

Building Sector and Housing Situation in Laos

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Summary

Building construction is an important sector in the economy of a country. In recent years, the economic crisis that affected from other Southeast Asian countries since the end of 1997 has brought a progressive deterioration of whole State apparatus and repercussions on the national standard of living in Laos.

In such situation, of course, it is difficult for the government to formulate the concrete housing policy for its people whether in urban or rural areas, especially for government staff and people who have no opportunity to build their own houses, because of their low income.

Although many more urgent problems of economy should be solved, the government, however, is playing and should play more the role of facilitator in this regard too. Augmentation of housing financing and improvement in construction technology and management is required.

This paper tries to describe the general situation of the building construction sector in Laos. Many actual problems are presented and some proposal solutions are given according to the opinion of the author.

This paper is made considering the relationship between the design stage, the production stage and the property management of building and housing construction.

Basic Information about Laos

Geography

The Lao People's Democratic Republic (Laos), a landlocked country is located in Southeast Asia and borders China and Myanmar in the north, Vietnam in the north and east, Thailand in the west and Cambodia in the south. The Mekong River and the Animate chain of mountains, which both run southeast in parallel, delineate its Geographical frontiers. Of the 4,000 km of the Mekong River, 1,865 km is along the border and within the country. It has an area of 236,800 km². Over 70 % of the country consists of rugged mountains and plateaux. The highest mountain is Phu Bia having a height of

2,819 m with respect to the sea level and is located in the northern part of the country.

Two thirds of the Lao country are forested, but only 10 % are considered suitable for agriculture. The country is administratively divided into one special area, one municipality (Vientiane Prefecture) and 17 provinces, with Vientiane being the capital.

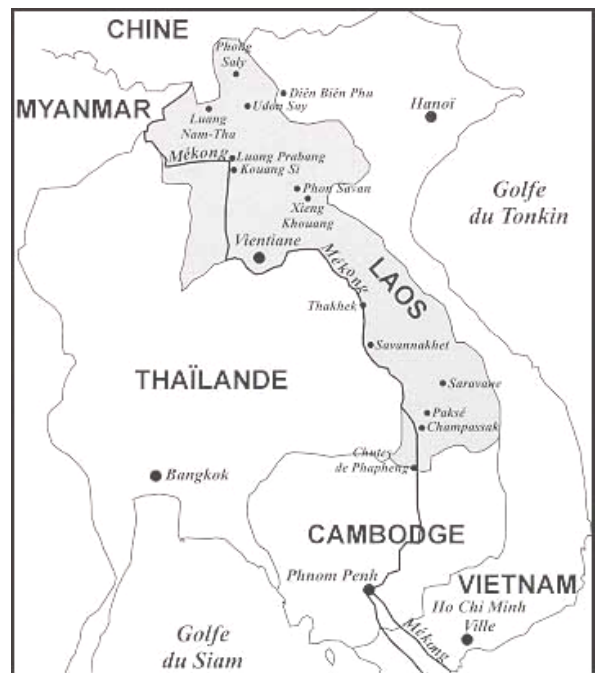


Fig.1: Location of Laos

Climate

The annual monsoon cycle gives Laos two distinct seasons: May to October is wet and November to April is dry. Temperatures vary according to attitude. In the Mekong River valley, the average highest temperature is about 38°C occurring between March and April, the average lowest temperature is approximately 15°C occurring between December and January. During most of rainy season, daytime temperatures average around 29°C in lowland and 25°C in mountainous valleys.

Population

According to the statistic estimated in July 1995, the total population of the Lao PDR is about 4.8 million: 49 % male and 51 % female. The estimated population growth rate is 2.5 %. The average national density rate of 19 inhabitants per km² is low compared with neighbouring countries: 209 in Vietnam, 113 in Thailand or 57 in Cambodia. About 80 % of the Lao population live in rural areas. In accordance with ethnic classification there are five main groups: Lao Loom (lowland) 68 %, Lao Theung (upland) 22 %, Lao Sung (highland) including the Hmong and the Yao 9 %, Vietnamese and Chinese 1 %. The life expectancy is about 51 years for men and 54 years for women which is quite low and similar to other less developed countries.

Language and Culture

Around 85 % of the Lao people believe in Buddhism and the remaining 15 % are Christians, Animist or Spirit Cults. The official language is Lao as spoken and written through out the country. In addition, there are five main dialects, each of which can be divided more into further sub-dialects.

Currency

The "Kip" (KN.) is Lao national currency, US\$ 1 = 5,410 Kip (April 13, 1999)

Recent History

Before 1975, the Lao PDR was known as the Kingdom of Laos. Many decades before that Lao people were not in peace, but fighting against colonialist as well as against the neo-colonialist for the liberation, for the true independence of the country and finally, in 1975 the Lao PDR was founded. During wartime, the country was divided into two parts, once was occupied by the revolutionist fighting for the national liberation and another part by the government supported by the northern American imperialist. It is said that more than 3 million tons of American bombs were rained to all parts occupied by the revolutionist. No houses were seen on the ground, but only debris, burned trees and big holes because of bombs. Consequently, people in there were forced to live in caves or underground tunnels. The overall development of the country was absolutely considered paralysed. All matters done by the government including social, cultural, educational and health care activities and even paying salaries for government staff were supported by USAID.

After the foundation of the Lao PDR in December 1975 all grants assisted by USAID and some western countries were logically withdrawn. As a consequence, the development of the country was supposed to start from zero. Nevertheless, the new government used to have some sorts of assistance, especially from the former USSR and some Eastern European countries.

Owing to the clever and flexible policy of the present Lao government, Lao people started a decade ago to open itself to outside markets when finding out that the lessons learned from eastern countries did not help the country to develop satisfactorily. Therefore, after the collapse of the

World Socialist System, Lao People still continue to develop progressively its country without any obstacle.

Economy

Laos has rich natural resources including rivers suitable for hydro electric power, timber, gypsum, tin, gold, gemstones and other under-ground resources. Most of mining resources including natural gas and petrol are under exploration. The Lao PDR has now exported timber, products of wood, coffee, manufactured goods and electric power. Laos possesses an estimated potential of over 18,000 MW installed capacity for hydro power, of which only around 2 % has so far been developed to date. Lao people are expecting to develop more and more hydroelectric power for export and further mining exploitation.

The macroeconomic setting from 1975 to the mid-1980s essentially developed following a central planning system. State controls were imposed on industries, trade, and banking along with a program of agricultural cooperatization and collectivisation in rural areas. The transition from central planning to the more market-oriented economy started slowly. As a result, since 1986 the Lao government launched the market economy to boost all economic sectors through indicative planning and economic liberalisation, decentralisation of control over industries, progressive privatisation, and deregulation to promote trade and investment.

Over the period 1994 to 1996, Lao GDP economic growth rates averaged over 7 %. Despite the "Asian Crisis", growth in 1997 was 7.2 % and 6 % in 1998.

The Lao economy is an agricultural one. In 1997, 51.5 % of GDP originated from agriculture, fishing, and forestry and 85 % of the labour force of 2.16 million was in these sectors. Agriculture has been a relatively dynamic sector with increases in cultivated land and yields for rice and maize as well as increasing production of cattle, pigs and chickens. Over the 1991 to 1997 period, agricultural output grew by over 5 % annually. Industry as a whole contributed 21.1 % and services contributed 25.5 % to GDP in 1997. Growth in both these sectors has averaged about 10 % in recent years. Over the 1991 to 1997 period, average growth in the manufacturing sector was 11.9 %. Although exports have expanded more rapidly than imports, but the trade deficit and the current account deficit have widened.

In the wake of the market economy, the country has increased its participation in regional and international bodies. Most significantly, in July 1997, the Lao PDR became a full member of the Association of Southeast Asian Nations (ASEAN) and the Asian Free Trade Agreement, joining Brunei, Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam.

Houses

Generally, houses in Laos are traditionally self-built and owner occupied. The most common type of house is the traditional 60 to 90 m² wooden house, built on columns to leave a space below the houses for various functions, from cooking to small-scale industries. This traditional house has developed into an urban two-story version, with

the ground floor used not only for living but also for small retailing shops, storage industries, and workshops.

Construction of the traditional houses uses mostly local building materials and local labour, which means lower costs, since transport costs, among others, are very low. Traditionally built houses often require more maintenance than modern building, but maintenance is easy since the building materials are locally available.

It is difficult to use simple techniques, to improve traditional building methods, to produce cheaper and more durable houses that conform to the local style. Nevertheless, this should be the aim, since it leads to sustainable development.

According to the statistic estimated in 1995 of about 750,000 households in the country, households with living areas above 40 m² make up more than 55 % of the total surveyed households in the urban areas and almost 40 % of those in the rural areas.

People who are living in rural areas can cope with their own situation even their income is nothing. They just go to the forest looking for wood and bring to build their houses. A very few they have to buy accessories to complete their houses or cottages. In contrast, people who live in urban areas have to buy every thing even a piece of wood for fire log. Therefore, only a few and rich people can afford a new house. Since most of Lao people are not rich, the new generation families have to live together with their parents or their relatives. Therefore, only one

Table 1: Housing Condition in Urban and rural areas %

<i>Item</i>	<i>Urban</i>	<i>Rural</i>	<i>Total</i>
A. Tenure Status			
Owner occupier			
Tenant	85.9	98.7	96.5
Lodger	4.8	0.2	1.0
Tied Accom.	2.0	0.4	0.7
Other	7.0	0.6	1.7
Total	0.3	0.1	0.1
B. Building Material			
Brick/concrete	100.0	100.0	100.0
Wood & Brick/concrete			
Wood	15.7	0.9	3.4
Semi-permanent	15.4	1.6	4.0
Other	45.8	41.0	41.8
Total	22.4	55.0	49.4
C. Living Area	100.0	100.0	100.0
< 15 m ²			
15 – 20 m ²	3.8	7.4	6.8
26 – 40 m ²	17.0	26.2	24.6
> 40 m ²	23.5	28.9	27.9
not stated	55.4	37.3	40.4
Total	0.3	0.2	0.3
D. Energy for Cooking			
Electricity			
Paraffin	10.4	0.1	1.9
Wood	0.3	0.1	0.1
Coal	68.3	97.7	92.7
Charcoal	0.3	0.1	0.1
Sawdust	17.0	1.6	4.3
Gas	2.7	0.3	0.7
Other	0.8	0.0	0.1
Total	0.2	0.1	0.1
E. Total Number of Households			
	100.0	100.0	100.0
	128,519	620,010	748,529

Source: National Static Centre, 1997.

hope for these low income families is waiting for any subsidy or assistance from the Government giving them opportunity to own a plot of land and to be able to get credit to build houses by themselves or when the project for housing to Governmental staff families has been accomplished.

Housing Policy

Suffering long time from the wars the Lao PDR started developing its country from two empty hands, it is difficult for the Lao government to give everybody the chance of good home. Nevertheless, the Lao government has done so far the best as possible to give assistance to its people to have adequate houses, of course government staff should have priorities.

When the country started to be moved towards a market economy, the government allowed people to run their own business. Consequently, many private businesses were opened. As an example, 34 private design and 240 private construction companies were founded by the year 1998 through out the country. New private houses have been built everywhere.

After the sudden increase in construction of private buildings, it seemed that urban areas were disorganised without master plan. Therefore, the government had to urge in having master plan designed beginning with the Vientiane prefecture and then major provincial towns. Now, the design of master plan for some major and secondary towns is in process. Certainly, infrastructure such as water supply, electricity, roads, sewage drainage systems will be provided in these towns and cities once the Lao government can meet adequate fund whether it is local or international.

A lot of very old houses in Vientiane, Luang Prabang were made of thick bearing brick walls with lime plaster, tile roof under the French colonialist time. In the master plan, the government has instructed to keep some concrete areas in the city for old cultural conservation. Therefore, people cannot renovate, rebuild or purchase their houses in this area. In the point of view of history and architecture, in 1995 Luang Prabang City, the former Capital of Laos (the Kingdom of Lane Xang) has been included in the World Heritage list of the UNESCO.

The government has released some national budget to build more houses for high position staff and military families. The people who live in state houses do not pay rent, for maintenance, but they just pay for electricity and water supply bills.

In order to alleviate more and more burdens on housing to people, especially to official staff, the government is now in process of analysing the possibility to transfer all existing state houses, certainly to people who is living in by selling to them. Even though these people can not pay at once, the government will receive a certain sum of money for other purposes and don't have to pay any more for maintenance. In contrast, the becoming landlords have to do it by themselves and then automatically they have to take them more care since they are owners.

The Lao government has been now seeking for investors to design and build houses then sell with credit to remaining official staff and military families, certainly approved by the government and ranking from highest position in the point of view of revolutionary and governmental services.

Actually, so far, foreign construction investments generally are aiming to hotels, supermarkets, factories, and etc. Most of these building are designed by the foreign design offices.

However, the Government has not yet formulated a concrete housing policy. A National Shelter Strategy Outline was formulated in early 1991, but this did not result in specific actions, regulations, or budgets. Most of the recommendations in the Strategy concern land use and accessibility, rural and urban infrastructure, and building materials. The Strategy quoted a backlog in Vientiane Prefecture of 3,500 urban and 6,400 rural homes in 1988. Although the Government has been facilitating the construction of new dwellings since that time, inward migratory trends have continued, and it is considered that the backlog is unlikely to have changed significantly. There are no effective rules and regulations controlling house construction. Both in urban and rural areas construction is spontaneous and without control. Furthermore, there is no formal mortgage market for

private or commercial housing finance. In the absence of a clear and unambiguous register of titles, a mortgage market cannot easily be developed. The banking sector, however, has been providing short-term lending to the limited urban property market, with annual interest rates exceeding 20 %. It is expected that this limited activity is likely to slow down as a result of the downtime in the economy of Thailand, and its consequent impact on the Lao PDR. An unregulated rental market exists in Vientiane and the major secondary towns.

Design Stage

Project Organisation

The project organisation in Laos depends on many factors, specially on the kind of the project to be implemented whether it is private or state.

In general, for a private project, the landlord himself is the project owner. He decides everything what to do. In case of small projects having low technical level requirement, the project owner tends to hire directly a well-known builder to implement his project. Generally, builders have their own teamwork. This means, they are equipped with certain numbers of workers. However, the landlord always provides construction materials, which is the best way for him to get the best price. In addition, he does not have to be worried about the quality sine he thinks he believes in himself that he has selected materials satisfactorily. Contracts done between landlords and builders are often not registered. Consequently, no tax is paid to the government. In fact, it is illegal but things like this still hapen in Laos.

Project organisation for a smallest private housing project

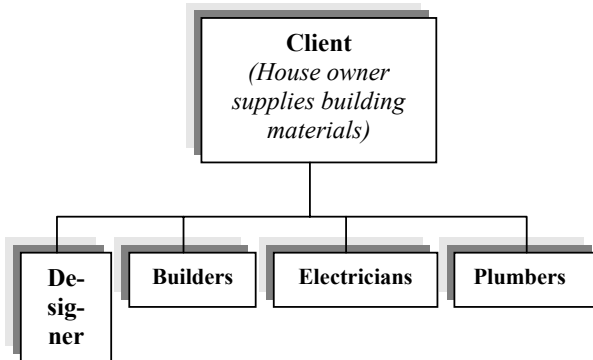


Fig. 2

In case of the big private project, the landlord may require an architect or a design company to design his project and an eligible construction company, which provides sufficient equipment and experienced engineer to implement the project. Contracts are always registered and of courses tax must be paid. Nevertheless, the landlord still prefers to supply construction materials.

Project organisation for a small private housing project

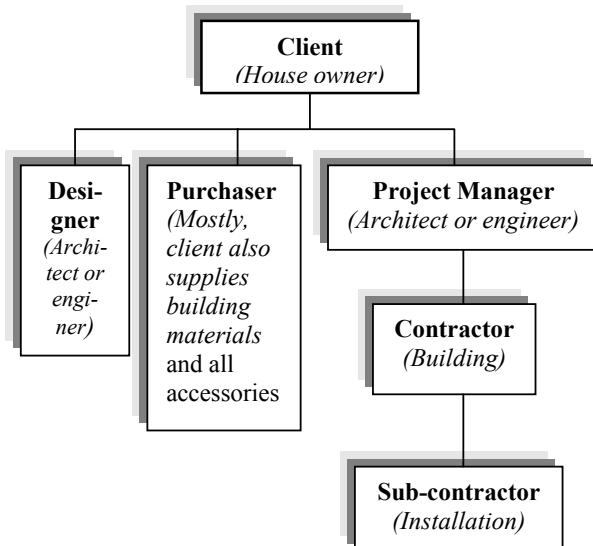


Fig. 3

For state projects, it is the responsibility of the minister of the ministry concerned to organise all projects to be implemented. This does not mean that the minister has to do everything. Every year, the Chief of Cabinet in collaboration with the Director of planning and finance Department of the ministry make a plan about which projects are needed to be implemented and how much money is required. This plan will be passed and approved by the National Assembly.

Once a project has been approved by the National Assembly, the Director of the Planning and Finance Department of the ministry has to make a detailed plan to be registered in the Ministry of Finance to propose the

fund required by the project, and in the State Planning Committee is required to have the right to get the proposed fund from the National Budget. In order to get detailed plan, the Director of Planning and Finance Department must have contact with any eligible design company, which is a common process for both private and state projects because it is required by the Municipal Authority before delivering licence for construction. A design contract should be done with only eligible companies. All design and construction companies should be registered and have licence expended every year to be considered eligible companies.

Project organisation for a small project funded by the National Budget.

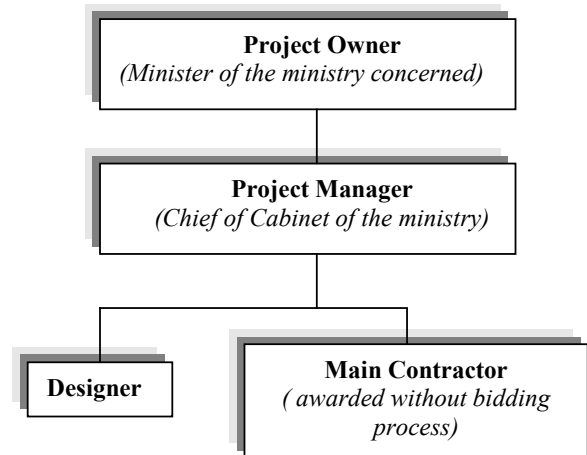


Fig. 4

Alternative project organisation for a small project funded by the National Budget

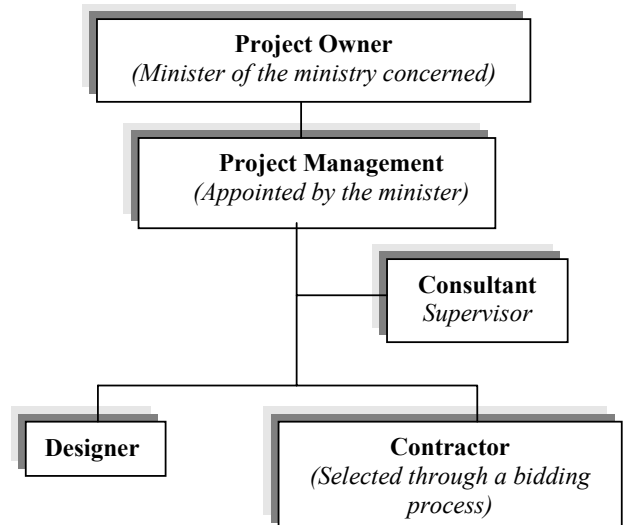


Fig. 5

Project organisation for the Buddhism Assembly building project funded by the National Budget and public donors



Fig. 6

Project organisation for a health care centre project funded by the World Bank

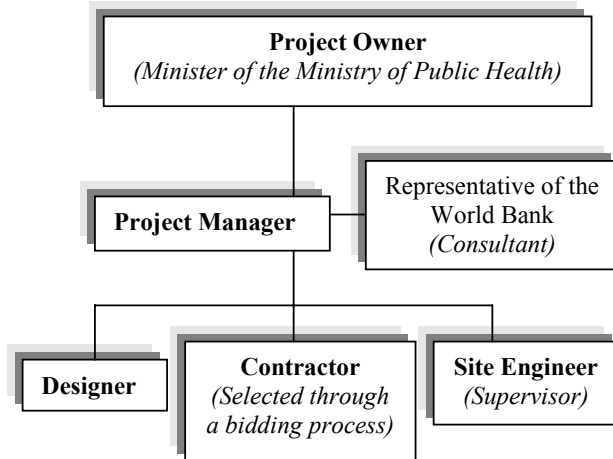


Fig. 7

Purchasing

Certainly, materials and money must be available as specified in the project time schedule, which requires making a schedule for local and foreign purchases.

It is important to have established routines for purchase, delivery and registration of inventory so that responsibilities are clear. Lack of materials, because of poor planning of purchasing, is a common cause of delays. Actually, Laos possesses just a few kind of construction materials. Only wood, sand, gravel, bricks, some cement and steel are available locally. In the country there are only one steel factory and one cement factory. These both factories are now expected to be developed production capacities. However, it is not satisfactory for construction through out the country. Even though, most of materials such as bricks or steel have low physical mechanical properties, manufactured woods have wrong sizes, but so far no standardisation of

such materials made. Therefore, most construction materials are imported from abroad such as Thailand, Vietnam, China, Singapore, etc. It seems there is only quantitative control. Actually, most of materials for structure rarely come with satisfactory quality when comparing with the international standards like requirement quoted in ASTM. In this situation, structural engineers have to apply some additional safety factors for compensation when designing.

Project Planning

In rural areas, people rarely request a design for their houses. According to a certain traditional local style that they like, their just hire experienced Forman to implement their houses. In urban areas, for small-scale private houses located nearby streets, the design is just formal procedure to get the permit construction licence from the local municipality. For big private and government projects, of course, a design stage has been requested.

In recent years, due to the rapidly and widely dwelling development, the architectural view of designing for the small scale project is rather disturbed.

For the institutional buildings like schools, hospitals the project owners, usually chose the prototype of building projects in different domestics in order to save money from designing.

In Laos, so far there is no construction law, no unified national codes for design of buildings. Therefore, architects and engineers just design them according to lessons learned from schools and from experiences while being employed by qualified veteran architects, and based on some foreign country codes like American, French and Russian. Only urban law is now expected to be approved by the National Assembly in this session. In order to regulate building activities, there are just master plans for some major cities. Together with these master plans there are recommendations about were and what kind of houses is allowed to be constructed in each zone, what kind of solutions for sewage and waste water drainage would be chosen.

Generally, the purpose of project planning is to complete the brief and determine the layout, design, methods of construction and estimated costs for the project. Furthermore, the purpose is to prepare the necessary production information, including working drawings and specifications.

Drawings

The number of drawings needed depends on the complexity of the structure and if it will be built by self-construction, with a project manager or through a contractor. Simple housings may not require more than architectural and structural drawings including a site plan, floor plans, sections, facades, structural design and some details. Electrical and water services can be show directly on these drawings. Larger or more complex projects require separate ground, electrical, water supply and sanitation designing.

The site plan should show were the building should be placed on the plot and how services should be laid. The

technical specifications should clearly specify how each activity should be executed.

Cost Estimating

In Laos, bill of quantities are often the basis for contractor's tenders, when they are expressed in unit costs for each activity.

It is a responsibility of the designer to provide the estimated cost to the project owner in order to have the preliminary idea about the budget whether it is available or not. In addition, the designer provides the bill of quantity both for works to be done and materials to be consumed. The maximum allowable overhead to use is 5 % and the tax is 5 %.

The real cost of the construction is the cost quoted in the contract. After the contract having been signed, additional works are not allowed. In case it is strongly required, new contract should be done if there is money remaining in the budget allowed for the Ministry. If inflation is high, check against the time schedule how inflation affects the budget. In addition, about 10 % of the building costs should be reserved on contingencies.

Time Scheduling

It is a necessary tool to plan, prepare and execute a building project. The schedule should cover the entire construction period and all sub-activities, so that it is possible to anticipate and avoid potential disturbances.

There are number of external factors that affect the schedule. In some rural areas it is not possible to build during rain periods. During seasons of high agricultural activity, it might be difficult to find workers and arrange transport.

Usually, making a schedule the designer defines time Critical Path method (CPM) through the arrow method as a graphical way of working. The schedule is then presented in a Gantt diagram form. Many companies use Microsoft program. Bill of quantities and unit costs are usually calculated using Microsoft Excel.

Project Financing

So far, housing loan has been not available for people. Therefore, only few people which are rich enough can make their own house in order to be able to live apart from their parents. Some people are very rich so that they can build many houses for rent, specially renting to overseas people coming to work in Laos whether for short term or long term.

Owing to the new policy of the Lao government moving country towards a market economy, there has been a lot of investors including local and overseas investing in different fields of the society and the economy of the Lao PDR, among them in building construction.

Generally, there are three main sources of building financing in Laos namely:

- Private financing,
- Government financing, and
- International financing.

Private Financing

Private houses and residential building are financed by the owners themselves with their individual savings or partly by lending loans from relatives and friends. One can even get a loan from financial banks giving a plot of land or a building itself as a guarantee. The interest of this loan varies from 18 – 20 %. The more rich people invest for commercial building, hotels, guest-houses, resort restaurants and houses located nearby streets or the commercial districts for sale or rent, but recently, it seems that most of these houses have been still empty, because the people mostly can not afford them.

Government Financing

Annually, the government also has invested some of the national budget in construction of office buildings and houses for some governmental staff, and in maintenance of existing buildings. In addition, there is always some fund from the national budget in operating with the international fund for many projects.

When talking about the investing of the government in the construction of building, it does not mean the government is implementing project by itself. A project will be implemented by a constructor after a contract has been signed. In general, the contractor having the contract in his hand and some mortgage, is able to receive loan from any bank available in the country with interest rate of 20 %. The government will then pay to the contractor when works are in process and of course after an official inspection has been made accordingly to the conditions proposed in the construction contract.

However, so far the government budget in the building construction sector has been very limited. Owing to willingness of people, in most rural areas, many health care centre and schools have been built by involving their own fund.

International Financing

The input of international financing in the field of housing is very small compare to other physical infrastructure development projects in Laos. International financing comes in several forms such as grant, technical assistance and loan (soft and interest free). International financing is arranged by government through the Ministry of Finance or the Committee of Planning and Foreign Co-operation.

These are the main international financing institutions: Asian Development Bank (ADB), World Bank / IDA, UNDP, UNCHS, UNESCO, UNCDF, JICA, KfW, EU, NORAD, SIDA, Denmark, France, AusAID. These institutions are not directly involved in financing housing construction project rather they are involved in feasibility study, training, urban development and social infrastructure development such as electrical, water supply, sanitation systems. It seems only JICA grant is involved for renovation of Vientiane airport and construction of some schools, classrooms, dormitories, health care centres and service facilities.

Budget and Budget Control

Generally, for private projects, the clients, having money or own budget, just hire designers to start designing their

projects. This issue is not quite simple for the projects funded by government budget.

The cost quoted of 1 – 1.5 % of the total construction cost for a project design, is usually considered too high for the clients. Therefore, for some government projects, the owners do not want to pay for designing, so they whether stipulate in the construction contract or take this purpose as a part of issues in the negotiation that the contractors should pay for the project design. And it seems that in some cases, contractors agree with them in this condition.

The ministries or institutions have own construction division, which has a responsibility to make an annual plan for maintenance and construction of all projects and how much money needed. This plan, with according of the minister is submitted to the National Assembly to apply the budget. The budget applied is often reduced and sometime is not allowed, since the National Budget is always limited. Therefore, only projects seemed to be in priority are approved. The construction division has just a preliminary design of a project in order to earlier estimate the sum of money needed. But the detail design stage of the project, usually has been started after the budget for it is allowed. Some institutions have a preliminary design of its projects for a few years but the budget is still not available.

After the project budget is available, the project owner hires a design company or appoints a group for the design of the project. As a part of regulations, each project should be designed through an eligible design company. Then the Department of Housing and Urban Planning (Department of HUP) of the Ministry of Communication, Transport, Post and Construction (MCTPC) is responsible to check the bill of quantities and gives approval for implementation of the project. Every year, the Department of HUP of the MCTPC can save several hundreds million kip of the government budget by reducing the over-taken quantities of building materials calculated by the design company in the bill of quantities submitted for control and approval. According to the decentralisation of the government, this role is now expected to be given to the Department of Communication, Transport, Post and Construction (DCTPC) of the municipality and local authorities. The Ministry of Finance and The State Planning Committee take a responsibility for the budget control of all projects Committee.

Information Technology

The information technology level in the building sector in Laos is low. Only, owing to the government policy of market economy, all design and construction companies are private. There is crucial competition between them. Therefore, most of these companies recently started using computer support like the CAD programs and other software programs for designing and calculating of projects. However, on the construction sites there are no computer support for daily routines like the CAM programs for economic control, production planning, material administration and management. Furthermore, until now the Internet and E-mail systems are not used on the large scale in Laos.

Experiences Learned

In order to respond to the requirements for planning, and designing of buildings, the government and all parties concerned at the appropriate levels should:

- Promote and widen competition on designing and implementing of building projects by tendering process. At the same time, should improve and adopt purchasing and procurement regulations;
- Encourage and support research and studies to formulate the construction law, improve design regulation, codes, technical specifications, unit costs, standards of buildings and building materials;
- Strengthen and make more transparent government regulatory and inspection systems, design control basing on keeping of the national architecture that symbolises of the country;
- Provide incentives for clients, architects, engineers, and contractors to design and build by using locally-available materials;
- Encourage the exchange of regional and international experience of the best practices of design, construction and facilitate the transfer of information technology;
- Support private-sector initiatives to provide bridging loans to builders at reasonable interests and make more investment in the building construction.

Conclusions

The design stage of a building is an important phase of construction process. As it is said : The best commencement – a half of completion.

In this stage, there are a lot of factors that designers and engineers should take into consideration with both the point of views of politics, finance and architecture. The clear drawings and an appropriate cost estimation are the first purposes of designing.

Production Stage

Tendering

It is the responsibility of the designer to draft all documents necessary for tendering process, such as drawings, bill of quantities, technical specifications, and sometimes a draft of construction contract should be provided as well.

For most private projects there is no need to bid for contractor. Usually, clients select themselves who could be their contractors. They just compare between some their well-known companies which proposes appropriate or lowest costs for implementation their projects.

In case of big state projects, when all required documents have been already for the tendering process, the Minister may appoint someone to be the project owner and appoint a committee to implement the tendering process. Usually, the Chief of Cabinet of the Ministry is appointed as both the project owner and the chief of the committee for implementation of the tendering process. Other members of this committee are invited from

different ministries such as the Ministry of Communication, Transport, Post and Construction, Ministry of Finance, and Committee of State Planning. There will be no difficulty at the registration time since they are representatives from these ministries working together at the tendering process as witnesses of all figures to be proposed for registration.

Certainly, not all constructors have an opportunity to participate in the competition for bidding. This depends on the project owner. For small projects costing lower than 50,000 US\$, only some 5 or 6 selected companies are invited. Of course, these companies are well known by that project owner. In the other hand, for projects costing more than 50,000 US\$, the competitive process is open for all eligible construction companies. In case of projects funded by the National budget or by the ADB loan, a pre-qualification process is required. A maximum of 7 companies are selected and invited to buy tender documents. However, for projects funded by the World Bank loan a pre-qualification process is not required. All companies interested in participating in the competitive process have to buy the tender document. Non responsiveness tenders according to condition specified in the tender document will be rejected before bidding cost having been evaluated. Generally, three main factors are used to pre-qualify or to check whether tenders are responsiveness or not. These are:

- Experience,
- Financial statement, and
- Technical capacity.

Finally, the company which proposed the lowest construction cost will be selected and awarded the construction contract.

Contract

Contract is a very important document used as a guide for implementing certain work that are involved at least two persons in this process. Sometimes it is necessary to be connected to some relevant both local and international laws. Construction contract also has this kind of property and depends on whether the contractor is local or overseas company. However, the overall content of the contract is rather similar.

Construction contract in Laos is always draft before the tendering process being held. As parts of the contract, there are many documents involved such as: invitation to bid, instruction to bidders, general condition of contract, specific condition of contract, drawings, technical specifications, bill of quantities and some necessary addendum needed some clarification during the bid process. In addition, after finishing the bid evaluation and before the signing of contract, some modification may be done according to the negotiation held between the project owner and the contractor.

The main contents of the construction contract are:

- Scope of works,
- Relevant law to be used in case of dispute,
- Responsibility and duties of every person involved in the contract,
- Time schedule,

- Payment,
- Inspection,
- Cancellation or delay, and
- Certificate of completion.

In order to make the contract becoming more efficient, the ISO 9000 should be applied in Laos.

Production Planning

Certainly, the purpose of the construction is to construct the building within the agreed limits of cost, time and quality. Therefore, production planning is very important for the success of the construction project.

Time Schedule

Even though, in the design stage, the designer has already drafted the preliminary time schedule in the design stage, after the bidding evaluation have been declared officially, the tendering winner is required to prepare it again in details including manpower resources to be approved by the project manager before the contract is awarded and signed. The detailed time schedule should be of course logical in accordance with the available resources of the contractor. In addition, the contractor is also required to provide monthly implementation planning. At the end of each working month, he has to check the previous planning to find out whether there are some items that could not be implemented or completed. In this case, the cause of such mistakes or delays should be informed and prepare the implementing planning for the next month.

Actually, the time schedule is often incorrect because of the lack of data about resources and materials. Skilled workers are in scarce and not professional. Most important materials are imported. Sometimes it requires time for import. As a consequence, the proposed time schedule becomes invalid. Most of payments are often delayed so that many government projects have to be interrupted or stopped. Inflation varies, building material prices diversify while as tenders accept lump sum prices. One way of reducing the effects of inflation is to buy all building materials as soon as possible.

Site Organisation

It is very important to prepare and execute the building project. Site organisation should include all temporary and permanent construction works and the supply of all equipment, the co-ordination of subcontractors and the general supervision. Every site needs stores, usually, a temporary shed or one of the buildings in the project, to hold stores of building materials, tools and machinery. Often the employers and skilled labours have their own tools. This means that the tools last much longer, and do not get left around or lost. Practically, it might be necessary to have a permanent guard.

Material Delivery Plan

In Laos, two main issues are availability of building materials and transport. Since the availability of certain building materials is often uncertain, it can be wise to purchase them early and build up stores. Imported material can take a long time to arrive. Sometimes happen that when they are required, they are running out. Local

shops are empty. Additional time is needed for the order from abroad. If the construction sites are located in rural areas, it happens that roads are often impassable during rain periods or many roads and bridges can not support heavy trucks. Therefore, careful planning and early attention to purchasing are thus

Quality Assurance

Quality Control

In Laos, not all projects have been controlled for quality. Most of people are talking about quality of products, but when talking about money to pay for quality control nobody cares or does not want to take a responsibility. Therefore, many project owners just leave their project accomplished by contractors. So, the quality of all works depends on the contractors whether they're performing according to the technical specifications or not. Even worst when there is no technical specification at all. The inspection is very rough, checking only for quantity of works done in order to find out whether it is suitable for the interim payment proposed by the contractors. Some time it happened that only when some parts of houses were destroyed by accident they found out that there were no enough reinforced steel bars in structural members.

Only a few projects are controlled both quantitatively and qualitatively, specially projects invested by the World Bank or Asian Development Bank. For these projects, the project owners are required to provide qualified engineers or architects to supervise and inspect the construction site systematically in order to force the contractors to control their work continuously.

However, most of accomplished works are not too satisfied. Structurally, there is no big problem since testing of materials is available before used. Unsatisfied works are mostly architectural works, especially finished works that required skilled and experienced workers. This is a very big problem in the labour market in Laos.

Retention

In general, for big private and government projects, once the last inspection has been realised, the project owner may issue a certificate of completion to the contractor and start to use the building. In general, 10 % of the total cost of the construction quoted in the contract is deducted when paying to the contractor. This sum of many is considered as a maintenance bond, which will be paid to the contractor at the end of the Defect Liability Period. In case there is deflection occurring in some parts of the building during this period due to a weak construction, the contractor should take responsibility to repair such defected parts with his own expenses. If the contractor denies doing it, the project owner has full right to invite another contractor to accomplish such works using the deducted money.

After finishing the period of warranty, the remaining money will be paid to the contractor. It is the responsibility of the Director of the Department of Planning and Finance of the Ministry concerned to make a planning for its maintenance. However, the budget received from the national treasure is usually less than the proposal required. Consequently, the existing buildings

are getting deteriorating year by year. When it is found out that it could not be served more, a very big maintenance is required in emergency. At that time, it seems that the national budget will realise without any choice since may be thank to a negotiation between government members whether personally or officially.

Economic Control – Budget Review

It is very important for both private and government projects. For private projects, the clients whether strictly control by themselves or hire a consultant to check the quality as well as quantity, since they would pay their own money.

In case of projects funded by the government, before paying to contractors in the production stage, project owners should appoint a commission, inviting representatives from the Ministry of CTPC, the Ministry of Finance and the State Planning Committee to take part in the inspection on site and give approval document for payment. Usually, the payment process is undertaken after the production progress achieves gradually 30 %, 70 %, and 100 % of total works or depends on the contract.

In addition, after implementation and payment for projects having political meaning and high financial level, the Central Committee could appoint its special inspection commission to check accurately again the quality, quantity and transparent of payment. In case it found out that any participant of the projects frauds or makes an unreasonable mistake there would be a penalty and a punishment according to the laws.

As a result of high inflation, delays of budget allowance and lack of budget, some government projects are whether not completed on time or interrupted until the next year budget is available. On the contrary, if the available budget is not used on time, it would be taken back and must be applied again. But things like this, of course, rarely happen.

The purchase regulation issued by the Ministry of Finance quoted that in case of high inflation, only for projects having implementation period longer than 12 months, a variation of prices during the contract period could be allowed according with the commission appointed. Consequently, the contract with the fixed prices is rarely accepted in Laos. As a part of regulations, for the projects funded by foreign grant, the payment for contractors is paid only 40 % of the total project cost in foreign currency and 60 % remaining in local currency. It, of course, is discontent for contractors, and it is now in the stage of discussion.

According to the finance rule, every 6 months the Cabinet of each ministry and institution should submit a report of the summing up of the plan completion and the budget review to the Finance Ministry and the State Planning Committee.

Experiences Learned

In the design stage all participants of the construction process should pay more attention in some points :

- The designer should make more effort on detail design and shopdrawings, so that the workers could exactly execute each detail as it is quoted in the technical specification. In other hands, it is easy for clients and supervisors to control;
- In order to supply the building materials continuously and effectively, the purchaser, in the recent condition, should be active and flexible to the market situation. The best way to reduce inflation effects is to buy needed building materials as soon as possible.

Government and all parties concerned at the appropriate levels, in co-operation of other parties concerned, should :

- Strengthen quality control of building production by employing consults or supervisors for each big private and government project. At the same time, should improve consultant and inspection apparatus by promoting local consultant and supervision. These could be private, government companies or individual professionals;
- Strengthen and make a measurement by laws for quality control of locally produced and imported building materials, such as wood, bricks, cement and steel. At the same time, should promote and support an adequate supply of locally produced, affordable and durable these basic building materials;
- Provide and strengthen the capacities of training to professionals and practitioners to increase and diversify the supply of skilled specialists and workers in building construction;
- Promote and organise an association for architects and engineers and also an organisation for non-company builders and groups of professionals in order to manage and make them to follow the construction regulations issued.

Conclusions

In the production stage, the more important tools for quality control are shopdrawings and technical specifications. The time schedule, including quantities of materials and manpower needed is necessary financial, material supply and time control.

For this stage, not only skilled workers and professionals are needed, but the skill of a project manager is extremely needed as well. In Laos, the necessary things like this are now not satisfactory yet.

Property Management

Life Cycle Economy

In Laos, the property management is a relatively new concept. In general, people just understand that they have to manage their properties or houses in such a way that its gives them and their families the best possible economy and the best possible quality in their living. But they do not have in their mind how to succeed in this purpose.

Nevertheless, the Lao government now makes effort to manage properties and investments. A lot of houses and

factories confiscated by government from some pro-revolutionists and people left the country for abroad during the first year after the founding of the Lao PDR, is now delivered back to whether its old owners or their relatives. During this process, may be, there are many times of ownership change.

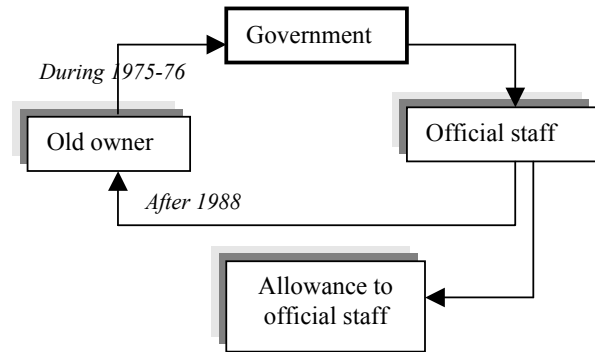


Fig. 8: Ownership change of some houses and factories

Understanding about the life cycle economy among designers and investors is also relatively low. As a result, the local investment and project design in Laos often seem not to be effective as properly.

Only in case of the large investments from overseas, the investors or the fund donors, systematically hire financial analysts to make a feasibility study and market analysis including the life cycle economy for their projects.

It is important to understand that the economy of a property is in contrast to most other investments controlled by the time. There are many methods to use for economy analysis and there is also the economical and technical life of a property. The life of a fixed asset can either be calculated based on its technical or economical life.

Properties can generally be seen go through two different cycle of life. The first one is the life cycle of the objective, which starts when the buildings is erected and ends when it is demolished. The second one is the life cycle of the object that is depicting the property to the owner. Different owners have different knowledge and different objectives for owning the property. As a result, this gives different patterns of investment during the life of the property.

Maintenance Planning

Certainly, the expected life span of a building presupposes that some basic regular maintenance will be provided during its service period. In normal practice, buildings also tend to be exposed to unexpected deterioration, thus requiring repair in addition to routine maintenance.

In rural areas, as mentioned before, traditionally built houses require more maintenance than modern building, but the maintenance is quite easy because the building materials are low-cost and locally available.

The low-income people in the rural areas just think firstly to have own houses. Gradually saving money, they

build their houses step by step. It might take a few years while their houses are completed. At that time, some parts of houses built before may require maintenance already, since they use low-cost building materials. In this case, the maintenance planning is far a way for them.

Maintenance is crucial for low-cost construction, because most low-income families cannot afford the replacement cost. In some cases their houses deteriorate to the point of failure.

For private or commercial building. The owners, usually have a quite regular planning for maintenance, since they are affordable. But most existing buildings of the government are often remaining in the poor condition without adequate repair and maintenance. The obvious reason for this situation is a shortage of fund for maintenance. It does not mean that the government has no the maintenance planning, but planning without money is certainly getting us nowhere.

As a result, in order to alleviate more burdens on paying for maintenance, the government has a simple solution by selling gradually on credit all its houses to official staff and military families who live in.

Nevertheless, the government has also shared parts of the National Budget for maintenance of its establishments, office buildings and the major institutions. This sum of budget, however, is very limited and not enough for requirement. So, the ministries or institutions whether have to wait for the budget divided or have to seek the fund from other different sources for repair own offices.

Furthermore, in most rural areas, people have involved their own saving money not only to build the health care centre and the school for their children, but also to pay for its maintenance as well.

Connection to the design stage – Feed back

The property management is considered as the longest part of the construction process after the design and production stages. These first stages influence continuously on the building operation phase. Decisions made in the design stage are obviously of great importance for the future property management. There is also still a lot to be done about the bringing back of experiences from the operation phase to the design phase.

In Laos, it happened in fact that some buildings having plate roof, particularly buildings built by the Former Soviet Union grant using prefabricated elements give us some problems of operation. Concrete slabs covered by waterproof materials have horizontally roofed these buildings. In the rain season, rainwater has been dripping through the roof. So, there was need to repaint the ceilings under that roof every year until the additional tile roof has been made above. The cause of this is not only there were not enough waterproof materials under roof but the main cause is the designers missed one thing that this kind of roofs is not appropriate for the rain-full country such Laos. As a result, the extra-expenditure in the operation of these buildings was needed due to carelessness of designers.

Therefore, it is very important, in the design stage, to take into consideration the dominating factors that affect the further operation of the completed project. Other examples could be given more:

- The good technical decision to make appropriate external walls or suitable oriental location of the building can reduce energy costs for the air condition and ventilation systems;
- The use of durable and the same long-life materials for roofs and facades can reduce costs of maintenance.

In addition, a very important use of the annual cost estimating is to analyse the chooses of technical and financial solutions in the design stage.

It has also actually happened in Vientiane that some rich people build a market centre and a lot of houses for rent without earlier careful market analysis. Finally, they cannot have properly benefits from their investment. Most of these houses and blocks of the market so far are not occupied yet.

In property management, frequent use is made of annual cost estimation. It is essential that one be able to estimate in the connection the “value” of an action that is taken or planned as summed over the entire economical and technical life of the investments that are made. This make it possible to obtain reliable information regarding future budgets during the property management stage, to maintain economic control during the designing of a building, and the choose sensible between alternative solutions during both the designing stage and the property management stage.

Unfortunately, understanding about the importance of property management is relatively low in Laos.

Experiences to use for the future projects

In order to improve the quality of property management in Laos, the Lao government and all parties concerned should :

- make a special training programme on the property management for architects, engineers and other specialists concerned to deepen their knowledge of this aspect.
- Include in the government housing programme, the importance attached to new entire construction vis-à-vis repairing and upgrading of existing buildings.

The architects, designers and engineers at the appropriate level should have a competence to:

- Use a model of analysis for property management in the design stage of the project.

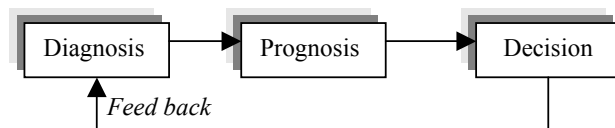


Fig. 9: Model for analysis of property management

- Take into consideration the life cycle economy for the economic control during the designing of a building.

Conclusions

The property management is very important for both a private and public sector. There are series of conditions, such as financing, running costs, maintenance costs, tax regulations, building techniques and building economics, which affect the property. These factors are influencing the costs of the house.

It is also important that the objectives of property management are carefully designed and are continuously updated to the current market situation. As in all management, the decision-maker must consider the factors of insecurity that are current on the studied market at the given time.

The basis of a property managing should be a carefully worked out long-term plan. From this plan, the strategic plan with shorter perspective and operational plans should be made.

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