

Internal evaluation of Sustainable Rural Livelihood in Sulawesi –project

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Project information

- Name of the project: Sustainable Rural Livelihood in Sulawesi
- Name of organizations: Lembaga Pengembangan Teknologi Pardesaan (Institution of Rural Technology Development, LPTP) and Payo Payo
- Project duration: 2009 – 2011
- Funding from the Helsinki University Student Union HYY and the Ministry of Foreign Affairs of Finland

This project has aimed at reducing poverty and improving sustainable agriculture among farmer families in three villages in South and West Sulawesi. The project villages were originally selected from different parts of Sulawesi and from different types of natural environments, with the idea that the knowledge gained from this project would spread effectively around these areas. In Soga the villagers grow cacao, in Bonne Bonne and Tombo Bulu they cultivate rice.

Officially HYY has made the co-operation agreement with LPTP. LPTP is located in Java and they provide the technical expertise on farming and energy issues for this project. The executive organization in Sulawesi is Payo Payo.

Introduction to the evaluation

The interviews and workshop that the evaluation is based on were conducted during two weeks in Indonesia 14. – 28.09.2011. The project, running from 2009 to 2011, will still continue for three to four months after the evaluation data was gathered. Project coordinator Iona Kalliola and I conducted 21 semi-structured interviews in the three project villages with people who are beneficiaries of the project. One of the interviews was a group interview with seven people. Payo Payo staff translated all the interviews for us.

We also conducted one evaluation workshop for Payo Payo staff and the project coordinator from LPTP at Payo Payo office in Makassar. As a basis for the evaluation workshop we used Max Peberdy's three universal questions of evaluation (presented below).

As the project will still continue for several months after this evaluation, there may be some additions made to this report later.

Main goals of the project

The main objectives and goals of the project as stated in the project plan:

Long-term objectives

- Strengthened food security of villagers in Sulawesi
- Strengthened energy independence of villagers in Sulawesi
- District government takes the farming activities developed in this project as a model
- These will increase the ownership of the villagers and reduce poverty in the villages

Direct objectives

- Forming working and successful farmer groups for spreading awareness
- Villagers know about and use environmentally and economically more sustainable farming methods
- Villagers are not totally dependent of energy coming from outside the village or from energy wasting options
- Strengthened capacity of villagers to work for the development of their villages
- In Bonne Bonne, the main objectives are to increase rice production and to decrease the amount of pests
- In Soga the most important objective is that the farmers find and accept alternative ways of income generation instead of cacao (However, this objective was changed when the project began, as we noticed that the villagers will not give up cacao and decided to aim for additional instead of alternative ways of income generation)
- In Tombo Bulu there should be agreements between villagers and national park administration about the use of water resources and the utilization of cattle for biogas production

Results targeted by this project

- Poverty in the villages will diminish by developed farming methods and increased knowledge of sustainable agriculture for the local people
- Household consumption patterns (energy, food etc.) and agricultural practices are known in the three project villages
- Farmers in the farmers' group know methods of ecologically and economically sustainable agriculture and use them
 - Reduced use of chemical fertilizer/pesticide among the participants in the farmer field schools
 - There are more post-production methods and the participants of the farmer field schools use them (economic sustainability)
 - More of the villagers' own food consumption is produced in the village (participants of farmer field schools)
- Farmers have found additional ways of income generation
- Biogas is produced in all three villages
- Energy saving options for food making are in use
 - Energy saving stoves, jathropa stoves

- Lessons learned from the project are spread out to other villages and the district government
 - Motivation, teaching, bulletins (three issues per year) and a leaflet
 - More detailed publications will be done about food security and bioenergy.

Main results of the evaluation

Employees

We held an evaluation workshop at the end of the monitoring trip for the employees of this project. The participants were:

Rahadi Palur – project coordinator from LPTP, Java

Ishak Salim – Payo Payo’s programme manager, leader of the project in Sulawesi

Karno Batiran – Payo Payo’s field coordinator and financial manager

Maryati Atkah – Payo Payo’s field facilitator in Bonne Bonne

Hasnulir Nur – Payo Payo’s field facilitator in Tombo Bulu

Iiona Kalliola – project coordinator in HYY

In the beginning of the workshop we went through the long and short term objectives of the project together. The idea was to reflect on the original plan and the progress and results achieved so far. The workshop proceeded with the following questions:

1. Did we do what we said we would do?

- *What were your expectations towards this project?*
- *How has the project progressed compared to your expectations?*
- *What were the main achievements?*
- *What were the main things that we didn’t achieve yet?*

2. Did we make any difference?

- *What are the main changes you have noted in the villages?*
- *Has the project increased the self-sufficiency of villagers and independence in food and energy?*
- *Has this project had an influence on poverty?*
- *Has the information about the project spread and been put to use?*
- *What have you achieved in building relations with the local government?*
- *How have Payo Payo’s ways of working changed during this project?*

3. Did we do the right things?

- *Was the project well planned?*
- *Did you find the researches useful?*
- *What would you do differently now than in the beginning?*
- *If the objective was to strengthen food security of villages, did we have good activities to reach that?*
- *If the objective was to strengthen energy independence of villagers, did we have good activities to reach that?*
- *What else would you have hoped for from LPTP / HYY / Payo Payo?*
- *What kind of feedback have you received from the beneficiaries?*
- *What were the main obstacles in the project? What has been the most difficult part of your job?*

1. What were your expectations towards this project?

2. How has the project progressed compared to your expectations?

The project staff was expecting that they could form working and organized farmer groups and that these groups would help them move towards the goals of self-sufficiency in food production and energy use among the villagers. The expectation was that other farmers could learn from farmer groups and that knowledge would spread this way to other villages. They were also hoping that the villagers would learn to think independently and the government would finally support these good practices and the villagers. There were also expectations of Payo Payo acquiring experience in organizing farmers and community. A good partnership between the different project organizations was also expected.

Thoughts about the progress of the project were clearly divided on the three project villages. Tompo Bulu had even exceeded expectations, while in Soga and Bonne Bonne progress has been slower. The expectations related to Tompo Bulu farmers have already been met and it appears that the village will be a learning place for other farmers. There have already been activities done on the farmers' own initiative, which shows Tompo Bulu's success.

In terms of the time, energy and resources spent, the staff thought that the progress should have been faster in Soga and Bonne Bonne. It was stated that the progress depends on the characteristics of the village. In Bonne Bonne, for example, the need for the yard gardens is smaller than was thought, so it has been hard to sell this idea to the villagers. However, in Bonne Bonne there are high expectations for the women's group.

For Soga, there were disappointments related to the speed of the progress, but the staff also believed that the acceptance of the people is already good, they just have to find suitable methods or instruments for achieving results. They think that the farmers just need the project to provide a discussion counterpart for them, because they already have an idea, but they are not organized well enough to achieve the goal. The staff still hopes that they will progress well in the last three months of the project. Knowledge about this project is also appearing in other villages, but the progress is still small.

Expectations towards Payo Payo as the executive organization were not fully met. The staff thought that organizing the communities in the villages might have been faster if the village facilitators would have stayed in the villages for longer periods all through this project. All in all, the project has been an important learning process for this young organization.

3. **What were the main achievements?**
4. **What were the main things that we didn't achieve yet?**

The main achievements were that an awareness and interest towards organic farming methods (fertilizers and pesticides) has increased and they are spreading in all three villages. This means that the people have been proven that these methods work and that by using the organic methods of farming they can save in production costs. Farmers are beginning to believe that the value of natural resources can be improved, meaning that they can make good use of materials that have been treated as waste until now (for example cow dung).

The second important achievement is the better spirit of the farmers: they are teaching and learning from one another and many villagers dare to practice and experiment with new things. There is a change in power relations between villagers and the village governments: village farmer groups now have an identity and that empowers them. Villagers have been subordinated by the state for a long time, so it's not easy to change these habits. Especially in Tompo Bulu the change is eminent. The fact that there are a few active core persons is seen as a main achievement also, because these persons catalyse the change of thinking in the villages and activate other people. Also, there are now some farmers who are experts on biogas in the villages.



Rahadi from LPTP and a farmer group member working together in the Tompo Bulu model garden in 2010

Soga and Bonne Bonne's good relations with village governments were also seen as important achievements. The staff sees that this can be used as an entry point for policy advocacy. In Tompo Bulu this is also going well, but the hoped for influence towards the village government is not yet achieved.

The staff felt that the experience that they have got from working in this project has been valuable for them and has helped the capacity building of Payo Payo and LPTP as organizations. They now have better knowledge on organizing communities and project management, as well as more expertise on how theories are met in the field. However, the staff agreed that there is still more for them to learn and achieve in good project management and finance issues. Payo Payo's capacity was felt to be disappointing and there is still a lack of good routines of work.

In Soga the main thing not achieved yet is that there is no solid and well organized farmer group. In Bonne Bonne the pest problem has not been solved yet. In general, the income generation from post-production is not yet achieved in this project as well as was hoped. The staff also feels that the policy advocacy and villages as community colleges (farmers and villagers teaching each other) are not achieved yet. There is progress in Tompo Bulu only. Farmer groups are not working like with other LPTP projects yet. Some feel that influencing people outside this project is still in process. The staff feel that they should write and publish more about their experiences for the project to have more influence.

- 5. What are the main changes you have noted in the villages?**
- 6. Has the project increased the self-sufficiency of villagers and independence in food and energy?**
- 7. Has this project had an influence on poverty?**

The main change seems to be not only the concrete things like biogas, but the increased spirit of the villagers for learning and doing new things on their own. There is a great cultural change in the spirit of farmers; they seem to have more confidence in themselves. Villagers are working together more than before. Even if only in small groups, people are still learning and sharing more than before.

In Tompo Bulu especially there is a group of farmers who are well organized and have plans for the future. People in the village are using and improving methods learned from this project. In Soga and Bonne Bonne main change is the new awareness on organic methods of farming and in Bonne Bonne on the System of Rice Intensification (SRI).

Self-sufficiency has increased somewhat during this project, but generally it still needs to be improved on. Villagers should be taught to calculate their input value so self-sufficiency could be measured better. Self-sufficiency has been increased in Tompo Bulu with rice, due to increased harvests and with vegetables, due to yard gardens. In the other villages this program is still at the starting point with food self-sufficiency, in Bonne Bonne people still feel more comfortable with buying vegetables than planting their own. The energy aspect in Bonne Bonne is better, because of the wood save stoves.

There has been no significant impact on poverty yet, but they think this is a good opening to try to do something about that. If we do not narrow poverty down to only economic poverty, but include the poverty of thinking as well, we can say that this project has had an impact on it.

8. Has the information about the project spread and been put to use?

The primary way of spreading information has been beneficiaries (farmers etc.) sharing information about their activities to other villagers and other villages. In Bonne Bonne the information has spread well and farmers have also invited people from other districts to some activities. In Soga they have spread information about organic fertilizers and the last farmer seminar was a success on spreading information, as there were about 50 participants, but there is doubt about the use of the information. In Tompo Bulu, farmers share and use information well.

Information about the project is also spread by Payo Payo members to their networks, for example to Inninnawa, another organization they are affiliated with, and to Makassar University in Sulawesi. There have been some television interviews and newspaper articles about the project. Payo Payo has also produced one bulletin, a booklet and a book to inform about the things they have done in this project. Facebook and blog are also mentioned as channels for information. There is a facebook group for SRP Soga, informing about their activities.

The information has been put to use to some extent, but there are no exact numbers yet on this. Some of the project agendas, especially biogas, have spread to northern parts of Sulawesi.

9. What have you achieved in building relations with the local government?

The relations with the district governments have been built slowly. At the moment only the village level governments are involved and policies cannot be influenced yet. Relations with the village head in Soga are good, he is spreading information about this project to other villages and his son Wawan is also working for this project. In the village development planning meeting there has already been a proposal that organic farming methods and alternative energy should be in the plan. The previous Payo Payo project coordinator was experienced in informing and lobbying district governments, so in that sense it is a shame that he had to leave the project at this stage.

10. How have Payo Payo's ways of working changed during this project?

The general opinion is that Payo Payo has had ups and downs in its ways of working. The second year of this project was not coordinated well and work was inconsistent. The field facilitators and the management did not discuss enough. The problems within the organization that also affected this project were raised after the first year and in the beginning of 2011 Payo Payo had an internal evaluation which led to some personnel changes. Now they are hoping for the best for this third and last year.

There is a worry that Payo Payo may become an event organizer rather than a community organizer and that the project staff start to do this work for the money. They have learnt that they should only say what they are going to do and not to promise if they cannot deliver. They have also learnt about financial management and can now apply this to their other projects. Now they are discussing more and not just doing things, but also planning better.



Payo Payo and Tombo Bulu villagers discussing in the Bale Tani –training center

11. Was the project well planned?

12. Did you find the researches useful?

13. What would you do differently now than in the beginning?

The project was well planned, with clear steps for each project year, but the plan was ambitious with many steps and this led to losing focus. The problems started when the steps took longer than was planned and progress was slow. It is hard to plan the social issues beforehand (for example attitudes rising from the local culture). It was sometimes hard to make adjustments to the plan according to developments in the field.

The researches like the ones that were done in the beginning of the project in the villages were seen as an important entry point and justification for this project. Research was found useful and helpful to formulate the needed approach and actions. It was useful especially on food and energy consumption issues and expenditure.

The project should have been planned with fewer activities and the characteristics and social aspects of the villages should have been taken into account better in the planning stage. It was also said that the project should have been a direct partnership between Payo Payo and HYY, not with LPTP as the responsible partner of HYY.

There should have been serious capacity building for the executive organization Payo Payo before starting a project of this scale. There would have been a need to reorient the field facilitators in terms of instruments, approaches and methodologies on how to work in a village community. The project plan should be flexible in this kind of a project. It is important to meet real needs and to identify the target groups in the villages, as well as to be able to change plans according to experiences.

14. If the objective was to strengthen food security and energy independence of villagers, did we have good activities to reach that?

15. What kind of feedback have you received from the beneficiaries?

Activities were systematically arranged; only the impact was maybe not as great as planned. The activities should have been modified according to the characteristics of each village. The problems were social problems and problems with the skills in how to organize communities.

The activities for strengthening food security succeeded better. Yard gardens, organic farming methods and SRI were really adopted well in the villages. Still, there were some activities that did not meet the needs of the villagers or were not lasting with their effects. Activities on energy were not seen to have been as successful. The technology brought into the villages was not always appropriate, for example the jahtropa stoves. The permanent biogas digesters mostly work, but they cannot be easily copied by others. Instead the plastic biogas could be a solution if the problems they have had can be solved. The staff feels that they are mostly doing the right things, but there are many things to consider before a permanent success can be reached.

There has been some over-expectation on the part of the villagers towards this project. They sometimes expect the staff to have direct solutions to their problems. Villagers often think that this project works like a government and can do anything. With food issues, some staff felt personal shame when the first organic experiments failed in Tompo Bulu, but the local farmers were supportive and advised them not to give up yet.

Villagers have generally been open to discussion with project staff about project issues and expressed a hope that the project has realistic goals and is not in the villages just to make them busy.

16. What else would you have hoped from LPTP / HYY / Payo Payo?

Hopes for Payo Payo:

- More time in the villages
- Writing and documenting this project and progress better
- Improving themselves and learning more in terms of knowledge and skills, sharing them and also reflecting on themselves
- The same intensity of concentration in all project villages
- Continuing working together with a positive way of thinking and trusting each other
- Stopping to really look at where they are now and where they need to go as an organization
- More communication with HYY directly

Hopes for LPTP:

- Keep developing applicable technology to the villages
- To come to meet Payo Payo more often
- Give more assistance in terms of technology and management
- To now contextualize their knowledge on technology in Sulawesi and not only Java, as the cultural context is different

Hopes for HYY:

- Quick responses and decision making
- Understanding on different cultural conditions and social dimensions of Sulawesi, because the project staff in Sulawesi has to bridge the gap between logical project management and the social context
- Understanding Payo Payo as an organization and also the human side
- Continue discussion (technical and ideological) and trust building with Payo Payo

17. What were the main obstacles in the project?

18. What has been the most difficult part of your job?

Reporting was a difficult part of the job for many. Handling and learning finance issues and personnel management was also found hard. The flow of information could have been better. Payo Payo's organizational problems have affected this project and caused obstacles with the project management. Because the project has been felt as personally important, it has been hard to make some decisions, especially before the internal evaluation and related personnel changes. Before that, there were usually no common discussions to base the decisions on.

Community organizing was found difficult. In encouraging the villagers to form a group or to work in a group, the main obstacle was the cultural habit of not working together. It was also difficult to reach farmers outside the farmer groups. It has been difficult to try to handle the possible side effects of this project. The main obstacle for Payo Payo has therefore been to face these obstacles with the beneficiaries and not leaving and giving up on them.

Beneficiaries

Beneficiaries in this project are the farmers and their families in three project villages.

1. Self sufficiency on food

The aim of self sufficiency on food in the project villages has here been divided into four different activities: organic fertilizers, organic pesticides, SRI (System of Rice Intensification) and yard gardens. Using organic farming methods reduces the need to buy expensive and environmentally harmful chemical fertilizers and pesticides. Organic fertilizers and pesticides are also a part of the System of Rice Intensification. Yard gardens provide vegetables and herbs for own consumption and one can also sell the surplus products. The idea is to use organic fertilizers and pesticides for gardens also.

Organic fertilizers

In the project, organic fertilizers and pesticides were used for rice, yard gardens and cacao. Two kinds of organic fertilizers have been made in all three project villages. The first one, lactobacillus, has spread to a large number of farmers, and the second is an improved version of lactobacillus simply named liquid fertilizer, that has been formulated within this project in Soga. Organic fertilizers are used in yard gardens for chili, green peas, tomato and papaya, as well as for the rice fields and cocoa trees.

Farmers have learned to make organic fertilizers within the project and many now have the knowledge and skills to make these fertilizers by themselves. Farmers usually make the fertilizer in small groups of two to five persons. They feel that it is easier to make it together and a large amount at once. Materials for the fertilizers can be found in the households and in nature. By the time of the evaluation, many farmers had already made lactobacillus by themselves once or twice without help from the project.

The actual benefit of organic fertilizers is the savings made when there is no need to buy as much of the chemical fertilizers as before. Although they do not need any chemicals at all, generally farmers are still using a small amount of chemical fertilizer along with the organic fertilizer. Depending on the amount of organic fertilizer used and the area of cultivated land, farmers save 50-90 percent in the input cost per planting season. Compared to chemical fertilizers, garden plants and rice grown with organic fertilizers grow slower at first, but in the end the harvests are as big and of at least as good a quality as with chemical fertilizers. For cacao, it is hard to tell what the results are yet, because the first time they had only started using it recently and it takes a long time for cacao to grow.



The organic fertilizer lactobacillus made and sold by the women's group in Bonne Bonne

The main problem with organic fertilizers seemed to be daring to try them on one's own land. In Soga a factory sells organic fertilizer also, so some farmers buy this even if it is more expensive. It seemed that fertilizer preparation is mostly seen as men's work rather than women's.

Overall, lactobacillus seems to have been effective and farmers have adopted it well in all three villages. Many farmers mentioned that people outside this project have been interested in organic fertilizers. Almost everyone mentioned that they plan to use them in the future and many said that they will try to go 100 percent organic, but it is a slow process to get the farmers to totally give up chemical fertilizers.

Composting is also a way of creating organic fertilizers that the project has introduced to the villages. Composts have been built in all three villages and people in the villages have produced fertilizer by compost more than two times now. The compost material is used for gardens (chili, vegetables etc.) and for cocoa. It was found useful and cheap to make because of the practically free materials. The difficult thing was that it takes time to make the compost and farmers prefer to have help with the work.

Organic pesticides

Farmers have been trying out organic pesticides for chili and rice. They have learned to make these in the project and now know how to make these by themselves. Most farmers are using partly organic and partly chemical pesticides. It is cheaper to use organic pesticides, because the materials can be found from the household and surrounding environment. The use of chemical pesticides has decreased by around 25 percent with some farmers. However, there are still problems with some pests and a special tungro-virus in Bonne Bonne, but the pesticides are nevertheless working for some pests.

SRI

The System of Rice Intensification is a method of planting rice introduced by LPTP, whereby only one rice seed is planted per hole, whereas previously the farmers had planted many seeds per hole to ensure that at least one survives. The method therefore saves seeds at the planting stage.

We interviewed farmers using SRI in Bonne Bonne and Tombo Bulu. SRI has been taught by the field facilitators and now farmers feel that they are able to teach others to use SRI. SRI has been used in Bonne Bonne for one or two planting seasons. In Tombo Bulu the use of SRI is already an established custom and it seemed that this practice was spreading. Some use SRI only on a part of their land, because they feel it is still too risky to use it for all the land.

With SRI, rice grains are bigger than before and the rice stalks grow taller. The incomes of some of the farmers using SRI have increased through an increase in the quantity of rice produced. For the amount of acres used to get two sack of rice before, now with SRI they get around 3,5 sacks. Also, farmers are saving ca. 30 – 50 percent with lower input costs, for example on chemical fertilizers.

However, some farmers also feel that it is problematic that SRI planting takes longer than with the old method. Crops are also more vulnerable to snails and pests, because with SRI you only plant one seed per seed furrow, so pests can attack quicker when there is only one rice stalk. Regardless of these problems, farmers in Bonne Bonne and especially in Tombo Bulu seemed open to SRI and were interested to use it in the future. Some were planning to use SRI for all of their rice fields.

Yard gardens

Yard gardening is mainly a women's activity. Yard gardens are established in all three villages, but the beneficiaries we talked to were mainly from Bonne Bonne and Tombo Bulu. Villagers have been planting some plants like flowers before, but with this project have started to plant useful plants like vegetables (beans, spinach, tomatoes etc.) and herbs (for herbal medicine).

In Tombo Bulu, the villagers used to plant vegetables before vegetable sellers started coming to the village, after which they stopped. Now they have started planting their own vegetables again through the project. The women we talked to felt that they have the skills and

knowledge to carry on with yard gardens in the future. They share knowledge and discuss about the problems in women's groups or in smaller, unorganized groups of women.

In Tombo Bulu villagers found enough space for yard gardens on their own yards, but in Bonne Bonne some were planting vegetables close to the rice fields or using the Posyandy women's group's yard for planting. Seeds for the first plantings have come from the project, but people seemed willing to buy the seeds themselves in the future, as seeds are inexpensive.



A yard garden in Tombo Bulu village

Most of those with yard gardens are using organic fertilizers for them. One woman said she could make it by herself, but others get it from the male farmers. Organic fertilizer is found useful as it saves money. In Tombo Bulu they also used compost and cow dung in gardens.

The biggest benefit from the yard gardens is that families do not have to buy vegetables or herbs from the salesmen anymore and were saving around 14.000 – 21.000 rupiahs per family per one week (1,15 – 1,7 euros)¹. A couple of interviewees had been selling the garden products and one of them in Bonne Bonne knew five other household who had also sold garden produce. One woman said she had never really thought about using the unutilized space in the yard, but now sees this as a possibility.

¹ The exchange rate 1 €= 12 359 Indonesian Rupiahs was used in this report.

It has been difficult especially in Bonne Bonne to encourage others to establish gardens. In Bonne Bonne the main problem was that people who want to start gardening do not have enough space in their own yard and would also have to add soil. The idea of yard gardening is not fully working if one has to maintain the garden far from home. In Tombo Bulu the dry season has caused some problems.

Yard gardens have spread both within and outside the women's groups. All the interviewees knew other people who had or were planning to establish yard gardens. They have spread the knowledge to others. In Tombo Bulu one women's group has spread the knowledge actively. Here the yard gardening has also spread to the village government level, as there is a preschool with a yard garden and the children can choose to attend lessons on gardening.

2. Self sufficiency on energy

Self sufficiency on energy contains five different activities: 9m³ biogas digesters, plastic biogas and an electricity-producing biogas digester, as well as wood saving stoves and jathropa stoves. The idea with biogas is to establish a system that is self-renewable: cows provide the raw material for the biogas digester and the slurry that is the end product can also be used as a fertilizer for example in the gardens.



Plastic biogas

Plastic biogas is a small scale biogas digester constructed in one household's yard from big plastic bags and pipes. It also needs a small shed and a stove. The dung from one cow is enough to produce gas for cooking for two or three hours a day. It was developed by LPTP and they have been built in the project villages since the first year of the project. We interviewed one person in Bonne Bonne with a plastic biogas digester and one in Tombo Bulu. Plastic biogas was used for cooking every day, along with firewood and was generally found useful and easy to use. The users can save in kerosene costs as with the big biogas digester.

In Tombo Bulu the plastic biogas we saw was broken. It had broken eight months after construction for the first time. After that, the villagers constructed a new one to teach the visitors from Bonne Bonne, but it

was broken by a cat a short time ago. Breaking has been the biggest problem with plastic biogas and it should be improved to tolerate animals and fungus.

However, even if it does not work as well as it could, the plastic biogas has worked as a motivator to the villagers and to make them believe that it is indeed possible to get gas for cooking from cow dung. As there are people in all three villages who can make plastic biogas, it is inexpensive to construct and many people have expressed interest, there are good chances that plastic biogas could be spread widely.

Biogas (9m³)

One nine cubic meter biogas digester has been built in each of the three villages. One digester of this size is designed to provide gas for cooking to three to four households. There are pipes drawn to the houses from the digester and a meter showing the amount of gas left.

The first biogas digester was built in Soga in 2009 and was used by two families for a long time, but is not in use at the moment. The families did not have enough cows to run the biogas and a small plastic part was also broken, although it can be easily replaced. (The biogas digester in Soga will be evaluated later, at the end of 2011, by Anniina Peltola.)

In Bonne Bonne there is a biogas digester in Pullipe hamlet, constructed in the hamlet imam's yard in 2010. The gas pipes go to four houses and there is also a public stove in a shelter right above the digester in the middle of a group of houses. We interviewed two women using the biogas stove in their house and one person using the public stove. In Tombo Bulu three households use the gas from one biogas digester constructed in late 2009 and we interviewed a woman from one of the households, using the stove in her house.

Beneficiaries used the biogas for cooking every day. In Tombo Bulu the woman we interviewed also had a lamp that could work with biogas and although it was broken at the time, they just need to buy a new bulb for it. The households had other stoves as well, but used mostly biogas. Firewood stoves are faster to use, but one has to watch the stove all the time, while with biogas one can do other things at the same time. The public biogas user in Bonne Bonne used the stove less than the others: 20 – 50 % of her cooking was done with the public stove.

Beneficiaries in Bonne Bonne and Tombo Bulu were happy with the biogas and only some small problems had occurred. The biogas stove is cheaper to use than a kerosene stove, as the four liters of kerosene they used per week used to cost them about 40 000 (3,20 euros). Using biogas also saves the wood that was previously used. In Tombo Bulu the people seemed to know that the slurry can be used as fertilizer afterwards, but in Bonne Bonne this recyclable use was not clear to the biogas users.

A common problem with the biogas has been that the villagers in all three villages have found it hard to bring their cows to the shelters next to the digesters. They feel more comfortable when the cows are in the forest as before and find their food there. In Bonne Bonne people collect the cow dung together. In Tombo bulu the biogas users bring their cows to the shelter only for the night, as this produces enough dung and does not create extra work. In Tombo Bulu they also have a small chopper machine to make it easier to chop different plants to make cow food.



Payo Payo staff and Soga villagers building the Soga biogas digester in 2009

Another problem in Bonne Bonne was that the government had a program to subsidise liquid natural gas (LNG) there and some people who used the public cooking stove before did not cook there anymore since the month before. Before the LNG it used to be crowded at the public biogas stove, now some houses only used biogas if the LNG was finished. Also, the public biogas stove is not convenient when there is a lot of wind, as the flame can die, but this can be fixed by constructing a cover around the stove.

Through the project many people have learnt how to build these digesters and the digester in Bonne Bonne was built without LPTP's experts, solely by the farmers trained in the project. There have been people trained in the building from villages outside the project as well and the project staff told us that two similar digesters have been built in villages outside the project.

Electric biogas

An 18 m³ biogas digester that produces electricity was constructed in January 2011 in a remote hamlet of Tombo Bulu, where people did not have electricity. Electricity is wired to 13 households, but only six currently get electricity and it works for two to three hours every evening. In each house there is a circuit to limit the electricity they get. There are also around 500 meters of wired street lamps, but they were not working at the moment, because of the dry season, the shortage of cow dung and work force. As a solution to the delay in the street lamps, project staff is forming a team to facilitate the construction.

The electricity is used mainly for lamps in the houses and for one small television (bought after the biogas was constructed). Beneficiaries seemed very happy about the biogas, as they do not have to buy kerosene anymore. One household used to buy five liters for lamps per month at 10 000 rupiahs per liter, so they are able to save around 5 euros per month.

There has been a problem of water shortage in the dry season, but the solution has already been identified and the digester works regardless of this problem. There are also problems with organizing the community for the cow dung collecting. At the moment there are six households cut from the electricity circuit because they have not brought neither cows nor dung and are not paying the maintenance fee of 30 000 rupiahs per month determined by the hamlet community.

It is not easy to organize people to take care of the biogas plant. The problem with placing the cows is the same as with the smaller biogas digester: people feel it is easier to keep the cows in the forest than to feed them at the shelter. The maintenance fee also seems to be quite high. Building this type of biogas requires a very big investment, but in theory these kind of biogas plants could be build with government or village level help to places with no electricity.

Wood-saving stove

We interviewed four people in Bonne Bonne that are using wood saving stoves. In Soga we saw one stove. Almost everyone had had the stove for two years and use other stoves as well (LNG, kerosene, briquette stove, normal firewood stove). Wood saving stoves were seen as useful especially when cooking for a long time and on a larger scale. The stoves were being used from twice a week to everyday and on average the amount of wood used for cooking one food has decreased from 20 pieces to four. People using the stove also save in kerosene.

One of the users mentioned that he has learned how to make these stoves and generally they are able to teach others how to make them. The materials needed are available and the only input cost is from cement. However, it seems to be easy to find firewood at the moment and wood saving stoves are also not the best option for fast cooking. In Soga and Tombo Bulu, households cook upstairs, where they can't build the heavy structure of the wood saving stove. Payo Payo and LPTP have been discussing lighter materials.



A wood save stove in Soga village

Jathropa stove

Jathropa stoves were not adopted well in any of the three villages. There were some technical problems as well as problems in finding enough jathropa. People in the villages found it hard to use the stove. It also seemed that there is no special need for this kind of stove. Payo Payo and LPTP are thinking of relocating these to other villages.

3. Ownership of the villagers

Farmer groups

Farmer groups have been established in all three villages. There are 3 – 20 farmers in one group and they meet once or twice in two weeks. In Tombo Bulu they meet at the training center (Bale Tani). There have been farmer groups in the villages before, established by the government, but farmers feel they were different because they were not learning groups. Our farmer groups aim at a new way of thinking by not commanding what the farmers should do, but teaching them how to make their own decisions and to co-operate with each other.

In all villages the farmer groups discuss farming issues and biogas. Like I mentioned before, the farmer groups make organic fertilizers and pesticides together, so they can make large

quantities. They mentioned that they help each other and solve problems together. It is easier now when they share knowledge, skills and aid and they want to continue working in groups in the future.

In Bonne Bonne the farmer group seemed to be less active, but in Tombo Bulu the meetings are more organized and regular and the Tombo Bulu farmer group has been a model for the other villages. The Tombo Bulu farmer group felt there was equality and trust between them and they were aware of the need to work together. The farmer group in Tombo Bulu has been active in informing about their activities, and the groups in other villages also want to spread information. Farmer groups seem to be open to others who are interested in joining. Group members are interested in study visits to other villages, but also hope that other groups would come and learn from them in their villages.

There has been a study visit to Tombo Bulu with participants from Bonne Bonne. Villagers, both men and women, were there to learn about compost, SRI, plastic biogas and group organization. Bonne Bonne villagers found the study trip very useful, even if they have not put to use all the skills that they learned - for example it is not possible to make use of plastic biogas without a cow. They felt that it was important to learn new things and it was especially motivating to see how good the Tombo bulu farmer group was.

Women's groups

We interviewed three women in Bonne Bonne who were members of women's groups in different hamlets and in Tombo Bulu we interviewed one woman. There is also a government women's group, Posyandu, in Bonne Bonne which has been used as base for our women's group activities. There are around 5 – 20 active member per group. Some meet on a weekly basis and some many times a week.

The groups have mostly learned about yard gardening and discuss gardening together. They have also learned about organic farming methods. In Tombo Bulu they have also been discussing small cookie industry. In Bonne Bonne the Posyandu women's group also handles children's health and nutritional issues. The women have participated in different kinds of trainings. Group members seemed happy about the groups and said they will keep meeting.



Payo Payo's facilitator discussing with the Bonne Bonne women's group

Post-production

Developing post-production methods was still in progress, but there will be trainings on producing quality palm sugar and honey, as well as on marketing. There has already been a training on producing banana chips for sale in Bonne Bonne, but it was not a success as the women were unable to compete with other producers.

Informing about the project

Booklets, audiovisuals, leaflets and books

There has been information material produced on organic farming methods, bioenergy and the overall lessons learned from this project. There was a booklet and one book published and printed while we were in Indonesia. We were not able to interview people who had been reading these materials yet. (Anniina Peltola will interview beneficiaries at the end of 2011.)

Conclusion

In this evaluation I have tried to cover all the main activities done in this project. This project has had many activities on many different topics. Next I will conclude the main results of the project in relation to the project objectives.

One long-term objective was to strengthen the food security of villagers in Sulawesi. Villagers were taught to use environmentally and economically sustainable farming methods. It has been a big challenge to teach farmers to think in new ways after decades of being depressed by both centralized power and chemical fertilizer companies. However, spreading the knowledge and use of organic fertilizers and pesticides has been the one activity that has succeeded in all three villages. Farmers now have the confidence that self-made fertilizers can be at least as effective as industrial chemical ones and they seem have more organic values than before. SRI has been put to wide use in Tombo Bulu, and Bonne Bonne is starting to see the good results of this method also. It seems that farmers are beginning to see the benefits of these methods, but changing their farming habits and ways of thinking takes more time than was planned. This project has been, more than anything, about ideological and social change and it takes time to achieve permanent results.

The second long-term objective was to strengthen the energy independence of villagers in Sulawesi and this was pursued through biogas (plastic, electricity and 9m³) and energy saving stoves. The need for new ways of producing energy in these villages, at the starting point, did not seem to be great enough to have effective result with energy. It is clear that energy saving stoves were not as big a success as was hoped. Wood saving stoves were only well accepted in Bonne Bonne and jathropa stoves were not suitable for our project villages to begin with.

Biogas plants have been technically working well and in Tombo Bulu and Bonne Bonne they help many household save money. Plastic biogas digesters are spreading and people can learn how to make all these energy saving options from the project booklets. The most important thing for the villages is that people have realized that energy can be made out of waste. The future can really force them to change their ways of energy use, if they are confronted with a wood shortage or high electricity or kerosene prices and they will have more options then.

The objectives for social and community building were to strengthen the capacity of villagers to work for the development of their villages and to form working and successful farmer groups for spreading awareness of the project. The idea of farmer groups and cooperation with fellow farmers has been accepted well in all three villages. In all the villages, farmer groups for example make large amounts of lactobacillus together. They find the cooperation beneficial, even if the groups are not as coherent in every village as was hoped. The project succeeded in forming a truly independent farmer group in Tombo Bulu; serving as an example to other villages, they have taught others on community building. Now villagers have learned that they can make their own decisions and initiatives on farming issues.

Through this project, the cooperation with village and district governments should have increased. The objective that the district government should take the farming activities developed in this project as a model is not yet fully achieved. In Tombo Bulu there is good progress with yard gardens in preschools, but generally government cooperation is still in progress. In Tombo Bulu there should have been agreements between villagers and national

park administration about the use of water resources and the utilization of cattle for biogas production, but this is not yet achieved.

All these activities should have reduced poverty in the villages. Organic farming methods have made it possible to farmers save some money in input costs. Now they do not have to buy as much for chemical fertilizers and pesticides as before (the use of chemical fertilizers with those participating in the project has decreased by 50 – 90 percent). Farmers using SRI now have better harvests and the land is in a better condition. Yard gardens, especially in Tombo Bulu, make households more self-sufficient on food and save money. Energy saving options also save money when households do not need as much kerosene as before. Although the savings might seem small, this small amount of money already makes a difference for the farmer families.

Poverty can be seen as economical poverty, but with this project we must also take into account the poverty of thinking. This project has especially reduced the poverty of thinking by giving the villagers new ways of thinking and teaching them how to organize themselves as well as new ways of farming and energy use. Villagers now have the will to take responsibility for their own village and actions and they believe in their abilities.

Tombo Bulu is clearly the most successful village out of the three project villages. Tombo Bulu got into a good start already in 2008, when Payo Payo constructed a water channel in the village, sponsored by HYY's project funds. This was good for building trust between Payo Payo and Tombo Bulu villagers and has helped the project to progress quicker in Tombo Bulu than in other villages. But even if the progress has been slower in Bonne Bonne and Soga, there has been progress there as well. It is important to remember that this project is, in the end, about changing ways of thinking. This requires Payo Payo to build a relationship and trust with the villagers, before any change can happen, and this was probably not taken into account at the planning stage. But having made it this far with the project, it can be said that there has been good progress in all the villages, in relation to the specific characteristics of each village.