UNITED NATIONS

UNCHS

Project VIE/86/020

Appropriate Technology Transfer in Construction

YEN BAC COMMUNE

Ha Nam Ninh province

EVALUATION REPORT

November 1990

NCRPD - Hanoi.

Introductory note.

This document has been prepared by the members of the NCRPD (National Centre for Rural Planning & Development), and the CATTIC (the Centre for Appropriate Technology Transfer in Construction), in Hanoi. It has been written at the start of the VIE/86/020 sub-contract in Appropriate Techology Transfer in Construction, being undertaken with the assistance of the sub-contractors, Development Workshop and GRET.

The first phase of the sub-contract has focussed attention on the need to develop skills in evaluating the actions undertaken in by the NCRPD, in order to assess whether they are in fact "appropriate" and able to reach the people who need the most assistance in the villages.

This evaluation of work undertaken in the Commune of Yen Bac represents only a first step in developing evaluation techniques: further work will need to be done, for example, in carrying out a much more detailed analysis of costs of the technologies which have been tried out, of their affordability and potential for social appropriation, and similarly in assessing their efficiency against the needs and priorities of the villagers. Nevertheless, the process of doing a preliminary evaluation and the process of producing this report has [illegible] raised awareness for the need to monitor performance more closely. The process has already served to highlight some aspects on which future work should focuss.

The report on Yen Bac, and the two other similar reports, on Hy Cuong and Dai Ang, also serve as a reference against which future actions and the reports which document them can be compared.

DW/GRET, November 1990

Contents

Introduction

This document presents the information collected by the NCRPD and CATTIC staff regarding the resources and problems of Yen Bac commune. It then describes the actions which have been taken to improve infrastructure and homes in the commune. Some of these actions have now been evaluated, and the results are presented in section 4.

1. Project Background

1.1. Project Objectives.

The project activities aim to promote balanced growth in socio-economic condition throughout the country by assisting in the further development of human setlements in rural area of Vietnam. This to be achieved by planning and implementing programmes of infrastructure development in selected places to provide means of livelihood and to improve living conditions to people in the country-side. To achieve these aims, the following immediate objectives have been assigned to project VIE/86/020:

i. Improve the capacity within the Ministry of Construction (MOC) for human setlements planning and implementation in rural areas.

ii. Develop a functioning advisory service in appropriate technology for implementation of infrastructure development projects in rural communes.

iii. Develop the coordination of infrastructure development activity and their funding in the pilot rural communes as model for replication.

iv. Increase knowledge transfer to staff of the Ministry of Construction in human setlements development in rural areas.

1.2. The pilot communes.

To serve as a learning process and testing grounds it was decided that the project would undertake actual infrastructure planning and appropriate technology (AT) application development in three pilot communes. This document concerns the experience of technology development and transfer in the Commune of Yen Bac, Ha Nam Ninh province (see location map).

The selection criteria used in choosing communes are as follow:

i. Since the integrated rural development is the project objective, so the selected places were in rural areas.

ii. The choosen communes were poor or of average wealth (but not too poor).

iii. They are representative of 3 rural areas in the northern part of the country (such as the coastal, Red river delta, hill or mountain areas).

iv. In the first phase, the selected communes would have an easy access, not far from Hanoi (max.150Km).

v. The communes are eager and capable to receive the new knowledge and realize the Project activities. They are in urgent need for the socio-economic and physical development.

The actual selection was based on the knowledge and experience of the NCRPD experts and the local leaders who have been working in the departments of rural planning and development, and followed field trips and discussions between the project staff and the local authorities.

Once the Commune had been selected, an ageement was drawn up between the province, the commune and the Ministry of Construction and UNDP/UNCHS.

For the implementation of practical action, a financial structure was developed which is divided up as follows from four different sources:

i. Contribution cash or in kind from users in the communes.

ii. Contributions in cash or in kind from district and provincial budget.

iii. Contributions in cash from project VIE/86/020 Government counter part budget.

iv. Contributions from VIE/86/020 UNDP budget.

Location map of Yen Bac

1.3. The project in Yen Bac Commune.

Yen Bac commune was chosen in 1990 following difficulties in achieving results in Do Son commune. In the 1987-1988 stage of the project, Trung Dung farm in Do Son town near Haiphong city was chosen as a commune typical of the coastal area in the North of Vietnam. After working on activities in the commune for more than one year to introduce prototypes such as fruit and forest plantations, production of NPK fertilizer for rice cultivation, and breeding of oysters, the project staff concluded that the results were very bad. The causes were as follow:

i. The irrigation and drainage system had been built but it was not good. In the dry season the fields were dry and short of fresh water for planting; in the rainy season the fields were flooded.

ii. The leaders and famers had no good mobilization and were not willing to receive the new technology proposed by the project, nor meet with the project objectives.

As a result work in Trung dung farm was temporarily stopped, and one of the "B" group communues chosen to replace this commune. Thus Yen BAc, the replacement commune, become an "A" group commune. The choice of this second commune was based on the following reasons:

i. Yen bac is a commune with an average level of living conditions for communes in Ha Nam Ninh province.

ii. The commune is easy to reach, not far from the main road and Hanoi.

ii. The commune's inhabitants seem eager and capable to receive the new ideas proposed by the project and thus ready to join in to meet the project objectives. There is a need for social, economic, cultural and physical development. AT the same time the commune has some funds and also workers available to help in the realisation of the project objectives.

iv. The commune's leaders have an adequate ability to guide and control the work, and the people involved, in the commune.

2. Yen Bac Commune: characteristics.

2.1 Overview

Yen Bac is situated in the middle of Duy Tien district, between the towns of Hoa Mac and Dong Van. The commune is 45 km to the south of Hanoi and 45.5 km to the north of Nam Dinh city (see location map). *The commune is bordered to the east by a river, and lies in flat low lying land, most of which is paddy fields. There are 11 settlements in the commune. The commune is exposed to typhoons, and floodng is almost an anuual problem.* There is a pumping station *and irrigation is quite good, allowing three crops a year.* Rice income is on averag about 320 kg/head.

The position of the commune is relatively good for transport, commerce and service with the Luong market and the many shops at district level. *The commune itself has some 30 traders based in the market in the middle of the commune, and 2 handicraft workshops doing embroidery for export to Hanoi and abroad. There are several brick kilns in the district and some in this commune. Lime (in Ninh Binh) and cement are produced quite nearby and so transport costs are not too high. People also make their own private small kilns for firing bricks to meet their own requirements. There are about 150 builders and 80 carpenters in the commune, the latter working as part of a cooperative in several workshops making good furniture as well as items for building. The cooperative feels that it could expand its activities if marketing of its products could be helped. There is also an embroidery produced in the commune, for sale in Hanoi and from there for export.*

The commune has a tractor, and a roller. Electricity is available in some places, but not for the whole commune. Yen Bac is on average quite advanced in the development activities of the district. *There is a public radio system in the commune.* The leaders are capable of socio-economic management and the people have been involved in development activities in the past, especially in construction works and the digging of ground wells.

2.2 Basic Data

Land use	
Total area	922.26 ha
Cultivated land	707 ha
Paddy fields	520 ha
Population.	
Total population	8,812 (in 1988)
Total households	2,218
Labour force	3,897
Average size of family	4 persons
Population growth rate	1.5% (1988)

2.3. Existing services and buildings.

There are two primary schools. One is still under construction, built with fired bricks and concrete. There are also a clinic, the people's committee office, a cultural centre and an open air theatre. *Every village has a kindergarden.* Fired bricks and clay tiles are the main materials. The extremely damp climate nevertheless contributes to the fast deterioration of buildings, and this shows in the schools and other public buildings. There are also signs of damage by the almost annual flooding which takes place. Some of the buildings could benefit from upgrading and rehabilitation.

Houses are either of fired brick and clay or cement tiles (60%) or, in a fewer number of cases, of torchis and thatch (40%). House building is normally done step by step over a period of time. There is some demand for new housing, estimated at about 50 families in theh next three years.

3. Problems identified by the project, and proposed actions.

3.1. The process

Infrastructure planning and development works in Yen bac commune started in 1990 when the commune was chosen to be part of the VIE/86/020 programme in as one of the "A" group commune. A certain number of project were designed on a small scale basic to serve as prototype for implementation, demonstration and testing. After the signature of the project document in 1990, a larger programme of implementation was agreed utilizing joint funding from the UNDP budget and people's contributions. Technical details on the projects are given below. The financial data can be found in the table "Estimates budget for prototype constructions in Yen bac commune (1990)".

Practical work in Yen Bac did not begin until quite late in 1990. Nevertheles in a quite short period a good deal has been achieved in the following activity areas.

3.2. The road system.

In Yen Bac, there is already an inter-commune and inter-village transport system. Most of the roads are surfaced with earth and a litle bit of broken rock. They are easily damaged and most especially in the rainy season. This creates an acute transportation problem for the people of the commune. Therefore a first priority of the people of Yen Bac is to improve the road system. It is proposed to improve about 2000 m of road with earth, broken rock and lime. In June 1990, with a small amount of money (3,000,000 VN dong) and the application of the "appropriate" technology, the project helped the local people to make the road in Van Xa village.

3.3. Water supply.

There is a lot of difficulty with regard to drinking water supply. At present, people have to use the surface water from the ponds, lakes and the river. Overall the water quality is bad with a yellowish colour, a high iron content and a lot of microbes. Water is actually of better quality near the river (see plan) than it is inland from the river.

The most important problem appears to be how to supply clean water to the people. The project team decided that the best solution should be to use filter tanks and rain water tanks for individual households, and to improve the quality of the village ponds by filter tanks for public use.

MẶT CẮT NGANG THI CÔNG

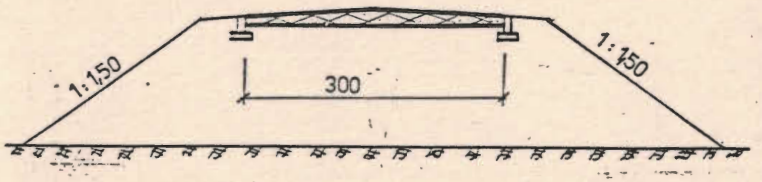
Roads Section

TỶ LỆ (Scale) 1/50 , 1/20

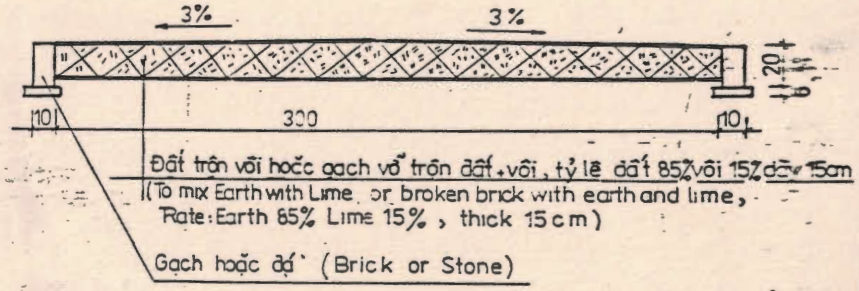
1/50

ĐƯỜNG TRỤC THÔN

(Mainroad of village)

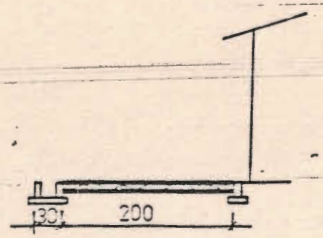


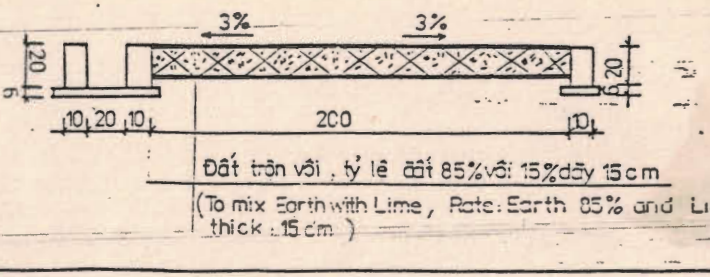
1/20



ĐƯỜNG NGÕ XÓM

(Lane)





GHI CHÚ : Kích thước bản vẽ lấy bằng cm

NOTE : Measure : cm

3.4. Energy supply.

There is a serious shortage of fuel for both cooking and lighting in the commune. Many families have insufficient fuel to meet their needs throught the whole year. The situation gets worse as new varieties of rice being introduced produce less straw than in the past (shorter stems). The project team consider that it is necessery to take full use of renewable energy (biogas), wind energy, and improved stoves for saving fuel. In 1990 improved stoves and biogas tanks will be constructed with the help of the the project financial and technical assistance, and with the participation of the commune people.

Estimated costs for improved stoves and biogas plant

I- IMPROVED STOVE

No	Material	Unit	Quantity	Price/unit	Cost
1	Brick (A)	Piece	50	120	6,000
2	Sand	m3	0.2	20.000	4,000
3	Steel rod 12(for grid)	kg	4	2.500	10,000
4	Broken brick	piece	25	40	1,000
5	Cement P.400	kg	10	400	4,000
6	Labour	working day	1	5,000	5,000
	TOTAL				30,000

II- IMPROVED BIOGAS PLANT ($3 m^3$)

No	Material	Unit	Quantity	Price/unit	Cost
1	Cement P.400	kg	250	400	100,000
2	Brick (A)	piece	600	120	72,000
3	Yellow sand	m3	0.5	40,000	20,000
4	Broken brick	m3	1	20,000	20,000
5	Ceramic tube	unit	6	4,000	24,000
6	Instruments (PVC pipe, valves, burner)	complex	1	100,000	100,000
7	Steel melt	m2	8	6,000	48.000
8	Steel wire	kg	12	3,000	36,000
9	Labour hired	working day	16	5,000	80,000
	TOTAL				500,000

3.5. Sanitation.

Because Yen bac is in a low lying area with a high water table, the improvement of sanitary conditions is very important. The project hopes to focus action on improving latrines. In the 1990 programme 30 improved latrines were supposed to be build as prototypes, although action has not yet begun.

3.6. Budgets

The following table shows the budget allocation for 1990 activities.

Estimated budget for prototype construction in YEN BAC commune (1990)

PROTOTYPE CONSTRUCTION	Manner and quality	Material	Price of unit	Total of expendi-	Resource of input		
					people	subsidized fund	project
1- WATER SUPPLY							
- Improved village wells and water tanks	2 units	brick & concrete	3,000	6,000	2,500	1,000	2,500
- Hand water pumps	20 -	-	300	6,000	4,000	-	2,500
- Water filter tank for households	40 -	-	300	12,000	6,000	1,000	5,000
2- ENERGY SUPPLY							
- Improved stove	400	-	30	12,000	7,000	-	5,000
- Biogas tank 2-3 m3	5	-	500	2,500	1,500	-	1,000
3- VILLAGE ROAD							
- In VAN XA village	0.15x3x850	stone,	-	12,200	4,700	3,000	4,500
In VU XA village	0.15x3x1000	concrete & lime	-	14,000	5,500	3,000	5,500
4- SANITATION							
- Improved lattrines	30	brick & concrete	100	3,000	2,000	-	1,000
TOTAL:				67,700	33,200	8,000	26,500

3.7. Finished products.

A lot of work is under way at the time of the evaluation in November, including road building and filter construction.

As an indication of achievement, the following had been completed at the beginning of November 90.

1. Improved stoves
2. Domestic Filters
3. Village Link roads

Section 4 shows the evaluation and comments made by the technicians of the Yen Bac team.

4. Evaluation and recommandations

4.1. Criteria and methods.

This evaluation has been undertaken by the members of the NCRPD team who have been workin in Yen Bac. The evaluation has involved three main steps. First, the establishment of criteria against which each technology can be evaluated, secondly, the evaluation in the field of each AT, through discussion and observation during visits to households. And thirdly, a more detailed economic analysis of certain techniques of comparable performance, to see whether the innovations being introduced are making it easier to improve living conditions.

The evaluation sheet used on the following pages lists the criteria that have been agreed upon in discussion by the VIE/86/020 team and the consultants. At the same time, the evaluation has addressed the question "Who is the target group and is the technology reaching them ?" Distinction has been made between four groups of users in the commune:

1. The Public.
2. Rich Families with a good surplus.
3. Medium families with a tiny surplus.
4. Poor families, who in many cases need subsidies to survive.

Following the field visit in early November to Yen Bac, the team working on Yen Bac filled in the evaluation sheet for each technique, and discussed the results. This lead to the establishement of several conclusions and some recommendations for the future. Summary conclusions are shown at the bottom of each evaluation sheet.

4.2 Evaluations

Evaluation

1. Fuel & Cooking.

TECHNOLOGY EVALUATION SHEET (1)

NAME OF TECHNOLOGY: A/ TRADITIONAL STOVE B/ IMPROVED STOVE
PLACE: YEN BAC
DATE OF EVALUATION: 8/11/1990
NAMES OF EVALUATORS: TRAN - NGUYEN - CHINH.

DOES TECHNOLOGY REACH TARGET GROUP?

CRITERIA	TARGET GRO PUBLIC A	PUBLIC B	FAMILY RICH A	RICH B	MEDIUM A	MEDIUM B	POOR A	POOR B
AFFORDABLE TO MAKE?	2	2	2	2	2	1	2	1
CHEAP TO MAINTAIN?	2	2	2	2	2	2	2	2
ALLOWS SELF HELP?	2	2	2	2	2	2	2	2
USE LOCAL MATERIAL?	1	1	1	1	1	1	1	1
TECHNOLOGY EASY?	2	2	2	2	2	2	2	2
ORGANIZATION EASY?	2	2	2	2	2	2	2	2
TRANSPORT EASY?	2	1	2	1	2	1	2	1
MAINTENANCE EASY?	2	2	2	2	2	2	2	1
REPLICABLE?	2	2	2	2	2	2	2	2
SUITS ENVIRONMENT?	0	2	0	2	0	2	0	2
DURABLE?	2	2	2	2	2	2	2	2
CREATES INCOME?	0	2	0	2	0	2	0	2
SAVES ENERGY	~~0~~ 0	2	~~0~~ 0	2	~~0~~ 1	2	~~0~~ 0	~~0~~ 2
SUITS LOCAL HABITS?	2	2	2	2	2	1	2	1
DOES TECH. WORK?	1	2	1	2	1	2	1	2

ANSWER '0' FOR NO OR BAD
'1' FOR MEDIUM
'2' FOR YES OR GOOD

CONCLUSIONS:
- The height of the chimney is not enough.
- Holes for pots aren't suitable for different dimensions.
- Rather difficult for expansion with wide areas.

+ Improve technic for creation (building) the surface of stove by stell m concrete. and concrete pieces for different dimensions of pots. ?
+ Write better manual for Building Improved Stove.

Evaluation

2. Water: improved water filter.

TECHNOLOGY EVALUATION SHEET (1)

NAME OF TECHNOLOGY: A. TRADITIONAL WELL B.- IMPROVED FILTER TANK
PLACE: YEN BAC
DATE OF EVALUATION: 8.11.1990
NAMES OF EVALUATORS:

DOES TECHNOLOGY REACH TARGET GROUP?

CRITERIA	TARGET GRO PUBLIC A	PUBLIC B	FAMILY RICH A	RICH B	MEDIUM A	MEDIUM B	POOR A	POOR B
AFFORDABLE TO MAKE?	2	2	2	2	1	1	0	0
CHEAP TO MAINTAIN?	2	2	2	2	1	1	1	1
ALLOWS SELF HELP?	2	0	2	2	2	2	2	2
USE LOCAL MATERIAL?	2	1	2	1	2	1	0	0
TECHNOLOGY EASY?	2	2	2	2	2	2	1	1
ORGANIZATION EASY?	2	2	2	2	2	2	2	2
TRANSPORT EASY?	1	2	1	2	1	2	1	1
MAINTENANCE EASY?	2	1	1	2	1	2	1	2
REPLICABLE?	2	2	2	2	2	2	2	2
SUITS ENVIRONMENT?	0	2	1	2	1	2	1	2
DURABLE?	2	2	2	2	2	2	2	2
CREATES INCOME?	1	2	1	2	1	2	1	2
SAVES ENERGY	0	1	1	2	1	2	1	2
SUITS LOCAL HABITS?	2	2	2	2	2	2	2	2
DOES TECH WORK	1	2	1	2	1	2	1	2

ANSWER '0' FOR NO OR BAD
'1' FOR MEDIUM
'2' FOR YES OR GOOD

CONCLUSIONS:

* The cost of filter tank is still high unaffordable for poor and medium groups
* The cleaning of filteration layers has got difficulties.

Recommend → + Recalculate the filter compartment and improve the design more for easy cleaning ? compartment

Evaluation

3. Road Construction.

A

B

TECHNOLOGY EVALUATION SHEET (1)

NAME OF TECHNOLOGY: Roads: a) Earth ; b) Stone c) lime + Earth + Sto
PLACE: Yên bái
DATE OF EVALUATION: 12/11/1990
NAMES OF EVALUATORS:

DOES TECHNOLOGY REACH TARGET GROUP?

CRITERIA	TARGET GRO PUBLIC a	b	c	FAMILY RICH	MEDIUM	POOR
AFFORDABLE TO MAKE?	2	0	1			
CHEAP TO MAINTAIN?	0	1	2			
ALLOWS SELF HELP?	2	0	2			
USE LOCAL MATERIAL?	2	0	1			
TECHNOLOGY EASY?	2	0	1			
ORGANIZATION EASY?	2	0	1			
TRANSPORT EASY?	2	0	1			
MAINTENANCE EASY?	2	0	1			
REPLICABLE?	0	0	2			
SUITS ENVIRONMENT?	0	1	2			
DURABLE?	0	2	2			
CREATES INCOME?	0	1	2			
SAVES ENERGY	0	2	2			
SUITS LOCAL HABITS?	2	0	2			
Does Tech. Work?	0	2	2			
	16	9	22			

ANSWER '0' FOR NO OR BAD
'1' FOR MEDIUM
'2' FOR YES OR GOOD

CONCLUSIONS:

a) bad quality but cheap.

b) Expensive.

c) The cost can be receiptable, it is good to use for village road.

Map of Yen Bac Commune