

**BEST PRACTICES STUDY**  
For The  
**PARTICIPATORY PLANNING OF RURAL INFRASTRUCTURE**  
**IN PDR LAO**



**United Nations Development Programme**  
**International Telecommunication Union**

**Bangkok, December 1996**

**BEST PRACTICE STUDIES**  
**For The**  
**PARTICIPATORY PLANNING RURAL PROJECT FOR LAO**

**INTERNATIONAL TELECOMMUNICATION UNION**  
**RAS 92/038-RAS 93/035**

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## **1.0 INTRODUCTION**

### **1.1 THE PARTICIPATORY PLANNING PROJECT**

The relief of poverty is a constant topic of study in all countries and the UN development agencies. While many countries in the Region have exhibited impressive rates of economic growth for the whole of their economies, many of the communities in the rural and remote areas still live under conditions of economic deprivation, without enjoying the benefits of economic progress, or, many of the facilities that national progress is supposed to deliver.

The challenge is to find the most effective means of connecting communities in rural and remote locations with services, resources and markets, to enable them to participate in the growing level of economic activity in the Global Economy. In the past, elements of national and community infrastructure have tended to be constructed independently, with little co-ordination between sectors. This has often reduced the effectiveness of the infrastructure and reduced the beneficial impact on those it was intended to serve. Part of this program will be to demonstrate how, by an integrated approach between executing agencies, along with a continuous dialogue with the affected population, infrastructure delivery benefits can be maximised.

The developing economies still rely heavily on the rural sector for national output, and in fact have the largest part of their populations living in such areas. But, while the a large proportion of the people are engaged in rural occupations, their contribution to national economic output remains low due to poor productivity gains. In the urban population, productivity is made possible by easier access to affluent markets, capital and other infrastructure, including telecommunications, which contribute to economies of scope and scale.

Past telecommunications plant and equipment development, using the technology available, has focused on closing the gap between supply and demand where demand has been the greatest. This has been in the larger cities where the level of sophistication of customers has required services which have been relatively expensive to deliver.

Communities outside of the capital and provincial administrative cities tend to be relatively poor, with seemingly low levels of demand for telecom services. In the past, telecommunications has been seen as an expensive infrastructure, requiring significant returns to justify its development. Without access to modern supporting infrastructure, rural communities cannot increase their ability to pay for telecommunications. Lack of telecommunications reduces the impact of other new and existing infrastructure on the effective delivery of other development assistance, since the increase of productivity by co-ordinating the deployment of knowledge and factors of production becomes difficult. The inability to generate higher levels of income, in turn, reduces the demand for telecommunications services. This cyclic problem has persisted for a considerable time.

In a number of countries, it has been found that rural economies can improve their quality of life and productivity through access to modern infrastructure. New types of low cost telecommunications plant and equipment using new technologies, can interconnect productive capacity in rural and remote areas with services, resources and markets, as well as contribute to social development. Just as the world exploits the benefits of gaining access to an increasing range of current information, rural communities can benefit, too, in a multitude of ways, from gaining access to and using information beneficial to their daily lives.

The challenge is to extend and maintain the telecommunications network in the myriad of villages and communities in a manner which is affordable, cost effective, serviceable and reliable.

## **1.2 COMMUNITY TELEPORTS**

In the telecommunication sector for example, vast resources and efforts have been put in to extend basic telecommunication services to villages. Practically no effort has been expended to organise the services available at these village public call offices (PCO) and optimise their conditions of working. The important aspect of taking the operation into the hands of the public sector has also not been studied.

**A Teleport or Community Telecentre is essentially a community facility serving a rural region of a few thousand inhabitants and is generally installed at one of the larger villages at the centre of the cluster. Being a centre run for the community, it can provide access to essential information and assist in developing social cohesion with areas remote from the particular location.**

In most countries, both urban and rural telecommunication services are owned and operated by the Government and access to these services is limited to the higher income levels. Access to lower income levels has generally been provided through an inadequate network of rural and urban PCOs. On the other hand in countries that have liberalised the provision of telecommunication services and permitted resale by individuals without a license, an explosion of outlets has been observed. In many cities hundreds of retail outlets offering telecommunication services have appeared almost overnight. This explosion of service availability without the addition of any public resource is demonstrative of the power of ideas, or of the negative aspects of excessive regulation. **This has provided an additional employment opportunity and an income generation source.** Similarly some countries have permitted resale of services in the rural areas generally through a village grocer or similar outlet.

The additional income generation results not only from the direct employment of teleport operators, but also from the new information and services which become available to rural user. Being available to the whole community, a telecentre or teleport can offer a whole range of telecommunications services, such as, facsimile, a distribution point for essential dynamic community information such as weather forecasts, market information and information relevant to local industry. Being shared by the whole community, it can generate the level of usage which justifies the initial investment at prices which individuals can afford on a shared basis, but which would be beyond their means on an individual basis. **Being a community based entity, the community could provide direct input into defining the type of services they need.** In the case of Lao, the provision of telecommunication facilities in rural areas already forms part of the development plan and is well supported by international donors, but the actual services provided at these teleports require to be defined in consultation with the community.

Teleport services beyond conventional usage require support for the definition, setting up and operation. Being indoor type of services, these are specially suited for operation by women. In semi-urban areas it is possible that the operators running the teleport can use the facilities in the form of a **virtual office.** This type of usage would significantly improve the possibilities of women in many parts of the society where their movements may be restricted due to family and social circumstances.

## **2.0 BEST PRACTICES STUDY**

### **2.1 BACKGROUND**

While several viable choices for rural telecommunications technology are available, not much is known of the legal and socio-economic environment

under which rural services operate. **Can they be made more economically viable and valuable to the community?** This question has not been addressed and a survey to establish the optimum conditions under which these services can best operate is urgently needed. The best practices study was proposed to answer this question. The original proposal envisaged a multi-disciplinary team to examine the legal, regulatory and economic aspects. Due to restrictions in available finance, the study was carried out by rural telecommunication experts and its objectives limited. **It is hoped that as a result of these preliminary studies a more extensive study can be undertaken in the future.** The scope of the original study is being indicated in the concluding paragraphs along with the recommendations for further action

## 2.2 DESCRIPTION OF THE STUDY

The parameters for the study were as follows:

### Proforma Budget:

International Expert:	5 weeks	\$ 17,250
National Project Officer	1 mm	\$ 2,000
Travel & Administrative Support		<u>\$ 2,750</u>
Total		\$ 22,000

**Area of Study:** Private Teleports in the Province of Punjab, India

### Objectives:

- To study the information needs of rural communities
- To determine the deterrents to the operation of such retail outlets
- To identify the nature of supplementary services needed by the community

The results of this study were expected to define the conditions under which rural teleport development could be initiated in the districts of Oudomxai Province in PDR Lao. The project document is attached at Annexure I

The job description of the NPO is at Annexure II. Mr. Gurdip Singh Director Telecommunication, Telecom Commission for India was the NPO.

During the last week of August 1996 a visit was paid by the undersigned to India for the purpose of setting up the parameters for the study. The Government of India had agreed to cooperate in the study and discussions were held with the Members of the Telecom Commission and with Mr. V.P. Sinha Dy.D.G. Rural Development who was nominated as the coordinating officer. During the visit the following actions were taken:

- The study would be conducted in the districts of Chandigarh and Ludhiana of the province of Punjab.
- About 30 call offices would be covered out of which about 25 would be selected for the report.
- The questionnaires were modified to incorporate suggestions made during the meetings.
- After the report was finalised, Government of India would examine whether surveys in one or two other regions were necessary.

The format of the questionnaires is given in the Annexures.

The field survey was carried out by the National Project Officer in October 1996 and results made available to the International Expert in November 1996.

### **3.0 SUMMARY OF THE REPORT OF THE NPO**

#### **3.1 FINANCIAL ASPECTS**

A copy of the report of the National Project Officer is attached at Annexure III. The salient features of this report are as follows. The exchange rate at the time of the survey was about Rs. 36 = USD 1.

Currently there are about 10,200 teleports operated under franchise, in the province of Punjab; India. In the target districts of Chandigarh and Ludhiana there are 1250 and 1370 operators respectively. The teleports, at present, provide only basic voice services and the operator collects call charges and pays them to the network operator, i.e. the Telecom Commission of India. The teleport operator (TO) is permitted to charge Rs. 2/- (about USD 0.05) and also receives a commission at the following rates:

- 16% on revenue up to Rs 20,000
- 15% on revenue above Rs 20,000 and up to Rs. 50,000
- 12% on revenue above Rs 50,000

The TO has to pay a security deposit to the network operator, amounting to one month's estimated revenue.

There is intensive competition between TOs in the urban areas. This is evidenced by the facilities being provided by the TOs to their customers.

A significant feature is the provision of services to remote customers. This is technically illegal and results in a deteriorated speech quality, but is quite

popular since subscribers who have a telephone, but do not have access to trunk dialling can still obtain service through the teleport.

### 3.2 FACILITIES AND EQUIPMENT

Most operators provide service through the hours 0600 to 2100 and some provide service over an extended period. Considerable attention appears to be paid to customer comfort. The services offered are generally local, national trunk calls and international calls. Telefax services are rarely offered.

The equipment generally consists of a telephone set and the following special equipment:

- **Monitor** - This consists of a device to receive the 16 KHz metering pulses. The Periodic Pulse Metering system is in use in Punjab. The unit is for the use of the operator and records the following:
  - \* Called number
  - \* Call duration in seconds
  - \* Number of metering pulses received
  - \* Cumulative total charge
  
- **Display Panel** - This panel is for the use of the customer and duplicates the information provided on the monitor.
  
- **Printer** - At the end of the call, the customer is provided with a printed receipt which shows the following
  - \* Receipt Number
  - \* Date and Time
  - \* Called Number
  - \* Duration of call in seconds
  - \* Number of pulses received
  - \* Charges for the call

Sometimes a **2-line equipment** is used. The operator dials an international number on one line and a local number on the other and has the facility of interconnection. The additional transmission losses are sought to be cancelled by an amplifier incorporated in the equipment. This arrangement is illegal, but popular.

### 3.3 EARNINGS

The NPO reports the following facts relating to the revenue collected by the teleport operators:

**Table 1 - Summary of Revenue**

No.	Item	Revenue
1.	Monthly revenue per teleport in Punjab state	Rs.21,900
2.	Monthly revenue per teleport in Ludhiana District	Rs.23,300
3.	Monthly revenue per teleport in Chandigarh District	Rs.20,650
4.	Monthly revenue per teleport in Sample area	Rs 31,700

It is also reported that those teleports that have two lines earn an average monthly revenue of Rs. 38,600 when compared to single line teleports that earn a monthly revenue of Rs 27,800.

Teleports that are connected to larger exchanges earn a higher revenue than those connected to smaller rural exchanges. This is attributed to the better maintenance at the larger exchanges and the better grade of services for national trunk calls.

### 3.4 OTHER OBSERVATIONS

Reverse call and "Home Country Direct Services" are not popular with teleport operators. In these services the collection of revenue is in another country and the teleport operator gets no benefit. Telefax services are also rarely provided. Only 3 out of the 25 teleports had such facilities even though the profit margin for these services is higher than for telephone calls.

The concessional tariff during the hours 2100 to 0600 hours is 25% of the normal tariff and this causes heavy congestion between 2100 to 2230 hours.

Teleport operators feel that the competition is excessive, this point will be analysed in Paragraph 4.

### 3.5 RECOMMENDATIONS OF THE NPO

1. The reliability of transmission links connecting rural exchanges to the primary centres should be improved and the number of circuits increased.

2. The maintenance of the rural exchanges and associated transmission links should be improved.

## **4.0 ANALYSIS OF THE SURVEY RESULTS**

### **4.1 Questionnaires and Responses**

The questionnaires on which the surveys were based are given in the annexures. The detailed responses are not attached, but the important items have been extracted for typical cases and given in Annexure 4. Apart from the name of the teleport the important responses related to:

Classification and Population

Working hours.

Average number of daily customers.

Distribution of traffic for Local, National, International calls

Number of lines

Flow of customers during working hours: Morning, Afternoon and Night

Nature of transactions: Social, Business, Emergency

Quality of service

Monthly revenue from telecom services

Average income after payment to network operator

Average income of the teleport operator from other business

The observations for the 25 teleports is summarised below in Table 2. It should be noted that the teleports represent a mix of rural and semi-urban locations with two cases of teleports in the city of Chandigarh. The teleports in the city centre were excluded as they represent a special case of very high revenue and predominantly international call traffic.



**Table 2 - Summary of Responses**

No.	Village	Pop	Hours	Lines	Daily Customers	Flow of Customers	Calls/Day	Nature of Calls	G
1.	Shop 9 Main bus stand Chandigarh	State Capital	00 - 24	2	329	Morning: 75 Evening 150 Night 104	ISD 4 NSD 125 Loc 200	Soc 70 Bus 25 Emg 5	
2.	Booth 320 /15D Chandigarh	State Capital	06 - 23	2	200	Morning: 50 Evening 100 Night 50	ISD 3 NSD 150 Loc 50	Soc 45 Bus 50 Emg 5	
3.	Azad PCO Dera Basi	15,000	06 - 22	2	200	Morning: 100 Evening 70 Night 30	ISD - NSD 140 Loc 60	Soc 35 Bus 60 Emg 5	
4.	Deep PCO Zirakpur	5,000	06 - 2130	1	70	Morning: 15 Evening 30 Night 25	ISD - NSD 50 Loc 20	Soc 70 Bus 25 Emg 5	
5.	Megh Singh Lohgarh	4,000	06 - 23	1	75	Morning: 15 Evening 20 Night 40	ISD - NSD 50 Loc 25	Soc 40 Bus 50 Emg 10	
6.	Ajit Singh Shop 16 Landran,Kharar	45,000	06 - 22	1	100	Morning: 25 Evening 40 Night 35	ISD 2 NSD 38 Loc 60	Soc 50 Bus 45 Emg 5	
7.	Balbir Commn. Centre Mandi-Kharad	6,000	06 - 21	1	60	Morning: 20 Evening 25 Night 15	ISD - NSD 25 Loc 35	Soc 70 Bus 25 Emg 5	
8.	Mr. Deepak Bilangi, Mohali	13,000	05 - 24	1	80	Morning: 20 Evening 30 Night 30	ISD - NSD 30 Loc 50	Soc 70 Bus 25 Emg 5	
9.	Mrs. Nagpal 1862 Section 15* Panchkula	District Centre	05 - 2330	1	75	Morning: 20 Evening 20 Night 30	ISD 1 NSD 40 Loc 30 FAX 4	Soc 65 Bus 30 Emg 5	
10.	Mrs. Bagga HM 561 PH VII* Mohali	District Centre	07 - 1030	1	120	Morning: Evening Night	ISD - NSD 45 Loc 75	Soc 60 Bus 35 Emg 5	
11.	Sidhu, Village Behlana	4,000	0530 - 23	1	70	Morning: 20 Evening 20 Night 30	ISD - NSD 40 Loc 30	Soc 80 Bus 15 Emg 5	
12.	R.S.Walia Village Maloya	3,000	07 - 22	1	33	Morning: 8 Evening 15 Night 10	ISD - NSD 13 Loc 20	Soc 66 Bus 13 Emg 21	

**Table 1 (Continued)**

13	Davinder Singh Krishna Nagar Ludhiana	Metro City	09 - 2230	1	86	Morning: 15 Evening 40 Night 31	ISD 1 NSD 30 Loc 55	Soc 35 Bus 65 Emg 5	S
14	Gurcharan Singh Tehsil Office Jagraon	50,000	05 - 23	1	160	Morning: Evening Night	ISD 30 NSD 90 Loc 40	Soc 45 Bus 50 Emg 5	S
15	Darshan Singh Dana Mandi Mullapur	10,000	06 - 2130	2	88	Morning: 20 Evening 40 Night 28	ISD 3 NSD 45 Loc 40	Soc 45 Bus 50 Emg 5	S
16	Mrs. S. Kaur Bus Stand PCO* Khanna	District	0930 - 20	1	30	Morning: 5 Evening 20 Night 5	ISD 1 NSD 20 Loc 10	Soc 30 Bus 65 Emg 5	S
17	Gurpreet Singh Kohara Rd. Sahnewal	15,000	06 - 23	2	115	Morning: 25 Evening 55 Night 36	ISD 2 NSD 73 Loc 40	Soc 50 Bus 45 Emg 5	S
18	Mrs. Mamta Viridi Village Kohara	7000	06 - 21	2	60	Morning: 15 Evening 30 Night 15	ISD 1 NSD 30 Loc 30	Soc 40 Bus 50 Emg 10	US
19	Mand PCO Rara Sahib (L)	2000	06 - 22	1	125	Morning: 40 Evening 50 Night 35	ISD 3 NSD 102 Loc 20	Soc 65 Bus 30 Emg 5	US
20	Nirbhaya Singh Payal	10,000	06 - 21	1	180	Morning: Evening Night	ISD 2 NSD 128 Loc 50	Soc 65 Bus 30 Emg 5	US
21	Parminder Singh Manuke	5,500	06 - 21	2	50	Morning: 15 Evening 20 Night 15	ISD 5 NSD 25 Loc 20	Soc 70 Bus 25 Emg 5	US
22	Ms. P. Kaur Jagdijog PCO* (Jodhan)	6,000	0630 - 22	1	104	Morning: 25 Evening 45 Night 34	ISD 4 NSD 60 Loc 40	Soc 65 Bus 30 Emg 5	US
23	Mrs. Paramjeet Kaur Bija*	4,000	06 - 20	2	50	Morning: 15 Evening 30 Night 5	ISD 1 NSD 30 Loc 20	Soc 65 Bus 30 Emg 5	US
24	Sardari Lal Lalton Kalan	6,000	06 - 22	2	132	Morning: 32 Evening 60 Night 40	ISD 2 NSD 90 Loc 40	Soc 70 Bus 25 Emg 5	US
25	Sukhjivan Singh Bhagwan Market Sudhar	5,000	06 - 23	2	70	Morning: Evening Night	ISD 10 NSD 45 Loc 15	Soc 75 Bus 15 Emg 10	US

## 4.2 BASIC OBSERVATIONS

Calculations from the figures lead to the following basic observations:

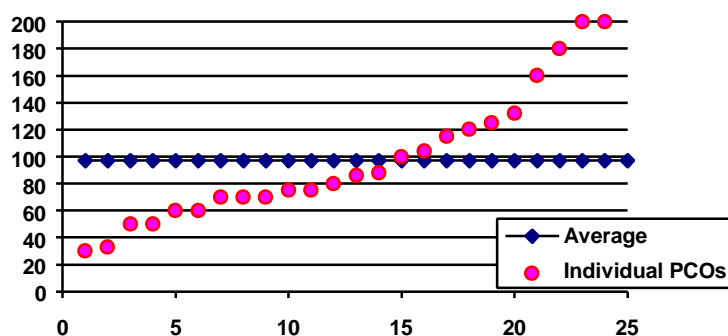
**Table 3 - Basic Observations**

ITEM	AMOUNT
Monthly revenue per teleport	Rs.31040.00
Monthly income per teleport	Rs.8480.00
Revenue per visitor	Rs. 9.82
Daily calls per teleport	105
Daily visitors	105
Local calls per visitor	0.40
National (nsd) calls per visitor	0.57
International (isd) calls per visitor	0.03
Daily local calls per teleport	43
Daily nsd calls per teleport	60
Daily isd calls per teleport	3

## 4.3 GRAPHS DERIVED FROM TABLE 2

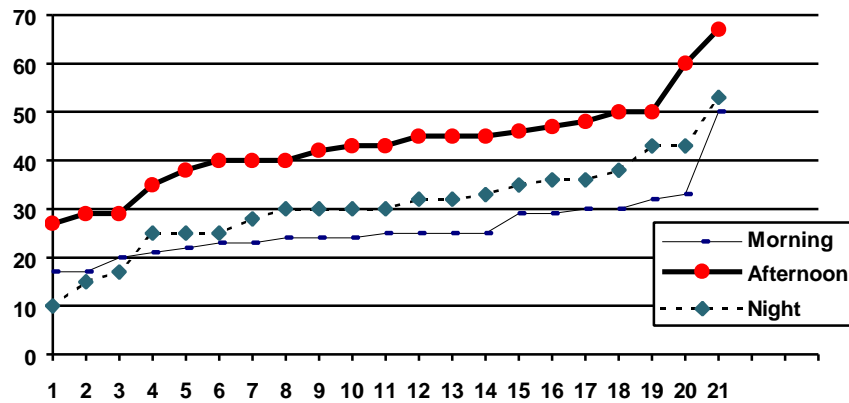
The detailed observations summarised in Table 2 were further analysed and are illustrated in the following graphs.

**Figure 1 - Daily Traffic**



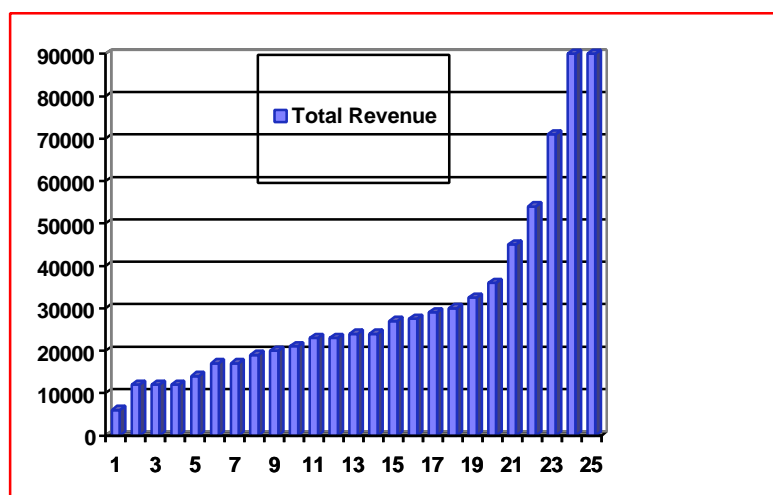
This graph has been ordered in terms of the number of visitors and shows a variation from 30 to 200 visitors per day.

**Figure 2 - Distribution of Traffic**



The above graph shows the flow of traffic during the day. Morning hours are up to 12 noon; afternoon from noon to 7 p.m. and night from 7 p.m. to closing time.

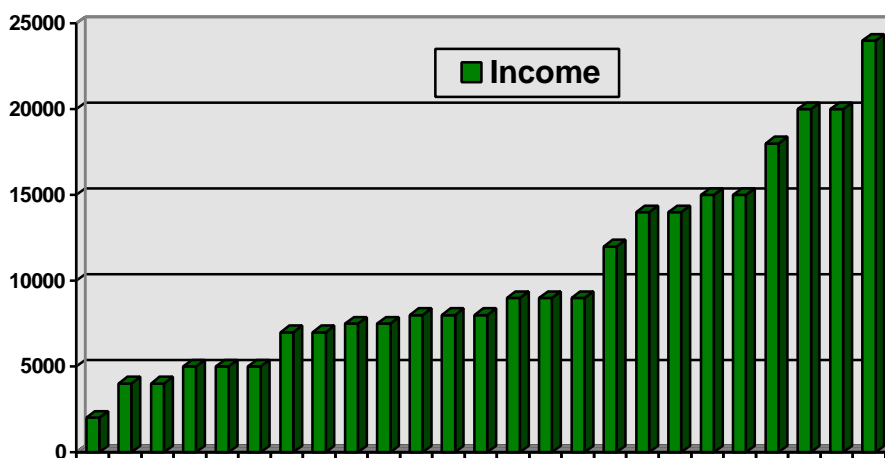
**Figure 3 - Distribution of Revenue (Rupees)**



The above graph shows that the monthly revenue of the teleports varies from Rs.90,000 (\$2500) to Rs.6,000 (\$166). The income from the teleport operations varies from Rs.24,000 (\$666) to Rs.2,000 (\$55). A number of

teleport operators conduct other business at the premises fetching an additional income from Rs. 2,000 to Rs.10,000. Figure 4 shows the distribution of the reported income from all operations at the teleport site. There is reason to believe that the “other income” may have been understated.

**Figure 4 - Income of the Teleport and Associated Operations  
(in Rupees - \$1 = Rs.36)**



#### 4.4 DETAILED OBSERVATIONS

##### 4.4.1 Income and Employment Generation

The survey found that about 10,200 private teleports now operate in the province of Punjab. This is remarkable progress considering the fact that up to about ten years ago private teleports were discouraged. This growth has come from market forces even though the conditions are not yet optimum. If Government improves the conditions as discussed later in this report the number could easily double.

One of expectations was that women would find a special opportunity for income generation while staying at home. This is particularly important in societies where women have to shoulder major family responsibilities and have less freedom of movement. This has only been partially achieved with 25% of the teleports being operated by women. As will be seen later, the income generation appears to be high enough to attract men.

It was also seen, as discussed later, that in several cases the teleport operator combines his/her business with other activities such as a shop. The teleport then provides a major source of additional income in most cases surpassing the original business. Another interesting fact is that the teleports have generated a local industry for manufacturing monitoring, printing and amplifying equipment and their maintenance. **A new technological culture is being introduced in the rural areas through these devices .**

The immense potential of teleports, for both employment and income generation is evident from these figures. Governments in Asia will be well advised to open up the market completely and support the teleports.

#### 4.4.2 Development of Telecom Services

Telephone penetration in India is rather low, being just above 1 per 100 population. Rural penetration is far lower. The GDP per capita is \$350 and the above penetration is related to this GDP level. The purchasing power of the Indian Rupee, is however, much higher (about \$1400) and the country is very active commercially. The potential for development is therefore much higher than the current penetration. This is evidenced by the fact that waiting times for a telephone are very high and the registered waiting list stood at 2.5 million.

The following Table 4 shows the situation in India as compared to the rest of the region.

**Table 4 - Basic Data**

	<b>India</b>	<b>Asia Pacific</b>	<b>ASP Lower Income</b>
GDP/Capita(1996)	\$350	\$2180	\$530
Purchasing Power (1996)	\$1400		
Telephone density (1995)	1.1	5.0	2.0
Revenue per line (1994)	\$335		
Waiting List (1994)	2.5 million	8.6 million	8.6 million
Payphones per 1000 pop.	0.16	0.57	0.17
Rental for rural lines	Rs 100		
Rental for urban lines	Rs 190		
PCO Rent + connection charge	Free		

Since most users of the telephone service are not able to own a telephone, the public teleports are a major arrangement for accessing the rural public. Government of India has a policy of subsidising public call offices operated by the Department of Telecommunications. While subsidies are not in order for the private sector, incentives have been provided by free installation of rent free telephones.

During the survey, it was observed that only basic telephone services are being provided by the teleports. Phonogram services are not provided and newer services such as FAX are rarely provided. Information services are totally absent from the rural scene.

The reason for not providing phonogram service appears to be administrative. Telegraph services are still extensively used in India and the phonogram service provides a facility for booking telegrams on the phone. The problem is that the charge for the service comes in the form of a separate bill or entry in the telephone bill and the teleport operator may not know the charge. Since telegram charges per word are fixed throughout India, the problem can be solved if the message is written down and given to the teleport operator. For international telegram services it would, however, be necessary to introduce a 'charge advice' service before the facility can be made available at a teleport.

The relatively low use of the Telefax facility can be traced to the slow development of this service in general in India. This is due to historical reasons and it is expected that the situation will get rectified in the near future. The profit margin for FAX services is reported to be high and in the single case where the facility was available the traffic was reasonable. It is expected that as soon as FAX machines become easily available on the market the service will expand rapidly. Before access to Internet type services becomes available, the reverse FAX service may be the only easy way to download an information page from a remote database.

An important feature relating to rural teleports is that **they do not have to pay any installation or monthly rental** once their installation is approved. This, however requires administrative approval and this could be a minor deterrent. Teleport operators should therefore also be allowed to convert their existing connections to a public call office on payment of the usual guarantee deposit.

### 4.4.3 Legislation and Regulation

To enable private teleports to operate freely in accordance with market demand it is essential that a proper legislative and regulatory framework should be in place. While resale of services by teleports has been allowed by issue of administrative orders, the legal framework requires to be modified by introducing changes in the Indian Telegraph Act. The RAS 93/035 Handbook on Legislative Guidelines proposes the following measures:

#### **2.4.2 Facilities and services to be licensed**

*Not all systems (facilities) and services need to be licensed. It is proposed in Schedule I to the Model Telecommunication Act that certain systems and services be exempted from licensing. These include private systems (for example, intercoms) for domestic or business use which:*

- a) *are not connected to other systems; and*
- b) *are not used to provide service to persons other than the licensee's family members or for the purpose of his business.*

*Government departments may also be exempted subject to conditions, if necessary.*

***In a number of countries some services, including value-added services, are not licensed, while in other countries class licenses are issued for such services. Value-added services have been included in Schedule I to the Act as those that may be exempted. It is proposed that the Minister have powers to modify the Schedule as and when necessary, without recourse to Parliament.***

Such a measure would permit the private teleports to operate on a legal basis, without fear of interference. It may also be necessary to protect the teleports by placing some responsibilities on the network in connection with the provision of facilities to the teleports. With this legal background, the Regulator would be able to encourage and protect the small teleport operators.

It is observed that some teleport operators use two-line equipment that is non-standard. The penalties for use of such equipment are quite heavy under the Indian Telegraph Act. The rectification of this situation is discussed later.

#### 4.4.4 Flow of Traffic

Figures 1 and 2 show the traffic pattern for the teleports. It is observed that the number of visitors vary from 30 to 300 for individual locations. The average of 105 seems to be an optimum number and the question of opening additional teleports should be related to this number. If market forces were allowed to operate freely, there would be no need for control; but if controls are applied they should encourage new teleports in the vicinity when the number of visitors exceed about 120. For teleports with more than 100 visitors a second line appears to be justified.

Figure 2 shows that the peak traffic (45%) occurs during the afternoon hours of 12 noon to 7 p.m. The night traffic is, however, quite substantial (35%). This is largely due to the rather sharp reduction in tariffs during the night. The NPO reports that congestion is observed in the late evening hours and this suggests that **the tariff structure should be re-examined** .

#### 4.4.5 Nature of Traffic

It is observed, from the responses, that 65% of the calls were in the 'social' category with only 30% in the business category. This aligns well with the normal concept of traffic in rural areas, but illustrates that the use of the telephone for social calls is quite prevalent. In the suburban teleports such as number 13, the situation reverses itself.

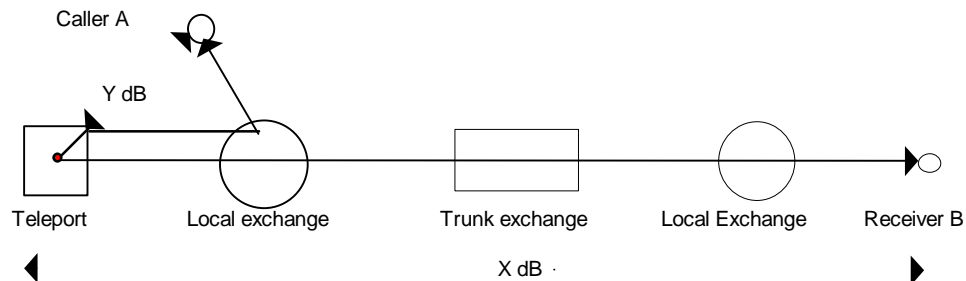
It is also observed that about 58% of the traffic is long-distance traffic. This is also typical of a rural area. The use of the teleports for international calls is however quite low although in one case (No. 14) the traffic was extremely high at about 30 per day. This situation can improve if the arrangements for incoming international calls can be improved as described in Paragraph 4.5.

#### 4.4.6 Equipment to be Provided at a Teleport

There are several issues relating to the equipment to be provided at the teleport. The first issue relates to the equipment for monitoring and display that is currently being used. Only the interface of this equipment with the telephone line need be regulated and type approved. The rest of the equipment should be left to be developed by the market as required.

The second issue relates to the use of the two line equipment for connecting remote subscribers. This is popular since a substantial number of subscriber's opt to have the trunk dialling facility disconnected. These subscribers can obtain these services through the teleport. The following diagram illustrates the principles and problems.

**Figure 1- Two line Conferencing**



It will be seen from the above diagram that if the caller comes to the teleport and makes a call to Receiver B, the line attenuation is X dB in accordance with the national transmission plan. If the teleport operator sets up the connection to B on one line and connects the caller on the second line, an additional loss of Y dB is introduced. This is outside the transmission plan and can degrade the speech considerably. Some teleports have, therefore, connected a voice amplifier to improve the speech. It is essential that the design and application of any such device be regulated through a strict type approval procedure, followed by periodical inspections by the network operator. Any other approach would cause severe degradation of speech and will introduce additional unbalance and echo points in the network. Once the equipment design is standardised and type approved, the extra-legal situation will get regularised.

The third issue relates to the introduction of new services such as Telefax, Internet, Data, etcetera. This is basically a marketing problem and the network operator must undertake the major tasks in this connection. This may involve installation of such equipment free of charge at selected teleports to induce and measure demand. The teleport operators do not have the financial strength to support such services until a substantial traffic develops. The ITU is currently supporting field trials in this regard.

## 4.5 REVENUE AND INCOME

### 4.5.1 Current Income

The revenue and income figures show that the teleport is a highly profitable business. The average revenue in the survey area was Rs. 31,040 (\$862) per month against an average revenue of \$30 for an ordinary line. This also compares well with the ITU estimate of \$60 per month as the required average revenue for a normal line in the Asia-Pacific Area for an investment of \$1500 per line. This is because each teleport has more than 100 visitors daily which is an impressive figure.

The income of the teleports is also quite impressive. The average income is Rs. 8480 per month (\$ 235) or \$ 2826 per annum in a country where the per capita GDP is only \$350 ( Punjab has a slightly per capita GDP than the country average). This is the reason why the teleports are so popular in spite of the capital cost of Rs.18,000 (\$500) required to provide the special monitoring and display equipment. This level of profit is attractive even to household heads which is evidenced by the large proportion of male operators. The complaint that competition is excessive is therefore not justified as the average revenue per teleport is very substantial.

The teleport also provides opportunities of combining other operations such as a shop. It was observed that 30% of the operators ran other businesses at the same site and earned a total of Rs. 45,000 or \$15.6 per operator per month

These figures are illustrated in the following table.

**Table 5 - Revenue and Income**

Item	Monthly Revenue	
	Rupees	US Dollars
Monthly revenue per teleport in sample area	Rs 31,040.00	\$862
Monthly income per pco	Rs.8480.00	\$235
Revenue per visitor (Daily 105 visitors)	Rs. 9.82	33 cents

The details of the monthly revenue and income per teleport are shown in the following table.

**Table 6 - Monthly Revenue and Income Details**

No.	Village	Daily Customers	Revenue (IR)	Operator Share	Income in US\$	Other Income	Total Income
1.	Shop 9 Main bus stand	329	90,000	24,000	\$666		24,000
2.	Booth 320 /15D Chandigarh	200	71,000	18,000	\$500		18,000
3.	Azad PCO Dera Basi	200	45,000	15,000	\$417	5,000	20,000
4.	Deep PCO Zirakpur	70	12,000	4,000	\$111	4,000	8,000
5.	Megh Singh Lohgarh	75	12,000	4,000	\$111		4,000
6.	Ajit Singh Shop 16 Landran, Kharar	100	30,000	8,000	\$222		8,000
7.	Balbir Commn. Centre Mandi-Kharad	60	14,000	4,000	\$111		4,000
8.	Mr. Deepak Bilangi, Mohali	80	17,000	5,000	\$139	3,000	8,000
9.	Mrs. Nagpal Panchkula	70	29,000	9,000	\$250		9,000
10.	Mrs. Bagga Mohali	120	23,000	7,000	\$195	8,000	15,000
11.	Sidhu, Village Behlana	70	27,000	7,000	\$195	2,000	9,000
12.	R.S.Walia Village Maloya	33	6,000	2,000	\$56		2,000
13.	Davinder Singh Krishna Nagar	86	24,000	7,000	\$195		7,000
14.	Gurcharan Singh Jagraon	160	90,000	20,000	\$555		20,000
15.	Darshan Singh Dana Mandi, Mullapur	88	27,500	7,500	\$208		7,500
16.	Mrs. S. Kaur Bus Stand, Khanna	30	19,000	4,000	\$111	10,000	14,000
17.	Gurpreet Singh Kohara Rd., Sahnewal	115	54,000	14,000	\$400		14,000
18.	Mrs. Mamta Virdi Village Kohara	60	12,000	4,000	\$111	3,000	7,000
19.	Mand PCO Rara Sahib	125	24,000	9000	\$250		9,000
20.	Nirbhaya Singh Payal	180	36,000	12,000	\$333		12,000
21.	Parminder Singh Manuke	50	21,000	5,000	\$140	10,000	15,000
22.	Ms. P. Kaur Jagdijog PCO* (Jodhan)	104	17,000	5,000	\$140		5,000
23.	Mrs. Paramjeet Kaur Bija*	50	23,000	5,000	\$140		5,000
24.	Sardari Lal Lalton Kalan	132	20,000	5,000	\$140		5,000
25.	Sukhjivan Singh Bhagwan Market, Sudhar	70	32,500	7,500	\$208		7,500
	<b>Totals</b>	<b>2657</b>	<b>776,000</b>	<b>212,000</b>	<b>5904</b>	<b>45,000</b>	<b>257,000</b>

#### 4.5.2 Measures for Increase of Income

As seen from the preceding figures, most teleports are doing fairly well. A few points became apparent during the study, which could improve income levels if addressed. The first relates to the complaint of unsatisfactory service made by eleven out of 25 teleports. Improvement in this area would certainly improve traffic and revenue.

Another observation is that incoming international services are not provided including the very popular **reverse charge calls**. Many rural family members work in the cities and in foreign countries. Their family members often do not have resources to pay for outgoing calls. The reverse charge facility enables them to originate calls to their earning family members. This is a considerable enhancement to the quality of life of rural families who, in Asia, are very close. The reason that this facility is not available in the teleports is, that, no share of an international call comes to the teleport operator, although the network operator gets the full benefit of 50% of the accounting rate in foreign currency. It is felt that at least **a fixed amount should be paid to the teleport for every reverse charge call to an international destination**. For neighbouring countries connected by terrestrial media a lesser amount may be fixed.

It is also felt that Government should examine ways of providing telefax machines at low rates to the teleports or provide some other incentive such as a scheme for renting such machines.

### 5.0 EXECUTIVE SUMMARY - CONCLUSIONS & RECOMMENDATIONS

This summary is directed towards the possible applications to the Participatory Planning Project in Lao RAS 92/028 which seeks to improve the Transport & Communications infrastructure in selected districts of the Oudom Xai Province in the PDR Lao.

#### 5.1 CONCLUSIONS

This study relates to the practices followed in the establishment and operation of community teleports in the Province of Punjab, India with the objective of drawing on the experiences for application to Lao and other countries of the region.

A Teleport or Community Telecentre is essentially a community facility serving a rural region of a few thousand inhabitants and is generally installed at one of the larger villages at the centre of the cluster. Being a centre run for

the community, it can provide access to essential information and assist in developing social cohesion with areas remote from the particular location.

There are several important conclusions that can be drawn from the study. The most important one appears to be the decision by the Telecommunications Department that Private Teleports will be installed at approved premises free of cost and rent-free. Another important decision is to give a 15-16% commission on the revenue. These concessions appear to have resulted in an explosive growth of the teleports from a very small number ten years ago, to over 10,000 in the province of Punjab alone. Government of India may consider increasing the commission in the case of the lowest revenue slab to provide further encourage penetration to the smaller population clusters. It appears that community teleports will make a major contribution to the Universal Service Obligations of network operators.

Another major and perhaps surprising conclusion is that these teleports are earning substantial revenue. In the target area the average monthly revenue was over Rs.31,000 (Over \$850). This is many times the average monthly revenue of a telephone and the Telecommunication department, even after provision of all the listed concessions, is making a handsome profit from their share of the revenue.

The average income of the teleports is also substantial, being over \$2800 per annum in a country where the GDP/capita is less than \$400. In addition 40% of the teleports earn income from non-telecommunication activities. This has provided an additional employment opportunity and an income generation source.

The teleports draw an average of just over 100 visitors per day. This is about what they can optimally handle with one line. While the study could not be extended to the social aspects, due to the limited funds, it is clear that a certain amount of social interaction and information exchange must result from this number of visitors at one site. The survey also found that the teleport operators make the visitors comfortable and this was a measure of the competitive situation.

It was also observed that the present tariff concession scheme (25% tariff) was drawing a large number of visitors during the night hours. This is unusual for a rural environment, but illustrates the need to communicate if the price is right.

Incoming international services are not available as there is no method by which the teleport operator can get even a small share of revenue representing the terminal delivery cost. For the same reason, reverse charge calls are not allowed by the teleport operator. This represents a loss of potential earnings in foreign currency for the Network Operator and loss of income for the teleport.

The telecommunication facilities at the teleports are rather basic and the study shows that the situation is ripe for the introduction of telefax facilities. Electronic equipment in the form of printers, monitors and display units are already being used and maintained. Telefax machines should be provided perhaps on a lease basis and semi-urban teleports could be provided with E-Mail facilities. This could enable some semi-urban teleports to develop as **Virtual Offices**.

Women operate about 25% of the teleports. Since the conditions are favourable for women to operate these services from home, a higher percentage of teleport locations could be allocated to women.

The introduction of electronic devices such as printers, monitors etc., has supported manufacture of these devices and introduced a new technological culture in the rural areas. This is considered to be extremely significant because cultural change is quite difficult to implement in rural areas. On the other hand, large steps in national development almost always require cultural changes in the rural areas.

## **5.2 RECOMMENDATIONS**

Governments in the region should consider the following:

1. Free resale of services by community teleports should be permitted by law.
2. Access charges (installation + rent) should be waived for teleports and replaced by minimum revenue guarantees. Profit will derive from usage.
3. Teleports should be permitted to apply a service charge and earn income through a commission on the usage charges. This commission should be applied in steps designed to favour the small operator.
4. Arrangements should be made for the teleport to recover his terminal costs from incoming or reverse charge international calls.
5. Guidelines should be issued on the equipment to be provided at each teleport. Such equipment should be made available preferably on direct purchase and in the case of costlier equipment on hire-purchase terms.

6. The concession rates and periods during which they apply should be reexamined to optimise revenues and avoid congestion.
7. A follow-up study should be undertaken to identify the training needs of teleport operators, the arrangements for maintenance of the teleport equipment and a practical programme for introduction of additional telecom and information services (**InfoCom**) at the teleports. This study should also identify the question of social interaction and exchange of information amongst visitors. The effect of introduction of modern electronic equipment on rural culture in terms of development of operative, maintenance and repair skills should also be examined.

All these recommendations will apply to the Lao Participatory Planning Project with the additional dimension of involving the community in decisions relating to the type of services needed.

For the Government of India, it is recommended that the study be duplicated in two other area to determine whether the same success has been achieved elsewhere and if not, to identify the reasons.

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