

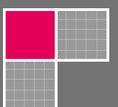
2009

Report

Evaluation of Bebnine Project

"Understanding Water, Understanding Health: The case of Bebnine"

Rana Haddad Ibrahim, MPH
Consultant AUB
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Acronyms

| | |
|------|---|
| AC | Advisory Committee |
| AUB | American University of Beirut |
| CBP | Community-Based Project |
| FGD | Focus Group Discussions |
| FHS | Faculty of Health Sciences |
| IDRC | International Development Research Centre |
| NGOs | Non Governmental Organizations |

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I. Introduction

Improper discharge of wastewater is a main environmental and health concern for the town of Bebnine, an underserved community, in North Lebanon. The community in general, and its health professionals in particular, believe that the fecal contamination of its different sources of water (springs, artesian wells, cisterns, irrigation water) is directly responsible for the high occurrence of enteric diseases in the town, some of which are perceived as endemic. Preliminary water analyses in 2003 confirmed the community's concern, including the unexpected microbial contamination of the well that supplies drinking water to two densely populated public schools. The community believes that separate and well-maintained water and sewage networks would solve their problem¹.

In order to have a better understanding of the linkages between people, water, and health in the town *the American University of Beirut (AUB)* funded by International Development Research Centre (IDRC)-Canada, conducted over the four past years a Community-Based Project (CBP) in Bebnine. Based on the "Ecosystem approach to human health", a trans-disciplinary research team has worked closely with the community to understand access to water, its quality and impact on health specifically enteric diseases.

Bebnine community was selected because it responded better to the research project's set criteria in addition to the implementing agency (AUB) having easy entry point to the community because of prior working experience. *"First it is agricultural sector, second it is underserved, third there is a potential for community participation, because we're already working there so we thought that that would be a good starting point", A member of the (AUB) research team.*

IDRC-Canada was convinced by AUB undertaking this project because of the interfaculty environmental science program; four faculties namely the faculty of agriculture, the faculty of engineering, the faculty of health sciences and the faculty of arts and sciences, offer a Bachelor of Sciences program called "environmental science", with different majors where each one of these majors is offered by one of the four faculties. This program answers one of the main pillars of the Ecohealth approach.

The Ecosystem approach to human health, Ecohealth for short², a new research framework developed by IDRC, needs to involve three groups of participants: 1- researchers and other specialists; 2-community members, including ordinary citizens,

¹ Understanding Water, Understanding Health: The Case of Bebnine_A proposal submitted by the Interfaculty Graduate Environmental Sciences Program (IGESP) at the American University of Beirut, Lebanon to IDRC- Ecohealth Program, September 9, 2004.

² Health: An Ecosystem Approach, in_focus, IDRC, 2003.

peasants, fisherfolk, miners and city dwellers; and 3- decision makers. Furthermore, the Ecohealth approach is based on three methodological pillars precisely transdisciplinarity, participation and equity. Briefly described These terms means the following:

1. Transdisciplinarity implies inclusive vision of ecosystem related health problems. This requires the full participation of each of the three groups mentioned above and validates their complete inclusion.
2. Participation aims to achieve consensus and cooperation, not only within the community, scientific and decision-making groups but also among them.
3. Equity involves analyzing the respective roles of men and women, and of various social groups. The gender dimension recognizes that men and women have different responsibilities and different degrees of influence on decisions: it is therefore important to take gender into account when dealing with access to resources.

The CBP, a research oriented project, aimed at achieving the following objectives¹:

1. To develop an understanding of the people-water linkages in the town of Bebnine.
2. To assess the impact of microbial contamination of water on the health of the community.
3. To assess the contribution of non-water sources to enteric diseases or diarrhea.
4. To develop and implement community-based short and medium term intervention programs.

In summary the project activities that extended from December 2004 until July 2009 included the development of an advisory committee, the prioritization of needs, three household surveys (2005, 2006, and 2007), a detailed GIS map, monitoring water quality on a monthly basis in 20 sources and twice in a sample of households before and after the first rain, and a series of town meetings, workshops to disseminate the results of the surveys and to increase awareness of the community, development of project materials and focus groups to understand the cultural determinants of the problem.

Coming to an end, the project needed to be evaluated. Ms. Rana Haddad Ibrahim was recruited by AUB project team to undertake an external evaluation of the project.

II. Objectives of the Evaluation

The evaluation, qualitative in nature, will assess if the three pillars of the Ecohealth concept were respected during the process of the project, the degree of satisfaction of the communities as well as how the community perceives the impact of the project, in addition to the project team and community recommendations.

Thus, the objectives of the evaluation are:

1. To undertake an independent assessment of the overall project and assess if all objectives have been met.
2. To assess the activities, services provided, and quality of surveys of the project.
3. To assess the extent of community participation and the satisfaction level of the community with the research team, project, and project activities.
4. To assess the likelihood of sustainability of the project and the services provided after the research team leaves.

The following are the questions that the evaluation tried to answer:

- Have all aspects of the Ecohealth Approach been covered?
- How is the project perceived by the community and by the stakeholders?
- Who benefited and in what ways? Is anyone being disadvantaged?
- What were the successes and failures of the project?
- What were the facilitating factors?
- What challenges have arisen and how have these been addressed?
- What else needs to be done?

III. Methodology

Given the nature of the project and the assignment as well as the project outputs, the consultant in agreement with Dr. Habib opted for a qualitative evaluation. Thus, the methodologies used were in depth-interviews, discussion

meetings and Focus Group Discussions (FGD) in order to ensure triangulation of the information provided. In addition, observations were noted through a field visit to the community to attend the project closure event and to visit the water source in Al-Sharkiyeh where the filter was installed. Furthermore, four interim technical reports were reviewed as well as the material used during the awareness raising interventions and the dissemination of information.

Taking into consideration the limited time assigned to undertake the evaluation and consequently the availability of the participants, the following was conducted: 1- three in-depth interviews, based on an interview guide (Annex 1), took place with the head of the municipality and one of its members who is simultaneously a member of the advisory committee as well as with Dr. Nuwayhid and Dr. Habib; 2- one focus group discussion (Annex 1) with women living in Al-Sharkiyeh neighborhood attended by nine women most of them are housewives while two are school teachers, one is a school supervisor in addition to a university student; and 3- two discussion meetings with three ladies each; precisely the women members of the Advisory committee and those who participated in at least one of the three surveys conducted (two participated in the three surveys while one participated only in 2 surveys). (Annex 2)

The sample of participants is considered a convenience sample.

The procedures undertaken were as followed:

- After consultation and agreement with Dr. Habib, Ms. Hind Farah, Bebnine project field coordinator organized the interviews as well as the FGDs based on the directions of the consultant. It is worth mentioning that in order to minimize bias, neither Ms. Farrah, nor the AUB team did attend any of the interviews, or the FGD or the discussion meetings.
- Informed consent was obtained from each person who participated in the interviews or FGDs; participants were briefed on the purpose of the interview or FGDs and their agreement to participate was taken verbally. Also, their approval was taken in regards to recording the interview or FGDs.
- Moreover, before the start of the interview or the FGDs, it was explained that participation is voluntary and can be terminated by the participant(s) at any time during the interview, FGDs or discussion meetings.
- No names or identifiers (like phone number, social security numbers ...etc) were obtained from the participants. The data was secured on the laptop of the consultant and will be the property of AUB.

IV. Findings and Discussions

Have all aspects of the Ecohealth Approach been covered?

The Ecohealth approach used in the study implemented in Bebnine was cited by almost all the members of the advisory committee and the head of the municipality. Furthermore, the approach was praised by the research team as well as the advisory committee members.

“Later you realize that in any research idea you could apply the eco health approach”, a member of AUB research team.

Transdisciplinarity³ was respected in this project through the involvement, as planned, of the AUB research team composed of various disciplines needed to tackle the research study questions, as follows:

- Iman Nuwayhid (PI), an occupational health physician and epidemiologist, Faculty of Health Sciences (FHS), AUB;
- Mutasem El-Fadel, an environmental and water resource engineer, Faculty of Engineering and Architecture, AUB;
- Rima Habib, an occupational health epidemiologist with a vast experience in field training, and survey development and execution, FHS-AUB;
- Mona Haidar, with a background and experience in community development and the application of the sustainable livelihood framework, ESCWA, Beirut;
- Dima Jamali, an expert on social policy with a background in sociology, School of Business, AUB
- Rami Zurayk, soil and agricultural scientist, Faculty of Agriculture and Food Sciences.

In addition to the community members through the Advisory Committee (AC) that was established especially for this project and compromising initially a Non Governmental Organization (NGO) (left during the process because the NGO closed), the ex-head of the water committee in Bebnine, the ex-mayor, two members of the

³ It implies inclusive vision of ecosystem related health problems. This requires the full participation of each of the three groups (researchers and other specialists, community members and decision makers) and validates their complete inclusion.

Bebnine municipality council and a public school director replaced by an NGO (the lady was not committed to the meetings and the other activities of the committee) and a social worker from outside Bebnine. Membership to this committee was either through people being assigned by the municipality (members of the municipality council) or because inhabitants showed their interest (community members).

“So we picked our advisory council based on people who are willing to give us time, and who concerned about the community issues”, a member of the AUB research team.

An AC member linked the turnover in membership to the length of the project on one side and to the abuse of volunteerism on the other side.

“You cannot depend on the volunteerism of the civil society for ages...for example we in the advisory committee a lot of people left...they don't have continuity...they considered it boring, five years is a too long period”

When asked about an equal representation between the 15 neighborhoods in Bebnine; different people had diverse opinions as follows:

- *“Knowing the community now, someone could have spent more time in building more support inside the neighborhood trying to have a some advisory committee that is more representative for the neighborhoods and the families...”, a member of the AUB research team.*
- *“...no it is not important to have a delegate from each neighborhood in the committee...may be the person representing the neighborhood is not interested...everyone present in the committee should be representing the whole Bebnine”, the mayor.*
- *“...you do not need the entire village to undertake a research and collect statistics...”, a member of the AC.*
- *“Because they are the most knowledgeable people about the issue, the mayor, the head of the water committee, the members of the municipality council in order to be the link with the municipality and keep it updated since it is the local authority...it can follow up on issues with the various parties”, a member of the AC and “the elected municipality board represents the community”.*

It is obvious that the opinions against a larger representation of the community given by some of the committee members and the mayor reflect that the concept of community participation is not very well developed yet and that there is a tendency to restrict knowledge and skills to a certain group that has a power status in the community.

As for decision makers, they were represented principally by the mayor, as the municipality is the responsible party for these issues in the community. The water establishment was contacted at first through a staff from the community. The water establishment provided the project team with maps of the old and new water networks. However, due to changes in the structure of this institution and historical conflict with the municipality regarding the ownership of Bebnine spring on one hand and the general feeling that the water establishment is not fulfilling its responsibility on the other hand, the participation of the water establishment was limited.

"...the community says that the spring is ours and the water establishment does not have to do with it and we want to help ourselves...They helped us with some maps of the new network...The water establishment knew that we are doing a project, they did not interfere ", a member of the AUB research team.

"Also it is not our job at the municipality, however, because there is a gap and the water establishment is not fulfilling its duties, we cannot withdraw from the problem", the mayor.

"...We refused that they deal with the spring of Bebnine...look at their project it has been five years now, the pipes were mounted but the network is not working yet since five years", a member of the AC.

Participation⁴ was achieved throughout the whole process of needs assessment, planning, implementation and evaluation of the project. This was confirmed by the various partners met.

Participation was noticed and reported at two levels: the decision making level through the advisory committee and at the community level through getting data from and providing feedback to the people.

Periodical meetings with the AC, workshops to launch results, lectures for mothers, surveys and questionnaires were the tools used.

"Meetings were held every two months, sometimes every 15 days based on needs", a member of the AC.

"The local society was participating by giving their opinion through the questionnaires...the data gathered helped in deciding on solutions and implementing these", a member of the AC.

Genuine participation was noticed since the beginning. Originally the research question was on agriculture and health.

⁴ It aims to achieve consensus and cooperation, not only within the community, scientific and decision-making groups but also among them.

"Would work with agriculture workers and their exposure to pesticides and we look at the families and we look at the products and we look at the community", a member of the AUB research team.

However, based on community participation, the project team modified the research question to respond to the need of the community.

"So the first couple of visits we visited a few farms and model plots, we met some farmers and discussed with them. We also met with the municipality and started approaching key people. We slowly got into a debate with the municipality and with the people. They were not really selected to be representative... we tried as much as possible to talk to people working in different sectors...we felt that the community was not very excited about the project or the research idea that we were thinking of...Whomever we talked to, they used to tell us about water demand. So we thought that the municipality was very concerned about the quality of water, the mixing between the water and sewage networks, the quality of water, the level of pollution of this water, diarrhea and typhoid, so the head of the municipality talked about it, people used to talk about it, so we sensed that this was the major concern for people", a member of the AUB research team".

"First of all, a meeting was organized with the advisory committee, as the research team wanted to know about our priority and needs. They focused on the data available with us and not only on their data, in order to ensure complementarities", a member of the AC.

It is noticed that active participation was throughout the whole process as per the below selected quotes.

"We worked with the municipality council and the head of the municipality was very excited about the project and we had a strong support from the municipality council, and we started writing the proposal", a member of the AUB research team.

"Our role as an advisory committee was to decide what is the most appropriate action...Nothing was done without referring to us...and they abided by the collective decisions...the municipality was also always put in the picture...a complete coordination was done", a member of the advisory committee delegated from the municipality.

"...Brochures were distributed based on our suggestion", "... we said it is best to target mothers and women through the schools during the awareness raising campaign..." ,a member of the AC.

"...they tested the water then we met and we decided where to put the filter", a member of the AC. "...everyone says his/her idea and the most appropriate idea was

implemented...we felt that there was a democracy not only talks... "

"So when we suggested the idea of a random sample to our advisory council, they didn't understand it and they refused it...their argument was that any study that is performed on a selected sample of households, the other non selected households will not be happy about it, and will consider themselves not to be represented and you will have a permanent problem in trying to explain your results. So they made a strong argument and they were very very rigid about it, they were very inflexible. So we went along and said ok, rather than doing a survey on a sample of households we will do a survey of all the households amounting to 2400 households", a member of the AUB research team.

NGOs and health centers participated in the implementation phase and not at the decision making level, some referred this to the fact that NGOs in Bebnine are not very active and that since it is a health issue, only NGOs working in the health field were focused upon. Health dispensaries were involved in the registration of diarrhea and vomiting cases and related information. Also, they provided the research team with their patients' registry.

"...we provided the university with the patients records...we did surveillance of diarrhea and vomiting cases...there was an emphasis on the NGOs possessing health dispensaries...", a member of the AC.

"In Bebnine, there is a major disadvantage, initially NGOs are not too much, most of them are just a name...we tried to discover active NGOs...at this stage of the project we needed them to be involved in the survey...you feel that the civil society work is not very developed in Bebnine", a member of the AUB research team.

On the other hand, study participants perceived that during the five years there was no conflict regarding decision making. When it was the case, people were convinced by showing them the data.

"...some people wanted the filter to be put in a place other than Al-Sharkiyeh so we showed them the data ...so the decision was then taken in half an hour", the mayor.

Participation had also the form of partnership where the community participated in-kind in the establishment of the Al-Sharkiyeh filter.

"They offered the labor force and the materials and we offered the system", a member of the AUB research team.

Equity⁵

⁵ It involves analyzing the respective roles of men and women, and of various social groups. The gender dimension recognizes that men and women have different responsibilities and different degrees of influence on decisions: it is

The participation of women in the project especially in the surveys showed that this pillar was respected. For the study participants, it was logical and appreciated.

"Because the issue is related to the woman, what would men know in all of this, nothing is related to men...he does not know from where he is drinking the water...because in our community the woman is the responsible for the house", a survey interviewer.

Moreover, their participation at the level of the decision making was noticeable and of value to them.

"As a decision it was taken by men and women in this committee also...Dr. Nuwayhid was always present and he always gave the initiative to talk for the women", a women member of the AC.

However, although in the various interviews it was reported that the decision making process was a participatory one based on the analysis of the data provided by AUB, the mayor seemed to give credit to the municipality council for the final decisions. He referred this to the need to make interventions official.

"...a recommendation is given by the advisory committee we discuss it with them and the final decision is that of the municipality council", the mayor.

How is the project perceived by the community and by the stakeholders?

The members of the advisory committee interviewed were aware in details of the various project activities. On the other hand, the mothers who participated in the FGD and those who took part in the surveys had a general knowledge about the project *"cleaning the water", "sterilization of water", "they put a filter", and "everything in relation to water was studied even its effects on people and resulting diseases..."*.

Stakeholders and decision makers perceived the project to be very important and filling a gap. At the beginning, some of them showed resistance to the project because a public drinking water network was planned to be constructed by the water establishment. However, five years later they realized that the AUB research project resulted, directly and indirectly, in a large number of achievements limiting the water pollution and providing Bebnine with a better quality of water while the promised public water network is not functional yet.

"A very important project...I was not much excited about the project because I was hoping that after few months the water from "ein Yakoub" will be distributed. After 5

therefore important to take gender into account when dealing with access to resources.

years, the project is over and too many changes happened and we worked a lot on the ground based on the periodical results to limit water pollution and ensure a better quality of water...”, the mayor.

“Installing the filter in Al-Sharkiyeh was very important, I used to live there and there was a lot of pollution”, a member of the AC.

The information provided by the study is considered very beneficial and crucial.

“The information is very much valued”, a member of the AC.

Furthermore, as a result of the implementation of this research project, decision makers are convinced of the importance of data to direct policies, programs, projects and interventions.

“When it is based on data results are better and cost effectiveness increases”, the mayor.

The various people interviewed felt that the project should not stop at this point. Some even expressed their fears regarding the sustainability and even loss of the achievements, if AUB and consequently the project field coordinator withdraw from the community. This confirms the researcher opinion about the “ownership” issue. Other reasons, as reported by the participants, are that people are neither motivated nor have the capacity to take a decision. They believed that the municipality can monitor the project but cannot implement it as it lacks the necessary funds.

“The research will stay useless if not coupled with operational steps...by the concerned such as the municipality for example or may be others”, a member of the AC.

“The project needs follow up even where the filter has been installed, as for example a problem of chlorine level was reported by the families”, a member of the AC.

“...We go back to the old days”, a member of the AC.

“People alone can do nothing...they are not motivated and do not have the capacity to make a decision”, a member of the AC.

“...if the project is continuing the municipality can monitor it but I don’t think it can implement it...no money” a member of the AC.

“...Even Dr Abdul Rahim was telling us, try to find new funds, try to continue working, they don’t want us out of the community. They might tell you something else tomorrow, but from our perspective they want us to continue, they are sad and upset if we don’t

continue with them, and that is the feedback that they are so far telling Hind about it.", a member of the AUB research team.

The same observations applied for the committee in terms of sustainability.

"We never met without the university...of course it will disintegrate", members of the AC.

"... You feel they are a little bit laid back about acting on their own issues and unless you give them this push, things are not really happening. There is some sort of dependency. There is this proverb that says, if you really want to help someone, don't give them a fish, and teach them how to fish. They need this mobilization for them to become motivated to take actions on their own issues. But because our field is public health, we want them to take issues on public health level, not about political issues or other issues", a member of the AUB research team.

The involvement of the community in the research project was appreciated.

"I appreciate the efforts of the university to involve the community...this is a good step...and a successful one", a member of the AC...

However, women participating in the FGD mentioned that they did not have feedback regarding the results of the study or the water surveillance. Also, most of them did not attend the awareness raising sessions; the reason reported is that their children are not affiliated to the schools where the sessions were conducted. Thus, awareness sessions should also be done at the level of the community and not only through schools.

"No, we did not know anything".

"...every time statistics are collected...or something is done about the water and we do not know about the results".

The above, regarding giving feedback to the community, was also confirmed by the survey interviewers that were interviewed.

"Even some women when they see me they ask me where are the results of the study that you did, we did not see anything".

"...three years they have been waiting for example tell the women what happened. Unfortunately some lectures were happening in the girls' school, we did not know. I was involved in the project and I knew from the people that there was a lecture in the girls' school. The woman that participated in the research shouldn't she be there?"

Furthermore, they mentioned that they were neither informed of the results of the study nor of the results of the water sampling collected during the last survey.

"Since they were sent to the university ...we know nothing".

"People informed me of the meeting at the municipality...I was not invited".

"I was responsible for one neighborhood, I should have been invited and I inform the women...".

However, the length of the research period was negatively evaluated. People were frustrated that the resources could have been used in a better way and not only on the research, i.e. to install at the Bebnine spring, accounting for 50% of the water source, a station to solve the problem. This was commented without knowing about the financial possibility as the community did not know about the available resources and were not consulted on the budgeting of activities.

"the duration was very long...we could have done one year for the study and we could have used the remaining resources to implement solutions", and "...we could have said for the people we did a study and based on the results we are going to work on alleviating the contamination of the Bebnine spring...and people will drink water", same member of the AC.

"...We were not consulted and we do not know about the resources", a member of the AC.

"If to be done differently, we should have solved the issue of the Spring of Bebnine, replace all the research part with the action oriented intervention", "without theories...everything practical", more realistic work on the ground", "more concrete things", "evaluate the changes in terms of awareness", members of the AC.

"...it is not an easy project...however, more than three years, Haram", a survey interviewer.

"The questions were too much and change the issue of water...the work we did resulted on the people becoming bored...they said you are repeating yourself...in the third survey it was very difficult for the woman to accept, they opened and sometimes they took it as a joke", a survey interviewer.

On the other hand, the 5-year issue was not pointed out by the decision makers because when the mayor was asked about what changes would you take in if the project is to be repeated, the response was *"nothing"*.

The AUB research team explained that the lengthy duration was due to the requirements of the Ecohealth approach itself in addition to the various barriers and challenges faced during the project. On the contrary, the AC members and the community seemed not aware of or may be did not want to recognize the actual reasons behind this.

“So I just wanted to tell you how tough are the requirements of an Ecohealth approach. It took us a lot of time to think of a project. It also took us a lot of time to negotiate with the community and it took us a lot of time to start. Plus this is a project that is highly affected by the overall situation of the country. The community is not ready to start the project. If we were working alone as a research team, you would wait a bit, if the household doesn't want to fill the survey we would consider it as a rejection ...we had to move with their agenda, with their schedule, with their priorities, and this happened at the expense of faculty members even in terms of publications. Because the main investigators in the project were all already promoted to full professors, so we were all able to absorb this, but if I was an assistant or associate professor, I can't do a 2 or 3 years investment until I would be able to get some results. So this is why it's a demanding approach, no regrets, but it's a demanding approach”, a member of the AUB research team.

Furthermore, the attitude of the research team and the field coordinator was highlighted as one of the reasons behind reinforcing the cooperation of the community.

“...They were active...they were working for the project heartedly and not just because it was their task to do so....this feeling pushed us to stay with them five years”, a member of the AC.

The professional and scientific process followed, to ensure the quality of the interventions, was also pinpointed.

“They went into the house to do an interview...someone was verifying the questionnaire in terms of completeness of information...”, “They had a supervisor that monitored everybody” “every questionnaire”, members of the AC.

“The quality of the meetings that were done”, a member of the AC.

Who benefited and in what ways? Is anyone being disadvantaged?

Rural areas in Lebanon are often neglected in terms of infrastructure and basic services.

“this is the policy of the government in water, health, electricity...This is not strange to us especially in rural areas that are completely left out” and “we depend on ourselves to solve our problems”, a member of the AC.

The research project's objectives, activities, and achievements, created a momentum that was directly and indirectly beneficial to the whole community on various levels, as follows:

- Assisting decision makers in taking scientific and transparent choices; *"it helped us first to know what decision to take and to be able to argue this decision in front of the community because people might think that the selection was haphazard or subjective...the data allowed us to put the filter where it should be put", the mayor.*
- Using the results to undertake further interventions to solve water related problems; such as identifying and prioritizing the problem areas relating to the sewage network and septic tanks. *"The first project that we did since 5 years was the removal of 40 septic tanks that were not fit to the standards around the Bebnine spring region", the mayor.* Also, though the project intervention was to put a filter in Al-Sharkiyeh neighborhood the data helped the municipality intervene by changing the pipes in several neighborhood especially where water sampling and inspection was done routinely. *"...we are not done with the pollution but it decreased to a minimum, we did not only work in Al-sharkiyeh we worked everywhere and took water samples...we changed pipes based on the data provided by AUB and this is a major part", the mayor.*
- Economizing the expenses of an epidemic that was occurring previously on a yearly basis. *"I am sure that the budget put in the project is much less the expenses that were saved because of the yearly epidemic that we used to face", the mayor.* It was reported that the number of acute diarrhea as well as Hepatitis A cases reported every year around September/October in Bebnine decreased.
- Developing proposals and fundraising to continue what was initiated: *"We could ensure from a funding source 25 thousand dollars but truly we could not have this if we did not show them data. They would not have approved and helped to ensure the fund because these are our partners in other project but they were aware of what we were doing", the mayor.* *"Frankly we are taking the study seriously, the mayor talked about it ...soon we will clean the water and disinfect it and filter it on Bebnine's spring" and "the resource will be a little bit from the municipality and from another party ...AUB was very transparent...", a member of the AC.*
- Negotiating with the water establishment the fees to be paid by the people in order to join the new water network, since it was very expensive according to the Bebnine community. *"They wanted exclusivity for the Bebnine spring and put fees to be collected from the families...thousands of families cannot pay 50 thousands Lebanese Pounds per month or year or 100 thousands", a member of the AC and "The municipality negotiated towards decreasing the fees of the connections" and "... we showed some statistics, almost 50% of the community will not join, and most of them due to financial reasons, they didn't want to pay. So the municipality used it and informed the water administration that people in Bebnine are more likely to connect to the network if the fees are waived. They*

were going to charge them around 100\$ or 150\$ in order to connect them”, a member of the AUB research team.

- Building the capacity of a group of women selected from all the neighborhoods in interviewing skills through theoretical and practical trainings thus enabling them to participate in the three surveys conducted in Bebnine. Further knowledge and skills were acquired because of the field work such as developing a better and more comprehensive idea about the community and knowing how to disinfect the water among others *“As a women, I have children and I benefited ...how to boil the water... how to disinfect the water with the sun...”* and *“we used to explain this and we benefited from this in addition to other issues due to our contact with the people from different social classes; middle and high as well as poor, in the society”*, survey interviewers.
- Ensuring potable water in Al-Sharkiyeh neighborhood that is being used by people from within and outside the neighborhood. Only half of the women participating in the FGD drink from the filtered water, however, all use it for cooking. Some of the reasons stated for not using it are the taste *“too much medicine in it”* and *“the chlorine is too much”* as well as the rumor that it is still contaminated *“...they said and are still saying that the water is till contaminated although a filter was installed”*. Few women said that after adjusting the chlorine level they started again drinking from it. They also mentioned that continuous supervision of the quality of the water and maintenance is being done for the filter in Al-sharkiyeh. The person responsible for taking care of this is being paid by the community. Furthermore, this person is supervised and informed by the project field coordinator. *“There is a person and the engineer who comes every two weeks to collect sample of the water”, “He is responsible for the water”, “...the lady engineer gives him directives” a lady from Al-sharkiyeh neighborhood. “This person is appointed from the municipality and is paid symbolic amount of money” and “This person should be continuously supervised and told about the danger of excessive chlorine concentration in the water”, a member of the AC.*



Moreover, the mothers requested that the filtered water should reach their houses; women said that it is only the spring water that reaches home and in order to get clean water they have to go to the filter to fill bottles. *"If the project is appropriate, the filtered water should reach the homes directly" and "yeh, yeh, we go and bring the water, the one that reaches our houses is the one for the cooking, the spring water", mothers from the FGDs in Al-Sharkiyeh neighborhood.*

What were the successes and failures of the project?

In general, opinions regarding the achievement of the objectives agreed that most of the objectives, if not all, were met. However, the impact was not measured in order to determine the effect of the interventions done in terms of installing the filter and the awareness raising activities. As a result, the next phase of the project, if any, need to focus on assessing the impact using appropriate indicators.

"some of the objectives were achieved", "some were not achieved because to see the impact we need more time", "we did awareness and we taught people how to clean the water but we need to see if people are applying these measures...we need monitoring and may be new questionnaires" we need to know also if people are still facing contamination...evaluate", a member of the AC.

"... I don't know how much they applied", the mayor.

However, although not scientifically measured, some members of the AC believed that the project had an impact; on the awareness of the people regarding the water and how to disinfect it.

"At least, a person per house if not all Bebnine, knows that if you cannot afford a filter you can disinfect the water....using an affordable way".

This corresponded with the point of view of the interviewed members of the AUB research team, to whom most of the principal objectives were met with the exception of the investigation regarding the diarrheal cases in certain seasons of the year that was hindered by factors external to the project. On the other hand, it was also mentioned that at this stage of the project, community participation did not lead to community ownership yet. Thus, more investment is needed in this direction.

"We wanted to study the water... we wanted to know what was the problem. We tested all the water sources, we knew what was contaminated, and we correlated the variables...what are the things that associated with the prevalence of diarrhea. We managed to do short to medium term interventions such as the installation of the filter. We managed to do some awareness campaigns, but to be honest with you, mobilizing the community proved to be tough... we have community participation, we probably

initiated community participation through the municipality, through other stakeholders...”, a member of the AUB research team.

“...I think we were successful. One of the things we wanted to do investigating the cases of diarrhea that were happening in the summer, we couldn’t do it because of the repeated wars, I believe that this might have given us more information or it could have guided the other studies in a different way, had we succeeded in doing it...The second point, is that the community supported us, the community believed in us, they collaborated with us and the proof for that, is that they still meet with us, ... they realized that we are on their side, still they have no ownership”, a member of the AUB research team.

“In spite of all this involvement for many many people and this is unfortunate in many communities they still look at it as a project that you are implementing and you should be totally responsible for it. We didn’t feel that they had full ownership of the project”, A member of the AUB research team.

What were the facilitating factors?

The collaboration and cooperation of the various parties involved in the project was a factor that ensured a smooth implementation of the study.

“Everything went on smooth...a very good cooperation”, a member of the AC.

The commitment of the former mayor played an important role in establishing contact with the newly elected municipality council and mayor. This provided evidence on the strong relationships that were created with stakeholders in the Bebnine community.

“So I asked him (the old mayor), how can we deal with this situation (the change in the municipal council)...the previous mayor said that I believe in the importance of the project and I will support you... We organized the workshop that included around 30 or 40 people, mayors, municipality council, physicians, teachers, and even the former mayor was there, and it was very nice that he spoke in support of what we were doing and our future plans. This gave a continuation. It was a great push and it convinced IDRC that our networking with the community is not based on a connection with one or two members only”, a member of the AUB research team.

The project field coordinator, an agricultural engineer, played an important role in the implementation and achievement of the project. Her background, knowledge, attitude and skills had a positive impact on the project. Her role, contributions and the trust relationship established with the community were highly appreciated by the mayor, the AC members, the community, etc.

"The representative Ms. Hind was very successful...she was present to do the coordination and people trusted her", the mayor.

"...without Hind nothing would have happened...she could have relied on me or on other persons but no she was passing by everybody, ensuring their presence and convincing people that the work being done is for their own benefit" a member of the AC.

"She is very much committed", a lady member of the AC. "She was the dynamo...communicating between the AUB, the advisory committee, the municipality, the civil society...she was coordinating... advocating for the project with key stakeholders...people in the community do not understand the importance of research they have the mentality that any party working in the community might be registering names in order to bring donations" a member of the AC.

"A person is in charge, the lady engineer that was here; she comes every two weeks to take a sample of the water, sometimes she takes twice, she ensures the disinfection of the water, she does everything", a women from Al-sharkiyeh neighborhood.

"Frankly the key for success to this thing on the field, the credit should be attributed to someone like Hind Farah, because Hind being a person from that community, not from Bebnine, but being from the north...so she was close to them, and in the period when we were not able to do any work she was actually visiting and meeting, and she used to arrange meetings for us. But it was all done low key, with a lot of respect for their feelings and the sensitive political situation, so Hind being there on daily basis was a major plus for us, and I don't think a project like this could have been if there weren't someone like Hind in the field", a member of the AUB research team.

The commitment of the field coordinator resulted in her complete integration within the community without privileging one party on the expenses of the other. Thus the community considered her as one of its members, a positive factor. However, this entailed the community requesting a more frequent presence of the AUB research team as the partner of the AC. On the one hand, this request was not achievable and on the other hand, it can be considered against the purpose of recruiting the field coordinator.

"We thought that Hind would represent us and that since Hind is there all the time it's like we were there. But they started to consider Hind as one of their own, not one of our team. Although she is the one who represents us, and who is following up on everything... but no they wanted us in person...which was difficult to do, because we had teaching on daily basis and other things", a member of the AUB research team.

Another facilitating factor was that the data collected facilitated decision making, approval and adoption of the decisions taken.

"The statistics collected facilitated the work", a member of the AC.

"It clarified the issues for the advisory committee... they decided on the intervention and implemented it", a member of the AC.

What challenges have arisen and how have these been addressed?

Given the nature of the research project and the Lebanese unstable political context, a lot of challenges were faced by the AUB research team. It is worth noting that there was a discrepancy between what the research team identified as barriers and challenges and those identified by the interviewed people from Bebnine. For example, one of the AC members mentioned that no challenges were faced. The same member that found that the project was long and the funds could have been used differently.

"There were no challenges to be mentioned", a member of the AC.

On the other hand, it is observed that most of the barriers and challenges entailed time and efforts that could have been saved if using the classic research approach.

The following barriers and challenges were identified:

- The replacement of the municipal council by a newly elected one affected the project in terms of timely implementation of the activities planned for this period. It also raised the need to restart the advocacy process with the new mayor and municipal council. AUB research team had to withdraw from the community during the municipal election due to the highly politicized environment during such events. Then, although supported by the previous mayor, the research team had to undertake discussions with the new mayor to convince him about the importance of the research that according to him is useless since the water pollution issue in Bebnine is known to the community and decision makers.

"What took place is the municipality elections... so during that time we completely withdrew from the village... So after the elections were over...I called the mayor...he said ...now there is a new council. So for us that was a major shock. As for the past period we had a relationship with a council and all of a sudden we have to start from zero, or that was what we assumed. So I asked him, how can we deal with this situation? ...He said that I believe in the project and I will help you... So we established a contact with the new mayor, a doctor, he didn't have any problem with the project, on the contrary he adopted the idea considering it a continuity of the previous council work ... But he was a little bit skeptical. His skepticism was based on the fact that they already know that the water is polluted... so what are you trying to do? Thus, we had to argue a lot on the idea that this is evidence, science, data. He was convinced then.

Now he is one of the major supporters of the approach”, a member of the AUB research team.

- Several external barriers affected the first six months of the project. These are the assassination, in February 2005, of the Lebanese Prime Minister impacting heavily the country, the cleavage of the Lebanese population into those supportive of 8 March versus those affiliated to 14 March party, and the parliamentary election. Moreover, the death of the vice president of the municipality council, a great supporter of the research project, resulted in an internal conflict within the municipal council that was also reflected within the community. The research team as well as the project field coordinator acted maturely and kept its contact with the mayor awaiting the resolution of the internal conflict within the council. Furthermore they had to withdraw once again from the community to avoid any involvement in the prevalent political tensions.

“We started preparing for meetings. On February 14 Hariri was assassinated...we didn't even have the time to set our feet on the ground. After three weeks or one month the vice mayor...passed away. So first the community was mourning because “Hariri” party had a strong presence in the village and on top of that the vice mayor passed away. At that point, the community was not ready to engage. Whenever we talked to the mayor, he would tell us that the country is terminated, what are you talking about? ...Then came March 8 and 14 ...followed by the parliamentary elections in May or June...So that was a very tough period. We also had to pull out during the elections, we even asked Hind not to be present there...”, a member of the AUB research team.

“After the death of the vice mayor...the members were in conflict...two groups were formed within the council...we stayed committed to the mayor”, a member of the AUB research team.

- The issue of a new water network being established by the water authority discovered at the launching of the project entailed discussions with the donors and the community. It is worth mentioning that so far the network is not operational.

“The villagers drew our attention to a water network. This caused some problems for the project. The IDRC said that there are water ponds and an irrigation network so the project will be totally irrelevant. So we had a debate... Most of the community said that we still think that we should proceed with that. We don't know when we will have the water from the network and anyway we will still continue to use the water from the spring of Bebnine, because it is a back up source...We discussed with IDRC and we decided to include the water network into the project, and we thought that if the network became operational while implementing the project, then we would compare the new network with the old network...”, a member of the AUB research team.

- The challenges faced by the field supervisors and interviewers participating in the survey were suspicion regarding the accuracy of information provided especially in relation to the socioeconomic status, refusal to participate in the survey and the validation visit.

"I knew him he was my neighbor he was retired from the army and his wife told me that he is jobless..." and "...we write what the woman tell us, we did not have the authority to change...but we put our comment at the beginning of the questionnaire", survey interviewers.

In few cases the men refused that their wives participate in the survey and wanted to answer themselves. The interviewers reported that few around 1-2% were negative the remaining were positive. The attitude of some people; they looked down at the study and interviewer. Furthermore, some responded to support the interviewer that was from their neighborhood.

"So the data were collected and the rejection rate was very small, we got a high response rate (around 95%). Some of the households that did not participate were because they had doubts in the municipality and the project. Some of the interviewers that were not accepted to participate in the study tried to close some doors but their impact was very limited", a member of the AUB research team.

The interviewers met also reported some violence against them, especially verbal violence. However, a close follow up was assured by the field coordinator in order to solve problems or threats.

"...the woman said five minutes and I will awake my husband...I waited for 15 minutes and when he walk up he insulted me ...and put me at the door", a survey interviewer.

"A lady used to meet us every day before we start...", a survey interviewer.

"They were trained several times and Ms. Farah followed up on them daily basis...", a member of the AC.

According to some interviewers people were not comfortable with the sporadic verification undertaken by supervisors after the completion of households' interviews as is the case in scientific surveys.

"We had a supervisor...it was the first round, we filled the questionnaire then a person went for the second time to do the verification ...This bothered people most", and "...I remember the supervisor went to this house to do the validation and the husband there asked her to leave in a violent way...", survey interviewers.

- Modifications of some decisions during the process to respond to the AC recommendations, for instance the number of households to be surveyed in the initial survey, entailed additional work and time that was not planned for. Furthermore, such delay was not understood by the AC, thus leading to tensions in the relationship with the AUB research team.

"...Surveying 2400 households' entailed additional questionnaires for data entry and cleaning. It was hard to convince the community that cleaning data and validating it requested time...", a member on the AUB research team.

"We also faced a problem at this point, when the advisory committee told us that you have already been here for a year, you gathered information, and we still haven't seen anything from you yet, so we told them that we were planning to put a filter, a disinfection system on one of the points; they thought it was a very positive step", a member of the AUB research team.

- The prevalence of low socioeconomic conditions, politicized family lead neighborhood, and self-interest driven mentality among the population and decision makers in Bebnine constituted another challenge to implementing the projects' activities following a scientific path. Thus, people in Bebnine tried to benefit themselves and/or their neighborhood regardless of the ethical or scientific considerations. Tasks and activities such as the selection of the interviewers to participate in the first survey, the selection of the neighborhood to install the filter as well as the undertaking the surveillance activities at the health centers are concrete examples. These pressures were overcome by the AUB research team insisting on the scientific process using assertiveness as well as through finding innovative solutions.

"...then we started debating, which point to choose (to install the filter). We were relying on the data, while the advisory committee members' each one was trying to push for his own area, the mayor wanted to avoid problems by installing the filter in one of the schools. Our data showed that there was no problem in any of the schools; the pollution was identified in the wells rather than in the water tanks. Our study results has shown us that Al-Sharkiyeh is the location where water is polluted the most...but the mayor completely refused the idea referring this to the political situation and the related pressure that the municipality council cannot endure...So we (AUB) refused and asked for more time to provide more evidence. We kept on collecting data, and kept debating with him (mayor) until we showed him a trend over several months that in this (Al-Sharkiyeh) location there is a huge problem in the fecal contamination...So the advisory committee was convinced...and consented...we carried that consensus with the supporting data to the mayor and he couldn't refuse...", a member of the AUB research team.

"Another thing that we committed to was that the field workers and interviewers come from the community itself, and that was a big challenge... the community also tried to twist our arm by imposing people on us... We played it safe and told them we have no problem in accepting anyone. They have to attend a training workshop, get proper training just like anyone else, and only those who pass the examination can join the team...this is what happened...", a member of the AUB research team.

"...we did training and at the end an exam" and "when they saw the work on the ground they selected who will be in the second time", survey interviewers.

"We focused on selecting the girls from the region where the study is to be conducted so that the people don't feel strange to give the information because we were searching for the correct information...and this gave us success", a member of the AC.

"...they wanted to impose people to be recruited and we felt a lot of tension...one wanted to recruit his wife...", a member of the research team.

- Both wars (2006 and 2007) in Lebanon constituted also external barriers that affected the project. Several activities were postponed and altered while few were even cancelled. Examples are the second and third surveys, the GIS mapping of Bebnine and the surveillance of the diarrheal cases.

"We started planning for the survey and Rima conducted training on July 12, 2006 ...but then the war broke and everything changed. So that was another big blow for our project, because the diarrhea cases... because our main assumption and our data revealed that the highest prevalence is during the summer", a member of the AUB research team.

"In 2006, it did not work out, so we prepared ourselves for 2007 and we had the Naher Al Bared war in 2007 and the same story repeated...", a member of the AUB research team.

Moreover, the effects of the wars on the project went beyond its actual duration. For example, although the 2006 war lasted only two months, the aftermath situation affected the project a great deal. In such situations, the priorities of the communities change and the people that were once committed to certain tasks of the project found themselves solicited by other priorities. The Bebnine mapping exercise constitutes a good illustrative example that entailed the adoption of other alternatives because the initially appointed person was no more available. These alternatives proved also not to be successful. All of this had resulted in delays in data collection and thus delivery of the output, not to mention the quality of the data itself that had to be corrected.

"The municipality police knew the details of the village, so he was recommended by the advisory committee and the mayor to participate in the GPS coordinate and the mapping...after 2006 war, we asked him to help us but it was not his priority and he kept on postponing things...when we felt things are not moving we selected two persons from the community and trained them...they took much time and hind was supervising them", a member of the AUB research team.

Another example that could be attributed to the effect of the war is the failure in collecting correct data from the health dispensaries for the surveillance of the diarrheal cases. People from the community accessed the health dispensaries in order to get the goods distributed because of the war. Thus, they pretended to have diarrhea as well as other health problems to obtain these.

"...we tried it for two months than we realize that the quality of the data is doubtful. It gives an idea but doesn't allow us to establish future action", a member of the AUB research team.

- The fact that the community viewed the AUB project as a development project rather than a research project resulted in distrust and a blaming relationship at the beginning. Although the AUB research team was transparent since the beginning regarding its role and the project's objectives. People in Bebnine expected that the AUB project will solve the water pollution problem in their village and thus they made the research team responsible of initiating and undertaking the needed actions while they felt no responsibility towards this issue. This attitude and reaction was remedied for later on by the installation of the filter at Al-sharkiyeh water source, in addition to efforts in explaining the purpose of the research project.

"Every time we presented information we were practically held responsible for the results. So whenever we had results, either they refused it, or they used to shout at us: what are you planning to do with this, why are you telling us this? So there used to be denial...The other reaction might be: ok you just told us about that, so now what are you going to do for us?...", a member of the AUB research team.

"All the resentment we felt at the beginning, was absorbed after we installed the first filter, because they felt that we wanted to participate, and help in finding a solution for the problem, so when they felt that we are as concerned about finding a solution for them, even if it is not our role...which makes you feel that there was a high level of trust", a member of the AUB research team.

- The concept of volunteerism in participation was not really adopted neither by the community in Bebnine nor by some of the AC members. An example illustrating this is the involvement of the health dispensaries in Bebnine in the surveillance of diarrheal cases. Although the responsible in the dispensaries showed interest at the beginning and training was provided by AUB research team to build the capacity of

the participating health centers in Primary Health Care (PHC) surveillance, soon after the beginning of the data collection, they started requesting money to undertake the surveillance.

"Surveillance needs people that are fully available...to be successful and sustained people should have been given fees...", a member of the AC committee.

It is believed that this can impact the partners' relationship to a great extent. From its side, AUB research team reported that all the people that participated in the project with the exception of the AC members were remunerated.

"Yes we were paying and the idea was to improve the record", a member of the AUB research team.

"Nobody worked on a voluntarily basis except the advisory committee. The others including interviewers were compensated", a member of the AUB research team.

What else need to be done?

All the people interviewed from both parties requested, for various reasons, as explained below that the continuity of the project does. Few went further, to request AUB continuous support and involvement on other issues needed in Bebnine. What is obvious is that Bebnine water sources related problems need to be more tackled with a special focus on the behavioral factors related to diarrhea and vomiting cases at the community level. However, in order to sustain the solutions, community partnership and ownership principles and practices should be clarified and reinforced among the community members and decision makers. The following summarizes what was thought by the people interviewed:

At the level of Al-Sharkiyeh filter; the women participating in the FGD suggested having a committee in Al-Sharkiyeh neighborhood that will supervise the water guard. Sustaining the remuneration of the guard in order to ensure his commitment was also stressed.

"If it is on a volunteer basis you cannot ask him to continuously take care of the water".

"Now he is being paid 2000 Lebanese pound from each house".

"When there is a problem we collect 10 to 15 thousands Lebanese pounds and give it to him to fix it".

However, a big discussion took place regarding the body to take the responsibility i.e. the municipality or the community. Some women based on previous or current experience had doubt and mistrust about the municipality taking responsibility. They mentioned that the community was behind bringing the Bebnine spring water to Al-

sharkiyeh and not the municipality although it should be the case; the garbage collection is not done appropriately and/or timely.

"Negligence will occur..."

"We waited for two to three weeks to bring the piece needed for the filter's generator".

"Before, the spring water the people collected money and brought the water over here".

"...there is negligence from the municipality in regards to the general hygiene of the neighborhood".

The FGD participants questioned the process and means used to fill the water. On site observations by the consultant confirmed what the mothers reported.



Thus, the FGD participants suggested having awareness raising sessions carried out for each house by peer educators (i.e. women themselves).

At the level of Bebnine; the women participating in the discussion meeting of the advisory committee stressed on the need to put a filter on the Bebnine spring especially that a big percentage of the people in Bebnine drink from it and it has a big collection tank.

"...the spring is a crucial project...it should be considered seriously...it would be an achievement if a filter is installed at the spring where there is a big tank".

They further requested to increase the awareness raising interventions and broaden the spectrum of issues addressed to include the pollution due to the chemicals used in Agricultural activities and reach more people.

"Do more awareness raising to include not only the water pollution and related diseases but those also related to the haphazard use of chemicals...", a member of the AC.

This was confirmed by the survey interviewers. They specified that the awareness raising sessions should be done in venues not far away but at the neighborhood level in order to facilitate the access to the women. They also highlighted the fact that these sessions should be done in the morning period between 10 and 12. This timing is considered appropriate for the women because their husbands are not at home, since the latter don't appreciate that they are not present once they return back home.

"Sessions in the neighborhood".

"between 10 and 12 because after they have lunch and their husband are back home and they don't approve this".

Also, the interviewers specified that organizing these sessions in the neighborhood will ensure the attendance of the women

"...if in the neighborhood, one woman will encourage the other".

They argued about the efficiency of the awareness raising material and the face to face. The discussion resulted that in the face to face, understanding would be better because of the chance to request clarification and do practical work, moreover, they mentioned that 30% of women are illiterate in Bebnine. Materials, especially posters with illustrations and minimum wordings can be a reinforcing option.

"30% are illiterate", a survey interviewer.

"During the session you can explain...", a survey interviewer.

"some women are not interested by a piece of paper, she needs to see and discuss and practice..." a survey interviewer.

Moreover, the need to organize conferences at the neighborhood level to inform the people who participated in the study was highlighted. People feel that it is their rights to know about the water status in their neighborhood and the related action to be undertaken.

"They helped us and they want to know the results", a survey interviewer.

"Tell the people what happened", a survey interviewer.

"Gather people in each neighborhood or region, if 40% participate then every woman will tell her peer what happened", a survey interviewer.

Another project that is believed to be crucial is the installation of a sewage system and network that responds to standards.

"Separate the sewers from the drinking water", a member of the AC.

"Fix the spring, the sewers...", a member of the AC.

They are aware that this is costly and needs a lot of planning. They see their role in fund raising and people from the community can contribute in kind.

"We go and bring funds from somebody... the recent elections could have helped us fundraising ...may be every person can help in a way according to his capacities", a member of the AC.

"Voluntary work to help digging or installing the pipes ...", a member of the AC.

They mentioned that the municipality and the community play an important role in the process. The municipality needs to have a proactive role in asking for support and funds. The NGOs should also collaborate and their participation should be improved and expanded. The whole project should be expanded to cover the other neighborhoods in Bebnine.

Although the community is continuing to act on the problem, the request to address the government to fulfill its responsibilities was voiced.

"We cannot be the replacement of the government...we can raise the voice through the representatives of the people...so that they raise the issues in the appropriate venue", a member from the AC.

Regarding the sustainability of the work initiated, most of the interviewed people mentioned that assistance and support is needed to continue monitoring the water sources, updating the mapping of Bebnine, establishing the installation of the filter at Bebnine's spring and solving the disinfection at the other sources of water in Bebnine. For the time being, it is worth mentioning that AUB is providing some funds to support the work at Bebnine spring. This was acknowledge at the project closure meeting held at the municipality.

"We cannot withdraw from the issue...but I cannot pretend that we have the capacity to study on a monthly basis the 13-14 water points...Truly, I don't know how we are going to continue", the mayor.

"From our side, we said that we will contribute 10.000\$ to the filter and 2.500\$ to curptretgers to support the continuity of the current filter for a least couple of years", a member of the AUB research team.

Moreover, wanting to reinforce the Ecohealth approach as well as the Public health principles, AUB research team suggested in a second cycle of the project to work more on the representativeness of the Bebnine neighborhoods in the advisory committee. Along the same line, they suggested to build the capacity of the Advisory committee to play a role in advocating for the work being done, in mobilizing the community to participate and in establishing the ownership of problems and solutions.

"Now that we know the community after 4 or 5 years, someone could have spent more time in building more support inside the neighborhoods trying to have some

advisory committee that is more representative for the neighborhood and the families”, a member of the AUB research team.

“We were hoping that the advisory, could act as an advisory for us and as an advocacy for the people. They played the role of advisory pretty well, but as advocates, sometimes they used to be good advocates, but some others were not able to explain what was the study about. They helped us a lot, but they were never community mobilizers, they didn’t go around telling people to collaborate with us, and so on and so forth”, a member of the AUB research team.

“I don’t think we could have done things much differently, but we could have had a stronger relationship. I believe that if we haven’t worked through the municipality like we did, our work would have been much more difficult.”, a member of the UAB research team.

V. Recommendations

The following recommendations encompass those suggested by the evaluation interviews and participants as well as those proposed by the consultant.

- Promote on a continuous basis and using local channels, the use of the filtered water among neighborhood members especially when specific incidence such as the altered taste due to excess chlorination is encountered.
- Expand the appropriate and comprehensive dissemination of results to the communities especially the survey participants using accessible and locally acceptable means.
- Increase the awareness raising and educational activities in relation to the water pollution and disinfection issue as well as other related issues such as hygiene to cover the housewives or any person responsible of these issues at the household level. Innovative Behavior Change Communication strategies and approaches such as peer education for example can be used to increase the effectiveness and accessibility as well as sustainability of these interventions. Interactive techniques can be used to enhance learning among the target groups.
- Build the capacity of the NGOs and health dispensaries in Primary Health Care including surveillance of diseases.
- Enhance the participation of other sectors of the community through 1- providing them with opportunities; 2- building their capacities and 3-promoting a supportive environment.

- Empower the municipality and the community on various levels (technically, establishment of connections to ensure funds, visibility, ownership, etc.) in order to enable them to take the lead and responsibility in identifying and solving community problems as well as monitoring, evaluating and sustaining related interventions.
- Organize periodical advocacy campaigns to promote the role of the municipality to ameliorate its image among the population.
- Encourage the municipality and community to sustain the initiated work in the area of water pollution through their involvement in the dissemination of the case study at the national, regional and international level.
- Develop with the municipality and advisory committee an operational plan of action, based on the findings of the research to ensure comprehensive and sustainable solutions to the water pollution problem in Bebnine. This operational plan can then be shared and advocated for with decision makers, community individuals, institutions and organizations to ensure funds for its implementation.
- Plan and undertake an evaluation of the impact of the interventions in terms of changes in Knowledge, attitudes, and behaviors.

VI. Annexes

Annex 1

In-depth interview questions

1. In your own words, please describe the AUB project in Bebnine?
2. Who are the individuals / institutions participating in the project? Why were they involved? How they were involved? How do you describe their participation?
3. What is/are the process/steps followed to implement this project? What are the various activities?
4. Did the project reach its objectives?
5. What impact did it have?
6. What are the challenges that you faced during the course of this project? How did you overcome these?
7. What is next?
8. What are your recommendations for future work?

Focus Group Discussion Questions

1. In your own words, please describe the AUB project in Bebnine?
2. Are you using the water from the filter? Why yes, why no? for what purposes?
3. What impact did the filter have?
4. Is the filter being taken care of? By whom? When?
5. In what activities in relation to the project did you participate in? why?
6. What is still needed to solve the water problem? Who should do this? How can you participate in this?
7. What are your recommendations for future work?

Annex 2

List of activities done

| Date | Event | People met |
|---------------|--|---|
| 22 July 2009 | Introductory meetings | <ul style="list-style-type: none">• Field coordinator• Research team member |
| 28 July 2009 | Project closing meeting | Participants at the event |
| 4 August 2009 | Field visit to Bebnine to conduct the interviews and FGD | <ul style="list-style-type: none">• Two members of the AUB research team• The mayor• A member of the AC• 3 ladies member of the AC• 3 ladies survey interviewers• 9 women from Al-Sharkiyeh neighborhood |

VII. References

1. Understanding Water, Understanding Health: The Case of Bebnine. A proposal submitted by the Interfaculty Graduate Environmental Sciences Program (IGESP) at the American University of Beirut, Lebanon to IDRC- Ecohealth Program, September 9, 2004.
2. Health: An Ecosystem Approach, *in_focus*, IDRC, 2003.
3. First-Fourth Interim Technical Report on: Understanding Water, Understanding Health: the case of Bebnine, Lebanon, IGESP-AUB, 2005, 2006, 2007, 2008.
4. Final Report on: Understanding Water, Understanding Health: the case of Bebnine, Lebanon, IGESP-AUB, 2009.