

Project Management

A New Role in a Council Housing Company

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Acknowledgements

I want to thank the opportunity to attend this important course, that is going to improve the job I have to do as Province Councillor of Pichincha in Ecuador, in order to solve in part the big problem that faces, the lack of housing. It is important to emphasise the great advantage, especially for Third World Countries, to know new technologies already proved, that could be applied with a smaller range of error. This exchange of experiences is not only in the technology field but also in the construction system as well as management skills; this will help to provide efficiency and the best way to use the small resources that our countries have.

The globalisation process is a complex matter that has to be well understood in order to be reached, important events as this course that has the support of the Swedish Government through SIDA and LCHS Lund University, has a great value because it search a clear goal that is the transference of technology as a way to help Developing Countries that are facing great crisis that will be overcome only with the help of Developed Countries as in this case Sweden is doing.

Summary

Ecuador is located in the north East Coast of South America, surrounded by Colombia and Peru. At the East Side we have the Pacific Ocean in which are located Galapagos Islands.

Ecuador has three main regions (Costa, Sierra and Oriente), each one with a specific climate; these are divided by the Andes Mountains, which runs along the country.

The capital of the country is Quito, which is growing very fast. The population is estimated in 12 million inhabitants according the last official information and its territory of 270000 square kilometres. The 42% of the population live in the cities.

History has resulted in widespread interbreeding which makes it necessary to refer to real socio-cultural criteria in order to study the ethnic groups. The influence of the native Indian is very clearly felt in the costa region,

though with the exemption of the Province of Esmeraldas, where the population is predominantly black.

In the Sierra region, the native Indians predominate. He is subject to the process of migration from the rural areas into the towns and is consequently becoming more "mixed" in race.

Ecuador is a free and independent state; its government is republican and democratic. The people elect the government freely every four years.

The basis of the Ecuadorian economy is what is known as the primary sector. The dominant activity is agriculture for export and domestic consumption. The main products exported are bananas, coffee and cocoa. Nowadays it is very important income new export products as prawn, flowers (roses) and broccoli. Since 1972 until now oil export sales still constitutes one of the most important resources.

One of the main problems of Ecuador is housing; it has its root causes in the rural poverty and the centralisation of economic founding. These factors lead to massive migration to the towns, so that certain key cities find themselves with terrible sprawling expanses of "barrios clandestinos" or shanty towns, which would be workers pull together as best they can out of anything available to them. It is very important to help this situation in order to generate income and create jobs.

In the urban areas of Ecuador the housing deficit increase every day, the most recent information says that 1 in 3 Ecuadorians now have adequate conditions, 2 in 3 live with out services. It is estimated that 500000 housing units are urban areas and 800000 in the rural areas.

At the present time, the central government through its Ministry of Housing decided to involve the participation of private sector and local governments too.

This is part of the rehabilitation policy for the improvement of the housing stock and for an increase of the labour market. Nowadays there is a subsidy policy which allows to receive this benefit once in the life, this amount is used as the first payment for a new dwelling, the remnant should be paid monthly.

According to this situation Province Council of Pichincha, after a very hard election, decided to build 20000 new houses in all the province of Pichincha the second more populated in the country.

Because the bureaucracy procedures, the Province Council decided to create a new operative organisation in order to execute the housing project required, therefore it was created a housing company called COVIPROV SA.

At the present time it has been built almost 1000 units. This new legal frame allows to organise and contract all the works needed in a rapidly way. Today some management problems arise. Managing director has too much responsibility in technical matters; problems related to quality and time control that we must need to improve. Therefore, I believe that construction and supervision activities should have an expert controlling those fields, this must be improved as soon as possible.

On view of the ideas and knowledge developed from the course about project management it may concluded that for the present case study COVIPROV SA, must improve management procedures. Therefore it is important to take into account that construction and supervision should have a responsible manager who will have overall control. The aim of this paper is to advise to the company's board as one of its members that how can be improve management skills through the analysis of the new role for the project manager in the present case study. He will be responsible for planning, construction and supervision stages in the housing project proposed, in order to improve the projects according to time, quality and budget.

Introduction

One of the most important requirements that Ecuador needs to face is the lack of housing. Every year increase considerable the number of units required; according to the information of the last census the population growths is around 2.2% per year, if this continuous in the year 2000 Ecuador will have 12 million inhabitants. The present deficit is estimated 1300000 dwellings, taking in account the population growth the country will require 76000 new houses per year for the next 20 years.

Because this problem all the institutions must be involve trying to improve housing conditions, therefore local and province authorities must face this lack.

Pichincha, the second populated province in the country in which is settle down the capital Quito requires around 150000 housing units, therefore the Province Council decided to built 20000 new dwellings for the next four years.

At the present time the construction have been started, it is constructed 1000 units almost, each house is 36m² using local materials as well own construction systems, in order to built as fast as possible; the Province Council decided to organise a company that will execute from the design stage up to the sale of each dwelling.

Consultants and contractors trying also to generate employment in the private sector carry out the whole project cycle; Staff Company will supervise all the process. The company created COVIPROV S.A. (Compania de Vivienda Provincial S.A.) has some problems, professional skill must be improve specially those related to management areas because the lack of experience.

Ecuador

General overview

The purpose of this introduction is to give a panoramic and therefore superficial view of a country. Colombia surrounds Ecuador in the Northeast of South America, to the north, Peru to the east and south and the Pacific Ocean to the west. As a result of a systematically anthropological research it can be asserted that Ecuador has behind it at least 12000 years of civilisation. This does not mean that there are no older remains, but that there is coherent archaeological evidence covering which starts in 3200BC with all the indigenous tribes that settle in that land, up to the Incas domination. In the sixteen century was discovery, conquest and colonised by Spain.

On the 10 August 1809, the first claims to American Independence rang out through Quito (today's the capital). On 24 of May 1822, after the battle of Pichincha the country was annexed to the Great Colombia. In 1830 began the republican epoch, as a free and independent country that actually constitutes the republic of Ecuador.

Ecuador has three main regions each one with a specific climate; Costa, Sierra, Oriente and the Galapagos Islands, which constitutes another province. The Andes Mountains, running across the country in the form of two cordilleras, provide a double vertebral column of ice, lava and granite.

Costa

Fertile plains spread out the western cordillera and the Pacific Ocean. These cover 70000 square kilometres divided in five provinces. With a hot moist climate, the soil produces bananas, coffee, cocoa, rice, a very wide range of fruit and abundant wood, most of which is exported.

Average temperatures vary between 26 and 29 degrees centigrade. Guayaquil, the chief port and the centre of industrial development, is the town with the largest population.

Sierra

The highlands cover an area of 72000 square kilometres; the space between the two mountain ranges of the Andes is interrupted by a number of hills which is a triumph of man over nature. Volcanoes and mountains are absolute earthly symphonies of rock and snow in the Ecuadorian Sierra. The bigger mountain (Cayambe and Cotopaxi) is around 6300 meters above sea level. Quito, declared by the UNESCO Patrimony of the Mankind, is the capital of the republic, at 2800 altitude settle down on unusual topography. It is the political and administrative centre of the country and over the fifteen years has achieved considerable economic importance based on the development of the petroleum industry as well the growth of medium and great industry.

Oriente

This region constitutes a promise for the future of the country with its exuberant vegetation, its Amazonian tropical climate, its wide variety of fauna and its sparse

population, which still lacks the infrastructure necessary for the sustained of its economic potential. The north oriente region is at present producing more than 300000 barrels of petroleum a day in which is based on our national budget.

Galapagos Islands

A thousand kilometres from the main land lies the Colon Archipelago or Galapagos Islands; this is derived from that of the giant turtles, which are founded there.

The Galapagos Islands, with their landscape of granite and lava constitute an absolute natural history museum, for they contain species of fauna, which are not found anywhere else in the world. During the seventeenth century pirates and filibusters used these islands as a refuge. In 1853 Charles Darwin made a study of the species living in the islands and worked out his theory of evolution of the species, which revolutionised the scientific world of that time. His theories of adaptation to the environment and natural selection gave rise to passionate academic duels among his contemporaries.

General Aspects

According to the last census and assuming an annual population increase 2.2%, Ecuador has about 11'600000 inhabitants in its territory of 270000 square kilometres, the 42% of its population live in the cities.

Ecuador is a free independent state; the people elect its government, freely each 4 years.

Ecuador Location



General Housing Public-Administration Environment

Ecuador present housing and living conditions

Ecuador housing has its root cause in rural poverty and the centralisation of economic funding and the employment would need more time and planning to

resolve. This is because of rural migration to the towns; certain key cities find themselves certainly expanded by the terrible sprawling expanses of “barrios clandestinos” or shanty towns, which the workers pull together as best they can out of anything available to them.

Largely as a result of the ineffective economic policies of successive governments, living conditions for the vast majority of Ecuadorians have deteriorated over the last ten years.

As we know, one of the main points that have a close relation with the housing problem is the growth of the population. Ecuador is a South American country with the highest average population growth in the region.

The number of homeless increases in many areas of the urban population: on the one hand as a consequence of the increase of the natural population in the cities and on the other hand, because of the lack of jobs in rural areas causing migration.

Another problem causing fluctuation in population is city to city migration. Homeless takes place the moment that the urban work market is not able to absorb the total number of people who arrive looking for work. As a consequence we observe a variation in levels of income and living standards between the employed and unemployed population. Those manifest it self in the socio-economic aspects, as well as in the socio-cultural ones.

The problem of housing deficiency can be seen in conjunction with the plight of low-income sections of the population who live in extreme poverty and who are in need of enough money to allow easy access to the cheapest available houses.

Recent recognition of the need for more accommodation and an improvement in general living conditions has lead third world countries to increase the importance given to the “housing financing” in their development plans for economic and social reasons. This change in the traditional strategy of development contributes in a positive way to the growth of the internal economy.

The new housing solutions should be in accordance with the environment; the cultural patterns and above all they should be with in the payment capacity of the low-income groups. As an alternative solution the government create a banking system in order to support the financial assistance for housing projects.

The participation of the population in the struggle for better conditions is important but not unsupported. The contribution of all the potential professional and technical people in Latin America are needed, although the intervention of the state should be clearly defined through the development of a true national housing policy.

Therefore, housing projects are urgently required within the country and towards the poorest class. Private enterprises should look after the possibility of a total solution in the architectural and urban level in order to improve this situation, while public enterprise should concentrate on financial matters.

According to the information of the last census the population growth is around 2.2% per year, if this continues in the year 2000 Ecuador will have 12 million inhabitants.

This brief analysis shows that only 1 in 3 Ecuadorians homes have adequate conditions, 2 in 3 live with out services.

From the accumulative housing deficit (1300000) it is estimated that 500000 units are in urban areas and 800000 in the rural areas. If we add to all these considerations, the future needs by demographic growth at 2.2%per year, we can say that Ecuador will need 76000 new houses per year for the next 20 years.

Local Government Structure

Ecuador is divided into 22 provinces, each one has there own Province Council composed by the Prefecto and Consejeros (Councillors); all of them are elected by free election every four years. The Province Council is also called "Prefectura" which origins belong from Spanish organisation at the sixteenth century.

The "Prefectura" manages some public works like inter-city roads, rural roads, irrigation, rural development projects, electricity and so on. Each Prefectura has their own municipalities that it depends on the number of inhabitants those lives there.

Pichincha is the biggest province in the Ecuadorian Sierra region (Andean area), in which is located Quito the capital of the country that has around 2 million populations. The Prefecturas and Municipalities work in co-ordinate programs, one at regional level and the other in a local level.

During the last election (1996), one of the candidates running for Prefecto of Pichincha submits to the electorate a different goal. He proposed to work focussed in the highest requirement that the people has, which is to improve the housing condition for low income citizens; he is Rafael Reyes Uribe present Prefecto of Pichicha.

Pichincha Province has an area around 12914 square kilometres; the housing deficit is 73000 units, which represent 5.84% of the national total.

Pichincha Province Council Organisation (Prefectura)

The Province Council is a regional authority, independent from the central government with own autonomy, that control and manages those activities related to the regional development. The main task is to preserve planning development programs different fields like: roads, irrigation, rural development, cultural activities, forestry as well maintenance programs related to roads and motorway, schools and some assistance for water supply and sanitation projects at rural areas, all these activities are financed with central government money.

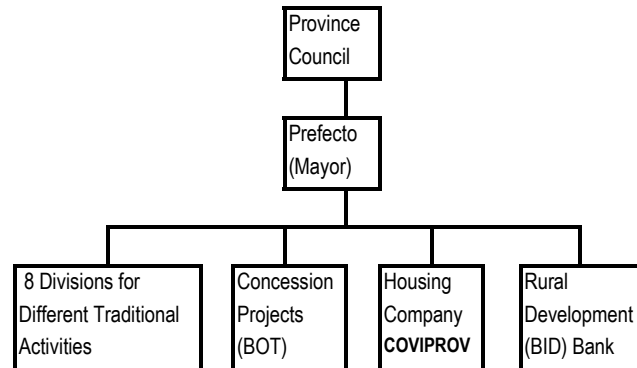
Nowadays according new parliament resolutions there is another role for local and regional institutions that allows project execution with national or foreign investments in a concession way (built, operate and transfer) BOT, up to the project cost is paid.

The Pichicha Province Council is a big organisation composed of 400 employees and 1000 workers, all of them are involved in the activities established in the

constitution (frame law) described above with goals and mission clearly defined.

Because the bureaucracy procedures, the Province Council decided to create a new operative organisation in order to execute the housing project required, therefore COVIPROV S.A. housing company was created with public capital and controlled according to the private company's legislation. This new structure will allow a flexible project organisation only with the staff needed and rapidity construction and selling procedures.

Province Council Organisation



COVIPROV S.A.

Province Housing Company Project Organisation (Case Study)

When the housing project was detailed studied, arose three different challenges:

- Lack of resources
- Short period to execute the project
- # Lacking of appropriate legislation (Contracting laws)

The national government knew about the importance of the housing project in agenda, the goal that have and the possibility for improvement of housing conditions for at least 20000 families, therefore gave 25 US million received from the oil sales.

Unfortunately every four years each administration has own programme therefore is very important to finish the housing project during the present period, which ends in august of 2000. Contracting laws starts to be a trouble because it takes many time to prepare a contract according to the public contracting procedures, and also the Ecuadorian legislation establish many stages in order to sell government properties, when the houses will be built.

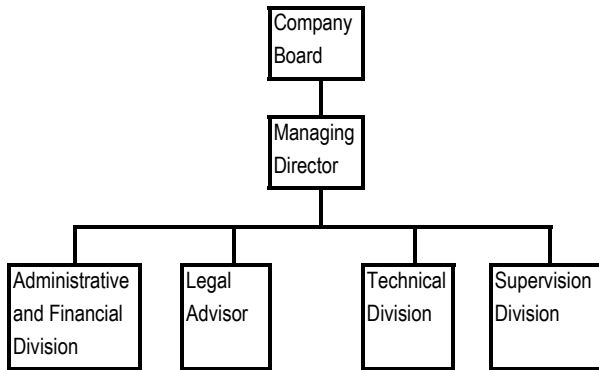
Therefore, the province council decided to create a Limited Company, this was allowed by the different control mechanism that the central government has.

The present initiative is quite new in the country and becomes two year ago since was approved by the congress the Modernisation Law that define the new role of the local and regional government can execute.

Company Organisation

The housing project is implemented through the Housing Company created COVIPROV S.A. This company will have a frame and procedures more flexibles, which allows carrying out the project in a short time without the bureaucracy stages.

The organisation is as below:



The “Prefecto” heads the company board, the main task is to draft general policies for site location, price sales; quality, cost and general control approvals as well the general monitoring control.

Managing Director who is responsible for all the company activities manage 4 main divisions:

Administrative and Financial Division, is responsible for the staff control, office location, vehicles as well all the financial management.

Technical Division, mainly co-ordinate project infrastructure design, site development plan, quantity survey stage and has a close contact with the city council planning office. Local consultants do all the planning activities.

Supervision Division

The production stage, contractors carry out infrastructure and houses construction, each one has 20 houses per contract. Local consultant executes the supervision also but in order to have a good control staff engineers will do the final review.

Project Goals

The construction of 20000 new housing units will contribute with a real solution to at least 100000 inhabitants and also:



- Growth internal economy
- Reduce the migration phenomena
- Develop the private sector participation, by a clear and transparent contraction form
- Generate direct employment to all levels such as contractors, workers, consultants, and suppliers
- Possibility to create some skills for a new practical housing policy more coherent, real and convenient.

Company Activities

The housing company will have the following activities in order to implement the housing projects:

- Project Development: social, financing and operative company manuals.
- Legal registration of the company
- Central Government approvals
- Financial system organisation, (loans and payments procedures)
- General insurance
- Manual for land acquisition
- Registration for consultants, contractors
- Registration for beneficiaries
- Project development stages: design, cost estimating, construction and supervision.
- Co-ordination with other institutions involves in the project. (Private and public)
- First ex-post evaluation

Its important to take into account that the construction of this housing project will represent a growth in the economy as well many other activities that have close relation with the construction industry (small and medium size industry). It is estimated that this project will generate 50000 temporary employees.

Project Planning

In order to built 20000 housing units across the province, which means in all the municipalities of Pichincha will be necessary to find 2060000 m² of land; therefore it is necessary to work in a co-ordinated way with the planning department of each municipality in order to find sites with all the infrastructure services required, as well with all city council regulations.

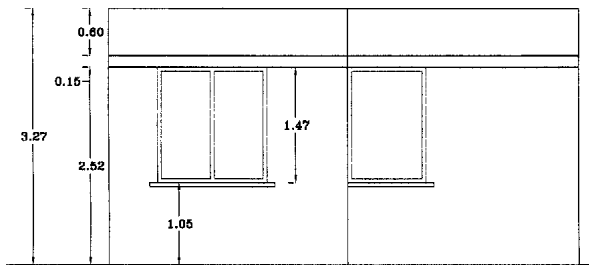
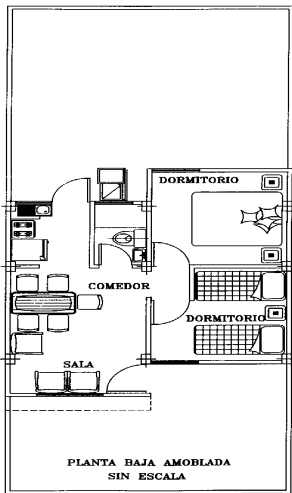
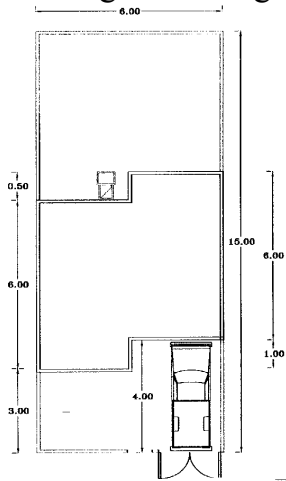
Company Board had taken a decision to build all the houses with the same design; each housing unit will have 36 m²:

Living room	11.10m ²
Two bedrooms	15.60m ²
Kitchen	3.00m ²
Toilet	2.00m ²
Walls and walking	4.30m ²
Area	36 m ²

The housing unit will have a close relation with the site topography as well with the local climate and environment. Each unit will have an individual site of 72 m². (6 m. front- 12 m. Long), but for estimating we will assume an individual site of 103 m², including common area, pedestrian footpath and also green spaces.

One of the main resolutions company boards have taken is to build all the houses with the same design, while the site layout depends on the topography. Staff architects are doing this job according to the planning regulations (design and density) that each municipality has.

Housing Unit design

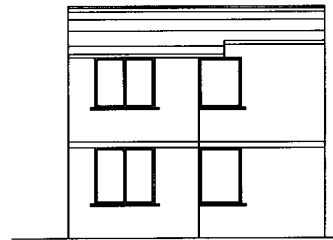
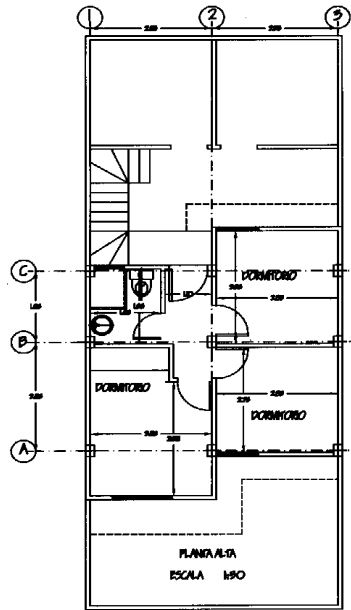


The design proposed be based on the possibility to have progressive growth in different stages starting on the first stage which is composed by 36 sq.m.

Site Area		72.00m ²
Housing unit area		36.00m ²
First growth stage	21.20m ²	57.20m ²
Second " "	20.50m ²	77.70m ²
Third " "	15.50m ²	93.20m ²

As we know, COVIPROV, (Province Housing Company), will provide with detail information to the clients about the growth stages programme so they can built in relation with the original design in order to preserve the shape, environment and city council regulations.

It was also decided to build all the dwellings with the local materials and own technology. This can allow generating employment in our labour market. Local materials, stone foundations, reinforced steel structure; concrete blocks and cheap finishings are used in all the projects.



Project Requirements

Each housing project will have the following information:

- Site location
- General layout (access from the main roads)
- Detail design
- *Water supply and drainage design
- Electrical design
- Estimating cost
- Construction System to be applied

Location of the housing units

Pichincha housing program will be built in all the municipalities according the following characteristics:

City Council	Population 1996	%	Units	%
Santo Domingo	241451	10.68	5000	25
Ruminahui	59849	2.65	200	1
Pedro Moncayo	60287	2.67	200	1
Cayambe	51322	2.27	300	1.5
Quito	1750088	77.45	13800	69
Mejia	53199	2.35	200	1
Pedro V Maldonado	9118	0.4	100	0.5
Los Bancos	18068	0.8	100	0.5
Puerto Quito	16352	0.72	100	0.5
TOTAL	2259734	100	20000	10

The sites necessary for the project must be acquired according to the council regulation stabilised. Offerings that will have same range price can discuss in a final meeting in which in front of all of them the best offer will be selected in relation with price, location, time for payment, infrastructure services provided etc. At the present time 16 offers have been received:

Quito	83
Santo Domingo	20
Mejia	4
PVMaldonado	2
Cayambe	2
Pedro Moncayo	1
Ruminahui	4

The site choice depends on:

- Location in the urban context
- Site area offered
- Infrastructure services that the site has
- Cost
- Offering condition

As a reference information, I should say that in one hectare (10000m²) could be built 90 housing units.

The average cost per m² in Quito, in a low-income area is around 3 us dollars/m². The average cost by m² for infrastructure services (roads, walking areas, water

supply, drainage, and electricity) is around 15 us dollars/m².

Project Financing

The Central Government provided 25 million USD to start the project.

At the present time, the central government through his Housing Ministry involves the private banking sector in order to finance the housing project. Each Ecuadorian receives "once off" a subsidy which allow to give as first payment for the purchase of new dwelling, a private bank will finance the remnant with government money at special rate conditions.

The people who buy a house should pay monthly to the bank for the next 15 years. The government gives the subsidy to the company directly in which the house is purchased.

This new policy can permit to organise a revolving fund in order to have a healthy cash flow that allows us to build more houses. I must point out that the Province Council will provide money from the budget as well machinery for roads works, therefore we can get cheapest prices.

Each house has 36m² is made of concrete fundation, beams, columns and roof too; steel frame for windows, steel doors, glasses, paint and all the other finishing with cheap materials.

The foundations and the structural frame are calculated according national standards (against earthquake), each dwelling will have the following cost:

ITEM	Unit	Amount	Cost(US)	TOTAL
Site	m ²	103	3	309.00
Housing Unit	m ²	36	118,3	4260.24
Infrastructure	m ²	103	15	1545.00
Sub-total				6114.24
Administrative cost	7%			428.00
General Supervision	4%			232.21
Final Cost per Unit		USD		6774.42



Information Technology

The information technology used in implementation of the project is new. Computers with full data and software are used that guarantee a goal and rapid knowledge of what is going on in the project any time.

Technology at the design, construction and supervision stages are not a problem, it was implement a full system that provides all the modern facilities.

It was developed a new computer system that all the data per house is included, so at any time you can know exactly what is happening in each dwelling, from the design up to the delivery.

During the development of construction projects, done by private and public sectors, many are the problems that they faced but, one of the main problems especially at the top levels, is management.

Professionals with high responsibilities need to learn about this field that improve the quality of the work done and the control of the personnel engaged in it.

It is necessary to point out some experiences that had happened in Latin America in the late fifties; at that time it was necessary to learn about new construction techniques based on the experiences of other countries with more knowledge in this field in order to develop our own technology (intermediate technology), same as this example, nowadays people involve in jobs of high responsibility need to learn management in order to develop an appropriate management systems trying to improve the conditions of the project and the best use of our resources.

Management Knowledge

The construction industry is an essential contributor to the process of development. The structure and organisation of the construction industry varies considerably among countries. The differences within the industry are determinates by the relative importance of a few specific characteristic of the industry as well as by the degree of development of a country's economy construction work also suffers from administrative and allocate inefficiencies, because of a lack of a sound framework of institutional and legal arrangements, especially those affecting public sector procurements, the industry is not shaped to respond quickly and efficiently to the needs of the clients.

Nowadays as was explained above there is an urgent need to improve the management methods used. People at top management levels in private and public sectors need to know more about this crucial field; any person involved in high level position must learn because from this knowledge depends the expansion of the enterprise.

According to the present situation of the construction industry in Ecuador, it is important to develop suitable management systems in direct relation with the Ecuadorian reality. These changes will bring to the construction industry many advantages such as:

- Generation of qualify personnel
- Educational level more in relation with the demands of the country
- Possibility to use our resources properly

If there is available appropriate system of control and guidance (management) the result will be the development of the enterprises. Therefore, it is important to develop suitable management skills in order to improve our capacity to manage the buildings projects; only if there is a clear definition of management an its implications, the projects can be finished in a successful manner.

Production Stage

Its important to point out the company's board decided to built all the housing projects with the same interior design (36m² per unit), the site layout depends on the topography conditions, area and location, according municipal regulations. Each project has different consultant. Therefore it was defined in each contract, detail construction requirements, time schedule and fix price. Also was established that each contractor can have only 20 units to build it, trying to generate employment.

All the contractors have the same time to do the work. A qualify staff team are engaged to supervised the construction process according to time and quality specifications defined in the contract, this can be done because there is only one design, so it is easier to do.

Quality Control

Quality assurance is done in two phases, first when contractors brought the materials to the site; it was check by a supervisor engineer. In the case of concrete samples are taken in the laboratory. Cement blocks are test at site by checking their shape, size etc. It is required another method.

The second phase is during the production stage; materials are check and verify. All the advances must be written in the report book on site.

After the contractors finish his works, there is a final inspection in which is testing all the installations and in the whole project. Each contractor should sign a guaranty and his responsibility will for the next 10 years.

When the house is completed company staff will give to the owner after he has cancelled all the payments.

Tendering

Covipro (Province Housing Company) followed the legislation procedures defined in the public contracting law. The writer will not go into all details of tendering but will explain some important issues.

As was explained before, there is one house design, it was defined all the materials to be used as well construction details and finishing; time and price was fixed. The company pre-qualify contractors through a formal invitation in the main newspapers. After few days was more contractors rather than contracts, therefore was decided prepare a lottery system in order to select the contractors. It is possible to do the construction by this way; because there is only one design and each contractor has 20 units to build.

The economic situation at the present time, its not good, therefore in order to avoid price escalation we give

as first payment 80% of the total contract value. All the contractors must present a banking warranty same amount and other for 5% of the total amount of the contract. The 20% remnant will be paid after he finishes everything.

Production Planning

Each housing project has their own site supervision engineer, who has some assistants depends on the number of houses that each project have.

The first project have 1000 units, there is one site supervision engineer and 4 assistants engineers. The total project had been divided in small groups so that more contractors could be involved.

The construction period is 4 months, working 5 days per week and 8 hours per day. Each contractor was responsible for accommodation, storage, and cleaning and pedestrian movements in his area of works.

Covipro will provide temporary connections for water drainage and electricity during the construction period, as well security guards 24 hours a day, the site its open from 630 until 1730h.

For monitoring the project usually once week board members visit the site and have meeting and discussions. A consolidated progress report must be submitted to the monitoring committee to compare the actual and expected progress of works.

Economic Control

During the timely completion of project, the economic control over the project was easy and effective. The bill of quantities with rates and time was fixed during contract. So there was a little scope of changes in some items. In some cases the volume of works in foundation had increased around 10 %, it was necessary to change soil characteristics. For infrastructure services water supply, drainage and electricity, items and prices change about 10%. At the completion stages price escalation was not needed.

There is no maintenance programmes implemented. After finishing the construction, the owners will elect a committee who will be responsible to organise this task. I think that for future projects the company must get involve in this area through technical assistance, brochures and detail information in order to guide them in a proper way. Property Management it's urgently required.

Suggestions and Conclusions

Ecuador, as many other Latin-American countries is going through a difficult economic recession, mainly in my personal opinion because the lack of creative policies that the politicians should have. This unexpected change in the Ecuadorian economy has meant that the government has had to plan programs and policies that try to revitalised productivity, because in the future it is important that the economy does not continue to depend only on the oil and agricultural export as the most important items in the national income. It is necessary to implement programmes that emphasis the development of

the Ecuadorian industries, especially those which are labour intensive.

The construction industry is important because the majority of its workers come from low-income groups. If more programmes are established there would be increased employment opportunities; therefore improving the qualities of live for many people. It is thus important and necessary develops the private sector as a job generator, especially those with small and medium size investment requirements. New policies are also needed in order to improve the economic system conditions.

According with this situation, Province Council of Pichincha decided to build 20000 new houses through private contractors, each one with a small participation (20 units) trying by this way to generate employment in all levels.

After building 1000 units COVIPROV (Province Housing Company) faced some difficulties, most of them are solve but those related to management must be improve. Therefore it is necessary for the writer to redefine the organisational frame. It is clear that the company Managing Director concentrate all the responsibilities even those related to the construction and supervision stages. It is important that technical decisions must have been taken for somebody who knows perfectly this matter. The Managing Director is an economist and his responsibilities are for all the company, but on the other hand he must delegate some of them otherwise internal procedures will take long time. Construction and supervision stages are mainly technical, so it is very important to have a Director in the high decision level with good knowledge in order to have an adequate overall supervision. I really think that this position can be created and be called Project Manager for the present housing company. Management is very important factor in the development of the company, because it will bring appropriate tools that allows control, growth and expansion.

As I explained before, for the present case study, Managing Director has the overall responsibility in the company; but there are areas that need a responsible technical person, due to the importance of the works that are done. At the present time, there are four main directions:

- Administrative and financial Division
- Legal Advisor
- Technical Division
- Supervision Division

Technical and Supervision Division must work in a co-ordinated way; with two directors, each one wants to have more power decision through a direct contact with the Managing Director. This carries many problems and many "clarifying meetings". This situation must be solve because its allows delay in payments, house delivery and lack of feedback information. Therefore it is necessary for the writer, to introduce a new technical decision level which for the following case study will be the Project Manager.

The role of the Project Manager in Covipro SA can be crucial because it implies services provided throughout the whole project, from the pre-design through final

design, cost, construction and supervision to handing over and warranty period.

The Project Manager will have the control of the design and production stages from inception to completion. Effective supervision will be possible only if there is detailed planning information for the project, therefore, it is important that the Project Manager supervises the project at each stage in order to build it ensuring the company goals.

The Project Manager will have an important role in the company, which is to maintain harmony between the design and cost division with the construction and supervision divisions in order to, finish the projects in suitable conditions. It is necessary to point out that all the planning and private consultants and different contractors carry out construction stages.

In order to improve company management it is important to reorganise the company organisation structure. After 1000 dwelling built it is important to define four main areas:

- Administrative and financial
- Technical
- Marketing
- Legal

The administrative and financial division will have the responsibility to supervise company requirements such as office location, cars, and computer maintenance staff control and all the financial support. This division will execute office payments, tax, salaries and also contractors and consultant payments previous the project manager review.

As was said, in order to improve control it is very important to define a new organisation in the technical division. The production stage which start with the project design up to the completion will have one responsible which will be the Project Manager. He will co-ordinate three main activities such as: Design supervision, Construction supervision and Final inspection and warranty.

The Design Supervision will control the design process done by different consultants, after that all the projects will have the final cost schedule for quantity surveyor. An architect heads this sub-division.

The Construction Supervision will supervise all the activities done by the contractors. This sub-division will be responsible for all the work done on site, is headed by an engineer who will control all site-supervising engineers (each project will have one). Monthly the sub-director will report the contractor's activities executed on site in order to do the payments.

After some new experiences in the course, I think it is important duty the warranty period, because ensures that all the houses are done in a proper way. Also it will be very important to create a new area headed by a senior engineer who will be responsible for the final inspection and the delivery for the clients. He is also responsible for the supervision of the warranty period.

Legal advisor has the responsibility to prepare all the contracts for staff, consultant and contractors; also any other legal requirements such as register property assistance etc.

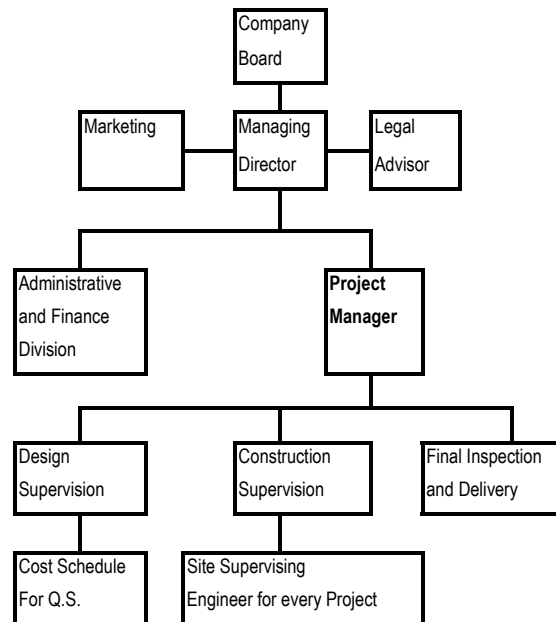
According with the government housing policies, each Ecuadorian can receive once in his life a subsidy; in order to help the buyer to receive this subsidy as well the banking procedures for financial support it is important to create a new sub-division to assist the client in a successful time. With this new company structure, I think that all the staff will know exactly what to do, their responsibilities, duties and company goals.

New company organisation

Project Management is an activity that requires the ability to co-ordinate company goals, staff and work during the cycle process of each housing project in the company. The main ingredients in this process is those related to decision making, therefore a prudent Project Manager must take into account several basic elements related to this field, they can be summarised as follow:

Any decision can only be as good as the information upon which is based.

Management's hardest task is identifying a problem; therefore decisions at any level should be taken quantitatively in order to choose the best alternative.



Control is the only possible target against which to measure performance.

Finally, motivation is more complex than simply providing more payments, human needs which requires to be satisfied include the need for participation, responsibility and job development.

Project Management in COVIPROV SA, imply the knowledge of many subjects, each one from different specialised areas, although it is important to have a strong theoretical foundation. It is through real work situations that appropriate management systems and techniques are developed. This allows the work to fulfilled in a successful manner, while still offering satisfactory

conditions for the personnel and also the improvement and expansion of the company.

Attending this course has been a great experience for me, not only in the professional field but also in the personal one because the interaction with people of different countries, which live different realities, has cleared many questions that now have good answers.

The new vision I have obtained is wider and under this topic the great results that in housing others countries have reached I hope to apply in Ecuador, considering we are a small country, with economic and social problems but very rich in natural resources as well as in its people that as every human being have the right to live in a worthy way.

I would like to point out, that the experience in Costa Rica with Fuprovi it is really interesting and possible to apply in my country; self-help construction is the right alternative for the poor people. This project can be done with two main requirements: housing subsidy policy and a small investment for training, tools and little machinery, therefore it possible to do it.

Housing in my country is becoming a dream difficult to reach, but it hasn't to be this, it is a right and as a right people has to get it.