be the key to effectively coordinate the various future efforts that aim for a common goal.

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Chapter 4. Efforts for School Based Disaster Resilient Communities in Pre-Disaster in Saijo

As discussed in the previous chapters, there is convincing potential that schools can take a significant role in recovery and community building by linking various stakeholders through their facilities and educational activities. Chapter 3 has provided a specific case from Toni District, Kamaishi in which school recovery in coordination and collaboration with schools (teachers and students), local government and community residents can facilitate the overall community recovery. With aims to compare and utilize good practices as reference from other regions, this chapter looks into the city wide school DRR education program in Saijo, Ehime Prefecture that has been implemented since 2006 after being affected by a major typhoon disaster in 2004. With risks of getting affected by the anticipated Nankai Trough Megathrust Earthquake (NTME), the Saijo BoE has been continuing with efforts in working together with schools and various community stakeholders to further strengthen disaster resilience of the city for different types of disasters.

4.1 History and experiences of natural disasters in Saijo

Saijo, with moderate annual rainfall and the southern mountain rage protecting the city from typhoons, has not experienced major disasters as such and relatively has lower risk to hydrometeorological disasters. However in 2004, the city was affected by series of typhoons that occurred from June until September in which six landed on Shikoku Island, triggering record-breaking rainfalls, which caused damages to 2,774 public facilities and 29 deaths in the whole prefecture, including 5 deaths in Saijo. The largest damage was caused by Typhoon No.21, which triggered massive landslides and inundation that also paralyzed transportation

Table 4.1 Disaster damages of 2004 typhoon disaster (figures) (Source: Saijo City)

Date of occurrence	September 2004
Recorded rainfall	257mm (plain area) 442mm (mountainous area)
Deaths	5
Economical damage	JPY 17 billion (about USD 170 million)
Damaged homes	25 (total damage), 91 (partial damage)
Inundation above floor level	489
Damaged road	187
Damaged bridge	5

networks, affecting about 1,300 infrastructures in the city causing economical damages up to JPY17 billion (USD170 million) (Table 4.1 above and Figure 4.1). The disaster was among the most shocking tragedy that Saijo had experienced in the recent years, which compelled the city to take bold steps in conducting a complete make over of their DRR planning. Immediately after the event, the city established the Recovery and DRR Team and in 2006, institutionalized the new Citizen's Safety Division to start an earnest effort to prepare for future emergency response and to reinforce disaster resilience of the city. There are three tectonic lines in which Japan's longest Median Tectonic Line (MTL) run through the southern part of the city. With records and traces of earthquake and tsunami over the years that go as far back as Houei Earthquake in the 18th century and Ansei-nankai Earthquake in the 19th century (Ehime Prefecture 2013), the city is also at high risk from earthquake and tsunami.

Figure 4.1 Observed damages from the 2004 disaster (Source: Saijo City)

4.2 New measures for the Nankai Trough Megathrust Earthquake (NTME) in Saijo

4.2.1 Central government's views to prepare for NTME

While taking DRR measures after the 2004 typhoon disaster and from observing the effects of EJET in the Tohoku Region, Saijo become even more alert after being designated a city located in the "Priority Promotion Regions for Taking DRR Measures to Nankai Trough Earthquake." On March 31, 2012, the Nankai Trough Massive Earthquake Model Investigative Commission of the Cabinet Office of Japan, which was established in August 2011, presented its first report on its prediction on the seismic intensity and tsunami height caused by the anticipated Nankai Trough Megathrust Earthquake (NTME). This was the first time such study was conducted after EJET and ten years after the Act on Special Measures for Disaster Prevention Measures for the Tonankai – Nankai Earthquake was adopted in 2002 that was followed by the Master Plan for Disaster Prevention Measures in 2003, Basic Plan for Promotion in 2004 and the Strategy for Disaster Prevention Measures in 2005. The purpose of the new study conducted by the Cabinet Office was to incorporate the lessons from EJET by considering the most severe

scenarios in order to reduce the unexpected factors experienced with EJET, basing them on the up-to-date scientific basis. Another report was released in May 2013 by the Cabinet Office from the discussions held by the Working Group to Investigate Disaster Prevention Measures to the Nankai Trough Massive Earthquake, which highlighted the five characteristics of NTME to be considered for DRR planning as below.

(1) Strong shake and massive tsunami will occur in wide areas

(2) Arrival time of tsunami in some areas will be extremely short

(3) Possibilities of multiple mega earthquakes occurring one after another

(4) Because of these, damages will be immense and penetrating over wide area

(5) Damages and aerial extensiveness will be unprecedented from past disasters

Because of these characteristics, the report calls for urgent measures for building required disaster prevention infrastructures, capacity building in self-help and mutual-help of communities and retrofitting of homes and public buildings. It also mentions that enhancement in coordination of national government, local governments, communities and other stakeholders from non-disaster time is of essence to cope with such enormous disasters. In accordance, the revised law in 2013 was renamed as Act on Special Measures for Disaster Prevention Measures for the Nankai Trough Megathrust Earthquake and followed by the adoption of the Basic Plan for Promoting Disaster Prevention Measures for Nankai Trough Earthquake in March 2014. The Basic Plan has provided the principles for implementing required measures noted in the Cabinet Office reports with clear targets and timeline. The Plan provides the basis for different national agencies and local governments to develop their own respective DRR plans in which they are required to promote in their respective communities and revise them with the changes in social situations.

4.2.2 Anticipated effects of NTME

With target priority on saving human lives before anything, the first report in March 2012 by the Nankai Trough Massive Earthquake Model Investigative Commission provided projections of NTME's effect on people and buildings. The second report in August 2012 further refined the disaster predictions with higher resolution (from 50m to 10m mesh), added projections on tsunami inundation areas and estimated economical damages. According to the severest scenario among the five scenarios presented in the reports, 1,346,000 buildings will be damaged by ground motion with an additional 134,000 by land liquefaction. For human

casualties, estimations greatly vary from 323,000 to 32,000, depending on factors such as location of the epicenter, distance from land, occurring time, wind speed and percentage of early evacuation by the communities (Central Disaster Prevention Council 2014a). Timing is the principal factor for the range of damage intensity in which midnight during the winter season is likely to produce more death because cold weather will affect people even if they are able to evacuate from the tsunami. In the first week after the disaster, five million people are expected to be in the evacuation centers. Strong wind is an important factor to exacerbate the disaster as fires caused by the earthquake and tsunami may spread faster and further to different areas. The report identifies 707 municipalities across 29 prefectures from Kanto Region that includes greater Tokyo area to the southern most island of Okinawa along the Nankai Trough as "Priority Promotion Regions for Taking DRR Measures to Nankai Trough Earthquake" with criteria of possible occurrence of earthquake above 6M, tsunami waves above 3m with low coastal dykes, level of DRR measures and past disaster experiences. Figure 4.2 shows a map created by the Cabinet Office that marks the aforementioned regions. The economical damages in these regions are estimated to reach up to JPY338.1 trillion (Central Disaster Prevention Council 2014a). As for the probability of NTME, the Committee of Earthquake Research of MEXT has released information in 2013 that a M8-M9 class earthquake will occur within the next 30 years with 60-70% probability.

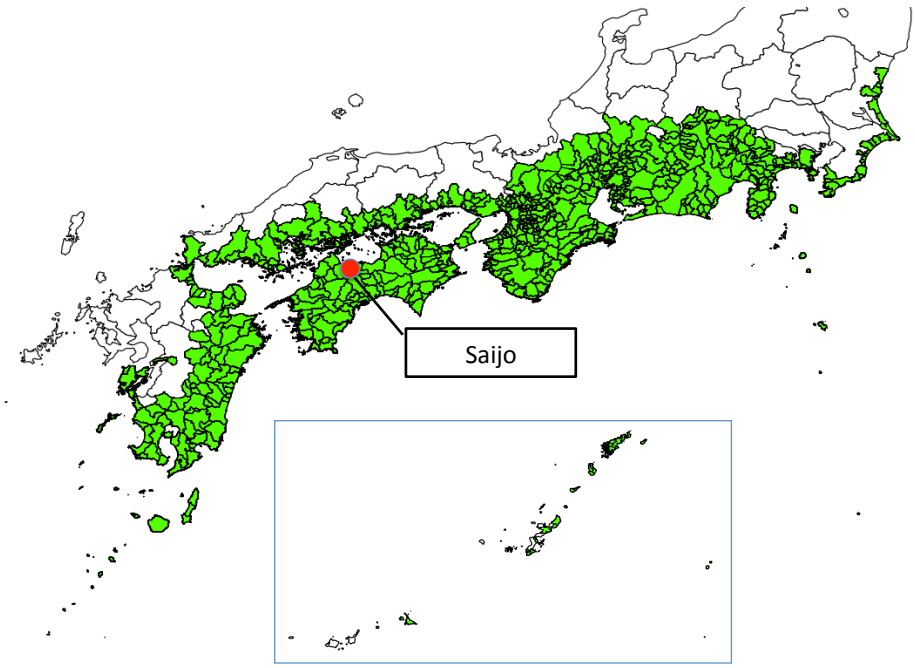

Figure 4.2 Priority Regions for Promoting DRR Measures to Nankai Trough Earthquake (map produced by Cabinet Office 2014)

4.2.3 Policies for local levels to take measures to NTME

Basic Plan for Promoting Disaster Prevention Measures for Nankai Trough Earthquake is the principle document of the Japanese government in taking measures to NTME. The specific aim of the plan is to reduce the projected causality of 323,000 by 80% and to decrease the full collapse building of 2.5 million by 50% in a ten-year time frame (Central Disaster Prevention Council 2014b). The plan covers the specific issues listed below.

(1) **Measures for earthquakes**: Earthquake proofing of buildings, measures for fires, measures for geohazard disasters (landslide, liquefaction), earthquake proofing lifeline infrastructures.

(2) **Measures for tsunami:** Building mechanisms for strengthening tsunami resilience, support to ensure safe evacuation.

(3) **Strengthening of comprehensive DRR system:** Enhancing DRR education and drills, coordination with volunteer groups, DRR capacities at community level, measures for long period earthquakes.

(4) **Emergency response preparedness:** Enhancing disaster response mechanism, search and rescue, medical response, fire extinguish system, emergency transport system, securing food, water and other relief goods, securing fuel, measures to evacuees, support for people who are unable to return home after disasters, prompt recovery of lifeline infrastructures, maintaining hygiene and sanitation, handling of corpse, management of disaster waste, consolidation and dissemination of disaster information, securing social order, effective use of public space and facilities, establishment of wide-area support system.

(5) **Maintaining order in disaster affected areas:** Maintaining access of important traffic network, business continuity planning of private and public sectors.

(6) **Measures to additional hazards:** Preventive measures to secondary or complex disasters occurring after NTME.

(7) **Measures to regional specific issues:** Securing safety of high rise buildings, underground malls, shopping centers and train stations, zero-meter areas, nuclear power plant, petrochemical facilities, townships with high risk of getting isolated**,** DRR for coastal industries, important cultural assets.

The issues covered above are relatively comprehensive, including measures for specific disaster type as well as non-structural plans that will compliment each other. Many of

the lessons, particularly from mega disasters including EJET, Kobe Earthquake and Niigata Earthquake in 2004 has been incorporated in the plan, such as wide-area support system, recovery of lifeline infrastructures, support for townships getting isolated in rural areas, support for people who are unable to return home in urban areas and risk reduction measures for petrochemical facilities in industrial areas. Among the items raised in the plan above, two tasks are specifically assigned to MEXT to strengthen school DRR under the responsibilities of MEXT below. In actuality, there are other measures that the education sector are directly or indirectly involved in which some of the tasks are overlapping (e.g. "earthquake proofing of schools" and " earthquake proofing of DRR hubs" in (1) above) or specifically not associated to the education sector (e.g. "effective use of public facilities for emergency response preparedness" in (4) above).

1 **Earthquake proofing schools (linked with (1) above):**

Aim: Securing safety of students and regional community when schools are used as evacuation centers.

Target: All public schools are earthquake proofed by 2015.

2 **Promotion of DRR education (linked with (3) above):**

Aim: Dissemination of DRR knowledge of students and regional community thorough DRR education.

Target: Under the advice and directive of relevant agencies, all coastal municipalities designated as DRR promotion area conduct tsunami DRR drills (no specified time frame).

In the scope of school centered recovery and community building, most of the other issues raised in the plan is either directly or indirectly connected with schools and their link with the communities. For example, strengthening of coastal infrastructures may include more accessible evacuation routes to and from the schools, improved information dissemination can alert schools and communities to make informed response decisions and strengthening evacuation centers can supply schools with sufficient materials and equipment to function more effectively during disasters. In addition, DRR education and drills can be conducted in conjunction with local authorities and community DRR volunteers. Enhanced support network system can also help schools cope with initial response actions and recovery efforts when government assistance is not available.

4.2.4 Planning DRR measures to NTME in the education sector

For specific measures in the education sector for NTME, the Committee for Policy Planning on Disaster Management of the Central Disaster Management Council in 2012 has discussed and reported on two main topics in DRR education and strengthening school facilities. Under DRR education component, the emphasis has been placed on DRR education/studies and transmission of lessons learned. The purpose is to develop and systematic way to build a culture of DRR to future generations by reviewing and further enhancing school DRR education programs. For this, capacity building of schoolteachers and other available resources in the community, such as former teachers and principles, is broached as most important. It also touches upon a holistic system in utilizing social education facilities such as community centers and conducting DRR activities in the context of life-long and experience based education with participation of different community stakeholders. This is expected to make the contents more relevant to the everyday lives of the communities. Under the component to strengthen school facilities, the schools together with community centers, social education facilities and social welfare facilities are demanded to function as hubs to facilitate community interaction and to function better as evacuation center during emergencies. Therefore, these facilities need to be sufficiently equipped and stocked with items that will allow them to accommodate evacuees. Also, earthquake proofing as well as securing lifeline infrastructures of the facilities should be take measures to.

4.2.5 Application of EJET experience for taking measures to NTME in the education sector

-Infrastructural measures

MEXT has released an emergency report, "Strengthening School Facilities Based on Damages Experienced in EJET" in July 2011. As noted in the previous chapter, over 6,000 public schools received damages from EJET in which 600 of them became evacuation centers, but poor DRR function due to lack of proper electricity, water supply and space turned out to be a major issue. As a place that house children, MEXT has developed a series of projects, including the "Project to Strengthen DRR Functions of School Facilities" that emphasized on improving the structural and non-structural aspects of schools as well as considerations to role of schools as community hubs during non-emergency time. Since then, earthquake proofing of school buildings have progressed up to 84.8% out of all public ES and JHS in Japan. Besides this, 29.7% non-structural parts of school facilities have been earthquake proofed. The location of

the school itself became another element to be reconsidered, although in some regions, available plot to build new schools has been a big challenge. However, the percentage of schools designated as evacuation centers remains high at 89.3%, but only 35.2% owns stockpile warehouse, 18% has stand-alone electric generators and 29.7% has auxiliary water tanks (NIER 2011). MEXT has targeted 2016 to improve this situation with a series of new plans to enhance disaster resilience of school facilities in order to make schools a safer place for students to be educated and lead their lives and to function effectively as evacuation centers.

-Disaster management and DRR education

While the magnitude of EJET required communities to make on the spot decision for their response actions, many had difficulties in doing so. Communication was a critical problem in which schools could not provide situation reports to the local government and to parents. Handover of students to their parents was another issue, as numerous schools did not have a plan for smooth operation. It is known that some schools allowed students to go home with parents, despite of the fact that the schools were located in a safer place then their homes. Overloading tasks of schoolteachers in having to take care of evacuees from peripheral communities in addition to looking after the students and evacuating them also became apparent. In order to improve on these issues from lessons learned from EJET, MEXT has categorized its "next steps" policy in three categories.

(1) DRR education

(a) Development of education that nurture attitude to save own lives, knowledge and skills when faced with disasters.

(b) Mainstreaming education that creates consciousness to become supporters in building safe and ensuring society.

(2) DRR management and collective activities

Sufficient implementation of DRR management activities to ensure safety during disasters through better equipment, DRR leader trainings, improved disaster management manuals and coordinated DRR drills with families and regional communities.

(3) Remaining issues

Conduct consultations to seek synergies with DRR and other safety-related studies.

The policy's basic principle lies in systematically and holistically educating students with to become not only self-reliant, but also supporting when faced with disasters through DRR education programs that are suitable for each development level. Incorporation of EJET lessons in the programs, drills and other activities is also seen as important. Planning for these activities need to be developed in a participatory approach and under good coordination with relevant stakeholders that include local government departments, parents and community leaders. Flexibility is another important concept so that improvised decisions and actions can be taken when faced with unanticipated disaster situations.

4.2.6 Preparing for NTME in Saijo

As noted above, because Saijo has been designated as one of the cities of "Priority Promotion Regions for Taking DRR Measures to Nankai Trough Earthquake," the city has been taking additional DRR measures with consideration of new disaster scenarios. Based on the second report by the Nankai Trough Massive Earthquake Model Investigative Commission in 2012, Saijo has predicted that the city will experience a maximum 7M that will trigger tsunami at the height of 4m that will arrive within three to four hours after the tremor (Saijo City 2013). An Inundation map has been developed, marking wide areas in along the coast and the five main rivers that flow out to the Seto Inland Sea through the city as possible danger areas. Liquefaction in the coastal landfill area, where many of the industries are located, has also been considered as a high possibility. Detailed projections of disaster damages developed by Saijo, based on the most severe scenario presented by the Cabinet Office report, are summarized below.

(1) **Structural damage:** 33,132 (total damage), 17,541 (partial damage)

(2) **Human casualties:** 3,648 (deaths), 5,383 (injuries)

(3) **Percentage of population affected by damages to lifeline:** 99.8% (water supply), 99.8% (sewerage), 99.8% (electricity), 95.3% (telecommunications)

(4) **Displaced people:** 76,145 (after one month), 6,881 households (required temporary housing)

The above is based on the First Report on Projection of Earthquake Damage Survey released by Ehime Prefecture on September 2013, which is based and updated from the projections made for the Tokai – Tonankai – Nankai Earthquake in 2006. Ehime Prefecture plans to present the Second Report that will incorporate new forecasts for human and

structural damages and economical effects of NTME. With this, the Committee on Examining Measures for Wide-Area DRR and Risk Reduction consisting of members from subject municipalities will be established to discuss on detailed DRR measures.

4.2.7 Efforts in taking city wide DRR measures for the education sector in Saijo

After experiencing the 2004 typhoon disaster and anticipating the NTME occurring with 60% possibility within the next 30 years, Saijo immediately started discussions to revise its DRR planning with the following four concepts receiving technical guidance from Kyoto University and experts from other relevant organizations.

(1) **Make citizens the main actors of DRR:** Make every citizen in the city to become self-conscious that they are one of the main actors in DRR.

(2) **Develop mechanism to save the most vulnerable group:** Build mechanism so that there is no vulnerable group existing in the city.

(3) **Share regional DRR culture:** Compile all DRR culture that exist in the city and share them throughout the city extensively.

(4) **Deliver message to next generation to build disaster resilient society:** Train young leaders with DRR capacity

With combined considerations in preparing for NTME, the city soon started implementation of four DRR programs. The program that is directly linked with schools is the 12-year-old Education Program in which implementation started from 2006. The program aims to build a community centered DRR culture by educating students with social skills and DRR capacity through the acquirement of DRR knowledge and skills. Although 12 year olds (6th grade) are normally considered as the vulnerable group to disasters, they are in fact able of think and make decisions by themselves. It is for this reason that Saijo targeted the 12 year olds to start DRR education. Not only will the 12 year old acquire DRR knowledge and skills through the program, they will also be able to acquire skills that will nurture their critical thinking and decision making, which are some of the important elements in becoming an adult. For implementation, the Steering Committee, consisting of school representatives, has been established that will coordinate with the Disaster Management Division of the city government as well as with MILT, Self Defense Force, Fire Department, NTT (Nippon Telegraph and Telephone Corporation) on needed basis (Figure 4.3). It is worth noting that this program had been solely initiated by Saijo under the strong leadership of former mayor Ito, with no

technical or budgetary support from the prefectural government.

Some of the main events of the program that are conducted annually are the DRR Leader Training and the DRR Summit. For the DRR Summit, about 60 students (6th grade) from 26 elementary schools participate to decide on what DRR topics they would like to study and to present as their summit declaration. DRR Leader Training is conducted during summer vacation in which participating students acquire DRR knowledge and skills by conducting earthquake simulation vehicle exercise, first-aid training, handling of emergency relief goods and town watching to identify both safe and dangerous areas around their schools. The leaders who received the trainings then consider which activities will be implementable at their own

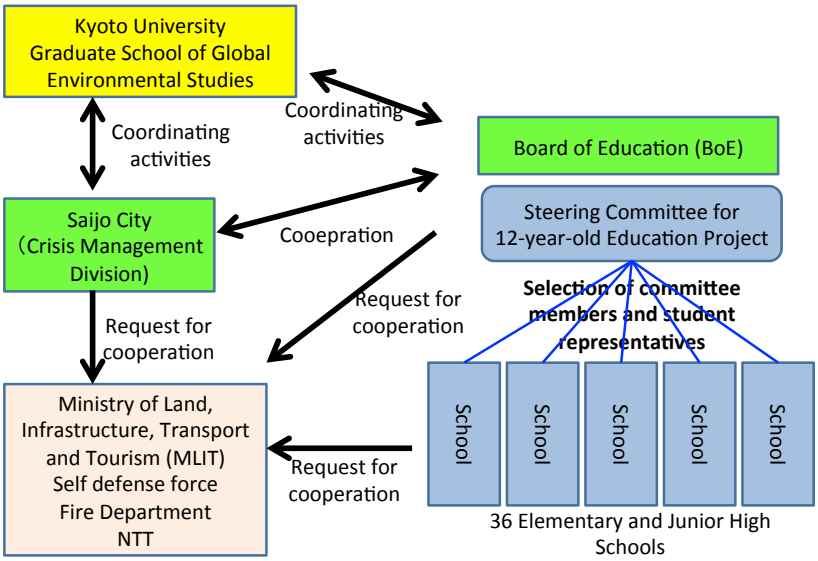

Figure 4.3 Structure for planning 12-year-old Education Program (Saijo City)

schools in the second semester. Specific example of selected activities include, evaluating and suggesting better evacuation routes when faced with earthquake and tsunami, school route town watching, listing of emergency supplies that can be bought at ¥100 store. In addition, activities such as making sandbags, bucket relay, rescue simulation (with guidance from the fire department) and Disaster Imagination Game (DIG) with the cooperation from the town associations have been conducted at Saijo schools.

Town watching is perhaps the highlight of this program with regards to connecting schools with communities through joint DRR activities. Yoshida (2007) remarks that the concept of town watching originated from necessity for establishing a DRR network that connects the plain and mountainous areas of the city for strengthening disaster resilience. Therefore, town watching actually is comprised of (a) Mountain Watching: For understanding

disaster risks (e.g. landslides) and environmental issues (e.g. role of forests) in mountainous areas, (b) Town Watching: For understanding disaster and environmental issues in plain/urban areas such as floods and earthquakes and (c) Coastal Watching: For understanding disaster and environmental risks such as tsunami and storm surges (Shaw and Takeuchi 2009). These activities, do not only help students and community members better understand their surrounding environment, but also support building community networks, build interest and familiarity among community members, such as students with elderly people residing in different areas of the city that carries different profiles and risks. In Saijo, town watching has been conducted in target school districts in grouping with (a) School: 2 teachers and 6 students, (b) Local government: 1 official from BoE and DRR divisions and (b) Community: 2 parents and 2 members of neighborhood association (Figure 4.4). The group observes their community to identify possible danger spots, receive lectures from government officials on the 2004 typhoon disaster and DRR issues of the city and interview community members on past disaster experiences. Continuation of town watching is the key as well as a challenge for enhancing its practicality. It is therefore important that this process is monitored and evaluated to confirm the impact of the activity and to refine the program contents (Yoshida 2007).

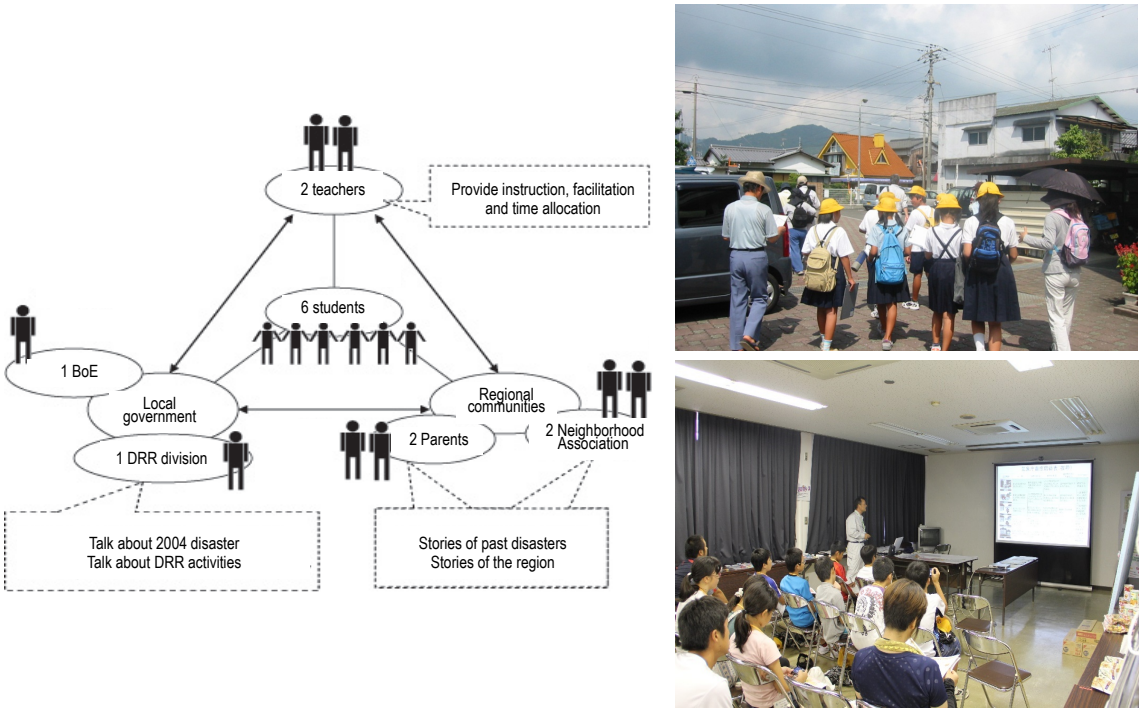

Figure 4.4 Grouping for implementing town watching (left: adopted from Shaw and Takeuchi 2009), Scene from town watching (right: photos by Saijo City)

Soon after EJET, Saijo City BoE had interviewed 35 public ES and JHS to reexamine DRR activities, evacuation routes and locations. Furthermore, BoE inspected the time required to move from initial evacuation place to the secondary evacuation areas on foot and changed the evacuation plan as needed. Some schools, assuming future emergency situations, added portable toilets and arranged unused classrooms to be used by evacuees. In order to ensure sustainability of the activities, "Forest is My Friend Project" has been newly considered to conduct follow up trainings for JHS students who have taken part in the 12-year-old Education Program in the past. Other activities that would strengthen vertical coordination with high schools, kindergarten and pre-schools are also being considered for continuity. Recognizing the importance of school – community linkage from experience of EJET, program have been further reinforced by ensuring that the activities are not confined in the schools, but outreaching to the regional communities through school education and regional DRR activities. Ideally, sustainability and continuation of the program activities and active involvement of the program will create a cycle in which students will be willing to join volunteer DRR groups, become the DRR leaders in the community and eventually teach their peers and even children when they become adults. For further steps, Saijo is also planning to effectively utilize the regional festivals for DRR advocacy.

4.3 Profile of Saijo City

4.3.1 Basic profile

Saijo City (33° 55′ N 133° 11′ E) of Ehime Prefecture, located in northern Shikoku Island, is a city with population of 111,366 and land area of 509 ㎢ (Figure 4.5). The geography can be characterized as having a narrow plain area that can be used as residential areas (consisting 30% of city's total area), sandwiched by the tallest mountain range in western Japan, Mount Ishizuchi, and shoreline that faces the Seto Inland Sea. The city is known for having a plentiful ground water resource and has been repeatedly awarded for owning one of the most delicious spring water nationwide. Because of this, aside from the city being a significant agricultural production center of the prefecture, it has one of the largest industrial zones, including semi-conductor production that has been contributing to the development of the regional economy. Saijo is also rich in history and culture, particularly with traditional festivals – the biggest being the Saijo Festival, which has been one of the most important events for building community pride and ties for Saijo residents (Figure 4.6).

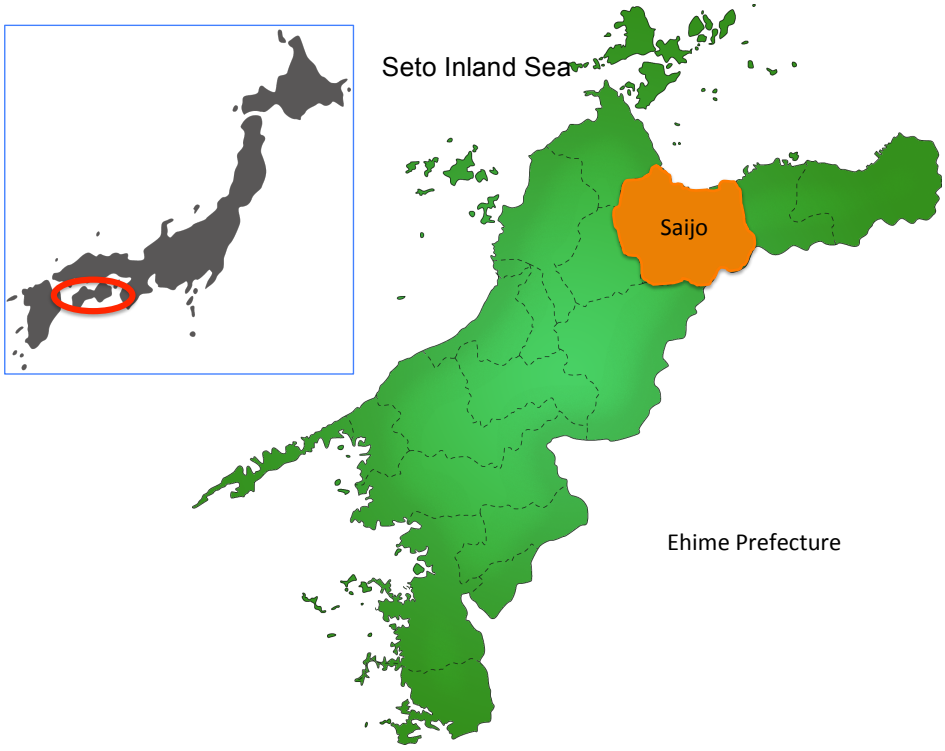

Figure 4.5 Location of Saijo City, Ehime Prefecture

Figure 4.6 Sceneries around Saijo City

Although the demographic profile (Table 4.2) of the city follows the decreasing trend in the overall population experienced in similar provincial cities in Japan, it is mixed when looking at it in more detail by school districts. In general, there is either leveled or increasing trend (some, ranging from +10-20%) in the coastal areas where the industries are located, but an alarming decrease seen in the mountainous areas (some, more than -20%). The student number also concurs with this trend. As the case, communities tend to be smaller, but more traditional with close ties in the mountainous area, whereas coastal communities are composed to newer residents moving into areas established more recently.

Table 4.2 Demography of Saijo City

Population	Total	113,859
	Male	54,690
	Female	59,169
Population by age groups		
Juvenile 0-14	Total	15,010 (13.18%)
Working 15-64	Total	67,253 (59.06%)
Elder 65-	Total	31,603(27.75%)
Households		49,514

4.3.2 Educational governance in Saijo

Under the common BoE system adopted by other cities in Japan, the set up of the education sector in Saijo consists of five BoE members that include the superintendent. The BoE secretariat under this is comprised of divisions including General Affairs Division that manages 36 public ES and JHS, Social Education Division that manages the community centers, libraries, museums and other education related facilities and School Education Division that is responsible for DRR education.

Saijo's educational policy has set forth to "Enrich and promote DRR education (Action 1)" under Priority Goal 3 of school education to "Promote School Education Unique to Saijo" in which the 12-year-old Education Program above has been one of the main activities. Not only has the implementation of the program achieved effective results, but it has also facilitated development of good collaborative partnership between BoE and Disaster Management Division. The continuous and constant engagements between the two divisions had been realized primarily due to the fact that they were able to find mutual benefits in conducting DRR activities together. In detail, while BoE has been able to utilize the DRR expertise and connections with DRR experts that are needed to design and conduct DRR education activities, the Disaster Management Division has also been able to directly access students, their parents and other community members in each of the school districts. This kind of win-win situation has been advantageous for BoE to effectively and sustainably promote and implement the 12-year-old Education Program.

While further collaboration between ES and JHS and with the regional communities

have been reckoned as additional tasks for the program, this can reinforced by achieving Priority Goal 1 of social education to "Utilize human resources developed through life long education" that aims to "Realize region-centered life long education (under Action 1)" in which community center events are developed together with schools and other social education organizations. School DRR programs can also be further enhanced in linking them with DRR trainings and drills that are conducted by the regional communities in which the community centers are tasked to promote under Action 2 to "Establish foundation for social education activities." As the case, even within the education sector, the policies and actions can be further coordinated to create enabling conditions in raising effectiveness of measures taken aimed to achieve the goals in Saijo's educational policy.

4.4 School and stakeholder survey in Saijo

4.4.1. Methodology of stakeholder survey (Group interview survey)

Stakeholder interview survey were conducted on October 30 and November 19-21, 2013 with the assistance from the Disaster Management Division and the Board of Education of the city

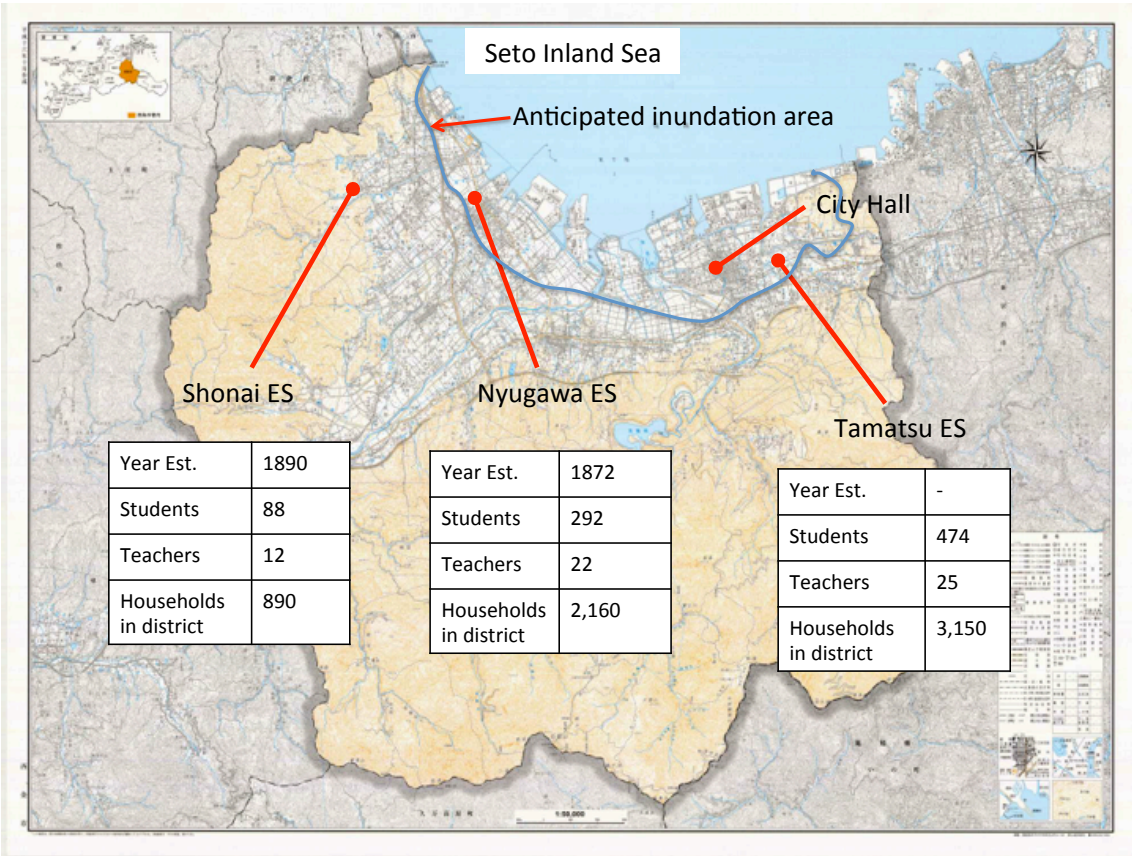

Figure 4.7 Selected schools for survey in Saijo (Map source: Saijo City)

government. The survey targeted three public ES (locations on Figure 4.7 above; photos on Figure 4.8), which was selected to with aim to get as much diversity in the school-community profile as possible. Some of the factors consist of difference in geographical location and features (coastal, mountainous and riverside), size of schools (number student and teachers) and profile of the school districts (demographic profile and social status). These factors determine the possible risks and DRR plans that each school and schools districts must consider.

(1) **Nyugawa ES:** Owning 292 students and 22 teachers, the school is located 2m above sea level within anticipated inundation area from the NTME tsunami. The district is composed by a mix of traditional and newer neighborhoods. Located in a plain area, it will take 20-30 minutes for students to evacuate to higher grounds. The Shinkawa River also runs through the school district that adds disaster risk.

(2) **Shonai ES:** Composed of mostly aging traditional neighborhoods, this school has 88 students and 12 teachers. Located 80m above sea level, disaster risk is assumed by the communities to be low, although there is possibility for landslide disasters. The school, community center and the district residents are active in organizing joint activities that has been contributing in maintaining communities ties.

(3) **Tamatsu ES:** Owning the largest student number among the target schools, the school has 466 students and 25 teachers. The student number is expected to increase as new residential areas are being developed to house employees in the industrial area. School is located 2.7m above sea level next to Uzui River, within the anticipated inundation area from the NTME tsunami.

Figure 4.8 Photos of selected schools (left: Shonai ES, middle: Nyugawa ES, right: Tamatsu ES)

Due to time constraints and to examine the relationship between the different stakeholders, the interview sessions were conducted in groups that included school principles

and teachers, PTA chairperson, town association leaders, Syobo-dan leaders, disaster expert's council, directors of community centers and BoE and Disaster Management Division of Saijo City (Figure 4.9). Only the interview with Shonai ES was conducted separately with community representatives. Each interview sessions lasted approximately two hours with prepared questions in the following themes (full detail of interview questions are provided in Appendix 3).

(1) School – community linkage:

- School events
- Opening school facilities to the communities
- Regional education
- How to get households with no children to participate

(2) DRR education and activities

- Coordination and collaboration with communities in DRR
- Arrangements on initial evacuation operation
- Coordination with Sybo-dan

(3) Other issues

- Function of community centers as intermediary
- Role of Disaster Expert's Council
- Acquiring and maintaining DRR knowledge in the region
- Measures for decreasing student numbers due to low birth

Figure 4.9 Interviews in Tamatsu (left), Shonai (middle) and Nyugawa (left)

Before each interview, a brief explanation of MEXT's School Centered Community Building concept was given to the target audience. The question topics were chosen so that situations for building school centered disaster resilience in Saijo can be compared with those acquired in Toni. The first aim is to identify the commonalities and differences in building a

school centered disaster resilient community in pre- and post-disaster situations. The other objective is to identify the essentials and the gaps in building resilience of the education sector through observation in comparing the two cities. Finally, while Saijo's school DRR program is known for its good practices in building effective partnerships (e.g. in UNISDR's "Making Cities Resilient: My City is Getting Ready" campaign) among schools (students and teachers), local government and communities, the survey looked into the school based partnerships/networks established through the school DRR program that can be referred as one of the key elements for realizing the school centered concept in Toni.

4.4.2 Results of group interview survey

The results of the group interview sessions for each school district are as below and summarized in Table 4.3.

-Nyugawa ES school district

Located in a low lying area (+2m) with some areas being reclaimed land, the school district is a high risk area to receive considerable damage from tsunami and land liquefaction in case NTME occurs. Therefore, the school has been placing its efforts in prompt evacuation to higher areas and encouraging students to conduct family DRR meetings to prepare all family members to take appropriate response actions. The school implements joint regional DRR drills with the communities once a year in coordination with the nine town associations and volunteer DRR groups, including drills to confirm safety of all students. In addition, flood evacuation drills are conducted annually with 6th graders taking a significant part in planning by first understanding the high risk areas in the district. The students also visit the fire department as part of regional education program. Youth Firefighting Clubs (4th grade students) are also active in DRR awareness raising activities. Because in the district has not experienced any major disasters in the recent years, signboards displaying elevation have been installed on the school routes.

As for school – community linkage, there are regular programs for interactions, including agricultural experience class with local farmers, city walks and student volunteer activities with assistance from Women's Association. Community volunteers also help the school to watch out for students' safety when they are commuting. The community center is central in organizing the three major festivals – Bon Dancing Festival, Community Sports Day and Respect for the Aged Meeting in which students and teachers have opportunities to

interact with various members of their communities. The PTA also hosts numerous events with help from the communities that facilitate activities among different age groups. As community representatives are given spare keys to the school gymnasium, they are free to use the facility outside of school hours.

Regarding remaining tasks, although the school district is well aware of the risk that they carry in case NTME occurs, the community is still in the process of identifying the safest evacuation route that will originate from different location of the district. Liquefaction of coastal reclaimed land is a huge risk, but unpredictable. Although Nyugawa ES is one of the designated evacuation places, many perceive that the students should evacuate to higher areas (e.g. Shuso Hospital, +4m). However, it will take at least 30 minutes for all 300 students to arrive and be confirmed of their safety. Another task is to pre-arrange a mechanism with community organizations can support evacuating students and teachers anywhere and anytime because teachers may not be from the district and unfamiliar with the local situations.

-Shonai ES school district

Shonai ES is located at the foot of Naraba Mountain 80m above sea level and because of this, the school district has not experienced much natural disasters. Despite of risks for landslides, DRR awareness in the area may be lower than other parts of Saijo. DRR drills at the school have been conducted irregularly, but handover of students to parents was done smoothly in the last drill. Even with regular changes of teacher and students, implementation of school DRR education have been sustainable because of the 12-year-old Education Program. 6th grade teacher is usually responsible for coordinating the DRR education implementation committee of the school. Youth Firefighting Clubs consisting of 4th grade students are also active in Shonai ES. In general, school needs support from the communities in order to organize both community and school events, which have continued to make school – community linkage strong in the district. In some the events in which the community center also takes an important role, including culture asset visits with elder groups, regional education programs and autumn festival, DRR activities are conducted on ad hoc basis.

Especially after EJET, the district has recognized the need to strengthen its DRR measures. Currently, renewal of stockpile and name list as well as revision to evacuation operation manual is being considered. The PTA has also planned to put emphasis on DRR events in the coming year. Although community DRR drills that assume fire and earthquake disasters are held four times per year, participation from the school is limited and held in

conjunction with crime prevention and traffic safety activities. On the other hand, Shonai ES district has abundant DRR resources, including 100 Syobo-dan members, six community DRR volunteer groups and at least two DRR experts in each town association - one of the largest group of DRR related people in all of Saijo. Some of these members have visited the EJET affected areas to volunteer and receive training in mutual help DRR program. The district also has had experience in supporting schools in Tanbara District when they were affected by hailstorms in the past.

-Tamatsu ES school district

Tamatsu ES is located at 2.7m above sea level along the Uzui River and within the anticipated inundation area. The ES is one of the most active school in implementing DRR drills and education in Saijo and has been well coordinated with kindergarten and JHS in DRR planning and implementation. The school has also been coordinating DRR activities with Iioka ES, a school located in the adjacent school district located on higher grounds, so that the students can evacuate when there is danger of flood disaster. Many of the 6th graders who have experienced the 12-year-old Education Program act as leaders in helping younger students' self-help capacities at schools and on school routes. Aside from this, the school also has been active in conducting schoolteacher training two times per year, so that they will be able to effectively operating evacuation drills and evacuation center operation. Moreover, schoolteachers are proactive in joining the regular town association meetings of their residential community, contributing to the school – community linkage in their daily lives. Tamatsu ES is also among few schools in Saijo that is expecting increase in student number due to new industrial developments in the area. As the case, the school has been planning additional DRR programs to train new students with town watching and regional education to familiarize them to the district.

One of the unique achievements of this school district is the partnership that had connected the schools, communities and industry with the "Support Agreement in Building Disaster Resilient Community," which is a MoU signed in 2011 between Imabari Shipbuilding Company and town associations in the Tamatsu school district under the witness of Toyo Regional Bureau of the Prefectural Government and Saijo Mayor. The agreement stipulates the company and community stakeholders, including schools to (1) support for the injured by rescue and providing care and (2) conduct volunteer activities in disaster recovery with or without requests from relevant parties. In coordination with the city government, the MoU

additionally stipulates both parties to conduct annual joint DRR drills. Any costs incurred by activities led by the company will be borne by them. One the other hand, developments of the new residential area for new population who have been employed by the local industries may need to be paid attention to as they do not comprise the traditional community in the city. Because many of the new residents do not have much care for joining the activities of the school district, alternative approaches to encourage them to take part in local initiatives need to be taken. For this, schools that their children attend may be a feasible window for them to start engagements with the community.

Table 4.3 Summary of interview survey results with three school districts

School district	Risk profile	School – Community activities	Next steps
Nyugawa ES	• +2m above sea level • Located in coastal high risk area, prone to tsunami and liquefaction	• Students active in local Youth Firefighting Club • Joint DRR drills with communities • Joint community events such as festivals and volunteering	• Need to find safer, accessible evacuation route for students • Arrangements with community organizations for disaster response
Shonai ES	• +80m above sea level • Generally a low risk area, possible landslide disaster	• Students active in local Youth Firefighting Club • Various student – community events organized by school and community center (e.g. Cultural Asset Visit Program)	• Renewal of stockpiling and equipment to reinforce function as evacuation center • Support arrangements for other school districts with higher risks
Tamatsu ES	• +2.7m above sea level • Located in anticipated inundation area next to river	• Teachers regularly attend town association meetings • DRR collaboration with ES in next school district • School district has MoU with local industry for DRR	• Need for new tactics to involve new residents in community activities (including DRR).

4.5 Analysis of the survey results

In analyzing school DRR planning and activities taken so far in Saijo, it has exceled in not only in institutionalizing a city-wide effort in building resilience in the education sector, but also in actively incorporating participation from the various community stakeholders. The advantages of engaging the communities in school management and education for providing "real-life" education and in responding to recurring attention to life long education have been already mentioned in the previous chapters. In this regard, Saijo has taken the benefit of meeting the principle responsibility of enhancing education, but at the same time, incorporated DRR capacity building to nurture future DRR leaders as part of efforts in preparing students to

become responsible citizens when they become adults. Below are analyses on some of the key elements that have shaped the Saijo model that can be well replicated in other disaster prone cities in Japan and other regions globally. Summary of the issues raised below is provided in Figure 4.10.

4.5.1 Institutionalization of 12-year-old Education Program

The 12-year-old Education Program has been continuing and developing since its start in 2006 despite the fact that Saijo has not experienced severe disasters in almost a decade. Initially driven by the strong incentive of former city mayor Ito, the program has continued to implement Children's DRR Summit, Leader's Training/Camp Program during summer vacation and DRR activities based on the outputs from the Training Programs that includes DRR Town Watching. While the Leader's Training targets only the 6th grade representatives from all ES in Saijo, the others have full participation from all 6th grade students as well as community representatives. When the survey target schools were inquired on the incentives of continuing with DRR activities, they replied by stating that because the 12-year-old Education Program has been a city-wide effort, they are encouraged to participate and contribute. Given the fact that Shonai ES with lower disaster risks also concurred to this, it is a good sign that the program is very much institutionalized and will be sustainable in Saijo. The partnership built between schools and different community stakeholders through the program's participatory approach in sharing problems and visions for community building has developed the sense of belonging and attachment to their communities, encouraging individual and collective efficacy and commitment (Paton and Johnston 2001). As for setting the schools as the hub for DRR activities, Aldrich (2012) reasons that such "neighborhood resilience centers" is can be significant in creating deep levels of trust and social capital that are needed to sustain DRR efforts and practical in effectively responding to disasters.

4.5.2 Coordination among relevant government departments and schools

Another characteristic of Saijo's DRR efforts that should be highlighted is the firm partnership between BoE and Disaster Management Division that directs and coordinates different stakeholders that include Town Associations and the representatives of the Steering Committee for Promoting 12-year-old Education Program. This partnership have also contributed in building extended networks with external organizations including Kyoto University, MLIT, Self Defense Force and private companies, which has been arranged to

provide technical, financial and logistical support that are required by the city. It is very much encouraging to observe the close and continuing partnership between BoE and Disaster Management Division as they are both essential in administering school DRR education and drills more pragmatic with Disaster Management Division providing the technical backstopping for DRR while BoE has the tools and the expertise to transfer the knowledge and skills. However, this kind of collaboration is often on ad hoc basis because it common that there are disconnections between different departments due to stagnant bureaucracies. The problem of coordination among relevant government departments becomes critical when they are obliged to take irregular roles that must be performed during actual disasters, but unable to because the routine mandates are conflicting with the flexibility that is required in making on the spot, adaptive response actions (Kapucu 2006; Waugh and Strelb 2006). On the other hand, flexibility for effective response can be achieved upon firm arrangements for coordination and good preparedness (e.g. simulation drills), which can be seen in Saijo through the various activities in the 12-year-old Education Program.

In addition, an example from Tamatsu ES and its collaboration with Iioka ES shows possibilities in further exploring inter-city partnerships among schools with different risk levels. While schools with less disaster risk may be less inclined to take extensive DRR measures compared with schools located in low-lying areas, they are able to employ preparedness activities to receive and support evacuees during disasters. Another option can be to partner ES with JHS (if in safe locations) because the students will eventually go on to attend the JHS. This will also allow for additional benefits for the smooth transition of knowledge and skills for students who will be progressing to higher level education. The 12-year-old Education Program provides the incentive for this because it educates students and teachers with principals for developing the want to contribute in helping and caring for others and sharing knowledge to protect their own hometown and its people. Indeed, the experience from EJET in which inland schools took initiatives to assist coastal schools during emergency response has proven that such efforts would be more effective if such arrangements had been predetermined before disasters occur.

4.5.3 Building linkage between school – community

The 12-year-old Education Program has been playing an important role in promoting the school – community linkage, not only with households with children, but also will other community members who are not directly connected with schools. The above-mentioned

Town Watching that schools in Saijo undertake is based on the program's principles that encourages students to actively interact with a range of community members to gain knowledge about the history of past disasters and the risks that the school district might be possessing. Actual implementation is done in partnership among schools (students and teachers), community members (town associations, parents and neighbors) under the guidance of BoE and Disaster Management Department. The activity is initially aimed to train students in DRR by acquiring knowledge about DRR in the preparatory stage, then self-discover the danger spots around the school and on the way to the school by actually walking in the neighborhood and interviewing community residents. Therefore, this program has a balanced approach of acquiring DRR and regional knowledge as well as obtaining skills that will induce intuitive actions of students to protect their own lives and help others in the community. Activities such as Town Watching has an additional effect in providing opportunities for students to connect and to get familiarized with the community members. This relationship building will be beneficial when schools and communities are tasked to solve other common problems of the region together. From the interview survey, efforts by the schoolteachers in connecting with the community members beyond the school premises, such as by means of regular attendance to the town association meetings, have been useful in smooth implementation of program activities that call for participation from different community members.

4.5.4 Utilizing school based networks

The interview survey revealed that schools in Saijo are connected with numerous social organizations such as Women's Union, Senior Citizen's Group and local industries. These groups also work regularly with community volunteers including District Welfare Officers (also holding dual responsibilities as Child Welfare Volunteers) and community DRR volunteers that commonly conduct activities in their respective residential school districts. As the case in cities like Saijo, it is common to see community services and events, such as sports/culture festival and public services, including social welfare, disaster prevention drills and healthcare consultations being conducted on school district basis (Saito 2011; Sakagawa 2004). The partnership between school district and local industries mentioned above is a unique collaboration at community level that has started to be recognized as a beneficial measure in expanding support networks within and beyond the city. As the case, Saijo has been active in concluding similar agreements with various companies, NGOs, cooperatives and

other municipal governments in the recent years.

There are also countless informal networks connected with the schools that may not necessarily be connected by DRR or with any particular objectives (Takeuchi et al. 2011). For example, the PTA of Shonai ES occasionally organizes a gathering of fathers of PTA members (called Oyajino-kai) outside of their school district. Most of the school districts also have local festival groups which all take part in big festivals as Saijo Festival. Because these groups are involved with the schools through volunteer activities or have jointly been conducting activities involving school children, the networks can also become good opportunities to start collaborations in school DRR activities.

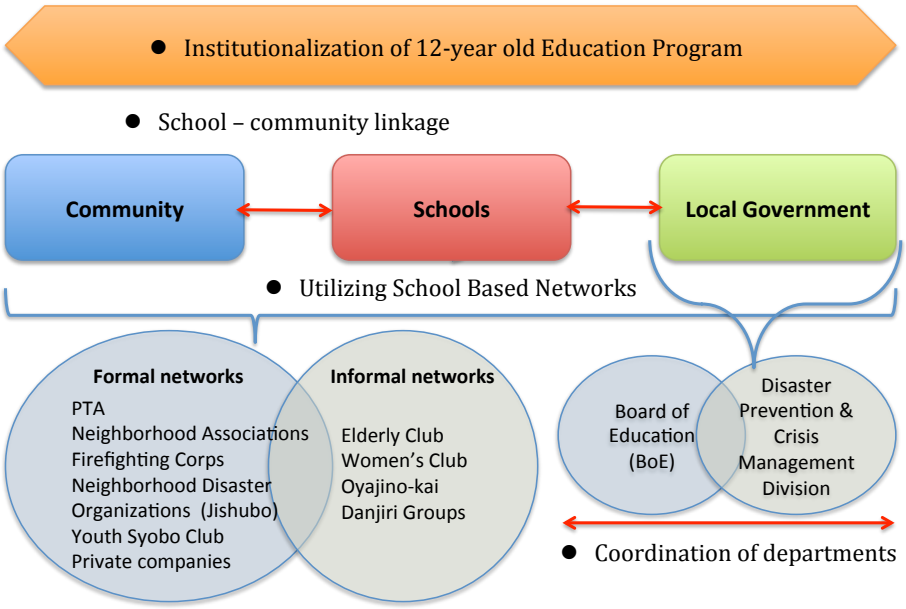

Figure 4.10 Summary of issues for implementing 12-year old Education Program in Saijo

4.6 Application of the Saijo model in other areas

As noted above, Saijo has been recognized internationally as one of the four model cities in Japan that have participated in UNISDR's "Making Cities Resilient: My City is Getting Ready!" Campaign for its sustainable DRR efforts that had successfully bonded different community members to take part in the 12-year-old Education Program. In 2010, Saijo has taken a new endeavor in sharing the experience and lessons learned from the program with its first overseas project in Vietnam. Utilizing the Japan International Cooperation Agency's (JICA) Grassroots Technical Cooperation Projects scheme, Saijo formulated the "Project for Development and Implementation of Disaster Education Programs in Hue City, Vietnam" that

was implemented from 2010 to 2013. The project targeted schools in Hue City located in Central Region that encounters water-related disasters almost every year. Through interactions of schoolteachers, students, community DRR volunteers and government officers of the two cities, project activities incorporated those of 12-year-old Education Program such as Town Watching, development of multi-hazard maps and simulation drills. In addition, discussions were held between schoolteachers of both cities in developing school DRR education programs. Joint Children's DRR Summits were also conducted in both cities. From the achievements gained in the project, Saijo city was able to build confidence that their school DRR model is very much applicable to other disaster prone cities and communities that are taking preparedness measures to future disasters.

It was during the implementation of the JICA project that EJET occurred in Japan. Soon after in May 2014, Saijo signed the Agreement for Mutual Support During Disasters with Soma City in Fukushima Prefecture - one of the EJET affected cities in Tohoku Region. The purpose of the agreement is to share disaster response, recovery and disaster resilient community building experiences and to provide support when affected by future disasters. Although the agreement does not specifically mention on the schools, it is likely that the collective activities of the two will eventually include the efforts of Saijo in its school DRR program. Also in 2012, Saijo had established Council for Research on DRR Measures that consisted of experts from universities, research institutions, Self-defense Force and Director of Disaster Management Division of Soma City. In supporting Saijo's slogan for "Building Disaster Resilient Saijo," the Council had provided policy advice through its research on review of DRR measures taken since the 2004 typhoon disaster and future measures for preparing for NTME. While many cities that are anticipated to receive immense damages from NTME have boldly declared that government will not be able to attend to all the needs of the community in mega disasters, the Saijo DRR model is developing to become a persuasive example that high risk cities can replicate in their own communities.

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Chapter 5. Governance Issues for Effective Disaster Response and Preparedness in the Education Sector

5.1 Strengthening educational governance for improved disaster response, recovery and preparedness

This chapter reviews the status of educational governance system in Japan and attempts to suggest prospects for specific measures to strengthen it to improve disaster response, recovery and preparedness at the local level, especially after mega disasters. It will first provide some general views on the importance and challenges of disaster preparedness for improving disaster response and recovery, followed by situations specific to the education sector. For this, issues in institutionalizing school DRR education and investment planning will also be covered. Then it will discuss on the BoE system in which the history of developing the current system and the roles and relationships of central (MEXT), prefectural and municipal level BoEs in non-emergency time was explained in Chapter 2 – but here, looking into how the system works under disaster situation. Specifically, it will refer to the tasks assigned to each administrative level under disaster situation, as stipulated in the MEXT Disaster Management Work Plan and relevant regional disaster management plans. This is followed by observations on the experiences and lessons learned from EJET in the education sector to analyze what had worked and not work under the existing system. Lastly, it provides prospective measures to enhance disaster management in the education sector through several options to improve in the educational governance system. Analyzes are provided on BoE of relevant cities with various capacities can seek for better intra-agency (vertical), inter-agency (horizontal) and cross-sectoral coordination to strengthen access to different support systems. Finally, it recommends options for increasing efficiency of the support system, including considerations for flexibility in the evolving situations in the recovery process.

5.1.1 Importance of disaster preparedness

Experiences from mega disasters, including EJET, have shown that in many cases, official help from the government may not be available in a timely manner or can be greatly limited. Therefore, it is vital that communities that are usually become the first responders be prepared to take quick and appropriate action. Helslootn and Ruitenberg (2004) assess that when people are faced with disasters, they use intuitive and/or analytical systems to decide how to act. Intuitive decision is the swift, associative, affectionate, automatic, emotional and

unconscious and the analytical decision is based on rules of reasoning, algorithms and formal logic, but is slower and calls for more effort, learning capacity and consciousness. On this, the Kamaishi survey presented in Chapter 3, emphasized more on the intuitive aspect in which many of the response actions were improvised due to time constraints of evacuating from the tsunami. However, what allowed local residents make the best possible on the spot decisions were the analytical skills that was nurtured by traditional DRR knowledge and through such efforts as school DRR education. The case in Saijo in Chapter 4 that showcased the 12-year-old Education Program is for strengthening analytical decision making skills, but at the same time, aims to foster students' critical thinking and self judgment for taking proper disaster response actions. As the case, while intuitive decisions are critical for surviving disasters, it should be backed with analytical decisions making skills that can be fostered by disaster response preparedness measures.

The United Nations Office for the Coordination of Humanitarian Affairs (OCHA) defines emergency preparedness as "the knowledge and capacity developed by governments, recovery organizations, communities and individuals to anticipate, respond to and recover from the impact of potential, imminent or current hazard events, or emergency situations that call for a humanitarian response" (OCHA 2014). As so, the focus of disaster response preparedness is not so much to establish a manual with fixed set of procedures for disaster response, but more to provide knowledge and skills to capacitate first responders to be able to make informed decisions for taking effective response actions. Preparing for responding to disaster commonly requires wide range of activities such as strengthening DRR institutions, developing DRR plans, conducting risk assessments and evacuation drills and arranging support networks. These activities should also be streamlined throughout the cycle of disaster response, recovery and development phases, but these tasks could be great challenges for some local communities to measure on their own. The Hyogo Framework for Action (HFA: 2005-2015) clearly notes on the need to empower local authorities to manage and reduce disaster risk by having access to sufficient information, resources and the authority to implement solutions.

In Japan, the Disaster Countermeasures Basic Act stipulates the local government of the affected cities, in principle, to be responsible for taking first response to disasters. During non-emergency time, local governments under their respective Disaster Prevention Councils are tasked to provide favorable environment and conditions to empower communities to strengthen their disaster preparedness, such as building or designating proper evacuation

place for the communities (Furukawa 2000). The prefectural and central levels are more in a secondary role in supporting the city governments for both response and preparedness on issues that are beyond what the city levels can take measures to. This stance is sensible, since cities own the equipment and manpower (e.g. firefighting trucks, search and rescue teams, etc.) and local information that are needed to take actions on the ground for disaster response (Kitamura 2014). After the Great Hanshin Earthquake in 1995, the Act was revised twice. In realization of the effectiveness of "mutual help" in disaster response, matters such as strengthening of community based DRR volunteer organizations, enabling environment for relief volunteers, more consideration for elders and handicapped and arranging support agreements among local governments were newly featured to fortify local DRR capacities (Murata 2013). Receiving the unprecedented effects of EJET, the Act was further amended with approval of the national diet in June 2013. The main purpose of the amendment is to strengthen preparedness measures against large scale – wide area disasters with even more attention in supporting cities and communities.

(1) Clarification of the disaster management basic principles

(2) Improvement of immediate response to large-scale disasters affecting over wide areas
- Improving national government's support for local government, which function has been paralyzed by disasters

(3) Ensuring smooth and safe evacuation of residents
- Designation of emergency evacuation place (for immediate temporary evacuation)
- Enhancing system to confirm safety of affected residents
- Preparing list of people with needs to be supported for evacuation (elderly and disabled people)

(4) Improvement of measures for protecting affected people
- Improving conditions at evacuation centers.
- Issuing certificate for affected people to ensure sufficient support depending on extent of damages.
- Enhancing comprehensiveness and efficiency for supporting affected people with development of database

(5) Strengthening disaster preparedness in normal time
- Promoting pre-agreements among national/local governments and private sector that engage in disaster response.

- Ensuring robust joint DRR measures of community stakeholders by developing local (district) disaster management plans

(6) Smooth and quick reconstruction from large-scale disasters

- Ensuring community participation in recovery planning process.

These additions are accompanied by policy improvements for response to nuclear disasters and restructuring of the Act itself. It is also noticeable that the responsibilities of the communities have been marked more clearly, such as responsibilities in dissemination of local DRR knowledge and stockpiling.

Consequently, there are growing numbers of countries that are paying more attention in decentralizing responsibilities for disaster response to the local authorities. Scott and Tarazora (2011) claim that decentralization of DRR can (a) have an impact on government capacity, (b) change funding arrangements, (c) affect participation of various stakeholders, (d) change accountability structures and enforcement arrangements, (e) change the location of decision-making power and (f) affect communication and coordination. While decentralization off DRR seems logical because the communities often become the first responders to disasters – thus the problem being more of their own rather than DRR officers sitting at national capitals – a strong governance system is perquisite for bringing positive impacts for the localities (Scott and Tarazora 2011). To elaborate, even though DRR organizations and technical knowledge might be in place, components such as multi-sectoral policy/plans, coordination and institutional framework and legal basis for implementing DRR activities still need to be in place to provide conditions for national, regional and local levels to effectively support each during disaster response (UNISDR 2004).

5.1.2 Disaster preparedness for better response and recovery in the education sector

Discussions on school centered recovery and community building concentrate at the local levels, given the fact that the education system in Japan as well as DRR measures are very much decentralized in Japan. However, EJET has necessitated the local levels to seek for extended support from higher administrative levels and various sectors due to the magnitude of the disaster for responding, recovering and preparing for such mega disasters. As mentioned already, because close to 90% of public schools in Japan are designated as evacuation centers, the tasks of BoE and school in having to deal with initial operation of the centers and attending to the needs of evacuees in addition to looking after the schoolchildren

and teachers can be overwhelming. Under crisis situation, it is common to observe organizations such as BoEs and schools become overstretched with too many tasks in taking additional measures to problems that are not part of their ordinary mandates (Quarantelli 1997). Although the extended role of the organizations during disasters has been widely recognized since the Great Hanshin Earthquake, the scale and the effects of EJET have once again become an opportunity to further consider strengthen preparedness measures to support the local level. In addition, the EJET experience also revealed that there is good chance that there will be gaps among different cities in which some will be able to receive support from various entities within and outside of the city, while others will only get limited support or none. It goes without saying that this will significantly decide the fate of the recovery process of the education sector in the affected cities. While situations will be determined, in parts, by the capacity that each city possess, such as preexisting networks and coordinating capacities, there could be a more systematic way to fill the gaps so that every city will be able to receive the necessary assistance they need to support the education sector when faced with disasters that cannot be coped by the local actors single-handedly.

5.1.3 Legal basis for disaster management in the education sector

There are two laws related to disaster management in Japan. One of them is the Disaster Relief Act that refers to the emergency relief measures after disasters. The other is the Disaster Countermeasures Basic Act, noted above, that mentions on the establishment and management of evacuation centers. Both stipulate disaster response as being primarily the responsibility of local governments. The Disaster Management Work Plan of the Ministry of Education, Culture, Sports, Science and Technology (MEXT) is based on these laws and encourages local BoEs and schools to act as first responders to disasters, including initial set up and operation of evacuation centers. This is because although the responsibility of evacuation operation is normally with the Disaster Management Divisions, their timely support to the schools cannot be always guaranteed, especially in large-scale disasters. In such case, the education sector will require extended assistance from the prefectural BoE and MEXT as well as cross regional and multi-sectoral support because response based on conventional disaster management plans, may be insufficient in taking required measures.

5.1.4 Investment planning for the education sector

In Chapter 2 "2.3.1 Educational Governance in Japan," the budgetary responsibility of each

administrative level in the education sector was introduced. While a huge portion of the budget required for school management, including construction of new schools, salary of teachers and distribution of textbooks are borne by MEXT and Prefectural BoE, budget for other items in principle, are shouldered by the city government with subsidy allocated from the state budget. Because amount of subsidy varies according to city size and from year to year, it is often difficult to predict how much budget will be available for the city government. Moreover, as state subsidy received by the city is subject to allocation according to budgetary planning of the city government, investment for the education sector can also greatly vary among cities (Komatsu 2013). Although there are occasional opportunities for project funding, commonly administered through Prefectural BoEs, access to these funds depends on the application capacities of City BoEs and schools that can create significant gaps in available budget for school based projects among cities.

Since EJET, MEXT has planned budget provisions to implement recovery related projects based on such policies as "Basic Policy on Recovering EJET (Reconstruction Agency 2011)" to recover affected school facilities, supporting students to return to schools, mental health consultations, providing school lunch, projects for NGOs and universities to support schools, etc. As noted in "2.2.2 Implementation of the concept," MEXT had been prompt in taking emergency measures in allowing affected City BoEs and schools to submit fast track budget requests without going through the conventional evaluation procedures. This has been fairly effective in meeting the immediate needs of affected schools. On the other hand, it was found that issues remained in this process with regards to intensive administrative burdens and top-down approach of the higher administrative levels that created discrepancies between available funding and the actual needs of the affected schools (Sasaki 2012).

In the recent years, in order to diversity partners mainly for enriching financial resource for investing in the education sector, schemes such as Private Public Partnership (PPP) and Private Finance Initiative (PFI) have been introduced. Under these schemes, the private sector can participate in investing and take on management of public facilities that is expected to resolve issues on limited financial sources and efficiency for operating the facilities. Although there have not been many cases to prove its effectiveness in the education sector in Japan yet, this may be an effective approach to explore alternative financing options for cities with limited budget available for the sector.

5.1.5 Institutionalizing school DRR education and activities

For the education sector, the most principal DRR measure that it can take is school DRR education and activities that are conducted ideally in close cooperation with the communities. Saijo's 12-year old Education Program was highlighted in Chapter 4 as a case study in which continuous collaboration among different local government divisions (BoE and Disaster Management Division), schools (students and teachers) and communities (parents, town associations, etc.) has contributed in improving the governance system. The said program also touched upon the potential of schools being central in connecting various supporting stakeholders within and outside of their regions. While Saijo was able to for the most part, institutionalize its school DRR education program as a city wide effort, this may not be an usual picture that can be seen in other cities. MEXT, in its 2007 report from the Panel on Supporting Disaster Education has categorized three main issues, human resource, DRR program contents and implementing structure for institutionalizing DRR education in which many are closely related to governance issues. The issues associated for institutionalizing school DRR education from the report are summarized in Table 5.1 below.

Table 5.1 Issues for institutionalizing school DRR education (MEXT 2007)

Issues in human resources	• There is no system to consolidate and disseminate efforts by individuals (e.g. teachers) which confines DRR education to a limited number of people. • There is no intermediary or platform that can connect implementers of DRR education. • There is no system to evaluate individuals that implement DRR education.
Issues in contents	• There is no minimum standards for DRR education, which schools can use as a benchmark. • There is no system to conduct DRR education that targets different type of schools or age groups. • DRR education is limited to acquiring disaster knowledge and does not include other social issues (e.g. human relationship, natural environment, importance of life, etc.)
Issues in approach	• Limited support from outside of schools (e.g. community, DRR experts, etc.) • DRR education tend to be implemented on ad hoc basis and does not consider long-term goals. • Limited linkage with regional/community DRR activities. • Networking among schools and with various stakeholders have not been fully considered.

While DRR education manuals or more commonly, School Safety Manuals are distributed to schools by Prefectural and/or City BoEs, actual implementation and contents are decided by the schools or more specifically, by the teachers. In a way, this approach is practical

because schools in different places have their distinctive risk factors and social profile that are specific to their regions, but the quality and effectiveness of school DRR education would rely heavily on the teachers (Hiroi 1995). This may be one of the challenges for institutionalization, for example, in setting minimum standards, disseminating good practices, development of school DRR activities with long-term goals, linking school DRR program with those of the community, etc. Because of this, good practices can easily be confined within a school located in a disaster prone region that owns teachers or BoE officials who are especially passionate about DRR education. Observing the situation in school DRR education after EJET, Sakurai (2013) has suggested several approaches to resolve some of these issues including: (1) Consideration of all phases of DRM cycle to avoid the sporadic nature of school DRR education, (2) Further reinforcement of DRR training for teachers, (3) Development of regional specific DRR education that incorporates more of local context (e.g. local characteristics, history, etc.) and (4) Strengthening school – community linkage for DRR efforts. While the previous chapters have already referred to most of these issues, it can be reasonable to say that most of them are based on the school – community linkage that should be strengthened from non-disaster time. Aside from the connecting various stakeholders to implement school DRR education programs, the linkage can also expand the program from being a mere disaster preparedness effort to a broader social issue in which both schools and communities can conduct as a day-to-day activity in which they can feel more benefit from. If such partnership can be built, Paton and Johnson (2001) claim that even if people are not engaged in DRR activities as such, disaster risk can still be reduced. This is a positive note for undertaking institutionalization of school DRR education.

5.2 Administrative system of education sector in emergencies and cases from EJET

In responding to disaster emergencies, MEXT takes its actions based on the MEXT Disaster Management Work Plan, while the prefectural and city levels base their response on their respective regional disaster management plans (Sasaki et al. 2011). As noted previously, both plans are based of the Disaster Relief Act and the Basic Act on Disaster Control Measures that cut across all sectors. This means that fundamentally, the first response to disaster is the responsibility of municipalities (Kitamura 2014) and only when they make a request, the higher authorities will be mobilized for support (Funaki 2006). While standard administrative arrangements would be sufficient for less intensive disasters, for high impact disasters like EJET, additional measures are need to support affected cities. Although there are some

variations among different regions, the following summarizes the conventional structure and roles that each educational administrative level takes during disasters. Some case studies on issues that were observed during EJET are also highlighted from Iwate and Miyagi prefectures. Table 5.1 summarizes the roles of different administrative levels in the education sector during conventional and emergency times.

5.2.1 City level (City BoE) and schools

Under the leadership of the school principle, it is the priority of schools to first confirm the safety of the students and teachers, as well as damages to school facilities. In addition, the schools are expected to take initial roles in setting up and operating the evacuation center, in addition to attending to the needs of evacuees. As the case, there are high expectations placed on the schools to take on these roles because schools are known for their organizational capacity and leadership, even from non-emergency time (MEXT 1995). City BoEs will take a supportive role for response actions and collect information from the schools to report to the higher levels. They are also tasked to coordinate cross-sectoral stakeholders, including local volunteer organizations in disaster management and NGOs (MEXT 1995). After the emergency response phase, BoE will also help the affected schools to resume educational activities.

Among the various issues reported during EJET, collecting information on the status of affected schools had been a major problem due to blackouts and damages to the communication equipment. Because many of the coastal communities were isolated due to damages of access roads and with shortage of gasoline, BoE officials and school staffs had to visit each other by foot to get information on disaster damages. As the case, it took the BoE as much as two weeks to get an overview on the status of all affected schools (Iwate Prefecture Board of Education 2014). Another problem faced during EJET was the workload of BoE and school personnel in having to manage both school response and evacuation center operation. For example, Otsuchi High School in Iwate Prefecture, was tasked not only to function as the city's main evacuation center, but also as the city office, medical center and banking facility (Sasaki et al. 2011). Such situation exposed issues in which roles among the schools, local administration and other stakeholders could have been predetermined to ease the burden on the school personnel (Iwate Prefecture Board of Education 2014).

5.2.2 Prefectural level (Prefectural BoE)

While the city level is tasked to function as first responders, the Prefectural BoE takes a

secondary role in (1) collecting information of affected schools, including public high schools that it directly manages, (2) coordinating relief assistance, (3) providing human resource assistance by dispatching personnel from less affected cities (4) supporting early recovery of educational activities. For example, Miyagi Prefecture BoE had appointed one to five supervisor level staffs and one administrative staff to City BoE of disaster affected cities in the first six months after EJET (Miyagi Prefecture Board of Education 2012). Such role had been proven relevant for the Prefectural BoEs to take, because decision on human resource management is under its ordinary mandate. Prefectural BoEs also provide support the mental and psychological counseling of affected students and teachers by assigning counselors to make scheduled visits (MEXT 1995). Their role as intermediary for intra-agency (or vertical) and cross-sectoral (or horizontal) coordination is also one of its important functions.

During EJET, the Prefectural BoEs faced even more difficulties in collecting local information on the status of schools, especially from the coastal cities. Aside from reasons in failures of communication equipment and logistical challenges in reaching the affected cities, it struggled to acquire local disaster information because their relationships with City BoEs and schools had been limited from non-emergency time. Moreover, it has been generally recognized that many affected cities and local organizations sought and received external assistance from their peers (e.g. other non-affected cities) with very limited involvement from the prefectural government (Nanba 2012). Because the roles between prefectural and city governments had not been clear, prompt response actions by the prefectural government proved difficult with much of the assistance remaining on "request basis" (Kitamura 2014).

5.2.3 National level (MEXT)

The national agency, MEXT, normally takes a tertiary role in disaster response in which tasks concentrate more on coordination, such as facilitation of international, inter-regional and interagency relief and recovery support. Information consolidation and dissemination of disaster status are also important tasks of MEXT to function as liaison in supporting local levels. For example, MEXT had set up a web-based information portal to share real time information on the disaster situation as well as organized meetings for superintendents to enable smooth information flow between different stakeholders. Depending on the scale of the disaster, MEXT Emergency Operations Center (EOC), led by the Vice Minister, is established as noted in the MEXT Disaster Management Work Plan (MEXT 2014). Upon request, MEXT can dispatch its officers to local BoEs and schools to support relief coordination in the affected

regions (Iwate Prefecture Board of Education 2014).

Taking measures to EJET was equally a challenge for MEXT. Before anything, the ministry faced coordination issues within itself, having to set up two separate EOCs to deal with earthquake/tsunami disaster and nuclear disaster at the Fukushima Daiichi Nuclear Power Plant. For this, MEXT soon experienced shortage of personnel that greatly affected its relief operations (MEXT 2012). Despite of the availability of emergency operation manuals, some basic shortcomings such as blackouts and congestion of mobile phones lines further hindered the procedures. As the case, communication again became a problem, disabling proper response measures to support the local levels and in assisting prompt information sharing. In the emergency relief stage, it was also prominent that survey missions of MEXT's high officials became a burden on the local BoEs, because the mission usually required extensive logistical support.

Table 5.2 summarizes the roles of different administrative level organizations in the education sector during non-emergency and emergency times. As the EJET experiences show, the affected City level BoEs and the schools were not able to perform their roles due to the magnitude of the EJET effects that also limited the actions of higher administrative levels.

Table 5.2 Roles of different administrative levels in the education sector (conventional and emergency time)

Levels of administration	Conventional roles	Roles in emergencies
Central level: MEXT	• Implementation of International initiatives • Development of nation-wide policies for school system (e.g. national curriculum) • Advisory/budgetary support	• Information consolidation and dissemination • Coordination of national and international assistance • Interagency coordination • Dispatch support personnel
Prefectural level: Prefectural BoE	• Human resource management of school personnel • Budget planning and support (e.g. salary of school teachers) • Advisory/coordination support	• Collect information on damages • Coordination of relief assistance with relevant departments • Dispatch support personnel • Support recovery of educational activities
City level: City BoE	• Establish school district & elementary and junior high schools • Management of teachers • Support for school operation/ administration	• Collect information on safety of students/teachers and damages to school facilities • Coordination with other departments of city government • Logistical/administrative support for school recovery
Schools:	• Day to day school operation	• Confirmation of safety of students and teachers • Situation reporting to City BoE • Initial set up and operation of evacuation center

5.3 Survey on strengthening educational governance for disaster response and preparedness

5.3.1. Methodology

In coming up with several suggestive measures for strengthening educational governance for disaster response preparedness, a series of field interviews and workshops were conducted as below.

- Direct interviews with MEXT (Disaster Promotion Section, Facilities Planning Division, Department of Facilities Planning and Administration)
- Miyagi Prefectural BoE (Disaster Promotion Division, Facilities Planning Division)
- Workshop with MEXT, City BoE, university/research institutions, NGOs and international organizations on building disaster resilience in the education sector (August 2012)
- Joint workshop with Kesennuma and Saijo with representatives of City BoE, Disaster Management Division and public schools organized in January 2014 at Kyoto University.

The main purpose of the survey is to study the problems experienced with the administrative system in the education sector during EJET and to grasp the bottlenecks that the local BoEs and schools have been facing when working with higher administrative levels in implementing DRR programs. With aim to improve the coordination and communication among different administrative levels in the education sector as well as with cross sectoral partners, the survey attempts to point out the key elements for strengthening educational governance in order to create better conditions to effectively and sustainably implement the school centered concept.

5.3.2. Results of the surveys

The key results of the above-mentioned surveys are summarized below and consolidated in Table 5.3.

-Interview with MEXT

In July 2011, only four months after EJET, MEXT established the "Advisory Panel on Disaster Education and Management upon receiving the Great East Japan Earthquake Disaster" that was tasked provide recommendations to revise the national policies on disaster education and management that focus in enabling children to better predict and prevent from getting affected by future disasters and to develop a mechanism to pass on the lessons learned from EJET for

schools and children in both affected and non-affected regions. For concrete measures, MEXT has presented the aforesaid "School Centered Community Building" concept that has suggested projects that would be jointly implemented by MEXT and other line agencies including MAFF and MLIT that is aimed to recover schools and strengthen schools to become effective community and DRR hubs. Surveys were also conducted to plan enhanced measures to ensure safety of schools structures and to prepare a list of 47 affected schools and related facilities from Iwate, Miyagi and Fukushima prefecture that may need to be relocated to safer locations. In accordance, MEXT drafted a joint budgetary plan to support revisions to both school DRR education and disaster management with relevant line agencies. From the interview with MEXT officials, it became apparent that aside from budgetary and policy planning with Prefectural BoEs, most of the activities had been conducted directly with the City BoEs. MEXT was unclear about the specific roles of the Prefectural BoEs in this process and does not provide any directives to them in working with the City BoEs.

-Interview with Prefectural BoE (Miyagi Prefectural BoE)

Since EJET, Miyagi Prefectural BoE has been taking measures to support City BoEs and schools with eight main components. Assignment of various support personnel, including retired teachers as emergency school staff (88 teachers for 73 schools), administrative staff (28 staffs) faculty staffs from outside of Miyagi Prefecture totaling 216 teachers (as of April 2014) have provided valuable manpower to the affected schools for implementing the listed measures below (Miyagi Prefecture 2014).

(1) Conduct teachers' training program to establish common awareness for DRR and confirming designation of roles
(2) Development of manuals for revising school DRR plans assuming different types of disasters and DRR drill planning within and outside of school hours
(3) Designation of evacuation locations (secondary and tertiary) and evacuation routes with assumption of secondary disasters that would be reflected in school DRR plans
(4) Establishing improved communication manuals for confirming school status and safety of students and school staffs
(5) Revisions of rules for handing over students to parents/caregivers
(6) Development of evacuation operation manual and strengthening function of evacuation centers in coordination with municipal government departments

(7) Providing guidance for students in taking evacuation measures on the way to school and at home

(8) Dispatching experts of mental health care to schools for students and teachers

Two principles that incorporate the lessons from EJET in implementing these measures are the promotion of DRR culture through school DRR education and the school – community linkage that are fostered from non-emergency time. One of the noticeable undertakings that Miyagi Prefectural BoE has taken on this is the appointment of schoolteachers that function as coordinators to link schools with their communities through DRR activities. In 2012, DRR Advising Teachers (*Bosai syunin*) have been appointed in every school in every city in Miyagi Prefecture. In addition, Chief DRR Teachers (*Bosai tantou syukan kyoyu*), who are senior level teachers, have been appointed to key schools in every city, solely to implement school DRR activities and to function as a coordinator in connecting schools with their communities. Providing support by coordinating prefecture-wide and linking with other prefectures, such as providing teacher trainings and appointing support staffs to affected schools are relevant roles that the Prefectural BoE should take, considering its position for looking over the whole prefecture and mandate for human resource management.

-Workshop of Building Disaster Resilience in the Education Sector

On August 2012, Kyoto University organized the "Workshop on Enhancing Disaster Resilience of Education Sector and Communities" in which extensive group discussions were held on school centered community building and school centered DRR education (Figure 5.1). Participants ranged from local government from three EJET affected cities, other cities preparing for the possible Tokai-Tonankai-Nankai Megathrust Earthquakes and other researchers and practitioners working in the DRR field. Among the outcomes from the discussions, key words including "coordination," "partnership," "networking," "sustainability," and "child and region focused" were raised. These are all factors that make school based recovery and community building viable and therefore, should be pursued by communities undergoing disaster recovery and others in disaster prone regions.

Discussions for this workshop were conducted under the two main headings, "School Centered Community Building" and "School Centered DRR Education." The discussion from the workshop covered some issues that call for strengthening governance system for effective disaster response, which is presented below.

(1) Organizational structure for proper disaster and safety management need to be arranged prior to disasters at schools with communities because teachers are most likely to become the first responders during mega disasters, but will require community support.

(2) While initial response to disasters may be handled by the schoolteachers, the role will be eventually handed over to the responsible department of the local government (e.g. BoE, disaster management division). The timing for the handover and the roles of schools should be clarified with relevant authorities.

(3) Equipping schools in coordination with related departments is essential to enhance DRR functionality. Preparing schools to function as evacuation centers cannot be solely done by BoE. Therefore, close communication with disaster management division and fire department from non-emergency time is required.

(4) School DRR education must enable students and parents to make timely decisions to take effective actions to save their own lives during emergencies.

(5) Quick restoration of schools' function from being evacuation centers to normal school operation should come as soon as the response phase is over.

(6) Social linkage, in addition to self-help, mutual-help and public-help, should be extended to include new networks within and outside of the region to assist with school recovery.

The issues raised above entail schools and BoEs to coordinate with other government departments and communities to strengthen capacity of first responders (in this case, school faculty), clarify roles with local authorities and communities for evacuation center operation and management, improving and standardizing DRR functions of designated schools and early resumption of educational activities.

Figure 5.1 Workshop on Enhancing Disaster Resilience of Education Sector and Communities

- Joint workshop with Kesennuma and Saijo on educational governance

The joint workshop with Kesennuma and Saijo was organized by Kyoto University from 20 to 21 January 2014. The objectives of the workshop were to discuss and compare the specifics on how educational administration works in DRR in post-disaster (Kesennuma) and pre-disaster (Saijo) settings. Interestingly, the majority of the comments were alike between the two cities, especially on the fact that much of the roles in disaster management and risk reduction efforts concentrated at the city level with very limited involvement from the prefectural and national levels. The process of having to go through the MEXT – Prefectural BoE – City BoE – School is seen as a time consuming process and even a bottleneck for information flow. Kesennuma claimed that during EJET, both fast track and conventional response system existed separately at different levels that added administrative inefficiency. Likewise, Saijo city argued that DRR-related projects are usually given in a top-down manner from the Prefectural BoE without consultation with the city government because there is no system for City BoE to initiate such discussions with the higher administrative levels. This has been making city governments passive in working with prefectural levels, which are unaware of the local situations. Although both cities recognize the significant roles that the Prefectural BoE can play from past case with Hyogo Prefecture in the aftermath of the Great Hanshin earthquake, there is a general perception that the Prefectural BoEs have only minimal functions in disaster response, recovery and preparedness process in the view of the City BoEs and schools.

Table 5.3 Summary of key results from survey on strengthening educational governance

MEXT	• Presented the "School Centered Community Building" concept in coordination with MAFF and MLIT (including budget plan). • Developed list of 47 high-risk schools potentially to be relocated. • Does not giver directives to Prefectural or City BoEs. • Works directly with City BoEs as needed.
Prefectural BoE (Miyagi Prefecture)	• Development of new training program to maintain minimum levels of DRR knowledge of school teachers. • Revision of guideline to enhance school DRR planning (e.g. improvements to evacuation procedures, communication system, evacuation center functions) • Assignment of DRR coordinators (teachers) to schools.
Workshop for Building Disaster Resilience in the Education Sector	• Systemizing support system for schoolteachers to function as first responders prior to disasters. • Improving arrangements for evacuation center operation and management among local government, schools and communities. • Equipping schools to strengthen its function as evacuation centers. • Review to enhance school DRR education that is child centered and regionally specific. • Extending help networks within and outside of the region.
Joint Workshop with Saijo and Kesennuma on Educational Governance	• Further strengthening of self-help capacities at city levels and schools. • Consideration for better coordination with Prefectural BoE and MEXT by referring to good practices (e.g. Hyogo Prefecture).

5.4. Suggestive measures for strengthening educational governance for disaster resilience

The literature review, interview surveys and workshop outputs above have shown that communication and coordination have been one of the critical problems that branches out to other issues during EJET response as well as for preparedness measures in pre-disaster. Kapucu (2006) claims that these are the central issues for organizations to be able to work effectively during disasters. In reviewing the roles that each administrative level play, each BoE level has endeavored to contribute to the DRR process in their own ways. In spite, fragmentation among these efforts has caused opportunities for a better collaborative effort to be lost because of lack of coordination and communication. This problem commonly becomes more apparent when the government function is weakened under emergency situations and organizations lose their capacity to share critical information among themselves and efforts for supporting affected cities become more complicated (Comfort 2007).

As a result, while some cities were able to take stopgap measures by using their own resources and connections, smaller cities were unable to request or receive assistance from the higher administrative levels to effectively respond to EJET (Nanba 2012). On this issue, Berke et al. (1993) claims that the degree of "vertical" and "horizontal" integration becomes the key determinant for local authorities to be able to communicate their requests externally. In turn, this integration is what allows external supporters to self-initiate timely actions to assist affected cities and communities. Therefore, lack of vertical and horizontal integration greatly affects the multi-organizational, inter-governmental and inter-sectoral coordination that is vital in responding to large-scale disasters (Waugh 2006). As the case, even if a support plan for disaster response might already be in place, it must be reinforced through collaborative relationships of individuals and organizations. Some suggestive measures for the education sector for resolving this issue are given below to further strengthen vertical and horizontal coordination that all BoE levels can endeavor on to either receive or provide support to support affected City BoEs and schools.

As a system to coordinate emergency relief operation, the Disaster Countermeasures Basic Act stipulates for the establishment of Emergency Operation Centers (EOC) called "Headquarters for Managing Major Disasters" at the municipal, prefectural and central levels depending on the magnitude of the disaster. When an EOC is established, representatives of different agencies and/or divisions are mandated to gather at the EOC to collect relevant disaster damage information so that so that they can carry out effective

emergency response activities such as search and rescue and medical operations on the ground. By utilizing this existing mechanism as a hint to improve both vertical and horizontal coordination in the education sector, the establishment of Joint Emergency Operation Center (JEOC) for the education sector is suggested as an option with aims to enhance intra-agency, peer-to-peer and cross-sectoral communication and coordination for effective disaster response and recovery.

5.4.1. Vertical coordination (intra-agency)

Although EOCs organized at different levels were expected to quickly collect information and precise coordination and instructions to affected local administrative levels, a MEXT report on lessons learned from EJET have revealed some fundamental shortcomings in vertical coordination (MEXT-Prefectural BoEs-City BoEs). For example, MEXT officers experienced difficulties in contacting their local counterparts because they did not know whom to contact at the local levels (MEXT 2012). Issues in intra-agency coordination, which are closely linked with dysfunctional vertical information flow, have caused complications and even conflicts in response operations during EJET (Kitamura 2014). While conventional EOCs are usually set up separately at each administrative level, the suggested JEOC will be established at the Prefectural BoEs, which will play a key role in the JEOC in coordinating with MEXT and City BoEs. It is important however, that the City BoEs are kept as the main drivers to base JEOC's decisions on disaster response, whereby the Prefectural BoEs will take a supporting role to deliver the actions. Even if the higher administrative levels are responsible to ensure that every City BoE and school is able to receive the needed support for disaster response, too much involvement or control may sacrifice the autonomy of the local levels, which may result in disruption or weakening of local capacity as first responders (Sunahara 2013). Another critical factor for JEOC is keeping the flexibility of roles among the BoEs. Disaster response and recovery are dynamic processes that require actors to be able to adjust their roles with the changing conditions. For this, improved communication and coordination realized under the JOEC may allow its members to coordinate in adapting their functions as necessitated by situations on the ground.

5.4.2. Horizontal coordination (peer-to-peer and cross-sectoral)

With the JEOC setup above, strengthening of horizontal coordination can additionally be pursued. In the aftermath of mega disasters, measures taken by a single agency may not be

sufficient and could require multi-organizational, intergovernmental and inter-sectoral support. For this, Janssen (2009) suggests a Network-Centric Operation (NCO) approach for improving information quality that will allow better collaboration among stakeholders, contributing to speedy disaster response. Oikawa's (2013) idea on N-Help (N="network," "NGOs," "new") that derives from EJET experiences reinforces the NCO approach by extending networks beyond traditional actors and sectors, such as business sector and international organizations like UNESCO. In relation, the concept of Wide Area Support System has been broadly recognized and institutionalized in Japan since Great Hanshin Earthquake in 1995 and Niigata Chuetsu Earthquake 2004 with revisions to the Basic Act on Disaster Control Measures (Funaki et al. 2006). EJET, with its unprecedented magnitude and aerial extensiveness, has become another opportunity to revisit and strengthen the horizontal support system. In taking this approach, existing networks at the local levels can be first examined. For example, the National Governor's Association functions as prefectural level and National Mayor's Association at the city level have been known take a supporting role in developing the Wide Area Support System that functioned effectively during EJET (Kitamura 2014). The schools can also make use of their unique networks based on Principle's Associations, sister schools and former graduates residing within and outside of their respective regions. It is known that during EJET, this kind of peer-to-peer assistance was prevalent and effective in the initial phases of disaster response (Nanba 2012). Hence, in seeking optimal effect of these networks in the context of disaster management, it would be effective if such horizontal support can be systemized through predetermined agreements as the following. Again, the Prefectural level through the JEOC can take an important role in coordinating city level actors within the prefecture as well as with peer actors from other prefectures in different regions.

-Peer-to-peer coordination (Inter-agency)

Following are some suggestive approaches, in which some of the ideas were adopted from a survey conducted by the Hyogo Earthquake Memorial 21st Century Research Institute (2014) for systemizing support system through reciprocal agreements for establishing various horizontal help networks that will be useful for materializing the Wide Area Support System in the education sector.

- **Block agreement method:**

  Agreement of groups of BoEs (usually more than eight prefectures or cities) in the same

regional blocks to assist each other in case of emergencies. Host BoE is assigned to coordinate larger operations. The agreement could include items such as (1) prior sharing of disaster management plans, (2) self-initiated support operation plan and (3) shouldering of costs for operation.

- **Counterpart method:**
  Agreement among BoEs in one region, usually of the same administrative level, to support pre-assigned counterpart BoEs of the affected region. The agreement could include plans to self-initiate support for the affected schools, in providing relief goods, dispatch support staffs and receive displaced students. A prefecture could delegate the activities to a City BoE.
- **Scrum assistance method:**
  Joint arrangements of BoE that has existing reciprocal agreement and several peripheral BoEs to assist BoEs in disaster affected areas. The contents of the support would be same or similar with that of the previous two methods.

These arrangements are expected to enable supporters to self-initiate assistance for the disaster stricken areas without waiting for requests from the local levels. Because City BoEs is probably unable to take the administrative burden of making an official request during mega disasters, self-initiated assistance from the supporters would be the key in realizing timely horizontal support operations (Nanba 2012). Also, as information from affected areas is usually limited under disaster situation, strengthening of information flow through this process will enhance the quality of information that will lead to better self-initiated support actions as well as collaboration among stakeholders (Janssen 2009). With more information on damage situations, external supporters will be able to make informed decisions that will increase efficiency, sustainability and speed for quick disaster response (Waugh and Strelb 2006).

- Cross-sectoral coordination

To further explore the possibility in enhancing horizontal support, cross-sectoral networks can also be considered. For example, partnership with the Ministry of Land, Infrastructure, Transport and Tourism (MLIT), the key agency for disaster management in infrastructural aspects of disaster mitigation can be studied. While the administrative levels in the education sector are relatively independent from each other, the Regional Bureaus of MLIT are directly

managed by the national level, making its control and command system more efficient. Therefore, partnership with MLIT could be highly beneficial for the education sector to backup its vertical coordination. The Ministry of Agriculture, Forestry and Fisheries (MAFF) also has a similar administrative organization, owning Regional Agricultural Administration Offices that look over disasters on agricultural and fishery areas, such as landslides and coastal erosion. Unfortunately, MEXT's cross-sectoral partnership agreements in disaster management only came after EJET, under its school recovery initiative, "School Centered Community Building, " that was presented in October 2011. If such relationships can to be built from normal time, emergency support can be more rapidly mobilized and continuous working partnerships for recovery and community development can be created (Norris et al. 2007).

5.4.3. Re-alignment of roles of different administrative levels

By taking some of the suggestions for improving coordination and communication in the education sector through the JEOC mentioned above, re-alignment of roles for each administrative level that comprises the JEOC is suggested below. It is noted here again that while the Prefectural BoE role as the base to coordinate the vertical and horizontal actors can be maintained, the proposed re-alignment is not in any way prescriptive and should be adaptable with flexibility as according to the situational changes of the affected cities and schools. If this is possible, the same structure can also be applied for recovery and preparedness and even up to community building allowing collaborative efforts to be streamlined throughout the different disaster management cycle phases (possibly under a different name). Figure 5.2 captures the overall concept of the proposed JEOC of the education sector in building an improved intra-agency (vertical), peer-to-peer (horizontal) and cross-sectoral coordination system and incorporates the re-alignment of roles of each administrative level.

- **Role of schools in JEOC:**

1. Confirmation on survival or safety of students and school teachers
2. Support for disaster affected students and schoolteachers
3. Initial set up and operation of evacuation center (to be handed over to city government)
4. Planning resumption of educational activities

- **Role City BoE in JEOC:**

1. Support for evacuees and operation and management of evacuation centers
2. Situation reporting to higher level administrations
3. Coordination with relevant departments in city government
4. Support to resume education activities

- **Role of Prefectural BoE in JEOC:**

1. Administrative support for City BoEs
2. Managing dispatching of BoE staffs and school teachers to disaster affected cities
3. Vertical (with MEXT) and peer to peer (with other Prefectural BoEs) coordination for schools and City BoE in prefecture
4. Information collection and dissemination (from and to schools and City BoEs)
5. Support to resume education activities, including budget support

- **Role of MEXT in JEOC:**

1. Administrative support for Prefectural BoEs
2. Budgetary and technical support for local level BoEs
3. Nationwide information consolidation and dissemination
4. Developing framework for intra-agency (vertical), peer-to-peer (horizontal) and cross-sectoral coordination system

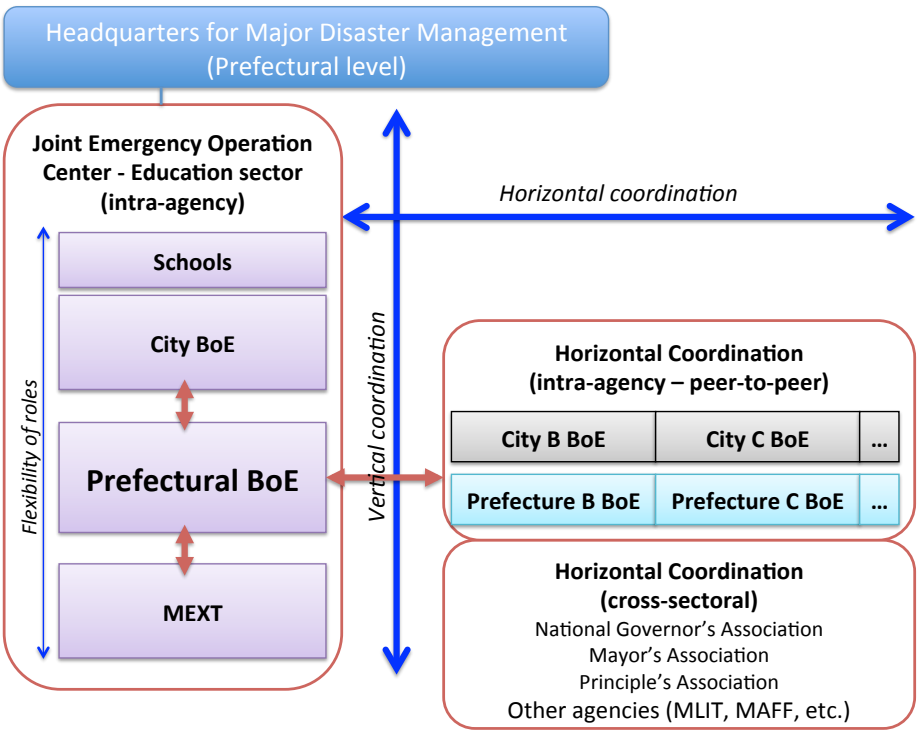

Figure 5.2 Joint Emergency Operation Center for the Education Sector

5.4.4. Enhancing efficiency of proposed support systems

Even if the proposed support systems above were to be established, considerations for efficiency will be critical to make them functional in real disaster situations, as available resources are normally limited during emergencies. On this, Gopalakrishnan and Okada (2007) note that affordability is one of the critical factors for an effective integrated disaster management measures. As the case, these arrangements should not be uniformly placed in full scale for every disaster for all cities. One suggestion for raising efficiency is to adjust and determine the levels of extended support by city size (Figure 5.3). Although in reality, factors such as geographical condition, economical profile and DRR capacity would also be considered, for the purpose of demonstration, city population will be used to categorize the subject cities. Foe example, in Japan, large cities of population of more than 200,000 are categorized as Government Ordinance City (500,000+), Core City (300,000-200,000) and Special City (200,000+) respectively. Cities with population of more than 50,000 is categorized as municipality and those smaller are referred to as villages, districts, etc. Commonly, larger cities would possess more resources (e.g. equipment, budget, expertise) and autonomy over their administrations that enable them to be more resilient to disasters, even on their own. Larger cities, if the effects from a disaster are manageable, may also have the capacity to assist smaller affected cities, such as providing relief goods and dispatching staffs to support response operations. In contrast, as smaller cities do not have such resources or authority, they will be dependent on the higher-level administrations for their support. In this context, support arrangements for each categorized cities can be attuned accordingly to their capacity levels that allow strategic allocation of limited resources for the appropriate beneficiary.

An often forgotten factor in discussing efficiency for assisting disaster response is the constant change in the needs and availability of resources in the course of response and recovery. This in turn would also require adjustments in the roles that schools and different administrative levels should take. On this, Comfort (2007) claims that effective crisis management requires both structure and flexibility that can adapt to the changing physical, engineered and social environment. The ambiguity and urgency in disaster response also call for greater adaptability effort (Waugh 1991). For example, as communication has been repeatedly mentioned as being central in making organizations and partners to work effectively together, when roles of organizations fluctuate and additional actors come in the course of disaster response and recovery, communication strategies should also be adaptable to the changes. Hence, the most effective adaptive strategy for communication is also the one

that relies on flexible, yet timely information flow, as opposed to ridged fixed plans (Longstaff 2005). Yet, it is a reality that the irregular roles in which organizations must perform during large-scale disasters often conflict with their routine arrangements in which such bureaucracies frequently become a bottleneck for this flexibility (Kapucu 2006; Waugh and Strelb 2006). Although there may be no single answer in solving this issue, the second best option could be to prepare for disaster response with various scenarios through joint operational drills involving all administrative levels as suggested in this paper.

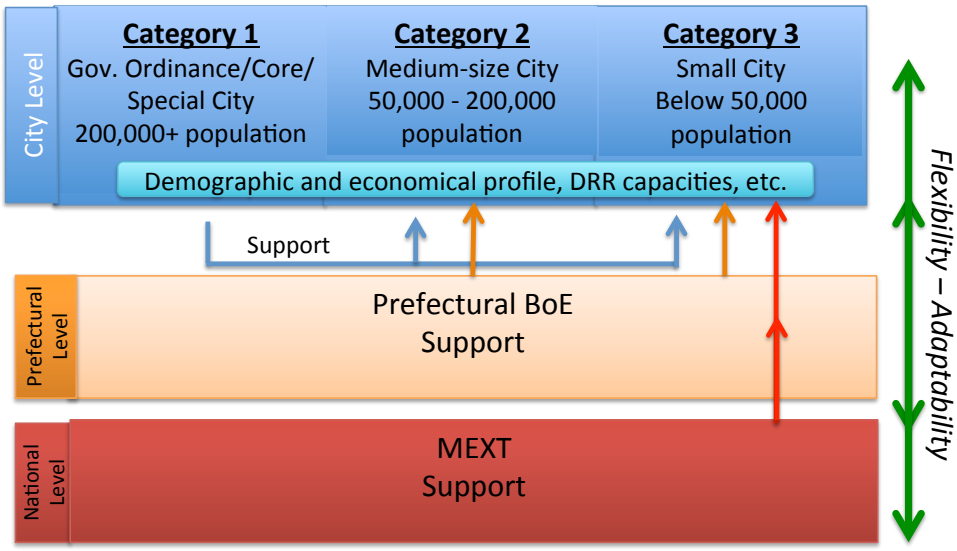

Figure 5.3 Categorization of cities for support and the flexibility/adaptability factor

5.5. Summary of findings

This chapter has reviewed the educational governance system by first providing perspectives on the importance of governance for disaster response, recovery and preparedness. It also touched upon the legal basis for disaster management, investment planning and institutionalization of DRR education and activities. By referring to the history of the BoE system that was explained in Chapter 2, the mandates of the current BoE system and the roles of each administrative level during disaster time were introduced. Direct interviews with MEXT and Prefectural BoE (Miyagi Prefecture) confirmed various efforts and plans that each administrative level has developed and been implementing to support disaster recovery and preparedness in the education sector since EJET. However, two critical problems on communication and coordination among the different administrative levels were raised as issues that were experienced during EJET and in the current recovery process. On this, the

outcome of the Workshop of Building Disaster Resilience in the Education Sector also picked up on similar matters pertaining to coordination, communication, participation and linkages as core requirements to further improve disaster response and recovery in the post-EJET process. Likewise, the Joint Workshop Educational Governance touched upon the administrative bottlenecks of having to go through the MEXT – Prefectural BoE – City BoE – School procedure in planning recovery in which the disconnect between Prefectural BoEs and the City BoEs were especially became clear in the discussions.

While plans for enhancing response and recovery are in the process of being developed and implemented, individual efforts at the national, prefectural, city and schools can be better coordinated by reviewing and realigning the current roles of each administrative levels. Response to large scale disasters can only become effective and efficient if such efforts are harmonized before disasters occur. The issue regarding the unclear role of Prefectural BoE during disaster response and recovery has proven that there are still opportunities to further explore the possibilities in improving existing administrative set up of the education sector. On this, Kitamura (2014) states that education sector can make better use of the prefectural level administration by giving it a larger role in emergency operation by exploiting on its budgetary and networking competences. Concerning horizontal coordination by means of support agreements, a study has shown that although more than 90% of cities within the same prefecture have concluded reciprocal support agreements, only 51.3% of the cities have such agreements with those outside of their prefectures (IGES 2012). For this, MEXT can also work more effectively in matching affected cities with non-affected cities based on local needs and capacities. Though cross-sectoral partnerships can be more complicated, stakeholders will ultimately be obliged to work together when they faced with large-scale disasters.

Given these facts, specific suggestions were given to improve the educational governance system with aims to maximize effectiveness and efficiency in supporting BoEs and schools of affected cities. First, establishment of Joint Emergency Operation Center (JEOC) for the education sector was proposed as a vehicle for improving vertical and horizontal coordination and communication during disaster response. With the Prefectural BoEs taking a pivotal position, continuous re-alignment of roles of each administrative level based on the changes observed in the different phases of the disaster management cycle may be realized. Under the JEOC, the concept of Wide Area Support System was introduced, intended to develop better horizontal coordination (inter-agency and cross sectoral) that could be pre-arranged to prepare for major disasters like EJET. The discussions also underlined the flexibility element

that is essential during disaster response to optimize utilization of limited available resources. Strategic support system based on city population size and capacity was also recommended to resolve the gaps for assisting affected cities that is commonly seen, especially after major disasters. Through the suggested measures above, a robust governance system may be built for better decision making, coordination of efforts and financial planning that can create an enabling environment to facilitate effective, efficient and sustainable recovery of the education sector.

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PART III

Chapter 6. Discussion on the key findings and way forward

Through literature reviews, interview and questionnaire surveys, group discussions and workshops, the previous chapters have identified various elements for realizing the School Centered Recovery and Community Building concept in Toni District, Kamaishi and at the same time, looked into the challenges that measures must be taken for actual implementation. The key findings obtained from the study are discussed in this chapter for the purpose to answer the three research questions raised in Chapter 1: (1) "What can be done to further strengthen schools to function as a community (DRR) hub?" (2) "How can the key stakeholders, essential for the implementation of school centered recovery and community building, be identified and institutionalized to work together?" and (3) "How can implementation of School Centered Community Building be supported?" For each of the key finding, a suggestive measure is provided as possible options for actual implementation in Kamaishi referring to practices observed in Saijo (Chapter 4) and Kesennuma (Chapter 5). Below is a summary of the four key findings that are discussed in detail in this chapter.

1. **Integration of schools with other public facilities and functions:** In rebuilding Toni ES and JHS, possibilities of integrating schools with other public facilities and functions through structural measures were examined. First, in anticipation that decline in student number will likely to continue in the future, the new ES/JHS was decided to become a joint school from an early stage. The community residents generally supported the idea of making the new school a multifunctional facility that is open to the public from expectations that it would help revitalize community ties. On the other hand, schoolteachers and Kamaishi BoE showed apprehensions, due to safety concerns, added responsibilities and burden from being tasked to coordinate with extended stakeholders.
2. **Linking schools with community through school education and activities:** The Toni residents and schoolteachers find that social/regional education program which utilizes local human resources is effective in providing students with "real-life" education that compliments academic education. Although DRR education and activities had been actively implemented in both schools, there was little collaboration with communities in DRR prior to EJET. On the other hand, Sajio's Town Watching has shown good cooperation among school (students and teachers), parents, local government (BoE and Disaster

Management Division) and community members in jointly implementing DRR activities in which participants are able to not only acquire DRR knowledge and skills, but also build strong trust and partnership that would be advantageous in strengthening self help and mutual help capacities when faced with disasters. This partnership can also applicable for taking joint measures for other common issues that may exist in the community.

3. **Utilizing and developing school based network:** In addition to the existing networks centered around BoE, the joint workshop with Saijo and Kesennuma (Chapter 5) revealed that schools possess unique networks that may not be necessarily connected by education or DRR per se, but could be developed as new partners. The case from Kesennuma shows that since EJET, schools have been exposed to unprecedented span of supporting actors within and outside of their communities, which can be considered for establishing N-help networks. Looking into these networks is helpful for identifying key partners for implementing school centered recovery and community building. Furthermore, there need to be an intermediary that connects the schools with their key partners, which could be the first step for institutionalizing new partnerships.
4. **Strengthening educational governance:** During EJET, coordination and communication became major bottlenecks that hindered higher-level authorities to take prompt and effective actions to support affected schools and communities during EJET. Gaps in receiving much needed external support were also observed among cities with different capacities (e.g. population, economic size, preparedness levels, etc.). In the midst of this, surveys revealed that Prefectural BoEs could have taken a more significant role in supporting schools and City BoEs in disaster response and preparedness in accordance with their mandate and competences. While experiencing breakdowns in the ordinary decision making process in post disaster scenarios, opportunities co-exist for institutional strengthening that could enhance efficiency, equity, accountability and sustainability of disaster management issues.

6.1 Integrating schools with other public facilities and functions

MEXT's idea of "School Centered Community Building" prescribes schools to become a multi-functional facility by integrating EJET affected schools with other public facilities and/ or functions. This prescription was faced with great anxieties from Kamaishi BoE and Toni ES/JHS due to reasons on safety, administrative burden and the need to take on tasks that are beyond their normal mandate (e.g. coordination with various divisions). Integration of schools

has several meanings in this discussion, which Saio et al. (1999) classify them into four types which are, (1) Opening of school facilities and space for public use, (2) Transforming school facilities for different ways of utilization, (3) Combining school facilities with other public facilities and/or functions and (4) Joining school activities with the community stakeholders. With these different, but intersecting approaches for integrating schools, three objectives, which are pursuit for economical efficiency, flexible use of school facilities to meet multi-stakeholder requirements and ensuring safety of schools are raised to correspond to the issues observed in the survey results.

6.1.1 Economic efficiency

For small communities, school is a big public infrastructure. A MEXT study shows that school facilities comprise close to 40% of the public facilities owned by municipal governments (MEXT 2013). Similarly in Toni District, the Toni ES and JHS were two of the largest public facilities. If others including Toni Community Center, pre-school and Child Raising Support Center would be included in the picture, it is clear that child/education related facilities owns a significant percentage of public facilities in Toni (see Table 6.1). Nevertheless, with the chronic trend of low birthrate and decreasing student number that continues to close around 400 to 500 public schools every year (MEXT 2012), rehabilitation or reconstruction of these facilities must be carefully planned. Because public school is a common asset that was built by

Table 6.1 Main public facilities in Toni

	Facility	Function in community	Jurisdiction
Education/Child Raising related facilities	Community Center Life Support Center	Lifelong education activities Administrative procedures	Board of Education Citizen Life Dept.
	School (ES/JHS)	School education	Board of Education
	Pre-school	Education and child raising	Health and Welfare Dept.
	Public Library	Education	Board of Education
	Child Raising Support Center	Child raising support	Health and Welfare Dept.
Other facilities	Fishermen's Association	Industry	Industrial Development Dept.
	Seigan Temple	Religious service	-
	Meeting Halls	Multi-purpose	Citizen Life Dept.
	Water Supply, Sewerage, Roads, Public Housing	Lifeline Infrastructures	Construction Dept.
	Community Fire Fighting Stations	Disaster Risk Management	Disaster Management Dept.

subsidies from public funding, there is high demand for school facilities to be efficiently used. In addition, although public facilities like schools had been a sign of community in prosperity, Cassels and McLennan (2000) claim that construction costs of new facilities are a very small percentage of the overall operational, maintenance and replacement costs. This means that once a school is built, it becomes a liability of the owner to effectively manage them regardless of economical or social changes that may occur. EJET damaged over 6,000 educational facilities that are in need to be rehabilitated or reconstructed. Moreover, as only 80% of the public schools had been earthquake proofed at the time of EJET, MEXT has set a goal to retrofit all public schools by 2017 (MEXT 2013). These measures will require a substantial amount of budget from the national treasury, which will make justification of building new schools even more difficult. This is one of the reasons why Toni School Construction Consultative Committee was able to quickly come to a decision to reconstruct the new ES/JHS as a joint school and further perused the possibilities of integrating other facilities. Although in recent years, there have been innovative cases to encourage private sector investment and management of public infrastructures like schools, through such schemes as Private Finance Initiative (PFI), such measures are still difficult to popularize (Dixon 2005). With the decreasing trend of student number unlikely to change any time soon, it remains critical for the government to consider exploring new ways to efficiently utilize and manage schools, without compromising their main functions.

6.1.2 Flexible use of school facilities to meet stakeholder needs

Although the economical reasons for integration of pubic facilities and services for seems convincing enough, mixed opinions shown by community residents, schools and BoE in Toni indicate that each stakeholder have different perceptions and needs for opening up the schools which must be considered. As the case, planning changes for school usage will require extensive stakeholder consultations from an early planning stage that looks into approaches for flexibility, economy and consultation (Townshed 1998). It is also important to remember that although schools may be physically designed to become a multi-functional facility, decision making without consideration for the non-structural aspects, such as managerial issues and planning for effective use of school facilities, schools might virtually remain static and separated from the community and concerns for safety and security would be seen as uppermost in the design and placement of schools (Fisher 2000).

From the community's perspective, demand for opening school facilities started

with society's rising interest for lifelong education in the late 1990s in which regional communities demanded schools to be opened for the purpose to "learn whenever, wherever and by whomever" (Arizono 2006). Under the tight fiscal budget, social changes experienced in recent years have created new demands for other facilities, such as social welfare and health facilities for the elder group and child support centers for working parents as seen in Toni. Because municipalities normally have insufficient funds to construct and manage all of these facilities, even with subsidy from the national budget, consideration to use schools for multi-purpose has been suggested by many for some time (Sakagawa 2004). There is also growing interest for residents to come to the schools not only to borrow their facilities, but also to seek school – home – community engagements, organizing joint activities and supporting students in their studies and everyday lives (Saio 1999). This inclination has been seen in the questionnaire survey from Toni in which communities expressed high expectation for schools to function as a child support facility (40% of households with children, 28% without children) and among the residents, around 15% had actually taken part in supporting experience class, 5% each in life consultations and volunteer work at the schools.

From the government's point of view, because City BoEs are mandated by policies to fully utilize their assets and to support lifelong education of the communities, they are generally supportive in the idea for using school facilities with flexibility and opening them up for community use (Saio 1999). However, in regards to taking further steps to combine schools with other public facilities, BoE are not so keen because some of these facilities are under the jurisdiction of other divisions, which will entail them with coordination and responsibilities. This concern was observed clearly in the interview with Kamaishi BoE. As the case, although by functionality, facilities like pre-school and child support center would be more suitable to be integrated with Toni ES/JHS, choosing other facilities that are under management of BoE may be considered as a more feasible option by BoE.

As for schools, the teachers have displayed even more reluctance for school integration because teachers have their minds full on students' academics and fulfilling their work during their appointed terms. On the other hand, schools nowadays have started to recognize the advantages of using professionals and experts available in the communities by inviting them to the classrooms as guest teachers, but the purpose of this is more to enrich their education programs and not so much to increase interaction with the communities (Kesen et al. 2013). This may however depend on individual relationships of schools and the teachers with the communities. In this respect, although teachers in Toni ES/JHS were

enthusiastic in resuming experience classes that had existed before EJET with the Fishermen's Association and Seigan temple, they had less interest in inviting external organizations like NPO/NGOs to the schools to endeavor on new education programs or events as they see this as a burden under current conditions.

It has been shown above that different stakeholders have their own specific interests to want a certain type of flexibility for school usage (or physical integration). While the roles of schools and education have been expanding in the recent years (Sasai 2011), there is even more possibly that the demands to schools from the local stakeholders will change over time depending on social trends and sudden events like disasters. Hence, a system for participatory consultation to regularly map out the demands on the school facilities should be developed (Townshed 1998) which can keep the school beneficial for all.

6.1.3 Ensuring safety of schools

It was mentioned in the surveys results in Toni that although residents' perception of former JHS as a DRR hub has been and remained strong (32% before and 41% after EJET), the actual evacuation actions during EJET differed (7% who evacuated to JHS did not stay at the school). The significant gap in perception and action experienced in Toni depicts the fact that although during non-emergency time, people are exposed through DRR drills to believe that school is a place to seek safety, when faced with actual emergencies, they can lose their confidence in its safety and realize its insufficiency to function as evacuation place. Despite of this, experiences from major disasters in Japan, including Great Hanshin Awaji Earthquake, Chuetsu Offshore Earthquake and EJET show that people still evacuate to the schools more than any other public facilities in their communities (Kashihara et al. 1998; Haga et al. 2008).

The needs observed to enhance DRR capacity of the new Toni schools are those concurrent with what is experienced with many schools across Japan. For example, it is known that out of all the public schools designated as evacuation centers, only 35.2% accounts for having a proper storage room, 28.7% with backup water supply facility, 18.0% with electric generators and 30.2% with telecommunications equipment before EJET (NIER, 2011). In the same time, there were still more than 15% of designated schools in need of earthquake proofing (FDMA 2014). In addition, since proximity and accessibility to and from the evacuation place are factors that determine evacuees' decision where to evacuate (Horikiri and Odani 2000), improvements to peripheral infrastructures, such as evacuation routes, are required. In areas where the mountain range and the coast are close like in Kamaishi,

limitation of leveled land requires key buildings to be strategically located, built on reformatted mountainside or completely relocated. The costs for taking these measures will be overwhelming to the municipal governments, even with sufficient subsidy from the national and prefectural governments (Terumoto and Kondo 2009). Therefore, it would be more efficient to concentrate investment to upgrade the DRR functions of schools that comprises more than 60% of all the public facilities that are designated evacuation centers. In communities with landscape like Toni, combining DRR facilities will not only be efficient in making use of limited leveled land, but also can strengthen schools' function as evacuation centers. Such planning should ensure participation from different community stakeholders, especially the most vulnerable and marginalized (Morrow 1999) as schools and BoE may not be able to properly recognize their needs.

6.1.4 Prospects for implementation

Figure 6.1 shows a suggestive image of the new Toni ES/JHS as an integrated multi-functional facility that is based on the analysis of discussions held in the School Construction Consultative Committee and stakeholder interview survey. The figure was actually presented in the Committee meeting in Toni to be referred in order to further discuss the possibilities for integration. The key stakeholders are distinguished by how they can be integrated with the schools based on their roles and functions in the community and in supporting schools. As an

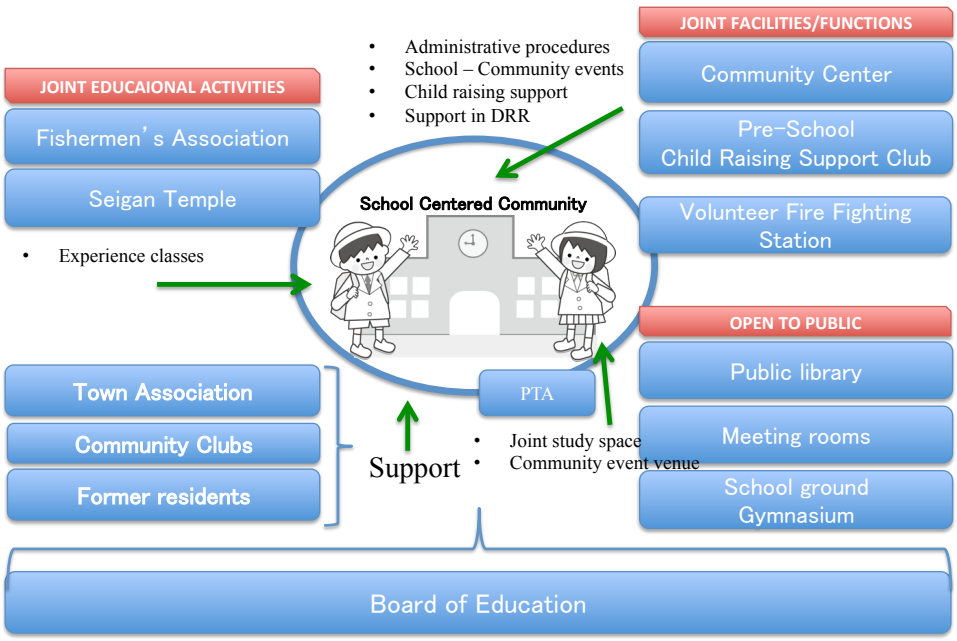

Figure 6.1 Image of school centered community in Toni

initial suggestion, Community Center, Pre-school and Child Raising Support Club can be joined with the schools as they are more related to education and child raising. Functions of the Community Center, such as administrative procedures and social welfare service (e.g. health consultations) can be conducted in the same facility. As there is no public library in Toni, the school library can be transformed into one to become a common study space for students and the community. Adjacent to the school, the volunteer firefighting corps station can be built for the purpose to raise DRR awareness and to assist the schools when they become an evacuation center during disaster emergencies. Building access pathways to and from the school and Highway No.45 is also critical when evacuation needs to be continued to even higher ground. Although architectural issues will not be mentioned here, they will influence what can be actually built together with Toni ES/JHS, given the limited availability of high and leveled land in the Kojirahama where the new joint school will be built (former JHS).

6.2 Linking schools with community through school education and activities

Exploring the possibilities of integrating schools with communities will greatly be influenced and shaped by school educational activities that will involve participation from the communities. Ikeda argues that although the importance of linkage between school and community for the education sector has been understood by many, their roles have been divided for a long time (Ikeda 2001). However, in many cases, once they start sharing the same interests and a common goal, there is a better chance of bringing school and outside-school communities together (Bouillion and Gomez 2001). This is the primary aim as well as the means to successfully implement school education and activities that links schools and communities together. In this context, the common interest of Toni residents in history, culture and education had provided an ideal base for conducting collaborative activities for education. Saijo's city wide school DRR education program has continued to foster partnership among various stakeholders that encompass the school community producing mutual benefits in strengthening community preparedness for future disasters. The collaboration has provided an additional impact in establishing a foundation to tackle other existing and arising social issues that prevail in the region. As a result of their continuous endeavor, the 12-year-old Education Program has been featured by UNISDR as one of the good practices in its "Making Cities Resilient: My City is Getting Ready" campaign.

The discussion below sheds light on the survey results from Toni's social/regional education and Saijo's DRR education that are conducted with community participation. These

education programs will provide the contents for the non-structural aspect for integration in which schools can take a central role. When referring to education, instead of going into the specifics of the education programs, the discussions will concentrate more on examining how school and communities can jointly take roles in implementation and how they can both benefit from it by administrating in a participatory manner.

6.2.1 Social/regional education

As noted in the interview survey results, before EJET, Toni ES/JHS had been active in conducting integrated study programs, which is aimed to help students better understand the historical, cultural and socio-economical qualities of their hometown. In providing such education, there are numerous local resources that can be utilized, especially human resources that may be individuals or organizations existing in the community (Toyofuku 2007). It has been mentioned that before EJET, Toni ES/JHS have been cooperating with the Fishermen's Association to carry out salmon hatchery, release and food processing experience classes. Since students usually do not have much connection with the fishermen or have actually seen how salmon is processed, the program becomes a precious experience for them to better understand how their local economy is supported. In times which concerns on the gap between school education with what students actually experience outside of schools are widely raised (Bouillion and Gomez 2001), these experience based education can greatly benefit school education because local resources can provide education for students on subjects which experiences of schoolteachers are limited (Tett 2004). Moreover, such practical education can help students better connect with their communities and allow them to find future career interests in their communities (Corter and Pelletier 2005). This would create mutual benefits on both sides.

Seigan temple prior to EJET, had also been cooperating with the schools in educating students about local history and moral values that are important for their development into adulthood. Under stressful conditions that students and teachers have been under since the disaster, such resources can assist schools and their students in providing moral support through programs that teach on various issues such as community life, living with the natural environment and local traditions that are based on rich life experiences in the region. As these programs also provide opportunities for both students and communities to interact with people in different age groups, going to school and taking part in these education programs by itself can mean that the students are joining as citizens of their communities

(Osterman 2000). This kind of school - community partnership in education will not only promote students' performance in their educational achievements (Israel et al. 2001), but also cultivate their willingness to understand the existing issues in their society and to solve these issues together with the others in the community. This creates an ideal partnership between school and communities that has been built from non-disaster times, which will then show its positive effect in jointly coping with disaster response, recovery and community building.

6.2.2 DRR education and activities for school – community linkage

Toni's DRR awareness was attained from a combination of local knowledge and school disaster education based on the Handbook for Tsunami Disaster Management Education of Kamaishi. While there is no doubt that DRR knowledge and strong community ties have greatly contributed in saving many lives from EJET, disaster effects and unforeseeable social developments in the future may pose challenges for Toni to maintain its disaster resilience. In contrast, 12-year-old Education Program of Saijo provides an institutionalized system for building a collaborative school – community partnership that could be adaptable to changing social situations and applicable not only for disaster response, but also for other phases of disaster management. On this, the case study from Saijo's three school districts have demonstrated that even though each school district exhibits different risk factors, demographic profiles and social capacities, the Program can be adaptable in various situations.

There are several reasons on why schools and communities should work together in DRR. First is the fact that traditionally, school disaster education and activities tend to be contained inside the schools (Sato 2011) and under limited assumption that response measures the students will start at schools. But in fact, students on an average only spend about 6.5 hours at the school and at other times are elsewhere – at home, en route to and from the schools, in parks. Hence, they will need to be able to protect themselves from disasters anywhere at anytime (Ronan and Johnston 2005). Because teachers would not be able to look after students once they are outside of the schools, it will become the responsibility of adults in the communities to protect them wherever and whenever possible. On this, Town Watching activity in Saijo is a good example in bringing school disaster education out of schools on to various places for students and community connect and collaborate for disaster preparedness. The principle message here is that although disaster education can start at schools, it should not be confined in schools (Shaw et al. 2004).

The other reason for the need for community participation is that in disaster prone

region, families and communities within the locality have a great deal of local experience and knowledge of disaster (Takeuchi 2011). Because direct experiences of disasters with individuals are limited (Dufty 2009), the community as a whole need to learn from one another to acquire sufficient DRR knowledge to effectively cope with disasters. To this regard, Town Watching activity directs students to interview community members on their disaster experiences and local DRR knowledge that may exist in the communities. Although such traditional teachings may not have much technical information to offer, the lessons can be invaluable for school DRR education programs and more permissible to the local people because the knowledge is based on those of their own communities (UNISDR 2008). Also, schools often face difficulties in retaining their DRR knowledge base built by school DRR programs due to regular rotation of teachers and graduation of students. As DRR knowledge and awareness of new teachers and students may be less from those of their predecessors, the school should effectively employ community based DRR knowledge, ideally by incorporating them into the school DRR education and in turn, disseminate the knowledge back to the community (Morrow 1999).

From another prospect, collaborative approach in DRR education can transform students from belonging to the vulnerable group and being disaster victims into important DRR actors for recovery and community building. This is the aim of 12-year-old Education Program in Saijo in which 12 year olds (6th – 7th graders) are targeted to become DRR leaders and contributors to their communities in DRR. By nurturing DRR leaders, students who are usually categorized as belonging to the most vulnerable group and disaster victims can become those who can help others during disasters. It is therefore important to recognize that students can also become contributors for enhancing DRR capacity of the community (Fujioka 2008; Shaw 2011) and can influence disaster preparedness of the whole community, starting with their parents (Ronan and Johnston 2005). It should be emphasized that although DRR education that is conducted by teachers or experts in an unilateral manner is useful to gain knowledge and raise awareness, that by itself leave the students as passive learners and may not necessarily change their attitude or behavior. Shaw et al. (2004) observe that the actual usage of knowledge can be taught by visual aid, experiencing (e.g. listening to disaster experiences, conducting drills) and conversing with others. Furthermore, the DRR education activities should allow flexibility in the teacher – learner paradigm, so that students can also take a "teachers" role to provide inputs and take initiatives in improving the programs (Yamori 2009). As this process will require time to permeate, the programs should be ideally be

incorporated in everyday aspects with active participation from families and communities (Shaw et al. 2004) for sustainability and effectiveness, especially for large-scale, long enduring disasters. Also, while support from the local government in providing technical and administration may be required at the initial stage of implementation, in the long run, the support can be extended further to individuals or organizations, such as local experts, NGOs or universities that can work as an intermediary in coordinating or connecting schools with the various resources available within and outside of the region.

Fisher (2000) use the term "Schools as Social Capital," which states that if school buildings and educational services can be better used for linking schools with communities, schools can greatly encourage communities to come together to work for a mutual benefit. Therefore, exploring the possibilities of school – community cooperation and collaboration in education programs as above can enrich community linkage or social capital would work positively for community's capacity for effective disaster response, recovery and preparedness (Aldrich 2012; Moore 2004; Nakagawa and Shaw 2004). As noted already, there is a good chance that that community disaster risk can be reduced even if some community members are not engaged in DRR activities per se, if the community link is strong enough.

6.2.3 Prospects for implementation

In the current situation in which schools have not fully recovered their functions – not only in structural terms, but also their prior engagements with communities – Toni may be at risk from getting affected by upcoming emergencies. On the other hand, Toni schools have gradually started planning their new integrated study program for the coming academic year that emphasizes understanding of recovery, industry and interactions with various community members (Figure 6.2). While these programs that involve parents, local communities and local government are much encouraged, it is important to ensure that these programs are not short-termed and linked with the long-term goals of community building with continuous interaction, collaboration and participation of various community stakeholders. Particularly for implementing recovery education, activities that include interviews to construction workers of recovery project allows students to be a part of the recovery process of their own hometown, which helps in raising awareness in recovery, community building and DRR. For actual implementation, practices observed in Town Watching (Chapter 4) can also be referred as not to confine these activities inside school premises.

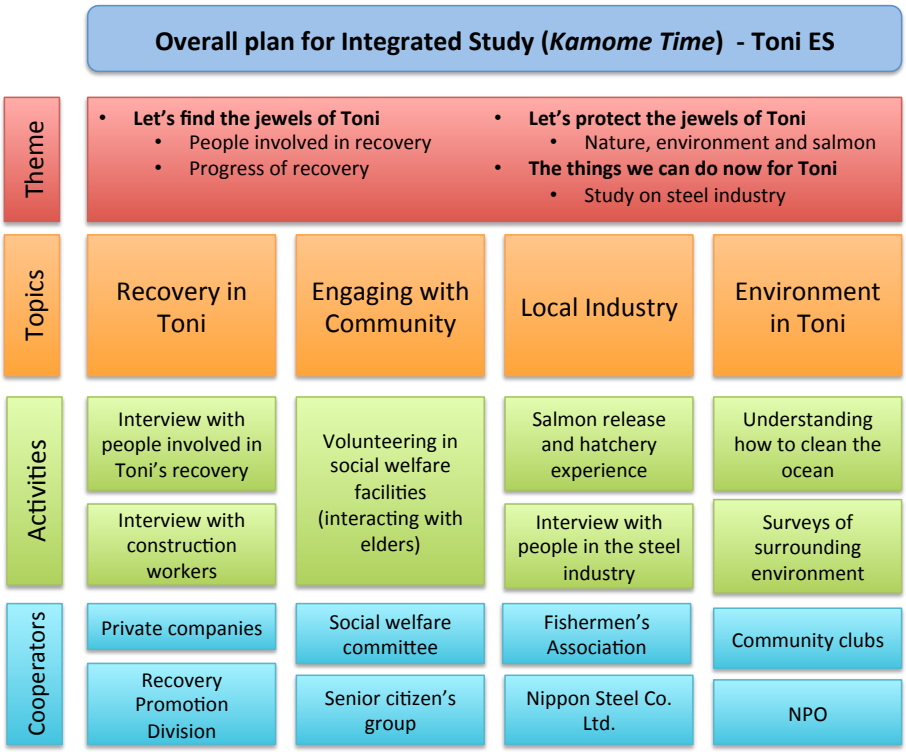

Figure 6.2 Planning for integrated study program in Toni

6.3 Utilizing and developing school based network for DRR

Aside from the official networks that schools possess with BoE and its related organizations, schools commonly own other community based networks that start with student families through the PTA that would then reach to other community members and organizations (Sakagawa 2004). Surveys in Kamaishi and Saijo have shown that the schools in both cities possessed school based networks unique to their respective school districts. Toni ES/JHS were able to make use of their existing community based networks to effectively respond to EJET, whereas Saijo schools have strategically planned to strengthen existing networks and build new ones to prepare for future disasters through its school DRR education program.

Since EJET, many of the affected cities have been experiencing an unprecedented range of multi-layered assistance from various local, prefectural, national and global individuals and organizations (Yamamoto 2012). Kesennuma is one of these cities that have received assistance from extended network of supporters even those from abroad. Coining such extended network as N-help (New, Network, NGOs), EJET has provided the city with opportunities to expand their partners within and outside of its communities. On the contrary, there are evidences in which numerous relief organizations came into the affected cities by

responding within a few days after EJET, but acted individually without much coordination (Liu et al. 2012). The operation to coordinate such broad scale assistance has proven to become a burden on local government and communities and one of the major issues in managing the recovery process. For instance, Kamaishi BoE and Toni ES/JHS have been receiving various support offers from NPO/NGOs as well as individual volunteers, but the contents of many of these proposals have either been overlapping or simply not appropriate for the schools. Imposed on having to screen and attend to these overwhelming numbers of offers, the schools have become hesitant in in receiving any of these supports from the workload. While some of the assistance may actually be useful, schools and communities should aim to strengthen reciprocal links and regular interactions with their existing networks and place efforts in building new ones from pre-disaster time to make full use of these opportunities (Norris et al. 2008). This process will be significantly important in mapping out the key stakeholders for implementing School Centered Recovery and Community Building. It will also help identify the intermediary who can help connect the stakeholders to create networks. The below provides discussions on the challenges and opportunities of utilizing existing networks and possibilities of developing new ones for recovery and community building.

6.3.1 Existing school based networks

Although the degree of intimacy depends on the community profile and social conditions, schools are usually connected with various stakeholders either bilaterally or multilaterally through networks. First, schools in Japan are deeply connected with the parents of students through such events as open school days, teacher's home visits, class newsletters, report cards and PTA/School Committee activities (Tett 2004). They are also connected with wider range of community members through annual school events, such as sports and culture festivals, where households with no children sometimes participate. Toni communities was such a case in which households with children only accounted only about 20% of the total, but more than 60% of them regularly participated in school events. As a more formal network, the members of Board of Education (not the secretariat) are appointed from various community residents of different profession and age groups. Directly related to DRR, local firefighting volunteer corps (*Syobo dan*) and community based disaster management organizations (*Jisyubo*) that conduct regular fire patrols and DRR drills for their school districts are deeply embedded and trusted by the communities. As these organizations are often composed of members of town

associations (*Chonai kai*), the participants are widely connected with different community stakeholders in their community. It is known that the local governments take advantage of these organizational networks to transmit information and instructions related to DRR and other regional issues to the communities (Bajek et al. 2008). In the recent years, various local volunteers and community based organizations have become increasingly active in supporting schools and teachers of their locality. For example, the MEXT program, "Regional Hub for Supporting Schools Project (2008-)," mentioned in previous chapter, has been effective in assisting volunteers create sustaining networks among community members, community with teachers and schools with local organizations (Sasai 2011). Such networks and relationships that are built from normal times is the key for rapidly mobilizing emergency support that appropriately meets community needs as well as creating continuous working partnerships for community development (Norris et al. 2008). For schools and communities, especially those affected by disasters, seeking to strengthen or recuperate their community ties for recovery and community building, can consider making effective use of networks that encompass the schools and school districts.

6.3.2 Developing new school based networks

In early stage of recovery, there are more opportunities to develop local organizational capacities because of availability of human and financial resource usually concentrates during this phase (Berke et al. 1993). Disasters, especially those of high impact, can expand individual and organization connections that have previously not been seen through disaster management during non-emergency time (McEntire et al. 2002). In network building, the schools could have opportunities to build new networks while the attention of the society is still high on school recovery. First, the schools can get linked with the local emergency management organizations (Ronan and Johnston 2005), if cooperating relationship is still limited. There are also countless informal networks connected with the schools that may not necessarily be connected by DRR (Takeuchi et al. 2011) or with any specific objectives. These may include community based groups, such as women's associations, seniors' club, gathering of fathers of PTA members (e.g. Saijo's *Oyajino kai*) and local festival groups. Because some of these groups have been involved with the schools through volunteering activities or joint community activities, the connections can also be considered to be applied for disaster recovery and community building. The school districts in Saijo have been active in establishing networks with the private sector (e.g. ship building company), from the need to strengthen

connections with new neighbors who moved to Saijo to work in these companies. Stewart et al. (2009) points out that some private sector companies have the capacity to respond efficiently and effectively to the needs of impacted areas because of their financial and material resources as well as disaster response plans. Although their intentions might be that of company – consumer relationship, corporations can also show good will in supporting troubled communities under crisis. Network building in partnerships with the media should also be considered as a significant measure to enhance information collection and dissemination (Quarantelli 1997) where conventional communication system is unlikely to be functioning in the immediate aftermath of disasters.

Schools also have loose networks extending outside of the city or region, such as "sister schools" that are usually under the same management body or share the same educational policies and programs. Schools in Kesennuma are connected with other schools internationally by belonging to such framework as UNESCO Associated Schools. There are also possibilities of looking into the school alumni network where former graduates currently living in other cities and countries can take initiatives, such as fund raising and awareness building, to support the affected schools in their hometowns. These informal networks can compliment formal networks and be prominently valuable if the communities of the schools have completely lost its function. Such network help may allow delivery of aid in supporting local organizations, including schools, to undertake sustainable recovery initiatives (Berke et al. 1993). The various networks described above can indeed be effective in bonding communities, bridging different communities and linking them with financial and public institutions (Mathbor 1999).

In order to ensure that the networks continues to be of practical use, it would be more strategic to place a system in which the actors of the network are connected by a connecting intermediary. For this, school can consider appointing coordinators responsible in community relationship or place a system in which teachers are regularly participating in community meetings and events. Then the schools themselves will be able to become the key intermediary or connector for the communities by taking advantage of its facilities and networks that can bring stakeholders within and outside of the communities together. It would be even more effective the school networks and the intermediaries are institutionalized to provide a robust basis to fully utilize the network system. A specific example from Kesennuma that provides prospects for establishing such network/partnership building is presented below.

6.3.3 Prospects for institutionalizing school based network

Kesennuma is another coastal city in northeast Japan that was devastated by the EJET, damaging four ES and one JHS either due to the effects of tsunami and earthquake. In resuming school DRR activities, BoE and the schools have been taking initiatives to renew the school DRR education program by strengthening linkage with their respective communities. It has already been mentioned that identification of an intermediary, whether individual or organizational, will be the key in building networks between schools with the community stakeholders. In this view, the Miyagi Prefectural BoE has appointed schoolteachers to function as coordinators in materializing this initiative. In 2012, DRR Advising Teachers (*Bosai syunin*) have been appointed in every school in every city. In addition, Chief DRR Teachers (*Bosai tantou syukan kyoyu*), who are senior level teachers, have been appointed to key schools in every city, solely to implement school DRR activities and to function as a coordinator in connecting schools with their communities. Education Researchers have been assigned by the Kesennuma city government to conduct research on Education for Sustainable Development (ESD) that has been well established in the city before EJET. Since EJET, their topic has been focusing on renewing school DRR education program that is integrated with the core concepts of ESD, emphasizing on cooperation between school and communities in solving common social issues.

Adopting the efforts of the city in enhancing school DRR education through school – community linkage, a suggestive measure to further expand the network by establishing a DRR Education Promotion Committee in Kesennuma is presented in Figure 6.3. The main objective of this proposal is to expand the existing networks with stakeholders who are not currently connected through school education or DRR, even though they might already have their individual DRR agendas. It is important that when such committee is established, it should be institutionalized for sustaining the structure. For this, it is suggested that the roles and the benefits of each stakeholder are clarified and periodical activities are conducted from normal times. In a much smaller scale, the Hashikami District has established a similar committee with ES/JHS, parents, neighborhood association and BoE with aims to (1) Strengthen "self-help" capacities through DRR education, (2) Enhance "mutual-help" capacities through joint DRR drills and (3) Learn about natural environment and disaster risks in the district. Although on a voluntary basis, regular DRR programs have been implemented by neighborhoods, which consist of joint school – community DRR drill in the morning and DRR education program and handover drill at school in the afternoon.

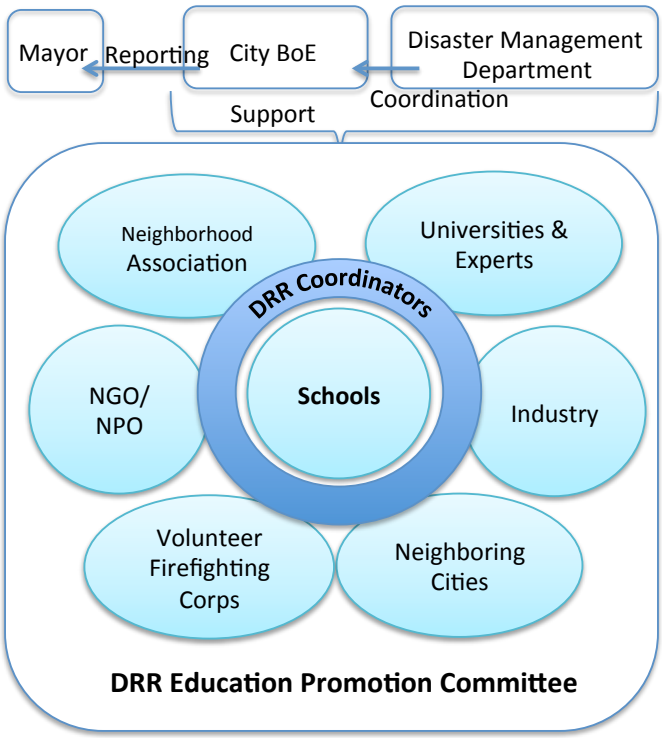

Figure 6.3 Image of DRR Education Promotion Committee

The setup will place the school at the center with teachers appointed as DRR Coordinators who will be responsible to function as the school's focal point for the Committee as well as with other supporting organizations. As mentioned previously, identification of an intermediary will be the key in bridging and maintaining networks between schools, communities and other stakeholders that will be participating in this initiative. Therefore, the DRR Coordinators are expected to work as an intermediary in connecting various stakeholders within the school district and bring them together to form the Committee. The organizations that surround the Committee are the City BoE that will provide support in administration and the Disaster Management Division who will offer technical backstopping in DRR. If such setup already exists in the communities, then this Committee can be built on top of it to avoid unnecessary duplication. On the other hand, this Committee can function with flexibility as a platform to discuss other arising issues in the community.

6.4 Strengthening educational governance

The EJET experience exposed issues in the educational governance in which different levels in the current BoE system (including MEXT) were unable to communicate and coordinate to

support the City BoEs and affected schools that were overwhelmed by responding to the disaster in saving lives of surviving students and teachers. This has created a problem in which some were able to directly request support from MEXT, neighboring cities, cities in other prefectures and even organizations overseas, while others were left to take measures by themselves. In such case, interventions from higher-level administrations are demanded, especially in supporting smaller cities with lower capacities. Literature reviews on experiences from EJET (Nanba 2012; Kitamura 2014) and past disasters (Funaki et al. 2006) and interview surveys with MEXT, City BoE and schools have strongly portrayed the ineffectiveness of Prefectural BoEs in contributing to this role. Although their actual effectiveness in the post-EJET process has remained unclear throughout the study, due to contrasting information given by different administrative levels, the capacity of Prefectural BoEs have for coordinating with different level authorities and managing human resources should be used more proactively in supporting the local levels. With arising attention for the need for extended support networks, especially for responding to mega disasters, possible roles of the Prefectural BoEs should be further pursued. In this regard, specific options to strengthen intra-agency (vertical), peer-to-peer (horizontal) and cross-sectoral coordination to broaden support partnerships have been provided in Chapter 5.

Coordination and partnerships gained through good governance can impact perhaps a more important aspect of the School Centered Recovery and Community Building concept, which is sustainability of disaster management efforts. Berke et al. (1993) claim that if vertical and horizontal ties can be developed before disaster events, even if the ties are temporarily weakened during the emergency stage, they can be reestablished rather smoothly in the recovery phase. This statement is significant in the sense that the ties could possibility resolve the problem of disaster management efforts being short-term focused and ad hoc in manner. McEntire et al. (2002) point out on the gap between sustainable development and sustainable hazards mitigation in which groups involved in response and preparedness have different interests with those responsible for recovery and development as one of the causes. In addition, the profession of the actors involved is most likely to be diverse and less related with each other (e.g. urban planners vs. search and rescue teams). There are presumably similar gaps among actors in different administrative levels and sectors. From another point of view, implementing inclusive DRR programs that involve various regional stakeholders can be effective in building long lasting collaboration and partnerships, as seen from the Saijo case. Such strengthening of educational governance can provide opportunities to streamline efforts

for response, recovery, mitigation and preparedness that are perquisite for long term and economically sustainable recovery and community building.

Ideally, once the measures above are well established they should be reflected in the policies and planning for institutionalizing DRR activities, including school DRR education. Similar practices wer observed after major disasters such as Great Hanshin Earthquake and Chuetsu offshore earthquake (Funaki et al. 2006) in which the Disaster Countermeasures Basic Act was considerably revised on these issues. The current recovery process is another opportunity to incorporate the EJET lessons for institutionalization. Shaw (2014) mentions that institutional transformation, decision and policymaking and stakeholder engagements as being common issues that are required to improve the governance system for the recovery process. On this, Kapucu (2006), by referring specifically to communication issues, notes that although environment of uncertainty and rapid change under crisis situation poses many constraints, they also give opportunities for organizations and individuals to expand beyond their traditional institutional boundaries to expand their scope of work.

Lastly, with regards for investment planning, the issue with the capacity gaps among City BoEs of various sized cities with different planning capacities (Komatsu 2013) will most likely to affect the quality of education as well as safety measures of individual schools. As in the case of Tohoku Region, it will influence the recovery process of the affected schools. While there are limited references that discuss on the means to improve investment planning for the education sector, especially for public schools at compulsory education levels, some steps in which each administrative level can take for improvements can be suggested. For example, City BoEs can enhance capacities for budget planning to get them approved by their city mayors, city council and then the Prefectural BoEs. Prefectural BoEs can attempt to simplify administrative procedures to ease the workload of City BoEs and develop consultative arrangements that involve the City BoEs and school principles from the planning stage when making budgetary request for project funds to the central government. MEXT can assist the Prefectural and City BoEs with policy guide and technical backstopping, such as for introducing new financing tools. MEXT can also further systemize fast track measures for immediate budgetary requirements of the affected cities and schools by developing direct access between City BoEs and MEXT.

6.5 Overarching elements for effective implementation

While the key findings above were each provided with suggestive measures for actual

implementation, there are other encompassing measures that are essential for making individual efforts closer to their objectives. One is community consultation. In the post-disaster situation in which conventional decision making may not be functioning, the community consultation process experienced in Toni to plan recovery of damaged schools can be a good referral applicable in other communities under similar circumstances. Another proposal is to develop a checklist that can used to first evaluate enabling elements and gaps of the target schools and communities, then to identify the actions needed to realize the School Centered Community Building concept. Finally, an overview that consolidates the key findings and conceptualizes the next step will be provided.

6.5.1 Community consultation

As noted earlier, multi-stakeholder consultation is one of the key elements for effective and sustainable implementation of recovery and community building efforts. While a centralized and top down approach may be necessary for critical issues in the immediate aftermath of disasters (Farazmand 2007), participatory approach brings substantial advantages in planning and implementing measures, especially under ambiguous conditions. Firstly, involvement of various stakeholders can reduce transaction costs and information asymmetries, increasing acceptance levels of policies and sustainability of actions that will be placed for disaster management (Ahrens and Rudolph 2006). Local institutions and community/neighborhoods organizations in particular should be considered as the main actors, as they ensure local contexts and needs are reflected in the policies. This is also significant from the perspective of community ownership in which communities should determine their own future and destiny. On the other hand, Pearce (2003) argues that although it is ideal that decisions are made with consensus-based approach with public participation, in certain cases this is not effective and sometimes not possible. For this, Thomas (1995) proposes an option to use advisory committees that can attain a balance between "quality" and "acceptability" with several advantages including, (1) Reaching consensus may be easier through an advisory committee rather than public meeting, (2) Being selected as a community representative encourages him/her to think on behalf of the whole community instead of interests of a particular group and (3) It can serve as a important vehicle for gaining public acceptance.

In implementing the school centered recovery plan for Toni, BoE established the School Reconstruction Consultative Committee in December 2011, approximately nine month after EJET (Figure 6.4). The consultations were joined by community representatives that

included (1) Principles of ES and JHS, (2) Community leaders, including heads of town associations, (3) BoE and related local government departments and (4) Local and external experts. The sessions were chaired and observed by external experts of Kyoto University and Tohoku University, which provided technical backstopping to the discussions. The Committee's primary task was to conduct a participatory consultation among community representatives to propose the location and design concept of the new school, discuss on the possibility for joint ES/JHS and improving safety and DRR functions of the schools.

Although the Committee was dissolved only a year after its establishment, it was one of the first sectoral consultations that were initiated by the city in an organized and participatory approach. Given the opportunity to raise their opinions through this Committee, the community representatives actively raised many beneficial comments on different aspects of school recovery and community building because they felt strong responsibility and ownership to the issues. Inputs from internal and external experts from various field also allowed the discussions to become more detailed and substantial. Although in the end, it will be the efforts of the city and the communities who will realize the outputs from the Committee, the experience of such participatory consultations and decision making process can be used as a reference for other sectors and communities that are going through similar situations.

Figure 6.4 School Reconstruction Consultative Committee of Toni District (left), Reporting decision of the Committee to Mayor Noda of Kamaishi (right)

6.5.2 Development of checklist for monitoring and evaluation

In the dynamic and ambiguous recovery and community building process, a comprehensive monitoring system to monitor and evaluate progress of recovery projects is important. This will set the accountability of actions taken in the process in which clear set of roles and

responsibilities and agreed levels of performance are entrusted to organizations and individuals. Monitoring, evaluating and reporting of the progress are usually coupled with this to ensure transparency of the process (Ahrens and Rudolph 2006).

In order to ensure effective and sustainable implementation of School Centered Recovery and Community Building, development of checklist adopted from the work of Ikeda (2001) in developing a "Participatory Education Community" is suggested (Table 6.2). The checklist will identify the key elements, gaps, prioritized actions and responsible stakeholders for implementing the concept. It also features a system to monitor and evaluate the implementation progress in which the checklist will be updated according to the results. The components of the checklist is as below:

1. **Listing of key elements:** Items required for realizing the concept is listed and classified based on the key findings of this study to ensure the comprehensive approach for strengthening schools as community hubs.
2. **Evaluation:** Status of the key elements of the target school is evaluated to extract the strength and gaps for realizing the concept. Periodical monitoring is part of this process to confirm progress and for taking measures to shortcomings in implementation.
3. **Required action:** Identified gaps will be translated into specific actions that would be incorporated into planning. As expected outputs of the actions may be interlinking with each other, these should be closely analyzed and aligned as necessary.
4. **Prioritization:** Actions need to be prioritized, as all of them cannot be simultaneously implemented due to constraints in financial and human resources. However, actions that are required to be implemented in a sequential order can be grouped.
5. **Responsible organization(s):** Clarification of responsibilities for each of the action is important to clarify accountability to ensure results. This is also effective for encouraging ownership of the responsible organizations to their given tasks.

Actual utilization of the checklist will engage community members though a consultation process as discussed above. For the conducting the monitoring and evaluation, an external body will be required. This could be appointed to the higher administrative authorities (e.g. Prefectural BoE) or a neutral committee, preferably with some expertise in the topics that does not belong to an interested party to this proceeding. One of the important aim of the checklist is to monitor the overall impact of the outputs that each of the activity will

Table 6.2 Checklist for school centered community building (adopted from Ikeda 2001)

Items	Evaluation	Gaps identified	Required actions	Responsible Organization(s)	Priority
1. Function as community hub (structural)					
Safety of location from multiple hazards	**Low**-Mid-High	(high risk flood area)	(raising level of land)	BoE Construction Div.	Short-**Mid**-Long
Sufficiently equipped as evacuation center	Low-Mid-High				Short-Mid-Long
Space is available for community activities	Low-Mid-High				Short-Mid-Long
School used to provide other public service	Low-Mid-High				Short-Mid-Long
2. Function as community hub (managerial/operational)					
Emergency response plan with community	Low-Mid-High				Short-Mid-Long
Joint DRR program with community	Low-**Mid**-High	(only PTA members)	(consult with neighborhood association)	BoE, Disaster Management Div.	**Short**-Mid-Long
School Management Committee	Low-Mid-High				Short-Mid-Long
DRR Education Promotion Committee	Low-Mid-High				Short-Mid-Long
# of school organized events	Low-Mid-High				Short-Mid-Long
3. Education program (involvement of community)					
DRR programs with community help	Low-Mid-High				Short-Mid-Long
# of students joining community DRR drills	Low-Mid-High				Short-Mid-Long
Integrated Study Program w. community	Low-Mid-**High**	(3 new partners)	(expand partners)	BoE, Community Center	Short-Mid-**Long**
Education program with NPO/NGOs	Low-Mid-High				Short-Mid-Long
4. School Based Networks					
Meetings with BoE and other departments	Low-Mid-High				Short-Mid-Long
# of informal networks institutionalized	Low-Mid-High				Short-Mid-Long
MoU signed with private companies	**Low**-Mid-High	(no MoUs)	(meetings with local companies)	BoE, Business Association	Short-**Mid**-Long
Connected with schools outside of city	Low-Mid-High				Short-Mid-Long
5. Governance					
Arrangements for wide area support system	Low-Mid-High				Short-Mid-Long
Contingency budget available for schools	Low-Mid-High				Short-Mid-Long
Plan for JEOC at Prefectural level	**Low**-Mid-High	(not available)	(approach Pref. BoE)		Short-**Mid**-Long

bring to process and not to evaluate individual actions. The methodology can be applied to not only schools and communities in recovery, but also to pre-disaster cities attempting to build disaster resilience of communities through the schools. Although the checklist suggested here is basic and only for purpose for discussion, users may further customize and expand this checklist in their respective local context for more detailed planning. While the focus of this activity is focused on schools, this tool also has the flexibility for applying to other public facilities that may function as community DRR hub in other areas and countries.

6.6 Consolidated approach for School Centered Recovery and Community Building

Through the key finding discussed above for implementing the School Centered Recovery and Community Building concept, some of the answers have been provided for the research question raised earlier in the study. The three questions in turn are the goals for realizing the concept which are: (1) Strengthening school as community hub, (2) Identifying key stakeholders essential for implementing the concept and (3) Creating conditions that support implementation and ensure sustainability of actions. The key findings identified for the three goals above have been packaged and labeled in three main contributing factors that are assumed perquisite for implementing the School Centered Recovery and Community Building concept. First is the "Platform," which provides the structural and non-structural (contents) justifications for designing the new school in order for it to become a platform that will facilitate school – community engagements. It is worth noting that this component in particular, contributes additionally for boosting measures for continuing social issues such as low-birth and super-aging that have existed prior to EJET. Second is the "Actors," identified through existing and newly developed school based networks that can be individuals or organizations within or outside of the community which will work collectively and continuously in both emergency and non-emergency times. Third is the "Conditions" that will create the enabling environment to implement the concept in the most effective and sustainable manner, mainly through institutional strengthening for better communication and coordination of the education sector (intra-agency and inter-agency) as well as cross-sectoral partners (Figure 6.5). The consolidated approach recommended in this study is comprised of the following:

1. "Integration of school facilities and functions" provides the physical aspect for the designing the new Toni ES/JHS which schools and community residents will be able to

utilize its facilities as a platform to engage and conduct various activities that will facilitate recovery and community building. In particular, improving the DRR functions of the schools to be used as a designated evacuation center of the community will ensure safety of all community members. The school design will incorporate flexibility so that if the student number continues to decline in the future, the facilities will continue to be efficiently used as a hub to serve community needs, instead of being closed down. **(Platform)**

2. "Linking schools with community through school education and activities" provides the contents on how the integration can be made through educational activities that are supported with community participation. While Toni had been implementing experience classes with local communities before EJET, these programs should be resumed and further explored to showcase the uniqueness of the new schools that reflects the characteristics of the region. As for DRR education, reference to Saijo's DRR education program can be made to systematically engage school – community – local government collaboration to further strengthen Toni's DRR capacities to cope with disasters. **(Platform)**
3. "Utilizing and developing networks" can be an effective approach to identify the key stakeholders needed to implement the concept. Because Toni had been isolated for weeks after EJET and unable to receive prompt assistance from the Kamaishi government, developing new partners through extended networks (e.g. Kesennuma's N-help) may be valuable in securing additional channel in responding effectively to future disasters. The current recovery process provides numerous opportunities for schools to identify and build new partnerships that can help facilitate school recovery and assist in community building. Initially, BoE or Toni Community Center can work as an intermediary to connect Toni schools with the appropriate partners because the schools may not have the capacity. On the long run, the partnerships can be institutionalized by forming a committee, which may embark of various social issues including DRR. **(Actors)**
4. "Strengthening of educational governance" looks into building an enhanced support system to assist affected schools and City BoEs that have been overwhelmed with coping with response and recovery from large-scale disasters. This study has particularly focused on the possibilities of maximizing the role of Prefectural BoEs that can play a greater role in vertical coordination (with MEXT, City BoEs and schools), horizontal coordination (with City BoEs and schools within the prefecture and BoEs in other

prefectures) and cross sectoral coordination (regional bureaus of other agencies, national/regional associations, etc.). Prefectural BoEs may also function as a supervisory body that ensures efficiency, accountability and equity for the regional recovery and community building processes. Improving planning capacities for investment is another important factor that will influence the sustainability of measures in streamlining efforts in recovery up to community building. **(Conditions)**

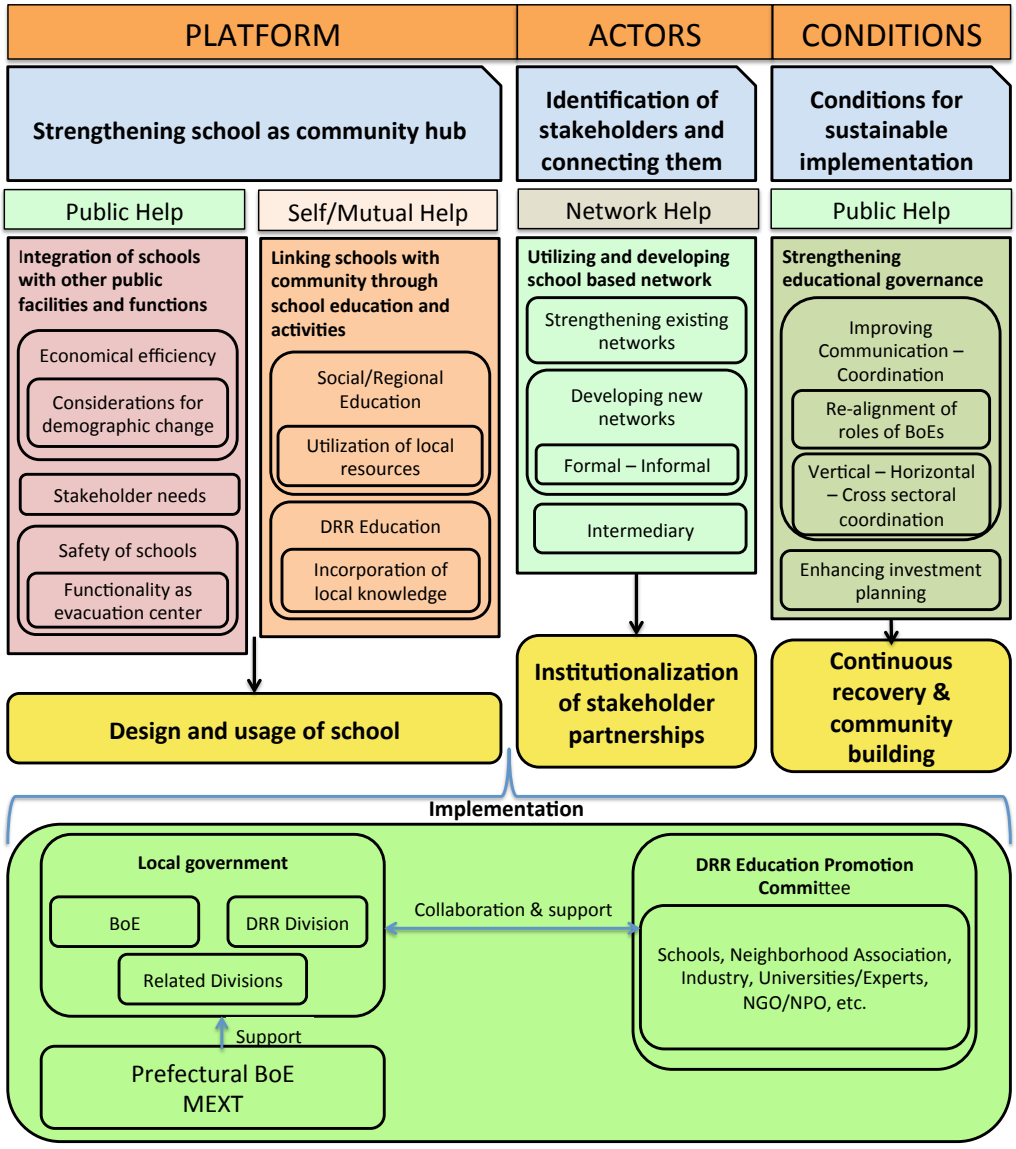

Figure 6.5 Consolidated approach for School Centered Recovery and Community Building

In linking the key findings above to show the correlation among the four key findings, the concept of "public-help," "mutual-help" and "self-help" is referred. Public-help is the official assistance of government authorities for tasks are usually beyond the capacity of

individuals or regional communities. These may include construction of large-scale infrastructures or actions that require higher administrative level decisions such as dispatching of self-defense force. In the context of this study, "1. Integration of school facilities and functions" and "4. Strengthening of educational governance" can be categorized as forms of public-help as they are mostly tasks of the local, prefectural and central governments. Mutual-help is support provided among neighbors or within region to assist each other during disasters. Mutual help, often highlighted for saving many lives during the Great Hanshin Awaji Earthquake, is perhaps the most traditional and regionally specific method that can save lives in situations when public-help is not available. Neighborhood DRR Volunteer Groups (Jisybo) in Japan can be considered as an established system that promotes mutual-help in communities. Among the three goals, "2. Linking schools with community through school education and activities" is related to mutual-help because it fosters partnerships of regional communities in making a join effort to better understand their own region and resolve other common issues that might exist among them. Because school education and activities can also build capacities of individuals or families to save their own lives, this can be correspondingly be seen as self-help. Finally, N-help (also referred in Chapter 5) in which new support networks are created with both formal and informal partners can be attached to "3. Utilizing and developing networks." Even though the characteristics of these different help networks will depend on the regional profile and magnitude of the actual disaster, there should be a good balance and complementarities among the three approaches in order to make full use of them in building disaster resilient communities (Matsuo 2010). In this sense, the four key findings from the study own a good balance that combine all of the above-mentioned help approaches, illustrating the comprehensiveness of the concept.

As for the implementing structure, the main actors should include the key stakeholders identified by "3. Utilizing and developing networks" and ideally be institutionalized for continuous collaborative partnership by establishing a working group or a committee as in which the form of DRR Education Promotion Committee from the Kesennuma case can be referred to as an example. In this case, the schoolteacher(s) can function as the intermediary to make initial connections with the relevant stakeholders that would comprise the committee in addition to work as the coordinator between the local government that would commonly include the City BoE, Disaster Management Division and other related divisions. The local government will then be supported by the higher-level authorities to ensure that effectiveness and sustainability are maintained for implementing the concept.

6.7 Prospects for replication to other regions

Implementation of School Centered Recovery and community building will be greatly influenced by such factors as magnitude of the disaster, national and regional policies on education and DRR, social and economical situation of the locality and conditions including availability of human, financial, technical resources. Depending on the DRR profile of schools and communities (e.g. local DRR knowledge, number of community volunteer firefighting corps, etc.), the tasks raised in the concept will also vary. For this reason, the research has conducted an in-depth study of these factors in the target cities to extract the their strengths and challenges to identify the elements for implementing the concept. However, conceptualization of the approach to realize School Centered Recovery and Community Building drawn out above do provide opportunities for the ideas to be applied to different cities under various conditions.

The replicability of School Centered Recovery and Community Building can first be rationalized, as described in Chapter 2, from the fundamental characteristics of schools as being a symbolic and central public facility of communities not only in Japan, but also in most parts of the world. Many schools also take on an important additional role as evacuation centers during emergencies even if they are not designated as one. While a single disaster event can greatly challenge schools to uphold their role and even threaten survivability of their communities, case studies have shown that school recovery can positively influence the overall community recovery (e.g. school recovery in post-Katrina). Based on these fundamental characteristics, the potential of school to become central to recovery and community building has been repeatedly emphasized in the research. On the other hand, it should be noted that the role of schools is something that is not guaranteed for every case and could change over time, even by one single event. For this reason, the Comprehensive Approach for School Centered Recovery and Community Building has been suggested to ensure consistency of school to function to benefit the whole community. The components of the school centered approach above itself, can be utilized as a tool that can identify areas that are need to be further strengthened for communities with different levels of competencies to become closer to realizing a school centered disaster community. It can also be used as a monitoring tool to assess progress of the concept implementation in which checklists such as the one suggested in this chapter; "6.5.2 Development of checklist for monitoring and evaluation." Although not a prescribed tool, modification to some of the components can be made for actual application for different schools and communities.

Together with the MEXT policy in Building School Centered Communities, several policies for strengthening disaster resilience at the national and local levels were presented. Correspondingly at the global level, campaigns such as "The One Million Safe Schools and Hospitals," of UNISDR continues to promote building of DRR culture and mutual learning/ understanding of DRR, which signify that schools are acknowledged as a suitable platform to not only disseminate disaster knowledge, but also to contribute in building disaster resilience of communities. Concurrently, at the upcoming The Third UN World Conference on Disaster Risk Reduction that will be held in Sendai, Japan in March 2015, three Working Sessions, "Commitments to Safe Schools," "Education and Knowledge in Building a Culture of Resilience" and "Children and Youth" will be organized. The fact that the education sector is the only sector among others that has three official sessions also depicts the global perception for placing importance to schools for building disaster resilient communities. Also, in the zero draft post-2015 global agenda that will be adopted at the said World Conference, the role of the education sector is again highlighted in the Guiding Principles and in the Priority for Actions to "Promote incorporation of DRR education in all levels of school curricula (Priority 1: Understanding disaster risk)" and "Strengthen investments for DRR measures in critical facilities, including schools (Priority 3: Investing in economic, social, cultural and environmental resilience)." As for implementing the priority actions, children and youths are cited as one of the important agent of change for building resilience across different sectors and age groups. This global trend is encouraging to rationalize and set the basis for developing school centered community building in disaster prone communities.

Reference

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Chapter 7. Conclusion

In the course of conducting the surveys based on the School Centered Recovery and Community Building concept, questions were frequently raised on the reason for addressing schools as the vehicle for disaster recovery and community building. While most people agree on the importance of schools in the communities for their role in educating children and as a symbol that represent the tradition of communities that was built by different generations of residents, it is still difficult for many to link schools with recovery and community building. The reason for this is perhaps the general perspective of schools remains to be confined inside the school premises and school education. However, schools and communities have been engaged through school events including parent visitation days, cultural festival and sports festivals from the past. More opportunities for interaction have aroused since the popularity of Lifelong Education that started from the mid-1990s, followed by the introduction of Integrated Study Programs in 2000. After the unprecedented damages that the communities experienced from EJET, the importance of schools for bringing communities together has been re-acknowledged by many. This has greatly encouraged cities undertaking recovery measures to reexamine the possibilities that the schools can take for their communities as a hub for recuperating community ties that were weakened by the disaster to move forward in recovery and community building.

Given this context, the objective of this research was to look into the potential of school recovery facilitating the overall community recovery and community building in Toni District, Kamaishi, Iwate Prefecture. The research has based its scope on the "School Centered Community Building" concept suggested by MEXT that aims to further strengthen schools as a community hub by recuperating school – community linkage. With aim to realize the concept in Toni, the research has raised three research questions, (1) "What can be done to further strengthen schools to function as a community (DRR) hub?" (2) "How can the key stakeholders, essential for the implementation of school centered recovery and community building, be identified and institutionalized to work together?" and (3) "How can implementation of School Centered Community Building be supported?"

In order to answer these questions, three methodologies were applied in the study. First is the direct interview that was conducted with relevant Kamaishi city government divisions and 25 community representatives of Toni Regional Council. This was followed by a questionnaire survey that targeted all households in Toni (N=224), schoolteachers of Toni

ES/JHS (N=20) and students in 6th and 7th grades (1st year JHS). The surveys attempted to reveal several key points related to the research question that include, (1) Community linkage with schools prior and after EJET, (2) Experience of responding to EJET (in the first 2 weeks), (3) Situations with DRR education and activities for both schools and communities prior and after EJET and (4) Perceptions and prospects on school centered recovery and community building. Additional surveys (direct interviews) were conducted with MEXT and Miyagi Prefectural BoE to collect information on the policies that relate to the concept. The surveys in Toni showed interesting results that extracted both strength and the challenges of the district for implementing the concept. As a next step to further look into the possibilities of enhancing role of schools in connecting various stakeholders in the community, survey by group discussions that targeted three school districts were conducted in Saijo. In addition, two workshops on "Building Disaster Resilience in the Education Sector" and "Joint Workshop on Educational Governance (with Kesennuma and Saijo)" were conducted, which information from practitioners and experts from different fields were acquired to further enrich the study.

Four key findings have been featured from the result of the surveys. First concerns on the integration of schools with other public facilities and functions, which is one of the main components of the MEXT concept. Although the new Toni ES/JHS were decided to become a joint school at an early stage in the recovery process from anticipation that student number will continue to decline in the future, the idea of integrating schools with other public facilities was not well received by Kamaishi BoE and teachers, primarily due to safety concerns, added responsibilities such as coordination with stakeholders outside of their mandates. In contrast, residents were more supportive in making the new school a multifunctional facility from expectations that it would bring benefits, particularly for child raising and DRR. While each stakeholder has their individual interests for utilizing the new school facilities, further consultations are required to gain full understanding of the purpose and benefits of the integration that would allow them to create a win-win situation. Improving the DRR functions of schools as a community evacuation center may be one of the more feasible options because it can contribute to ensuring safety for all stakeholders.

Secondly, since schools are principally an educational facility, utilizing educational activities to collaborate with community residents and organizations has worked effectively in Toni prior to EJET. Concurring to this, both Toni residents and schoolteachers found that social/regional education program which employ local human resources as "non-school" teachers is an effective way to provide students with real-life education that compliments

school education. In contrast, although DRR education had been actively implemented in Toni schools, there had been little collaboration with communities prior to EJET. As a reference for Toni, case study in Saijo was studied in which its 12-year old Education Program has been able to build continuous collaborative relationships among schools, parents, local government and community members through joint DRR activities. Implementing the project has not only been providing the participants with DRR knowledge and skills, but also opportunities to build strong trust and partnership based on mutual benefits that can be applicable for taking joint measures for other social issues that may exist in the community.

Another key finding is on the school-based networks that schools commonly possess in their communities. While formal networks are usually comprised of students' parents and people associated with BoE, the surveys also found that there are other stakeholders in the communities that may not be necessarily connected by education or DRR per se, but could be developed as new partners (e.g. private companies). In addition, it is known that after major disasters as EJET, schools can get exposed to an unprecedented span of supporting actors within and outside of the communities that can also be developed as long term collaborators. Finding partners from such formal and informal networks can be considered as an advantageous option for identifying key partners for implementing school centered recovery and community building. Furthermore, if an intermediary can be found to coordinate and connect schools with key actors, it could become the first step for institutionalizing new partnerships, such as establishment of DRR Education Promotion Committee as described in Chapter 6.

Key findings regarding educational governance has been diverse. While responsibilities for first response to disasters are usually with City BoEs and schools, the magnitude of EJET had overwhelmed many of them with tasks beyond their capacities. Under this situation, higher-level authorities were not able to provide the much needed assistance to the affected cities mainly due to fundamental issue in coordination and communication. From the surveys, it became known that the Prefectural BoEs could have taken more significant roles in supporting City BoEs and schools during disaster response by making full use of their position and competences. For strengthening response measures are beyond the city level, an institutional structure which places the Prefectural BoEs as a pivot to coordinate vertical (intra-agency) and horizontal (peer-to-peer) and cross sectoral actors has been suggested to resolve the various issues observed during and after EJET and create enabling conditions for sustainable recovery and community building.

The four key findings have been supplemented by several prospects for actual implementation in Toni and a monitoring tool that will allow replication of the concept to other disaster prone regions. A comprehensive approach for School Centered Recovery and Community Building has been illustrated to summarize the key findings that answer the three research questions for developing school-centered disaster resilient communities.

For further studies, it would be interesting to follow up on the progress of School Centered Recovery and Community Building in Toni since the School Construction Consultative Committee was dissolved in 2013. According to the Kamaishi city government, basic design of the new Toni ES/JHS has already been completed. During this process, participatory consultation meetings with Toni residents were held twice for the purpose to give ownership of the project to the communities. Aside from the decision that the new Toni ES/JHS will be a joint school, childcare center, stockpiling warehouse and new evacuation routes that leads to a new parking lot adjacent to Highway No.45 have been decided to be built as adjoining facilities. The classrooms have been designed for flexible use to avoid creating vacant rooms in case student number continues to decrease in the future. While the construction of school buildings is anticipated to commence from March 2015 and completed in 2018, the schools and communities are expected to continue the consultation process in making Toni ES/JHS a community hub that will be contributing to the rebuilding of Toni.

Appendix 1: Interview sheet for Toni District representatives

唐丹地域会議代表者への聞き取り調査シート

面会者:　　場所:

日時:

1. 所属組織の役割

- 所管業務、防災関連の業務、学校・教育関連の業務

2. 関連施設

- 被災状況、復興状況

3. 関連行政組織

- 担当部局、上部組織、下部組織、関連組織

4. 防災訓練・活動の有無

- 地域防災訓練、学校防災訓練、独自の防災訓練、地域防災計画作りへの参画

5. 緊急時の役割

- 災害対策計画上の役割、東日本大震災の際の役割

6. まちの防災活動での役割

- 市全体の防災活動、地区の防災活動、学校との防災活動

7. 震災後の役割・活動の変化

- 通常業務の変化、防災上の役割の変化

8. 復興への課題

- 組織の復興、復興まちづくり、その他復興状況の感想

9. 組織の学校とのつながり

- 震災前・震災後のつながり、これからの学校とのつながりに関する感想

10. 学校を中心としたまちづくりへのコメント

- （コンセプトを説明の上）、コンセプトへの感想・意見、どのように貢献できるか

11. 次のステップ

- 組織の復興計画、まち全体の復興の次のステップ、その他感想

Appendix 2: Questionnaire survey sheet for Toni District, Kamaishi

-Residents-

「唐丹町の学校と地域のまちづくりに関するアンケート調査」

ご協力のお願い

平成 25 年 1 月 9 日

拝啓　　アンケートにご協力いただく唐丹町の皆様へ

この度の震災におかれまして心よりお見舞い申し上げます。

この度、突然のご依頼で誠に恐縮でございますが、釜石市教育委員会および京都大学大学院地球環境学堂が実地する「学校と地域のまちづくり」に関する住民意識調査・研究にご協力を賜りたく、各ご家庭にアンケート調査票を配布させて頂きました。

本調査では、釜石市復興まちづくり基本計画の中に記載されているとおり、学校を地域の中核となる公共施設、また、重要な防災拠点とし、災害に強いまちづくりを実現するための方向性を把握することを目的としており、今後の唐丹の学校建設とまちづくりを推進するための貴重な情報として活用させていただきたいと考えております。

つきましては、ご多忙のところ誠に恐縮ではございますが、調査の趣旨をご理解の上、下記要領にてご回答賜りますよう、何卒よろしくお願い申しあげます。

敬具

釜石市教育委員会

京都大学大学院地球環境学堂　国際環境防災マネジメント論分野

●調査のご回答について

本アンケートの回答内容は統計処理され、個人のご判断が外部に漏れることは一切ありません。また、本アンケートにはお名前、住所などをご記入いただく必要は一切ありません。

●ご返送の締め切り

ご記入いただきました調査票は、お手数ですが本アンケートが入っていた返信用封筒に入れて、

平成 25 年 2 月 28 日（木）までにご投函ください。

●アンケートに関するお問い合わせ先

釜石市教育委員会

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京都大学大学院地球環境学堂　国際環境防災マネジメント論分野

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Ⅰ　はじめに以下の質問にお答えください。

問１　あなたのお住まいの地区をお答えください。

震災前（○はひとつ）		現在（○はひとつ）	
1.　花露辺	2.　本郷	1.　花露辺	2.　本郷
3.　小白浜	4.　片川	3.　小白浜	4.　片川
5.　山谷	6.　荒川	5.　山谷	6.　荒川
7.　大石		7.　大石	
		8.　その他※（　　）	

※仮設住宅に現在お住まいの方は、仮設住宅の名前をご記入ください。

問２　あなたの性別

1. 男性	2. 女性

問３　あなたの年齢

1.　30 歳未満	2.　30 歳以上 40 歳未満	3.　40 歳以上 50 歳未満
4.　50 歳以上 60 歳未満	5.　60 歳以上 70 歳未満	6.　70 歳以上 80 歳未満
7.　80 歳以上		

問４　あなたの職業

1.　漁業	2.　農業従事者	3.　自営業
4.　旅館・民宿	5.　会社員	6.　主婦
7.　公務員	8.　無職	9.　年金生活者
10. 地域の役員	11. その他（　　）	

問５　あなたの家庭の同居人数

あなたを含めて＿＿＿＿＿＿＿＿人

問６　あなたの家庭には子供がいますか？

1.　幼稚園児/保育園児	2.　小学生	3.　中学生	4.　高校生
人	人	人	人

問７　何年間、唐丹にお住まいですか？

＿＿＿＿＿＿＿＿年間

II　新しく建設される小・中学校についてお聞きします。

震災により唐丹小学校及び唐丹中学校が被災しました。それに伴い、学校をまちの中核的な施設として、地域を支える生活・防災拠点として再建することが釜石市復興まちづくり基本計画の中で示されています。上記に関する以下の質問にお答えください。（次項に続く）

問８　新しい学校が地域住民も利用できる施設となる場合、求める機能は何ですか？**（左の欄に優先順位を１−３までご記入ください。「その他」がある場合には、ご記入ください）**

設備・機能	優先順位（番号を記入）
● まちの文化・スポーツ行事を行う会場	
● 地域住民の交流の場	
● 避難所・防災訓練を行う防災拠点	
● 子どもの育成支援	
● 文化・歴史資料室（災害の歴史など含む）	
● 会議室	
● 駐車場	
● その他（　　）	

問９　新しい学校が地域住民も利用できる施設となる場合のコメントをご記入ください。(良い点、懸念される点など)

コメント：

III　唐丹小学校・中学校との関係についてお聞きします。

2011 年 10 月に実施した調査の結果、学校に通っているお子様がいない住民でも、８割近い方々が学校と何らかの関わりを有することが判明しました。これは唐丹において、学校がまちの中核的な施設であることを示していると言えます。地域と学校の関わりについて、以下にお答えください。

問 10 あなたは学校とどのような関わりを持っている･持ちたいと思いますか？**（○で複数回答可）**

	震災前	これから
● 文化祭や運動会等への参加		
● 児童学生の社会教育・体験学習等で協力		
● 児童学生への生活相談で協力		
● 学校が実施する防災訓練への参加・支援		
● 緊急時の避難場所として		
● ボランティアで学校運営のお手伝い		
● 寄付		
● 子どもが学校に通っている、又は学校関係者		
● 関わりを持っていない・持ちたくない		
● その他（　　）		

IV　震災当時のご経験に関してお聞きします。

小白浜地区の津波災害一次避難場所は「唐丹中学校校庭」、唐丹地区全体の拠点避難所は「唐丹中学校体育館」として市により指定されています。新しい唐丹小中学校を含む避難所の機能および今後の防災教育を充実させる参考のため、以下の質問にお答えください。

問 11　震災時、最終的に避難した場所はどこですか。**（○又は記入回答）**

1. 指定の津波避難所（場所：　　）
2. その他（　　）
3. 避難しなかった

問 12　あなたが避難場所と決めている施設の改善点があれば、下記にご記入ください。

改善点：

問 13　避難時、避難後（１～２週間以降）に、あなたは誰の支援を受けましたか。

（○で複数回答可）

	避難時	避難後
● 学校関係者		
● 家族・親戚		
● 近所の方		
● 町内会の方		
● 消防団員		
● 行政関係者		
● 支援を受けてない（一人で対応した）		
● その他（　　）		

V　防災・危機管理の知識に関しお聞きします。

問 14　あなたは災害時・緊急時の対応の知識をどのように取得しましたか？**（○で複数回答可）**

1. 防災に関する講習会等
2. 先祖代々からの言い伝え（過去の被災経験等）
3. 文献・メディアからの情報
4. 防災訓練・活動への参加を通じて
5. 学校・大学で防災教育を受けた子どもから
6. その他（　　）
7. 特に取得していない

問 15　あなたはこれまで防災訓練に参加したことがありますか？（**○一つで回答**）

震災前	震災後
1. はい　→（**問 17 へお進み下さい**） 2. いいえ	1. はい →（**問 17 へお進み下さい**） 2. いいえ

問 16　これまで防災訓練に参加しなかった理由をお答えください。（**問 15 で「いいえ」と答えた方のみ、○で回答**）

1. 訓練の実施について承知していなかったため
2. 仕事や他の用事があり時間がなかったため
3. 既に十分な防災・危機管理の知識を持っているため
4. 関心がない
5. その他（　　）

問 17　唐丹の防災力を更に高めるには何が必要だと思いますか。防災力向上のため、あなたには何が出来る・やりたいと思いますか（**記入回答**）

必要なこと：

あなたができる・やりたいこと：

VI　唐丹のこれからのまちづくりに関しお聞きします。

問 18　唐丹住民が誇りを持ち続けられる、復興まちづくりを実現するために最も重要なことは何ですか？（**○一つ、又は記入で回答**）

1. 地域性が生かされた魅力的な学校
2. 安心・安全なまち
3. インフラの充実（住宅・道路など）
4. 社会福祉システムの充実
5. 地場産業の強化
6. その他（　　）

問 19　唐丹の復興まちづくりのため、あなたには何が出来る・やりたいと思いますか（**記入回答**）

あなたができる・やりたいこと：

問 20　その他、唐丹のまちづくりに関するご意見等ございましたら、別紙（アンケート表紙の裏面など）にご記入し、本アンケート用紙と共にご返信ください。

-Schoolteachers-

1月21日版

「唐丹小中学校と地域のまちづくりに関するアンケート調査」

ご協力のお願い

平成25年1月9日

拝啓　　アンケートにご協力いただく先生へ

この度の震災におかれまして心よりお見舞い申し上げます。

この度、突然のご依頼で誠に恐縮でございますが、釜石市教育委員会および京都大学大学院地球環境学堂が実地する「学校と地域のまちづくり」に関する意識調査・研究にご協力を賜りたく、唐丹小学校及び中学校に本アンケート調査票を配布させて頂きました。

本調査では、釜石市復興まちづくり基本計画の中に記載されているとおり、地域の中核的な公共施設、また、重要な防災拠点である学校と共に、災害に強いまちづくりを実現するための方向性を把握することを目的としており、今後の唐丹の学校建設とまちづくりを推進するための貴重な情報として活用させていただきたいと考えております。

つきましては、ご多忙のところ誠に恐縮ではございますが、調査の趣旨をご理解の上、下記要領にてご回答賜りますよう、何卒よろしくお願い申しあげます。

敬具

釜石市教育委員会
京都大学大学院地球環境学堂　国際環境防災マネジメント論分野

●調査のご回答について

本アンケートの回答内容は統計処理され、個人のご判断が外部に漏れることは一切ありません。また、本アンケートにはお名前、住所などをご記入いただく必要は一切ありません。

●ご返送の締め切り

ご記入いただきました調査票は、お手数ですが本アンケートが入っていた返信用封筒に入れて、

平成25年2月15日（金）までにご投函ください。

●アンケートに関するお問い合わせ先

釜石市教育委員会
電話：0193-22-8832　email：murai1324@city.kamaishi.iwate.jp　担当：　村井（むらい）
京都大学大学院地球環境学堂　国際環境防災マネジメント論分野
電話：075-753-5634　email：matsuura.shohei.8s@kyoto-u.ac.jp　担当：　松浦（まつうら）

1 月 21 日版

I　はじめに以下の質問にお答えください。

問１　あなたの性別をお答えください。

1. 男　　2. 女

問２　担当する学年をお答えください。

1. 小学校・中学校 _____ 年　2. その他（　　）

問３　唐丹小学校、又は中学校に赴任した時期をお答えください。

_____年 _____月　（勤務年数_____年）

問４　教員としての経験年数をお答えください。

_____年 _____ヶ月

II　震災当時のご経験に関してお聞きします。

問５　震災時に取ったご自身の行動・対応を時系列にご記入ください。※当時、唐丹小中学校に赴任していなかった方は、当時の赴任先のご経験をお書きください。

問６　震災への対応を行うにあたり、校外の方からの支援を受けましたか。それは誰でしたか。

（○で複数回答可）

1. 消防団　2. 近所の方　3. 町内会の方　4. 行政関係者 5. 特に支援を受けてない　6. その他（　　）

問７　学校に避難（又は訪問）してきた校外の方への対応もされましたか。**（○で回答）**

1.　はい　2.　いいえ

問８　震災時の行動・対応を取った際の困難・上手くいったことだったことは何でしたか。

困難：	上手くいったこと：

問９　震災時に取った・取る行動及び対応の根拠は何ですか。**（○で複数回答可）**

1. 災害・緊急時の対応マニュアル（具体的に：　　）
2. 上司の指示
3. 行政関係者の指示（教育委員会、警察等）
4. 地域住民の指示（PTA、消防団員、町内会等）
5. 自己判断
6. その他（　　）

III　学校の防災教育・活動についてお聞きします。

問 10　震災以前に、防災教育・活動を実施するための知識はどのように取得しましたか。

（○で複数回答可）

1. 津波防災教育のための手引き
2. セミナー・研修等（具体的に：　　）
3. 前任者からの引き継ぎ
4. 同僚から
5. 独学（具体的に：　　）
6. その他（　　）

問 11　防災教育・活動を実施するにあたり、校外の方からの支援を受けたり、共同で実施したりすることがありますか。それは誰ですか。**（○で複数回答可）**

l. 消防団	2. 近所の方	3. 町内会の方
4. 行政関係者	5. 専門家（大学等）	6. その他（　　）
7. 特に支援を受けない　**→問 12 へお進みください**		

問 12　校外の方と具体的にどのような活動を行いますか？**（記入回答）**

問 13　震災後、授業で実際に行う防災教育・活動の見直しを行いましたか？それはどのような内容ですか？**（○及び記入で回答）**

1. はい　**→具体的に下にご記入ください**	2. いいえ
見直した内容：	

問 14　一般教科の中で、実際の授業の中で防災教育を取り入れて実施している例があれば、下記に挙げてください。

IV　学校と地域のつながりについてお聞きします。

問 15　教育活動の中で、学校と地域が繋がるために地域住民や組織がどのように関与するのが有効だと思いますか。**（○で複数回答可）**

1. 総合学習を通じて（体験学習、ボランティア経験等）具体的に：＿＿＿＿＿＿＿＿
2. 学校の年間行事（運動会、文化祭等）
3. まちのイベント（公民館祭り、唐丹祭り等）
4. その他（　　）

III　学校の防災教育・活動についてお聞きします。

問 10　震災以前に、防災教育・活動を実施するための知識はどのように取得しましたか。

（○で複数回答可）

1. 津波防災教育のための手引き
2. セミナー・研修等（具体的に：　　）
3. 前任者からの引き継ぎ
4. 同僚から
5. 独学（具体的に：　　）
6. その他（　　）

問 11　防災教育・活動を実施するにあたり、校外の方からの支援を受けたり、共同で実施したりすることがありますか。それは誰ですか。**（○で複数回答可）**

1. 消防団　2. 近所の方　3. 町内会の方
4. 行政関係者　5. 専門家（大学等）　6. その他（　　）
7. 特に支援を受けない　**→問 12 へお進みください**

問 12　校外の方と具体的にどのような活動を行いますか？**（記入回答）**

問 13　震災後、授業で実際に行う防災教育・活動の見直しを行いましたか？それはどのような内容ですか？**（○及び記入で回答）**

1. はい　**→具体的に下にご記入ください**　2. いいえ

見直した内容：

問 14　一般教科の中で、実際の授業の中で防災教育を取り入れて実施している例があれば、下記に挙げてください。

IV　学校と地域のつながりについてお聞きします。

問 15　教育活動の中で、学校と地域が繋がるために地域住民や組織がどのように関与するのが有効だと思いますか。**（○で複数回答可）**

1. 総合学習を通じて（体験学習、ボランティア経験等）具体的に：＿＿＿＿＿＿＿＿
2. 学校の年間行事（運動会、文化祭等）
3. まちのイベント（公民館祭り、唐丹祭り等）
4. その他（　　）

問 16　唐丹において、学校と地域とのつながりを更に強化するために、これからできる・したいことは何ですか。**（○で複数回答可）**

1. 新たな地域学習プログラム（例：　　）
2. 新たな学校行事（例：　　）
3. 学校施設の一部を地域住民に開放し、利用してもらう
4. 地域の NPO/NGO を通じた活動
5. コミュニティスクールの検討
6. その他（　　）

V　学校と唐丹地区の復旧・復興についてお聞きします。

問 17　学校を復旧・復興するにあたり、新校舎・施設の早期建設は最優先事項となりますが、その以外に重要なのは何だと思いますか？**（左の欄に優先順位を 1－3 までご記入ください。「その他」がある場合には、ご記入ください）**

	優先順位（番号を記入）
● 児童・生徒及び教員のメンタル・ヘルスケア	
● 行政からのサポート	
● 地域住民からのサポート	
● PTA 等の学校運営組織の活動の充実	
● 震災前同様の教育活動の再開	
● その他（　　）	

問 18　学校は唐丹の復興及びまちづくりに、どのような貢献ができると思いますか。

（○で複数回答可、又は記入回答）

1. 児童・生徒と地域住民（特に高齢者）が触れ合えるイベント等の企画
2. 学校を防災拠点として強化する
3. 学校施設の一部を開放し、地域住民の交流の場とする
4. 地域住民や組織の協力の下、児童・学生に地域の文化、歴史、産業等を理解してもらう
5. その他（　　）

問 19　唐丹小学校・中学校の卒業生が将来的に唐丹のまちづくりに貢献してもらうために、学校が行えることは何だと思いますか。下記にご記入ください。

-Students-

「新しい唐丹小中学校に関するアンケート調査」ご協力のお願い

平成 25 年 1 月 9 日

拝啓　　アンケートにご協力いただく唐丹小学校・中学校の皆さんへ

この度、突然のお願いで申し訳ありませんが、釜石市教育委員会および京都大学大学院地球環境学堂が実地する「新しい唐丹小中学校」に関する意識調査・研究にご協力いただきたく、本アンケート調査票を皆さんへ配布させていただきました。

本調査では、安全な唐丹小学校・中学校を早期に再建し、元気に勉強等で活躍される皆さんや先生がいる学校と共に、唐丹町がより安全で活力あふれる故郷となるためのまちづくりを進めるための貴重な情報として活用させていただきたいと考えています。皆さん、お忙しくされていると思いますが、調査の目的をご理解の上、ご協力いただければ大変ありがたく思います。

敬具

釜石市教育委員会

京都大学大学院地球環境学堂　国際環境防災マネジメント論分野

Ⅰ　これから新しく建設される学校について答えてください。

問１　新しい学校に求めるものは何ですか。

問２　皆さんの新しい学校が建設される過程や建設現場の方々のお話を聞くことに関心がありますか。（〇で回答）

1. はい	2. いいえ

II　防災教育・訓練について答えてください。

問３　これまで学校で行った防災教育・訓練の中で最も関心が高かった、又は覚えている内容を２つ挙げて下さい。

1.
2.

問４　学校以外で防災教育・訓練に参加したことはありますか。それは何ですか。

III　学校と唐丹のこれからのまちづくりについて答えてください。

問５　総合的な学習の時間などで地域の方々と交流する授業で最も関心のある内容を２つ挙げて下さい。

1.
2.

問６　皆さんが今の唐丹をさらに元気で安全なまちにするためにできること･やりたいことを自由に記入して下さい。

Appendix 3: Interview sheet for Saijo school district representatives

西条市3学区代表者への聞き取り調査シート

面会者:　　場所:

日時:

1. 学校と地域のつながりについて

- 共同行事やイベント、子供がいない世帯の参画、学校施設の地域への開放、地域(社会)教育

2. 防災教育・活動について

- 学区内住民との協働(学校・登校／下校時、自宅にて)、避難所運営(初動対応マニュアル、役割分担、時間／気候別の対応)、消防団・水防団と学校の活動、活動の頻度・内容、地域防災教育・活動の内容・頻度、防災士連絡協議会の役割・活動内容

3. 公民館の役割

- 地域住民・児童生徒の利用頻度、定期行事の内容、防災事業

4. 学校教員について

- 地域とつながるための活動、異動時の知見の継承(特に防災)

5. 少子化対策

- 取り組み事例、児童生徒数を維持するための努力、子育て支援

6. 学区内の防災活動

- 防災への取り組み、防災組織、消防団・自主防災組織の団員数・活動内容

7. 防災の知識

- 災害経験、地域特有の防災知識、継承手段、東日本大震災から学んだこと

8. 学校を中心とした復興まちづくり

- コンセプトに対する意見、西条市での適用の可能性

9. 南海トラフ大地震

- 内閣府・西条市の被害想定発表後の対応