

Social Education on Earth Quake and Tsunami Disaster in West Sumatera

¹ EMRIZAL, ² YESSY MARKOLINDA

¹⁾ Politeknik Negeri Padang. Jln.Kampus Unand Limau Manis Padang;

²⁾ Universitas Andalas Jln. Kampus Limau Manis Padang
email: ¹⁾ Emrizal_se@yahoo.com, ²⁾ Yessi.markolinda@fk.unand.ac.id

Abstact. West Sumatra is one of the areas located in areas prone to earthquake and tsunami in Indonesia. This article aims to reveal the profile, functions, and problems BPBDs and RSUP as well as the proposed solutions and education for the community. Article contains information about the knowledge of the risks, warning services, communication and dissemination of information to the public. BPBDs, RSUP in Bali and Padang serve as a research base. Based on these studies, the educational proposal of the earthquake/ tsunami for public consumption, map problems and a package of policy proposals for BPBDs and RSUP are in this article. Instruments research is conducted by a structured interview format with a special interview, observation, focus group discussions, and data documentation. Results of the study reveals that the readiness of the community in the face of the earthquake and tsunami need to be improved because now the community is not ready to face it. The resulting software is able to prepare the public face of the earthquake and tsunami.

Key words: BPBD, RSUP, warning services, tsunami

Introduction

Both the earth-quake and Tsunami are two kinds of disaster that often haunt the people of West Sumatra, mainly in several towns that are situated within the ring of fire such as cities of Padang, Pariaman, and the Mentawai Islands. Unfortunately, the condition of the earth quake vulnerable pertaining in those three areas is still unsuccessful to increase the common awareness of people. Among others, these can be seen each time as the earth-quake happened in these three places. In general, they never took care if the epicenter of the earth quake stemmed from the sea or from the ground. Never did they pay attention whether or not the earth-quake preserves the potency of tsunami. Usually they were heedless with the sound of early warning serene of tsunami already installed surround them. Instead, they preferred to crowd randomly to the heights, and as usually they went up to the campus of Andalas university or Padang State Polytechnics. As a result, there occurred a traffic jam

and uncontrollable urban citizen panic. The different story took place at the hospital in Padang. They stood in queue in front of exit without obvious direction. It commonly occurred that a patient pulled out the infusion injected in his/her body and a number of illogical medical activities occurred as well.

Both tsunami and earth-quake are serious threats that will be faced by Indonesia. The natural disaster is a tremendous one (Chamlee-Wright & Rothschild, 2007), and is an ironic thing, for instance, if there is a tsunami early warning infrastructure system is damaged and even stolen by the losers and opportunists having only personal interest as ever written by the media as the tsunami stormed Mentawai in October 2009. Such a condition already noted that this disaster drawn the world's most attention up to now. (Telford and Cosgrave, 2007). Thus, the policy, and the rules enforcement as well as the actions taken by the authority concerned are absolutely necessary (Sawitri, 2006). A number of trainings conducted by BPBD

Received: October 08, 2016, **Revision:** May 27, 2016, **Accepted:** June 23, 2016

Print ISSN: 0215-8175; **Online ISSN:** 2303-2499. Copyright@2016. Published by Pusat Penerbitan Universitas (P2U) LPPM Unisba Accredited by Kemenristekdikti, No.040/P/2014, valid 18-02-2014 until 18-02-2019

(Provincial Disaster Management Agency) of Padang, Pariaman, and Mentawai are found unable to change the people's awareness of West Sumatera. What has been done by the BPBD of Padang, Pariaman, and Mentawai whether based upon preliminary survey or searching through online still make use of conventional patterns such as lecturing, training, as well as simulating of avoiding tsunami once a year to a few people. The settings done by the authority concerned seems still unable to stir the people's awareness from the BPBD's view-point (Pristiyanto, Djuni. 2008). It was found that the pattern of training and socialization to the people generally done under the method lecturing was also found not change the people's behavior (Wirasetiadi, 2007). As if the Website of BPBD in the three towns displayed the "autobiography of BPBD" as it is and it is not well known let alone read by the people widely. Based upon the survey of the BPBD of Padang, it still did not obtain the satisfactory result. If it is referred to the conception of ideal *tsunami early warning system* (tews) and *Indonesia tsunami early warning system* (Ina-tews), the BPBD of the three towns seems still far away from being ideal starting from the facilities and socialization tsunami up to the job-setting of the staffs and service to *stake holders*.

Owing to the sophisticated technology instruments as well as the reliable resources and infrastructure, an earth-quake resistant buildings are necessarily planned by the government, socialized to the people and put everything into reality. Until now, the presence of earth-quake is still hard to predict accurately. However, at any rate, the coming of tsunami is already forecast. Unfortunately, the capability of early warning of Indonesian people to the *natural threat* is still far from expectation. Our human resources need to learn from Japanese. No matter how strong the earth-quake is in Japan and no matter how tremendous the tsunami storms it, the Japanese calm under fire. This due to, among others, policy, planning, and the management of tsunami early warning infrastructure system having reached the level of being established in Japan so that the adaptive attitude of Japanese people is good enough at the moment of encountering tsunami in Japan in March 2011.

Either government or citizen has to be well prepared to the unpredictable conditions. In relation to this, there are still lot of question to be presented related to the context of

policy, planning, and strategy of handling or reducing the impact of disaster, mainly earthquake and tsunami in Indonesia. In order to be able to encounter these two things, the government must be able to increase its ability as to socialize the need of erecting the earthquake resistant buildings for the people, to make effort so that the people do not always panic as the earth-quake comes, to make self-evaluation to do a comprehensive research on *behavior analysis* within a community, and is also able to surmount or control the stream of panic at the moment of disaster such as earthquake and tsunami. Other than that, intensive counseling and training of evacuation need to be done and to enlighten the knowledge of people over the disaster such as to prepare the road of evacuation, mental readiness of people in facing the disaster, to make the policy pattern of massive salvage and to socialize any attempt that can be done in order to eliminate the victims, to train the dependable facilitators; not "the jerry ones" in such a way that information can be taken for advantage to make educational software of earth-quake/tsunami for all ages as well as the other side-products.

In the other words, the release disaster information, primarily, earth-quake and tsunami either from BPBD or hospitals in this area has not yet fulfilled the aspect of massive education to stimulate the public psychological awareness in order not to get trapped under extreme psychological conditions. As to respond this problem, the availability of holistic and systematic disaster-knowledge based software is needed but is presented attractively and jocularly that could become an entertainment to all ages including children and hospital patients but not otherwise as offered by the media so far of a documentary film on earth-quake and tsunami making people more panic with this word.

Since the beginning of 2014, we have collected a number of photos and videos either taken with DSLR camera or digital one starting from BPBD Padang up to BPBD Bali and General Hospital, Sanglah Denpasar, Bali which is ready to be broken down into an educational soft-ware software about tsunami for all ages. To the related aspects, software and educational documentary film of earth-quake and tsunami disaster, they are expected to be used by the decision makers as a reference to plan both preventive and preemptive actions as to set a strategic planning act for both central and provincial/municipal government,

primarily to apply *people centered* tews. It goes without exception that the educational software of both earth-quake and tsunami disaster will also be made and an be used as the instrument of evaluation to monitor the progress and achievement of tews implementation process in West Sumatra as well as to evaluate both the role and responsibility of each local tews actor involved to improve the Ina-tews system having been built seriously since 2005. This research is aimed at finding out how the readiness of West Sumatran's people is in encountering the disaster of tsunami.

The purpose of this research is to create a research based educational software of both earth-quake and tsunami disaster for two years realized in the form of carton and comic motion pictures so that it can entertain the patients and it could also be consumed by all ages including children. The primary purpose of this software is to enrich the common people of all ages with the knowledge of disaster, and how to handle, to respond it and the method of self mobilization under a good direction with the high level of awareness. It is not impossible that the educational software of disaster that will be made should also be able to offer to children and included to the school curriculum.

As to produce dependable educational software of disaster, a deep and reliable research is required. The location of *best practices* will be chosen beforehand. Both Jakarta and Bali will be made the basis of research this year reasonably that Jakarta and Bali are often made as the pilot project either by international world or by the central BMG dealing with something related to the tsunami early warning in Indonesia (see GTZ, 2009). Some hotels and hospitals in Bali have owned international standard SOP to minimize the risk of tsunami impact (GTZ, 2009).

As the basis of international tourism either BPBD, Top General Hospital (RSUP), Regency General Hospital (RSUD), and hotels in are already more established in terms of instruments utilized for tsunami early warning system such as (a) the instruments to receive information from the central authority; (b) the instruments to distribute information from BPBD to the people; (c) function and operational system of tsunami detecting instruments; (d) the policy of instrument management; (e) the instrument maintenance; (f) the professional key actors operating the instruments/facilities; (g) the

SOP as the earth-quake occurs; (h) the SOP of decision making and recommendation of evacuating or not. This information is very good for making educational software of earth-quake/tsunami disaster.

The source of data is taken from geophysical and metrological agency(BMG) in Jakarta, the hospital chairman and BPBD cities of Denpasar, Padang, and Mentawai. The research instrument is done by conducting check the list, interview, observation, FGD, and documented data (Muhtar and Muhamad. 2010); (a) Check List, it is designed by adapting and modifying the framework and guided questionnaires from Checklist for Developing Early Warning Systems "made during EWC III Third International Conference on Early Warning" From concept to action "dated March 27 – 29. 2006 in Bonn, Germany written by Harald Spahn Vidiarina, and associates (GI-Tews, 2007); (b) interview, it is done within BMG Jakarta and BPBD of Bali under the structured format designed based upon variable, sub-variable, and research indicator stated sub-division of research aspects at the hospital chairman/ BPBD, and the hospital/BPBD workers. The following is the guide of interview to be done in Jakarta and Denpasar as best practices.

All information acquired will be taken advantage to make educational software ofearth-quake/tsunami disaster for all ages as well as the other side products which are also targeted; (c) Observation, it will be done at BMG Jakarta, hospital and BPBD in Denpasar, Padang, and Mentawai, mainly, the one which concerns with a number of tews instrument existing on the locations of research with format and particular observational guide; (d) documented data, the documented data and the material of primary laws binding the norms or basic rules of National Constitution 1945 of Indonesia, constitutional rules related to TEWS, related references to TEWS, as well as the information coming from both printed and electronic medias (internet) will be taken for benefit. In such context, a number of documents available such as the manuscript of joint declaration between the Ministry of Research and Technology of Republic of Indonesia and the Ministry of Education and Reseach of Germany, etc will be analyzed in accordance with the regulation applies.

The whole data obtained is qualitatively analyzed as to find out the implementation of Ina-TEWS (*Indonesian Tsunami Early Warning System*) at BPBD cities of Padang, Denpasar,

and Mentawai mainly, the one related to the purposes of research to yield a number of research products.

The procedures are applied in analyzing the data to produce the educational software of earth-quake/tsunami disaster and some other products are by collecting, categorizing, coding, and classifying as well as analyzing information about disaster mitigation namely (a) road of disaster evacuation as well as evacuating areas; (b) education of attitude to face and respond the disaster in order to prevent unnecessary victims during the evacuation; (c) a technical know-how to mobilize people orderly; (d) the instrument owned by BPBD to collect disaster information from the level of central government the instruments distributing information from BPBD to the people; (e) function and operating procedure of tsunami detecting instrument in general, policy of instrument maintenance; (f) procedure of instrument security (g) professional key actors to operate the instrument/infrastructure; (h) the SOP of earth-quake; (i) the SOP of decision making, recommending or not recommending the evacuation; (j) information of earth-quake resistant house etc. Based upon the research result year 1 upon the aspects investigated at BMG in Jakarta and Denpasar will produce a documentary film, draft of problem map and draft of educational software of earth-quake/tsunami disaster.

Tsunami and Policy

One certain thing is: what important is not the question "if" but "when" tsunami will come! (CIM, 2009:6) the statement of *Centrum für Migration und Entwicklung* (CIM) in a translated version of Indonesian such an extract above indicates that the disaster of tsunami becomes an international fright. Therefore, *tsunami early warning system* commonly referred to as Tews draws international institutions. Indonesia would not welcome it until 2005 punctually, post-tsunami disaster on December 26, 2004 on the West Coast Nanggroe Aceh Darussalam Province, Nias, and North Sumatra as well as a number of countries in the territory of South Asia killing 3.00.000-s people.

As to restore the trust of international world and to anticipate a more serious damage physically, economically, social culturally, and tourism they have to respond it quickly to be able to cope with the disaster coming any time (Spahn, Harald. 2007), the

of President of Republic of Indonesia instructed all related authorities in order to develop *tsunami early warning system*. The *Indonesia Tsunami Early Warning System*, abbreviated into Ina-TEWS) in 2005. Germany is one of the countries trusted by the Indonesian government to assist the provision of infrastructure of Ina-TEWS so it brought about a *Joint Declaration on Realization of Tsunami Early Warning System* commonly referred to as GI-Tews (*German-Indonesia Tsunami Early Warning System*). The undersigning of *Joint Declaration on Realization of Tews* was done in Jakarta on March 14, 2005 by the Minister of Research and Technology of RI Kusmayanto Kadiman and Minister of Education and Research of Germany Edelgard Bulmahn (Jakarta Post, March 15, 2005).

As to implement the call of President of RI, a number of department/ ministry issued the policy related to Ina-Tews. National Agency of Disaster Management (BNPB), Agency of Meteorology, Climatology, and Geo-physics (BMKG) are trusted as the key institution in the central level (Jakarta). A number of Provincial Agency of Disaster Management (BPBD) are trusted as the key institution at the level of province, regency, and municipality. The BPBD serves as the facilitator of central BMKG as the information sender, decision maker, and decision maker of act at the provincial level. Both policy and decision of the BPBD is distributed media to government office, institution, and the whole people. Thus, a number of government offices, institutions, hotels, and established hospital also issued SOP to implement the Ina-Tews.

Bali, for example, has issued *The Tsunami Ready Toolbox for the Indonesian Hotel Industry* which is one of the government effort in this respect Department of Culture and Tourism and Directorate General of Tourism Destination Development of Bali in supporting the development of (Ina-TEWS) nationally launched by the President of Republic of Indonesia on November 11, 2008 involving a number of government offices, institutions, hospitals, and so on which discusses how far the roles of BPBD is in the provinces to respond the Ina-Tews. it is still a too early question to answer in the context of Indonesia.

To answer such a question, this research is done in Bali as the pilot project of Ina-Tews by the international institution such as CIM and GTZ and the central government. A number of municipal/regency BPBD and

Top Referral General Hospital (RSUP/ RSUD (Provincial General Hospital) in Bali will be investigated. In the second year, the research focuses on municipal/regency BPBD and RSUD/ RSUD in West Sumatera, primarily City of Padang and Regency of Mentawai based upon *best practices* existing at BPBD and hospitals in Bali.

General Policy of Ina-Tews

Article 3 of The regulation of Home Minister of Indonesia Number 46 of 2008 stated that the BPBD is subject to and responsible to The Head of Province and is lead by The Head of Agency in *ex-officio* occupied by The Provincial Secretary. The same thing is also regulated in Head's Regulation (Perka) of BNPB Number 3 of 2008, namely "The Head of BPBD is occupied doubly in *ex-officio* by The Provincial Secretary". The organizational structure of BPBD consists of Head of Agency, Steering Committee and Executing Committee preserving their own duty, function, job description, membership, and work mechanism.

The BPBD is a operational controlling center of disaster management, and each BPBD constitute Operational Controlling Center of Disaster Management abbreviated to PUSDALOPS-PB. The PUSDALOPS is the hand extension to Provincial Government or Municipal One in handling the Tews. Other than routine policy done to make a plan, the job must be done so that the disaster coming could be encountered according to SOP available (Sawitri, 2006). The duty of PUSDALOPS-PB in operating the Tews is (a) to find out and/or to receive the formal information about the occurrence of the earth-quake and the potency of tsunami from the BMKG; (b) to inform and to direct the people according to the decision already made, and to decide to make use of available instruments; (c) to make decision whether or not the evacuation is necessary over the threat of tsunami to the related institutions in order to let the people know about it; and (d) to control and supervise the implementation of Tews.

The Provincial, Municipal governments, BPBD, and PUSDALOPS may ask the government for a support, or supports form other institution to substantiate the implementation of Tews in their territory. The framework among the actors involved such as government, people, business unit and donor have to be able to communicate so as to be

able to implement exactly the policy (Sari, 2013). The related institutions may serve to help widely distributed the information of Tews based upon the information and direction from PUSDALOPS and information from BMKG to the people. In the context of this research, the related institution concerned is focused to Top Referral General Hospital Sanglah, some of RSUD in Bali, Hospital of M. Jamil Padang, RSUD of Padang City, RSUD of Mentawai, and Hospital of Yos Sudarso Padang.

BPBD Bali and RSUP Sanglah Denpasar: Profile and Function

As an organization agency related to the management of natural disaster, technically, the BPBD is assisted by UPT (Technical Executive Unit) as a part of BPBD network which has not come into existence but in Bali. Owing to interview it is found that what differ the BPBD of Bali from the other BPBD in the other provinces in the Archipelago is related to the making of both response and action.

The primary function of BPBD including the BPBD of Bali is that it belongs to to the part of information distribution of any problem. The things expected are the level of knowledge owned by the people related to both problem and the management of natural disaster becomes more comprehensive. The BPBD of Bali is the institution concerning with natural disaster that the BPBD of Bali and The Top Referral General Hospital Sanglah Denpasar Bali keeps promoting good services either quantitatively or qualitatively. As to realize these, the UPT under the umbrella of BPBD of Bali maintains cooperation with some research agencies both with all BPBDs and hospitals in Bali. The framework of the cooperation became clear as interviewing the two public relation staffs of The Top Referral General Hospital Sanglah Denpasar Bali.

Such cooperation is not only with the two institutions mentioned above but also with a number of BPBDs in Indonesia including several of which abroad. Other than Germany, France is one of the countries chosen by BPBD and Provincial Government of Bali to support the instruments of Tews. According to The Chairman of BPBD of Bali, both countries, from the instrument of Tews, are considered more advanced than the other countries including the modern research applied by both countries in using Tews.

The BPBD of Bali or The Top Referral General Hospital Sanglah Denpasar Bali is also supported with cooperation and good

organizational management among the staffs staying in the job areas. The types of workers at BPBD of Bali, for example, intentionally recruited the staffs from various background of education. This means that the staffs' competence may complementarily distribute as to help promote the service quality over natural disaster emergency response.

Either the BPBD of Bali or The Top Referral General Hospital Sanglah Denpasar Bali keeps empowering the use of the instruments effectively as the natural disaster takes place. This program is the first priority of BPBD and The Top Referral General Hospital Sanglah Denpasar Bali. This may be exemplified in the availability of ambulance keeping standing by at BPBD and some other modern instruments.

The disaster is a sequence event being able to bring about loss either material or moral, and psychology of mankind massively. According to the chairman of BPBD of Bali, disaster can be divided into two those are (1) disaster taking place due to natural activity and (2) the one related to the mankind as the subject and object of events. Social conflict is one of the examples as the result of human error.

To face the natural disaster with category of tremendous damage such as tsunami, the preventive, pre-emptive, and curative acts, of course, cannot be imposed to only one or two authorities. One of a good thing of BPBD and Top Referral General Hospital Sanglah Denpasar Bali at the moment is the attempts of both authorities consistently to cope with the event related to natural disaster or the one human catastrophe under professional management.

Either the BPBD or hospitals are two authorities operating ranging from central working area up to provinces. When the SOP designed is not well tested, thus, it is not impossible that it probably can worsen the disaster impact to the people. As to anticipate this, the BPBD of Bali, for instance, regularly conducts a tsunami simulation monthly to some given places and some hotels (starred) in Bali. The interesting thing is that the Tews simulation also becomes one of tourism assets to the area on which the tsunami shelter will be built, too. Other than the local tourists, foreign ones also get involved witnessing the tews simulation done regularly once a month as to anticipate the damage of tews instruments.

Therefore, either the BPBD or Top

Referral General Hospital Sanglah Denpasar Bali, at any rate, develop three kinds of control in Tews among others (1) personality control over one's self (the related staff's awareness of rights and duties); (2) leader's control (the one created by the leader of the authority); and (3) control over the system sustainability to process the system improvement continually).

Instrument of Tsunami Early Warning System of BPBD Bali and TRGH Sanglah

For the sake of organization, BPBD and Top Referral General Hospital Sanglah Denpasar, Bali keeps coordinating well either with a relatively shorter time or distributing information done under technology modern media. The following are the technology list owned by BPBD of Bali for self preparation in facing the risk of tsunami (tews), among others CCTV, LED, Radio, Telephone, Serene Tsunami Early Warning and EWS Application as well as cellular phone receiving SMS Information. Since tsunami belongs to the natural disaster having high level of risk, thus the distribution information is absolutely necessary as the media of notification of the tsunami to the people. One of the procedures applied in Bali is the making of serene location of *Tsunami Early Warning System* (Ina TEWS). Based upon the result of interview to the chairman of BPBD of Bali, the location of tsunami alarm serene in Bali is located in some areas such as Sanur, Nusa Dua, Kuta, Tanjung Benoa, Kendongan and Seminyak. The advantage owned by the PUSDALOPS of Bali compared to the other areas in Indonesia is that the provincial government and central government have prepared a SOP and special policy. For instance, if a disaster takes place, the BPBD of Bali asks anybody on duty to tune on the serene at the time of tsunami disaster potency without having to wait instruction beforehand from the boss. This is, according to Mr. Jaya (Chairman of BPBD of Bali) it is meant to use time effectively as well as that the people are able to be cautious of both danger and threat of tsunami that may storm anytime.

The management system of tsunami disaster which is also develop by BPBD of Bali self-evacuation system. The self-evacuation concerned is that the people themselves should salvage themselves as their bodies respond to the coming of the earth-quake shake by moving up to the much higher locations. According to the Head of BPBD of

Bali, as the pattern of self-evacuation succeed and well implemented, thus, the people are expected unnecessarily to think of salvaging others except the one who is too old to rescue one's self still deserves to get a rescue from others. For example, the old man/woman, little boy/girl, people suffering from disable bodied which is different from others that are physically normal.

The other solutions to face the danger of tsunami in Bali is done by using *shelter* or the area specially built with primary function is to protect people as the tsunami disaster occurs. A good *Shelter*, according to the chairman of BPBD of Bali is that the *shelter* that can carry people massively. At the moment, Bali is preparing itself to construct the shelter which according to the Chairman of BPBD of Bali, it plans to have double-function. It means if the danger of tsunami comes, the shelter can be used as shelter. Under a normal condition, the shelter does not lose its function for it can be used for other purposes, for instance, it can be used for selling and buying activities as to support the popular economy that also becomes the target of Provincial government of Bali since long time ago.

The use of double function, according to the chairman of BPBD of Bali that is also preparing the *tews* curriculum for educational institution and this is also intended to activate the function of building in order to not to be meaningless buildings. As for maintenance, the erecting of shelter with double function is also useful to protect asset or building from technical damages. As a number tourism province in Indonesia, the planning of erecting shelter in Bali is also planned to support the values of local wisdom. Therefore, the shelter does not function as the location of *tews* but it also become the tourism assets and supporting factor of popular economy.

Map of Tews Problem and BPBD in West Sumatera

Our purpose to do research on BPBD of Bali and Top Referral General Hospital Sanglah Denpasar Bali as well as BMG and BNPB in Jakarta among others is to see the BEST PRACTICES in both facilities that enable us to make a proposal on policy of some maps of problem available in West Sumatera to develop this institution in the coming years. Based upon the research result of 2014, the problem map of BPBD West in Sumatera has been able to be mapped. The following is the problem map of BPBD and *Tews* program in

West Sumatera.

The effectiveness of Program and Instrument of Tews Socialization at BPBD

Socialization, program and instrument of *tews* at BPBD is one of the main causes out of so many is that the immaturity of the people of West Sumatera as the earth-quake disaster came. Until now, there are still many people (and even the intellectual ones) who have not known the existence of BPBD in their town let alone the programs done by BPBD. The same as the SOP for road of evacuation, *tews* instruments and so on are not yet recognized by the people widely. Thus, it is necessary to set a post-earthquake reconstruction (Sari, 2013). It proved that some training done by the BPBD of Padang City, Pariaman City, and Mentawai was found unable to change the people's awareness West Sumatera.

The socialization of SOP, roads of evacuation, *tews* instruments, and so on through sites of BPBD of Padang City, Mentawai, and Pariaman was also found not effective to socialize them. Albeit, according to the rules, all people preserve the rights to face this (Emily, 2007). Probably the sites of BPBD could only be accessed by intellectual people and university students only and even it is the one related to their field of discipline or lecture assignments. Thus, the other way of offering the disaster education is needed. One of which is by making software and documentary film offering educational values but not presenting scary impression as much done by media.

BPBD Patern Using

The fact in the field proves that what is done by the BPBD in cities of Padang, Pariaman, and Mentawai is either based upon the result of survey or the tracing through online, it is true that the BPBD still made use of conventional patterns as lecturing, training and tsunami simulation to a few people once in a year. The patterns implemented by the institutions related seem unable to stir the people awareness. It is found that both training pattern and socialization introduced the people are generally under the method lecture and it still does not change the people behavior. Truly, as if the website of BPBD in the three cities displayed the "autobiography of BPBD" than nothing is still not known by the people let alone to read widely. Our survey to BPBD of Padang city has not yet brought

about satisfactory result either. Referring to the ideal conception of *tsunami early warning system* (tews) and *Indonesia tsunami early warning system* (Ina-tews) (German Technical Cooperation (GTZ). 2009), BPBD it seems that city is still far from being ideal starting from facility and socialization of tsunami up to the staff's working atmosphere and service to *stake holders*. The birth of both software and documentary film on tsunami education is hoped to be able to change the image of both earth-quake and tsunami from scary and frightening impressions into natural impressions containing conscious and educative values.

The SOP of Road of Evacuation, and Instruments

As tsunami stormed Japan in March 2011, the maturity of Japanese people is the Japanese was obviously seen in encountering this horrifying natural disaster (Kompas, 2011). It was widely broadcast on a number of TV sets and printed media when tsunami was striking, it was clearly seen that cars kept running on the roads in a moderate speed even though under the bridge there some boat capsized due to tsunami strike. A number of hotels were calmly able to evacuate their guests. A number of hospitals were able to evacuate their patients under a well designed established SOP ready to face tsunami. Making decision as the earth-quake takes place, let alone the one tsunami potency is not an easy thing to cope with. However, owing to several times of tsunami occurring in Japan, the readiness of people is much more mature including the evacuating team and hospital staff.

Such a condition is quite contrary to what happened in Indonesia some of which have been mentioned previously in background. The people of Padang City, for example, always panic as the earth-quake occurs. Never do they take care of whether the epicenter of the earth-quake is from the sea or from the ground. They have not pay attention on whether or not the earth-quake has potency of. Generally, they do not care of the sound of serene of tews already installed around them. Ironically, some of them even have not known and realized that the tews is already fixed around their houses.

One of the main instruments at the BPBD of Padang City is tsunami serene tower taken from three corners. Although the tsunami serene tower is ignored by the people

of Padang City, they have been well installed in various places of resident houses. Based upon a preliminary study on March 19.2012, it was informed that the use of tsunami serene tower was to send information of tsunami early warning especially to the people of Padang City. Due to the vital function of tsunami early warning serene, the BPBD of Padang City has located the tsunami monitoring instrument on nine strategic points situated on the red zone (beach edge) in Padang City namely Koto Tengah, Lubuk Buaya, STTIND (High School of Industry Engineering), Jalan Ahmad Yani (near to Singgalang News Paper), Air Tawar (near to Minang Plaza), radio ProNews FM, PUSDALOPS PB, Telkom Padang, and campus of University of Eka Sakti Padang. Owing to the information from the source person, the tower is switched on for 24 hours week days in order to be always able to send accurate information to the people.

Conclusions

The result of this research shows that some territories have several areas that the same level of earth-quake and tsunami dangers but both readiness and management is very much different. Bali is one of earth-quake and tsunami vulnerable areas and factually, is much more ready in preparing their people to face both earth-quake and tsunami disasters either about instrument of BPBD or human resources, the readiness of hospitals and medical staffs as well as the people. The reality that is much different from the condition avails in West Sumatra, the instruments and the readiness of hospitals and paramedic staffs as well as the people is far away expectation, whereas the territorial condition is just the same as Bali in respect of natural disaster. Based upon the problem described above, the educational Software on earth-quake and tsunami could also be made the basis by the institution concerned to study what have been done by the provincial BPBD of (*das sein*) and what have to be done (*das sollen*) based upon the rules apply. The educational software of both earth-quake and tsunami disasters is also expected to be used by the central government, BMKG, BNPB, West Sumatra Province, and Municipal/ Provincial Government that concern to monitor the progress achieved by BPBD and hospitals for seeing the *das sollen* there are still lot of backwardness and weakness behind. The educational software on earth-quake and tsunami can be one of references of making decision to develop or to evaluate the program

policy or tews progress at BPBD and RSUP/RSUD, particularly, in West Sumatra.

The educational software on earthquake and tsunami is also expected to be able to instigate the implementation of activity planning or could also be expected to stimulate the planning of activity or pattern of other innovative education needed for learning the education on both earth-quake and tsunami disasters either in West Sumatra or in the other provinces across Indonesia. The educational software on earthquake and tsunami is also expected to be able to become a model of creative education for the whole people of all ages for they were fed up with the conventional patterns such as lecturing, up grading, and so on. It is not impossible that the educational software on disaster education to be made has also given to children and is included to the school curriculum for it is designed for all ages.

To the related aspects, the educational software on earthquake and tsunami software is also expected to be used by the policy makers as a reference to plan both preventive and pre-emptive acts to set up a strategic acting plan for both Central and Provincial/Municipal Governments, primarily, in applying of *people centered* tews system. Unexceptionally, the educational software on earthquake and tsunami disasters can be used an evaluating tool to monitor both the progress and process achievement of tews implementation in West Sumatra as well as used to evaluate both the role and responsibility of each local tews actor getting involved in improving Ina-tews seriously built since 2005.

References

- CIM (Centrum für Migration und Entwicklung). (2009). *The Tsunami Ready Toolbox*. Jerman: CIM
- Chamlee-Wright, Emily (2007), "The Long Road Back: Signal Noise in the Post-Katrina Context," *The Independent Review* 12(2): 235-259
- German Technical Cooperation (GTZ). (2009). "Konsep & Rekomendasi untuk Implementasi Sistem Peringatan Tsunami di Bali". Bahan Presentasi yang disampaikan oleh Kesbang Pol dan Linmas Propinsi Bali.
- Jakarta Post. (2005). *Germany Helps Indonesia Install Tsunami Warning System*. 15 Maret 2005.
- Kompas. (2011). *Tsunami Paling Mematikan di Jepang*. Kompas, 13 April 2011
- Muhdar, Muhamad. (2010). *Bahan Kuliah. Metode Penelitian Hukum. Sub Pokok Bahasan Penulisan Hukum*.
- Pemko Daerah Kota Padang. (2007). *Peraturan Daerah Kota Padang Nomor 18 Tahun 2007 tentang Pembentukan Organisasi dan Tata Kerja Badan Penanggulangan Bencana Daerah Kota Padang*.
- Peraturan Daerah Kota Padang Nomor 3 Tahun 2008 tentang *Penanggulangan Bencana (Lembaran Daerah Kota Padang Tahun 2008 Nomor 3)*.
- Peraturan Daerah Kota Padang Nomor 14 Tahun 2010 tentang *Pelaksanaan Sistem Peringatan Dini Tsunami di Kota Padang*.
- Peraturan Pemerintah Nomor 21 Tahun 2008 tentang *Penyelenggaraan Penanggulangan Bencana (Lembaran Negara Tahun 2008 Nomor 42, Tambahan Lembaran Negara Nomor 4828)*
- Peraturan Pemerintah Nomor 22 Tahun 2008 tentang *Pendanaan dan Pengelolaan Bantuan Bencana (Lembaran Negara Tahun 2008 Nomor 43, Tambahan Lembaran Negara Nomor 4829)*
- Peraturan Pemerintah Nomor 23 Tahun 2008 tentang *Peran Serta Lembaga Internasional dan Lembaga Asing Non Pemerintah Dalam Penanggulangan Bencana (Lembaran Negara Tahun 2008 Nomor 44, Tambahan Lembaran Negara Nomor 4830)*.
- Perka BNPB 3 tahun 2008 tentang *Pedoman Pembentukan BPBD*. Payung hukum tertinggi pembentukan Badan Penanggulangan Bencana Daerah (BPBD)
- Permendagri 46 tahun 2008 tentang *Pedoman Organisasi dan Tata Kerja BPBD*.
- Pristiyanto, Djuni. 2008. "Pembentukan BPBD Berdasarkan Permendagri 46/2008 dan Perka BNPB 3/2008".
- Sari. (2013). *Interaksi Aktor dalam rekonstruksi rumah pasca bencana gempa bumi*, Mimbar, Vol XXII, No.1, pp 217-226.
- Spahn, Harald. (2007). *GITEWS. Indian Ocean Tsunami Early Warning System*. Germany: International Services.
- State of Ministry of Research and Technology and the Federal Ministry of Education and Research. (2004). *Joint Declaration on the Cooperation Concerning the Realization of a Tsunami Warning System between the State of Ministry of*

- Research and Technology of the Republic Indonesia and the Federal Ministry of Education and Research of the Federal Republic of Germany.
- Sawitri. (2006). Profesi Perencanaan dalam perencanaan partisipatif suatu kajian teori dan praktek perencanaan, pp-15-32., *Mimbar*, Vol XXII, No.1
- Telford, J. and Cosgrave, J. (2007), "The international humanitarian system and the 2004 Indian Ocean earthquake and tsunamis", *Disasters*, Vol. 31 No. 1, pp. 1-28.
- Undang-undang Nomor 24 Tahun 2007 tentang Penanggulangan Bencana (Lembaran Negara Tahun 2007 Nomor 66, Tambahan Lembaran Negara Nomor 4723)
- Wirasetiadi, Rikrik. (2007). *Seri Bencana Alam: Gempa Bumi*. Bandung: Bina Sarana Pustaka