

Re-development of Under Served Settlements in the City of Colombo, Sri Lanka

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by

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Abstract

The importance of redevelopment of under served settlements is not debatable. In the redevelopment approach the slum dwellers, instead of being evicted, share the area on which the slum is located with the planned commercial properties while the people normally cannot afford to purchase the land because of its high land value. Governments of Sri Lanka have largely focused on promoting housing for rural and urban middle-income class families, neglecting the low-income families who live in slums and shanties and account for greater percentage of population. As a result 66,000 households that are currently living in 1500 slum and shanty settlements all over the city of Colombo never had the legal rights to settle down in their encroachments. Sri Lanka has already tried out almost all the popular shelter options to address the housing problem of the slum and shanty population in the urban areas.

This problem frames this research. The main objective of the study is to develop a methodological process to evaluate the feasibility of re-development of under-served settlements in the City of Colombo, Sri Lanka, under the "Sustainable Townships Programme". To achieve this, the research aimed to find a solution to the problem of redevelopment of these underserved settlements in the City of Colombo. This study is concerned with three under-served settlements areas out of 1500 total settlements, and investigates the feasibility of their re-development according to goals and policies of the Sustainable Townships Programme.

There are many alternative schemes that could come under the category of slum redevelopment in general the concept of slum redevelopment is distinguished by five relevant redevelopment alternative strategies mostly relevant to the Sri Lankan context. A contribution to a solution of this spatial problem, applying stakeholders, analysis could indeed be generated through a process which various alternative strategies were defined and identified, which were evaluated according to a number of criteria selected by the views of the various stakeholders, who were qualified to express their priorities where preferred alternative strategy can be applied for the suitable alternative sites. The methodological process developed consisted of the following steps:

- ❖ Five strategic alternatives were generated and evaluated.
- ❖ Seven criteria were identified to evaluate the suitable development potential site for the redevelopment of underserved settlements.
- ❖ Finally the preferred alternative strategy was applied to the selected site and the feasibility of redevelopment of underserved settlement was evaluated.

The preferred strategic alternative chosen was Land Sharing, which facilitates to solve the underserved settlement problem in the City of Colombo, providing self-financing facilities, which the Government is unable to afford. The Sustainable Townships Programme could follow the developed methodological process to recognise the rights of these under served households to become owner of a house to live as a proud citizen in their own country.

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1. Introduction

1.1. Background

Sri Lanka is one of the developing countries in the Asian continent. The City of Colombo, its Prime City, continues to be the focal point of the country's urban development activity, with its strategic role it plays as an administrative, commercial and trading capital centered on its port. The Colombo Municipal Council area (with population of 790,000 in the year 2000 within its 37.3 square kilometres) has retained a land use structure similar to what was derived from the port activities in the colonial period with its related uses like warehousing and railway yards, etc.

This urban configuration has created large numbers of slum and squatter settlements. The majority of these settlements were created on encroached lands primarily owned by the government agencies. This issue has become an important issue since these informal practices continue to extend the great majority of the low-income housing stock. Although the successive governments attempt to provide housing, it has failed to compete with these illegal arrangements being practiced by the dwellers. Therefore the availability of housing, particularly for low-income groups in urban areas especially in the City of Colombo has not been kept pace with demand during the last few decades in Sri Lanka. The demand for housing has been continuously increasing due to the population growth and rapid urbanization within low-income groups since this component comprises about 50 percent of the total population. The supply of houses has been constrained by the low-income levels of the majority of urban population, high land prices and lack of financial assistance for low-income housing. As such Governments in Sri Lanka have largely focused on promoting housing for rural and urban middle-income families.

The shortage of habitable housing for low-income groups or under-served settlements in the City of Colombo is of a great concern due to its impact on this commercial hub and in enhancing the social well being of the city dwellers and the overall environmental upgrading of the city. The population density is rapidly increasing in the City of Colombo and it was, 152 persons/ha in 1971, 158 persons per/ha in 1981 (Pp/h) respectively, in contrast to the average population density of 196 persons per/ha in 1996 (City of Colombo Development Plan, 1999). It is estimated that there are about 1,500 under-served settlements in the City of Colombo with over 66,000 households or 50 percent of the total population in the city. These settlements are spread over land area of more than 10 percent of the total land area (3729 ha.), which could otherwise be used for various other urban development activities such as commercial, industrial and property development.

These deprived settlers urgently need decent homes as a first step towards attending their social and economic empowerment. At the same time, the accommodation requirement for the growing commercial, trading, and other activities in Colombo is also rising. In this context, Sustainable Townships Program (STP) has drastically planned out a programme to address this issue along with supplying economically valued lands occupied by the under served settlers. The STP will be considered as financially viable, socially acceptable, and environmentally friendly solution to these two critical problems.

Therefore this study will concentrate on how far STP policies, plans and programs could be feasible to address these two issues, and how best GIS could assist in decision support process.

1.2. Research Background

This study begins with the premise that urban (re) development of low-income settlement areas does not simply mean the physical improvement of the existing housing area and its surrounding environment. A sustainable process requires specific institutions and incentives that ensure the continuation of valued benefits and the availability of services to the citizens. Hence, it requires the awareness from both the civil society and the local government of how capital costs can be earned and invested and how best the maintenance services can be carried out. The research argues that the conceptualisation of 'development'-urbanization relationship in narrow economic terms is inadequate to address the problem of low-income urban housing, to explain the significance and dynamism of their neighbourhoods, to uphold the sustainability of livelihood of the population etc.

1.3. Terminology

The following terminologies are used in this study:

1.3.1. Under-served settlements

These settlements have been gradually developed by the invasion of Government lands and privately owned lands by individual families. These settlements have an irregular layout and can be found on along the rivers, canals and the government reservation lands. The construction quality is poor in terms of materials and techniques used. These settlements have different levels of services, depending on their age (stage) of development.

1.3.2. Redevelopment of under served settlements

In the redevelopment approach the slum dwellers, instead of being evicted, share the area on which the slum is located with the planned commercial properties while the people normally cannot afford to purchase the land because of its high land value. There are many alternative schemes that could come under the category of slum redevelopment; in general the concept of slum redevelopment.

1.4. Scope of the study

This study is concerned with three under-served settlements areas out of 1500 total settlements, and investigates the feasibility of their re-development according to goals and policies of the Sustainable Townships Programme. The study is limited to these three areas only, due to the time limitation and lack of data. The study selected subjectively three areas out of 1500 settlements areas, which are representative of the following:

- ❖ Site 1 - a site where housing units will be constructed soon, and within the port related zone
- ❖ Site 2 - a site where housing units, are presently being constructed within the mixed development zone
- ❖ Site 3 - a site in close proximity to Central Business District and within the concentrated development zone.

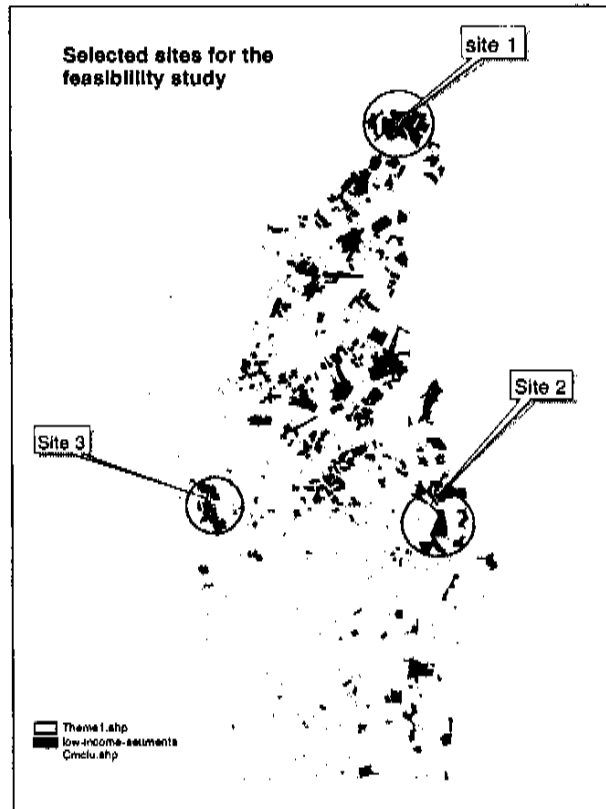


Figure 1.1 Selected three areas for the case study

1.5. Objectives of the Study

The main objective of the study is to develop a methodological process to determine the feasibility of re-development of under-served settlements under the “Sustainable Townships Programme”.

1.5.1. Specific Objectives

The specific objectives of the study are shown in Table 1.1

Table 1.1 Specific objectives and research questions

Objectives	Research Questions
❖ To review alternatives strategies available for re-development of under served settlements, which are relevant to the Colombo situation,	<ul style="list-style-type: none"> • What are the national goals and objectives of current underserved housing policy in Sri Lanka? • Who is the stakeholders involved in this underserved settlements problem? • What are the issues and determinations of relevant alternative strategies? • How do the stakeholders offer their preferences to select preferred strategic alternative? • What are the preferred alternative strategies?
❖ To select three locations of under-served settlement areas to carry-out field investigations	<ul style="list-style-type: none"> • What are the criteria follow to select three areas of the study?
❖ To build up a social and demographic profile of the area by using primary data (i.e. questionnaire)	<ul style="list-style-type: none"> • Which methods can use to create a social and demographic profile?
<ul style="list-style-type: none"> ❖ To examine the criteria to be used for the selection of suitable underserved settlements areas for redevelopment. ❖ To obtain specific data for the measurable criteria needed for the site selection 	<ul style="list-style-type: none"> • How do the stakeholders perceive the various criteria? • What are the relevant criteria being used by the stakeholders. • What is the impact of scores on the various criteria for each of alternative sites?
❖ To develop a methodological process to determine feasibility of redevelopment of selected areas.	<ul style="list-style-type: none"> • What is the appropriate methodological process to carryout the redevelopment of underserved settlements?
❖ Can the selected preferred alternative strategy be apply on the selected suitable site	<ul style="list-style-type: none"> • How does the final result contribute to an acceptable solution of the problem?

1.6. Research methodology

This section presents the conceptual model considered in the study to address the methodological process followed. The conceptual model in Figure 4.1, it shows the methodology followed to achieve the final results:

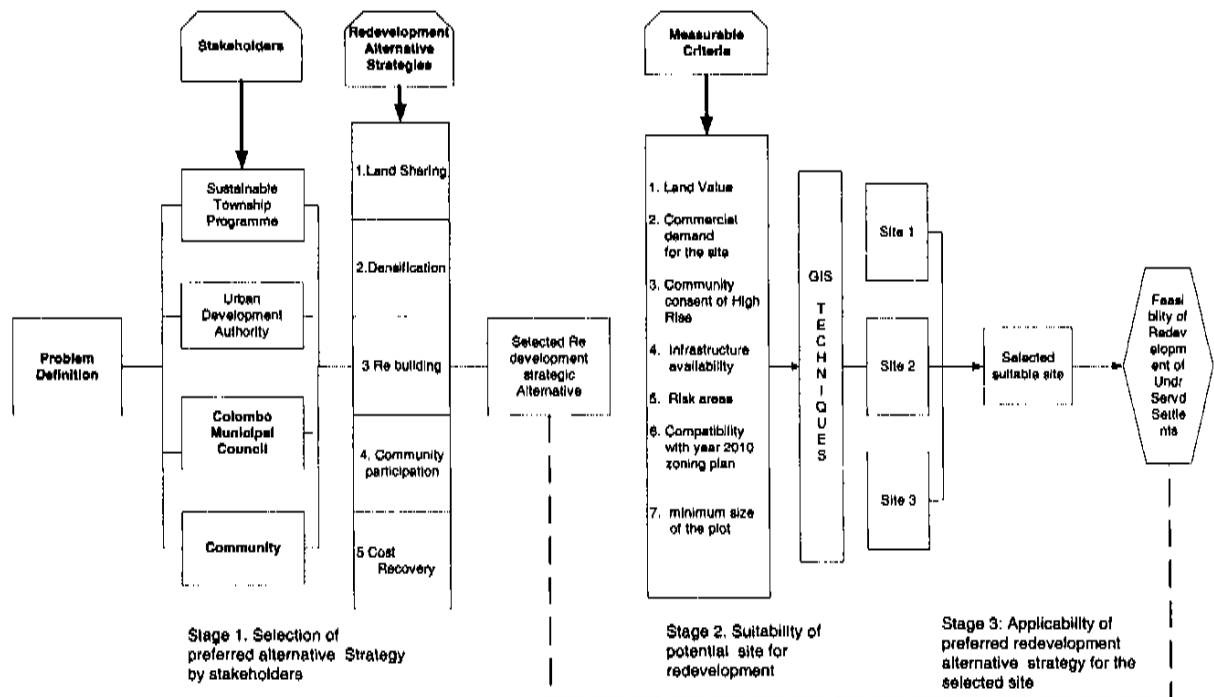


Figure 1.2 Conceptual Model

1.7. The research stages

The research work is divided into three stages. The first stage is pre fieldwork study, the identification and formulation of the problem and formulation of objectives etc. The second stage is the fieldwork data collection phase and the third stage is the post fieldwork of analysis and report writing. Details of these stages are presented in chapter 4.

2. Study area, Under Served Settlement Structure in the City of Colombo and need for Redevelopment

2.1. Introduction

This chapter introduces the characteristics of the study area and underserved settlements structure of the City of Colombo. It examines the location development of the study area and makes a comparison between the total population with the underserved population and reveals the magnitude of problems identified.

2.2. Study area

2.2.1. City of Colombo

The Colombo Municipal Council administrative area is extended over 3729 ha according to preliminary estimates, the Colombo municipal council administrative area is extended over 3729 ha. According to preliminary estimates, the population of Colombo Municipal Council area is 721,443 in the year 1994 and the projected population is 1,000,000 in 2010.

The City consists of 47 planning wards, by taking into account the main land use characteristics and the spatial distribution of economic activities and functions of the city Table 2.5. A noticeable change in land use is the reduction of land allocation for residential purpose after 1981. A further reduction in residential land use is expected to reduce from 40.0% of the total land use at present to 21.0% in the year 2010. It is expected that this reduction to be compensated through increased density of housing units with more high-rises. The availability of housing, particularly for low-income groups in urban areas has not kept pace with the demand of housing during the last few decades in Sri Lanka. This situation is worst in the capital, Colombo. The demand for housing has been continuously increasing due to the population growth and rapid urbanization. The supply of houses has been constrained by low-income levels of the majority of urban population, high land prices and lack of low cost housing financial facilities. Governments in Sri Lanka have largely focused on promoting housing for rural and urban middle-income class families, neglecting the low-income families who live in slums and shanties and account for greater percentage of population.

The study identified the locations of 3 sites of under-served settlement and investigates the feasibility of their re-development according to goals and policies of the Sustainable Townships Programme. Number of households are in these three sites are shown in Table 2.1, Fig 2.1 shows the existing Land

2.3. Under Served Settlements Structure of the City of Colombo

The Colombo Metropolitan Regional Structure Plan (CMRSP) 1998, reveals that there are 66,000 house holds within the City of Colombo living in squalid slums and shanties unfit for human beings under any standards. They represent 50 percent of the total city population (CMRSP, 1998), and live in 1506, pockets of human concentration identified as Under Served Settlements, (USS), basically encumbered on the state owned lands with no title (Table 2.2). About 390 ha of valuable prime lands in the City have been gone under this encroachment process during the past five decades. More ever they have engulfed all the environmentally sensitive areas such as low lying areas, canal and flood retention areas including the roads and railway reservations and other open spaces like green lung areas. Of the above total, nearly 11,000 households live in 249 such settlements (Table 2.4). Colombo has virtually become a slum and shanty city with very limited space environmentally friendly for urban development in future.

Nonetheless the above situation has aggravated the problem of garbage collection, canal and water body pollution. The century old sewerage system that has been designed to serve a threshold population of about 350,000 is now being used by nearly a million and collapsing. Half of the city population is unconnected for water. Since they are living mostly in government land without titles to the property and not classified, as bona-fide ratepayers, the infrastructure agencies and the CMC do not provide them the basic services. Further, this situation is responsible for creation of series of social and environmental problems despite the perpetuation of urban poverty.

Table 2.2 Underserved settlements in CMC area 1998

Settlement information	Total
No. of underserved settlements	1,506
No. of Households	66,000
Population	363,000
Extent of under served settlements in hectares	390

Source: City of Colombo Development Plan 1998

Table 2.3 Comparison between total population and the underserved population

General Population	Total land Extent (ha)	Population Density (General)	Population (USS)	%	Land Extent (ha)	Density (USS)
721443	3729	193 (p/p/ha)	363,000	50	390	930 (p/p/ha)

Table 2.4 Distribution of Designated Households and settlements

Distribution of Designated Households and settlements								
No. of Designated House holds for rehousing					No. of settlements for re housing			
Location	Envi-ronmen-tal reser-vations	Rehous-ing Sites	Urban redevelo-pment sites	Total	Environ-mental reser-vations	Rehous-ing Sites	Urban redevelo-pment sites	Total
Sahaspura	2,197	3,600	14,574	20,371	70	34	372	476
Minikelanipura	2,072	4,178	10,551	16,801	29	42	168	239
Kochchikade	-	1,868	3,982	5,850	-	39	204	243
Mayura Place	930	476	5,931	7,337	23	10	35	68
Narahenpita	1,927	361	5,166	7,454	40	10	80	130
Slave Island	3,025	159	100	3,284	77	85	96	258
Other Sites	747	830	3,599	5,176	10	13	69	92
Total	10,898	11,472	43,903	66,273	249	133	1,024	1,506

Source: Central Bank of Sri Lanka 2000

Table 2.4 shows that the Sustainable Townships programme has identified a total of 10,898 households living on the reservations, 11,472 living on the encumbered lands within the designated areas and over 43,000 families encumbered on prime locations in the City. Of the total underserved settlements in the City of Colombo (1500), 17 percent is located on environmental and road reservations and 15 percent are within the areas identified for the development of compact Townships, while large majority (68%) are on prime locations identified for the Urban Redevelopment programme through the Sustainable Townships Programme.

2.4. Definition of the problem

"The dramatic growth in the population of urban areas in many less developed countries has not been matched by the provision of adequate shelter" (Cotton & Franceys, 1991). This aspect alone has, however, not deterred people from migrating to the urban areas where life is perceived to be better off than in the rural areas. The resulting population increase, regardless of the causative factors, has resulted in increasing numbers of people seeking some form of shelter on informal unimproved housing settlements which lack basic social and physical amenities" (Cotton & Franceys, 1991). It implies the most of the cities of the third world countries; the proportion of inhabitants living in such illegal settlements is increasing. The settlements are enormously diverse, but their origins, their development, their permanence and even their basic services all arise from the fact that many of the city's people have no other means of housing themselves. They cannot afford even the cheapest, smallest legal house, room or housing plot with access to water and sanitation. The poorer the family, the greater its need for a central location for cheap and quick access to jobs or sources of income.

Informal settlements are a global phenomenon and occur mostly, but not exclusively, in Third world but also in developed countries (Durand, 1996; Fourie, 1993, p. 4; Payne, 1989; p. 1). The literature shows that the terms squatting and informal settlements are used interchangeably (Fourie, 1993; Harri-

son, 1992, The Urban foundation 1991, Peil, M. and Sada, P., 1984). The large percentage of urban residence in many developing countries lives in irregular or informal settlements. The expansion of most third world cities is unplanned and uncontrolled, but the illegal settlements themselves often match the real, needs and priorities of the poor far better than government schemes supposedly meant to help them. While this is viewed as a problem by the people in such settlements, there has been changing views regarding such settlements by governments, donor communities and Non-Government Organizations (NGOs)

Recent studies revealed that there are about 1,500 under served settlements in the City of Colombo with over 66, 000 house holds within the CMC area living in squalid slums and shanties unfit for human beings under any standards, on 50 percent of the total population of 794360 in the year 2000. Almost all these settlements are illegal constructions and located on encroached lands belongs to various government agencies. Of the above total, nearly 11,000 households live in 249 such settlements, occupying over 150 acres designated as reservations.

2.5. Urban poor and the Land

Unplanned settlements have various degrees of illegality depending on land tenure variations and the nature of development. However it can be said that all unplanned settlements have illegality associated with them. This illegality refers to:

- ❖ Illegal occupation of land,
- ❖ Non-adherence to building codes and infrastructure standards,
- ❖ Illegality of the land and non-conformity to building standards and codes as well as planning.
- ❖ The local authority recognition of the tenure rights of the community does not guarantee that the community would be granted tenure right where the settlements are currently situated.

Further expansion of squatter settlements could is not be encouraged due to the restriction made under the zoning and proposed land use structures stipulated by the City of Colombo Development Plan 1999.

The existing and future land use pattern, as indicated in Table 2.5, shows a noticeable change in land use structure, which reduces land allocated for residential purposes after 1977. A further reduction in residential land use is expected to reduce from 40% of the total land use at present to 21% in the year 2010. However it is expected that this reduction will be compensated through increased density of housing units. In other words housing development in the future will give priority to intensive development with more high-rise housing schemes to supplement the total lands extent needed for increasing population in the future. Allocation of additional lands for commercial and mixed development in the city is expected to come from land that has become available due to relocation of activities and limited lands being allocated for housing development in the city (City of Colombo development plan 1998).

Table 2.5 Land Use Distribution Pattern (1977-2010)

Land use	Extent (ha.)		
	Year 1977	Year 1996	Year 2010
Residential	1,687	1,402	780
Commercial	201	225	1,052
Institutional	465	411	238
Transport	610	650	700
Port Related	-	-	506
Open Spaces	142	262	355
Water	98	98	98
Others	375	532	
Total	3,729	3,729	3,729

Source; City of Colombo Development Plan 1998

2.6. Need for redevelopment

During the past five decades no government or city authority could find a feasible solution to the slum and shanty problem. As a result half backed ad hoc solutions such as slum and shanty upgrading, on site- infrastructure development in USS, land regularisations etc, were adopted commonly. Still the National Housing Development authority and Colombo Municipal Council spend colossal amounts of public funds to carry these approaches. None of these approaches have been productive and efficient in urban and social development prospective. Perpetuation of poverty, land fragmentation and destruction of common amenities create huge economic and environmental problems on one hand, and threaten the entire fabric of social security and the sustainability of the city on the other.

Sri Lanka has already tried out almost all the popular shelter approaches. These have shown some success in the rural areas where land, materials and labour are not considered as scarce resources. However similar approaches have miserably failed in the urban areas where land is most scarce and the basics of the social and economic dynamics are governed by the market mechanisms. Especially in the urban areas the state led interventionist development strategies based on provider and enabling approaches have failed largely because the shelter and property ownership is considered as a commodity in the market place rather than meeting a basic need. For an example many relocation houses given to the slum and shanty dwellers have sold to a third party despite all the restrictions and conditions to prevent such illegal transactions. Similarly in many of the regularised settlements new encroachments and illegal fragmentation of plots continue, as this process would open a new avenue to make easy money in the market place. However the policy makers still did not take this situation into consideration, and continue to persuade common shelter approaches just to see the failure of them. Therefore, no breakthrough was found so far to tackle this problem, as huge amount of financing around Rs. 50 billion (Central Bank of Sri Lanka-annual report, 2000) is needed to address the total issue. Therefore it is of vital importance to identify proper market based shelter development strategies for the urban poor, within a broader urban development context.

3. Sustainable Townships Programme and Redevelopment of Under Served Settlements

3.1. Introduction

In this chapter the first section reveals the Sustainable Townships Programme; its concept and the policy framework. Second section provides literature of the identified problem, alternative strategies of redevelopment and stakeholders' participation of redevelopment programme. Third section reveals the issues of the redevelopment of under served settlements programme.

3.2. Sustainable Townships Programme

The presidential taskforce on housing and urban development was appointed in mid 1998 to draw up a macro policy framework and an action programme for both short and long term physical development of Sri Lanka with a view to improving quality of life of its inhabitants to meet the aspiration of 21st century. It has made strong recommendations to the government of Sri Lanka in general, and the ministry of Urban Development, Construction and public Utilities in particular, policies and strategies to adopt urban led growth.

Keeping in line with the recommendations guide lines, policies, and strategies the scope and the vision of the Government of Sri Lanka, The Sustainable Townships Programme promptly identified a new Housing and urban development programme to fulfil the aspirations of the Government in General, and the Ministry of Urban Development, Construction and Public Utilities in particular.

The Sustainable Townships Programme aims to rehouse those poor families who are encumbered with no titles on the valuable lands within the City of Colombo in modern compact townships, and thereby to liberate over three forth of such lands for urban redevelopment. (The Central Bank of Sri Lanka, annual report, 2000). Through sale of these liberated lands, the STP will find necessary capital to invest in the rehousing programme.

3.2.1. Mission

The mission of the STP is to enter the next millennium with a vision to fulfil the shelter aspirations of the urban poor, and to create socially acceptable, economically viable, technically feasible, and environmentally friendly, housing, urban and spatial development to ensure a sustainable living in an environment, beneficial to CMC area in particular, and to the Nation as a whole. (The Central Bank of Sri Lanka, annual report, 2000).

3.2.2. Re-housing program

Rehousing is the term given to the process of placing the slum and shanty dwellers in modern housing. The planning units of STP and UDA select the slum and shanty dweller locations. Rehousing programme will go forward only where the STP obtains complete consent by all dwellers in the location (STP policy paper, 2000).

3.3. Sustainable Townships programme: policy framework

Unique implementation strategy of the STP is a market- based process directed to establishing key commercial markets. The STP is carrying out two major programmes;

Redevelopment programme; to re house over 66,000 households living in slums and shanties in the City of Colombo in modern compact townships within 5-7 year period.

Urban development programme; to commit lands liberated through the rehousing programme for urban renewal projects and thereby to generate capital for financing the rehousing programme
Sustainable Townships Programme is based on the series of new concepts and different from all previous urban shelter development programmes in the past. These new innovative concepts are:

- Self financing instead of state funding
- Voluntary relocation instead of forced eviction
- Bottom up instead of top down approach.
- Full ownership of the apartment instead of conditional tenure ship.
- Programme is offered to all households living in one particular selected settlement rather than selecting few beneficiaries among them on political, ethnic, or other considerations
- Rehousing instead of on-site upgrading
- Market based instead of provider and welfare approach.
- Enabling the urban poor into the main stream of the urban economy.

Firstly the STP will provide an opportunity to each of these under-served families to become owners of a house in a condominium, with all basic facilities, free of charge. Secondly STP will provide the accommodation needs of the growing commercial trading and other activities in Central Business District in the City of Colombo.

The STP is expected to be self-financing. The lands freed from the re-housing programme will be utilized for urban and commercial development programmes. Earnings from such developments will be utilized to finance the construction of houses and the STP will promote the real estate exchange, mortgage backed security markets and the construction industry. To initiate this programme the STP will expect grants from the trustee companies and the government Treasury loans. The government will launch this programme under the theme of "Housing for people and lands for urban development".

3.4. Major issues of the programme

3.4.1. Critique of the STP policies



"I still do not understand high-rise living I walked to the elevator this morning and wasn't even there". (Angle, 1983).

Figure 3.1 Social resistance of high-rise

- ❖ In terms of STP policies of finance, it is purely on commercial principles; it cannot relocate the families located along the main roads, railroads, and canals. There are no economic values to these lands, although they are environmentally valuable. These households have to be served under other programs.
- ❖ The STP policy did not consider the implications it will have on social and cultural aspect on the community. What is missed is the effect of the introduction of these values on traditional social relationships in existing communities. Often low-income communities tightly knit social organizations, which have gradually developed over time. The redevelopment trends to destroy these communities without their replacement with other social values and social controls. To maintain social integration, the policy should address such shortcomings with regard to forestall coexistence of beneficially of such policy. Where STP strategy requires high rise high density residential building, there may be social resistance
- ❖ STP does not discuss small (below 6 perches) low-income settlement areas. In term of this redevelopment programme it is partly commercial and partly high-rise development. But dwellers from small areas should be relocated where the housing projects will be undergone. "Subsidies on a large scale for housing the poor no longer appear feasible. Slum redevelopment must, therefore, proceed on a cost recovery basis. The cost of construction must be recovered from the sale of properties. If there are to be subsidies, they must be sufficiently low to afford repetition of the program in other locations in the urban area." (Angle, 1983). It is emphasized for under served settlers redevelopment to be economically feasible, external subsidies minimized and cross subsidies must be maximized.

- ❖ “The difficulty with slum reconstruction is that it requires involvement in the commercial sector as well as in the low income housing field. While private developers are enthusiastic and knowledgeable when it comes to commercial operations, they are not keen to become involved in low-income housing. The government on the other hand, as well as non-profit voluntary organizations, can effectively work on low income housing, but is not particularly experienced in market operations. The latter are less efficient and can waste all or most of the potential profits required for cross subsidies by their inefficient management of construction and sale of properties”. (Angel, 1983). The author further discusses trends in the failure of this redevelopment programme. He concludes that STP should be stronger to enhancement of the project implementation.

3.5. Alternative strategies for Redevelopment

This section introduces the alternatives that were generated from several approaches of addressing the problem. The alternative strategies depict varying fulfilments of the objectives of redevelopment of under-served settlements. Further explains the strategic alternatives that were generated from literature review and the stakeholders' approaches of addressing the problem. In chapter 4, section 4.3 presented the more detail of alternative strategies.

3.6. Considered strategic alternatives for redevelopment of under served settlements

This Redevelopment method is referred to as “Slum Reconstruction”, which is the process of rehousing slum dwellers on land, which they currently occupy (Angel, 1983). While there are many alternative schemes that could come under the category of slum redevelopment, the following five important strategic alternatives were considered essential in redevelopment of Under Served Settlements (USS).

- (a) **Land sharing.** Part of the slum settlements will be cleared for the new development of commercial activities, and slum dwellers housed on the remaining part of the site.
- (b) **Densification:** Increase in residential densities, either through infilling of vacant plots or through rebuilding of houses instead of existing structures.
- (c) **Rebuilding:** Construction of high-density row houses to accommodate most of the dwellers settled in the particular location occupying a large extent of land:
- (d) **Total Community participation:** The transformation of existing slums into permanent residential communities with the active participation of people in decision making process, particularly during negotiation, allocation of plots, demolition of structures and reconstruction.
- (e) **Cost recovery.** In order for slum redevelopment to be economically feasible, it is considered that essential external subsidies should be minimized and cross subsidies must be maximized. The earnings from the sale of lands for commercial projects are expected to be utilized for construction of houses.

This study is to design a decision support system to evaluate the feasibility of re housing of low-income households (numbering over 66,000) currently living in slums and shanties in Colombo under the Sustainable Townships programme (fully developed modern compact townships, without burdening the government). The methodology will take into account the five principles in order to evaluate the feasibility of the proposed Sustainable Townships Programme.

According to Turner (1990.) "Organization, finance, land, planning, technical, building and maintenance are the common barriers to solve the housing problems, which can be determined in the housing problem." Reference to the flow chart given below shows the process of underserved housing (homeless) to obtaining a good shelter. It could be considered as barriers that have overcome to achieve the better shelter.

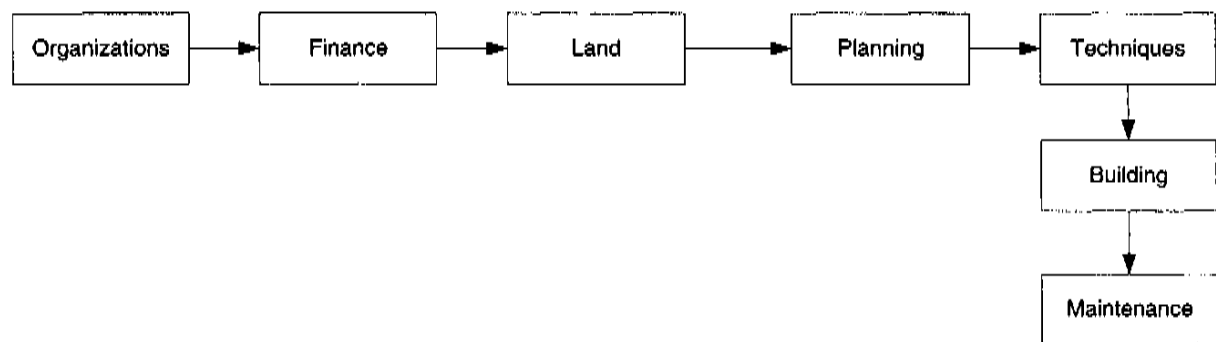


Figure 3.2 Barriers common to all housing programmes, Turner, (1990)

The research will introduce a methodological process to overcome the barriers. Such as;

- ❖ To overcome the planning barrier by determining the government low-income housing policy and the policy of the Sustainable Townships Programme.
- ❖ To overcome the land barrier by analysing the factors that will be developed through a case study.

3.7. Stakeholders and community participation in the programme

The establishment of the Sustainable Townships Programme of redevelopment of underserved settlements involves many people and organisations. Table 3.1 presents relevant stakeholders, their composition and the description of responsibilities.

Table 3.1 Relevant stakeholders, their composition and description

Stakeholders	Composition	Description,
Sustainable Townships Programme	Composed of the Chairman, The general secretary, City planners, financial advisors engineers and experts	<p>Description:</p> <p>To practice market –based solution to finance the re housing programme of the target communities who currently live on the USS lands, with no financial burden to both the state and the beneficiaries.</p> <p>To offer different market based shelter options to the poor communities encumbered on the USS, and opportunities for the private sector to join urban development programmes based on the lands liberated through the redevelopment process.</p> <p>To Implement new delivery mechanisms enabling effective community mobility through a system pro-poor marketing strategy and opening the programme for private sector, real estate development, and financing on a participation and partnership basis according to the prudent market principals.</p>
Urban Development Authority	Composed by the Chairman, director general, Directors, city planners, engineers, environmental specialists	<p>Description:</p> <p>To carry out integrated planning and physical development within the declared areas.</p> <p>To implement related development programmes, activities and services in such areas that are consistent with integrated planning.</p> <p>To preparation and implementation of development plans and capital investment plans approved by the government.</p> <p>To undertake the execution of development projects and schemes approved by the government.</p> <p>To formulate and implement an urban land use policy.</p> <p>To formulate and execute housing schemes.</p> <p>To cause the clearance of slum and shanty areas and to undertake the development of such areas.</p>

Colombo Municipal Council	<p>Composed of the Mayor, Deputy Mayor and elected members of the different political parties. They are elected democratically in period of every five years.</p> <p>There are Commissioners, city planners, Engineers, and Technical assistants.</p>	<p>To carry out integrated planning and physical development within the municipal council areas.</p> <p>To implement related development programmes, activities and services in such areas that are consistent with integrated planning.</p> <p>To prepare and implement development plans and capital investment plans approved by the government.</p> <p>To undertake the execution of development projects and schemes approved by the government.</p> <p>To formulate and implement an urban land use policy.</p> <p>To formulate and execute housing schemes.</p> <p>To cause the clearance of slum and shanty areas and to undertake the development of such areas.</p>
Community	Members of the affected groups or beneficiaries	<p>Beneficiaries will individually choose the building that they want to move, in non market-based programmes, where community does not have the purchasing power at individual levels, would certainly prefer to bargain as a whole community in a collective spirit. Neither the members of the community, nor the local politicians will be able to influence the individual decision in this process of the beneficiaries</p>

4. Methodology

4.1. Introduction

Based on the problem description, literature review and analysis of the historical processes about the problem situation, this chapter describes the methodology followed in the study. The first section presents the conceptual model considered in the study to address the methodological process. The second section is concerned with the analysis of the stakeholders' participation. The next section considers the design of strategic alternative solutions to be evaluated: the fourth section is about the selection and definition of relevant criteria to use in the evaluation of the different alternative strategies proposed. In this chapter, the results for the first three sections are also presented. The discussion about these results is presented in chapter five.

4.2. Conceptual Model

This section presents the conceptual model considered in the study to address the methodological process followed, which is initiated with the generation of a discrete set of alternatives, the formulation of the set of criteria, and the evaluation of the impact of each alternative strategy on every criterion. The estimated impact of each alternative on every criterion is organized in a decision table. The conceptual model especially focused on GIS applications. The conceptual model in Figure 4.1 shows the methodology followed to achieve the main objective of the study. The methodology consists of three stages, namely:

- Stage 1:** Selection of the preferred redevelopment alternative strategy.
- Stage 2:** Selection of the suitable potential site for the application of the preferred alternative strategies
- Stage 3:** Application of the preferred alternative strategy for the selected suitable site to evaluate the feasibility of redevelopment. (This stage will be discussed on chapter 5)

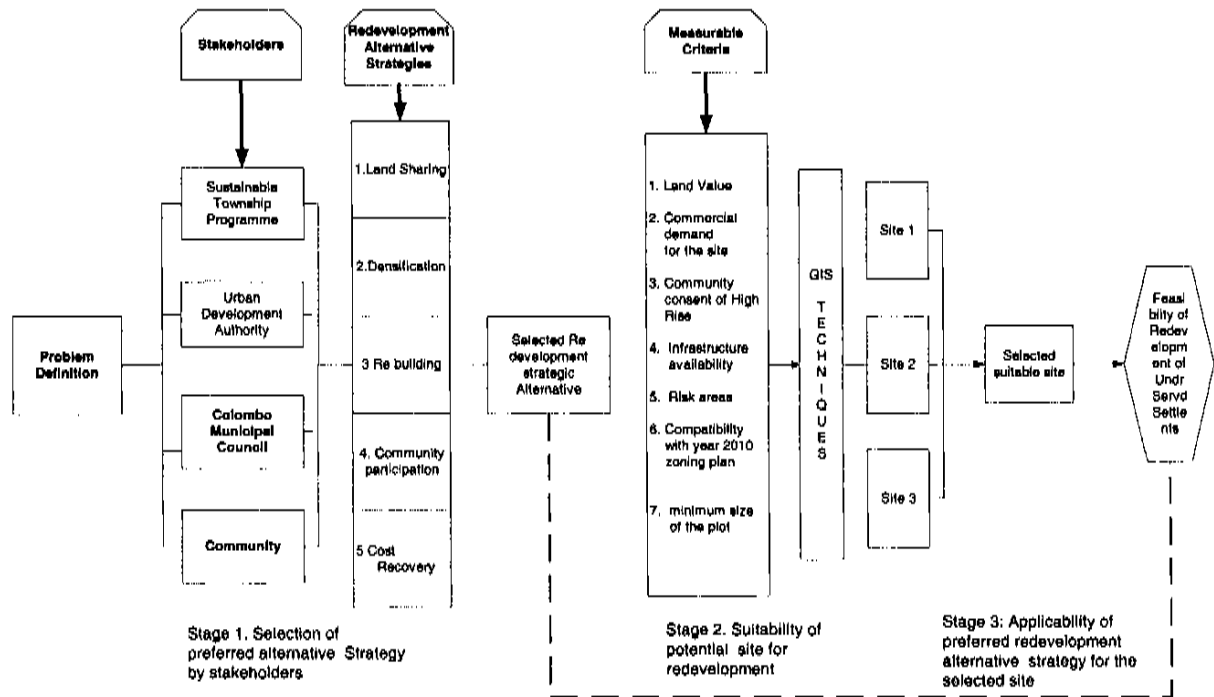


Figure 4.1 General Conceptual Model

4.3. Stage1: Selection of the preferred alternative strategies

4.3.1. Definition and Identification of stakeholders

The establishment of the program of Redevelopment of under-served settlements has involved many people and organizations: relevant stakeholders were identified to participate in the study. The stakeholders were identified by the researcher base on the following criteria:

- ❖ Their involvement in, and relation to, the problem of underserved settlements
- ❖ Their current participation in different meetings concerning the problem identified

However there are several relevant stakeholders (Table 4.1), the need to group all of them and to estimate their interest and positions was achieved through literature review. In this way, according to Vincke, 1994; Bana, 1980; two basic categories of stakeholders were defined:

- (a) Standard Stakeholders – They are those who have the legitimate responsibility to participate in the process. They include city planners, experts, managers, engineers, and analysts responsible for preparation and managing the process.
- (b) Interest Groups – They comprise political parties, community organizations, or residents in the affected areas.

The steps to identify relevant stakeholders are described in sequence according to the process showed in the conceptual model and specified according to the activities developed during the pre fieldwork and fieldwork stages.

4.3.2. Activities before fieldwork

- ❖ Selection and Identification of the potential stakeholders involved in the research, according to their participation in the study based on literature and historic review of the problem.
- ❖ Identification of the stakeholder categories.
- ❖ Identification of the relevant stakeholder from each category to participate in the study (analysis of their functions, objectives and historic participation in the problem).
- ❖ Relevant stakeholders were identified considering the following criteria:
 - Literature review and the historic participation of the stakeholders in the problem.
 - Representativeness and the legitimacy of the stakeholders.
 - Availability and interest of the stakeholders to participate

4.3.3. Activities during fieldwork

- ❖ Establish contact with the selected stakeholders
 - Bi-lateral meeting with the stakeholders to confirm their participation in the study. These first opportunities were also utilized to introduce the research topic
- ❖ Selection and identification of the final list of stakeholders' participation

Based on the discussions and negotiations with the stakeholders, applying the above-mentioned criteria, the relevant stakeholders were identified and consensuses were achieved on the procedure, objectives and methodology to follow. The relevant stakeholders are presented in table 4.1.

Table 4.1 Identified relevant identified Stakeholders

Category	Stakeholder
Standard stake holders (decision making and implementation)	1. Sustainable Townships Programme 2. Urban Development Authority 3. National Housing development authority 4. Colombo Municipal Council 5. Other Experts
Interest group	1. Residents of the study area 2. Community leaders

Following the above-mentioned steps, the stakeholders were contacted and their availability and willingness to participate in the research was verified.

This resulted in:

- ❖ Some of the government representatives were not available and difficult to contact to participate in the study because of the difficult political situation prevailing in the study area during the fieldwork stage.
- ❖ The representatives of the illegal settlements are difficult to contact due to their daytime activities.
- ❖ Since the urban Development Authority and the municipal council had the same objectives and position about the situation, they were agreeing following and expressing their positions.
- ❖ Other stakeholders were available to participate.
- ❖ The final list of stakeholders participating in the study is presented as follows in table 4.1

Table 4.2 Final list of stakeholders

	Stakeholders
1	Sustainable Townships Programme
2	Urban Development Authority
3	Colombo Municipal council
4	Community leaders

4.3.4. Stakeholders' participation

Sustainable Townships Programme

Considering the policies of the Sustainable Townships programme is the main authority of the redevelopment of underserved settlements. The aim of this programme to re-house all deprived families who are encumbered with no titles on the valuable lands within the City of Colombo in modern compact townships and thereby to liberate over three fourth of such lands for redevelopment. Through the sale of those liberated lands, the STP will find necessary capital to invest the rehousing programme, making it not only a self-financing, but also fully market based and private sector driven programme. STP actively participated for this study as the key stakeholder of the study.

Urban Development Authority

The Urban Development Authority (UDA) is a multi-disciplinary organization engaged in urban planning and sustainable urban development in Sri Lanka. UDA is responsible for the planning and development of urban areas throughout the country. STP has to follow the UDA development regulations for their Townships programmes. Officials including chairman of the Urban Development Authority participated as one of the main stakeholders of this study.

Colombo Municipal Council

The Colombo Municipal Council is the main institution responsible for development of the City in various aspects to meet the residents' basic requirements. Development of urban infrastructure with long term, integrated perspective and launching comprehensive urban development plans for the City of Colombo. CMC continues planning projects for the constructions and renewal of housing, providing basic infrastructure facilities, and the improvements of social, cultural and environment. Furthermore CMC provides technical assistance and supervision in the implementation of projects funded by other institutions.

The population density is rapidly increasing in Colombo City and it was nearly 19,000 persons per sq. km. by end of 1998. The housing problems of urban low-income families, who live in slum and shanties, have become a serious economic, social and environmental issue to the Colombo Municipal Council. Clearing of slum and shanty areas and to enhance the urban development are major responsibilities of CMC. On this perspective Colombo Municipal Council is one of the relevant stakeholders of the redevelopment programme of underserved settlements.

Community Participation

Community participation is essential for slum redevelopment to be successful. In fact, total community participation is necessary, involving all households in the community in the process of redevelopment. Participation of community members is necessary in a number of key decisions during the reconstruction.

tion process. In some decisions it appears to be mandatory, and in others it can be introduced to strengthen the confidence of the people, and to build trust and corporation among people and the initiators of the program. The decisions in such participation appears to be necessary are;

- ❖ Identification of bona-fide community members;
- ❖ Selection of leaders an allocation of responsibilities;
- ❖ Negotiations with the government and the related agencies
- ❖ Agreement on layout and house design;

Failure to involve the people in any of these decision areas may result in serious errors, as well as in resistance of community members to participate actively in those stages where their resistance may endanger the success of the redevelopment programme. The entire process of redevelopment involves the community of the area and requires the consensus and the participation of the community at all stages of redevelopment. During the fieldwork study community leaders participation can be considered as their contribution to get the success of this study. Community leaders participated as representatives of the community.

4.3.5. Private Participation of this programme

In order to undertake the operational aspects of the programme and to guarantee it's smooth navigation, a new company called Real Estate Exchange pvt. Ltd. (REEL) has been formed with representations from key agencies. Accordingly, the STP of the Ministry of Housing and Urban development Authority (UDA), National Housing Development Authority (NHDA) and Colombo Municipal Council have become partners of REEL. As they management arm of the STP, REEL will manage the entire commercial as well as the construction aspects of the programme. Private sector developers and other special service agencies will directly participate in the construction of high-rise flats for the beneficiaries

Agreements and negotiations of stakeholders' participation;

Since the decision-making involves a process, agreements were achieved at the beginning of the work. These agreements are as follows;

- ❖ Possible data sources to use
- ❖ Acceptance m to solve, objectives, methodology and expected results to achieve.
- ❖ Data an of the participation of a group of experts who are providing specific data of it is required
- ❖ A representativeness and legitimacy of the stakeholders' participation on the process.

Once the process and agreements through bilateral meetings had been carried out, table 3.1 in chapter 3 presents relevant stakeholders, their composition and description of the study research.

4.3.6. Level of importance of the stakeholders

The identified stakeholders have the same level of importance.

4.3.7. Participation and Legitimacy of the stakeholders

Most of the stakeholders are official representatives of their institutions, organizations and interest group in relation to the problem of redevelopment of under-served settlements. Since they are participating in a decision process for a solution to the problem of underserved settlements.

4.3.8. Skills and Knowledge of the stakeholders

The stakeholders understand the context and the matter of the study, and have the knowledge and skill to participate following the methodological process proposed. According to the Martin, (1975), experiments show that the capacity of the human memory to analyse and evaluate alternative strategies is limited. In order to generate suitable solutions to the problem, development of a number of alternatives were considered as an important aspect. Martin suggested that around seven alternative strategies should be considered for arriving at one solution. However in this research five basic alternative strategies discussed to be considered by the stakeholders.

4.3.9. Availability and motivation of the stakeholders to participate

Stakeholders as decision makers represented with a closed agenda, it is assumed they have the motivation, willingness and available time to participate during the required time for the study.

4.3.10. Design and Formulation of strategic alternatives

Following steps were organised in to pre- fieldwork stage activities.

Step 1.

The analysis of the general context of the study area

- ❖ The knowledge about the problem situation through the literature and historical process of the problem situation review
- ❖ The main concerns in the problem context
- ❖ The main possible impacts
- ❖ The position of the stakeholders
- ❖ The pros and cons
- ❖ The activities considered
- ❖ Assumptions in the development of strategic alternatives

Step 2.

Analysis of the position of various stakeholders about the problem of underserved settlements through the literature and, review of the history of the problem.

- ❖ The interest and needs of the stakeholders
- ❖ The position of the stakeholders
- ❖ The influence of the stakeholders

Step 3.**Alternative strategies developed are presented to the stakeholders**

The alternative strategies are presented through the bilateral meetings and each one is explained to the stakeholders and additional visual materials and GIS operations are explained

Step 4.**Feedback from the stakeholders and process of analysis and negotiations**

The stakeholders were given with questionnaires with four questions for each alternative strategy. From their answers to the questionnaire and through discussions with them, their preferences were determined and in relation to their answers and their opinions, which came from the discussions, preferences were weighted and final alternative strategies that are relevant for the study were selected.

Step 5.**Definition of the final set of alternative strategies to be evaluated**

The stakeholders were in a position about the acceptable alternative strategies to be evaluated; the process of evaluation of them was initiated mainly by the questionnaire provided and the feedback. In order to have an adequate understanding of the alternative strategies accepted to evaluate, and overview of them presented in a general way, followed by detailed explanations.

4.4. Alternatives for the redevelopment**4.4.1. General views of the strategic alternatives developed****4.4.1.1 Alternative strategies**

The alternative strategies or choice possibilities were generated from several approaches of addressing the problem. The alternatives depict varying fulfilments of the objectives of redevelopment of underserved settlements. They try to incorporate the interests of all the stakeholder groups and to select the preferred alternative. Experiments about the capacity of the human memory to analyse and evaluate alternative strategies are limited (Martin, 1975). In order to generate suitable solutions to the problem, development of a number of alternatives were considered as an important aspect.

The alternative strategies were generated from literature review and stakeholders approaches of addressing the problem. The alternative strategies depict varying fulfilment of the objectives for determining a possible methodology to identify the feasibility of redevelopment of underserved settlements in the City of Colombo. In this research five basic alternative strategies are discussed based on the literature review and considering the stakeholders views.

4.4.2. Description of the basic alternative strategies**4.4.2.1. Alternative strategy 1: Land sharing**

The principles of land sharing requires that the part of the slum settlements be cleared for the development of commercial activities, and that slum dwellers be re-housed on the remaining part of the site. Land sharing means that slum dwellers, instead of being evicted, share the area on which the slum is located with the planned commercial properties. While the people normally cannot afford to purchase a land because of its high market value, be able to own part of it, if the rest of the land is sold for

commercial property development, and if that development can generate sufficient surplus revenues to bear the major burden of the construction of housing units to make projects financial feasible. The basic implementation strategy is to offer re-housing option for all the households currently sitting on under served settlements, basically no titles to the lands.

4.4.2.2. Alternative strategy 2: Densification

Redevelopment of slum dwellers on smaller plot of land requires an increase in residential densities, either through infilling of vacant plots or through rebuilding of existing locations. Rebuilding with high-rise flats involves clearing the old houses and reconstructing the area with either high-rise flats or high density, low rise houses. In general, a number of high-rise arrangements can be designed to reach densities similar to those of four-storey apartment buildings. From the point of view of residents, row houses are to be preferred to walk-up their apartment buildings. Government or the beneficiaries have to bear the financial cost of constructing these apartments. Finally, in case of densification there are not sufficient financial resources in developing countries to build high rises for the entire community.

4.4.2.3. Alternative strategy 3: Rebuilding

In many cases, rebuilding will require the demolition of existing structures and rebuilding at higher densities. High-density row houses will allow for sufficient densities in the majority cases. Rebuilding on the other hand, can better respond to the need for densification, and, particularly when the quality of existing housing is low, it can produce housing at higher standards. Higher standards of housing can meet the rising expectations of residents, and can move toward meeting the codes and standards of municipal authorities.

Once plans and agreements are finalised, the residents demolish their old houses and build temporary shelters on nearby land specially allocated for this purpose by the municipality. Residents then proceed to build new houses on the method of row houses with four or five stories, on the same structures in the plan. Local banks provide loans for the purchase of the building materials, and the municipality supervises the quality of construction. Building material loans are provided in stages. To begin with, residents themselves buy materials for foundations which, which once completed, are considered by the banks as down payments. The banks then provide staged loans, geared toward the progress of the construction. The municipality has to provide ownership or lease agreement of the lands for the deprived families as a provision of guarantee to the bank.

4.4.2.4. Alternative strategy 4: Total Community participation

The transformation of existing slums into permanent residential communities will require the active participation of people in decision making, particularly during negotiation, allocation of plots, demolition of structures and reconstruction. The transformation of existing slums into permanent residential communities will require the active participation of;

- ❖ Community in decision making, particularly negotiations;
- ❖ Selection of leaders and allocation of responsibilities;
- ❖ Negotiations with relevant organisations;
- ❖ Allocation of plots among the house holders;

- ❖ Agreement on contract for loans, land tenure and work commitments;
- ❖ Organisation of construction work
- ❖ Clearing of the site and erection of the temporary shelter;
- ❖ Self help house building;
- ❖ Settlement of disputes;
- ❖ Initiation of community development activities;

Most slum houses are built with the participation of the residents, and re-housing can take advantage of the residents' participation in the construction. In a self-help scheme, individual families can assume more direct responsibility for managing and working on their houses, thus reducing the burden of managing and working on their houses, thus reducing the burden of management by outside organisation. Careful planning and agreement on all-important issues prior to the initiation of clearance and reconstruction will be essential to success of the project. Once clearance and reconstruction actually begin, any delay will limit the chances of the project succeeding in economic terms. Losses, waste and high interest payments may endanger the chances of attaining cost recovery and thus curtail the possibilities of replacing the project on a large scale in other locations in the city.

4.4.2.5. Alternative strategy 5: Cost recovery

For slum redevelopment to be economically feasible, external subsidies must be minimized and cross subsidies maximized. The earnings from the sale of lands for commercial projects would be utilized for the construction of houses (Angel, 1983). There is currently no feasible preference to eviction and no hope for the slum dwellers to be able to stay in the area once the government decides to develop these lands according to their development plans. For slum redevelopment to be a feasible option, it should be replicable through out the city. The main reason for the failure of public housing programs in the past has been the need for large subsidies in order to make up the difference between what the government and the residents can afford to pay and what the project cost to construct. On that basis, slum redevelopment must, proceed on a cost recovery basis. The cost of construction must be recovered from the sale of properties.

For cost recovery in slum redevelopment to become a reality, six conditions must be met;

- ❖ A good price must be negotiated for land
- ❖ Cost of construction must be controlled
- ❖ Commercial properties must be effectively marketed
- ❖ Cross subsidies must be maximised
- ❖ Community consent to go away from their premises

This alternative strategy requires that existing residents be re-housed off-land. Most slum residents may not be able to afford the price of land, and requires the construction of houses and sale of commercial properties on site, and the cross subsidizing of the cost of construction of housing from the surplus profit on the sale of properties in the open market.

4.5. To select preferred alternative strategy

The selection of the preferred alternative strategy for the redevelopment of under-served settlements is done by assigning weights to the available alternative strategies. With respect to the preferences of the stakeholders, following have to be taken into consideration.

- ❖ No financial burden to the government
- ❖ No financial burden to the beneficiaries

The selection of the best strategic alternative among the stakeholders by obtaining their preferences is presented in table 4.2. It clearly shows the distribution pattern of the stakeholders' preferences to alternatives. Each arrow has four answers; Scale values are assigned based on the answers.

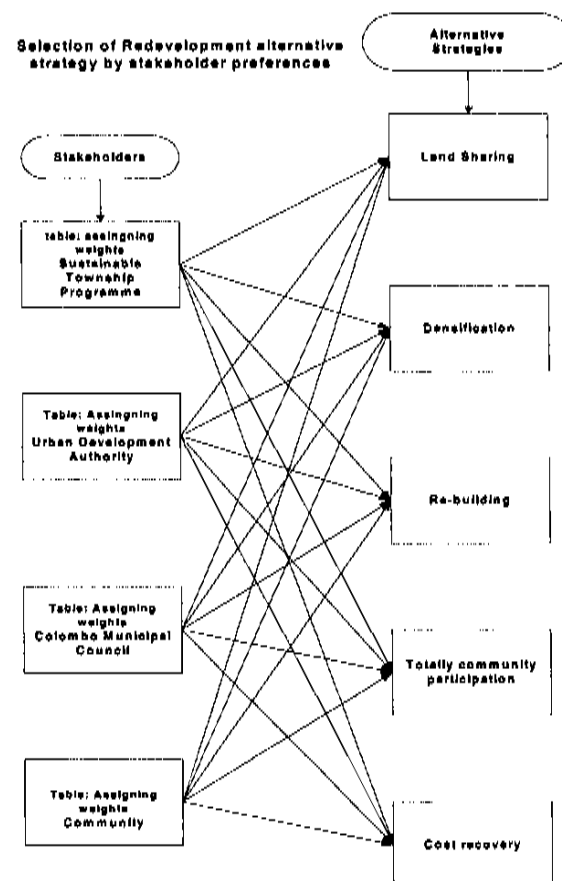


Figure 4.2 Selection of Redevelopment strategic alternative by stakeholder preferences

Selected stakeholders were distributed with a questionnaire (a copy of the questionnaire is attached as annex-1). The questionnaire had four questions relevant to each of the alternatives. Based on the answers to the questionnaire and the views that they had at the discussions, a weight was assigned to each of the alternatives. In assigning the weight, the experience, historical process of the problem and the literature review were made use of preferred strategic alternative. The following questions were used in the questionnaire for the assessment of the each alternative.

4.6. Assigning weights to the alternative strategies

The selected method was 'rating'. According to literature review, it is considered the most attractive approach to determine criterion weights (Voogd, 1983). For the feasibility analysis for each alternative Strategy, a feasibility ranking was given. A five-scale value was used to determine the qualitative rankings of the feasibility alternative strategies. The scale values are from 1 (strongly dissatisfy) to 5 (extremely satisfy). The feasibility scores in this model are based on stakeholders' preferences, planning experience, historical process and the literature review.

4.6.1. Analysis of the Questionnaires

There are 30 community people who were distributed with 30 questionnaires. Each questionnaire has 56 questions, 4 questions for each alternative. Thus a total number of $4 \times 30 = 120$ questions were asked for each alternative and therefore 120 answers were received for questions related to each alternative from the Community stakeholders.

In the case of the government stakeholders, they were CMC, STP and UDA. They were given 10 questionnaires each, thus a total number of 30 questionnaires. Each questionnaires contained 4 questions for each alternative, resulting in a total number of $4 \times 10 = 40$ questions relating to each alternative. These are presented in Table 4.3.

Table 4.3 Analysis of questionnaires

Stakeholders	No of Questionnaires	Questions for each alternative	Total questions for each alternative
Community	30	4	$4 \times 30 = 120$
Government			
STP	10	4	$4 \times 10 = 40$
UDA	10	4	$4 \times 10 = 40$
CMC	10	4	$4 \times 10 = 40$
Totals	60		240

Table 4.4 Descriptions of alternative strategies

Strategic Alternative	Description
A1	Land Sharing
A2	Densification
A3	Rebuilding
A4	Total community participation
A5	Cost Recovery

4.6.2. Analysis of the responses

Through the analysis, the answers received were measured as follows. The answers received for each alternative were categorised in to: Favourable, Unfavourable and Uncertain. The detailed questions and answers are given in the appendix. However, the following are examples showing how these answers were categorised into Favourable, Unfavourable and Uncertain:

Questions for strategic alternative 1

Question: As proposed by the program, do you like to live in a high rising – compacted housing environment.

Answer: Yes.

This and other similar answers were classified as Favourable.

Question: When you have a house in a high rise-housing complex, do you feel that you are an owner of a house?

Answer: No

This and similar answers were classified as Unfavourable.

Question: Present situation and the situation after the program, do you feel any difference on?

Answer: We hope it will be helpful to change our current life style

This and similar answers were classified as Uncertain.

The answers were analysed for each alternative, and were therefore classified according this scale. Tables 4.5, 4.6, 4.7, and 4.8 shows percentage of Favourable, Unfavourable and Uncertain for each alternative according to the different stakeholders answers given to the questions. (a copy of sample answers is attached as annex-2)

Table 4.5 Community's views on bases on strategic alternatives

	Favourable %	Uncertain %	Unfavourable %	Total
Alternative 1	65	20	15	100
Alternative 2	82	11	7	100
Alternative 3	62	20	18	100
Alternative 4	65	18	17	100
Alternative 5	35	36	29	100

Table 4.6 STP views on bases on strategic alternatives

	Favourable %	Uncertain %	Unfavourable %	Total
Alternative 1	100	-	-	100
Alternative 2	22	15	63	100
Alternative 3	33	-	67	100
Alternative 4	20	20	60	100
Alternative 5	85	10	5	100

Table 4.7 CMC views on bases on strategic alternatives

	Favourable %	Uncertain %	Unfavourable %	Total
Alternative 1	100	-	-	100
Alternative 2	32	28	40	100
Alternative 3	34	38	28	100
Alternative 4	35	35	30	100
Alternative 5	85	10	5	100

Table 4.8 UDA views on bases on strategic alternatives

	Favourable %	Uncertain %	Unfavourable %	Total
Alternative 1	100	-	-	100
Alternative 2	17	13	70	100
Alternative 3	22	20	53	100
Alternative 4	20	30	30	100
Alternative 5	85	5	10	100

4.6.3. Assigning scale values to the percentage of favourable answers

The uncertain answers reflect the uncertainty of the stakeholders' responses with respect to the alternatives, and therefore lie somewhere between favourable and unfavourable. To keep the analysis simple, the uncertain answers were not used in the assignment of the scale values. Also the unfavourable percentages were not used. Only the percentages of favourable answers were used to assign the scale values to the stakeholders' responses. A five-scale range has been used to assign the scale values according to the percentage of favourable answers for each alternative. This is shown in Table 4.9.

Table 4.9 Assigning scale values to the percentage of favourable answers

Classification	% Favourable	Scale values
Extremely satisfied	81-100	5
Very satisfied	61-80	4
Satisfied	41-60	3
Dissatisfied	21-40	2
Extremely dissatisfied	0-20	1

Based on above five-scale range, scale values have been assigned to each alternative according to the stockholders' responses. Table 4.10 shows the scale values for each alternative. After the scale values have been assigned to each alternative, their weighted percentage influence have been computed as shown in the table.

Table 4.10 Percentage values of each Alternative strategy

Alternative Stakeholders	A1		A2		A3		A4		A5	
	Weight	%	Weight	%	Weight	%	Weight	%	Weight	%
STP	5	27.78	1	12.5	1	12.5	1	14.29	4	26.67
UDA	5	27.78	1	12.5	2	25	1	14.29	4	26.67
CMC	5	27.78	2	25	2	25	2	28.57	4	26.67
Community	3	16.67	4	50	3	37.5	3	42.86	3	20
Total	18	99.96	8	100	8	100	7	100.00	15	100.00

Table 4.10 shows the percentage values of each alternative strategy according to the weighted values of stakeholders' preferences. The following graphs and the tables express the stakeholders' preferences individually.

Alternative strategy 1

Stakeholders	Score	Weighted Percentage
STP	5	28
UDA	5	28
CMC	5	28
Community	3	17
Total	18	100

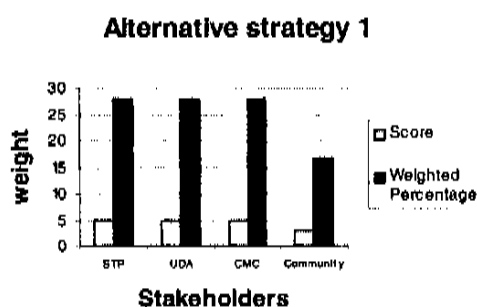


Figure 4.3 Weighted Percentage of Alternative strategy 1

Description: Figure 4.3 present the alternative strategy 1, *Land Sharing* scoring higher preferences of the stakeholders other than the community. The concept of land sharing is self-financing. A part of the land is to be sold for commercial purposes, and the revenue to be invested for the construction of residential towers on the remaining part of the same land. STP, UDA, CMC offered higher preferences, considering the assumptions. In this view the community ignored self-financing policy, their requirement is to obtain a house free of charge.

Main issues:

- ❖ Small portion of lands on one site have to be considered in one cluster.
- ❖ In terms of development of these small portions have never happened. Some underserved settlements are located, incompatibility with the zones, which cannot get the development approval. To avoid this situation STP has to consider another alternative strategy which satisfy the criteria for development of these sites

Alternative strategy 2

Stakeholders	Score	Weighted Percentage
STP	1	12.5
UDA	1	12.5
CMC	2	25
Community	4	50
Total	8	100

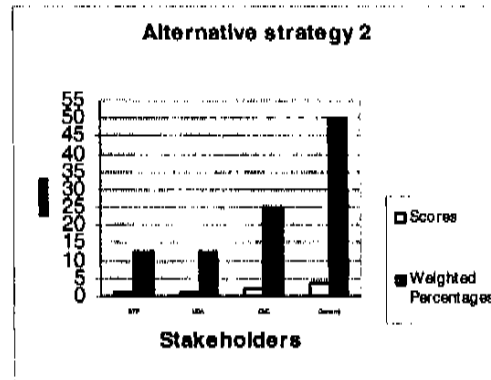


Figure 4.4 Weighted Percentage of Alternative strategy 2

Description: Figure 4.4 describes the Alternative strategy 2, which represents the densification that another component of redevelopment. It describes slum dwellers on smaller plot of lands requires and increase in residential densities through rebuilding of existing structures. The STP could not follow this vision, which does not represent their policies and not considering the relevant assumptions. Furthermore it depicts the different preferences of stakeholders, the community offered higher preferences while STP, UDA and CMC lower. It justified for redevelopment according to this alternative could not be happened, as it is really a financial burdening to the government.

Issues

- ❖ To obtain the housing loans beneficiaries has to prove their legality of the land. Beneficiaries should obtain the legality of the land. It is impossible with the future development plans of the City due to the incompatible of the activities.

Alternative strategy 3

Stakeholders	Score	Weighted Percentage
STP	1	12.5
UDA	2	25
CMC	2	25
Community	3	37.5
Total	8	100

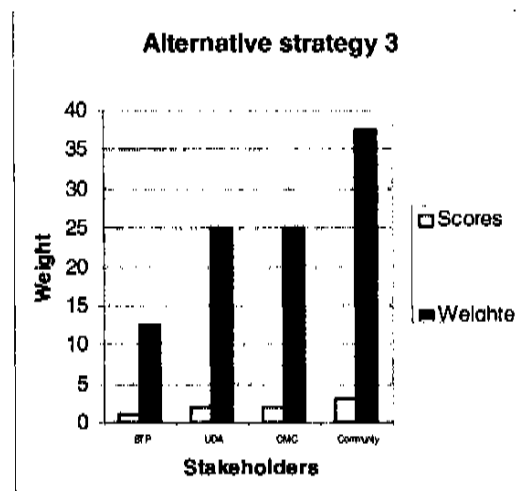


Figure 4.5 Weighted Percentage of Alternative strategy 3

Description; Figure 4.5 describes the Alternative strategy 3, which represents the rebuilding that another alternative strategy of redevelopment. It describes demolition of existing dwellings and rebuilding at higher densities on the same structures. High-density row houses will allow for sufficient densities on the encumbered lands. The STP could not follow this vision, which do not represent their policies and not considering the relevant assumptions. Further it shows the different preferences of

stakeholders, the community offered higher preferences while STP, UDA and CMC lower. It shows community prefers very much to stay their existing locations. But it justified redevelopment according to this alternative strategy could not be happened as it is really burdening to the government.

Issues

To obtain the housing loans beneficiaries has to prove their legality of the land. Beneficiaries should obtain the legality of the land. It is impossible with the future development plans of the City due to the incompatible of the activities.

Alternative strategy 4

Stakeholders	Score	Weighted Percentage
STP	1	14
UDA	1	14
CMC	2	29
Community	3	43
Total	7	100

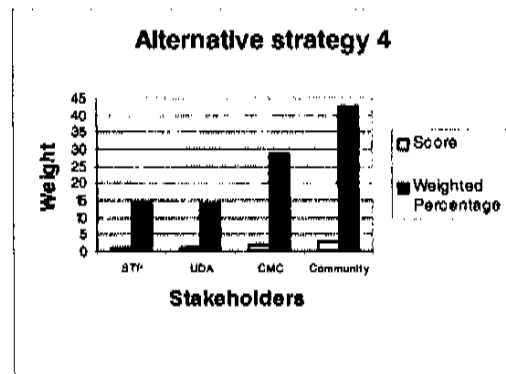


Figure 4.6 Weighted Percentage of Alternative strategy 4

Description: Figure 4.6 describes the Alternative strategy 4, the transformation of existing slums into permanent residential communities will require the active participation of people in decision making, particularly during negotiation, allocation of plots, demolition of structures and reconstruction. The STP could not follow this vision, which does not represent their policies and not considering the relevant assumptions. Moreover it reveals the different preferences of stakeholders, the community offered higher preferences while STP, UDA and CMC lower. It justified for redevelopment according to this strategic alternative could not be happened, as it is also financial burdening to the government.

Issues

Community has to negotiate the agreements on contracts for loans. Private sector property developers also mainly target on middle income and high income categories, neglecting low-income groups. Then these deprived families could not be to make an agreement, obtaining a housing loan.

Alternative strategy 5

Stakeholders	Score	Weighted Percentage
STP	4	26.66
UDA	4	26.67
CMC	4	26.67
Community	2	13.33
Total	15	100

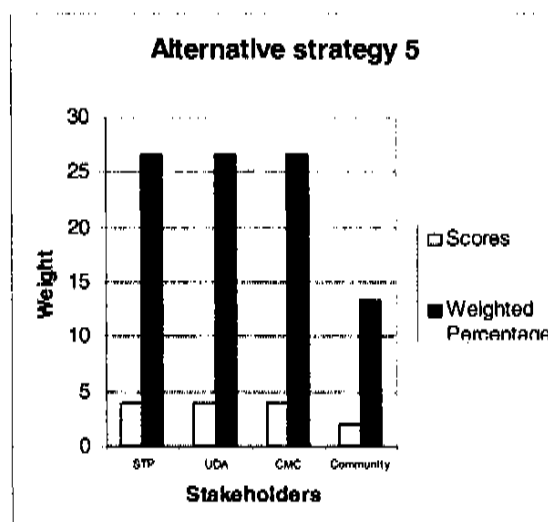


Figure 4.7 Weighted Percentage of Alternative strategy 5

Description: Figure 4.7 present the alternative strategy 5, *Cost recovery* scoring higher preferences of the stakeholders other than community. The concept of cost recovery is self-financing by maximizing cross subsidies. A part of the land or whole land is to be sold for commercial purposes and the revenue to be invested for the construction of residential towers on, on-site or off site. STP, UDA, CMC offered higher preferences, considering the assumptions. In this view the community ignored about subsidising policy, the requirement is to obtain a house free of charge.

Issues

There should be good commercial demand for the locations of encumbered lands, which is not difficult to implement this programme. The main reason for the failure of public housing programs in the past has been the need for large subsidies in order to make up the difference between what the government and the residents can afford to pay and what the project cost to construct. On that basis Slum redevelopment must be, proceed on a cost recovery basis. The cost of construction must be recovered from the sale of properties.

- ❖ For cost recovery in slum redevelopment to become a reality, six conditions must be met;
 - A good price must be negotiated for land.
 - Cost of construction must be controlled.
 - Commercial properties must be effectively marketed.
 - Cross subsidies must be maximised.
 - Community consent to go away from their premises
 - There should be vacant lands for the relocation of the affected families

Mostly this alternative requires that existing residents be re-house off land. Obtaining the community consent for this alternative strategy is impossible because most of the slum residents do not like to move completely another place, from their existing locations.

4.7.2. Identification of the potential Criteria

The method of generating the evaluation criteria involved two steps namely problem structuring and stakeholder identification. Before the field work stage, according to the literature review and taking into account the history of the study area evaluation: For that, it was made according to the analysis of the factors about the problem identified in this study through the review of the historic process of the growth of the under served settlements in the area, from literature review and based on the professional experience. Related potential criteria in this study could be considered as follows;

4.7.3. List of Potential criteria

The following are the potential criteria considered to select the relevant criteria for redevelopment of underserved settlements. (Table 4.12)

Table 4.12 Potential criteria

Aspect	Criteria
Social	Number of affected families Duration of the occupancy
Economical	Cost of illegal settlements demolition Cost of temporary relocation of the residents Land tenure status
Environmental	Settlements are not on the hazardous or environmental sensitive areas
Physical	Distance to the work place Distance to the Central Business District Infrastructure availability Compatibility with the year 2010 zoning plan Commercial demand of the site

4.7.4. Finalization and definition of the criteria

During the fieldwork the formulated list of potential criteria were introduced to the stakeholders in order to have a starting point to analyse and improve collaboratively the set of criteria proposed. For that with the discussions through questionnaires, the stakeholders are requested to identify about of key criteria in relation to the problem situation. The followed steps describe the procedure and results achieved. The discussions about the results are presented in chapter 5.

Step 1: Formulated potential criteria are presented to the stakeholders

During the bilateral meetings the set of potential criteria are presented and explained to the stakeholders. Additional explanations of the criteria definitions, assumptions, and possible values of the alternatives are given by the researcher. The presentation includes the visual techniques and GIS operations. The procedure to obtain the final set of criteria considered the dynamic participation of stakeholders through several meetings.

Step 2: Views from the stakeholders and process of analysis and negotiations

Through out of this step, a process of analysis, feedback and consensus about the alternatives and criteria formulated to the stakeholders is done. Suggestions and observations are considered from them and the adjustments are considered. The researcher is the link between the study and the stakeholders.

Step 3: Identification and definition of final set of criteria

After a process of adjustments to the aspects and criteria, agreements, considerations, finally consensus are achieved on the set of final criteria acceptable.

4.7.5. The final set of criteria are define and identified by the stakeholders

Through the application of questionnaires the stakeholders are asked to analyse the problem situation and to provide the relevant aspects and criteria to solve the problem.

The following list and description of each criterion is the result achieved by the stakeholders during the fieldwork stage. The main criteria were identified and grouped in the following aspects: social, physical, economical and environmental, as is presented in table 4.13. These aspects and criteria were obtained collaboratively with the stakeholders. These aspects and criteria were grouped in 5 aspects and 7 criteria.

The initial set of selected criteria proposed to the stakeholders was used as a base to identify and complete the criteria needed to evaluate the alternatives. In fact, the stakeholders maintained some of the aspects and criteria proposed.

Table 4.13 Preliminary aspects and criteria formulated

Aspects	Criteria	Measurement	Description
Social	1.Communi-ty consent of high rise	Number of people who are willing to live in high-rise on the area.	Understanding this value is possible to be estimated and from this, it is possible to predict the response of the residents.
	2.Infrastruc-ture availability of the site;	Site 1. 25% available, Cost; Rs.1619(Mn.) Site 2. 50% available Cost;Rs.1208 (Mn.) Site 3. 70% available Cost; Rs. 333 (Mn.)	This criterion considered the availability and unavailability of infrastructure and the cost of infrastructure facilities. In this context STP program and the community consent (Questionnaire) considered the following basic services such as Infrastructure facilities Water-Electricity-Access roads
Physi-cal	3.Compatib-ility of the year 2010 Zon-ing Plan	Constraint, Yes/ Not (No inconsis-tency between STP policies and the Zon-ing regulation of Co-lombo Metropolitan Regional Structure Plan (CMRSP) 1998)	The STP will be executed concurrently with the Colombo Metropolitan regional Structure Plan (CMRSP) 1998.

Eco-nomical	4. Land value of encumbered lands of USS	Perch (25Sq.metr:) value (Millions) Site 1. 0.20 Mn. Site 2. 0.25 Mn. Site 3. 0.35 Mn.	<p>This criterion STP considers the best market value for the liberated lands. Determination of land value according to the Colombo Metropolitan Regional Structure Plan (CMRSP) can be considered as follows; mostly land values depend on the area from the Distance to the Central business district Lands located closer to the city centre and nodal points are high valuable lands. Lands located closer to risky and environmentally sensitive areas are low value lands (environmental sensitive areas have only environmental value. Land values are obtained from the following institutions;</p> <ul style="list-style-type: none"> • Market value from private real estate valuer • Government value from the valuation department and the taxation department of Colombo Municipal Council. <p>Developers are not generally interested in buying lands, Which is occupied by slum dwellers. The price for slum lands, therefore, is below the market price for similar properties in the vicinity. There is no economic value for the lands located along the main roads, railroads and canals. There is no economic value to these lands. To implement this programme the designated areas must have high economic land value.</p>
	5 minimum size of the settlements	Minimum size of the settlements should be more than 5 acres	The minimum site should be more than 5 acres

			tion zone the process of building development should be controlled. It is intended to retain areas in their existing state mainly as open spaces, land reserves, urban agriculture farms, swamps and marshy areas, other natural open space, Scrub lands and paddy fields. STP does not promote further human settlement development in the environmentally sensitive areas.
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The methodology followed to obtain the set of criteria from the stakeholders through questionnaires is one of the easiest ways (Voogd, 1983). According to the time availability time for the survey stage, the methodology selected to obtain the criteria was succeeded. But because of the complexity of the problem a better way to obtain criteria from the stakeholders could be a brainstorming and the elaboration of the problem, and the objectives. The main objectives of the stakeholders can be summarised as:

- ❖ To promote the health and well being of the people in the City of Colombo Municipal Area.
- ❖ To protect and promote good quality environment of Colombo Municipal Council area
- ❖ To promote the efficiency and productivity of the Urban Development of the City of Colombo.
- ❖ To ensure safety and security of life

4.7.6. Identification of criterion scores

The criterion scores are obtained based on the description of alternative effects in the study, stakeholders' views, considering the gravity of the problem and based on my experience. Some of them are qualitative and some are quantitative. The classification of suitability analysis for each criterion, a suitability ranking was given. A five-scale value was used to determine the qualitative ranking of the suitability criteria. The scale values range from 1 (non-suitable) to 5 (highly suitable). The suitability scores in this model are based on planning experience and Urban Development Authority planning criteria and consider the stakeholders views.. For some criteria Boolean classification was used. For example, for hazard area 1, for non-hazard 5 was given. The following section shows the in detail how the different criteria measured and considered for each of the alternative sites.

4.7.6.1. Land value criterion

Implementation of the policies of the Sustainable Townships Programme of redevelopment of underserved settlements Land Value is one of the prominent criteria. In this criterion STP considers the best market value for the liberate lands. Determination of land value according to the Colombo Metropolitan Regional Structure Plan (CMRSP) can be considered as follows; mostly land values are depending on;

- ❖ The area from the distance to the Central business district lands located closer to the city centre and nodal points are high valuable lands.
- ❖ Lands are located closer to hazard and environmentally sensitive areas are low value lands and (environmentally sensitive areas have only environmental value.

Developers are not generally interested in buying land occupied by slum dwellers. The price of slum lands, therefore, is below the market price for similar properties in the vicinity. STP has to provide the necessary guarantee for the market value to the real estate developers. There is no economic value the lands are located along the main roads, railroads and canals which no economic value to these lands. To implement this programme the designated areas must have high economic value. The Table 4.14 shows that areas with high land value >350,000 are classified as highly suitable (5), the medium land value 350,000-250,000 is suitable (4), areas with medium land value 250,000-200,000 are classified as moderately suitable (3), areas with low land value 200,000-150,000 is non suitable (2) and lower land values below <150,000 also non suitable (1). STP is self-financing, earnings from the liberated land sale for the commercial activities and invests for the construction of compact housing. Implementation of this process the land value of these particular areas should be high.

Table 4.14 Land value

Table 1 Land value	Suitability	classification and ranking
Units (Rupees: Million)	Suitability	Scale Value
> 350,000	High- suitable	5
350,000-250,000	Suitable	4
250,000-200,000	Moderately suitable	3
200,000-150,000	Non-suitable	2
<150,000	Non-suitable	1

4.7.6.2. Commercial demand criterion

This criterion considers that liberate lands should be commercially valuable lands. Self-financing in USS redevelopment is based on the creation of surplus value which can be realised from the sale of commercial properties in the urban land market. Commercial demand is used in this study to mean an existing location of underserved settlement areas is found within the commercial zone or the development trend of the surrounding area is for commercial activities. Thus, the demand for commercial activities determines the current status of underserved settlement locations. If the settlements are located on the commercial zone or according the existing land use plan of a commercial area, the development trend of the area must be considered as commercial. The location of the slum and its relative advantages must be taken into account in evaluating market potential. Based on these conditions Table 4.15 reveals the locations of settlements with commercial demand are classified as suitable (5) and non-commercial commercial demand areas are as unsuitable (1).

Table 4.15 Commercial demand for the site

Table 2 Commercial demand for the site	Suitability	classification and ranking
Demand for the location of settlements	Suitability	Scale Value
Commercial	Suitable	5
Non commercial	Non suitable	1

4.7.6.3. Community consent of high-rise compact housing criterion

This criterion of community consent is essential for slum redevelopment to be successful. Community consent is necessary, and should involve all households in the community in the process of redevelopment. Consent of the community members is necessary in a number of key decisions during the reconstruction process. In some decisions it appears to be mandatory, and in others it can be introduced to strengthen the confidence of the people, and to build trust and corporation among people and the initiators of the program. Table 4.16 shows the classification of this criterion. If there is community consent of high-rise compact housing, suitable and the scale value given as (5). If not, non-suitable and scale value is (1), which shows the impossibilities of implementation of this programme.

Table 4.16 Community consent of high-rise compact housing classification

Table 3 - Community consent of high-rise Suitability classification and ranking		
Consent	Suitability	Scale Value
Yes	Suitable	5
No	Non-suitable	1

4.7.6.4. Infrastructure availability criterion

This criterion considered the availability and unavailability of infrastructure and the cost of infrastructure facilities. From the questionnaire answered by the STP program and the community the basic needs of the underserved settlement areas are considered to be infrastructure facilities such as, water, electricity, and access roads. This criterion has been measured based on the availability of the infrastructure facilities, which was estimated from the City of Colombo development plan. Table 4.17 shows a classification of this criterion: areas where more than 70 percent of infrastructures are available were classified as highly suitable between 70-50% is suitable between 35-50% is moderately suitable and 35-25% and less than 25% as non-suitable (Table 4.17). Infrastructure facilities are not very important criteria when development occurs; the STP has to provide, but the availability is important to reduce the financial cost of the project.

Table 4.17 Infrastructure availability of the site

Table 4- Infrastructure availability of the site Suitability classification and ranking		
Units (percentage)	Suitability	Scale Value
>70%	High- suitable	5
70-50%	Suitable	4
50-35%	Moderately suitable	3
35-25%	Non-suitable	2
<25%	Non-suitable	1

4.7.6.5. Hazard and environmental sensitive areas criterion

This criterion considered the effect of the flooding hazard on the settlements located in the study area. According to the city of Colombo Development Plan, in the environmental Conservation zone, the process of building development should be controlled. It is intended to retain areas in their existing state mainly as open spaces, land reserves, urban agriculture farms, swamps and marshy areas, other natural open space, scrub lands and paddy fields. STP does not promote further human settlement development on these areas because there are no basic requirements of this programme of land value or commercial demand and the operational development plans do not allow these developments. It was considered that about 30 metres buffer from the main river and 10 metres buffer from the other water bodies were flood hazard and environmentally sensitive areas, and therefore has been classified the settlements are not within hazard areas as unsuitable (1) in Table 4.17. All other areas the settlements are not within hazards zones were considered as suitable (5).

Table 4.18 Hazard and environmental sensitive areas

Location of the settlements	Suitability	Scale Value
Non-Hazard	Suitable	5
Risk	Non-suitable	1

4.7.6.6. Compatibility with the year 2010 Zoning Plan

Compatibility with the zoning plan is the one of the main criteria of this study. All the development activities should be compatible with the zoning plans, which show the development regulation for development activities, and this was used to identify the areas that are compatible and incompatible (Table 4.19). Therefore compatibility with the zone plan classified if the redevelopment programme is highly compatible with the zone plan is considered as highly suitable (5). Moderately Compatible as suitable (4). And non-compatible as non suitable (1).

Table 4.19 Compatibility of the year 2010 Zoning Plan

Compatibility	Suitability	Scale value
Highly compatible	Highly suitable	5
Compatible	Suitable	4
Non compatible	Non-suitable	1

4.7.6.7. Minimum size of the settlements criterion

To implement this program, the land must be at least 5 acres. If it is more than 5 acres then it is suitable the scale value is (5), but if it's less, than 5 acres it is considered as non-suitable(1) (table 4.20). However, where it can be done, STP can amalgamate small settlements in order to implement the program.

were discussed based on the literature review and considering the stakeholders views according to the relationship with the alternatives and the criteria. Figure 4.9 reveals the levels of relationship between strategic alternatives and the criteria.

These alternative strategies and criteria were grouped in 5 alternative strategies and 7 criteria. The initial set of alternative strategies and criteria proposed to the stakeholders was continued, as a base to identify and complete the criteria needed to implement the alternative strategies. The selected criteria determine the suitable alternative strategies for redevelopment of suitable sites. It revealed that there should be a relationship between the alternative strategies and criteria the analysing of the selection of suitable sites for evaluate the feasibility of redevelopment.

According to the Figure 4.9 the alternative strategies of land sharing and cost recovery have very high relationship with all the criteria. It further reveals all the alternative strategies have strong relationship with the criteria of community consent, compatibility with the zone plan, non-hazardous area.

4.9. Selection of the best development potential site for the redevelopment of underserved settlements.

The criteria for the site selection were identified, classified and scaled in this chapter. In this section, these criteria are used in a GIS-based analysis to determine the suitable site selection for the redevelopment of the underserved settlements.

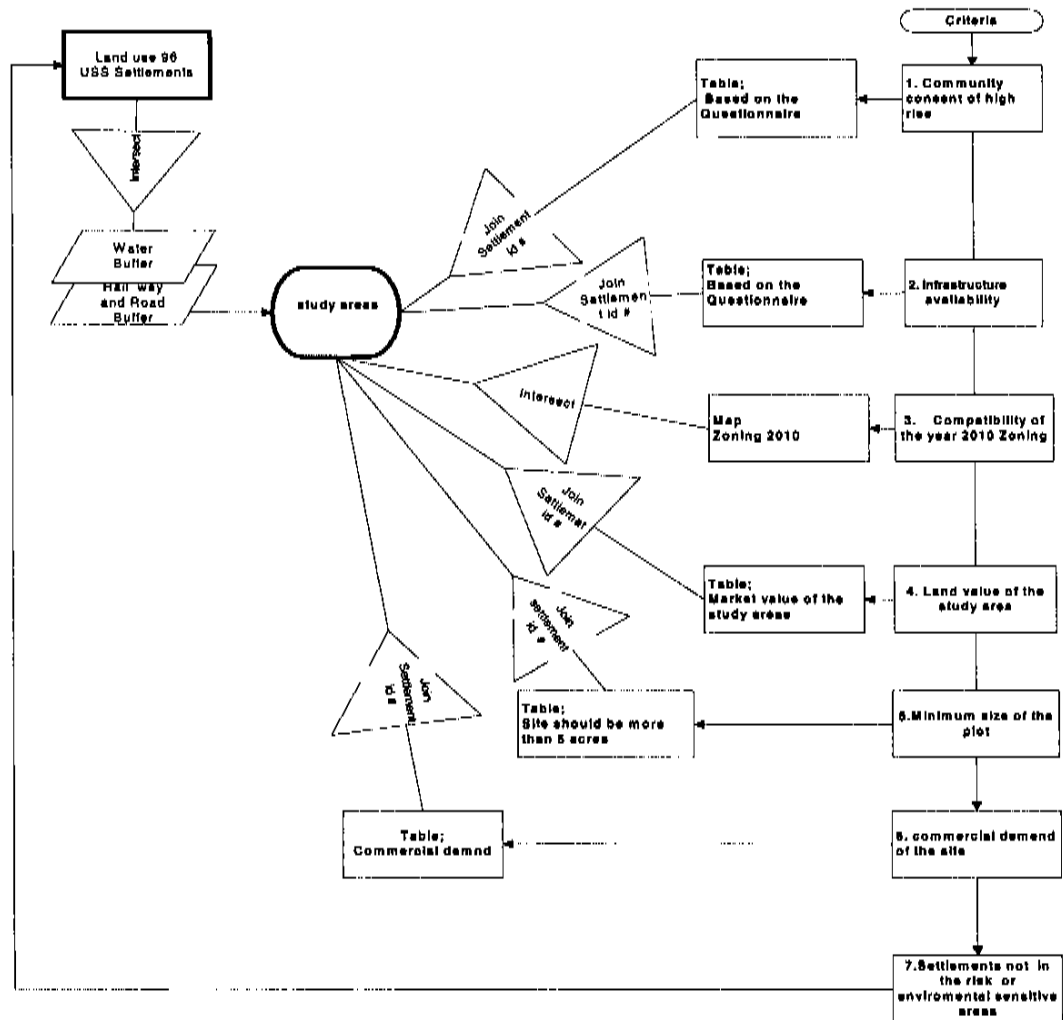


Figure 4.10 Methodology of selection of suitable sites for evaluate the feasibility of redevelopment

4.9.1.1. Classification of criteria

The set of criteria was obtained collaboratively with the stakeholders. These criteria were grouped in 4 aspects and 7 criteria. The initial set of aspect and criteria proposed to the stakeholders was used, as a base to identify and complete the criteria needed to implement the alternative strategies. The selected criteria determine the suitable alternative strategy for redevelopment of suitable sites. Fig. 4.10 reveals the analysing methodology of the selection of suitable sites for evaluate the feasibility of redevelopment.

4.9.1.2. Assigning criterion weights

Criteria weightings show the important factors for the redevelopment programme. The weighted overlay process allows to set weights for as many different factors required to analysis. The weight establishes the relative importance of one criterion with respect to others.(the sum of the weight 100 percent) weights are applied when not all aspects have an equal importance in the evaluation. In this study a percentage value as an influence value used for weight for each criteria.

In this analysis community consent, commercial demand for the site and compatibility with the zoning plan year 2010, achieved highest value as 20 percent, others were 10 percent.(Table 4. 21) As the same

level that are land value, infrastructure availability, non-hazardous areas, and minimum size of the settlements. All these criteria weighted as same level scale based on the planning experience and stakeholders' views.

Table 4.21 Weighted overlay

Criteria	% Influence value
Land value	10
Commercial demand	20
Community consent for the high rise	20
Infrastructure availability	10
Hazardous and environmental sensitive areas	10
Compatibility with the year 2010 zoning plan	20
Minimum size of the settlements	10

The weightings establish the relation between the weighted overlay process combining input themes to find out the best suitable site for redevelopment. By overlaying themes the values of each themes convert to a common evaluation scale. The study used that scale to represent that suitability with 5 being suitable and 1 being non-suitable.

4.9.2. Analysis of criteria to select the feasible sites for redevelopment

Criteria evaluations usually depend on the availability of data to support the analysis criteria. For this study criteria were selected according to the personal planning experience and based on the different stakeholders views and mainly considering the STP policies and development regulations of Urban Development Authority. Table 4.22 reveals the suitable sites with development potential for the redevelopment of under served settlements. Based on the influence of weighting and scale values, high suitable site for the redevelopment is site 1 by satisfying more criteria. It is closer to the central business district and located in high the area of high commercial demand. According to this analysis site 2 and site 3 also selected as suitable sites for this redevelopment programme.

4.9.3. Analysis of assigning scale values and criteria weights

In this study assigning scale values selected as evaluation scale of 1 to 5. In this analysis scale value 5 is high suitable and 1 is non suitable which determines the high suitable and suitable areas for the redevelopment of underserved settlements.

4.9.3.1. Results of the analysis

Land value criterion

Based on the assigned scale values for the land value criterion that indicated the site 1 is highly suitable and site 2 and site 3 also suitable. Implementation of redevelopment program land value criterion contributes a considerable role for the success of this program.

Commercial demand criterion

Assigned values for this criterion indicates site 1 has very high Commercial demand is one the key criteria of the redevelopment programme. Site 1 is located closer to Central business district, which influenced very high commercial demand. Commercial demand for the site 2 is indicated as high, site 3 is low. For the application of preferred alternative and STP policies, part of the land must be sold for the commercial activities, to make the project feasible.

Community consent criterion

Based on the answers of the questionnaire the criteria scale values were determined. All the answers to the question 'do you like to live in high-rise compact housing?' is "yes". These deprived family's need to live as pride citizen of the country instead of unhealthy illegal occupants with lack of infrastructure facilities. These reasons influenced them to move the high compact housing free of charge. For this criterion all three sites obtained maximum scores and weighted percentage value of 30 percent, which is very high. This criterion is essential for slum redevelopment to be successful. Community consent is necessary is necessary, and should involve all households in the community in the process of redevelopment. These factors influenced them to offer their consent to these three sites is equally suitable.

Infrastructure availability criterion

Cost of infrastructure influenced as 25 percent of the total project cost. If this facility is available it helps to minimise the cost of the project. The questionnaire helped to identify their basic needs, of infrastructure. Influenced scale values, availability of > 70 percent is 3 high suitable, 25-70 percent 2 suitable and, 25 percent 1 non suitable. When analysing the scale values for the availability of facilities, site 1 recorded as high suitable, and site 2,3 are suitable.

Risk and environment sensitive area criterion

The criterion considered the effect of the flood hazardous on the settlements located in the study area. The number settlements in these areas are the way to measure this criterion. According to the city of Colombo Development Plan, in the environmental Conservation zone the process of building development should be controlled. It is intended to retain areas in their existing state mainly as open spaces, land reserves, urban agriculture farms, swamps and marshy areas, other natural open space, Scrub lands and paddy fields. STP does not promoting further human settlement development in the environmentally sensitive areas.

Compatibility with the year 2010 zone plan criterion

Compatibility with the zoning plan is the one of the main criteria of this study. All the development activities should be compatible with the zoning plans, which show the development regulation for development activities, and this was used to identify the areas that are compatible and incompatible

Minimum size of the settlements criterion

To implement this program, the land at least must be around 5 acres. If it is more than 5 acres then it is the best, but if it's less then it is considered as non-suitable. However, where it can be done, small settlements that can be amalgamated by STP in order to implement the program. Finally these three sites me this criteria.

5. Discussions and conclusions

The main objective of the study is to develop a methodological process to evaluate the feasibility of redevelopment of under-served settlements under the “Sustainable Townships Programme”. In the first chapter, the problem was identified. In the second chapter, the existing situation of the underserved settlements was analysed in order to find the main characteristics of the study area and the target group. The third chapter discussed the policy framework of the Sustainable Townships Programme and a literature review of redevelopment strategy alternatives, and identified relevant stakeholders in the study. The fourth chapter explored the stakeholders’ analysis and selection of preferred development strategy alternative. The last section of the same chapter 4 explains the site selection model based on the selected criteria, which explained in chapter four to evaluate the feasibility of redevelopment of underserved settlements in the City of Colombo Sri Lanka. Chapter 5 presents the results and discussions obtained for this study. Since part of the results are already presented in chapter four, their discussion will be included in the first section of this chapter. The other results of this study can be found in the second part of this chapter. In this way, the objectives of the research are achieved. This chapter further reveals the synthesis of the main findings of the research.

5.1. About the housing situation

Recent studies reveals that there are about 1,500 under served settlements in the City of Colombo with over 66, 000 house holds within the CMC area living in squalid slums and shanties unfit for human beings under any standards, 50 percent of the total population of 794360 in the year 2000. Almost all these settlements are illegal constructions and located on encroached lands belongs to various government agencies. Of the above total, nearly 11,000 households live in 249 such settlements, occupying over 150 acres designated as reservations.

5.1.1. Government policy to solve this problem

Keeping in line with the recommendations guidelines, policies, and strategies the scope and the vision of the Government of Sri Lanka, The Sustainable Townships Programme identified new Housing and urban development programmes to fulfil the aspirations of the Government in general, and the Ministry of Urban Development, Construction and Public Utilities in particular.

The STP aims to re-house all 66,000 households currently living in slum and shanties in the City of Colombo in fully developed modern compact townships, without burdening the beneficiaries or the government. Under this programme it is intended that part of these occupied lands will be released for commercial development in accordance with the development plans, and earnings from the land will be utilised for rehousing programme. These encumbered lands considered as commercially valuable lands by the Urban Development Authority, Colombo Municipal Council, as well as valuation institutions.

5.1.2. About the feasibility of redevelopment

This redevelopment method is referred to as “Slum Reconstruction”, which is the process of rehousing slum dwellers on land, which they currently occupy (Angel, 1983). The following five important alternatives were considered essential alternative strategies in redevelopment of under served settlements. The five strategic alternatives were generated based on literature about alternatives of addressing the problem, stakeholders’ views and current government housing policy and historical process of the problem. The following five alternatives were considered as essential to solving the redevelopment of underserved settlements problem in the City of Colombo:

- Land Sharing:
- Densification
- Rebuilding
- Community participation
- Cost recovery

The specific design of the alternatives to be evaluated for the redevelopment process was done with particular reference to the analysis of the stakeholders’ views and objectives.

5.2. About stakeholder analysis

The results of this section were already presented in chapter four. Now the main findings and results of the stakeholders’ discussions are presented as follows:

Main findings

- ❖ Six relevant stakeholders involved in the problem were identified and contacted.
- ❖ Four of them have participated in the study.
- ❖ A process of initial contacts, presentations and work during the survey stage was achieved with the stakeholders.
- ❖ Stakeholders have expressed their views and positions about the alternatives.
- ❖ The stakeholders have evaluated the 5 alternatives proposed. There is an acceptable alternative for all of them.
- ❖ The stakeholders defined a set of criteria.

The bilateral meetings with the different stakeholders were successful although a lot of time was required. Unfortunately some of the meetings needed to be postponed many times because of the lack of time or unavailability of the stakeholders.

Since the Municipal council and the Urban Development Authority followed the similar objectives and positions about the objectives of this study, they decided to work as one decision maker team. This situation not only showed the good willingness and motivation of the stakeholders participating, but it also contributed positively to the application of the methodological process because of the limited time available for this study during the survey stage.

An important limitation of this study is the absence of two stakeholders, the other urban planning experts and National Housing Development Authority. These stakeholders were not available to participate in the study because of the difficult political situation prevailing in the study area during the field-work stage.

The stakeholders were provided with a list of alternatives and criteria which were important to them through the questionnaire and the discussions. Five alternatives accepted to be evaluated.

At the end, alternative 1 was selected as acceptable by the decision makers except the community. Alternative 1 represents 75 percent of their intent. The second preference is cost recovery. The main factors for all these alternatives, is that the Government and the beneficiaries are unable to invest money for the implementation of redevelopment programs. To overcome this problem, STP should be self-financing. With respect to the preferences of the stakeholders, following have to be taken into consideration.

- ❖ No financial burden to the government
- ❖ No financial burden to the beneficiaries

Based on these assumptions, stakeholders made their preferences, alternative 1 being preferred. Implementation of Alternatives 2, 3, and 4 need the provision of financial assistance for the community, or the government should have sufficient financial capabilities. In Sri Lankan context the Government does not have financial capabilities and nor does the poor community. Particularly for the underserved settlers who presently have limited access to finance due to limited collateral, mainly they do not have legal rights of their occupation and they face restrictive loan conditions. Alternatives 1 and 2 are selected as preferred alternatives, which minimise internal subsidies and maximised external subsidies.

Land sharing is an on-site development, to liberate a part of the land for commercial activities and the earnings to invest in the construction of housing towers. Cost recovery is an off-site development to sell the whole land for commercial activities and the earnings to invest in the development of housing on another site. Mostly cost recovery could be applied when the development regulations restrict the residential developments on particular zones.

5.2.1. About the Selection of alternative strategies

The method of selection of alternatives was presented in chapter four; this section discusses the results achieved in the process of formulating alternative strategies.

Main findings

- ❖ Five alternative strategies were designed and proposed for the redevelopment of underserved settlements in the City of Colombo Sri Lanka.
- ❖ Main issues were identified collaboratively with the stakeholders to define the design of the alternatives
- ❖ The alternatives proposed were acceptable after evaluation by most of the stakeholders.

5.2.2. Design of alternatives solutions for redevelopment of underserved settlements

The relevant literature supported the range of alternative strategies. Applicability of the alternatives was confirmed by the perception of the stakeholders, their involvement in the problem and their experience of the historical and existing problem of underserved settlements.

The conception of the different alternatives considered important differences among the stakeholders. Although alternative 4 is total community participation; community participation acts as a main component of all the alternatives. In these alternatives, the community is a key actor to the whole process of redevelopment of underserved settlements. Community participation or community consent is an essential element in the implementation of all the alternatives.

In this respect alternative 1, land sharing is the preferred alternative because self-financing is a major advantage. According to the interest of the stakeholders, the factor "costs" was considered as important compared to other factors.

The use of Geo-information tools like IKONOS satellite image, and GIS operations, were important factors to support the design and to define alternative strategies as well as the selection of preferred sites for the redevelopment of underserved settlements. The stakeholders used these tools during the process as a source to check spatial and non-spatial impact of the alternatives and criteria.

An important factor considered in the formulation of the alternatives was the assumptions made for each alternative. These assumptions greatly contributed to the design of the alternative. For example, alternatives 1 and 5 were designed based on the self-financing assumption because Sri Lanka is a developing country and the government as well as the beneficiaries do not have financial capability to invest in the solution. Since the level of uncertainty of the problem situation is high, these assumptions are not only permitted in the definition of the alternatives, but they are important elements to be taken into account during the implementation of the alternatives. The final results of the alternatives design is presented in chapter four, section 5 and 6.

Selection of preferred alternative solution

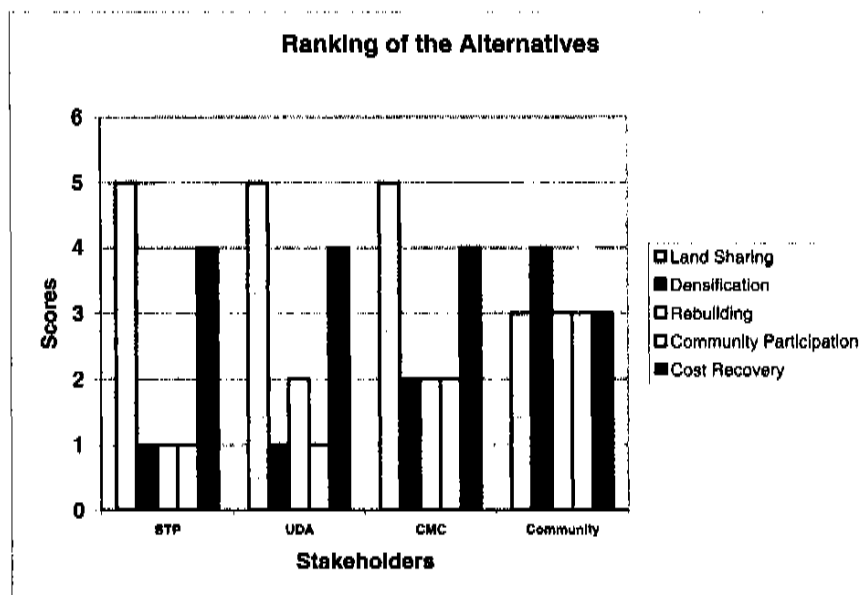


Figure 5.1 Ranking of the alternatives

The selection of the best alternative among the stakeholders is presented in Figure 5.1. The figure shows alternative 1 as the preferred for all the stakeholders except community stakeholder. The second preferred alternative is alternative 2, also for all the stakeholders other than the community. The reason is clear for the difference between alternative 1 and alternative 2. Government stakeholders award their high preferences for both alternatives, but the STP has to obtain community consent and participation to make this redevelopment programme successful. Comparing the community stakeholder preference for both alternatives, high preference is for alternative 1 over 2, because alternative 2 involves relocation, which the community does not like.

Finally in stage 1 of methodological process, the preferred alternative strategy was selected based on the stakeholders' analysis to address the main objective of the study.

5.2.3. Defining criteria to select suitable development potential site

The criteria were identified and defined in chapter 4. In this section, we explain the main findings as results:

- ❖ A set of criteria was identified and defined to select the development potential site.
- ❖ Difficulties about the identification and definition of criteria were identified.

The seven criteria were obtained collaboratively with the stakeholders. The initial set of criteria proposed to the stakeholders was constituted, as a base to identify and complete the criteria needed to evaluate the alternative sites.

The process to identify relevant criteria had some difficulties, some of which are:

- ❖ The stakeholders experienced some difficulties to achieve consensus to select the criteria.
- ❖ The stakeholders experienced some difficulties to achieve measurable criteria.
- ❖ The available time did not permit to repeat (sometimes) the same process to verify the answers from the stakeholders.

According to Voogd (1983), the methodology followed to obtain the criteria set from the stakeholders through questionnaires is one of the easiest ways. Considering the available time for the research this methodology was selected. Given the available time for the survey the methodology selected to obtain the criteria was successful. The methodology followed to obtain the criteria was discussed in chapter four. But because of the complexity of the problem, a better way to obtain criteria from the stakeholders could be a brainstorming and the elaboration of a problem and the objectives.

5.2.4. About identification of criteria scores and values

The stakeholders have expressed their position with respect to the criteria defined. The identification of criteria scores was done in terms of the locations of the alternative sites and their characteristics.

Weighted overlay

Criteria weightings show the important factors for the redevelopment programme. The weighted overlay process sets weights for as many different factors as required to analyse. The weight establishes the relative importance of one criterion with respect to others (the sum being 100 percent). Weights are

applied when not all criteria have an equal importance in the evaluation. In this study a percentage value was assigned as influence value and used for weighting each criteria.

In this analysis, community consent, commercial demand for the site, and compatibility with the zoning plan year 2010, achieved the highest value (20 percent) and from absolute conditions in the study. Others were 10 percent, land value, infrastructure availability, non-risk areas, and minimum size of the settlements. All these criteria weighted as same level scale based on the planning experience and stakeholders' views, explained in chapter 4.4

5.2.5. About the site selection model

The site selection model is the output of analysis of the stage two of the methodological process. The weightings establish the relation between the weighted overlay process combining input themes to find out the best suitable site for redevelopment. By overlaying theme the values of each themes convert to a common evaluation scale. The study used that scale to represent that suitability with 1 being non-suitable and 5 being highly suitable.

Table 5.1 Selecting suitable potential site for redevelopment by ranking

	Rank Order
Site 1: $(3*10)+(3*20)+(3*20)+(2*10) + (3*10)+(4*20)+(3*10) = 310$	Suitable
Site 2: $(3*10)+(4*20)+(3*20)+(2*10) + (3*10)+(4*20)+(3*10) = 330$	Suitable
Site 3: $(5*10)+(5*20)+(5*20)+(5*10) + (4*10)+(3*20)+(3*10) = 520$	High suitable

Ranking the alternatives

Table 5.1 depicts the stakeholders' interests in the way they distributed weights to the different criteria. The ranking of the alternative sites was obtained by totalling the products of the scale value with the weights of each criterion. By comparing these three alternative sites in terms of the stakeholders' preferences, site 3 is highly suitable and sites 2 and 3 are suitable.

The developed model was run successfully. Arc View Model builder was useful for analysis carried out in the study; analysis and presentation of results were done using this model builder tool. It can be applied to every kind of site selection problem. In stage 2 of methodological process, the best site with development potential is selected based on the criteria to address the main objective of the study.

In this research, five basic alternatives and seven criteria were applied based on literature review, the stakeholders' views on the relationship between the alternatives and the criteria, and personal experience about the problem.

5.3. Application of the preferred alternative for the selected suitable site to evaluate the feasibility of redevelopment.

This stage is to evaluate the feasibility of application of the preferred alternative strategy to the selected site.

- ❖ Five strategic alternatives were generated and evaluated. The views of four stakeholder groups were used in the assessment of the alternative strategies.
- ❖ Seven criteria were identified to evaluate the suitable development potential site for the redevelopment of underserved settlements.
- ❖ Finally the preferred alternative strategy was applied to the selected site and the feasibility of redevelopment of underserved settlement was evaluated.

The preferred alternative chosen was Land Sharing (alternative 1), which facilitates to solve the underserved settlement problem in the City of Colombo, providing self-financing facilities, which the Government is unable to afford. Successive governments could not solve the underserved settlement problem due to lack of funds, which resulted in the problem being unresolved. The stakeholders were thoroughly concerned about financial resources to solve this problem. The stakeholders' analysis resulted in alternatives 1 and 2 selected as preferred alternatives as they are self financing.

However, while the stakeholders selected strategic Land sharing as the preferred, as well as the current government housing policy, the validity of this result is only for the on-site development. In this study the suitable development potential site is site 3 located in concentrated development zone of zoning plan, which does not allow for residential developments.

The Sustainable Townships Programme has to relocate the settlers who are on site 3 for the redevelopment-applying alternative 5, the second preference. The result has shown some degree of inconsistency between the interest and position of the stakeholders. What is perceived as a logical position (if selected according to the hierarchy of their preferences) is that, when 1st preference could not be applied, the STP has to evaluate the next preference to overcome the underserved settlement problem. For instance when the settlements are located in environmental sensitive areas and road reservations, STP has to relocate these people for the places where the developments are going on and should bear the cost of relocation for the redevelopment of these settlements.

Finally the study concludes that to overcome this underserved settlement problem STP could follow this methodological process applying the three stages.

5.5. Strengths and weaknesses of the methodological process

Strengths

The following are the main strengths of the developed methodological process developed in this research:

- ❖ Self financing instead of state funding
- ❖ Voluntary relocation on the same land instead of forced eviction
- ❖ Bottom up instead of top down approach
- ❖ Full ownership of the apartment instead of conditional tenureship
- ❖ Enabling the urban poor into the main stream of the urban economy
- ❖ Market based instead of provider and welfare approach.
- ❖ Promote the health and well being of the people.
- ❖ Enhance the good quality environment of the city.

- ❖ Provide to urban lands intensively.
- ❖ By following this method STP could lead the process of regeneration by releasing prime lands for alternative urban development.

Weaknesses

The weaknesses to implement this developed methodology:

- ❖ The preferred alternative would not always be compatible with the current zoning plan.
- ❖ Lack of available data for carrying out this methodology. To evaluate the alternatives, current data and information are vital.
- ❖ Interference of political influence would affect the implementation of this programme.
- ❖ Different government mandates on implementation. Government organizations that are established for urban development have different consent on development of under served settlements.
- ❖ It is difficult to create commercial demand for encumbered lands. Property developers are willing to have unoccupied lands rather than encumbered lands. The commercial demand for encumbered lands is always in lower level.
- ❖ Lack of interrelationships among the relevant ministries.
- ❖ The strength of urban development regulations is not sufficient.

5.6. Recommendations

The following are main recommendations for further research and development directly relevant to study:

- ❖ Where the selected preferred alternative could not be applied, the STP has to evaluate the next preference, which could be compatible with the zoning plan.
- ❖ A sound urban information system should be created within the STP; thereby interrelationship could be established within the line organizations.
- ❖ Urban development regulations should be strengthened through by making provisions for redevelopment of underserved settlements in the existing development acts.
- ❖ Governments should take the responsibility to create commercial demand by providing information about encumbered land, and giving government security to the investors.
- ❖ It is recommended that a policy framework for redevelopment of underserved settlements be formulated that would not be affected by any political influence.

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- ❖ By following this method STP could lead the process of regeneration by releasing prime lands for alternative urban development.

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Appendices

A. Community leaders interview

1. Name of interviewee
(Leader).....
2. Name of Community.....
3. What position do you have in this community?

Elected leader	1.....	Appointed leader	2...
Secretary	3.....	Voluntary leader	4...
Member	5.....	Other specify	6...
4. How long have you held this position?.....Years.Months
5. How long have you lived in this community?Years..... Months
6. Location of the community (boundaries).....
.....
7. What is the land extent of this community?.....
8. Do you organize meetings to discuss community issues and events? with the commu-
nity residents
.....
9. What are the main topics you normally discuss?
.....
10. How often are these meetings held?.....

Daily	1.....	Weekly	2.....
Monthly	2.....	Quarterly	4.....
Half yearly	5.....	Yearly	6.....
11. How many people attend to these meetings.....
12. Do you have any political representation?
 If yes at which level ?

local	provincial	national
-------	------------	----------
13. Are there any NGO's working with you?.....

B. General Information

1. How many people live in this community?.....
2. What is the average size of the household?.....
5. Number of families in one unit?.....
6. Do you live in a house same as others in the commu-
nity?.....

7. Ownership of land.....

Government
MC
Private
Unauthorized

8. Do you own the house

Yes	
-----	--

Ownership of the house:.....

10. If no do you pay a rent Yes No

11. Do you have any problems related to ownership of the house or payment of rents? if yes how much?

12. Are you satisfied with the facilities providing to community?

Water	yes	no
Electricity	yes	no
Access	yes	no
Recreational	yes	no

13. If unauthorized, have you taken any steps to authorize them?.....

14. Current problems in the community?.....

15. Do you feel any difference between formal and informal housing conditions?.....

16. Did you discuss these problems with the government or their representatives?.....

17. What steps taken by the government to solve these problems?.....

18. Is there any development programme proposed?

19. Do you trust their proposals? Yes no

20. The influence of politicians to the community?.....

21. Do you have continuous dialogues with Govt. Officers?

22. If any, what is your opinions?.....

23. Your opinions about NGOs?.....

24. Is there any development programme handled by the NGOs?.....

25. Are the satisfy with the development programmes of the government and NGOs satisfy?

26. Your idea about the government intervention towards the redevelopment

Do you have any idea on redevelopment programme of your Country?

27. Faith to the STP program?.....

28. For these programs, is there any community participation involved?.....

29. As proposed by the program, do you like to live in a high rising – compacted housing environment?.....

30. Do you feel that you have to face many problems, which are related to different communities or cultures?.....
31. Since you get an ownership from the STP program, do you have any confidence on it?.....
32. Present situation and the situation after the program, Do you feel any difference on
.....
33. When you have a house in a high rise-housing complex, do you feel that you are an owner of a house?.....
34. Do you like to go out of this
area?.....
35. Do you legal rights to this
land?.....
36. Do you like to participate to build your own
house?.....
37. How do you like to participate for re building about your
house?.....
 - a. Alone or with the help of the government
 - b. 50 percent Government and 50 percent by the owner
 - c. If government provide materials only
 - d. Paying rent for the house/ long term lease
38. Would you like to have a government loan for construction purpose?.....
39. How much do you expect to obtain a housing
loan?.....
40. How do you pay back this housing
loan?.....
.....
41. What are the main problems of the community?.....
.....
42. As a community leader how do you solve this problem?.....
43. Do you like to design a new housing
scheme?.....
44. If the main problem is housing, what did you suggest to over come this problem?.....
45. Did you encourage any community participation programmes?.....
.....
46. Do you believe that community participation is a successful method to overcome this problem?.....
47. Do you have any idea about land sharing approach?.....
.....

48. Do you believe is this programme successful?.....
.....
49. What about your idea about cost recovery?.....
50. Do you like to sell your land for the commercial activities?.....
51. Do you have experience of government's housing programmes?.....
.....
52. Did government consider your consent?.....
53. Do you aware of this programmes?.....
.....
54. Did these programmes successful?
55. If government suggest to densify these existing housing/ or high rise row houses?
56. On which stage do like to contribute your community participation?
a. At the inception/ at the construction stage/providing labour only

C. Interview Guide for Municipal Officials/ Planners and STP Officials

Name.....
Designation.....
Organization.....
Location of Site.....

1. What is the current municipal low-income housing regulatory framework?
.....
.....
.....
2. What are the goals and objectives of the municipal in relation to redevelopment of informal settlements?
.....
.....
.....
3. Are there other stakeholders in redevelopment of underserved settlements ?
a. Yes... No
4. If yes please list.....
5. Do you think re development leads to create a planned city?

-
.....
6. What is the municipal plan for redevelopment of the informal settlements?
.....
.....
7. Is the municipality prepared to extend its services to increased informal settlements?
Yes..... No.....
8. If yes, how are you going to achieve it?
.....
.....
9. What form of cooperation does the municipality expect from the informal settlements?
.....
.....
10. Why does the municipal want to integrate the informal to formal settlements?
.....
.....
11. If yes, does the municipal have enough resources to upgrade or redevelop the informal settlements?
12. Yes..... No.....
13. If no, What do you propose?
.....
.....
.....
.....
.....
14. Your view on the municipal integrate the informal settlements in to the formal city to bring about clean environment.
.....
.....
.....
15. Do you identify this area as to be developed area?.....
16. Your views on the present plans of development of the area?
.....
17. What are the plan-oriented projects identified to the area.....

18. Do you consider that the community participation is necessary to implement their plans/projects.....
19. What is the feedback of the community for their participation?
20. Do you think that these programs are compatible with existing plans and development zones?.....
21. Are political leaders of the community agreed to these programs?.....
22. If not, do you think that this is a set back of the development process?.....
23. Did you held any discussion with relevant ministries, on the above programme when, where and how?
.....
.....
.....
24. If politician are not agreed, how to do the implementation of the program?.....
25. Who propose this program? (Government / local authority/other else?.....
.....
26. Do these plans/projects achieve the STP policies?.....
27. "Houses for every deprived family" is the concept of STP. DO you succeed to achieve it?.....
28. If not, what steps you are going to be taken?.....
29. Do you feel this research helps to your activities?.....
30. The main idea of this research is to find out the achievement successfulness of the programs. Is there any help from this research to improve the STP policies
31. If not, what sort of requirements you need to have from this?.....

32. 25. What are the past experiences of housing development programmes?.....
33. Did these programmes successful? What are the failures?.....
34. The gravity of this housing problem shows the failure of past experience, what you have taken to overcome this problem?.....
35. What is your idea about the densification and rebuilding of these houses? Could it be successful?.....
36. Which problems pertaining to the densification and rebuilding alternatives?.....
37. Do you think the government has sufficient financial capacity to develop your housing development programmes?.....
38. If government does not have financial power, do you have any idea to obtain financial facilities? If yes. What are these?.....If not how do you manage to solve this problem?.....
39. Do you expect to obtain housing loans to implement your housing projects? If you have opportunity to obtain housing loans, what is the pay back procedure?.....
40. If you do not have any financial resources to solve this problem? Do you suggest to sell part of this encumbered for the commercial activities and to invest the revenue for the construction of housing towers on the remaining part of the land?.....
41. Is there any commercial demand for these lands? If not what are your suggestions?.....

D. Land Sharing questionnaire

- Q: As proposed by the program, do you like to live in a high rising – compacted housing environment
- A: Yes
- Q: Do you trust the STP program?
- A: It tries to make us trust
- Q: For these programs, is there any community participation involved?
- A: Yes. STP always trying to get our consent
- Q: Present situation and the situation after the program, do you feel any difference on?
- A: We hope it will be helpful to change our current life style

- Q: When you have a house in a high rise-housing complex, do you feel that you are an owner of a house?
- A: If this program works we feel it.

E. Densification questionnaire

- Q: How do you like to participate for re building about your house? Yes
- Q: Alone or with the help of the government
- A: with the help of the government
- Q: 50 percent Government and 50 percent by the owner
- A: No, we don't have money to spend
- Q: If government provide materials only
- A: Yes, we can contribute only the labour free of charge
- Q: Paying rent for the house/ long term lease
- A: I am a labourer; I can't afford money for rent
- Q: What is your idea about the densification and rebuilding of these houses? Could it be successful?
- A: Yes. If the government invest money we like it very much. Because we can stay on our existing locations
- Q: Which problems pertaining to the densification and rebuilding alternatives?
- A: Previous governments and several NGO's to do it. But lack of funds it did not work
- Q: Do you think the government has sufficient financial capacity to develop your housing development programmes?
- A: Yes. Government can afford money to do it without misusing the money for corruptions.

F. Rebuilding questionnaire;

- Q: Do you like to participate to build your own house?
- A: Yes. By providing labour force
- Q: Would you like to have a government loan for construction purpose?
- A: Yes. We like. But ability to repay is not possible because our earnings are not sufficient. If the government give this money as a subsidy, it is favourable for us.
- Q: How much do you expect to obtain a housing loan?
- A: We cannot say exactly. As our ability to pay back is poor.
- Q: How do you pay back this housing loan? If government does not have financial power, do you have any idea to obtain financial facilities?
- A: No. Government should afford for it.
- Q: If yes. What are these? If not how do you manage to solve this problem?
- A: We like this programme very much. Government has to think about us. We are also citizens in this country.

G. Total community participation questionnaire;

- Q: Do you have experience of government's housing programmes? Did you encourage any community participation programmes?

- A: Yes. This is our own problem we should involve it. Government, CMC, and several NGO's tried community participation programmes
- Q: Did government consider your consent? Do you aware of this programme?
- A: Sometimes. We should involve for any of the programme related us.
- Q: Did these programmes successful?
- A: Not successful. Because of the corruptions and lack of community involvement

H. Cost recovery questionnaire;

- Q: What is your idea about cost recovery?
- A: we don't care about the policy, but we can understand this policy can generate money for the housing construction.
- Q: Do you like to sell your land for the commercial activities?
- A: We like to stay our own locations but when compare our poor condition we like if this programme works.
- Q: Do you think that these programs are compatible with existing plans and development zones?
- We have no idea about plans. We need solution only
- Q: If you do not have any financial resources to solve this problem? Do you suggest to sell part of this encumbered for the commercial activities and to invest the revenue for the construction of housing towers on the remaining part of the land. Is there any commercial demand for these lands? If not what are your suggestions
- A: Yes we live on the prime lands of the city. That is why we cannot buy these lands.
So far previous governments tried to develop our house. With the financial problem those were failures. Because of this we think this concept is fine.