

A Challenge of Mutual Knowledge Development in Implementation of the Yonmenkaigi System for Sand Mining Management in Local Community of Merapi Volcano

Jong-il NA *
Norio OKADA **
Ir. Bambang HARGONO
Dipl. HE, M. ENG.***
Djoko LEGONO****
Naoki UEHATA*****

*Graduate School of Urban Management Engineering

**Disaster Prevention Research Institute, Kyoto University, Japan

***Serayu-Opak River Basin Main Office, Directorate General of Water Resources, Ministry of Public Works,

****Civil and Environmental Engineering Department, Faculty of Engineering,

*****International Division, Yachiyo Engineering Co., Ltd., Tokyo, Japan

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ABSTRACT

This paper introduces a challenge of mutual knowledge development in the implementation of the Yonmenkaigi system as a participatory workshop method to improve sand mining management of local communities in Merapi Volcano of Indonesia. It was applied for the formulation of action plans on community-based sand mining management in Pilot Project implemented by Gadjah Mada University in Yogyakarta, Indonesia 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. A participatory workshop method called the Yonmenkaigi system method, originally developed in a local community in Japan, has the following main steps: carrying out SWOT analysis, completing a Yonmenkaigi Chart, debating between groups, and presenting the group action plan. A case study carried out in the Kemiren village, Yogyakarta, Indonesia in August 2009, demonstrates how residents who are interested in disaster mitigation and management in a local community can collaboratively develop an implementable action plan for Sand Mining Management of local community. Based on the above case study, this paper categorically itemizes and formalizes two types of knowledge development needed for introducing the Yonmenkaigi system method to the cases in Indonesia. The first type of knowledge development is that type of knowledge which is generated as an outcome through the process of implementing a whole set of the Yonmenkaigi system. The second type is shown to be modeled as mutual knowledge development between “seed knowledge providers” and “custom knowledge providers”. Illustrations are made from the field work results and the two types of knowledge development have been specifically described and analyzed.

Keyword: a participatory workshop, Yonmenkaigi system method, sand mining management, collaborative action plan, mutual knowledge development

I. Introduction

This paper introduces the development of the Yonmenkaigi system for sand mining management as a participatory workshop method to improve everyday disaster response capacity within communities. A method called the Yonmenkaigi system method, originally developed in a local community in Japan^[5], is presented as a case study conducted by Gadjah Mada University (hereafter called UGM), Indonesia, in collaboration with our 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. One component of the above project called “Study on Community Development at Mt. Merapi Area” consists of three project components, namely “Pilot Project”, “Evacuation Drill”, and “Events”. KU introduced the Yonmenkaigi system method program as a part of Pilot Project which was agreed to include the facilitator buildup program of the Yonmenkaigi system method to improve Pilot Project. This made us researchers from Japan to develop yet missing implementation knowledge such as how to revise and adapt the whole process of introducing the Yonmenkaigi system method to a new issue in a different country with a different culture and history, that is, participatory management for sand mining-troubled communities in the Merapi Region, Indonesia.

This paper intends to first describe specifically the processes of introducing the Yonmenkaigi system method by making adaptation for the Merapi mountainous communities in sand mining management (hereafter called SMM). It is also intended to

categorically itemize and formalize types of implementation knowledge needed for introducing the Yonmenkaigi system method to the cases in Indonesia. Development of such implementation knowledge is shown to be modeled as mutual knowledge development between “knowledge providers” and “knowledge customers.”

II. Yonmenkaigi System Method

1. Overview of the Yonmenkaigi System Method

The most current participatory workshop methods developed for disaster management mainly address disaster risk awareness or focus on personal post-disaster actions, despite an increasing need to create an implementable action plan in advance by going beyond enhancing risk awareness. A new type of workshop method for developing implementable action plan is required in order to enable participants from a local community to collaborate together^[4]. The Yonmenkaigi system method is exactly this type of method which has been developed and promoted by the authors.

The primary objective of the Yonmenkaigi system method is to develop a collaborative action plan for a community in a workshop with a disaster risk context. In order to achieve the objective, this method focuses on four broad aspects of management, public relations (PR) and information, soft logistics, and hard logistics. These four aspects (roles) are considered essential issues required for future action. The time dimension is also considered with each of these role sharing elements^[3].

The Yonmenkaigi system method provides a platform for face to face communication for participants to become aware of the concerns of others, to discuss the current state of their community and to collaboratively develop an implementable action plan. Other workshop methods lack this type of system^[4]. The emphasis of the Yonmenkaigi system method is placed on disaster mitigation and preparedness rather than on post-disaster situations. In a Yonmenkaigi workshop, participants are expected to play the roles of both planners and executors as subjects of the action plans.

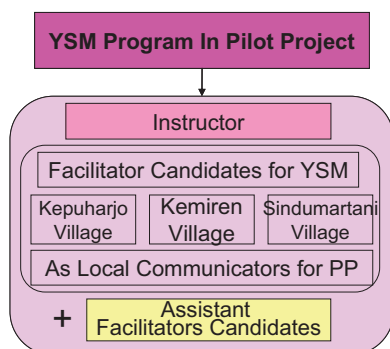


Figure 1. The Organization Chart of the Pilot Project of Gadjah Mada University

2. The Standard Process of the Yonmenkaigi System Method

The standard process of the Yonmenkaigi system method that has so far been formalized in Japan by authors and others, consists of four main steps: carrying out a SWOT analysis ^[1], completing the Yonmenkaigi Chart, debating, and presenting the action plan chart, as shown in Fig. 2. The SWOT analysis provides the participants with an opportunity to share their ideas and views about the current situation of the community, which leads to a holistic and detailed view of risks faced by the community and future actions.

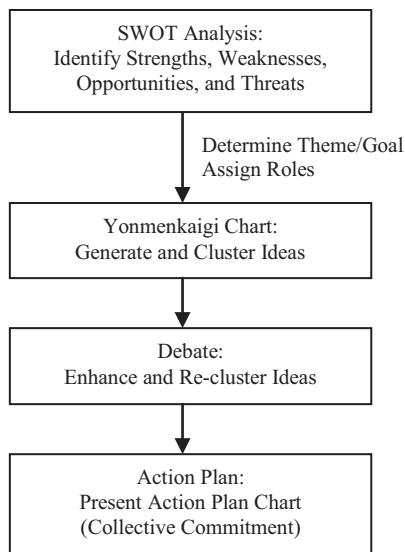


Figure 2. Standard Process of the Yonmenkaigi System Method ^[4].

Making a diagnosis of the current conditions of the community identified during the SWOT analysis, participants then determine the main topic/goal of the workshop. Afterwards, the participants are divided into four groups as roles, i.e., management, public relations (PR) and information, soft logistics, and hard logistics. Participants start to express their action components and views in accordance with their assigned role by utilizing also color cards corresponding to each group/role in a specially designed chart called Yonmenkaigi Chart, as shown in Fig. 3. The action components for each of the roles are grouped according to one of the time frames: within 3 months, within 6 months, within 1 year, and beyond 1 year. The implementable collaborative action plan is a coordinated combination of the actions developed by the four roles/groups ^[3].

Once each group completes the articulation of its action components, debating among groups is carried out to enhance the collaborative action plan. The Yonmenkaigi system method has two types of debates-general debate involving inter-group debate and inverse debate involving the exchange of the positions and roles of two groups facing each other across the Yonmenkaigi Chart.

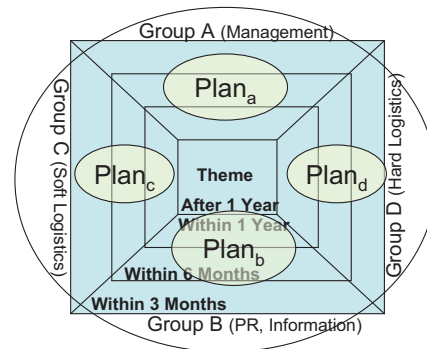


Figure 3. Typical pattern of the Yonmenkaigi chart ^[4].

III. Project Description

Our research team from Kyoto University (KU) was asked to collaborate with UGM particularly in methodological application and workshop implementation. The seed knowledge provider in terms of introducing the Yonmenkaigi system method to the Merapi Region is KU, with UGM as its first hand customer. The end customer is considered to be a collection of local residents (community people participating in the project from Merapi Region). Implementation gap in knowledge is identified to exist on both ends, i) the seed knowledge provider and the first hand customer, and ii) the first hand customer and the end customer. Since customers, either the first or the second, are expected to contribute to adding on knowledge from the viewpoint of customers, let us call them “custom knowledge providers”. In terms of implementing the Yonmenkaigi system method, the seed knowledge provider and custom knowledge providers should learn each other and fill in a gap of knowledge between them.

Obviously there exists a large implementation gap in knowledge between the seed knowledge provider and the end customer knowledge provider; knowing this, KU decided to gain access to local communities indirectly via UGM. Therefore the

above two types of implementation gap in knowledge came into scope.

The first challenge for the project team in implementing the Yonmenkaigi system method was an issue of capacity build-up of facilitator expertise owners, i.e., how to mutually develop facilitators for the Yonmenkaigi system method.

That is, in order to fill in the gap at both ends, human development of facilitators as intermediate knowledge owners was intended to be challenged by the instructor (mainly Na Jong-il, one of the authors) as an effective means. Here “intermediate” means bridging a gap and bringing something from both ends. Based on this premise, the members of the Pilot Project included the principal investigator, facilitator candidates of the Yonmenkaigi system method and local communicators for each village as shown in Fig.1. To make up for some of the yet remaining gap uncovered by the facilitators, local communicators were selected from the UGM staff to collaborate with each village in the project. As stated later in detail they were asked to serve as both assistant facilitator and an active participant.

Considering a workable time schedule for training (building up) facilitators for conducting the method of Yonmenkaigi workshop, KU has proposed and implemented a training program for facilitators. They were requested to take up buildup programs with two steps, namely Step 1 (beginners version) and Step 2 (semi-advanced version). The Step 1 conducted to May from April in 2009, and then the Step 2 was conducted (facilitated and instructed about facilitation) for the period from June 1st to 3rd in 2009 by the first author of this paper.

1. Illustrations: The Yonmenkaigi system method in Pilot Project

To elaborate on the aforementioned major points of our fine-tuning works to implement the Yonmenkaigi method, illustrations of the specifics of bringing in the Yonmenkaigi system method to a particular community are made in the following:

A special Yonmenkaigi system programs was developed and proposed to the implementation of the Yonmenkaigi system method in local communities, and the same was used in the facilitators training for UGM, respectively, as follows:

To produce a collaborative action plan to im-

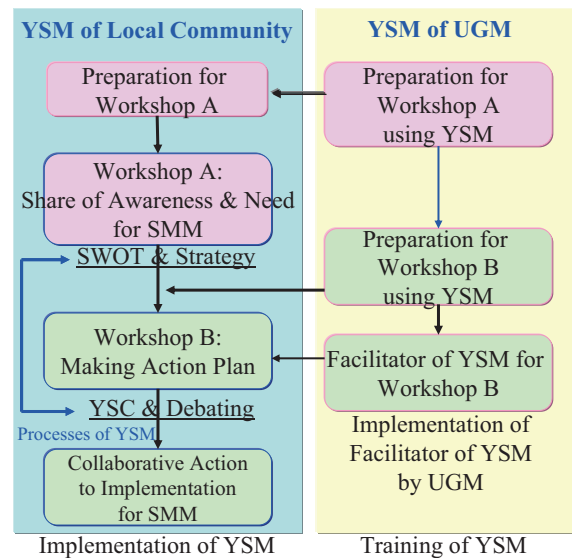


Figure 4. The progress of Workshop A and Workshop B using the Yonmenkaigi System Method (YSM) in Pilot Project

prove the sand mining management activity under the Pilot Project, firstly Workshop A and Workshop B using the Yonmenkaigi system method were planned as shown in Fig.4. The objectives of Workshop A are (1) to share the opinions of participants, as the representatives of each village, on their needs of sand mining management through free style discussions, and (2) to determine the outline of topics for the collaborative action to implementation of sand mining management at local community level. The objective of Workshop B is to follow up the Workshop A to make a collaborative action plan for each selected village using the Yonmenkaigi system method.

It is noted here that in order to introduce the Yonmenkaigi system method to the selected villages in Merapi Region, we needed to consider their local conditions (such as people’s unfamiliarity with this type of workshop method, and cultural differences in communication and deliberations). This is why we decided to make the above-mentioned modifications on the standard procedures of the Yonmenkaigi system method which have been commonly used in Japan by the authors and others.

In the following analysis two more points are addressed. That is, someone has to serve as i) an instructor, and someone has to serve as ii) a facilitator and also a local communicator of the workshop.

As mentioned above, the first author served as the instructor of the Yonmenkaigi system method. For this purpose “preparation workshops” were first

introduced before the implementation of Workshop A and Workshop B by using the Yonmenkaigi system method. The objectives of these preparation workshops were (1) to instruct and train the facilitators of UGM for the Yonmenkaigi system method, and (2) to develop an instruction manual of Yonmenkaigi workshops for the facilitators in UGM. This manual includes the process and work descriptions for both the facilitator and organizer of Workshops A and B. The facilitators of UGM carried out Workshops A and B on August 11 and 13, 2009 according to the process and work descriptions.

2. Mutual Knowledge Development for Facilitator Training Program of the Yonmenkaigi system method

We here analyze the above-mentioned additional human resource development from the viewpoint of mutual knowledge development to fill in an implementation gap identified for introducing the Yonmenkaigi system method into the target communities in Marapi.

To carry out effectively Yonmenkaigi workshops, questions were raised; who can offer such a communication skill to guide and coordinate the consistency and quality of collaborative actions among participants, who also shares essential knowledge and information on the respective local community, and also who has sufficient understanding of the Yonmenkaigi system method. The role model for such an integrated competence was decided to be called the facilitator of a Yonmenkaigi workshop.

Since in UGM there was none found to serve as facilitator, KU offered UGM a support to develop a facilitator buildup (training) program. This was the seed knowledge provided by KU, and UGM provided local knowledge needed for facilitators and also helped KU identify qualified candidates from their staff.

The purpose of Facilitator Training's Program of the Yonmenkaigi system method was to speed up and effectuate more systematically intended activities under the Pilot Project. Also, there was a crucial need to improve the competence of facilitator candidates. Another challenge was to how to train facilitators to own virtually experience required for the facilitation of the Yonmenkaigi Workshop with local community people by going through the whole process of the Yonmen-

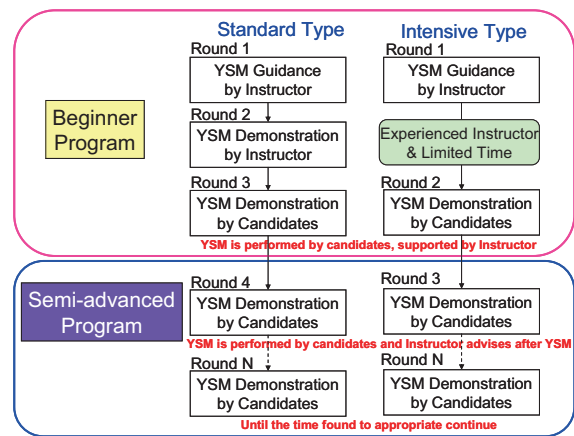


Figure 5. Facilitator Training Programs for UGM facilitator candidates in the Yonmenkaigi system method

kaigi system method. The training procedures consist of the two steps, namely Step 1 as Beginner Program, and Step 2 as Semi-advanced Program as shown in Fig.5.

The focus of training in the Beginner Program is to develop basic understanding of the processes of the Yonmenkaigi system method. The purpose of the Semi-advanced Program is to develop capacity to facilitate the Yonmenkaigi workshop as a facilitator, who is also trained to make a diagnosis by analyzing the current situation of local community. The facilitator candidate 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 Pilot Project's community issues. Beside the training practice of the Yonmenkaigi workshop, a short interview combined with questionnaire survey was conducted by the KU-UGM survey team regarding what the facilitator trainees found about both the significance and value of the Yonmenkaigi system method as well as its difficulties and deficits to be overcome. These data were collected to analyze how to make Yonmenkaigi workshops better conducted by considering the local specifics of the Merapi community participatory cases.

Thereafter thus trained facilitators of Pilot Project of UGM carried out the implementation of a participatory workshop in the selected communities for sand mining management by using the Yonmenkaigi system method. For this purpose, participants of local communities related to Pilot Project created the action

plan to carry out Yonnenkaigi workshops for sharing the need of sand mining management and to clustering ideas to implement sand mining management of local community level by using the Yonnenkaigi system method in August 2009. As shown in Fig.1, the Yonnenkaigi system method was implemented in three villages, namely Kemiren, Kepuharjo, and Sindumartani in Mt. Merapi region. In the following analysis this paper focuses the implementation of the Yonnenkaigi workshop in Kemiren village case, conducted on August 2009.

IV. the Kemiren Village Case Study

1. 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 north-western 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) namely; Dusun Jamburejo, Dusun Kemiren, and Dusun Kamongan Cilik. Kemiren village has 1,141 people and 307 households as of 2007 over area of 487.629 ha, as shown Fig.6.

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. Almost 60 % of the inhabitant working as Salak farmer, only 6 % work in rice field in where used to be the sand quarries. The rest are working on informal sector.

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.



Figure 6. Kemiren Village in Mt. Merapi, Indonesia (edited from <http://maps.google.co.jp/>)

Massive sand mining activities started in Kali Bebung, upland Kemiren village from year 2000 after the Mt. Merapi eruption. From that time, the sand mining activities began to use excavator equipments and to involve more than one thousand number of trucks. Most of the sand mining company and its workers comes from Temanggung District and Wonosobo District, out of Magelang District. Since the sand mining activities forced them to work long each day, the workers built a semi permanent barrack around the sand quarry to stay during mining activities, As mining industries increased, several sand depots (sand storages) were developed within Kemiren village by either land's owners or land tenants^[6].

The main problem of sand mining activities in Merapi may be described as follows:

- (i) Active volcanic eruptions may cause disasters but also provide a massive volume of sand resources for construction materials and others to be mined from across valleys susceptible to volcanic risks, thus making sand mining industries more economically activated. Therefore, the sand mining has become an important income source for local people in the Merapi region.
- (ii) Intensive and uncontrolled sand mining activities tend to cause non-registered sand miners grow in number, and results in increased improper excavation, and pollution and accidents due to heavy traffic, etc.,^[7].

In fact villagers were troubled more and more by the increasing of mining activities and traffic of including trucks and sand miners mobility passing through the village as well as expanding activities in

sand depots for loading and unloading of excavated sands from local mines mined. Noise pollution and several crime incidents have been reported by the villagers as the bothering impacts of both sand mining activities in Kali Bebeng and sand depots in their neighborhood.

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. Thus villagers intended to collaboratively work with the government and sand depots' owner as well as mining companies. It was intended to localize the sand depots to some proper place.

2. Implementation of The Kemiren Yonmenkaigi Workshop

Why the Yonmenkaigi system method was introduced in Kemiren village? The major reasons are:

- i) It was intended to work out some modest initiative that can be taken by each respective community, and involvement of the mining company to resolve conflicts between Kemiren community and sand miners was not challenged.
- ii) In stead, the main purpose of the workshop in 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 the sand mining impact to their maximum capacity.
- iii) The fatal lack of capacity on the side of the community people was their inability and inexperience to systematically and logically make a sound diagnosis of the current state of their community and to work out a collaborative action plan so as to achieve their own goal.
- iv) Therefore, the Yonmenkaigi system method is the suitable participatory workshop method to improve the activity of sand mining management in local community.
- v) Importantly the Yonmenkaigi 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 ^[4].
For the reasons above, the Yonmenkaigi work-

shop was organized in the name of Bumi Lestari in order to lead the survey plan in Kemiren village on August 19, 2009. As the initiator, Bumi Lestari was interested in developing an action plan for conducting a survey of the traffic of Armada (trucks) passing Kemiren village. Bumi Lestari as the community institution in Kemiren village determined the topic of conducting a survey of sand trucks for those passing Kemiren village. 13 participants plus 5 facilitators were involved in the Yonmenkaigi workshop process. Participants of the Kemiren Yonmenkaigi workshop are from Kemiren village, comprising the member of Bumi Lestari (5 people), Karang Taruna (Local Youth Organization) (2 people), and village government staff (6 people) as shown in Fig.7. Participants represented most of concerned parties in Kemiren village except for the sand miners coming from outside.

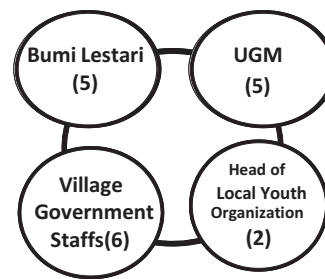


Figure 7. The Identification of Participants in Kemiren Workshop

3. Preliminary groundwork before the Yonmenkaigi workshop

One main facilitator and four sub-facilitators as both participants and members of Pilot Project team in UGM in each group were selected and engaged to promote the process of the Yonmenkaigi system method. The Kemiren communicator of UGM, who served as the main facilitator, As described before, he was then asked by the KU-UGM project team to serve as the main facilitator. He explained and introduced to the participants the rules and methods of the Yonmenkaigi workshop, thus facilitating the whole process. The KU-UGM project team advised that the Yonmenkaigi workshop should be designed to last for two and half hours, considering the time constraints and limit of enduring process for local participants from Kemiren village. For the purpose of documentation and following analysis, the process was recorded by one keeper of records and one cameraman.

To set a framework for collaborative action planning, both the long term and short term scenarios of sand mining management for Kemiren village were explained to the participants on August 19 by UGM based on the results of the discussions which had been conducted beforehand within Bumi Lestari as guided by UGM. The SWOT results of the Workshop A organized on August 11, 2009 were used to assist the participants in carrying out the SWOT analysis for the case of Kemiren Village. The participants decided that the main theme of collaborative action linked to implementation in the Pilot Project was to survey traffic conditions of sand trucks in an area of Kemiren village. They selected a two month period from September to October, 2009 as a realistic time frame for achieving the goal. This assessment was overall made by considering the following. a) It is necessary to collect sufficient information about the mobilization of sand trucks. b) This information will be used to determine both the proper place of sand depots and depot's capacity needed. Based on the results of the SWOT analysis, the following strategy was compiled as shown in Table I .

TABLE I. MAIN THEME SET THROUGH SWOT ANALYSIS IN KEMIREN VILLAGE

Main Theme	Survey of Armada traffic (sand trucks)
Objective	To count the number of sand and gravel trucks and To measure the sand height in trucks from mining sites in Bebeng river, and passing through Kemiren village in a week
Time	2 months (from plan to its implementation)
Target	Armada (sand trucks passing through Kemiren)
Executor	LPSPD BUMI LESTARI

From the 17 participants, each of four groups was formed to play the roles of management, PR & information, soft logistics, and hard logistics, respectively. In other words the corresponding responsibilities of the four groups were top-management, communication to other organizations related to the theme, human resources, and physical resources; thus each of them working collaboratively to achieve the main theme (topic)/goal of the workshop as determined in the earlier process.

With the above-mentioned preliminary groundwork, the Kemiren-tailored Yonmenkaigi workshop was conducted by following basically the standard pro-

cedures of the Yonmenkaigi system method, that is (1) SWOT analysis; (2) defining the main theme based on SWOT analysis; (3) working on Yonmenkaigi chart; (4) debating to improve the consistency and quality of collaborative activity; (5) final presentation of action plan. Note that the whole processes of the Kemiren-tailored Yonmenkaigi workshop was divided into two stages, one that deals with SWOT analysis and the second that deals with making the collaborative action plan.

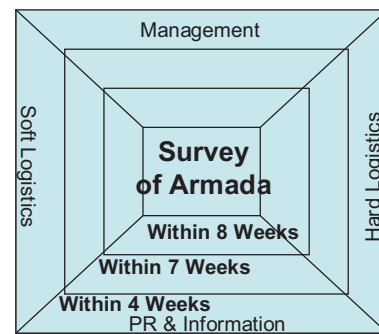


Figure 8. The Time Frames and the Roles of the Kemiren

The goal of this collaborative action is to know the number of sand and gravel trucks and the rate of sand transportation per week to its destination (collection and distribution depot) from mining sites in Bebeng River passing through Kemiren village. The target of a survey is the trucks of Armada passing through Kemiren village. the funding source for survey implementation is decided to come from both Kemiren village and Bumi Lestari. It also decided that the survey including the preparation and data entry will be conducted during two months (September - October 2009). The time frames and the roles of actions considered in the Kemiren Yonmenkaigi workshop are shown in Fig. 8 as within 4 weeks (September 2009), within 7 weeks (October 2009), within 8 weeks (end of October 2009). In the end of the action plan (end of October 2009), a workshop will be held to announce the result of survey to related parties and to prepare the follow up plan.

After some revisions of action components among each group during debating, the action plan of the Yonmenkaigi chart as shown in Fig. 9 was completed .



Figure 9. Picture of Yonmen chart after debating of Kemiren.

4. Analysis of Collaborative Action Development during Debate

In the Yonmenkaigi workshop method, cards are used by participants to express and exchange views and ideas during the debating phase. During the debate stage, the multi-level knowledge development process of the debating practice is reflected through card movements. For analytical purpose, several basic rules for the movement of cards as can be retrieved from the recorded data (snapshots made in the due processes) have been identified as follows [4]:

- Add a new card: a new action component has been identified. During the Kemiren Yonmenkaigi workshop, for example, the groups playing the role of soft and hard added new action component cards of “Making survey format” and “Survey on trucks”.
- Move a card: the action component is more suitable or preferable to the group the card moved to rather than to the original group.
- Delete a card: the action component is no longer needed or desirable.
- Arrange cards: cards are arranged and grouped by considering the time frames of the action components. For example, an action component card related to survey of Armada in management group was shifted from within 4 weeks to within 7 weeks in the same group.
- Collaboration shifts of cards: some action components may require collaboration among more than one group. This indicates that the groups concerned or overlapping groups will work

together—on the same action plan component. Because each of the groups has its own limitations, some action plan components require collaboration across the groups to manage the action plan components more synergetically [4]. During the Kemiren Yonmenkaigi workshop, the action component card of “developing the contents required in survey of Armada”, the card of “meeting with related government agencies in preparation stage of field -activity”, and other 22 cards in the management group were moved to the border zones between the management group and the other groups. It was noted, for instance, by participants that Kemiren village needs to work together with other stakeholders to implement these action components because its own capacities are limited.

In the Kemiren Yonmenkaigi workshop, as shown in Table II, the four groups, i.e., management, PR & information, soft logistics, and hard logistics first presented 40, 25, 22, and 29 action component cards, respectively, or a total of 116 action cards placed on the Yonmenkaigi Chart before debating. After debating, the numbers of action component cards increased to 41, 33, 31, and 34, respectively, or a total of 139. In Table II, the cards of collaboration (shifts) are counted in each of the collaborating groups.

TABLE II. ACTION PLAN COMPONENTS BEFORE AND AFTER DEBATE

	Management (M)	PR & Information (I)	Soft Logistics (S)	Hard Logistics (H)
Before debate	40	25	22	29
Changes to action plan components after debate				
Arrange	1	2	1	1
Add	0	0	1	1
Move	0	0	0	0
Delete	0	1	0	0
Collaborate	23	6	13	2
No change	17	24	16	30
Total	41	33	31	34

The above discussions show that movements of cards and debating process by use of the Yonmenkaigi Chart systematically lead to mutual knowledge development for collaborative actions. This type of mutual knowledge development is generated from within the participants together with from the formulated proce-

dures for performing the Yonmenkaigi Chart-based deliberations. Such knowledge generated and owned by participants are outcomes of the implementation of the Yonmenkaigi system method. It is therefore categorically different from the already mentioned types of mutual knowledge development for filling in missing knowledge for implementation. The former is “the outcome of implementation,” whereas the latter is “the knowledge development for setting a communication platform.” This kind of knowledge development is needed for actually practicing a Yonmenkaigi system method-based workshop.

For complementary discussions we will here take up a little bit more the latter type of knowledge development. Complementary Discussion: Development of Knowhow on Setting for Implementation

Throughout the process of implementation of the Yonmenkaigi system method in local communities in Mt. Merapi, there were two organizational developments findings which are considered development of knowhow on setting for implementation: (1) mutual knowledge development between KU-UGM and local communities, and (2) a new style of facilitation in the Yonmenkaigi system method.

1) Mutual knowledge development

There were knowledge gaps between KU, UGM and local communities to implement Yonmenkaigi workshops for sand mining management in local communities.

For example, KU has the knowledge of the Yonmenkaigi system method but did not have enough knowledge of local communities as basic information for development of collaborative action plan of sand mining management in the selected local communities; KU also does not own a human network or the knowledge of human networking to involve the respective local communities in Mt. Merapi. UGM has already built good relationship and experienced with the local communities in Mt. Merapi, therefore UGM owns basic information about them. However, UGM did not have the knowledge of participatory workshop methods, such as the Yonmenkaigi system method, and did not have enough facilitation knowhow for the development of collaborative action plan at local community level. Local community people have knowledge of communities’ problems in sand mining management, but they did not have the knowledge of

participatory workshop method.

It is remarked that in order to solve the knowledge gaps between them, each of the stakeholders shared and combined their knowledge considering the strengths and the weaknesses of KU, UGM and local communities.

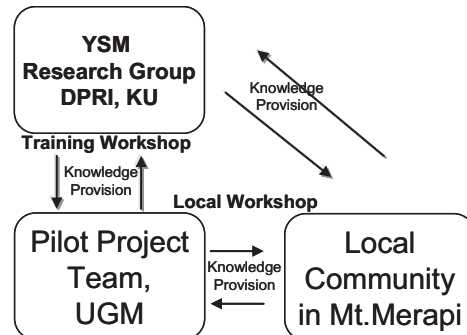


Figure 10. Mutual knowledge development of each stakeholder in implementation of Yonmenkaigi workshops

Mutual knowledge development could be achieved through the implementation of collaborative action plan in sand mining management in local communities by exchanging the knowledge owned by each stakeholder (KU, UGM, and local communities), as shown in Fig.10.

Other than the mutual knowledge developed between those three stakeholders, we also found the mutual knowledge developed internally among the members of UGM. By conducting the Yonmenkaigi system method to prepare Workshops A and B, the members of UGM could create the task demarcation document as a communication tool to understand internal information flow among them.

2) A new style of facilitation in the Yonmenkaigi workshop

A new style of the Yonmenkaigi workshop facilitation was proposed in order to implement the Yonmenkaigi system method in Mt. Merapi communities, considering the local situation. The typical facilitation of the Yonmenkaigi workshop, which is facilitated by one facilitator, was modified by adding the sub-facilitators into each group. Therefore, the new facilitation system consists of one main facilitator and four sub-facilitators as shown in Fig.11.

The following explains how we came to develop this new facilitation system. This is the process of mutual knowledge development to bypass a gap in

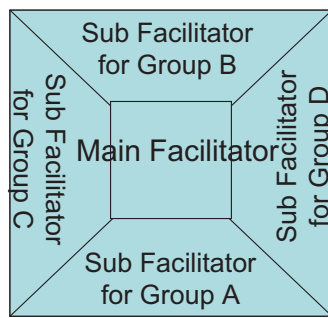


Figure 11. A new style of facilitation in the Yonmenkaigi workshop in Mt. Merapi community

implementation existing between the seed knowledge provider and customer knowledge providers.

With a view to effectively introducing the process of facilitation, given yet relatively non-matured level of facilitator’s experience and competence, we decided to add a supplementary role to that of facilitator. The new role is named sub-facilitator, who is expected to accelerate the procedure in the Yonmenkaigi workshop by supporting the main facilitator and guiding participants of each group. This role is important since there are gaps in social strata, education level including literacy and oral communication capacity to communicate in the standard Indonesian language, and level of familiarity with formal discussions among the participants in local communities. Thus the role of sub-facilitator is considered effective, particularly when main facilitator does not enough experience or competence to lead alone in the Yonmenkaigi workshop.



Figure 12. A structure of each group in Yonmenkaigi workshops in Mt. Merapi community

The local communicator of UGM in charge of Kemiren village who was selected from the UGM staff acted as the main facilitator, and four other facilitator candidates acted as sub-facilitator assigned to each group in the Yonmenkaigi workshop. The roles of the sub-facilitator included both that of assistant facilitator and that of a participant assigned to the group from Merapi communities as shown in Fig.12.

Sub-facilitators in the Kemiren Yonmenkaigi

workshop helped to write down action components when the participants expressed their ideas and opinions and to record action plan items of their group, also to explain to their community participants the roles of the group as well as the rules and procedures of the Yonmenkaigi system method in detail. Thus they are expected to make up for main facilitator’s role and also to softly guide their community participants by capitalizing on their knowledge of their local conditions and specifics.

V. Conclusions

The Yonmenkaigi system method has been utilized for developing a collaborative action plan for sand mining management for disaster risk mitigation in Mt. Merapi communities. The participants of Kemiren village in Yogyakarta, Indonesia produced what participants thought an implementable collaborative action plan for their village through the Yonmenkaigi system method.

Development of such implementation knowledge has been shown to be modeled as mutual knowledge development between “seed knowledge providers” and “customer knowledge providers.” Two types of knowledge development have been specified as instrumental for introducing the Yonmenkaigi system method to the cases in Indonesia. The first type of knowledge development is that type of knowledge which is generated as an outcome through the process of implementing a whole set of the Yonmenkaigi System. The second type has been modeled as mutual knowledge development between “seed knowledge providers” and “custom knowledge providers”.

A few more notes are made to consolidate our points.

- a. The second type of knowledge development is concerned primarily with knowledge needed for setting up an appropriate communication platform to operate a Yonmenkaigi workshop. Such knowledge development should be made before a Yonmenkaigi workshop is actually practiced in the target communities from the Merapi region. The knowledge developed may well be more commonly transferred to other areas in the Merapi region, or even beyond it, probably to other regions and other themes than for instance, volcanic disaster reduction.

- b. Given the second type of knowledge development, the first type of knowledge development is considered to occur during the process of practicing a *Yonmenkaigi* workshop. This type of mutual knowledge development takes place among participants of the workshop including facilitators and sub-facilitators. Knowledge acquired include the process-dependent knowledge generated and the outcomes of the collaborative action plan. Challenge is taken to fill in a gap as to how to collaborate to make a common diagnosis and to develop a collaborative action plan that is owned and committed by the participants. The knowledge is largely dependent on specifics of the areas targeted, themes selected, and participants involved.
- c. Irrespective of either type of knowledge development, it is achieved not merely through success events but also through “seemingly failure” events as lessons. For instance, it has been learned through communication failures caused by neglecting a considerable level of intellectual gap and literacy between what the standard version of the *Yonmenkaigi* system method takes for granted and what is actually the case with average community people in the Merapi region. This problem may be further explored by introducing the notion of “communicative rationality”^[8]
- d. Seed knowledge providers and customer knowledge providers may be reinterpreted in other words as “prosumers”^[9]. In this manner we can probably study the process of filling up an implementation gap as that of mutual knowledge development among “prosumers”.
- e. Systematic documentation and formalization of the knowledge developed was a primary concern of our research but it is fair to mention that any kind of knowledge development has to entail much of implicit knowledge and wisdom that may defy analytical attempts. It is also subject to any further change and evolution as further trials are continued to be made.

Therefore, there remains much room for further research. As of now (May, 2010) some of the action plan in the Merapi region are being put into practice, and the authors intend to monitor the upcoming process of its implementation, in collaboration with UGM. This remaining research challenge may need

an enduring process of field works in the case study area and for this purpose the authors plan to apply adaptive management. It is hoped that we will be able to follow up later in an another paper in the near future.

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