



CHAPTER V

SUMMARY, RESULT OF DISCUSSION AND SUGGESTION

The general objective of this study was to develop a sustainable waste disposal management model in the Yom riverside communities. The specific objectives were to create the sense of ownership in the waste disposal management project among the villagers and encourage the community to identify problems basing on their socio-cultural background. The participatory approach was applied in developing a continual learning process between the researcher and the stakeholders. The study comprised three phases starting with an investigation of the riverside people's way of life focusing on waste disposal practices. The first phase enabled the villagers to find solution to problems which were based on local wisdom, systematic brainstorming process and other reliable methods. After the solutions were obtained, process and mechanisms were developed for participatory evaluation. Tupperng community of Srisamrong, Sukhothai province was selected as the location to conduct this study. From the population of two hundred and forty households in the area, 40 stakeholders were purposely selected to become members of the research team on the basis of their ability to provide information, respectability in the community, leadership qualities and dedication to public services. Data were collected through observation, focus group, group discussion, note-taking and tape-recording. The data analysis was done by indexing, typology and taxonomy comparison and interpretation. The summary of this study was as follow:

5.1 Summary

The ways of life of the Tupperng people concerning waste

Way of life and occupation. The Tupperng people were agriculturists and measured their success on productivity per Rai. They regularly used chemicals to kill insects. These farmers usually threw used insecticide containers, such as cans or bags, into the Yom River. This waste or garbage was considered dangerous. In addition, they also cleaned the aforementioned containers in the Yom River. This was disastrous to the water condition of the Yom River. Furthermore, on both sides of the Yom River they grew tobacco and vegetables, which created wastewater. The wastes from cooking, composed of nitrogen and phosphorus, drained into the Yom River when it rained or after washing the dishes. At the same time, wastewater from farms contaminated with chemicals and other insecticides, such as herbicides, were directly dumped into the river

The utilization of new technology on the farms created garbage and waste that was very difficult to dispose of, for example, lube oil cans, grease bottles, old fan belts, etc. Furthermore, solid waste and toxic materials from farming activities, such as, electrical bulbs, neon tubes, batteries, brake fluid, cleaning agent containers, etc., were found. People did not separate these wastes or use the right methods for disposing them. In addition, the farming trucks, after being used, were always cleansed of dirt, mud and oil at the riverbank in the evening. The water mixed with mud and oil were drained directly into the Yom River. The used oil from the farming tractors near several houses formed pools of oil on the ground and the rain washed all of this oil into the Yom River and contaminated the water source.

Consumption lifestyle changes: the changes in the economy, society, culture and lifestyles of the people in the community led to a new and more complex society, which reflected on how the consumption habits of the people changed from relying on the previously balanced ecology of the community to relying more on the market system. Dependence on food bought from the market created excessive packaging material residues from the consumed products. Everything they bought from the market

or from the shops in the community were wrapped in non-reusable, non-degradable packaging material. *"There are a lot of plastic bags ,plastic bottles and we get them everyday; tomorrow they'll come again. We kept a lot of them, but the dirty ones were thrown away..."* (ThongKum, Conversation Group, B.E. 2546). These materials were haphazardly discarded and became a waste problem. These wastes, such as plastic bags and bottles, spoiled vegetables and fruits were disposed of in the Yom River where the people thought it was a convenient way to get rid of them. It was also close to their houses and by just throwing the garbage into the river, they did not have to be bothered with paying garbage collection fees either.

Way of life from a traditional perspective: Food was always an important part in all festivities may it be, ordination into monkhood, weddings, merit making and a lot of preparation was done to provide the monks as well as the villagers attending the ceremonies with an assortment and abundance of food. It was a nice tradition to strengthen relations between the people who lived together in the community. But after the affair, the garbage were dumped into the river. Drainage from the toilets also flowed directly into the river. This practice basically contaminated the river.

One such occasion was observed after a yearly community held rowboat competition which was followed by a night of entertainment at the temple where a lot of people joined in after the festivities ended, piles over piles of garbage were found spread all over the area, many of which were swept away into the river and the remaining left on the riverbank amongst a lot of overgrown grass.

On the "monk day" of every week, a lot of people would rise early in the morning to present food to the monks carrying their bowls during their morning rounds in the village. After the monks had eaten and given blessings to the people who came to the temple on that day, the people would usually hurry back home. A lot of leftover food still remained even after all the dogs running around the temple had been fully fed. Some people, unwisely but with good intentions would at the end of the day throw these leftovers and sometimes spoiled food into the river without realizing that it would

contaminate the river. In addition, a lot of these food came in non-degradable containers such as plastics and foam which were then readily disposed of in the river.

Environmental Hygiene: The drain water from cleaning dishes, washing clothes, bathing, cooking (such as cleaning fruit, vegetables, fish, and beef), the cleaning of farming utensils, such as insecticide tanks, washing of the farm truck, tractors and motorbikes, kitchen cleaning as well as water from the toilet, all drained directly into the Yom River. In addition, the garbage from households, shops and schools were left on the riverbank as well as in many other places.

There were huge piles of garbage on both sides of the river (Tupperng District) *"The garbage? It's a problem...there is one at the foot of the bridge at the temple entrance, another in the front of the temple and one more at the temple hall itself..."* (Somnuk) also *"... there is one over there beyond Berm's house, you see, people just threw it there, some still lremained on the riverbank ,the rest must be in the water..."* (Samarn) and *"... at the school, they just threw it behind the school, that is, once in a long time it will be burnt, other times the janitor always pushed it into the river..."* (Subin).

Tupperng people liked to build toilets and bathing rooms together in their elevated house above ground. After using the toilet or the bathroom, the drainage flowed onto the ground beneath the house and formed pits of dirty water. People called these pits "Num Krum" or black stinking water because its color and bad smell. Chickens always come to scrape near these pits. No management was done to the Num Krum; either they were left there to dry or remained at the same state forever. But some may dig long channels and let this untreated waste water flow into the river. Num Krum was a great source for breeding mosquitoes which also led to a very serious community health problem.

Conclusions for preventing the draining of waste water directly into the Yom River

Short-term Plans

1. Building of seepage pits
2. Growing plants to absorb the waste water
3. Building waste water gutters to carry household drainage to unused ponds or to fruit plantations
4. Building of concrete structures to be placed under waste water coming from the toilet and using this waste water to water trees
5. Providing designated areas for washing trucks, tractors, motorbikes as well as other farming utensils and machinery

Long-term Plans

1. Building of sanitation toilets on the banks of the river
2. Building simple waste water treatment wells
3. Putting in buckets for toilets
4. Building earthen dykes to prevent the waste water from flowing into the river

Procedures for Garbage Disposal

Short-term Plans

1. Building garbage dumps
2. Sorting out the garbage
3. Feed the domesticated animals with remnants of eatable items from garbage
4. Providing garbage containers for all households
5. Recycling the garbage
6. Re-using the garbage
7. Putting up signs not to throw any garbage over the banks of the river
8. Producing fuel from dry garbage
9. Burying wet garbage in the farms or gardens

10. Condemning people who threw garbage into the river
11. Refuse help to the people caught throwing garbage into the river
12. Using packaging material that are biodegradable and can easily decompose instead of foam and plastic.

Long-term Plans

1. The Sub-District Administrative Organization to start providing household garbage collection services
2. Establishing garbage collection center or garbage bank
3. Using wet garbage to produce organic fertilizer
4. Providing big garbage containers at various points along the banks of the river
5. Instill conscientiousness among the youth and the students
6. The Sub-District Administrative Organization to provide for the budget to buy and maintain a garbage truck
7. Prohibit any form of agriculture on the banks of the river

Evaluation

Project Results and Impact on the Community

It is apparent that this participatory research project allowed people with vested interests to participate in the research and produced remarkable and tangible benefits, as follows.

1. Developed the potential of the Community Organization. The project advocated and created leadership opportunities in the community, separate from the formal leaders who tend to manage the community's waste problem alone by themselves. These new leaders help solved the problem in the manner acceptable to and within reach of the community thereby fostering a better standard of living for the people as a whole.

2. It was the first time that people in the community were able to learn from one another by exchanging life experiences. This led to new ideas, new knowledge, new understandings and new awareness of the problem. It could be said that all of these were results of a combination of already existing local wisdom together with exposure to new technology.

3. A network was set up linking the government, the local people, the communities, the various organizations and what could be termed as the “bilateral associates” in the work to develop waste management. An obvious example is the “waste management network” at the community level, which was composed of community leaders, public health volunteers, the housewives’ group and officers from both the public and private sectors.

4. The people in the community joined forces to perform activities that were of public benefit, and led to a clear understanding of the community’s problem and to be able to seek solutions together. The participation in these activities constituted a form of “pooled resource management”. The contribution of labor, finances, ideas and time were important components in this community undertaking..

5. The people changed their attitudes towards waste problem and created a sense of satisfaction among themselves being able to get a grip on the problem and to manage their own sustainable development. This initiative to solve the waste problem and to develop the community came from using their own intellectual capacity.

6. They were able to include their own plans to solve the waste problem into the sub-district development plan, thereby allowing the allocation of budgets from local and government organizations to support the community operations and reinforcing the community further.

7. The research project caused the issue of waste management to be on the priority list of every household. Contrary to past government run projects where only a certain segment of the population were affected or could reap the benefits, this research

project had a much wider reach mainly due to the fact that it was “home brewed”, or in other words, created by the willful participation of the population themselves and using their own ingenuity

8. The research project taught the villagers how to work systematically and efficiently. This participatory process of the community research encompassed various stages--starting from the study of lifestyles in the beginning and continuing through to finally seeking solutions to managing the waste, this included developing the processes, the following-up, and the evaluation. The numerous tasks needed careful planning and full coordination in the access of resources and the holding of various activities such that work duplication was minimized and responsibilities were equally shouldered among the stakeholders.

9. The work was carried out effectively because clear priorities were set, objectives were identified, strategies were developed and plans precisely laid out in order to reach the desired goals. Decisions were made based upon available resources, local wisdom and most importantly, the concerted effort of the villagers to take matters in their own hands to make a change for the betterment of their community without relying on government handouts.

10. The research project encouraged equality in the community participation. All members of the community shoulder the responsibilities proportionately leading to a strong conviction to fully address the problem and find workable solutions to it.

11. The research project allowed the villagers to become self-reliant by creating awareness and building confidence little by little until they reached a point where they became self-assured of their abilities to tackle the community problems by their own. The researcher merely acted as a guide, a provider of thinking tools, a supporter and at certain times a director for the participating village leaders to master the art of self help. Once that was accomplished, the tasks could then be carried onward by themselves without the need for the researcher to be present any longer.

12. The old Thai saying, “Ru Kao, Ru Rao” or “knowing him, knowing me” truly symbolizes what had taken place in this community which contributed as one of the key success factors of this research work. The Tupperng community is a very closely knit community. People know each other well and whenever information was needed on local cultures, lifestyles, local wisdoms, traditions, rituals, values and beliefs, it can be readily acquired from different people who happened to possess these varied information. A supportive climate prevailed throughout the research work and most evident was the willingness of every party to lend a hand in improving the well being of the community. This is in regards to creating a better environment once the garbage disposal problem that links directly to the health of the Yom River had been successfully addressed.

13. From the research study, a “public society” was created, i.e., when the people in society with civic consciousness come together as one in some activity with love and care for each other under a management system to gain knowledge together. A public society can produce power exceeding that of the public and private sectors. This type of participation is a civic organization that can be either formal or informal and can create a social structure with horizontal relationships, which can create stable, solid, and sustainable development if smoothly coordinated with the structure in a vertical relationship.

It can be concluded that the community achieved sustainable management of the waste problem. Community participation was at the heart of solving the problem. Finding the solution to the problem of wastewater and garbage disposal can serve as a basis for solving any other future community problem. Therefore, community participation is not only important, it is essential in the work of all sectors.

5.2 Results of the Discussion

5.2.1 Research Methodology

This participatory waste management study used each step of the participatory paradigm for participative learning and collaboration between the researcher and the residents (Participatory Working Approach: PWA) to find ways to solve the waste problem which was a social problem affecting the health of families and the community. Every party jointly solved this problem, especially the community itself, which was responsible for the cause of the waste problem in the beginning and in turn was severely affected by it. Therefore, participatory appraisal could motivate the residents of the community to understand and use their knowledge to find appropriate methods to solve the waste problem in a systematic manner.

The promotion of community participation in waste management used the evaluation study of the community at every step together with education promotion which emphasized data exchange and comprehension. The experiences gained from solving the waste problem created the opportunity for the participants do group brain storming and, to acquire the appropriate and feasible solution to the waste problem., This concurs with Theerayudh Boonmee's (1992) findings where he said that to have the community jointly participate in an activity created power within the community itself. A strong community lends itself well to newer developments and progress.

The research team was initially formed by recruiting leading individuals within the community who already command respect from the people as having held important roles or had significantly engaged in developing the community before. These individuals were held in high regard by the general local population. The reason behind this selection was because these researchers would set a good example for others in the community to follow. Being of high prestige, beloved and admired by the community tend to have an added advantage when it comes to convincing people to follow their examples. These new researchers were then given the right tools to start addressing in a systematic manner the pending waste disposal problem that the community faced. The seed of this learning process was first planted in the minds of these new researchers

who were able to fully exercise their thoughts on the subject matter, exchange opinions, step back and thoroughly looked at the root cause of the problem before attempting to find the most acceptable solutions. Once the idea germinated amongst the researchers, it later expanded out in all directions and ultimately reaching out to everyone in the community.

The waste disposal problem in the community if left unabated will progressively become worse reaching a crisis point in no time. It is becoming clearer everyday to the community that the final result would have been the death of the Yom River and the deteriorating living environment of the community. A time bomb was ticking and when exploded would cause severe health effects and possible epidemic caused by unsanitary living conditions among the population residing along the Yom river banks. Therefore, a major mobilization of efforts of the people in the community needed to take place to stop detrimental practices that had been going on for ages that was harming the river to the point that the river can no longer maintain its own wellbeing without external interference. Fortunately, the proposed participatory problem-solving technique was just the right match to address the devastating situation that the Tupperng community was facing. It was important to take note of the fact that the participatory approach created a strong sense of ownership and once the community felt that they were both the originator of the idea as well as the practitioner, sustainability of the project almost became a non-issue.

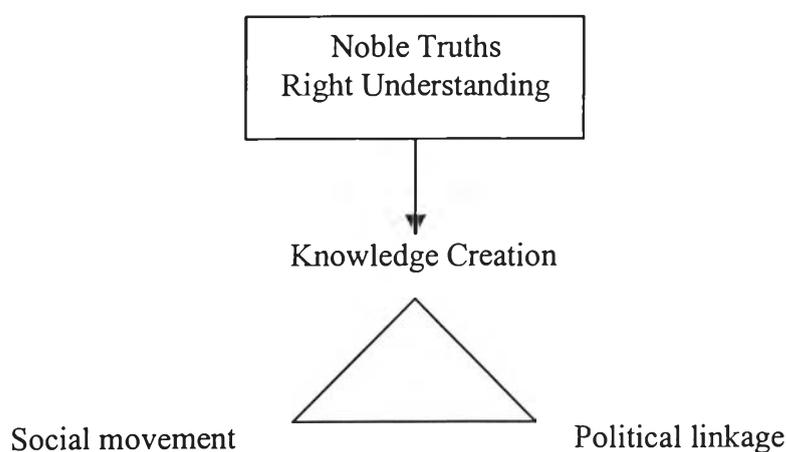
Currently, government authorities alone cannot solve the waste problem. The best alternative is to give the community a chance to take the primary responsibility in addressing the waste problem starting from the beginning. Namely, in the data collection, indentifying the problems and determining the proper ways to solve them, to jointly summarize the results of this learning process and the final evaluation of the waste problem-solving procedures taken to determine its effectiveness. All of these activities are designed to motivate the community to participate in solving the waste problem. Ideas for solving the problem reasonably and systematically are created by adhering to the Four Noble Truths, which is a way of solving problems that is in accordance with the Buddhist way of life. The success of this experimentation also

depended on the creative power of the community itself. Once having gone through this learning process, the participants will have the tools and the experience to tackle other community problems in the same manner. At least one thing that the participants will get out of this research project is that they will be able to appreciate the significance of “data” that had been gathered, compiled, catalogued and put in a data management system that can be accessed and analyzed appropriately. The importance of data collection and data analysis was a very well pronounced part of this research project. One practical research technique is to have residents form a sort of a “people’s organization”, once this is established, they will be able to work much more cohesively, vigorously and effectively. This research project basically enabled residents to conduct research and establish a local research team. It views people as members of the community. The heart of the participatory research process is community management which requires someone to act as leader of the group. He/She must be able to provide the knowledge and skills in doing the research without dominating the thoughts and decisions of the other research team members, but by promoting and supporting their work. In our particular research project, residents in the community play the major role in every step of the research process.

Community members have the opportunity to be members of different interest groups established within the village. They take part because it gives them the option to be jointly responsible on what goes on in their district. These residents are then empowered to monitor the work of the Sub-district Administrative Organization more effectively. However, in our situation, promoting the participation of the residents in solving the waste problem belongs to each separate community, as each community is different in various aspects, namely, their physical size, economy, social and cultural values, as well as their different administrative structures and political environments. A thorough study for each community should take place prior to implementing any development plans and making sure any customizations needed are well in place.

5.2.2 Conformity with theoretical concept

This research was in line with the problem-solving techniques used in Buddhist teachings called “The Four Noble Truths” (Ariya-sacca) and the “Right Understanding” (Samma-ditthi). By combining this two with the theory of the “Triangle that can move a mountain” of Praveit Wasi (1998), the researcher has come up with a newly modified problem-solving approach. This problem-solving cycle consists of education, learning, problem analysis, problem resolution, and result evaluation. The education and problem analysis portion is taken care of by “The Four Noble Truth” and the “Right Understanding” concepts in Buddhist teachings which would then lead to the proper problem-solving technique. However, to create social change, the three components of the “triangle-moving mountain” do have to play their important roles. Those in the community who were interested in this research participated in all the steps which can be described as follows:



1) Knowledge Creation

The research studied the community’s ways of living in relation to waste generation and disposal habits aiming to create awareness or knowledge such that the community could find the cause of the problem. This was done to provide a clear understanding to the residents based on the Buddhist principle about “Right Understanding” and in accordance with Virutsetazin’s concept (1999) which said that humans are unable to solve a problem if the source of the problem is not known. “Right Understanding” or realization enables the use of wisdom to analyze a problem by

listening, seeing the real thing, reading, thinking and experiencing. Humans must understand a problem thoroughly first before being able to solve it. “Right Understanding” will lead to knowledge and understanding and the gaining of self confidence. By this belief in reasoning and the seeking of the root cause of the problem will one finally gain true wisdom In summary, by using Buddhist teachings, the residents were able to lay out the facts of what was actually happening in regards to the problem that they are trying to solve before embarking on finding reasonable and workable solutions for them.

In studying the riverside community’s ways of living, emphasis was placed on waste management. By taking a step back and looking at the big picture, the analyst and the residents were able to obtain knowledge and understanding about the real causes of the waste problem that the community was currently facing. By exchanging ideas and learning from each other, the residents were able to link the knowledge received from solid data about their social behavior in generating and disposing waste together with local basic values and ways of thinking, enabling them to find the root causes of their problems. What had been done in parallel as well by the researcher was to do a fact finding of his own by observing, questioning, talking and noting down the residents’ practice and behaviors in order to confirm and validate the information that came out in the open during the group discussions. This was done in accordance with Tondon’s concept, who said that the major key in participatory research is building knowledge, once knowledge is gained then analysis and problem resolution can take place. This is also in conformity to Fine’s concept (1994). Fine stated that knowledge can occur in daily life and we should apply that knowledge and make it useful. Furthermore, Park (1993) also mentioned that knowledge generates practice????, and learning through reason comes from observing daily life. It also agrees with Brown’s concept (1985), that importance must be given to talks about daily lifestyles which could be expanded to include learning about everything found in the community, both background and social life styles, by taking notes, talking to people, observing and participating in community activities.

There are numerous factors that had to come into consideration when trying to understand why people do things the way they do, such factors are for example, people's lifestyles, social relations, local cultures and traditions, value judgements, differences in ages and sex, beliefs and local wisdoms, etc. By piecing all these aspects together carefully and see how it affects the waste generation and disposal problem of the community can one see the synergy and understand the situation (knowledge creation), realization of the situation then naturally followed afterwards (awareness). Once both had been reached then it was time to find the solution to make changes in the behavior of the residents in the community and transform it into a social movement.

2) Social movement

The study found that the residents understood the cause and effect of the river water pollution problem and that it was within their own reach to find solutions to remedy the situation. Since the cause was due to their own making, they find it incumbent upon themselves to get the matters taken care of without relying on external help, i.e., a strong feeling of ownership prevailed in the community because this long impending problem had a direct effect on the livelihood of everyone in the community. In this project, the researcher acted as a director, a guide in showing the ways and giving the tools needed for the residents to use in their deliberations to finally come out with the most satisfactory solutions that will be acceptable and acted upon by the residents of the community. During these many deliberation sessions, various ideas were tossed around, some were agreeable while others were not. But the opportunity to openly express one's opinion in a level playing field where everyone is treated on an equal basis helped form a kind of good rapport amongst the participants and strengthening their relationship even more. Virutsetazin (1999) suggested that the Four Noble Truth problem-solving methodology is an art of problem-solving based on rationality. It is a problem-solving method using the people's conscience to systematically go through their thought process and using their wisdom to solve the problem in well defined stages. This problem-solving method is considered to be most valuable in laying the foundations for a strong society. The Tupperng community demonstrated an ideal case of a social movement that resulted from the mobilization of efforts to remedy a serious problem the community was facing and to become totally self reliant in the end.

Their multi-partnership in solving this waste problem conformed to the concept of Rappaport, J. (1985), that building group capability was similar to building the potentials of the residents. The ability to reach a common understanding amongst the residents helped in upgrading the life in the community itself. This coincided with the statement of Schratz, M. and Walker, R. (1995) that taking part as a group in analyzing the results, developing an understanding of the problem, gaining new knowledge, and becoming more confident in problem solving led to a very significant human development that enabled social change.

What happened in the Tupperng community was the creation of “social advocacy”, i.e., “people in the community having a joint civic consciousness in the form of partnership in every activity, with love and solicitude for each other under the joint management system”. Thus, these social advocates created a powerful force stronger than those created by either the government or the private sector. This grass roots level structure that was formed by this research study, if combined with other networking structures could create a formidable and enduring force to achieve other goals in the betterment of their community.

Solid, Substantial Development

By being among their peers where in fact a number of them are relatives and in-laws, the residents felt much more freedom to express their personal opinions. This was contrary to the traditional situation when they were being recruited to participate in government run programs where they had to attend a series of lectures and being “educated” by the “experts”. The plurality of the groups that got together is that community members who are social advocates have the right and the obligation to commit themselves at par with one another down at the grass-roots level, in which they must depend fully on one another. This interdependence is most important whenever it is necessary to solve any big problem that exists between the residents of the community and the local political system.

3) Political Relationships/Linkages

The political relationships does have a very important impact to the success or failure of the whole undertaking. Although solving the waste generation and disposal problem in the community required behavioral changes in the residents themselves, a number of solutions that were worked out required allocation of budgets from the local administrative organization as well as from the sub-district level as well. In order to get this budgets passed, it must first be included into the sub-district development plan for the fiscal year and this is where the local politician's role come into play.

Local politicians are people elected by the community for their integrity, having good track record in providing social services to the community, trust worthiness, know their way around governmental bureaucracy and in general being persons of virtue and commanding the respect of the community. The local politicians who joined this research, one was the local administrative organization leader and the other was the sub-district administrative organization member. These two local politicians must understand the needs of the residents well and had to look for ways to put the already worked out solutions to receive government budget allocation by incorporating it into the sub-district development plan.

These three processes, namely, knowledge creation, social movement and political linkage as referred to by Prawes Wasi (1997), he also talked about the capacity of the community and the strategy that the community should take; by cultivating public consciousness in the love for knowledge, the understanding of the nature of the community, the meaning of empowerment, sharing, unity and the drive to be the source of power for problem-solving. According to Prawes Wasi, unity plays a very important role in the success of any social undertaking as it acts as a galvanizing force in directing people towards a mutually agreed goal. The fashion in which community problems are resolved can come in many forms. It can either be "top down" where the community leader takes upon himself to come up with the solution he sees fit and then convince others to follow suite or he can recruit the help of others in a concerted effort to find the right solution to the community problem.

5.2.3 Problem-solving Model

This research aimed to develop a problem-solving model that could be applied by the residents of Tupperng community to find a ways to solve the waste problem that the community was facing and to determine the course of action. This objectivity could be highlighted as follows:

- The main emphasis was not merely just to solve the waste problem in the community but to give the community which was represented by the research team members a new perspective in looking at the problem at hand. This is done by providing the tools and methodology that they were not aware of before and how it can be used in a systematic manner. The crux of the research is to make the community realize the enormous capacity that existed within the community itself, the local resources already available to them and the formidable power in their hands once they all pull themselves together, sharing experiences and local wisdom that existed from generation to generation and to basically work together without relying on outsiders to find solutions for the community problems.

- By having the research team members go through a learning process where they were asked to systematically look at the root cause of the problem, to look at the way the community led their daily lives and practices in regards to the waste generation and disposal issues, can they have a deep understanding of the circumstances involved. In other words, a mirror was given to the community to provide a reflection of their own practices that led to the deteriorating pollution problem. Once the cause was fully comprehended, following steps could be taken to try to resolve the problem.

- By sharing experiences, applying local wisdoms, exchanging ideas, the research team members were able to come up with solutions that were practical, could be easily implemented and readily acceptable to the community.

- Before this research project was initiated, the typical means in solving community problems did not require the mobilization of the community to take part which most often resulted in failures. Community issues could not be solved by one

side only, meaning by the government. In many instances in the past, government efforts tend to make the matter even worse by duplicating things or providing things that was no need to the community or not high on the list of priority since it was not customized to a specific community in general. Getting the residents directly involved in solving their own community problems helped overcome a lot of obstacles and resistance normally encountered in the former method.

- Projects run by the central government alone had a tendency to fail afterwards due to lack of community interest and proper follow-up. Those that do get the local administrative organization and the sub-district administration organization involved had a better chance for success. But the most viable alternative was to also get the local population involved as well. Success is almost guaranteed if all three parties joined forces and do things together. The participation of the authorities were important due to the fact that they do have a say in the budgetary process, the higher up in the ladder the more power in designating the budget allocations. The researcher played a role in helping negotiate with the sub-district administrative organization and other government officials to bring resources and necessary technology, which were not initially available to the community to help solve their problem

A great deal of patience and effort was needed on the researcher in integrating the varied background of the research team members who were accustomed to the operation and management styles of different community organizations that they each belonged to in the community. By using a trial and error approach, early meeting might not lead to a successful conclusion but as time goes on the possibility of coming to a positive outcome increased when the participants begin to realize the significance of working together and accommodating each other more and more. By having the local research team members go through the learning process together reaffirms the finding of Israel et al (1994), who remarked that joint research is not like any other research because it promotes learning from practice. A sense of discovery and conviction will be developed after the joint learning. Lessons are learned not only from successful outcomes but also from the obstructions that led to failure; by attempting to minimize the factors that led to failures, can one automatically increase than chances of success.

5.3 Suggestions

Having initiated this participatory research and following it through to the end, the researcher had made a number of observations and discoveries along the way that will facilitate similar activities in the future. The details of these new findings could be stated as follows:

5.3.1 Suggestions for implementation

I. Government regulations and the officials involved

(1) Government officials will have to change their attitudes from being somewhat nonchalant to be more aggressive and to develop more skills to blend into the community by working closely with the community. They can act as a “learning process coordinator” to motivate the community to think, to analyze and to fully participate in activities to solve the community ills.

(2) Joint learning with the community was important, especially in the study of the community’s way of living. It was considered the starting point of real participation. If the data collected were inadequate or incorrect, the overall picture of the original problems of the community would not have come out. This would have affected the process of solving the waste problem in the community by not being able to link the cause and effect properly.

(3) Government officials must have confidence in the local residents in their ability to learn and to develop their own problem solving expertise. These capabilities do not solely reside on the government official side only but the residents themselves could also possess these qualities as well.

(4) Community development projects do need continued support and involvement from governmental organizations in order to increase the chance of success and to achieve a certain level of sustainability.

(5) The process of solving the waste problem should be conducted by the community down at the grass roots level for they are the ones closest to the situation. Some of the government officials were not local people and therefore were not familiar with what was taking place in the community

(6) Encouragement in trying to solve the problem without giving the needed tools would not lead to success in finding the right solution. The two things would have to go together hand in hand. The tools mentioned were basically the methodology in doing participatory problem solving that comprised of things such as data collection, dissemination, data analysis, the exchange of ideas and local wisdoms, focus group discussions and deliberations, etc.

(7) The joint effort of the local research team together with other community organizations to solve the waste problem is considered vitally important

(8) Close monitoring of the research team members was necessary to get the research project moving forward smoothly and speedily. Care must be taken to make sure that time be appropriately spent on certain issues and not get bogged down in the process. Observations for any changes in the community organizations as well as the personal interactions of the research team members must be detected early on to make sure that it would not affect the research project.

II. The role of residents of the community

(1) The residents which comprised the research team members must participate in the thinking, the analysis and the work-planning and treating it as a unified system. Responsibilities must be divided amongst the participants according to their respective potential and skills, such as activities relating to, problem solving, organizing campaigns, managing public relations, restoring the quality of the water source, keeping watch, enforcing rules, and applying technology.

(2) Building confidence and uplifting the morale of the participants and the community leaders were an important task in assuring the success of the research

project. Working towards the same goal as a team while garnering the support of the whole community would lead to long lasting solutions.

(3) A sense of ownership played one of the key role in guarantying the success and sustainability of the undertaking. This sense of ownership was derived from having actively participated in the solution finding process, in offering advise and of sharing experiences, in patiently listening to other people's ideas and in truly believing in the cause

(4) In implementing the solution to the waste problem, the community organization was the starting point. In order to solicit more converts in a reasonably short period of time, it was important to get other organizations or community network to join in as well. These other groups are such as the women's group, the youth group, the senior citizen's group, the public health volunteers' group, etc.

(5) It seemed like everything boils down to one important aspect and that is of having a "learned community". A community that is aware of its surroundings, the many pit falls and how to get out of them, a constructive social gathering working towards a common goal, an unrelenting team work, etc, all of these and more were indeed a surefire ingredient for a self reliant community.

(6) Community capacity-building was achieved in this research study by having the participants engaged in every step of the process. Beginning from studying the community's way of living in regard to waste generation and disposal practices, problem analysis, result findings, solution determination, implementation planning and finally the outcome evaluation. As each steps were undertaken, confidence and understanding began building up along the way until it reached a point where the community itself possessed the capacity to tackle other community problems on their own.

5.3.2 Suggestion Leading to Applications to other communities

The result of this research study in participatory waste management in the community could be applied to other communities, by making sure that the following important issues must be addressed accordingly:

(1) There must be an entity to “play host” to the effort to solve the community problem. This entity could be an individual or an organization but with the prerequisite that it must be well versed about the community itself. Therefore, it could be a local official, a community leader or any community organization that was willing to devote time and effort in organizing, directing, mediating, planning, motivating and galvanizing the whole community into working together to form a unifying force to address the pending community problem.

(2) The whole idea of community participatory problem solving was to have everyone participate in the solution finding process. Every participant would have equal voice and equal opportunity to express his/her ideas, share experiences as well as having the patience to listen to other people’s opinions and providing constructive comments. For this to happen, there must be a person to orchestrate the various steps in the problem solving process. He/she would act as a “director” to make sure that the discussions do not go by the wayside, that all the necessary steps were taken properly and that everything went smoothly and according to plan. He/she would try not to inject his/her own ideas or try to influence the decisions of the participants in any way.

(3) The atmosphere at each of the gatherings must be made to be conducive to having a friendly, constructive, informal discussion. Depending to the nature of each particular community, the venue could have been at the village headman’s home, the temple meeting hall, the village coffee house, the village store or any other convenient place. By creating the right atmosphere to start out, chances were that the gathering would be productive as well as entertaining for the participants such that they will come back for more on their own will. As observed at Tuppermg, each gathering felt more like a family get together where food were prepared and served as well as some form of entertainment (karaoke singing) was available afterwards.

(4) A true commitment from the participants were needed to ensure success in the undertaking.

(5) Access to resources both internal and external to the community as must be made available.

(6) The process of result assessment and evaluation must not be left out for it provided the feedback to fine tune the actions taken to make the solutions more effective and to allow corrective measures to be undertaken

5.3.3 Suggestions for Research Work

In this participatory research study, the residents participated in every step of the research. It was a process that developed the potential of the community by guiding the community to go through a problem analysis process, determining the ways to solve the problem and to jointly implementing the solutions in the community. The researcher clearly defined his role before entering the community, he studied the residents' ways thinking, then adjusted his own thinking and attitudes. The researcher learnt about the residents' ways of life and their problem-solving methods, he assessed the readiness of the residents, gave support by introducing useful processes while always having the residents played the main role. He motivated the residents to learn every step of the research process and assisted them in solving their own problems. With this experience and tools in their hands, they will be able to solve other future community problems much easier than before.

It must be said that this research project had been very time consuming due to the fact that a significant amount of preparation work was needed to select a community that in the researcher's initial observation was ready for this kind of participatory problem solving approach and the community had the capacity and the potential to undertake this new challenge. Once the project was well on its way, evaluating the results of the solution implementation took quite a bit of time before the expected transformation took place. Looking back, the time was well spent. Without a lot of preliminary leg work and preparation, this research project would not have been as successful as it is today.

5.3.4 Suggestions for further research

(1) Although the methods developed in this participatory waste management study are new, this concept should be used with other communities or to address other community health issues not related to waste management.

(2) This research project had proven that participatory problem solving methodology can be successfully applied to real community with very satisfactory outcomes. It therefore could serve as a model for any future community level projects that seek to empower the community to become self reliant in addressing any problem the community is facing in a well planned and systematic manner.

(3) Finding the method to solve the waste problem in this research was based on the Buddhist way of problem-solving, using the “Four Noble Truths” and the “Right Understanding” in accordance to the villagers’ Buddhist way of life. This framework can also be applied in other public health problem-solving research studies as well because it is based upon reason and truth in nature.

(4) Participatory evaluation is the study of operational results and conclusions, by which the researcher and the people in the community together studied the results of the solutions being implemented. This is one of the most important steps that must not be neglected for it allowed corrective measures to be developed and taken if increased efficiency is required. Close tab and on going monitoring will only ensure continued success since there is no guaranty that things will not go back to where it was before again.