Multiple use of water for opium eradication

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SUSTAINABLE DEVELOPMENT OF WATER RESOURCES, WATER SUPPLY AND ENVIRONMENTAL SANITATION

Multiple Use of Water for Opium Eradication

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Shifting cultivation practised communities do not have sufficient land for irrigated paddy growing. Subsistence farming in highlands does not generate income: hence cash crop is the opium poppy cultivation. Communities engaged in shifting cultivation do change locations of villages periodically, in search of fertile land. These communities do not have access to: primary health care, water and environmental sanitation, schools, agriculture extension services etc. and high level of opium addiction persists amongst inhabitants. Provision of a pure and adequate supply of water coupled with environmental sanitation, introduction of primary health care with a first-aid box with medicines and community mobilization along with participatory approaches to development have changed the life styles and improved living standards. Use of water for: drinking purposes, environmental sanitation, power extraction for house lighting, for lift irrigation, including paddy cultivation and de-husking of paddy have tremendously contributed to rural development and eradication of opium poppy cultivation.

Background of the Shifting Cultivation Stabilization Pilot Project (SCSPP)

LAO PEOPLE'S Democratic Republic- Laos is a land locked country surrounded by Thailand, Vietnam, P.R. China, Myanmar and Cambodia as neighbours. Laos is a member of the ASEAN. The country has a population of about six million inhabitants and the area is around 236, 000 sq. km. Houaphanh is one of eighteen provinces with nearly 270,000 people.

In the Lao PDR, in the province of Houaphanh, there is a project, "the Shifting Cultivation Stabilization Pilot Project (SCSPP)". The Government of Lao Peoples Democratic Republic (Laos) has clearly set a goal of eradication of opium poppy cultivation in the country by the year 2005 and the above mentioned project in the province would contribute in achieving the national goal.

The project envisages eradication of opium poppy cultivation by 2005, according to the policy of the government of Lao PDR .One aspect of the concern for alternative ways of development is a concept for self-reliance, good governance, rational utilization of human and natural resources, integration of participatory development pattern and process.

Problems Encountered

In the Lao Peoples Democratic Republic in the province of Houaphanh people live by practising shifting cultivation and growing opium poppy. It has a per capita income of less than 50 US $ and is one of the poorest provinces of the Lao PDR. The Government of Lao PDR/GHP is concerned about the province for the following reasons.

Project and Project Strategy

Project area of SCSPP could be defined as a mountainous region where majority of the people are engaged in shifting cultivation. Different ethnicities live in various villages; most of these isolated villages have only one ethnic group in each village. Basically, the ethnic groups could be classified into four groups/classes: Lao Soung -high level (Hmongs), Lao Theung - middle level, Lao Phong (migrants) and Lao Loum - low level. These four categories have very different cultural practices, habits and perceptions from each other.

Multifaceted approach is highly emphasized in making analysis of impact of development projects. Some of the more common applications should include:

1 Programmes for equity (women and gender/ credit/ poverty alleviation / income generation / livelihood analysis/ food security and nutrition/ health assessment/ food, access to water and sanitation etc.
2. Policy (land policy/participator poverty assessments/ structural adjustments).
3. Natural resources and agriculture (village plans/ crops and animal husbandry, including farmer participatory research/problem identification by farmers/ water and soil conservation/ forestry and agro forestry/ fisheries and agriculture/biodiversity and wildlife reserve buffer zones/ markets etc).

Project Purpose, Aims and Objectives

The drug control objective is to eradicate opium poppy cultivation within 15,000 inhabitants and detoxification/rehabilitation of around 300 drug addicts.

Introduction of permanent irrigation facilitates and sed-

entary farming system has been meant to replace shifting cultivation and stabilization of the land ecological system.

Improve non-agricultural income generation activities such as dress making, tractor repairs, mushroom growing, frog raising, making of jams, cordial, paper making from banana plants etc., through community quality training.

Specific objectives to be achieved during the project life period of six years have been summarized as follows:

1. Formation of 52 village committees and training of their members for management
2. Awareness raising on drug control activities, elimination of opium poppy cultivation in 2,196 households and rehabilitation of 300 drug addicts in project target villages
3. Training of 650 farmers for creation of revolving fund and disbursement of US dollars 157,000 to 52 villages for income generation activities
4. Provision of 30 water supply schemes to villages with community participation
5. Provide permanent irrigation facilities to 200 ha of paddy fields to increase food security
6. Provision of 1,400 latrines to households.

Multiple Purposes of Utilization of Water for Opium Poppy Eradication

Background

In the project area and Houaphanh province, annual rainfall exceeds 2000 mm per year. In addition to the two major rivers: Nam Ham and Nam Ven traversing project villages, there are innumerable perennial streams and rivers flowing into valleys from mountains. Most water catchment areas of streams are steep slopes of mountains with thick vegetation, where shifting cultivation cannot be practised. Fortunately, this difficult terrain has conserved catchment areas resulting in abundance of water resources, but the quality of water has been affected in some places. Several rivers have murky water during rainy season, as a result of soil erosion of shifting cultivated lands.

Practically, all villages have been situated in remote locations without any all weather access roads. The only available access was the footpaths traversing through steep hills, marshy areas, needing few hours of walking to reach a main road. Some remote villages could be reached only during dry season, walking for few days, carrying produce and goods on backs of humans to reach a market. Unfavourable conditions such as lack of access, non availability of agricultural extension services and inputs, isolation of villages to learn good practices from neighbours and inability of state organizations to provide basic social services, compelled these rural communities to continue practice traditional shifting cultivation, along with opium poppy as a cash crop. The livelihood system analysis has shown that the income generation of a household consists of the following (in per cent): animal raising - 40, non timber forest products - 15, paddy cultivation/agriculture - 15, opium poppy cultivation - 15, weaving and handicrafts - 10 and others - 5 (trading, remittances etc.).

Traditional Practices

People living in remote locations, isolated from the society inherited many and varied practices for survival. These practices could be highlighted as genuine, traditional and practical, considering the typical conditions and problems faced by the communities.

Shifting Cultivation

For example, shifting cultivation was practised during rainy season, using the available forest to grow paddy, staple diet of the people. Lack of medicines compelled the communities to consume opium as a painkiller. Opium smoking was a cultural habit during traditional festivals.

This gave rise to high level of opium addiction in rural communities. Analysis carried out on shifting cultivation practices of a household has found that to cultivate around 0.5 ha of land requires about 125 person-days (forest clearing, fencing, felling and burning of vegetation etc.). Women share the burden equally with men, but looking after their children during their stay of 4 to 6 weeks living under harsh conditions in fields falls on the shoulder of women.

Lift Irrigation

Every farmer has preferred irrigated paddy cultivation, considering the less labour required and the permanent type of agriculture ensuring food security of communities However, limited availability of irrigable land has been a real problem encountered by communities. In order to irrigate lands situated above the water level of rivers, villagers have invented an original version of a water-wheel (made out of bamboo and other local materials), rotated by the flow of water of the river, to lift water to a height of 8 meters above river water level for irrigation of paddy lands. Photograph 1 shows details of the device. Construction of the water wheel requires around 100 person-days, utilization is limited to one season (made out of bamboo and other local materials), and unforeseen floods could damage the device needing repairs or re-construction, resulting in loss of labour and forest resources.

Modern Applications

Water has been in use for many centuries for: irrigation of paddy fields, creation of family fishponds, harnessing of hydropower for electricity generation and human consumption, including environmental sanitation.

Gravity Water Supply Schemes

In the livelihood system analysis, it was found that three major tasks women and children spent their time on an average of 5 hours per day was on:

- Fetching of water;
- Collection of firewood; and
- De-husking of paddy to make rice.

Opinion polling carried out for women to determine needs in communities convincingly indicated that the clean supply of water as the first priority over others. Table 1 shows the results conducted in eleven villages.

Another major factor learnt from participatory rural appraisal was that provision of a clean and adequate supply of water would establish permanent settlements of villages, preventing shifting of the villages to a new location (periodically). This finding was adequately proved by enthusiastic community participation in construction of 38 gravity water schemes and establishment of permanent villages with water users associations for operation and maintenance. Cost comparisons of some community constructed gravity water schemes have been furnished.

Natural springs and perennial streams having good quality and sufficient quantity of water have been chosen for construction of gravity water schemes. Water intake structures were constructed out of concrete, properly sealed to prevent entry of foreign matter (leaves of trees, animal excreta, leaches etc) and strainer fixed at the intake pipe entrance, to allow only water to be delivered to the storage reservoir. A washout valve was provided for cleaning the intake structure, while a second valve was provided to control flow of water from the intake structure. Both valves were enclosed in a concrete chamber with a locking device.

Pressure head in water schemes varied from 30 to 120 m, PVC and HDPC pipe rolls of various diameters were used for delivery of water to consumers. In few schemes with high pressures, concrete pressure relief chambers were introduced. Each scheme was provided with a concrete reservoir of capacity 5, 8 or 10 cubic meters (depending on the number of households). A standpipe with a stopcock and a control valve was provided to serve about 10 households (75 persons). Each village elected a water users association for community mobilization during construction, operation and maintenance of the whole scheme, including collection of a fee for maintenance purposes.

Hydro-electric Power

Remote villages situated in inaccessible areas do not have the privilege of receiving electricity from the national grid. Use of kerosene/diesel bottle-lamps of illumination of houses has not been feasible due to difficulties of transport of fuels to villages, as a consequence exorbitant fuel prices at village level. Villagers mostly used wood chips of pine trees for lighting purposes.

Micro turbine-generators could be easily installed in a flowing river/stream or a canal and could produce electricity for 2 to 3 hours per day. This modern trend has quickly and widely spread to many villages, opening eyes of villagers to adapt new and appropriate technologies.

Environmental Sanitation

Villagers sought herbal medicine and opium use for curing of sicknesses, in the absence of health care services and lack of trained personnel to attend to sick persons. Practice of using opium as a medicine and for traditional ceremonies, a high level of opium addiction was experienced in some communities (10 %).

A first-aid box with medicines was provided to the village for creation of a medicine revolving fund. Immediately after completion of water supply scheme, introduction of

Table 1. Community Implemented Gravity Water Supply Schemes

No.	Name of village	Number of house-holds	Reservoir capacity cubic. Meters.	Number served in village		Cost of scheme in US $		Total cost in US $	Cost per HH in US $
				Standpipe	Households (HH)/Std.	Materials	Labour		
1	Laksao	42	8	6	7	700	3,200	3,900	93
2	Nameuang	32	5	5	6	600	2,300	2,900	91
3	Houaisone	44	8	6	7	800	3,200	4,000	91
4	Nachong	48	8	6	8	800	3,300	4,100	85
5	Houaphou	44	8	6	7	850	3,100	3,950	90
6	Saleuil	142	10	10	14	1,100	4,200	5,300	38
7	Sangkham	65	10	7	9	950	3,700	4,650	72
8	Done	97	10	8	12	1,200	3,900	5,100	53
9	Ban	36	5	5	7	650	2,200	2,850	80
10	Tabong	80	10	8	10	1,000	3,700	4,700	59
11	Sombong	25	5	4	6	850	1,900	2,750	110

environmental sanitation in villages was commenced by community construction of five water sealed pit latrines.

Conclusions

Communities resort to labour intensive shifting cultivation practices as the only means of making a living in remote locations. Cash crop in subsistence shifting cultivation appears to be the growing of opium poppy. Opium serves as a medicine (pain killer) in communities, where basic health facilities have been non-existent. Shifting cultivation practices make communities move from place to place periodically, indulge in degradation of lands and soil conditions and result in diminution of forest cover, finally resulting in deterioration of the environment.

Community Water Supply and Environmental Sanitation

In order to arrest the situation of shifting cultivation and opium poppy growing, multiple use of water has been deployed to effective engagement of communities. The following pragmatic approaches and positive applications have been highlighted as factors of success:

Locally available pure water from natural sources has been supplied for beneficiary consumption, with the community participation. Conservation of the environment has been introduced.

Burden on women and children to fetch water has been drastically reduced, facilitating saved time to be used for social work.

Community participated construction has reduced the cost considerably (more than 30 %), while ownership issues and maintenance procedures have been clearly established.

Primary Health Care

Women and children spent hours for fetching of water from a distant source, collection of firewood and paddy de-husking. Awareness on: environmental sanitation, hygiene education and primary health care system have been raised. Provision of a safe supply of water, latrines and a first-aid box with medicines have tremendously enhanced living conditions and shelved away people from using opium as a medicine.

Alternative Technology Development

Use of renewable energy (water power, solar energy and wind power) for running rice hullers, lighting of houses and setting up of agro-processing small industries would contribute to: income generation of families, reduce burden on women and children, and enhance living conditions of rural population.

Water wheel constructed annually by using locally available wood and other materials could be improved to save the labour and materials spent annually.

References

Ben-Yehuda, David et. al. (1989), Pae Por Highland Development Project: Report of the Evaluation Mission: UNDP/UNFDAC/UNFPA, Bangkok, Thailand.

Berg, Christopher. (2003), “Alternative Development Concept”- potentials, successes and limits Agriculture + Rural Development, V,10, No 1/2003, pp.52-54.