

## Implementation of the Yonmenkaigi System Method for Capacity Building on Disaster Risk Management in Local Community of Merapi Volcano

Jong-il NA\* and Norio OKADA

\* Graduate School of Engineering, Tottori University

### Synopsis

This paper introduces implementation of the Yonmenkaigi system method for capacity building on disaster risk management at the local community level in Merapi Volcano as a participatory method to improve everyday disaster response capacity within communities in Yogyakarta from May to August, 2010. The Yonmenkaigi system method is utilized for developing collaborative action plans for disaster reduction activities at the community level. Implementation of Yonmenkaigi Workshops can be summarized as follows; 1) Developing collaborative action plan to sustain activities for disaster risk management, 2) Providing a sharing space between local community organization and local government, 3) Sustaining an activity of local community for community development, 4) Improving capacity of human resources in a local community.

**Keywords:** participatory method, the Yonmenkaigi system method, Merapi Volcano, disaster risk management

### 1. Introduction

This paper introduces implementation of the Yonmenkaigi system method for capacity building on disaster risk management at the local community level in Merapi Volcano as a participatory method to improve everyday disaster response capacity within communities in Yogyakarta from May to August, 2010. A participatory workshop method, the Yonmenkaigi system method, has been developed for improvement of disaster reduction capacity in a community. The Yonmenkaigi system method, originally developed in a local community in Japan, was presented as a case study conducted by Gadjah Mada University (hereafter called UGM), Indonesia in collaboration with a research group of Kyoto University (hereafter called KU), under Urgent Disaster Reduction Project for Mt. Merapi, Progo River Basin (JICA Loan No.: IP-524)

executed by Directorate General of Water Resources, Ministry of Public Works, Indonesia in 2009 (Na et al., 2010).

The Yonmenkaigi system method (hereafter called YSM) is utilized for developing collaborative action plans for disaster reduction activities at the community level (Na et al., 2009b). A “Study on Community development at Mt Merapi area” was developed with the collaboration of UGM for support in the planning and assessment activities in 2009. The Yonmenkaigi System also was introduced to UGM team in a pilot project towards “Sand Mining Management”.

This activity for implementation of a Yonmenkaigi workshop in 2010 has been expanded further to the community organization development for a sustainable action plan (2 years) at the local community level in contrast with a short term (2 months) “Sand Mining Management Plan” in

Kemiren village, 2009 as shown Fig.1.



Fig. 1 Expansion of Kemiren YSM workshop in 2010

## 2. Consideration to Implement YSM for Bumi Lestari in Kemiren Village

Kemiren village is located at the south west part of Mt. Merapi slope. Administratively it is a part of Srumbung District, Magelang Regency local government area of Central Java Province. Kemiren village is officially bordered by Ngablak village on its northwestern side; Hargobinangun village and Kaliurang village on its southeastern side; and Kamongan village on its southwestern side. Kemiren village is divided into three Dusun (Sub-village) has 1,141 people and 307 households as of 2007 over area of 487,629 ha. The structure of village administration is the same for the whole of Indonesia only the number of civil servants and the members of the village council are dependent on the character and the size of the village. Located at the right side of Kali Batan's upstream area, the villagers are depends mostly on Salak farming which is irrigated by water from Kali Batan. As the same as other parts of Mt. Merapi areas, the land consists of sandy fertile soil. Even the land has sand mined product potential, sand mining activities not became major occupation in this village since the Salak farm was able to earn higher income for the villagers. Yet small sporadic and localized sand mining activities in Kemiren village and its surrounding areas have also been developing since 1990s (Na et al., 2010). In order to minimize such

sand mining impact by themselves, the villagers resorted to a village's organization, Bumi Lestari meaning "Eternal Earth" in Java language.

### 2.1 Why the Yonmenkaigi system method was introduced in Bumi Lestari, Kemiren village?

[1] It was intended to work out some modest initiative that can be taken by Bumi Lestari, and involvement of Kemiren community to resolve conflicts between Kemiren community and Bumi Lestari was not challenged.

[2] The main purpose of the workshop in Bumi Lestari, Kemiren community was agreed to develop a collaborative action plan in a participatory manner so as to improve roles and activities of Bumi Lestari, thus reducing disaster risk impact to their maximum capacity.

[3] Some members of Bumi Lestari once experienced YSM Workshop in August, 2009. They are interested in community development using YSM Workshop, hope to create collaborative action plan for improving their activities.

[4] The fatal lack of capacity on each division of Bumi Lestari was their inability and inexperience to systematically and logically make a sound diagnosis of the current state of their organization and to work out a collaborative action plan so as to achieve their own goal.

Therefore, the Yonmenkaigi system method is the suitable participatory workshop method to improve the activity of Bumi Lestari in Kemiren community. YSM also provides a communication basis for working together by having all seated together around a square table and by brainstorming about each other's views. This strengthens effectively the sense of mutual trust and knowledge ownership as they engage themselves in a collective and collaborative action planning (J. Na, N. Okada, and L. Fang, 2009).

For the reasons above, the Yonmenkaigi workshops were organized in the name of Bumi Lestari in order to improving the activity in Kemiren village on June and July, 2010.

### 2.2 Preparation of Kemiren YSM workshops

Based on the communication with several key persons of Bumi Lestari (the Head, the Secretary to the Head, and the Head of Mining Division), it was found that the members of organization have the strong willingness to conduct a workshop applying the Yonmenkaigi method. The specific method they proposed is basically due the experience they have ever had, i.e. a structured workshop to establish the action plan. They also realize that since the institution establishment in 17 May 2008, so far, there has not been a meeting to evaluate the performance of Bumi Lestari. Therefore, the idea would have then being put as the Bumi Lestari anniversary program as well as the Bumi Lestari 2nd annual meeting.

Prior to the Bumi Lestari annual meeting, the UGM and KU met several key persons to discuss the plan of workshops applying YSM, among them were village head and three members of Bumi Lestari on June 9, 2010 as shown Photo 1. As the result of the meeting, the representative of Bumi Lestari and the village head then agreed to hold a meeting between Bumi Lestari and village government. The purposes of the meeting are to discuss the Bumi Lestari current condition and to formulate a strategy to follow-up that condition as well as the initial process of YSM workshop.



Photo 1 Meeting with representative of village government and Bumi Lestari

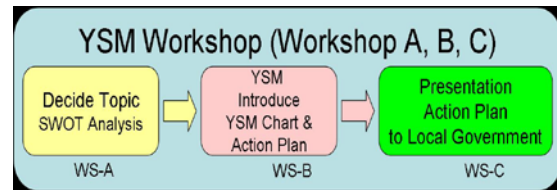


Fig. 1 Kemiren YSM workshop implementation for capacity building on disaster risk management in 2010

### 2.3 Formulation for Yonmenkaigi workshops of Bumi Lestari, Kemiren Village (2010).

Considering the result of the evaluation of previous YSM workshop implemented in pilot project villages in 2009, Kemiren YSM workshop was then modified. The purpose of implementation of Kemiren YSM workshop in 2010 is to formulate the collaborative action plan of Bumi Lestari to develop and improve the capacity of Bumi Lestari as well as to develop Kemiren Village.

Kemiren YSM workshop is divided into 3 workshops including presentation before the local government as shown in Fig. 1. The purposes of first workshop (Workshop A) are to define the topic/strategy and make SWOT analysis. The purposes of the second workshop (Workshop B) are to remind the YSM process and make the action plan using Yonmenkaigi Chart followed by debating process. The purpose of third workshop (Workshop C) is to share the Bumi Lestari action plan to relevant stakeholders especially to the local government as shown Table 1.

The participants will consist of members of Bumi Lestari and Kemiren Village government officials. All members of Bumi Lestari are expected to collaborate with the representatives of Kemiren Village government in establishing collaborative action plan to achieve the goal. The roles of participants will be divided into four divisions; Disaster Management Division, Agriculture Division, Tourism Division and Sand Mining Division. The facilitator team consists of main facilitator to lead the workshop and four sub facilitators.

The role of sub-facilitator in each group is to accelerate the YSM process in each group (technical aspect) and to encourage the group members to declare their ideas/opinions. The proposed time frame is 2 years with 4 time scales; within 3 months, within 6 months, within 1 year, within 2 years as shown Fig. 2.

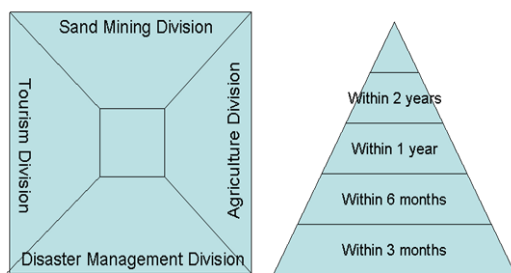


Fig. 2 Roles and time frames of Kemiren YSM workshop in 2010

The process of collaborative activity during YSM workshop will start in each group. The group members will make group action plan to improve their activity, and followed by collaborative activity for every group. All groups will collaboratively discuss and plan both in what activities they should cooperate and how they can collaboratively work among groups as shown Fig. 3.

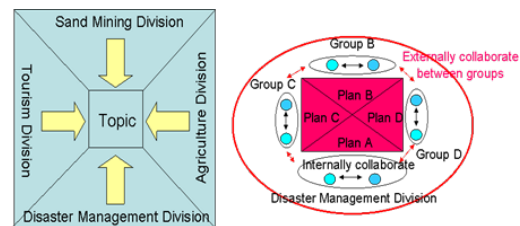


Fig. 3 Internally and externally collaborate between groups in YSM workshop

### 3. YSM Workshops in Bumi Lestari

Prior to the implementation of Workshop A, Workshop B, and Workshop C in Bumi Lestari, an internal meeting to establish the commitment between the Bumi Lestari members and the Kemiren Village Government was conducted on June 16, 210. This internal meeting was considered very essential in term of recalling of what those have been done by the Bumi Lestari in two years of

Table 1 Overview of workshop A, B, C

	Objective	Target	Outcome
Workshop A	To make consensus for future activity	Bumi Lestari, Village Government	SWOT analysis
Workshop B	To develop collaborative action plan	Bumi Lestari, Village Government	Action Plan for disaster risk management and community development
Workshop C	To make cooperation among stakeholders for implementation of collaborative action plan	Kemiren Community, Local Government	Sharing perspective for future plan

age, beside, this was also aimed at introducing sequences of next activities after internal meeting, particularly the Workshop A. During the meeting, the facilitator asked each member of Bumi Lestari to speak out their opinion about Bumi Lestari in general in order to criticize its performance. However, to simplify the process, the participants were not asked to classify their opinion into four factors as the common SWOT process. Rather, the opinions were summarized and classified by facilitators after the meeting and presented in the Workshop B. The opinions were classified into two factors, positive / strengths and negative / weakness.

The Workshop A, which was conducted in 21 July 2010, was considered as the process of defining strategy. During the workshop, the result of internal meeting was presented by Bumi Lestari representative to give description about the progress and performance of Bumi Lestari to all workshop participants. Based on that information, all participants were than discuss and get consensus on the strategy to solve the problem faced by Bumi Lestari. The strategy is that Bumi Lestari has to refresh the organization by re-planning all division programs in order to optimize their performance. Re-planning was conducted through YSM on Workshop B.

The Workshop B, which was conducted in 29 July 2010, was considered as the designing the action plans in YSM charts. The time frame was decided for 2 years thus each group arranges their program for the next two years. Each division comprises action plans for improving the organization capacity (internal) and the division programs (external) as shown Fig. 4, because the participants of Bumi Lestari wanted to improve both activities of their divisions and themselves divisions.

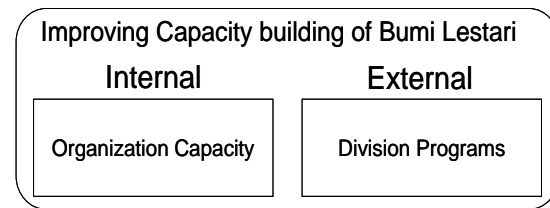


Fig. 4 A structure of each division in Yonmenkaigi chart in Workshop B

The Workshop C, which was conducted in 13 July 2010, was the presentation of the action plans before Magelang Regency government officials. Particularly in term of socialization of the action plans, the wider recognition of the community institution of Bumi Lestari, and further promotion of partnership between Bumi Lestari and related agencies in Magelang Regency.

### 3.1 Considering about implementation YSM workshops in Kemiren Village, 2010

#### (1) Control of performance time

The case of conducting YSM workshops in Bumi Lestari, the night time is most effective since at day time people usually go to work (as farmers, traders, and government officials). The most effective duration of a workshop of one time is approximately 3 hours, less than 3 hours will be too short to accommodate detail aspirations while more than 3 hours will be too tiring for the participants to contribute significant aspirations.

However 3 hours is not enough time to carry out YSM workshop for developing collaborative action plan of middle term plan (two years) in future. In order to take enough time for discussion between participants, we suggest the dividing into several times from a workshop of one time such as Workshop A, B, and C in Bumi Lesatari Yonmenkaigi Workshop mudules.

#### (2) Facilitation management by the facilitator of YSM workshops

After the end of Pilot Project in March 2010, the local communicator of Kemiren Village from UGM did not have any monitoring about Bumi Lestari activities. A communicator is changed to another

person from Kemiren local communicator in 2009. To know and analyze the current situation of Bumi Lesateri, a new communicator needed to again have a relation to Bumi Lestari, although she have been worked in Pilot Project. The facilitator of YSM is also expected to have enough experience and capacity to understand and communicate smoothly with people in the local communities in Mt. Merapi. The facilitator is required to develop enough knowledge and recognition of the themes related to the target community issues.

#### **4. Discussion of Implementation of YSM workshops in Bumi Lestari**

Considering activities of Pilot Project for sand mining management in PEED of 2009, this time the participants expressed their necessities along with the team of the local university to decide together on the highest priorities towards community development. Bumi Lestari, Kemiren village, produced what participants thought an implementable collaborative action plan for improving of their organization through the Yonmenkaigi system method. The Yonmenkaigi provides a communication basis for working together by having all seated together around a square table (Yonmenkaigi) and by brainstorming about each other's views.

This strengthens effectively the sense of mutual trust and knowledge ownership as they engage themselves in a collective and collaborative action planning.

##### **4.1 The meaning of Implementation YSM Workshops**

The meaning of implementation of Yonmenkaigi Workshops can be explained as follows;

[1] Sustaining an activity of local community for community development: Implementation of YSM Workshops was continued as only sustainable activity of PEED by a local community after the ending of activities of PEED in March 2010.

[2] Developing collaborative action plant to sustain activities: Bumi Lestari developed collaborative action plan as action plan for future their activities not one time event though implementation of YSM

Workshops. Since the establishment of Bumi Lestari, they could have their first matrix for activities of Bumi Lestari. Bumi Lestari also could have the opportunity to know what divisions should do and what kind of authorities they have.

[3] Finding of human resources: Though implementation of YSM Workshop modules, Bumi Lestari could find their human resources as future leader of their organization. After implementation of YSM Workshop modules, the implementation of additional workshop, i.e. workshop that had been conducted in Jakarta was also a continuation on efforts to make the Bumi Lestari be recognized more by other institutions. Some representatives from related institutions (Ministry of Public Work of Indonesia, other regencies, BAPPENAS, foreign donors, etc) participated in the Jakarta workshop. Moreover, Bumi Lestari presentation by a new leader and a positive response from participants made the entire workshop strategies are considerably effective.

[4] Providing a sharing space between local community organization and local government: Though especially presentation action plan of Bumi Lestari in Workshop C, YSM workshop provided a sharing space of perception about community development based on local community between local community organization and local government. The Workshop C was also considered a success one, in term of the numbers and types of participants, i.e. around 12 persons from Bumi Lestari and around 25 representatives from agencies of Magelang regency, and in term of strengthening the presence Bumi Lestari in Magelang regency.

[5] Using of human recourses: It is our work of next time that not only finding of human resources but also using of human recourses for community development based on residents of local community. We provided a chance to improving of facilitator activity using implementation of YSM Workshop modules.

##### **4.2 Mutual knowledge development between each stakeholder**

Mutual knowledge development could be achieved through the implementation of collaborative action plan in disaster risk management for at the community level by

exchanging the knowledge owned by each stakeholder (KU, UGM, local communities and local government). Each stakeholder has a role to improve the activities of Bumi Lestari as community development as shown Table 2.

Table 2 The role of each stakeholder for the activities of Bumi Lestari

Stakeholders	The role of each stakeholder
Bumi Lestari	the subjective of activities for community development
Local Government	Support for activities of Bumi Lestari
UGM	Accelerator to improve activities of Bumi Lestari
KU	Consultant to implement YSM Workshops

## 5. Conclusions

The Yonmenkaigi system method has been utilized for developing a collaborative action plan for capacity building on disaster risk management for sustainable community development in local community of Merapi Volcano. The participants of Bumi Lestari, Kemiren village in Yogyakarta, Indonesia produced what participants thought an implementable collaborative action plan for improving of their organization through the Yonmenkaigi system method.

Therefore, there remains much room for further research. As of now (August, 2010) some of the action plan in the Merapi region are being put into practice, and the author hope to monitor the upcoming process of its implementation, in collaboration with between Bumi Lestari, Kemiren local government, UGM, and KU. This remaining research challenge may need an enduring process of field works in the case study area and for this purpose each stakeholder (Bumi Lestari, Kemiren local government, UGM, and KU) should plan to apply adaptive management. We will be able to follow up later in the near future.

The Merapi volcano erupted in Jogjakarta, Indonesia on October 26, 2010 killing about 122 people and resulting in the evacuation of about

100,000 more on November 5, 2010. The Kemiren Village was also evacuated. Fortunately, there were no victims in Kemiren Village. Although we do not yet know to what extent the adaption of the improved Yonmenkaigi workshops was helpful, the workshop provided the opportunity for local community to discuss their problems and develop collaborative action plans for disaster risk management activities at the local community level through participation in municipal affairs.

## Acknowledgements

The authors are grateful to Staffs of Comdev Merapi team of Gadjah Mada University and Kemiren Community in Mt.Merapi Area, Indonesia.

## References

- Jong-il Na, Norio Okada, and Liping Fang, 2009. "A Collaborative Action Development Approach to Improving Community Disaster Reduction Using the Yonmenkaigi System," *Journal of Natural Disaster Science*, Vol.30, No.2, pp.57-69
- Jong-il Na, Norio Okada, and Liping Fang, 2009 "Collaborative action development for community disaster reduction by utilizing the Yonmenkaigi system method," *Proceedings of the 2009 IEEE International Conference on Systems, Man and Cybernetics*, San Antonio, TX, October 11-14, 2009, pp. 1929-1934
- Jong-il NA, Norio OKADA, Ir. Bambang HARGONO, Dipl. HE, M. ENG., Djoko LEGONO and Naoki UEHATA, 2010 "A Challenge of Mutual Knowledge Development in Implementation of the Yonmenkaigi System for Sand Mining Management in Local Community of Merapi Volcano," *Journal of Natural Disaster Science*, Vol.31, No.2,79-91
- Study Center for Engineering Science Gadjah Mada University and DIs Prev Res Institute Kyoto University, "Study on community development at Mt.Merapi area, 2010, Final Report," 2010.
- Yachiyo Engineering Co., Ltd., and Associates, 2009 "Study Report for Institution and Community Developmnet (Final)", Consulting Services for Urgent Disaster Reduction Project for Mt. Merapi, Progo River Basin (IP-524),

## メラピ火山地域コミュニティの災害リスクマネジメント能力向上を目指す四面会義ワークショップの 実践的な適用

羅貞一\*・岡田憲夫

\*鳥取大学工学研究科

### 要 旨

本稿ではインドネシア・メラピ火山地域コミュニティの災害リスクマネジメント能力向上を目指す四面会義ワークショップの実践的な適用事例を紹介する。四面会義システムは地域コミュニティの減災を目的にする協力的かつ実践可能な行動計画案を作成する参加型ワークショップ技法である。メラピ火山地域コミュニティの四面会義ワークショップの実践的な適用を通して、地域コミュニティでは1) 持続的な減災活動のための協働的行動計画案の作成, 2) コミュニティと行政との情報の交流場の提供, 3) 地域開発のための取り組み能力の向上, 4) 地域コミュニティの人材育成などの活動が行われた。

**キーワード:** 参加型手法, 四面会義システム, メラピ火山, 災害リスクマネジメント