Application of a micro-credit scheme to some ecological activities

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Abstract. Micro-credit schemes are expanding very rapidly worldwide in ecological activities. Providing gas-cooking equipments in Burkina Faso is a successful example in which the micro-credit system contributes to improve not only poor women's life but also ecological environment. In Bangladesh, a solar PV system program through micro-credit has been implemented widely and successfully: big NGOs act as equipment dealers and provide micro-credit loans to individual poor households. In contrast, there are very few cases which showed positive results in sanitation projects. Micro-credit schemes are, in principle, based on the income generated through the fund. But in usual cases, sanitation activities do not yield any income. High cost of latrine construction is another barrier. In this paper, we reviewed why we could not apply a micro-credit scheme to our "Améli-eaur project" in Burkina Faso. Common features for the success in ecological activities are 1) enough income yielded from the activity itself, 2) the strong needs from population side, and 3) established system support, both technically and administratively. If we find a way to fulfill these elements in a sanitation project, it can be a long, sustainable project.

1. Introduction
The "Ameli-Eaur Project on sustainbile water and sanitation system" was a joint action/research project of Hokkaido University in Japan and 2iE (International Institute for Water and Environmental Engineering) in Burkina Faso. It started in 2009 and terminated in 2014, aiming at creation of a new recycling system of domestic gray water and human excreta as natural resources for agriculture. More precisely speaking, this project tried to invent a new technology on gray water treatment and compost toilet which can be utilized at a pilot site in a rural area in Burkina Faso. This study aimed to look for the conditions which facilitate to apply a micro-credit scheme to ecological projects as a means of ensuring sustainability.

2. Methodology
In this context, the author conducted a research on a possible micro-credit scheme which can be applicable for this new technology, so that a large number of farmers will be able to benefit from it after the termination of the project.

The author began the research in interviewing various financing groups dealing with micro-credit schemes in Burkina Faso, such as banks, ministries and NGOs/private organizations. Facing some difficulties in application of micro-credit scheme to sanitation technologies, the author looked for other examples worldwide by reviewing documents of sanitation projects, and then moved to some cases of various ecological aspects.

3. Result and discussion
3.1. Application of a micro-credit scheme to a sanitation project in Burkina Faso
3.1.1. Existing micro-credit schemes in Burkina Faso
In Burkina Faso, three types of financial organizations deal with micro-credit systems: banks, ministries and NGOs/private organizations.

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Among banks, "Caisse populaire" is the biggest and most experienced in the area of micro-credit. It has a special scheme called "caisse villageoise" targeting village women, providing thus a potential for a future cooperation with our Améli-eaur project. The borrowers opened their account with the bank, and then they can get a micro-credit for their income-generating activities. The loan periods differ from 6 to 8 months (exceptional maximum is one year) according to the nature of the activity. The interest rate is around 9.75%, and the reimbursement rate is as high as 98%.

One of the characteristics in Africa is that national ministries try to help population to undertake a small business. In Burkina Faso, the Ministry of Finance has the FAARF (Fonds d'appui aux activités rémunératrices des femmes) through which female agents address to rural women. The credit system is almost the same as the Caisse populaire: the interest rate is 10%, with monthly reimbursement, and the period is 8 to one year according to the activity. The reimbursement rate is 97%. The Ministry of Education has its special organization AME (Association de Mères Educatrices) which provides small funds to pupil's mothers through school directors.

The third type of financial organization dealing with micro-credit is NGOs, international organizations and private organizations. NGOs are functional if they are supported by some international organizations, but it seems difficult if they are only locals. Private organizations are small but active and they take action especially at market places in towns, targeting working urban women. We visited three private organizations which deal with small micro-credit schemes in the Ouagadougou market places. AGD (Action Grâce Divine) is a religion-based organization. The amount of each activity is 5,000 to 2,000,000 CFA (of which up to half can be credited), with loan period of around 4 months. Interest rate is 8%, plus 1% of insurance. The reimbursement rate is around 75%. In the case of LAAFI SIRA KWIEOGO (it means, in the local languages of mollé and djoula, "the intimacy is the way to health"), micro-credit is given to informal sector workers who are doing savings in their account of the organization. The interest rate of the credit is 13% per year for social credit, and 15% per year for commercial credit. FINACOM (Finance communautaire) is also working actively for small female entrepreneurs.

3.1.2. Application of micro-credit to sanitation projects in Burkina Faso

Micro-credit system seems to work well in many activities in Burkina Faso. However in sanitation projects there were only very few examples, moreover none of them showed positive results. The reasons for this failure is the same as the cases described in 2.2.1. In almost all the sanitation projects of international organizations, toilet construction is financed by donors, and no scheme was foreseen after its termination. Only one micro-credit example was found with Caisse Populaire. It was realized in collaboration with World Bank and an international NGO: CREPA (Centre Régional pour l'Eau Potable et l'Assainissement à faible coût), but when the World Bank project terminated (that means, financial input finished), reimbursements from the farmers were not expected high enough to continue the micro-credit scheme. So it was in failure. Another sanitation project which we visited in Koupela was supported by CREPA. It did not adopt a micro-credit scheme, and therefore not expandable after the termination of the project.

The case of our "Améli-eaur" project is not the exception, and we could not even start a micro-credit scheme: the reasons are many: 1) the construction cost (although it is still under improvement) was far beyond the limit of small farmers economical capacity. (It was calculated for 100,000 -500,000 CFA/toilet) 2) The agricultural benefit expected from the use of compost and purified gray water was too low to cover the investment. 3) A strong support system did not exist technically nor administratively (a support system was planned but not realized before the end of the Améli-eaur project). And 4) the people did not feel so much impact of using sanitation devices comparing to big financial expenses (as shown in the results of interviews of pilot families: "Report of the Sociological Survey" conducted from March 11 to 14, 2014, at Améli-Eaur project pilot sites).
3.2. Review worldwide

3.2.1. Application of micro-credit to sanitation systems worldwide

After the interviews and research in Burkina Faso, we reviewed documents worldwide, but the results were the same. "La question du recouvrement des fonds est plus problématique. Nombreux sont des projets où le recouvrement des sommes prêtées a été nul ou faible." (Arnaud Assié: "Le micro- crédit pour l’accès à l’assainissement autonome", Revue documentaire d’expériences dans les pays en développement) Micro-credit schemes are, in principle, based on the income generated through the fund. But the borrowers of sanitation micro-credit have to reimburse the loan through their own savings. High cost of latrine construction is another barrier: poor families have often difficulties in reimbursement, especially when there is some natural calamity such as drought or flood. In usual micro-credit projects the initial capital is used as revolving funds. In the case of sanitation projects, the reimbursement rates are too low for such a revolving system to work properly. Moreover running costs such as excreta disposal have not necessarily been considered. This also affects the sustainability. As a result, micro-credit projects in sanitation are in many cases not sustainable, and expansion of latrine construction after termination of donor inputs cannot happen.

3.2.2. Micro-credit in ecological activities

In contrast, in the area of ecology, micro-credit schemes are expanding very rapidly worldwide. Providing gas-cooking equipments in Burkina Faso is a successful example in which the micro-credit system contributes to improve not only poor women’s life but also ecological environment. The borrowers reimburse their debt from the difference of expense between gas cost and eventual purchase of woods or carbon. For example according to AGD scheme, for 28,000 CFA of a gas bottle cost, the borrower pays 10,000 CFA at first, and 6,000 CFA per month for three months. The eventual purchase cost of woods is estimated 9,000 CFA/m, while the expense for gas is 3,000 CFA/m. So the borrower can pay the difference of 6,000 CFA/m. Another example is LAAFI SIRA KUIEJO: since 2008, this organization lends 25,000 CFA for a bottle of gas, with daily reimbursement, small by small, and the loan period is flexible according to borrowers' situation. They can thus get a high reimbursement rate at the end.

In Bangladesh, a solar PV system program through micro-credit has been implemented widely and successfully: big NGOs act as equipment dealers and provide micro-credit loans to individual poor households. Up to January 2013 over 1 million systems have been installed with an average loan collection rate of 96%. (Green Growth Best Practice (GGBP) report: "Microfinance for Solar Home Systems") For example, starting with PV systems, Grameen Shakti (GS) is offering 24-month leasing financing to consumers to spread out the initial equipment cost. In parallel, GS is training a network of local retailer-technicians to provide on-going maintenance and customer support. (FAO report: "Micro-finance for Rural Energy Using PV Systems")

In Morocco, the NGO: Migrations et Developpement has helped electrify nearly 100 villages in a remote mountainous area through diesel-based mini-grids. Local operators provide electricity to a village cooperative on a fee-for-service basis. The NGO helps the villagers form an association to own, manage and finance the electrical systems. (FAO report: "Micro-finance for Rural Energy Using PV Systems")

In Sri Lanka, the Sarvodaya Economic Enterprises Development Services (SEEDS) is the most financially self sufficient microfinance institution within the NGO sector. SEEDS has embarked on programme to support rural electrification with the emphasis being directed to home solar and micro-hydro units. The programme of support operates under the World Bank RERED Programme. A minimum down payment of 15% is required. The balance is granted as a loan and repayments are made over 1-4 years. A field officer calls each month to collect the agreed repayment. This comprehensive checking on each loan together with frequent direct contact has led to a very low level of default (no more than 2%). (University of Greenwich report: "Micro-finance and Credit in the Development of Renewable Energy Sector")
In India, the Ministry of Non-Conventional Energy Sources (MNES) has supported establishment of first two demonstration biomass projects of size 6 MW each in the year 1998 & 2000 by extending capital grant to the extent of 15% of the capital cost. Private entrepreneurs were encouraged to set up further biomass power projects through suitable interest subsidies. (University of Greenwich report: "Micro-finance and Credit in the Development of Renewable Energy Sector")

3.3. List of Interviews on micro-credit system in Burkina Faso
- AME (Association de Mères Educatrices), Ministere de l'Education, Direction nationale de la promotion d'éducation des filles, at Ouagadougou, on 20 March 2012
- Caisse Populaire, at Ziniaré, on 22 March 2012
- Association pour la promotion et l'émancipation des femmes, at Ziniaré, on 22 March 2012
- FAARF (Fonds d'appui aux activités rémunératrices des femmes), Ministère de Finance, at Ziniaré, on 22 March 2012
- AGD (Action Grâce Divine)/VIME at Ouagadougou, on 27 March 2012
- LAAFI SIRA KWIEOGO ("the intimacy is the way to health" in the local languages of mollé and djoula), at Ouagadougou, on 27 March 2012
- FINACOM (Finance communautaire), at Ouagadougou, on 27 March 2012
- Caisse Populaire, at Bobodjulasso, on 28 March 2013
- AME (Association de Mères Educatrices), Direction provinciale de l'éducation de base et de l'al phabétisation, at Bobodjulasso, on 29 mars 2013
- FAARF (Fonds d’appui aux activités rémunératrices des femmes), Ministère de Finance, at Bobodjulasso, on 29 March 2013
- Association des femmes, Cooperative Zoor Tanga, at Manga, 3rd April 2013
- Caisse populaire, at Ouagadougou, on 5 April 2013
- Fédération Caisse Populaire, at Ouagadougou, on 13 August 2013

4. Conclusion
In Burkina Faso, our team has renounced a plan to apply a micro-credit scheme in the Améli-eaur sanitation project, due to very high cost of latrine production, very low financial capacity of rural households, lack of business chain of compost/agricultural products sales, and insufficient keenness from users to install sanitation devices in overcoming big financial barriers.

But more widely speaking, in ecological activities there are a plenty of success stories both in Burkina Faso and worldwide. Common features for the success are 1) enough income yielded from the activity itself, 2) the strong needs from population side, and 3) established system support, both technically and administratively. If we find a way to fulfill these elements in a sanitation project, it will have a big chance to be a long, sustainable project.

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[2] University of Greenwich, Natural Resources Institute: "Micro-finance and Credit in the Development of Renewable Energy Sector", http://projects.nri.org/biomass/conference_papers/the_role_of_credit_in_the_development_of_renewable_energy.pdf

[3] Green Growth Best Practice (GGBP): "Microfinance for Solar Home Systems". http://www.ggbp.org/case-studies/bangladesh/microfinance-solar-home-systems

[4] FAO corporate document repository

[5] Hokkaido University and 2iE: Report of the Sociological Survey at Améli-Eaur project pilot sites, conducted from March 11 to 14, 2014.