VI. Comparative case study

6.1 Background of the comparative case study

From the result of the pilot study, the significance of the case study of PAFM activities by voluntary citizens in the study site was indicated; additionally, it was clarified that the study target is effective for verifying the validity of the developed framework.

Therefore, the final case study was designed with aiming to:

i) Compare different cases from the study site in order to identify how the differences of the activities is related to SC; at the same time, how the SC effect work on these differences, and

ii) Apply social network analysis additionally since it seems effective to identity and compare structural SC between different cases (Fig.19).

The targets of comparative study were firstly selected by the preliminary structured questionnaire. The details of the flow and method of the case study is explained in the next section. In the comparative case study, the effects of six characteristics of SC (SBo, CBo, SBr, CBr, SLi, CLi) are examined in detail.

6.2 Flow and methods

The final case study was conducted in almost one year from September 2007 to September 2008, with the methods explain in Table 17 following the flow shown in Figure 21. Qualitative approaches, particularly interviews and participant observation were repeatedly applied during the whole process in order to induce and verify the assumptions. In the first stage of the research, structured questionnaire for identifying

actual condition of PA activities in study site was the major objective, which gives general idea of the context as well as induce assumptions. Subsequently, in the second stage, the final targets were selected from the preliminary results for conducting a comparative case study in order to verify the assumptions.

As explained in Table 17, results from each method are related each other following the temporal sequence: e.g., precedent results from participant observation or interviews were available for designing the structured questionnaire. Thus, qualitative results became gradually concrete. Finally, social network analysis was conducted for supporting qualitative results in the comparative case study. Network analysis was employed so as to analyze structural SC characteristics. The details of each method are explained below.

Literature and secondary sources collection

Literature and secondary data were collected and referred. Data include: 1:20000 map and statistical documents of Hachioji city, books related to the city, governmental documents related to the conservation area as well as to institutional settings, report and planning sheets that the targeted organizations store.

Open-ended interviews

Open-ended interviews were conducted with two officers from the government in order to extract governmental intentions and expectation for voluntary activities as well as to collect information about the targeted conservation area: one from the metropolitan government and the other from the city government. The interviews were conducted by free talking as it is the first stage of the research to collect information without any biases, although the interviewer has intention what is expected to extract from the interviews. Interviews lasted 1-2 hr, and detailed notes were taken during each interview

and were later converted into transcripts for summarizing[32].

Participant observation

Participant observation was repeated in almost one year during the whole process of the research: i.e., in the environmental festival in Hachioji, six selected activities by voluntary organization in wooded areas and two voluntary activities in the conservation area by the targeted organization. Participant observation is most useful way to get to know the actual conditions of the study targets. In addition, interactions between actors during activities are most important information sources for SC analysis. Photos and detailed notes are taken during every participant observation in order to examine them as visual and text data later.

Structured questionnaire[33]

Structured questionnaire aiming to clarify and to analyse the actual conditions and challenges of voluntary PA activities in Hachioji city was conducted. It is expected that the results from the questionnaires gave the basic information of organizations and their activities in the study site since there is no such data exist in the city. Therefore, it is the first survey for comprehending the general information of those organizations in the city. Questions were designed and structured from the results of preliminary research such as interviews and participant observation. Questionnaires were mailed to the representatives of 38 organizations that are registered on the list of 'natural conservation

[32] This method comes from *content analysis* which generally aims to collect large amounts of textual information and to systematically identify its properties so as to examine by most frequent used keywords, which makes it possible to summarize the structures of the communication content.

[33] See appendix C to refer the structured questionnaire.

organization in Tokyo[34], and 24 organizations responded (the collection rate was 63%). Since the questionnaire aims to comprehend the actual condition firstly, most of the questions are open-ended in order to avoid any biases in ready-made questions. The answers of the open-ended questions were categorized by KJ methods[35] for after-coding; then finally, the categorized keywords were aggregated.

Semi-structured interviews

Semi-structured interviews were conducted with two officers from the government and two representatives from the targeted organization in order to support findings from preliminary research including participant observation and semi-structured interviews. The interviews were conducted with question sheets that are structured from the results of preliminary research. Each interview was conducted within 2 hr, taking notes on the question sheets and the sheets were carefully examined later.

Qualitative questionnaire

The same questionnaire as employed in the pilot study was conducted to members of the one of the targeted organizations[36]. It is mainly for clarifying SC in the study target as well as other related factors.

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[34] This is the registration system of Tokyo metropolitan government for promoting green volunteers that work voluntarily for any natural conservation activities including forest management, green park management, environmental education, and so on. Any organization can be registered. Since there is no such registration system in Hachioji city, this is the newest and largest information about the voluntary organization in the city.

[35] The KJ method developed by a Japanese ethnologist, Jiro Kawakita, which helps interpreting and organizing collected filed data. The KJ method builds upon Charles Pierce's notions of abduction and relies upon intuitive non-logical thinking processes. The method based on the group-orientation model were developed and diffused throughout Japanese academic circles and management. Briefly, the process is categorizing and summarizing all the collected data by keywords and classifying them into several meanings.

[36] In order to compare the results from two different organizations, the same questionnaire was employed for the other organization.

Social network analysis

From the results of pilot study, it is supposed to effective to employ social network analysis for analysing structural SC characteristics (Fig.19). To identify the tie structure, *name generator* and *name interpreter* approaches (Burt 1992; Yasuda, 1997) were applied. The details of the process are shown in Figure 20. Firstly, it is important to identify *operational definition*, which means to identify what to be measured and how it should be measured. In this case studies, the density and strength of ties are the target for analysis in order to visualize the structure of ties among all the stakeholders; therefore, the existence of ties and the frequency of interaction of those ties are examined. Next, by conducting interviews with questionnaires[37], *name generator* to identify the stakeholders of each participatory activities and *name interpreter* to clarify the frequency of interaction of each person were applied. Those approaches are useful to figure out structural SC among stakeholders. Final analysis was done by the soft ware UCINET 6.

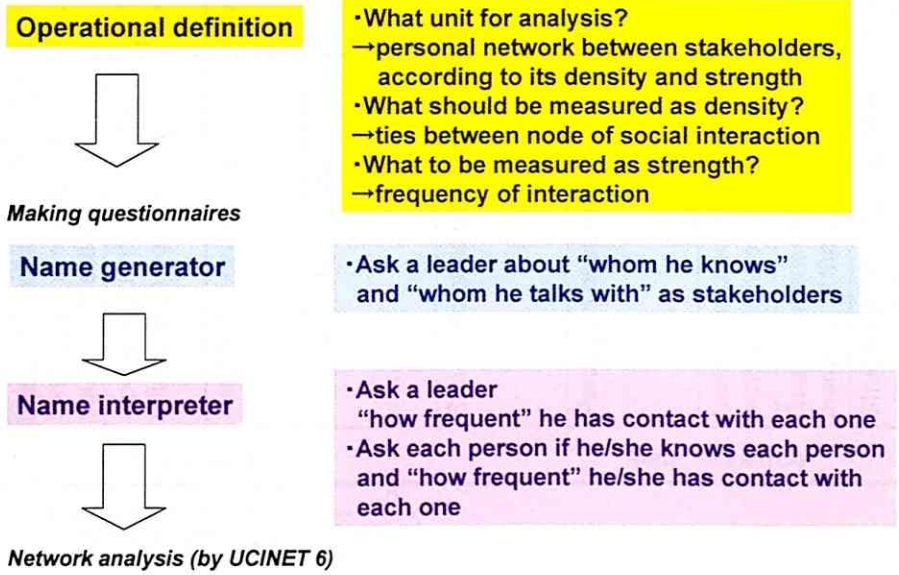


Fig. 20 The process of social network analysis

[37] See appendix D to refer structured interview for the network analysis.

Tabel 17　Methods applied in the comparative case study

Temporal sequence

	Research methods	Targets	Results
Pre Research	Literature and secondary sources collection	Data related to the study site	Identifying context: characteristics of the study site, stakeholders, institutions,
	Open-ended interviews with officers from governments	1 officer from the metropolitan government 1 officer from the city government	Gathering information and governmental intensions for designing structured questionnaire
	Participant observation	Environmental festival in Hachioji	Gathering as much as activities' information from all the voluntary organizations
	Participant observation	6 selected voluntary organization activities for green conservation in Hachioji city	Clarifying general conditions and challenges of voluntary PA activities: available for designing structured questionnaires
	Structured questionnaires	38 voluntary organizations work actively in Hachioji city	Clarifying and analyzing actual conditions and challenges of voluntary PA activities: for selecting the final study target
Main Research	Participant observation	2 targeted voluntary organization activities: *Shiroyamate* forest lovers activities HO greenery club activities	Clarifying actual conditions and challenges of the activities and interactions among participants: observation of SC
	Semi-structured interviews with representatives of the groups	1 *Shiroyamate* forest lovers chairman 1 HO greenery club chairman	Clarifying actual challenges of the organization as well as stakeholders
	Qualitative questionnaires to members of the groups	12 members from *Shiroyamate* forest lovers	Clarifying SC in the study target as well as other related factors
	Structured questionnaire to the representatives of the groups for network analysis	1 *Shiroyamate* forest lovers chairman 1 HO greenery club chairman	Clarifying the structure of ties among stakeholders: supporting the results from qualitative questionnaire and interviews

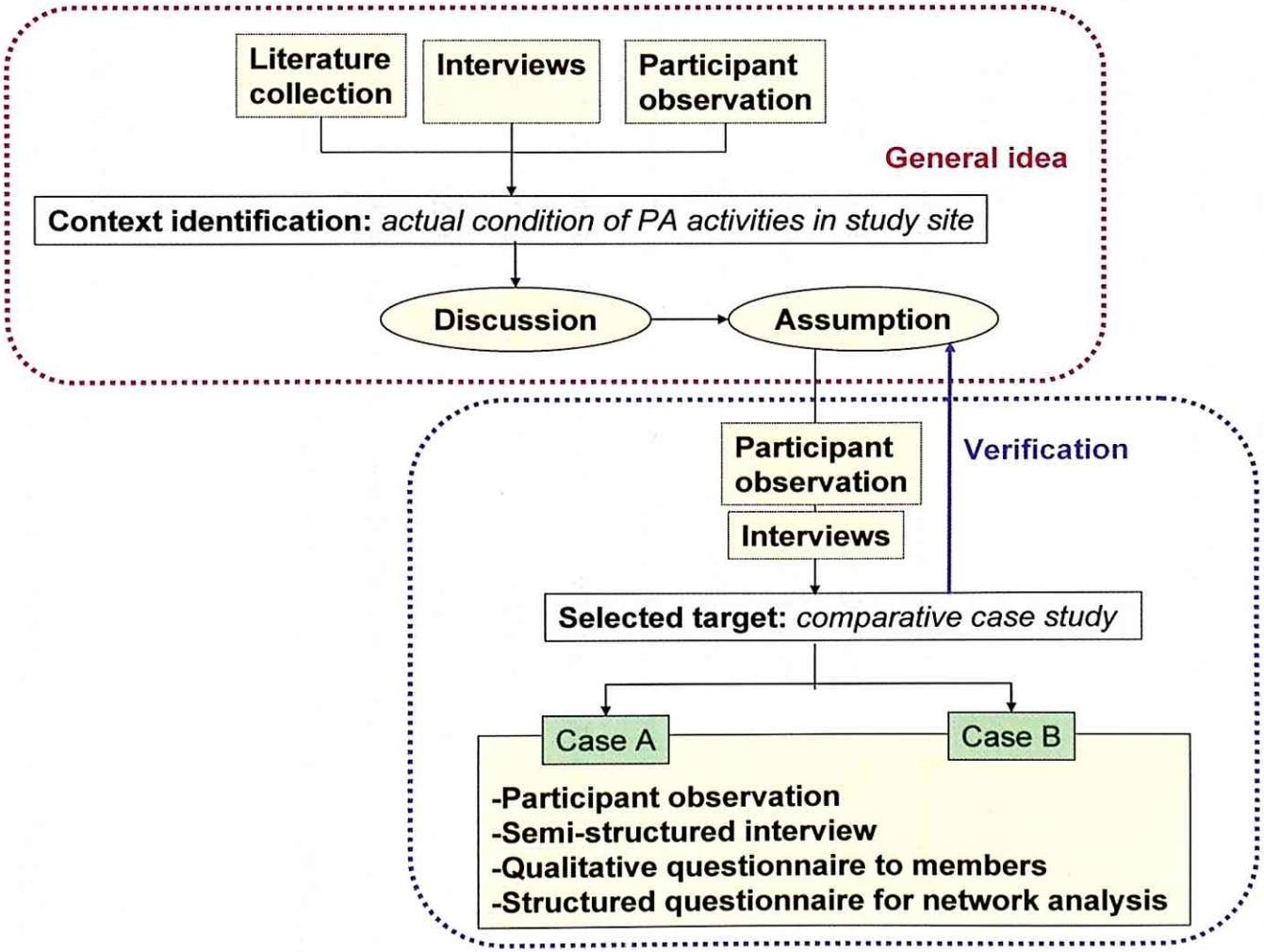


Fig. 21 Flow of the comparative case study

6.3 Pre-research for selecting the target

As shown in Figure 21, the context identification was important in the first stage of the case study. In order to select the target for the comparative case study, structured questionnaire was conducted in the study site. The details of the questionnaire and its results are explained in this section[38].

6.3.1 Survey objective and target

The survey was conducted with a mail-in questionnaire in July, 2008, collaborating with Natural Conservation Department of Hachioji city government. The main objective of research was to identify the general condition of voluntary organizations in Hachioji city that work for participatory natural conservation. This is the first survey in Hachioji to try to comprehend the natural conservation activities by volunteers; therefore, the questionnaire consists of mostly open-ended questions in order to obtain as many as free answers from each organization without researcher's biases.

The survey target is 38 organizations that are listed in Natural Conservation Organizations in Tokyo, and the questionnaire was sent to the representatives of those voluntary organizations. As a result, 24 organizations responded, of which the response rate was 63 %.

6.3.2 Analysis methods of the survey

The answers from 24 organizations were summarized and analysed. Some key points for analyses are explained below:

i) Regarding open-ended questions, all the free answers were carefully reviewed and

[38] See appendix E to refer all the results of the structured questionnaire.

then categorized by KJ methods for *after-coding*: i.e., the key words from all the free answers were extracted and categorized into a group and the group was coded; thus, all the answers were categorized into coded several groups. The questions that were analysed by this after-coding methods are; "main activities of the organization" and "income sources for the activity budget" in the basic information, as well as question No. 14, 26 and 28[39].

ii) Regarding the question No. 8 & 9, each group categorized by after-coding by the method i) was additionally calculated by ascending order: e.g., the ascending order was scored from 6 to 1. If a category ranks as the first, the score is counted as 6.

iii) Regarding to the question No. 26, the respondents were restricted only to those who checked code 1 in the question No.25; however, there were many other respondents as a result who did not check code 1 in the question No.25. It was regarded as design error of the question 26; therefore, all the answer was reflected into the accumulation. .

6.3.3 Results of the survey

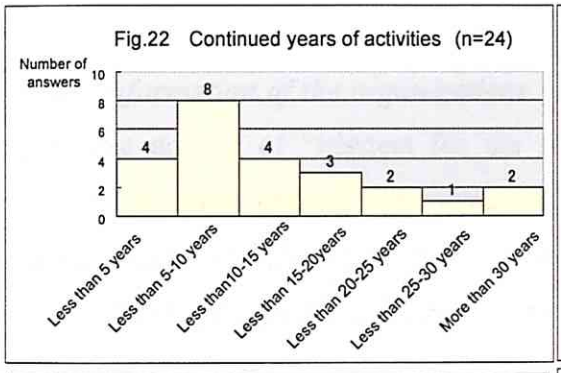
1) General features of voluntary natural conservation organizations in Hachioji city

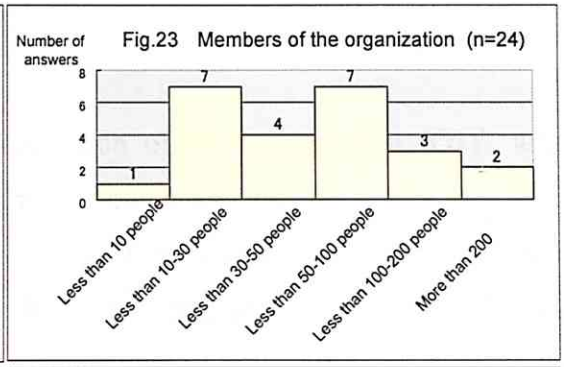
From the answers of basic information, the continuing years of the activities is mostly less than ten years (Fig.22). The number of members are various from thirty to more than one hundred (Fig.23); yet, the actual core members of each organization who is regularly working is mostly less than twenty people (Fig.24). Thus, on the average, the actual working members are the 30 ~50% or 50~70% of the whole registered members (Fig.25), which means there is a gap between the number of members and the number of actual labours. The core age of the members of 22 organizations out of 24 is 50~60 years old (Fig.26). Regarding the annual budget, less than 50 thousands to 1 million per

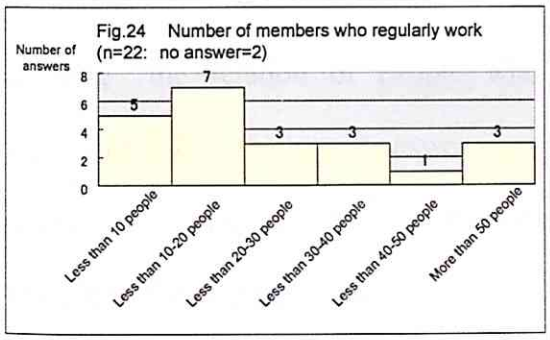
[39] See appendix C to refer the question numbers.

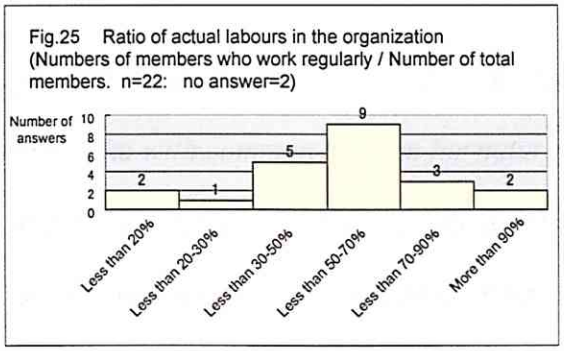
year is the most frequent answer (Fig.27); but a few organizations have a large budget such as more than 3 millions or 10 millions. In total, the 38% of the budget comes from the membership, followed by subsidy (17%) and coaching fee (15%) (Fig.28)

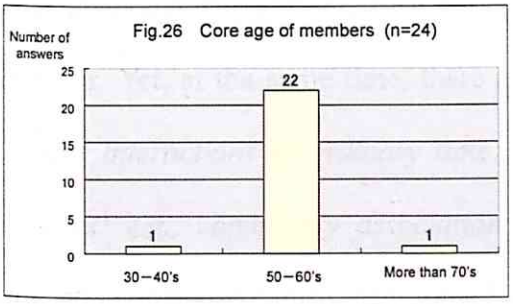
Regarding the activities' details, the results from open-ended answers were categorize and summarized, which as shown in Figure 29. The most frequent answer was providing "Environmental education and natural experiences" (20%), followed by "Maintenance of *Satoyama*, or wooded area" (16%). At the same time, the results in Figure 29 show that there are wide-ranging activities in voluntary organizations. In addition, regarding the frequency of activities, once to twice per month was the largest answer (Fig.30).

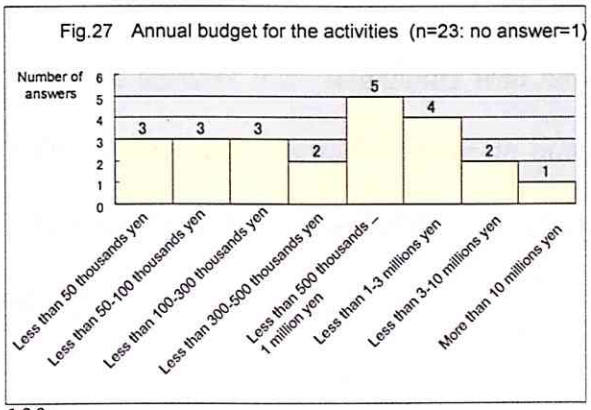


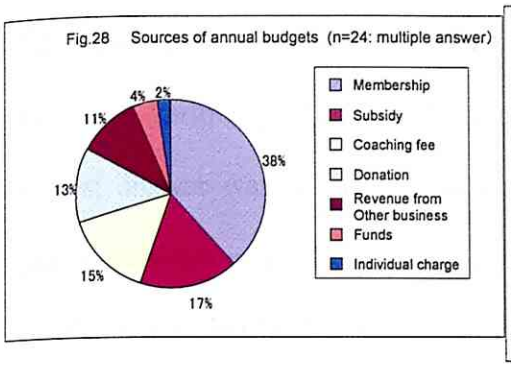


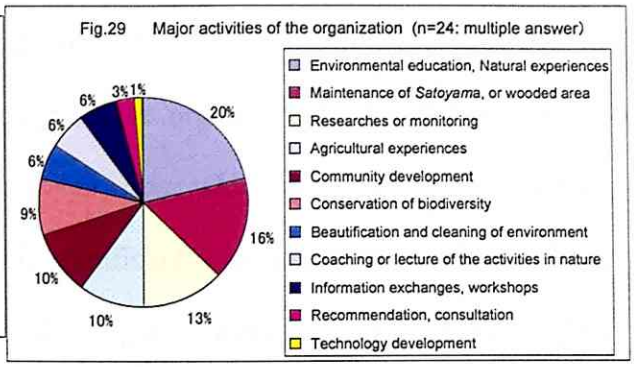


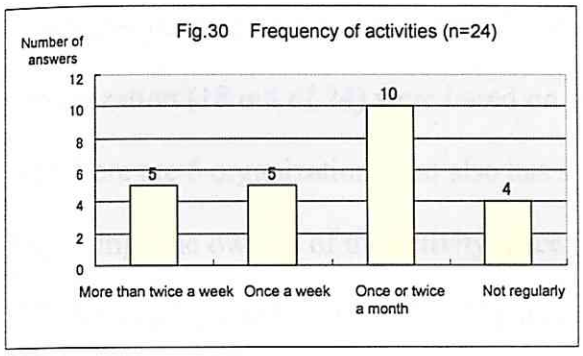












2) Basic information of the organizations

The largest answer of "triggers for the foundation of the organization (Q1)" was: *Wanted to preserve natural environment close to the residential area* (Fig.31). Next frequent answer was: *Any other reasons*. There was no answer that: *Could not maintain my own land by myself*, neither *Got to know the support for volunteer by the government.*

Regarding "the relation of people who got involved in the foundation of the organization (Q2)", the largest answer was: *Those who with common passion for natural conservation, although not knowing each other* (Fig.32), which indicates that for the foundation of the green volunteer organization, the passion for natural environment is most enhancing trigger rather than *relations between people*, or *motivation for voluntary activities.* Yet, at the same time, there are also the answers that *Neighbours who have frequent interactions at ordinary time*, or *Those who have worked together in other activities: e.g., community association:* this indicate that already build-up relations between people also contributed to the foundation.

The answers of "Participants in the activities of the organization (Q4)" revealed that there are various participants depending on the organization (Fig.33); however, the largest answer was: *From the whole Tokyo area*, which indicates that participatory green activities in Hachioji city provide significant opportunities not only for the city residents but also for Tokyo residents. The organization in which only the neighbour residents participate was the least. As for "working conditions (Q5)", most of the organization (18 out of 24) were based on *all voluntary works without paying* (Fig.34); but there are 5 organizations that also has some works with payments.

Regarding "the owners of the activity place (Q6)", *City-owned* (25%), *Individual-owned* (25%) and *Metropolitan-owned* (22%) made up almost 70% of total (Fig.35). It was not a few case that an organization work on the land of different owners.

Figure 36 shows the open-ended answers that are categorized to the question "What kind of affects does your organization generates for the environment in Hachioji city? (Q7)". The most frequent question was: *Natural conservation,* followed by *Improvement of natural environment at hand*, and *Promotion of volunteer activities in local community.*

Regarding the questions that "Factors that hinder the activities (Q8)" and "Factors that promote the activities (Q9)", answers were presented in ascending sequence. Therefore, the accumulation of the answers was done by 2 steps: Firstly, the open-ended answers were categorized, and secondly, the number of those categorized answers was computed by multiplying of its ranking (i.e., number of the answer $\times$ rank of the answer: it means the frequent answers and the high ranking answers get high scores). The results are shown in Table 18 and Table 19. The highest obstacle was: *aging and lack of successors.* On the other hand, activating factors were: *collaboration with local residents, or schools, children.*

Although there are many obstacles identified (Table 18), 20 organizations out of 24 answered *Yes* to the question "Is the organization able to continue the activities?" (Fig.37). Although 4 organizations answered *Do not know*, there was no answer of *No*. The reasons for continuing the activities were: *The activities became broaden and activated; The activities came to be understood by local residents; The quality of activities is improving; Existence of passionate members; Because it's fun; Because it is the close challenges for us.*

Fig.31 Triggers for the foundation of the organization (n=24)

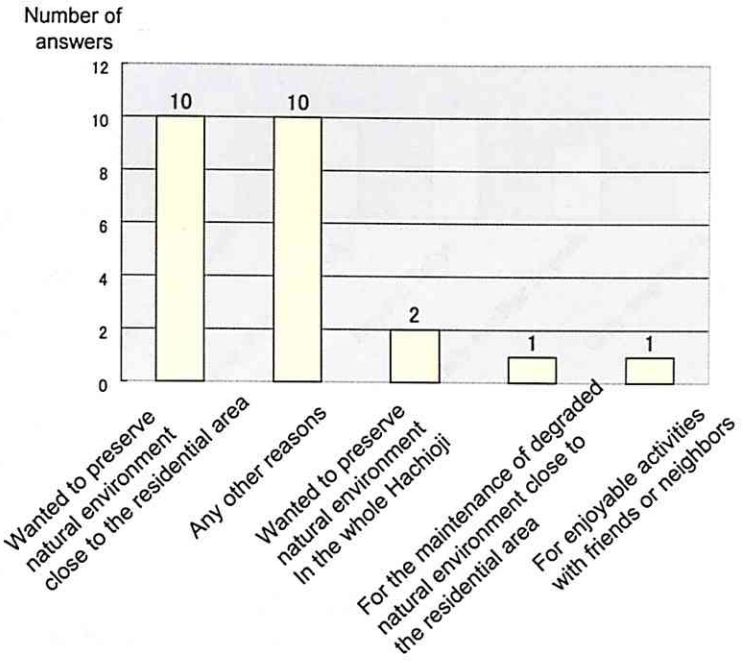


Fig.32 Relations among those who involved in the foundation (n-24)

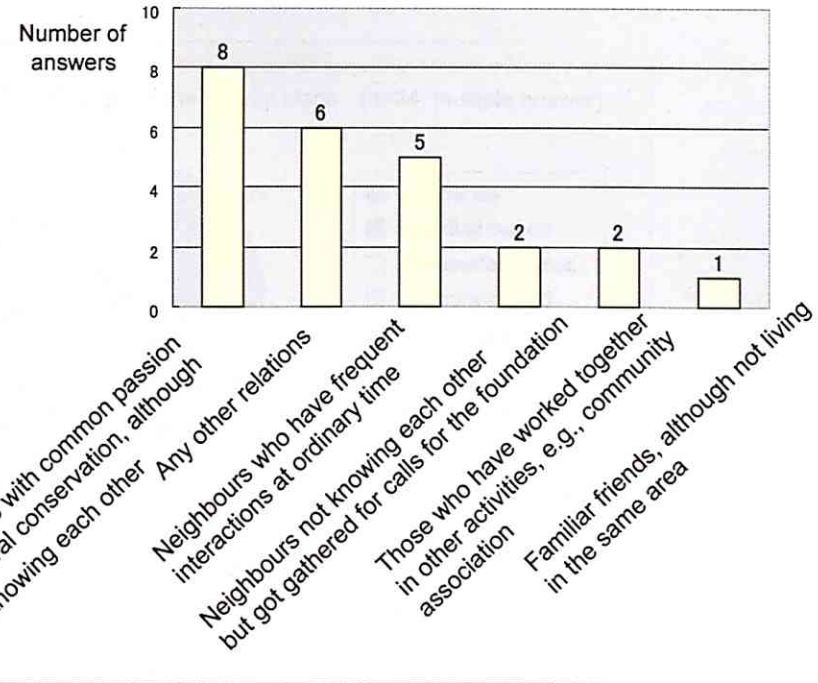


Fig.33 Participants in the activities of the organization (n=24)

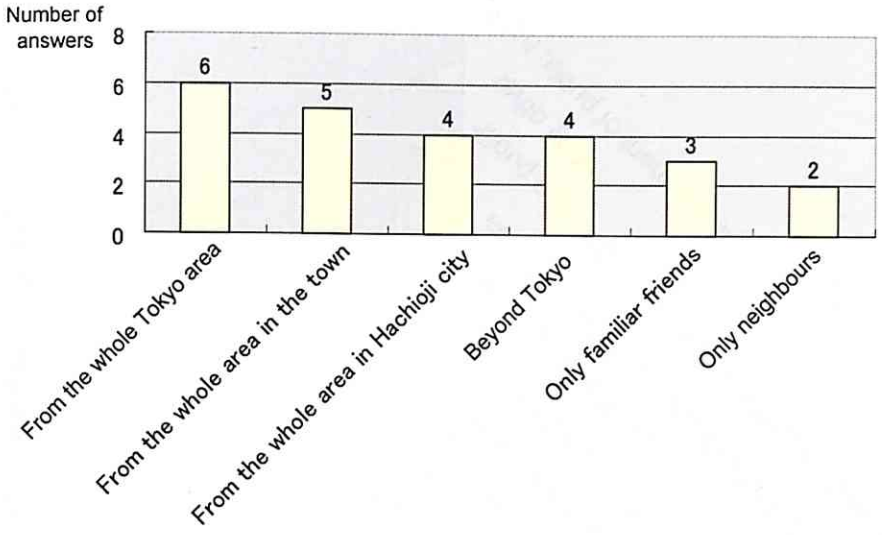


Fig.34 Working conditions (n=23: no answer=1)

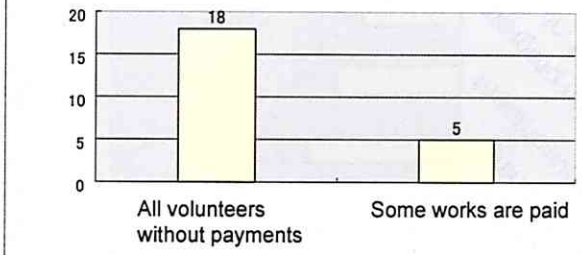


Fig.35 Owners of the activity place (n=24: multiple answer)

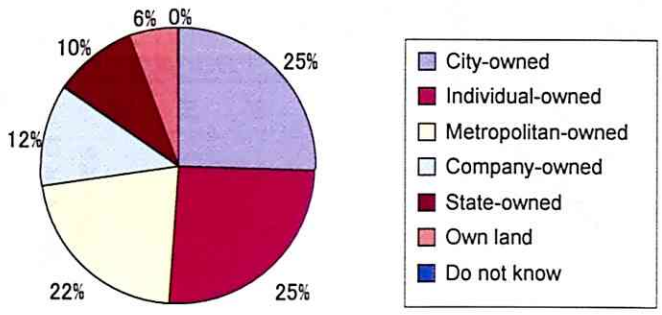


Fig.36 Contributions that the organization give to the environment in Hachioji city (n=24: multiple answer)

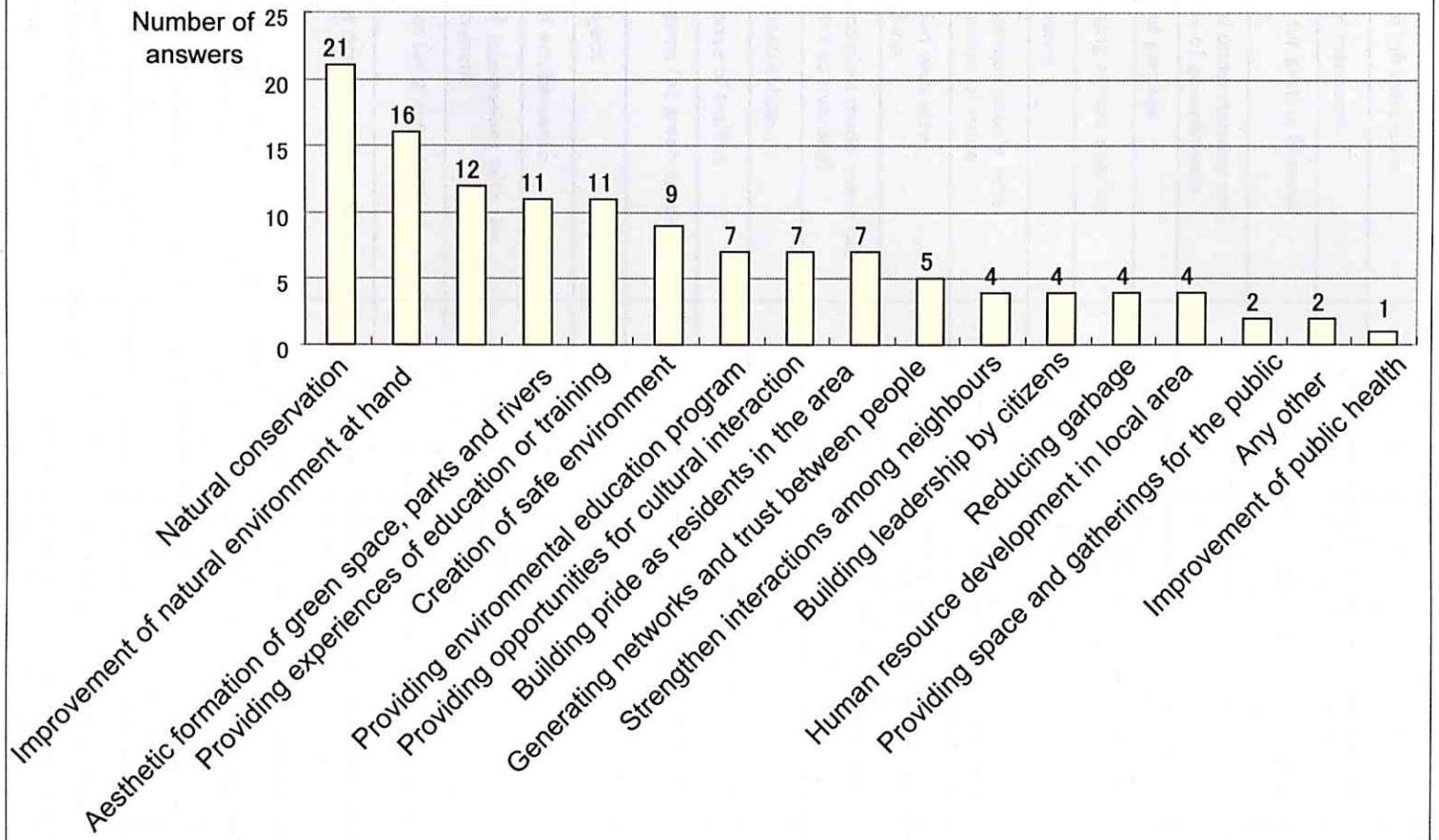
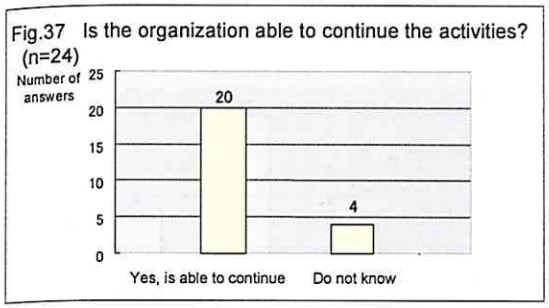


Table 18 Obstacles for the activities

Rank	Categorized answer	Point
1	Aging, Lacking of successors	89
2	Lacking of infrastructure	57
3	Lacking of manpower	29
3	Difficulty for getting financial resources	29
4	Lacking of understanding and awareness of governments	15
5	Problem of garbage	9
6	Illegal digging of rare species	8
7	Clerical works	6
7	Unity of various people with different sense of value	6
7	Collboration with other organizations	6
7	Radio-controlled model plane (at green space at riverbed)	6
7	Tunnel construction	6
8	Inconvinience of traffics	5
8	Survival game (at green space at riverbed)	5
9	Public project	4
9	Lacking of equipements	4
9	Lacking of interactions with the city government	4
9	Motorcross (at green space at riverbed)	4
10	Lacking of participant from local residents	3
10	Aelien invasive species	3
10	Fragmented city-owned land in the park	3
10	Health and security	3
10	Artifitial planning in the park	3
11	Maintenance of the website	2
11	Using riverbed as ground	2
12	Construction of homeless home at riverbed	1

Table 19 Positive factors for the activities

Rank	Categorized answer	Point
1	Collaboration with local residents	22
1	Collaboration with chidren and schools	22
2	Local vairous nature	21
3	Publication, reports creation	19
4	Pround of local identity	18
5	Improvement of member's quality	17
6	Collaboration with companies	15
7	Evaluations and appreciation from others	14
8	Variation of activities	12
9	Research activities	11
9	Increase and variety of participant	11
9	Doing with fun	11
9	Increase of members and new member participation	11
10	Changes of natural environment from our activities	9
11	Supoortf from governments	8
12	Subsidy	6
12	Some paid works	6
13	Enhancement of voluntary spirit	5
13	Open the website	5
14	New findings	4
14	Holding the workshops	4
14	Existance of untouched area	4
15	Collaboration with local public entity	2
15	Boradening the acivities' space	2
16	Amplification of activities	1



3) Networks of the organizations (Results related to bonding and bridging SC)

The results of investigation of interactions and networks of the organizations indicate that collaboration with other organizations, with schools and companies are ahead in most cases (Fig.40, Fig.43)

First of all, "Interactions among members (Q11)" revealed that more than half of organizations get together except activities (Fig.38), which means SBo is mostly developed. "The opportunities that members get together (Q12)" are: *Self-development; Local community's event;* and *Leisure*, frequently answered (Fig.39).

In addition, regarding "Interactions with other organizations that work on the same kind of activities (Q13)" 22 organizations out of 24 answered *Yes,* which means SBr is also developed in most cases (Fig.40). The open-ended answers of details of the interactions and collaborations (Q14) were categorized and summarized in Figure 41. All the collaborative activities are in the seven categories in Figure 41; there are organizations that work on some of those activities; whereas some organizations work on the only one activity of those. Furthermore, all the organizations that have interactions and collaborations with other organization answered (Q15) that they want to continue the collaboration (Fig.42). In addition, regarding "Interactions with schools or with companies (Q18)", 16 organizations out of 24 answered *Yes* (Fig. 43).

Fig.38 Do members get together except activities? (n=24)

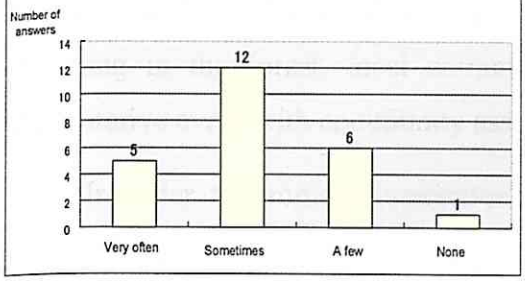


Fig.39 Opportunities that members get together except the green activities (n=17 multiple answer)

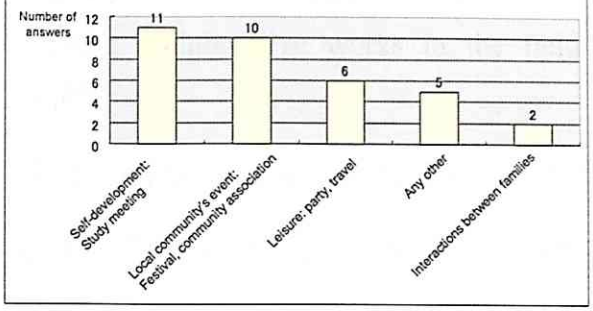


Fig.40 Are there any interactions or collaborations with other organizations? (n=24)

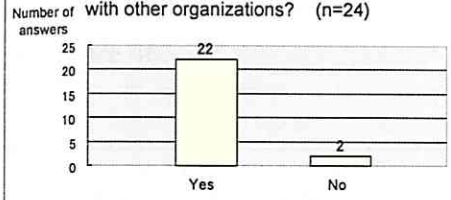


Fig.41 What kind of interactions or collaborations with other organizations does your organization have? (n=22: multiple answer)

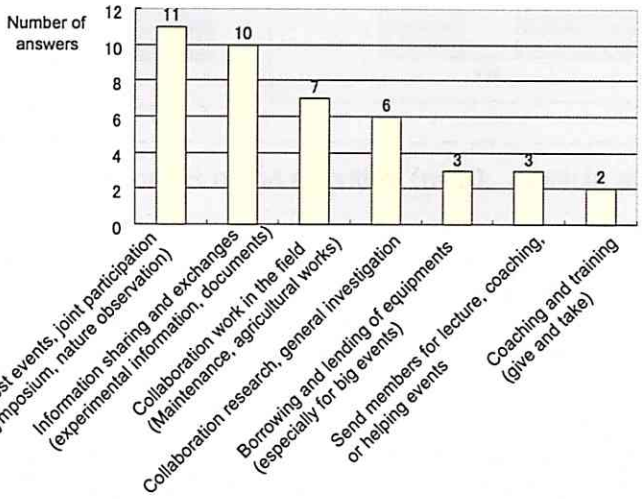


Fig.42 Do you want to continue interactions and collaboration with other organization? (n=22)

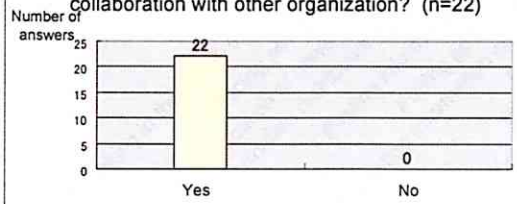
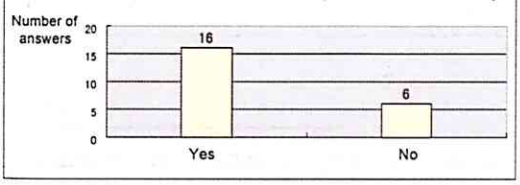


Fig.43 Are there any interactions or collaborations with companies and schools? (n=22: no answer=2)



Similarly, "Interactions with local residents (Q19)" are active in 21 organizations out of 24 (Fig.44). The activities of the interactions and collaborations are mainly nature tour or hiking in the forest, local community event, collaborative works in the field, collaborative event with community association[40].

In order to promote interactions and promotions, PR of the activities of the organizations is important. Regarding the question "Do you do any PR of the activities? (Q 20), 20 organization out of 24 answered *Yes* (Fig.45); and the way of PR are shown in Figure 46.

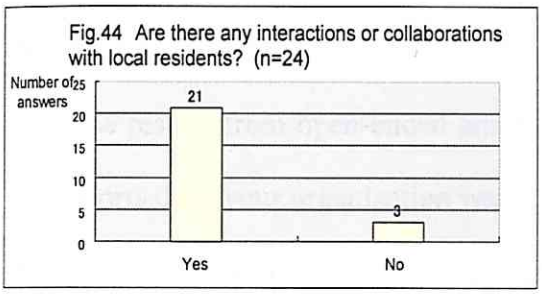


Fig.44 Are there any interactions or collaborations with local residents? (n=24)

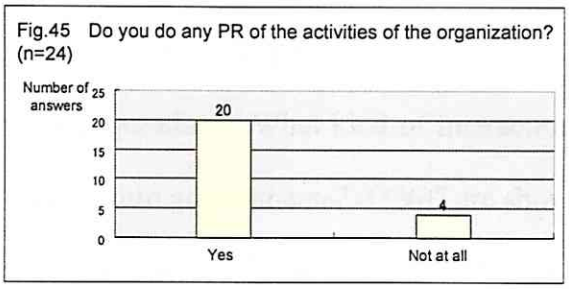


Fig.45 Do you do any PR of the activities of the organization? (n=24)

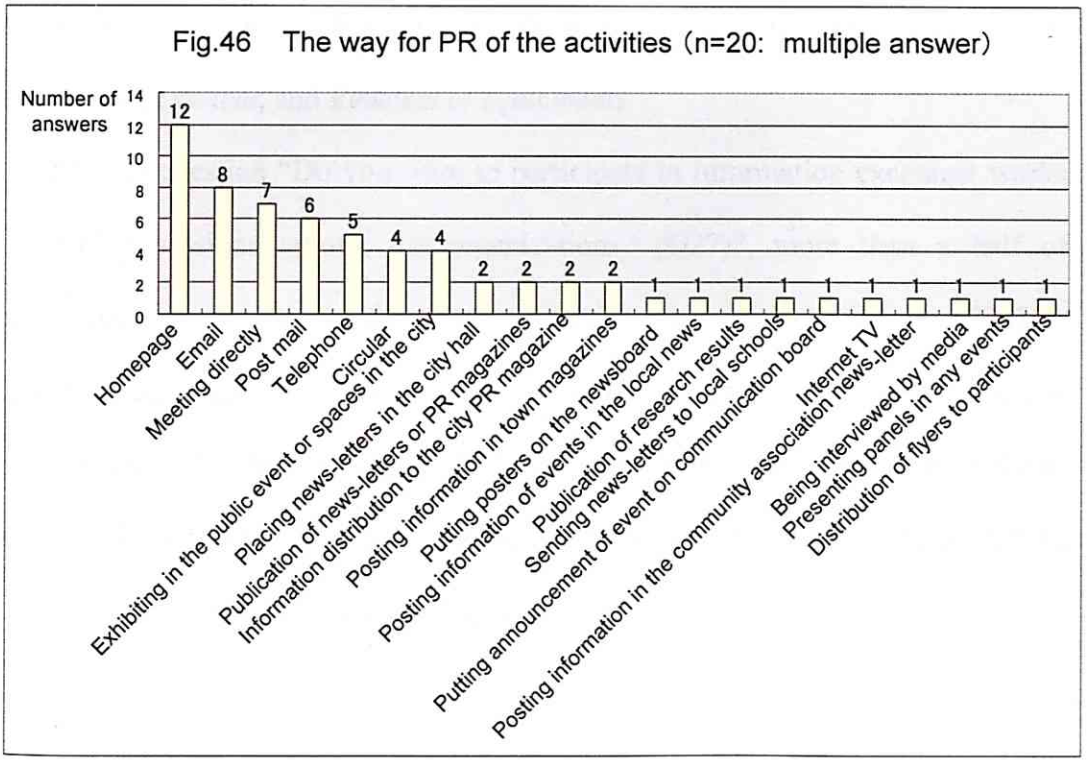


Fig.46 The way for PR of the activities (n=20: multiple answer)

[40] Concerning open-ended answers, all answers (in Japanese) are shown in appendix E as free answer excerpt.

4) Interactions and network with governments (Results related to linking SC)

Regarding the question "Does your organization get supports from governments? (Q22)", the answers were almost divided into two (Fig.47): 12 organizations answered *Yes*, whereas 11 organizations answered *No*. It indicates that SLi was not that developed compared to SBo and SBr among the organizations. The largest answer to the question "What kind of supports does your organization get from governments (Q23)" was *Material support,* which included equipments or facilities (Fig.48). At the same time, all the organizations that get any kind of supports from governments answered that Governments' supports were positive factors for their activities (Q24).

The results from open-ended answers to the questions "What kind of interactions or supports does your organization want to obtain from governments? (Q26)" are shown in Figure 49. The largest answer was: *Research results or information from the field should be reflected to the policies*, followed by the answers: *Building a new collaboration system*; and *Renewal of equipments.*

For the question "Do you want to participate in information exchange workshops or training sessions among the organizations? (Q27)", more than a half of the organizations answered that they want to participate in such workshops (Fig.50). The expected contents of those workshops (Q28) were: *Operational advices for conservation activities;* and *Specialized advices for natural conservation* are the largest answer, which revealed that they want to get more specialized advices and information for natural conservation activities (Fig. 51).

Fig.47 Does your organization get supports from governments? (n=23: no answer=1)

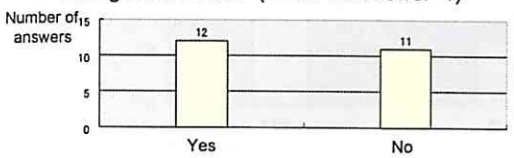


Fig.48 What kind of supports does your organization get from governments (n=12: multiple answer)

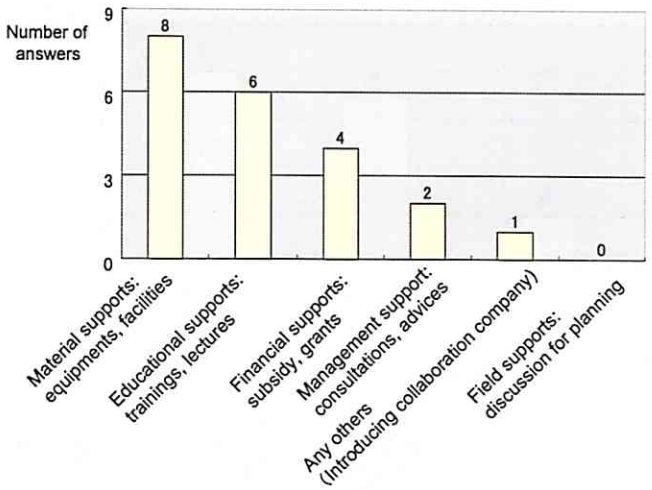


Fig.49 What kind of supports from governments is expected? (n=11: multiple answer)

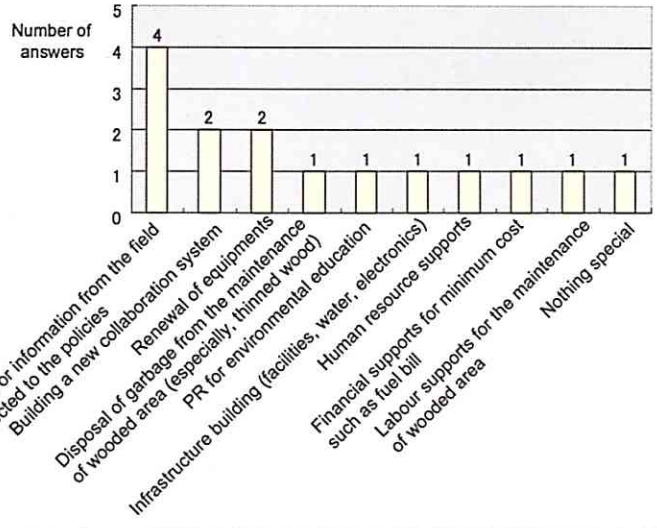


Fig.50 Do you want to participate in information exchange workshops or training sessions among the organizations? (n=20: no answer=4)

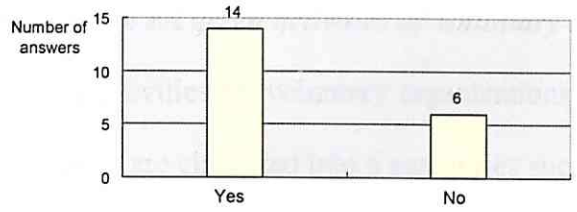
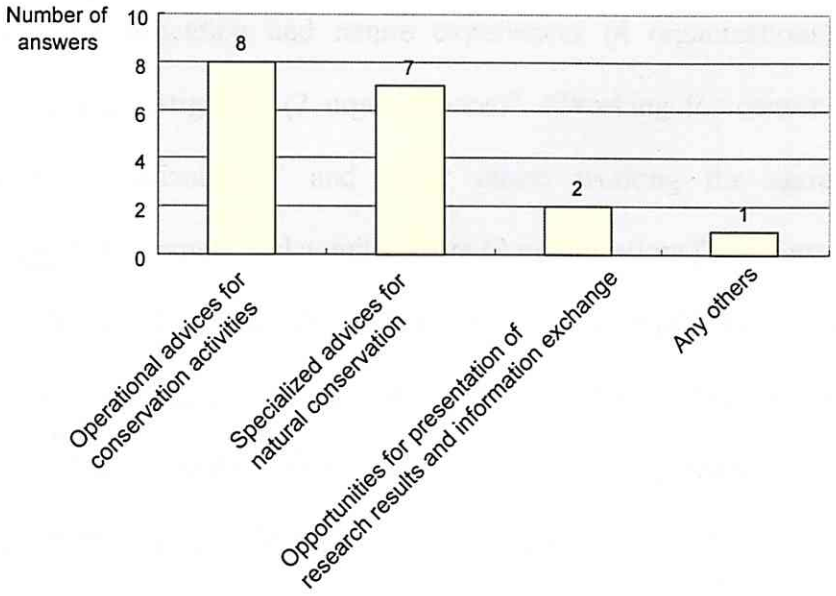


Fig.51 What kind of workshops or sessions do you expect? (n=15: multiple answer: no answer=9)



6.3.4 Discussion of the survey results

1) Variety of the PA green activities by voluntary organizations

The PA green activities by voluntary organizations in Hachioji city vary; however, all the organizations are classified into 6 categories such as: "Working for conservation and maintenance of wooded area (mostly can be regarded as *Satoyama*) (10 organizations)" , "Working for green spaces in watershed area (2 organizations)", "Working for environmental education and nature experiences (4 organizations)", "Working for research and investigation (2 organizations)", "Working for conservation of specific species (3 organizations)" and "Any other; working for agricultural supports, technology development and a united front (3 organizations)". During the process of the research, it was also revealed that there are still substantial organizations in Hachioji except ones targeted in this survey. Such organizations have not registered in any institutions but are working regularly; therefore, it is estimated that there are much more PA green activities by volunteers in the city. To get and accumulate information from field activities as many as possible in further surveys will be important for generating networks among organizations that work on the same kind of activities[41].

2) Contribution and significance of the PA green activities by volunteers

Considering the results shown in Figure 36 (in page 106), the PA green activities by volunteers in Hachioji are undertaking roles such as: i) Providing opportunities for natural experiences and environmental education, ii) Conserving and regenerating *Satoyama* and other wooded area, iii) Researching and monitoring of accessible natural

[41] In the current study, the organizations that are working for *conservation and maintenance of wooded area (mostly can be regarded as Satoyama)* are targeted as PAFM activities in the residential area, as comparative case studies to examine SC generation and its effects with the developed conceptual framework.

environment, iv) Providing agricultural experiences, v) Forming communities and local development, vi) Conserving specific animal and plant species at hand, vii) Beautifying the city environment, viii) Providing recommendation for policies.

Regarding the role ii), which is targeted in the current study as PAFM activities in the residential area, there can be a technical severe view that such voluntary management is merely operated only at a point but not spatial. However, the fact revealed in the survey that those volunteers have been working regularly with maintaining and observing the abandoned natural environment of *Satoyama* or of copse deserve taking their contribution to natural environment into account. Indeed, experiencing and observing such regeneration of natural environment from their activities comes to be a motivation for participants. The management of *Satoyama* is historically based on local knowledge and its succession from generation to generation that a local community seeks and obtains from their daily experiences. Therefore, it is significant that local voluntary groups today are trying a new operation of Satoyama which fits modern institutions. Moreover, those organizations also providing opportunities of natural experiences and environmental education (i) and of agricultural experiences (iv), which is important for submitting the value of natural environment to the next generation. In addition, monitoring at the same point for a long period (iii) is only possible for those who live close to that natural environment; thus, the results of such continuous monitoring and research from the fields are useful for natural conservation policies in the city (viii). In fact, it is a positive tendency to find an answer for the open-ended question 26 that *"Park management department in the city government took our recommendation into consideration for preserving rare species"*. Hence, it is desirable to accumulate and use valuable information and results from local communities' green activities in the city policies.

Furthermore, another significant aspect of those voluntary activities is: forming communities and local development (v), which is strongly related to SC generation. It is expected that networks and trust among people are generated through natural conservation activities and those social ties are accumulated as SC in the community, which accelerate the activities in turn. The expansion of the activities from only members to the whole local community including other residents and schools is supposed to result in beautification (vii) and formation of the safety in the city. From the substantial open-ended answers of the survey, it is indicated that such green voluntary activities contribute to interactions between seniors and children as well as between neighbours.

If the activities explained above spread and root in the whole local area with multilayered structure, the maintenance and monitoring of natural environment and the generation of networks and trust for collaboration are realized; as a result, the activities become sustainable, which achieve the biodiversity preservation (vi).

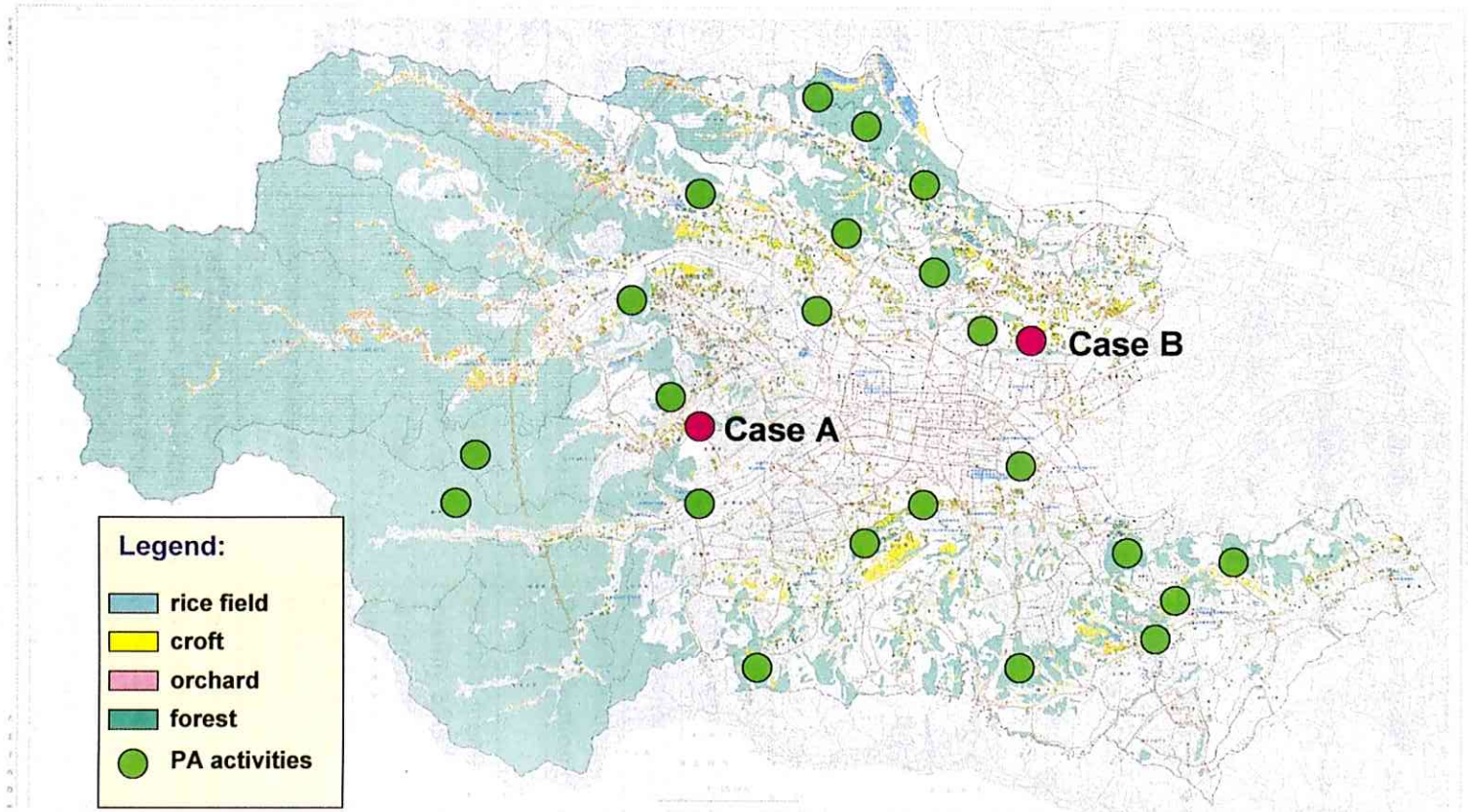
3) Common challenges and further expectation

However, not a few common challenges are found in the survey. Although there is a variation of continuous years of the activities, of the member structure and of the budget, the most common problem is: core members of each organization are almost all 50-60's. In addition, the active members who work regularly are mostly less than 20 people. These results reveals that those who sustain the green volunteer activities in the city are just a few core members and 90% of them are seniors. It is ranked as common challenges in Table 18 (in page 107): i.e., aging, lacking of manpower and the problem of successors. It seems how to tackle these challenges is seriously related to the sustainability of the activities.

For the lack of manpower, it is expected to complement by collaboration with local residents, schools, or companies as it can be already found the cases in some organizations. Actually, the promoting factors for the activities shown in Table 19 (in page 107), those collaborations are highly ranked. Yet, when there come a variety of participants, next challenge that how to keep the quality as well as the safety of the activities. In order to solve these problems, it is necessary to technically enhance the core members' ability as well as to strengthen networks between those members: i.e., making the core members tutors or instructors and networking them beyond own organizations are expected to support broaden activities with different participants. In order to achieve it, SC is prerequisite: i.e., SBr among different organizations and stakeholders as well as SLi between organizations and the government play important roles. Particularly, linking SC which promotes involvement of governments is necessary for enhancing technical ability and networking organizations. In fact, the frequent answers to the open-ended question 28 *"What kind of workshops do you expect?"* reveal that the members expect the government to provide opportunities for obtaining operational and specialized advices.

6.3.5 Assumption from the survey result

From the preliminary survey, it was revealed that there were variety of voluntary organizations who work on natural environment. All the activity spots revealed in the survey were shown in Figure 52. As already explained, the current study targets PAFM activities; therefore, the two cases of which PA activities regularly go on in the forest but on totally different scales were selected. The assumption from the survey result is: differences of the performance of the activities are related to SC development or SC structure. Two selected cases were marked in red in Figure 52.



Base Map: Hachioji Agricultural Map (1994)

Fig. 52 Positioning map of the green voluntary activity spots in Hachioji city: results from the structured questionnaire for 24 organizations: Case A and case B is the targeted activities for the following comparative study

6.4 Results of the final comparative study

6.4.1 Description of two targeted organizations

Table 20 show the summary of basic characteristics of targeted two organizations that were selected from the results of structured survey explained in the former section. The basic characteristics was revealed by participant observation and semi-structured interviews with representatives in both organizations. Both organizations work under the same institution as Green Volunteers of Tokyo metropolitan government and Park Adoption of Hachioji city government; however, activities' dimensions and variety are quite different. Therefore, it is significant to compare those two cases in order to clarify the difference of SC.

Table 20 Targeted organizations in the comparative case study

	Case A: Nagafusa green conservation area	**Case B: Oya green conservation area**
Organization	***Shiroyamate* forest lovers**	**HO greenery club**
Institutions	**Green volunteers (Tokyo) Park adoption (Hachioji)**	**Green volunteers (Tokyo) Park adoption (Hachioji)**
Active period	**6 years**	**8 years**
Active members	**15 (total member 25) -mainly 50-60 years old -100% local residents**	**30 (total member 60) -mainly 50-60 years old -almost 60% local residents and 40% visitors**
Annual budget	**50,000 yen (membership dues only)**	**1,400,000 yen (membership dues, aid fund, instructor fee)**
Activities	**Forest floor maintenance, Maintenance of walking trails, Clean up of green area, Field tour with local residents, Observation and conservation of rare species,**	**Forest floor maintenance, Thinning, Coppice, (every 2 years) *Satoyama* activities instructor, Coaching members for skill up, Maintenance of walking trails, etc**

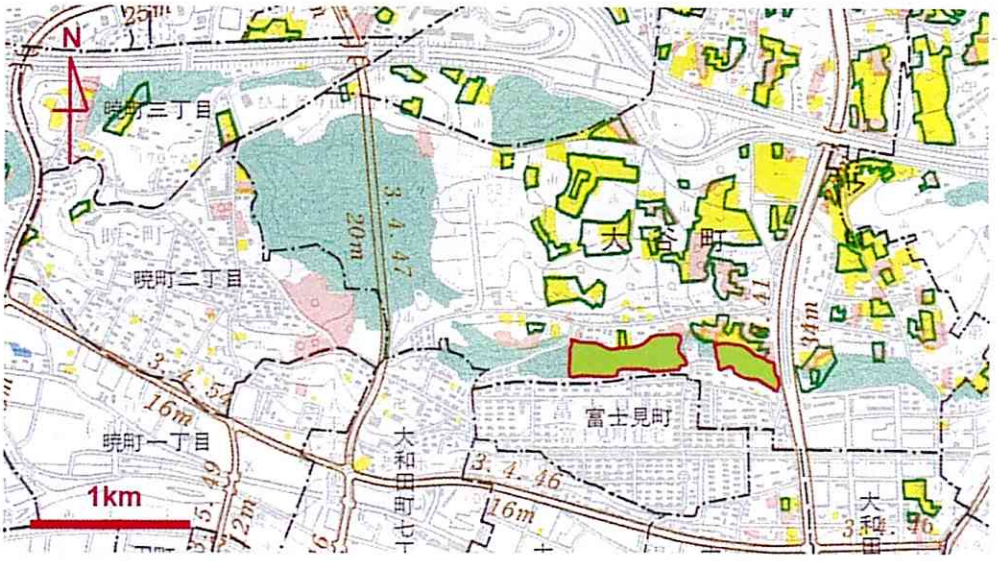
One of two selected target is *Shiroyamate* forest lovers (case A) of which the general feature are already explained in the former section 5.3.1[42]. Therefore in this part, the other selected target, HO greenery club (case B) is introduced. The activity site of HO greenery club is based on the *Oya green conservation area* (Figure 53 & 54) which is in the middle of the residential area in *Oyacho*, north-west in Hachioji city. The activity site consists of wooded area (30,619m^2), which was also designated as green conservation area by the Metropolitan government. The copse is dominated by *Quercus serrate* and *Quercus acuitissima* (Photo 2 in Fig.55); but forest floor where there is no maintenance is all covered by *Pleioblastus chino var. chino.* After their activities, rare species such as *Liriope muscari* or *Lycoris sanguinea* have started to grow and bloom. As in the same case as the other organization, such blooming and regeneration of plants makes members highly motivated. The visible changes of condition in the activity area are shown with exemplar photos in Figure 56.

Table 21 shows the transition of the activities of case B, which was revealed by semi-structured interviews with the members[43]. From the first stage, the organization has challenged technical approaches such as thinning or coppice-with-standard. From the semi-structured interview with the representative, it was revealed that the core member had already experienced some practical approach of the forest management since they had participated in the lecture held by the Metropolitan government. Moreover, there is a key-person as an instructor who has substantial knowledge about forest and its management. Thus, through participating and working with some people who have knowledge, other members gradually gained knowledge as well. Moreover, as shown in Table 21, case B has broadened its activities as year passed by; as a result, the participants has increased as well.

[42] See section 5.3.1 in the chapter V to refer general feature and activities of *Shiroyamate* forest lovers.
[43] See appendix A to refer semi-structured interview for activity transition.

Source: Google Earth

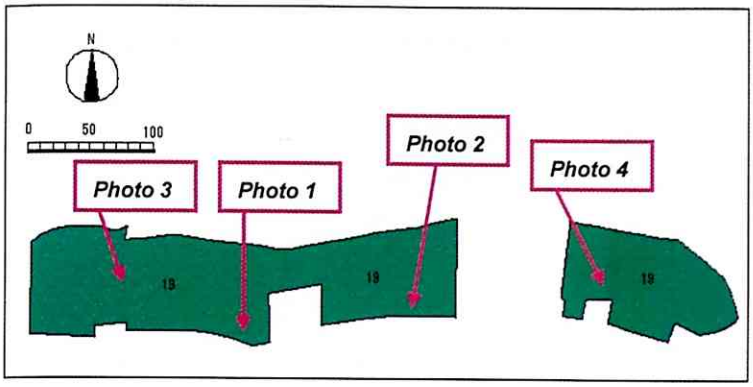
Fig.53 Aerial photo of *Oya* green conservation area (GCA)



Base Map: Hachioji Agricultural Map (1994)

Fig.54 Map of Oya GCA:

the activity area of the study target is framed by red line



Vegetatation legend on the map :
19. *Quercus serrata, Quercus acuitissima* is dominant
Source: Oya green conservation area map (Tokyo Metropolitan government 2000)

Photo 1: Trails made by the volunteers

Photo 2: General landscape of Oya GCA

Photo 3: Daughter of trunks

Photo 4: Trial field of nursery

Fig.55 Landscapes and vegetations of Oya GCA: the activity area: where the targeted organizations work

General forest conditions before the activities ⇒ After the activities

Fig.56 Exemplar photos of before and after of the activities in the forest:
The photos before the activities were taken at the points where the voluntary organization had not conducted their maintenance activities yet; whereas the photos after the activities were taken at the point where they finished their maintenance within a week ago.

Table 21 Transition of activities by HO Greenery club

year act.	2000	2001	2002	2003	2004	2005	2006	2007
Member	20 members	20 members	30 members	40 members	40 members	50 members	60 members	60 members
Frequency	1 Times/month 4th Saturday	2 Times/month 2nd Wednesday 4th Saturday	2 Times/month 2nd Wednesday 4th Saturday	2 Times/month 2nd Wednesday 4th Saturday	2-3 times/month 1st & 3rd Saturday	2-3 times/month 1st & 3rd Saturday	3-6 times/month Wednesday Saturday	3-6 times/month Wednesday Saturday
Participant	10 members	10 members	15 members	20 members	20 members	20 members	30 members	30 members
Management of copse	·Scything ·Thinning ·Coppice-with-standard ·Maintenance of : bamboo grove, nature trails, wooded area ·Planning of conservation schemes	·Scything ·Thinning ·Maintenance of : bamboo grove, nature trails, wooded area ·Planning of conservation schemes ·nursery	·Scything ·Thinning ·Coppice-with-standard ·Maintenance of : bamboo grove, nature trails, wooded area ·Planning of conservation schemes ·nursery	·Scything ·Thinning ·Maintenance of : bamboo grove, nature trails, wooded area ·Planning of conservation schemes ·nursery	·Scything ·Thinning ·Coppice-with-standard ·Maintenance of : bamboo grove, nature trails, wooded area ·Planning of conservation schemes ·nursery	·Scything ·Thinning · Maintenance of : bamboo grove, nature trails, wooded area ·Planning of conservation schemes ·nursery	·Scything ·Thinning ·Coppice-with-standard ·Maintenance of : bamboo grove, nature trails, wooded area ·Planning of conservation schemes ·nursery	·Scything ·Thinning ·Maintenance of : bamboo grove, nature trails, wooded area ·Planning of conservation schemes ·nursery
Other trial or findings: related to biodiversity			·Finding of rare plants in the forest:e.g. *Liriope muscari*	·Finding a community of *Lycoris sanguinea*	·Aware of big differences of growth between daughter trunks and seedlings ·Survey of plants on the forest floor ·Survey of coppice-with-standard	·Cultivating Shiitake mashroom ·Survey of plants on the forest floor ·Fixed-point observation with photos ·Survey of coppice-with-standard	·Survery of distribution of *Taraxacum officinale and Taraxacum platycarpum* ·Cultivating Shiitake mashroom ·Survey of plants on the forest floor ·Fixed-point observation with photos ·Survey of coppice-with-standard	·Survery of distribution of *Taraxacum officinale and Taraxacum platycarpum* ·Cultivating Shiitake mashroom ·Survey of plants on the forest floor ·Fixed-point observation with photos ·Survey of coppice-with-standard
Local community activities	·Woodworking class with parents & children	·Woodworking class with parents & children ·Experience of working activities in the forest (Scything, Nursery) For school	·Woodworking class with parents & children ·Experience of working activities in the forest (Scything, Nursery) For school	·Woodworking class with parents & children ·Experience of working activities in the forest (Scything, Nursery) For school	·Woodworking class with parents & children ·Experience of working activities in the forest (Scything, Nursery) For school ·Maintenance of open space with school children, Environmental education program	· Woodworking class with parents & children ·Experience of working activities in the forest (Scything, Nursery) For school · Maintenance of open space with school children, Environmental education program	·Woodworking class with parents & children ·Experience of working activities in the forest (Scything, Nursery) For school ·Maintenance of open space with school children, Environmental education program	·Woodworking class with parents & children ·Experience of working activities in the forest (Scything, Nursery) For school ·Maintenance of open space with school children Environmental education program
Activities with other stakeholders:					·Maintenance of copse & nursery, thinning with volunteers from companies	· Maintenance of copse & nursery, thinning with volunteers from companies	·Maintenance of copse & nursery, thinning with volunteers from companies	·Maintenance of copse & nursery, thinning with volunteers from companies
Non-member participant					·20-30 residents ·15-20 company members	·20-30 residents ·20-30 company members	·20-30 residents ·30-40 company members	·20-30 residents ·30-40 company members

The semi-structured interview with the representative revealed that their activities are supported by various different stakeholders including government, local schools, and companies. The interview revealed that those networks among different stakeholders are gradually developed through the interaction between members and other stakeholders. It was mostly the core members who have actively tried to obtain as many as connections and interactions, especially with people or organizations outside of the organization. It seems that in case B, the motivation for developing networks of the members have supported their activities very much; consequently, it is supposed that various SC should be generated comprehensively. In the next section, the qualitative analysis of SC in case B is explained.

6.4.2 Qualitative analysis of SC in case B

The summary of results from the qualitative questionnaire conducted to the main members of case B is shown in Table 22. Interactions between members (SBo) are not so strong and frequent in this case except the activities. Interviews revealed that they only get gathered and communicate for the activities and not for the other recreation because main members are already busy enough for the activities. In addition, the active members consist of local residents as well as visitors from other area in Tokyo (see Table 20 in page 119); therefore, their feelings do not weigh heavily on cognitive aspect as trust (CBo). It is rather broaden ties beyond local community (SBr) which connect members in the organization. The organization of case B interacts with various actors including other organization and local schools: thus, SBr is well developed in this case. Interviews supported the results of developed SBr that mutual trust (CBr) between other organizations is also generated, which often results in mutual support for the activities. Moreover, interviews clarified that the organization interacts with the governments well (SLi), both the metropolitan and the city government; thus, their comment for the government is mainly positive. Their feelings that their activities are trusted and valued by the government (CLi) are supposed to create their motivation that they would like to construct appropriate collaborative scheme with governments.

Table 22 The summary of answers of qualitative questionnaire

Questions	Summary of answers	Key words
Motivations for participating in this organization	-Already get acquainted with members in the training session held by the metropolitan government -To experiment the practical approaches that were learned from the training session by the metropolitan government -Recommendation from a member -Contribution to local community with the green activities -Aware of importance of 'green' and its conservation around the area -From the information of PR brochure of the city government	Practical approach Recommendation Contribution Awareness Information
Motivation for participating in the activities	-Will for green conservation -Social contribution -Own interest in forest -Contribution to local community -To learn the practical methods for *Satoyama* conservation -Promoting interaction among local community	Will Contribution Interest Practical method Interaction
Most enjoyable matter in the activities	-Satisfaction to see the forest becomes more and more active after the activities -Planning forest regeneration and conducting activities as it is planned -Satisfaction to see children's smile during collaborative activities -Being proud of our activity when others put values on it -Concentration on green conservation activities -To see the forest in Spring with various flowers	Satisfaction Planning
Most struggling matter in the activities	-Too busy but not enough people to work with -Restriction of schedule of the activities -Hard duty in the hot summer time -Materialistic lacks e.g., water, toilet, storage in the activity site -Nothing	Restriction

Will for continuing the activities	Would like to continue (100%)	
Reasons for continuing or not continuing the activities	-To see achievement of our planning and activity -Our activities become already so broad that we cannot quit -For fun -For own satisfaction with contributing nature and society	Achievement Broadening Satisfaction
Things you'd like to do in the activities	-To learn more specific approaches for forest management -	Specific approach
Vision or future dream of your organization	-Construction better system to collaborate with the government in order to achieve *Satoyama* conservation in Hachioji -Construction support system for the same kind of green voluntary activities in the city -Succession of the activities to next generation	System Support
Existence of interaction between members except the activities. If yes, in what opportunities	No (80%) Not really (20%) Yes (0%)	
Ways for communication between members	-Emails -Meeting in the activities -Telephone	
Any change of feeling of trust between members through the activities	-Same as before the participation of the activities (50%) -Trust more than before the activity participation (50%)	Trust
Any change of interaction depth between local residents through the activities	-Interaction becomes deeper than before the activities (100%), but only with schools and their family	Interaction
Tools for communicating to the public	-PR brochure and PR space of the city government -Participating the PR session of the metropolitan government -A few coverage of the activities	Participating
Existence of interaction with other organizations that involve in the same kind of activities. If so, how frequent.	-Yes, regularly: almost every month, as well as when the supports are needed each other -Always, because some members are the representatives of other organizations -We often support the activities of other organization since it is requested	Support
Feeling of understanding from local residents	-The activities obtain understanding from local residents	Understanding

about the activities		
Any claims, recommendation, suggestion or request to the city government or to the metropolitan government regarding institutions for the voluntary conservation activities	-Need more discussion in the activity area to see the condition of forest -Would like to construct appropriate collaborative scheme with governments -We feel that our activities are trusted and valued by the government -Need more materialistic supports	Discussion Collaboration
Any change of interests on natural environment (e.g. forest, *Satoyama*, and its ecosystem)	-Interests increased (100%)	Intersts
Any change of knowledge of natural environment (e.g. forest, *Satoyama*, and its ecosystem)	-Knowledge increased (100%)	Knowledge
If knowledge increased, how to obtain that knowledge	-From the activities: doing and learning with referring other knowledge source (e.g., books, lecture,) -From other members who has knowledge -From communications with other members -From the participation in the session held by the government	Knowledge sharing Learning

Note:

i) The colour column is SC related questions as shown below:

: related to bonding SC (SBo., CBo.) : related to bridging SC (SBr., CBr.) : related to linking SC (SLi., CLi.)

ii) Most of the question are open-ended; therefore, the answers are read carefully and summarized with combining the same answers as 'summary' of the answers in the table. Subsequently, summary of answers are categorized into some key words as 'category'. The process of summarizing and categorizing are proceeded by GT approach. (see *footnote 30* in page 86).

In the following section, the difference of SC characteristics and structure between case A and case B was investigated. More detailed analysis of structural characteristics of SC was conducted by social network analysis, of which the approach was induced by the pilot study (see Fig. 19 in page 90). Indeed, structural SC seems primarily important for the collaboration of different stakeholders because generally they do not know each other from the beginning, which means there is no historical or geographical SC (i.e., bonding SC in most cases) among them. Thus, it is supposed that in most cases of collective action for PAFM with various stakeholders firstly need structural SC.

Before doing comparison of SC in case A and B, the comparison results from two cases that were clarified from open-ended interviews, participant observation, or semi-structured interviews are explained. Subsequently, final analysis of SC is demonstrated in the following chapter.

6.4.3 Comparative results of general feature between case A and B

The qualitative results from interviews and participant observation are summarized in Table 23. As it is indicated here, case A is based on the local community where they live; whereas case B is based on as many as collaboration beyond the community. It can be said that case A is 'community-driven' whereas case B is 'activity-driven' organization. If we ignore the characteristics of each person[44], the general differences of two organizations are motivation for networking or collaboration with as many as stakeholders. Generally, the members of case A is satisfied with activities only with members, which means their activities can hardly broaden. On the other hand, the members of case B is highly motivated to get connection with outsider in order to gain

[44] If we start to think about each characteristic of a person, it is almost impossible to make a 'collaborative' policy. Policy should be something to work in any context with different kind of persons

financial, human resources as well as further knowledge.

However, not only the difference of their motivation or attitude, but also the relation between governments seems to strongly affect the activities. Firstly, the officers from metropolitan government and some members of case B had already know each other[45], which leads further connections between them. The good interactions between the members and the metropolitan government generated reliable relations. Moreover, the city government also started to interact the members of case B since they heard about the relations between the metropolitan government and the members. Thus, differences of relations stems from individual interaction as well. Yet, it is not effective for policy to depend on individual attitude or interactions; therefore, it is expected to promote structural SC in such collaborative operations as one of policy intention.

[45] It is because the core members of the organization case B had participated in the technical lectures held by metropolitan government.

Table 23 Comparative results between case A and case B: qualitative results from interviews and participant observation

Result / Research	Case A	Case B
General characteristics (from Participant observation; Interviews with members)	-All the members participating in the activities get knowing each other very well -They get together for eating and drinking after every activity, which most of the members are looking forward to -The activities of the day are fixed in the morning with chatting, and the role of each other is not clearly defined -The practical approaches for maintenance are not really technical: e.g., it seems they cut trees that they want just to open the space -There is no specific management planning for years for the moment -However, they have clear visions (or images) how they want to make the good relations between the forest and the community -They now start to feel that they want to gain more information and knowledge for the further activities -They also wonder that what they are doing as activities in the forest is correct or not; they feel that they are doing something in the dark -They are really enjoying the findings related to biodiversity; e.g., plants or insects, which contribute to strengthen their	-Not all the members get knowing each other very well since some from outside of the area -There are so various participant in the activities from children with parents to company volunteers -They rarely get together except the green activities -The core member actively try to get contact with key stakeholders -There are some key persons who have connection with outside of the organization -The meeting in the morning of the activity day is well organized which identity and sharing roles in the activities -They have been trying technical, practical approaches for forest maintenance, including thinning, or coppice-with-standard -They have clear planning of the activities of every year and for years -They are feeling that their trials are significant; they are proud of it -They start to feel that their techniques and knowledge for maintenance practices should be shared with other

	interests and knowledge on natural environment -They are gaining knowledge by themselves and sharing it among members -They are highly motivated about 'voluntary' activities, not only for green conservation but also for community's welfare in the area -They do not really want that many outsiders come to the area where they are working on -They are feeling that governments have no interests what they are doing in the forest, although the part of their activity place is metropolitan-owned or city-owned -They are trying to get contact with officers in the governments, but they said it was always ignored	organizations -They rather concentrate on trying of the practical approaches for forest maintenance -They are getting knowledge from outside as well as gaining by experiences and by self-development -They are now interested in running NPO to make their activities broader -They are feeling that they are trusted by governments -They feel that they do contribute to the local community, especially to local schools since they are doing educational programs regularly -They think their activities revive the community -They are highly motivated for regenerating forest
Governmental opinion (from Interviews with officers)	*-The activities of case A is fine; we leave it as it is for the moment…we do not really need to discuss and plan together in the field (Metropolitan G)* *-We do not have enough staffs and financial source to go to every field of the conservation area (Metropolitan G)* *-Unfortunately, we do not have time and manpower to visit the filed they work… (City G)* *-We do not totally rely on the voluntary activities for park management; rather we expect generating community cohesion*	*-The activities of case B is reliable; therefore we recommend it to the company (Metropolitan G)* *-We recommend them to build up NPO for supporting other organizations' activities (Metropolitan G)* *-We heard their activities were technically refined, so we went to the field several times to see how they worked; as a result, we start to think to try and build a new collaborative schemes by volunteers with them (City G)*

	(City G) *-The representative of the organization of case A is very reliable person; therefore we would like him to involve in green planning activities in Hachioji city (City G)*	
Specific features related to SC (from Interviews with representatives)	*-We have been enjoying our activities with members; and I feel that our activities started to gain understanding and appreciation from other residents* *-We do not feel like collaborating with other organizations that much because we ourselves do not have any concrete plans yet....* *-but I want to join any significant workshops if it provide information of practical approaches for forest maintenance because it is surely deserve referring* *-The governments (both metropolitan and city) rarely come to see our field, which is very disappointing* *-We start to think that we need more concrete planning* *-We want more advices in the field from the government*	*-We have many chances from outside, for example the person in the metropolitan government we know introduced us to company which made us gain financial resources as a result. Also, we have chances for PR that the person we know introduce us to the media* *-We are very proud of our activities* *-The member who involved in the foundation of the organization really tried to get and keep the networks outside* *-The staring point of collaboration activities with schools was also the introduction of our activities by a person.*

**Italic sentences are from the conversation that he/she talked*

6.4.4 Comparative results of SC structure

Figure 57 shows the results from social network analysis. The network analysis was applied for analysing structural dimensions of SC, which supports the results of qualitative research. The lines represent existence of interaction, i.e., ties between actors, and thicknesses of each line show the strength of ties.

As shown in Figure 57, more stakeholders involve in case B than case A. Network is dense only in local community in case A, which means there exist only dense SBo (brown dotted circle in Fig. 57) in this case. On the other hand, networks between different stakeholders are broadened and dense in case B, which means SBr (blue dotted circle in Fig.57) as well as SLi (red dotted circle in Fig.57) are well developed. It is obvious from the results that broader and more dense networks are well developed in case B.

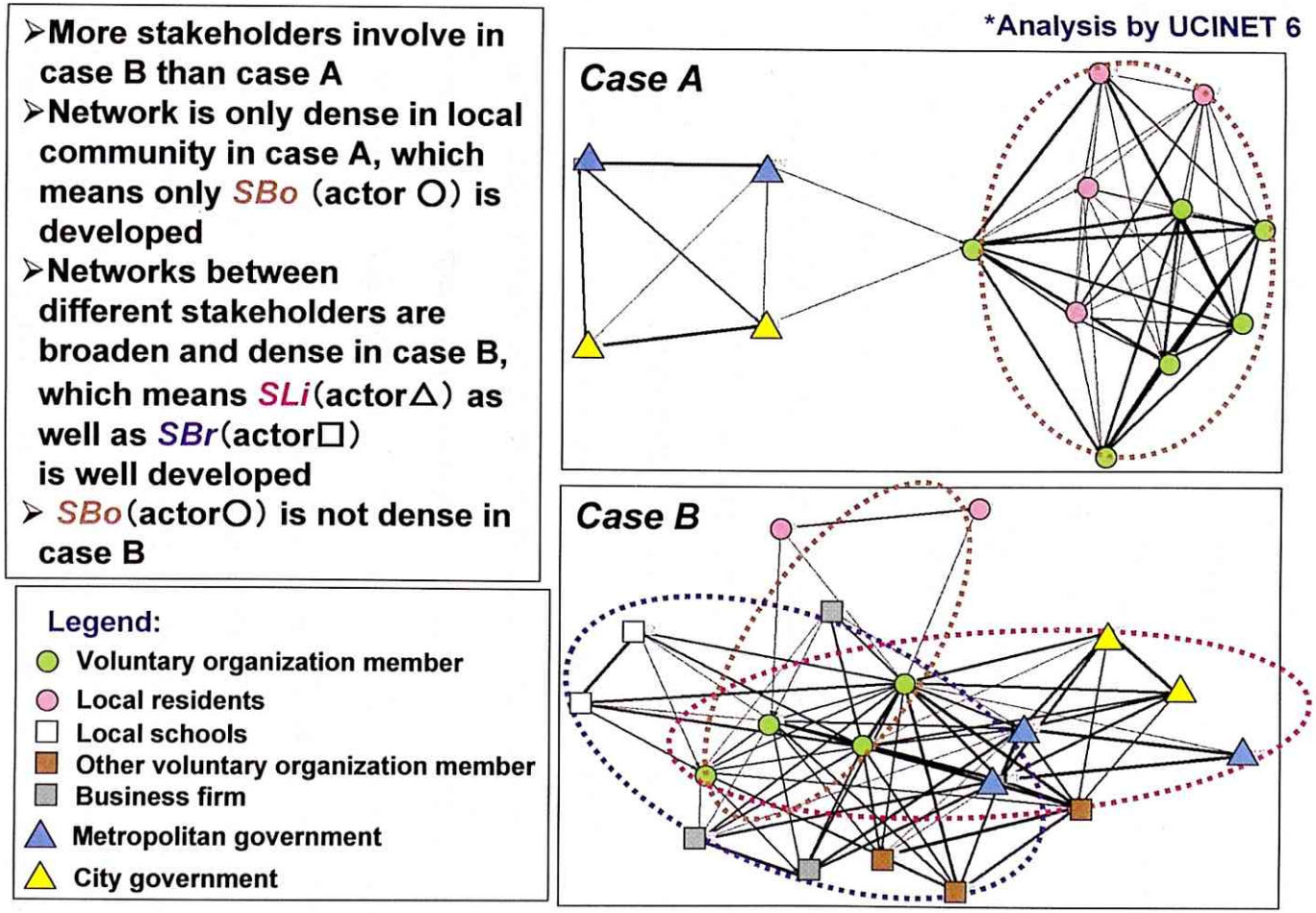


Fig.57 Results of social network analysis: stakeholders interaction of case A and B:

Brown dotted circle represents SBo, and blue dotted circle represents SBr, whereas red dotted circle represents SLi

6.4.5 Discussion

Combining the qualitative results from interviews and questionnaire and the results from social network analysis, it is obvious that broader and more dense network promote and sustain the green voluntary activities; i.e., the activities became more active and various in case B if compared to case A, with using different networks.

The detailed examination of all the results from both qualitative and quantitative results of the comparative case study, the different relations between SC, PA and FM (hypothesis as shown in Fig. 18 in page 89) of two organization are summarized as in Figure 58 and 59. The key words related to each category were identified from the whole qualitative researches.

In case A (Fig. 58), only bonding SC is generated and bridging SC is just started to generate. In fact, SBo existing in case A generated collaboration vice versa, and generated motivation for PA as well. Moreover, SBo is promoting knowledge sharing which is now developing the practical approached in the activities. Satisfaction from FM also promotes the motivation for PA. In addition, the governmental institutions are supporting FM activities although it is only for materialistic resources.

On the other hand, in case B (Fig. 59), more complicated dense SC has developed, which affect various factors. In this case, all six characteristics of SC are mostly generated and each characteristic leads different effects. Particularly, SBr existing beyond the organization affects on many important factors mostly: i.e., SBr is promoting collaboration works and stakeholder involvement as well as generating satisfaction of members in FM. Also, SBr contributes to knowledge sharing among different stakeholders. Moreover, stakeholder involvement is generating CBr, which is trust between different stakeholders. It seems that firstly structural SC (SBo, SBr, SLi) is generated, then cognitive aspect of SC (CBo, CBr, CLi) is also generated from

structural dimension in this context.

SLi , also plays important roles. The interactions between the organization and the governments work positively in many ways: e.g., supporting stakeholder involvement and materialistic resource gaining, as well as promoting actual planning for FM. Furthermore, institutions of PA approaches are supporting materialistic resources and stakeholder involvement; and the materialistic resources are supporting the practical approaches in FM.

Thus, SC effects on PA and FM in various ways in case B; as a result, other factors are also related to each other more effectively than case A. It is ideal that as many as networks have developed; and that consequently trust between stakeholders has also generated from the interactions. It seems crucial for the voluntary green activities to firstly try to build substantial networks.

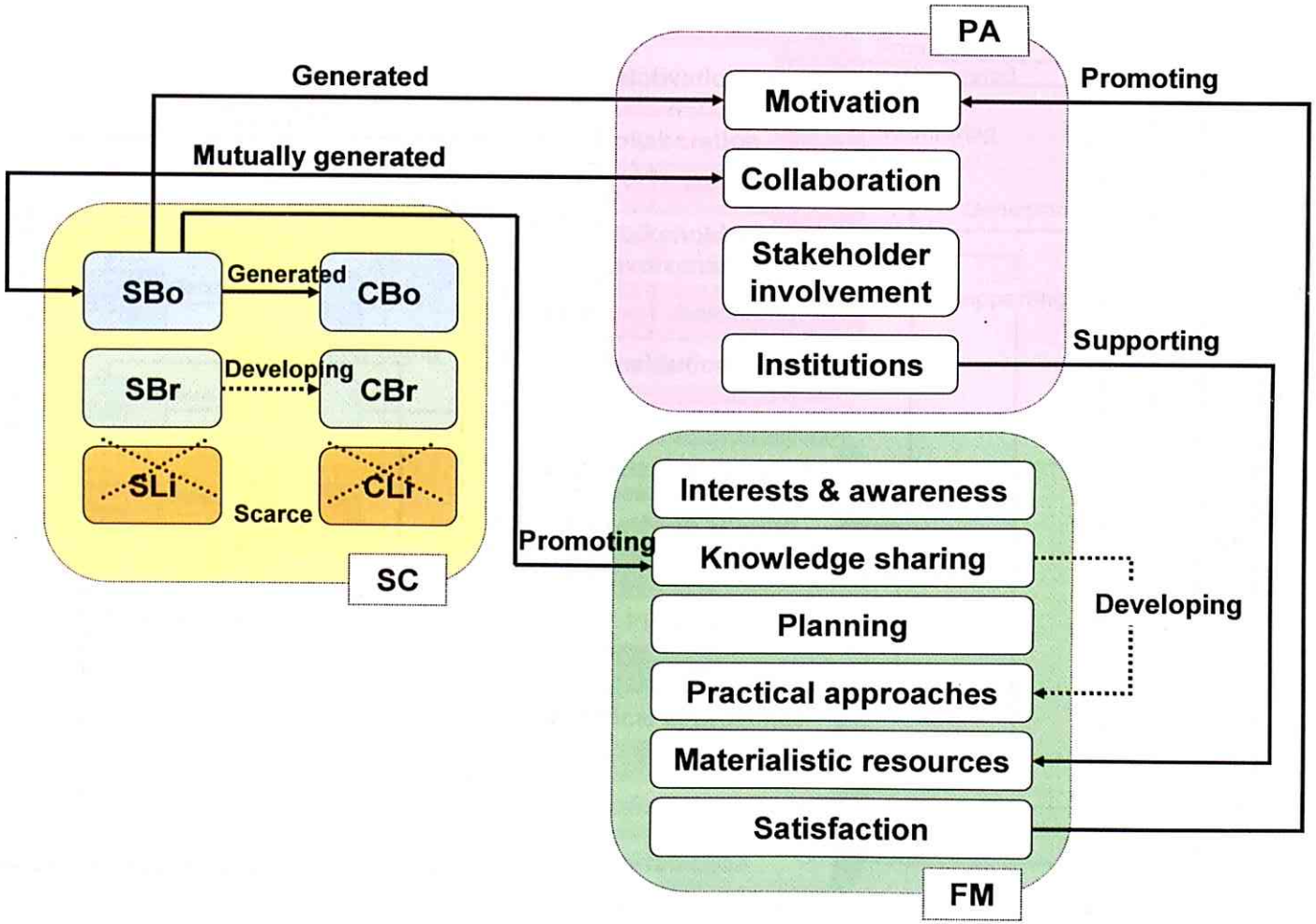


Fig. 58 The relations between SC, PA and FM in the case A:

the key words in each category were induced from qualitative researches in the case study

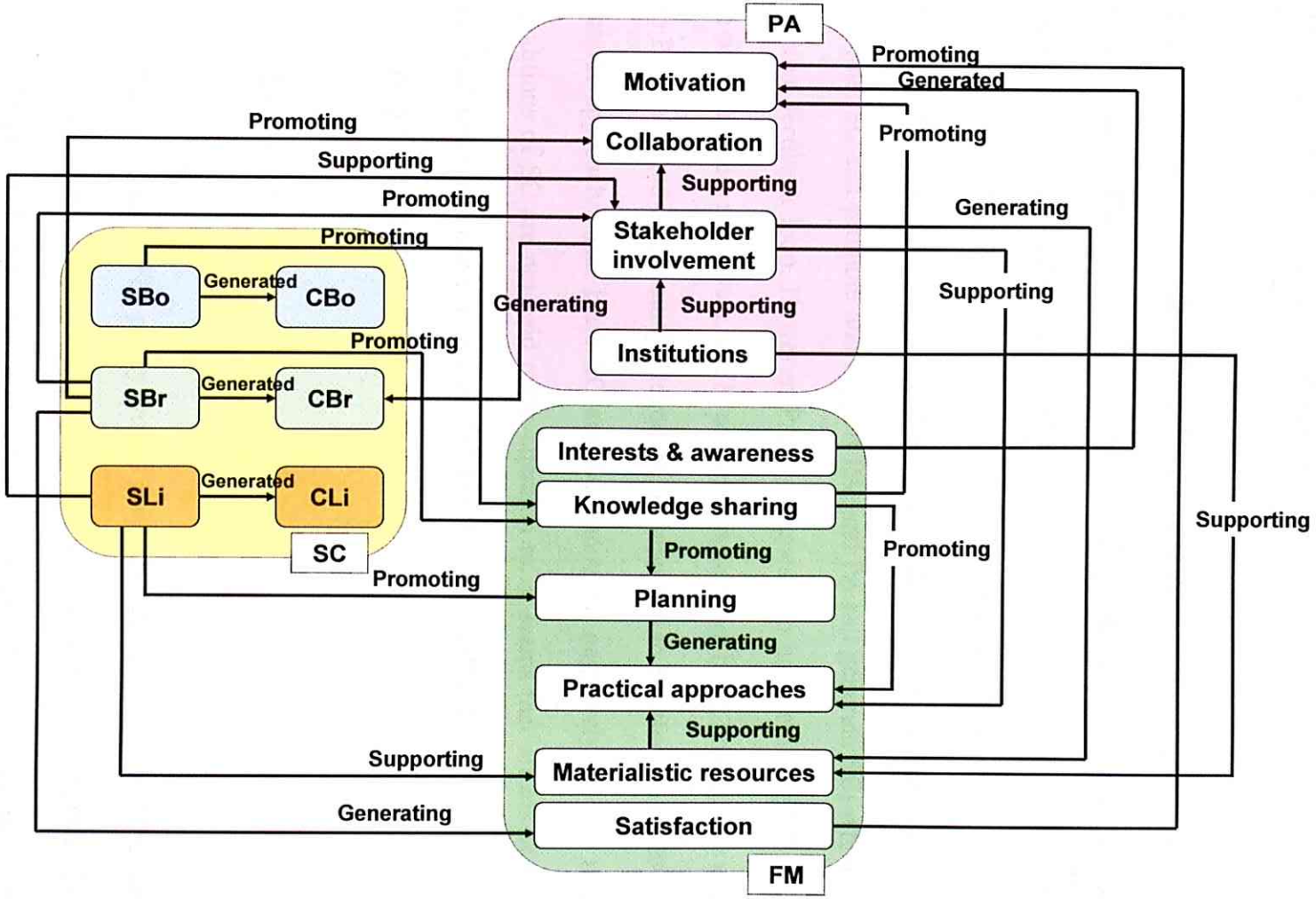


Fig. 59 The relations between SC, PA and FM in the case B:

the key words in each category were induced from qualitative researches in the case study