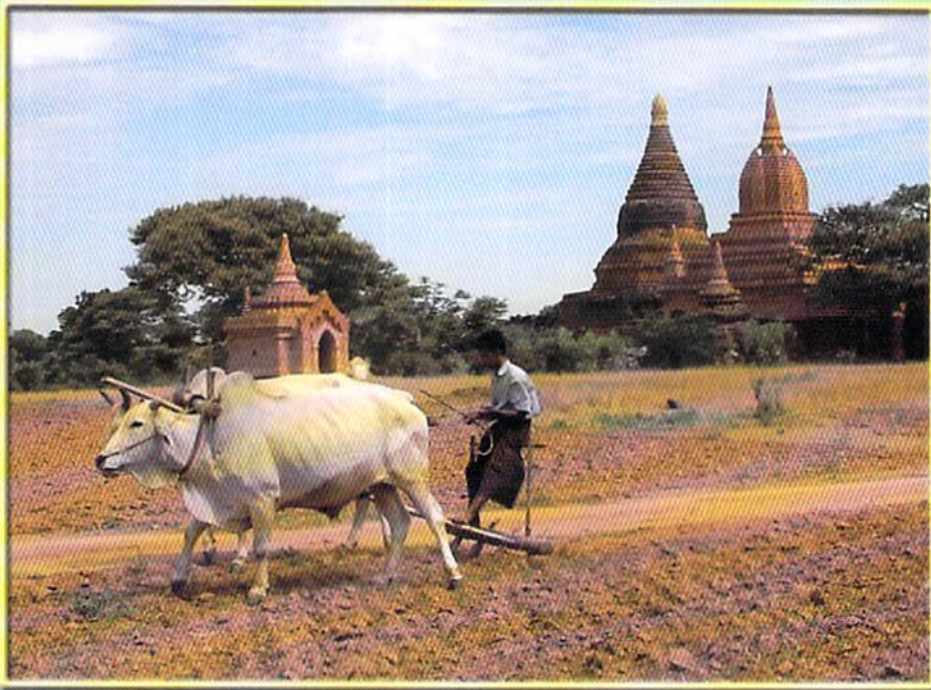


Integrated Study on Sustainable Agriculture and Rural Development towards Research and Education in Myanmar and Surrounding Countries

Edited by Kazuo Ando and Khin Lay Swe



November 2011

The joint project “Integrated Study on Sustainable Agriculture and
Rural Development in Central Dry Zone, Myanmar”
Yezin Agricultural University (YAU), Myanmar and GCOE
Program & Bay of Bangal JSPS KAKEN Project,
Center for Southeast Asian Studies (CSEAS), Kyoto University, Japan

FLOOD POLICY AND PEOPLE'S PARTICIPATION IN BANGLADESH

Haruo Uchida¹ and Kazuo Ando²

Abstract

Bangladesh has been helped by foreign aids financially not only for emergence relief for flood damage but also for establishing flood policy. We must care the fact that there are such foreign aids on the background of the flood policy of Bangladesh. Although the past ideological perspective of aids for the flood policy was mainly occupied by the idea of "flood control", it has become to be occupied partly by the idea of "living with flood" at the present day. Under such circumstance, the flood policy of the Bangladesh government must depend on ideologies for the flood among the donors. Dispute on the flood policy of this area has started in Pakistan period. In the aftermath of devastating floods in 1950's three international groups suggested that flood should be deluged but not enclosed in embankments. Nevertheless, master plan for water resource development of East Pakistan consisted of FCD/I projects with many and large embankments. Although small-scale irrigation project became the mainstream of the policy, these FCD/I projects were continued even in Bangladesh. Embankments caused the poor drainage and public-cut occurred all over the country, which induced rethinking the master plan itself in the late half 1980's. But after devastating floods in 1987 and 1988, consequently the government shifted the water policy to large-size flood control projects again. Responding to such situation, Flood Action Plan (FAP) of which the mainstream was construction of embankments started in 1989. On the way of FAP, people's participation has been highlighted but it was merely the playact without substance. After FAP the mainstream of water development policy of the government seems to be an integrated one which aims not only construction of embankments. Farmers in Bangladesh have thought how to adjust themselves to floods. They have been developing their knowledge which can be called as "local existing techniques" in order to face the flood. The traditional transplanting technique of Local Variety (LV) *aman* rice seen in *haor* at the period of water receding is a technique which is adaptable subtly to the dynamic hydrological condition. Farmers of a village are trying to recover the damage of flood by their traditional agricultural technique using LV varieties even in these days when High Yield Variety (HYV) rice is very popular. In the same village farmers cultivate *rabi* (winter crops) in normal years but increase cultivated area in flooding year. After the flood of 1987, total *rabi* cultivated area was two times larger than the former year. The fact that the *rabi* cultivated area increases on large scale after *aman* rice cultivation is damaged by the flood can be seen in many areas of Bangladesh. This kind of farmers' activities also can be thought as one of adaptive techniques to the flood. One farmer is reported to plant vegetation on the ridge of riverbed to protect the riverside near his house. It is clear that efficiency of such simple and small scale technique is less than so-called modern technology. But it is sure such kind of a technique suitable for a farmer who is not rich. It is to be desired that researchers are finding and collecting such local and/or indigenous techniques more intentionally to utilize in the field of rural development. Most of Bangladesh population is living in rural area as farmers. Flood policy suggested by farmers' successful experiences can be close to their heart and encourage them to participate in it. It is the first step to develop people's

1. Shikoku Research Center, IWeNARC, NARO (Zentsuji, Kagawa 765-0053, Japan)

2. Center for Southeast Asian Studies, Kyoto University (Kyoto, Kyoto 606-8501, Japan)

participation that evaluating the farmers' experiences of flood adaptation techniques and learning from their knowledge seriously. International aids for floods must be used to make people possible to "live with flood".

Key Words : Flood Action Plan (FAP), Bangladesh, Locally Existing Technologies (LET)

Introduction

Bangladesh is located on Bengal delta which is known as the biggest delta in the world created by three big rivers of the Ganges, the Brahmaputra and the Meghna. In the rainy season, the spilled water from these three and other rivers of varying size crisscross the delta and the rain water cover the country to inundate widely. Although we may think the country suffers the flood every year considering such hydrological condition, Bengali people distinguish between the normal flood occurring annually and the harmful flood for several years. They call the annual level flood as *borsha* which warrants the traditional rice cultivation, soil fertility and the fishery. They are grateful to *borsha* as a boon of nature and, on the other hand, they call the harmful flood occurring in decades as *bonna* which damages their livelihoods. Thus we must understand the dual nature of the flood, namely a boon and a disaster, that Bengal delta gives.

Bonnas have caused damage to the people like as cyclones which attack coastal areas and, at the same time, have brought pressure on the central government finance. It has been frequently reported by news media that many countries and international organizations gave the emergency relief when the flood occurred in Bangladesh. Not only giving the emergence relief foreign countries and international organizations has supported the Bangladesh government financially to make the flood and water resource policy. We must care the fact that there are such foreign aids on the background of the flood policy of Bangladesh. Although the past ideological perspective of aids for the flood policy was mainly occupied by the idea of "flood control", it has become to be occupied partly by the idea of "living with flood" at the present day. Under such circumstance, the flood policy of Bangladesh must depend on ideologies for the flood among the donors.

History of flood policy

1. Pakistan period

Floods known worldwide Although there had been little flood policy of the government of East Bengal in British era, floods in this area gathered world attentions after the independence of Pakistan. In the aftermath of devouring three years' floods in 1950s', Krug mission from the United Nations, Hardin who was ex-chairman of the Mississippi committee and professor Chisse from Netherlands reported to the East Pakistan government about the flood policy. Both of Krug and Hardin offered the suggestion that the flood should be allowed to deluge. Professor Chisse also objected to enclose unstable rivers in embankments without sufficient research. It is notable that all of them didn't recommend to enclose rivers in embankments for the flood control.

Water resource development Master Plan EPWAPDA (East Pakistan Water and Power Development Agency), which was the newly-established administrative body responsible for water resource and power generation followed by the Krug mission report, started to implement the flood policy from 1959 actually. EPWAPDA drew up the water resource development master plan for 20 years in 1964. Large scale 58 FCD/I (Flood Control, Drainage and/or Irrigation) projects with embankments of thousands miles in length including along the three big rivers, more than one hundred polders, numberless sluice gates and other water facilities were centered on this master plan. Total expense was thought to be running at two billions of which one third should be from foreign aids. Originally this master plan aimed to attain the food self-sufficiency in 1975 as the interim goal, at the same time, the plan made the flood to be controlled by embankments.

2. Independence of Bangladesh to 1989

Inherited Master Plan Although the water resource development policy focused on small projects of small-scale irrigation for expansion of food production after the independence of Bangladesh in 1971, the large-scale FCD/I projects of EPWAPDA's master plan was inherited by BWDB (Bangladesh Water Development Board) to be continued. The embankment has increased in length from 12km in 1947 when East Pakistan established to 7,555km in the last half of 1980's and water facilities has increased to more than eight thousands in numbers. 191 FCD/I projects have finished until 1987 and it was said that the half area of Bangladesh would be surrounded by embankments if ongoing 114 projects would be completed. Moved soil for construction of these embankments is expected to amount to the maximum level in the world, which indicates the flood policy has been depending on the embankments.

Imprisoned water FCD/I projects supported by foreign aids has run into trouble by and by. Constructed embankments have enclosed water in. The network of rivers and canals spreading all over the country has been cut by embankments in thousands parts to cause poor drainage, which induced rethinking of EPWAPDA's master plan itself in the late half of 1980's. After the consecutive devastating floods in 1987 and 1988 the Bangladesh government has shifted the water policy from focusing on small-scale irrigation projects to large-size flood control projects. And shifting the policy of the government had enforced foreign donors to rethink the solution of flood problems in Bangladesh.

3. After 1990.

Flood Action Plan In the aftermath of floods in 1987, 88 the Bangladesh government appealed the necessity of long-term flood policy to the world. Responding to it France and UNDP (United Nations Development Program) have made plans for controlling floods by the construction of large-scale embankments, and USAID (United States Agency for International Development) have designed the plan for living with floods without construction of embankment. Basing on these plans fifteen countries and international organizations has started FAP (Flood Action Plan) in December 1989 by the intercession of World Bank.

Mainstream of the FAP put emphasis on construction of embankments including along the Brahmaputra and the Meghna rivers, protecting large towns and tide wall against cyclones. Only two programs of 26 FAP programs were seeking countermeasures to floods with assumption of "living with floods". The idea of coexistence with flood was in a minority absolutely.

Two problems hold by FAP Most of information about FAP had not been known by citizens at starting period in the country. But home and foreign NGOs have revealed many troubles with implementing programs, which has brought about heated controversies. One of the topics of dispute was whether basic recognition to floods should be "control" or "coexistence". This was similar to the discussion by Krug and others whether floods should be enclosed in embankments or not. And another main topic of discussion was "people's participation", which had relations with citizens.

Public-cut Necessity of the people's participation has been highlighted by FAP ironically which had been implemented without people's seeing. A FAP program researching on completed FCD/I projects revealed the fact that "public-cut", which farmers cut the embankment to drain flooding water, had occurred all over the country. FAP had to recognize such ironical movements that people cut embankments protecting themselves had roots in the absence of people's participation to making plan and doing maintenance of embankments. Starting from this case many reports asserting necessity of the people's participation have been published and FAP has even formulated the guideline for people's participation. After then, FAP tried to grant local people's wish for projects and technical experts engaged in projects showed their efforts to contact with local people in their daily activities.

People's Participation In spite of highlighted people's participation, FAP has been implemented neglecting the local people from a practical point of view. For example, it was reported that FAP has decided to construct the embankment one-sidedly and stopped scheduled meeting with local people although villagers had wanted "the drainage system" instead of construction of embankment in answer to preliminary research of FAP. Moreover, there had been no female and landless member in water utilization association inside of FAP embankment. In this case, evaluation committee of the donor country criticized as if all villagers of the area only consisted of land owner and a critical lawyer group accused this situation as the human rights issue. Thus, people's participation of FAP was merely an apology to the world.

Farmers' adaptation to floods

Rural areas of Bangladesh have been damaged by floods around the same time that the government implemented the flood policy supported by the embankment construction. As *bonna* cannot be controlled privately or even communally, farmers have thought how to adjust themselves to floods. They have been developing their knowledge which can be called as "local existing techniques" in order to face the flood.

Adaptation to flood by *Aman* rice variety

In J village which is located on the fringe of *haor* or big seasonal inundated area farmers cultivate *aman* rice on *kanda* which is classified into high, medium and low-field. HYV (high yield variety) is cultivated in the high-field, LV (local variety) in the low-field and both varieties are cultivated in the medium-field. It is one of characteristics of *aman* rice cultivation in the village that LV in the low-field is transplanted at the water receding period. And so, the transplanting in the low-field may be late one to two months than that in the high-field if water recedes slowly. This kind of variety is more photosensitive than HYV and responds to day length sensitively and, so the rice can be harvested at the end of November to the beginning of December even if rice stays in the

plot shortly. In the flooding year the farmers transplanted LV *aman* rice in the part of medium- and high-field after the second transplanted HYV rice was damaged by the second flood peak. The farmers transplanted LV rice which can be transplanted lately after the second flood peak even in the high-field. Increase of LV rice area in the flood year shows that the farmers elected rice variety to adapt to the dynamic water condition.

In Bangladesh, HYV rice has been considered to take the place of LV rice used in the low-yielding traditional transplanted *aman* rice cultivation. Nevertheless, we can understand the traditional transplanting technique of LV at the period of water receding is a technique which is adaptable subtly to the dynamic hydrological condition. The farmers of J village are trying to recover the damage of flood by their traditional agricultural technique using LV varieties even in these HYV is popular days to realize the stable *aman* rice cultivation.

Adaptation to flood by *Rabi* cultivation

In J village *rabi* crops, namely dry field crops in the dry season like mustard, chili, wheat and pulse are cultivated on *kanda* where rich in sand and drains. The crops are sown from the beginning of November after reaping *aman* rice, in some cases the field is in fallow during the *aman* season, and are harvested in January and February. *Rabi* crops have been cultivated traditionally using water hyacinth brought by floods as manure. After the flood of 1987, total *rabi* cultivated area was two times larger than the former year as shown in Table 1 and mustard cultivated area was three times and chili area 1.8 times. Not only on the field of *kanda* which was given up to cultivate *aman* rice but also on the fallow field in the former year *rabi* crop was cultivated newly and, in consequence, total cropped area became 10ha larger than that of abandoned *aman* field.

Table 1. Rabi cropped area in the no-flooding and flooding year (ha)

Rabi crops	No-flooding year(1986/87)	Flooding year (1987/88)
mustard	41.8(38%)	128.0(64%)
chilli	19.8(18%)	32.2(16%)
wheat	26.4(24%)	9.9(5%)
pulses	15.4(14%)	23.7(12%)
others	6.6(6%)	6.2(3%)
Total	110.0(100%)	200.0(100%)

The inundated area in the middle of October in 1987 of the flooding year was larger than that of the former non-flooding year and water receded rapidly afterwards. Especially, the water recession from *kanda* which is suitable land for *rabi* cultivation was remarkable at the beginning and the middle of November when mustard was sown. Thus, a great deal of water hyacinth carried by the big flood and the water recession just in time brought abundant manure and moderate soil moisture good for *rabi* crops, especially, mustard in 1987/88.

The fact that the *rabi* cultivated area increases on a large scale after *aman* rice cultivation is damaged by the flood can be seen not only in J village but in many other areas of Bangladesh. The bigger flood followed on the heels of the flood in 1987 and rice cultivation in the rainy season was damaged further in 1988, nevertheless, it is said the agricultural production reached nearly a record in 1988/89. This is showing the flood damages the agriculture in the rainy

season and, on the contrary, guarantees some of cultivating conditions in the dry season. Namely, the flood in Bangladesh is a constraint for the agriculture and, at the same time, is also a condition which can keep the balance of agricultural production.

Plant using for riverside protection

One farmer who lives on the riverside of Rowhajon river in Tangail district planted three kinds of vegetation on the ridge of riverbed. His purpose is protecting the riverside on which his homestead situated from water flow. He planted *dor-kormi* on the roadside and the lowest part of the riverside, *kaisha* on the medium elevating part and banana trees on the highest part of the ridge as shown in Fig.1 schematically. He planted the vegetation in the dry season of 1994 in the aftermath of continuous two years' erosion by floods in the rainy seasons.

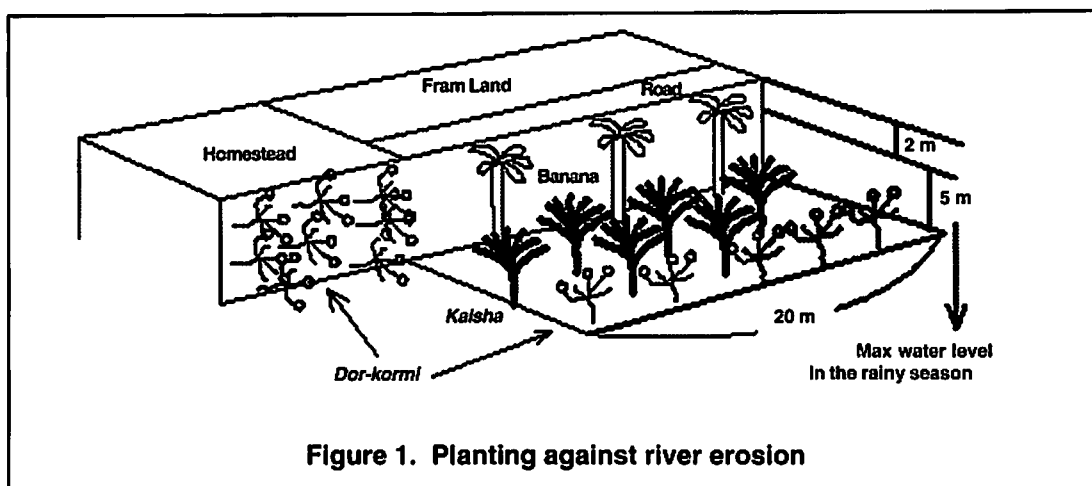


Figure 1. Planting against river erosion

He brought the cutting of *dor-kormi* which had drifted ashore and took root on *char*, or sand bar to his house and planted the cutting of 45 cm on the riverside. It can reduce velocity of water flow and also control waves. Sand and earth should deposit 90 cm thick annually if it would be planted in dense and the plant can stand even in deep water. He planted the cutting also on roadside and it grows thick over there with 3 m height at present. It is protecting his homestead from the river erosion. *Kaisha* grows about 2 m in a year. It can deposit 90 cm sediment if it could stay in water. New stalks would come from the root in the following year after cutting old stalks at the point of 40 cm above the root. It is only necessary to plant the root every four years if old stalks would be cut annually. Banana trees are planted on the riverside to protect steep cliff and roadside from erosion and to promote sedimentation. The hard roots of about 3 m long stretch in all direction under the ground of 10 cm. The root is hardly pulled out if once it rooted in the ground by waves and the tree can deposit sand 80 cm thick in a year.

It is clear that the efficiency of this kind of simple and small scale technique is less than so-called modern technology. But, at least, it is sure such kind of technique is suitable for a farmer who is not rich because of its inexpensiveness and sustainability. Moreover, this kind of technique can be said environment friendly technique, which can be substantiated individually. It is to be desired that the researchers are finding and collecting such local and/or indigenous techniques more intentionally to utilize in the field of rural development. Such a technique that is familiar to villagers can be accepted easily by themselves and become an effective tool for rural development.

Conclusion

Aiming to live with flood

Bangladesh flood is devastating as shown by the flood of 1988 which caused heavy damage to the country and cannot be controlled only by technological measure. Construction of colossal embankments for flood control which is invested in tremendously may result in the ecological destruction in the delta and only worth for the severe flood seldom if ever. It is more realistic solution such as the construction of safe shelters, emergent food supply and medical service systems, protection of shallow inundated farmland and development of local surface water drainage that has low environmental effect and effective economically and technologically than controlling floods itself. For developing these effective measures, we must reveal more about the local measures for safety and cultivation system to expected flood damage. Namely, we have to learn from farmers how they have lived with floods.

Most of Bangladesh people are living in rural areas as farmers. Flood policy suggested by farmers' successful experiences can be close to their heart and encourage them to participate in it. It is the first step to develop people's participation that evaluating the farmers' experiences of flood adaptation techniques and learning from their knowledge seriously. International aids for floods must be used to make people possible to "live with flood".

References

- Adnan, S. 1995. People's participation in the Tangail compartment. *Monitor*, 1(3): 12-13.
- Flood Plan Coordination Organization (FPCO), Ministry of Water Resources, GoB.1992. FAP12 FCD/I Agricultural study : Final report Vol.1:3-14.
- Flood Plan Coordination Organization (FPCO), Ministry of Water Resources, GoB.1994. Report on the flood action plan:S-3.
- Haggart, K. et al. (ed.) 1994. *Rivers of Life*. Bangladesh Center for Advanced Studies, Dhaka:26.
- Hughes, R. et al. 1994. Floodplains or flood plans? : A review of approaches to water management in Bangladesh. IFED and RAS, Dhaka:34-35.
- Safiullah, A.M.M. 1989. Embankments for flood protection : Success and failure. In *Flood in Bangladesh* (ed. Mohiuddin Ahmed). Community Development Library, Dhaka:174.
- Uchida, H. and K. Ando. 1996. Riverbank erosion control by "existing local technologies in Bangladesh. *J.JSIDRE*, 64(+):47-52 [In Japanese].
- Uchida, H. 1998. Natural disasters and foreign aids. (In *Foreign aids and Bangladesh*. ed. Sato, H.). IDE-JETRO, Tokyo, Japan:104 [In Japanese].
- Uchida, H. and K. Ando. 2003. Floods in Bangladesh : Farmers' adaptability and national policy. *Journal of Asian and African Area Studies* 3: 3-34 [In Japanese].
- Uchida, H. and K. Ando. 2007. Adaptive agricultural system to dynamic water condition in a low-lying area of Bangladesh. *JARQ* 41(1):25-30.
- Uwagawa, M. 1991. Bangladesh mega project. *Journal of Land reform*, 105: 62-65 [In Japanese].