

Sustainable Housing for Urban Poor

Design of a Preventive Maintenance & Management

Mechanism for Public Urban Housing Schemes

Deepika Fernando



Senior Manager / Planning & Management

Sustainable Townships Programme/Real Estate Exchange (Pvt) Ltd, Ministry of Urban Development,
Colombo, Sri Lanka

1 Shelter Situation Analysis

1.1 Basic General Data

Sri Lanka is an island in the Indian Ocean, located with a close proximity to the southern tip of the Indian sub continent with a landmass of 65.6 thousand square kilometres. It is enriched with different environments ranging from the coastal belt to the hill country. The country's coastal belt contains most of its human settlements and urban concentrations. Projections indicate that the total population will increase from the current estimated number of 19.0 million to about 20.7 million by the year 2010. The annual growth rate of population has decreased to 1.1%.

Table -1: Sri Lankas's demography, health and economy (2004, World Bank)

Indicator	1980	1990	1995	2004
GNP per capita US\$	280	470	810	1010
Population: Total (millions)	14.7	17	19.4	19.4
Female (% of total)	48.5	48.8	49.1	49.2
Life expectancy at birth (years) : Male	66	69	71	72
Female	70	74	76	77
Adult literacy rate (% of people aged 15+)				
Male	-	93	-	92
Female	-	85	-	89

Currently the proportion of the urban from the total population of Sri Lanka is estimated at 30% and projections are that it will reach 45% by 2015, and 65% by the year 2030 with an estimated "peak population" of 23.1 mill (PTFR, 1998). There have been significant improvements in the living standards, health and the educational levels of the people during past decades. Urban poverty, mainly can be seen in urban under-served community groups but rural poverty is the most predominant. Current official poverty line (national level) is Rs. 2292 (US\$ 23) per month.

1.2 Shelter Related Fact and Figures

Like any other developing country, access to shelter has become a significance issue, mostly in urban sector, because of limited land and its high value. This is severe in the Capital City Colombo. Data on the Colombo Metropolitan area reveals that about 150,000 households are living in under-served settlements (USS) like slums, shanties, old deteriorated quarters, deteriorated flats etc., and of these, about 66,000 households are within the Colombo Municipal Council (CMC) area and they represent 51% of the total City Population (Urban Under-served Settlements Survey, STP, 1998). About 1,000 acres of valuable prime land in the City has been affected under this encroachment process during the past five decades.

Table 1: Distribution of the Under-Served Settlements in CMC Area

SETTLEMENT INFORMATION	TOTAL
No. of Under-Served Settlements (USS)	1,506
No. of Households	66,000
Population	363,000
Extent of Under-Served Settlements in Acres	970

Of the above total, nearly 11,000 households live in 249 such settlements, occupying over 150 acres designated as environment and other purpose reserved areas, such as canals and flood retention areas including the road and railway reservations and other open spaces like green lung areas.

In Sri Lanka, the average household size is 5.0, and the calculated value for floor area per person in USS is 4-6 square feet. However, in accordance to the Shelter

Guidelines for urban housing, given in Urban Development Authority (UDA) Building Regulations, per capita space is about 8 - 10 sq.ft. which is being in practice at present.

Very few people in USS have tenure rights for their houses due to unavailability of land tenure as many of them live state owned lands. Most of the USS community have common infrastructure facilities and improper management of these infrastructure has led to the poor health and sanitation.

1.3 Housing Policy

Currently, there is no specific housing policy for Sri Lanka. During past decades, the successive Governments of Sri Lanka (GOSL) have practised various housing policies and strategies. However it is still an evolving process and there have been three main approaches: Delivery, Participatory and Market based.

- Ceiling on Housing Property (1973), introduced a policy to recognize urban poor as the legal residents and promoted the housing delivery system.
- Low-income settlement improvement strategy (1977), introduced by the Urban Development Authority and the National Housing Development Department to upgrade existing settlements..
- Million Houses Programme (1977), a self-help and direct construction of houses throughout the country implemented by National Housing Development Authority (NHDA) addressed the housing issue through community centred support based housing policies.
- Participatory Urban Development and Community Action Planning (1985) assisted the on site upgrading of the urban settlements.
- Then ceiling on property law repealed (1990) and reverts to state housing provision by direct construction (1994).
- Presidential Task Force on Housing and Urban Development (1997), addressed the urban housing issues with macro level policy framework, by introducing Sustainable Townships Programme (1998) under the Ministry of Urban Development Construction and Public Utilities to ensure “Homes for people and lands for urban development” through market based approach.

1.4 Actors in Shelter Delivery and their Roles

➤ National Housing Development Authority (NHDA)

Carry out rural housing development projects and on site upgrading and management of urban housing projects.

➤ Urban Settlements Improvement Programme

Provision of water and sanitary facilities in urban settlements.

➤ Urban Development Authority (UDA)

Preparation of Zonal Plans, Building Regulations and Provide Building Approvals and Approval for special projects.

Carry out housing projects for middle and upper middle class people.

➤ Sustainable Townships Programme (STP)/Real Estate Exchange Pvt.Ltd. (REEL)

Carry out housing projects for urban under-served settlers in the city of Colombo, through land sharing/redevelopment process.

2 Organisation

Real Estate Exchange (Pvt) Ltd. / Sustainable Townships Programme

Real Estate Exchange (Pvt) Ltd. (REEL), was established in 1999 as the management arm of the Sustainable Townships Programme (STP) of the Ministry of Urban Development, Construction and Public Utilities in order to address the shelter issue (especially the low-income/ underserved community group) of the city of Colombo. REEL shareholders are the agencies who own most of the encumbered lands in the city. They are Urban Development Authority (UDA), Sri Lanka Land Reclamation & Development Corporation (SLLRDC), National Housing Development Authority (NHDA), and Colombo Municipal Council (CMC).

REEL has completed a massive housing project (14 storied), called "Sahaspura", at Baseline Mw, Colombo 08, which consist of 676 housing units, and households from 16 underserved settlements were resettled in year 2001/2002.



SAHASPURA

Secondly, the Stage 1 of the "Sinhapura", consist of 60 housing units (5 storied), next to Sahaspura has completed and households from another two settlements were resettled. Stage - 2 (60 units) is now under construction.



SINHAPURA

Hence about 800 households are currently occupying the two buildings.

Thirdly, the Wadulusevana Housing Project at Orugodawatta, consist of 50 housing units already completed and households from adjacent settlement have been identified for resettlement. REEL also has planned to carry out another four relocation housing projects in Colombo for next two years.

3 Shelter Problem

3.1 Urban Housing Management

Most of the state led public housing projects in the past, especially carried out for urban under-served settlers, have suffered severe deterioration due to the poor maintenance and management of the building structures and their infrastructure, including solid waste systems, sewerage, drainage etc. Even today, in the housing projects carried out by REEL and various other government entities, the situation is the same. Some of the reasons for this situation relates to the following factors: a) the lack of proper maintenance and management system for manging the common elements and other physical infrastructure of the housing schemes; b) many of the members of these communities do not have a sense of the difference in terms of maintenance that is involved in these new type of dwellings (Wanasinghe Y. A. D. S., and Abeyratna M.D.C., 1999), (c) lack of willingness of the community towards maintenance and management (Attitudinal Survey, STP, 1998). The lack or almost inexistence community intervention on housing management is the result of poor awareness, lack of willingness, incorrect attitudes and bad habits of the communities (Attitudinal Survey, STP, 1998) . Also, their social status and education level might be an obstacle to undertake mangement tasks that involved certain skills and capacities. The poor regulatory level for management of the buildings and the

unsatisfactory institutional participation has also contributed substantially to the present status of miss management of these housing schemes.

When identifying the issues related to maintenance and management of infrastructure, there are several critical areas to be addressed, such as,

- Solid waste management;
- Swerage & other waste water systems;
- Surface runoffs and storm water drains;
- Drinking Water Supply System (Water lines, Pumps, Sumps, Storage tanks etc
- Common areas (corridors, stairways, common lighting systems, gardens and green areas, children play areas, community centres, parking areas etc.)

Each of these areas requires a deep analysis to identify key issues and a proper methodology that could lead to their adequate management.

3.1.1 Solid waste management

Solid waste management has become a critical issue in many of these housing schemes. The individual and community commitment and capacity for internal garbage collection and disposal in an environmentally acceptable manner is highly unsatisfactory. The situation is worst in the multistoried buildings and in the schemes where the housing density is high.

In many housing schemes there is no proper place meant for garbage bins. If available, these places are not maintained well and also their capacity is inadequate.

As a result, people through garbage in open areas, roads, drains, canals etc.

The management authorities, like the CMC on the one hand, and the responsible ministries on the other hand, do not have proper regulatory structures including policy, legislative frame works and implementations plan to address the issues related to garbage disposal in the urban housing schemes. One critical example is that the regulatory and management authorities accept the open garbage disposal due to its operational convenience. However, this can be considered as the primary reason for many environmental problems that relate to internal garbage management.

3.1.2 Sewage and other wastewater systems

Sewerage disposal of these housing schemes is either connected to the city's main sewer system or in some housing schemes sewerage is discharged to common pits. These systems are frequently suffering from sewer blocking. This is mainly due to disposal of non-biodegradable solid material through the sewer lines and excessive disposal of waste exceeding its design capacity. This has led to frequent blocking, leaking and overflowing from pits.

Also, delayed remedial actions by the responsible management authority is a common issue in many of the housing schemes. As these people are squatting the access areas for Repair and Maintenance it is the one main reason which authorities neglect the corrective actions.

3.1.3 Surface runoffs and storm water drains

Surface runoff water is also a critical problem and the runoff water is highly contaminated with solid waste washings and leachate, road washings, sullage and bathing waste, etc. Poor management of drains has led to frequent blocking and overflowing during rainy seasons. In many schemes, cleaning and maintenance of the storm water net work is limited to once a year. Thus, regular cleaning of the net work is a rare event creating highly unhygienic conditions in the storm water drains.

The disposal of solid matter to the storm water net work is a critical environmental and management issue for which communities are directly responsible. In many cases the existing carrying capacity of the storm water net work is inadequate. And again, the authorities lack the capacity to repair and maintain the systems. In some cases, the R & M of the storm water net work does not fall within their responsibility due to various regulatory limitations.

3.1.4 Water supply system (Water lines, Pumps, Sumps, Storage tanks etc)

Every housing scheme have pipe borne water supply from the city main supply system. Some housing schemes have underground sump. Also there are water storage tanks. However, these sumps and tanks are not maintained properly, and the quality of water is never assessed by the responsible authorities. Hence corroded,

leaking water tanks and pipelines are common in many housing schemes. In general, the communities in these settlements never contribute with their resources to repair and maintain the systems. The habit of using boiled water for drinking purposes is poor among these settlers and as a result the communities are at a high risk for water borne epidemics.

3.1.5 Management of common areas

Management of common areas like corridors, stairways, garden, children play areas, community centre, parking area etc. have also become a critical issue in most of these housing schemes. In some cases open and recreational areas or gardens have been used as garbage dumping grounds. Moreover, occupants who live in ground floors have encroached most of the open areas by expanding their built structures. This is mainly due to lack of proper regulatory systems enforced by the management authorities.

3.1.6 Changes of the built structures

Due to limited space within the houses, the settlers are in the process of continuous changing of the original structure of the house in an ad-hoc manner. This improper restructuring has affected the light and ventilation systems. In most of the apartments, the exhaust chimney in the kitchen has been converted to various other uses and as a result, it has completely blocked the smoke vents. Therefore indoor air quality and ventilation have been impaired badly.

3.2 Regulatory Level Drawbacks

It has been observed that the responsible authorities have not taken much into consideration the importance of the maintenance and the management of these housing schemes. In some housing schemes after ownership is granted, the responsible authorities have completely abandoned the monitoring, maintenance and management of the different infrastructure and basic services systems. As a result the total responsibility has fallen on the the community resulting in poor system management.

Most of these inhabitants are not bound by regulatory control and the regulatory bodies too have neglected them. Also the regulatory level enforcement to control the illegal encroachment and improper restructuring is very poor. Hence it has been taken as an advantage by the settlers and this has allowed a continued expansion of their living areas, reducing pavements, roads, drains and leading to further deterioration of their living environment.

4 Proposal for Change and Improvement

4.1 Design of a Preventive Maintenance Mechanism for Public Urban Housing Schemes

As per the Apartment Ownership Act No. 39 of 2003, Sri Lanka, the maintenance and management of housing schemes and condominiums is a responsibility of the Management Corporation (MC). Members of the MC are the owners of the housing scheme and they have to bare the monthly maintenance cost. However, the urban under-served community groups who lived in these housing schemes usually are hesitant to be involved in the management of urban infrastructure. There is no proper mechanism to generate the maintenance fund and also to cooperate with the responsible authorities and the infrastructure agencies. Finally, there is no proper incentives that could lead to the organization of the community in ways to have better execution systems for maintenance and management. Hence the formation of effective community management structures for government led housing projects are very important towards the sustainability of these housing schemes.

The management of the infrastructure systems comes under three categories: administration, operation and preventive maintenance. As long as the administrative and operational systems are more easily identified, the preventive maintenance is a key area to be considered to achieve long term sustainability of the infrastructure and therefore of the human settlement. Hence, the main objective of this study is to identify what elements are required to set up a preventive maintenance programme for the public urban housing schemes, especially done for urban poor.

Sahaspura Housing Project

The Sahaspura housing project is a 14 storied building and each and every floor consists of 52 apartments. Ground floors are meant to be common spaces and facilities for community centres, training centres, daycare and preschools, children play areas, open garden areas, parking areas, shopping areas, etc. But there is no proper maintenance programme for these common spaces. From the Sahaspura experience we have learned that the maintenance of these common areas is highly problematic.

Sinhapura Housing Scheme

Sinhapura housing complex located next to Sahaspura is a five storied building and its layout is in block wise. Each block consist of 20 housing units. The open area is under construction now. As this housing project commenced in early 2007, we are still in the prior stage of the maintenance of the infrastructure phase. Hence, identification of participatory maintenace mechanisms to manage these housing schemes are very important and critically. If something can be done in Sinhapura, this would be very important for the future housing projects of REEL as well as housing projects carried out by other Government Institutions of the country.

4.2 Deciding Sustainable Management Structure

4.2.1 Community as Managers

Preventive maintenance and management through community based organizations are the most effective ways and means to achieve sustainability. The community, who occupy these apartments, has to play a significant role in the maintenace of the building and its infrastructure. It is proposed to form a ***Community Based Management Committee (CBMC)*** where the community is considered as the main driving body of the maintenance structure. Then the community can be involved in the maintenance tasks with the support of other infrastructure agencies. The CBMC could be established under the Management Corporation. Then the CBMC can be empowered with necessary regulatory powers, to take decisions and actions on daily maintenance activities of the housing scheme.

4.2.2 Maintenance Fund

Most of the underserved community people work in the informal sector of the city. And their income is daily or weekly basis other than few monthly basis income earners, work in municipalities, hospitals, other service agencies etc. Hence it is not practical to collect service charges on monthly basis to maintain common elements / infrastructure of the building. However according to the Apartment Ownership Act No. 39 of 2003, each and every owner of the housing unit should contribute to the maintenance fund of the common elements.

REEL introduced a new practice, to start the collection of money for maintenance during the project construction period and before resettle the people in the new apartment the total cost to be completed from the people. This money will be reinvested in a bank and the monthly interest will be used for the maintenance activities. The maintenance cost will vary according to the maintenance activities of the building and the maintenance fund will be collected accordingly.

However this fund may sufficient only for short period as the maintenance activities will be increased with the time. Hence it is proposed to get the support of the other infrastructure agencies with their labour skills and equipments. Apart from the community, the project developer (REEL or any other Organization who carry out the project) too has to contribute to this Management Fund as a proportion of 80% from the community and 20% from the developer.

And also it is propose to introduce fund generating activities through CBMC.

4.2.3 Formulating an Administrative Structure for Preventive Maintenance

In order to achieve this task, at the beginning it is suggested to carry out a thorough mobilization and awareness creation on participatory preventive maintenance methodologies for a selected community group in each housing scheme at the beginning of the project. Then, when resettling the people in new housing schemes CBMC can be formed and it can be organized within external supportive structure as shown in Fig.1.0. Then CBMC should identify the key maintenance areas where community group can be directly involved. If the CBMC are empowered with better

financial systems, the maintenance and management could be strengthened. Also the systematic approach of management authorities through CBMC will lead to maintain effective management systems. As indicated above the CBMC would become the core body in the administrative structure. The proposed administrative structure is shown in Fig.1-0.

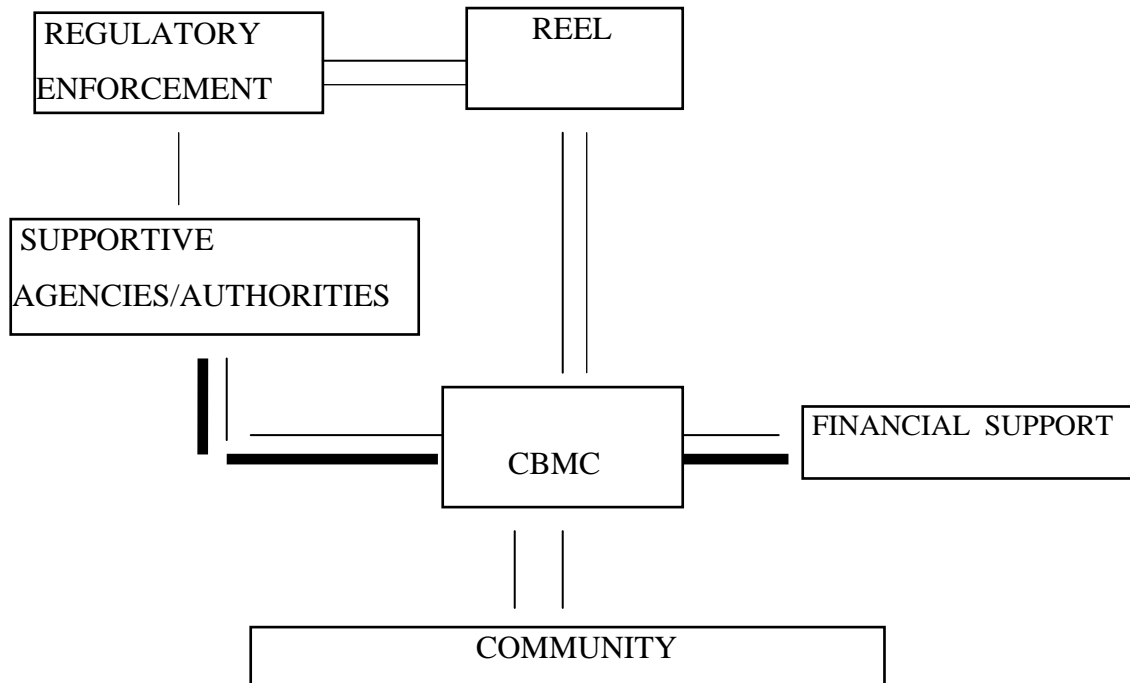


Fig. 1-0

CBMC could always consult the advisory and support agencies to get financial, administrative or legal advise regarding maintenance and management. Also they should report any short fall or issues to the responsible management authorities.

The regulatory enforment could be obtained (on behalf of GOSL) in accordance to the Apartment Ownership Act No. 39 of 2003 from Condomenium Management Authority (CMA) which will recognize and establish the communities rights, needs and contribution towards maintenance and mangement of their neighbourhood. They also can be the mediator to mainain the proper interaction with all relavent parties.

Regulatory body (CMA) through intensive consultaion with the CBMC, the local authorities, infrastructure agencies and various expertise in relavent fields could decide the most appropriate preventive maintenance / management plans for key maintenance areas of the housing complex. This plan should be prepared in such a

manner so that it orients the community and other management authorities to comply with the maintenance tasks. Also that the regulatory body could function as the authorized mediator for any form of regulatory enforcement, control, and contribution to establish a better interaction within all stakeholders, towards sustainability of the housing complex. It could act as the reporting body, to which the communities, CBMC, local authorities and service agencies could consult regarding the issues related to maintenance & management of the housing schemes. The preventive maintenance & management structure can be elaborated and applied for various housing schemes as in Fig. 1.1.

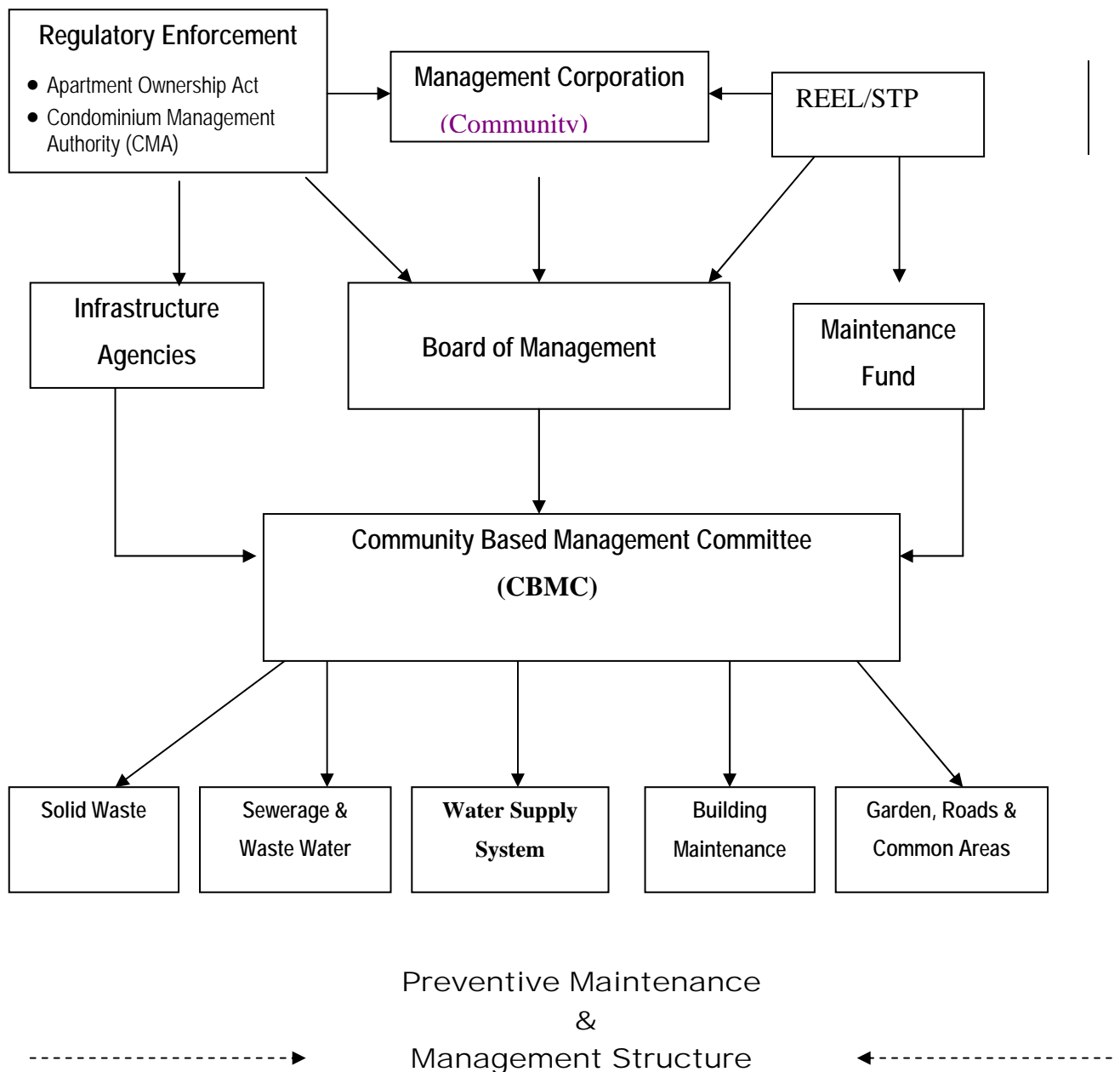


Fig. 1-1

As indicated above it is proposed to have few internal management circles within the management structure as in Fig 1-2.

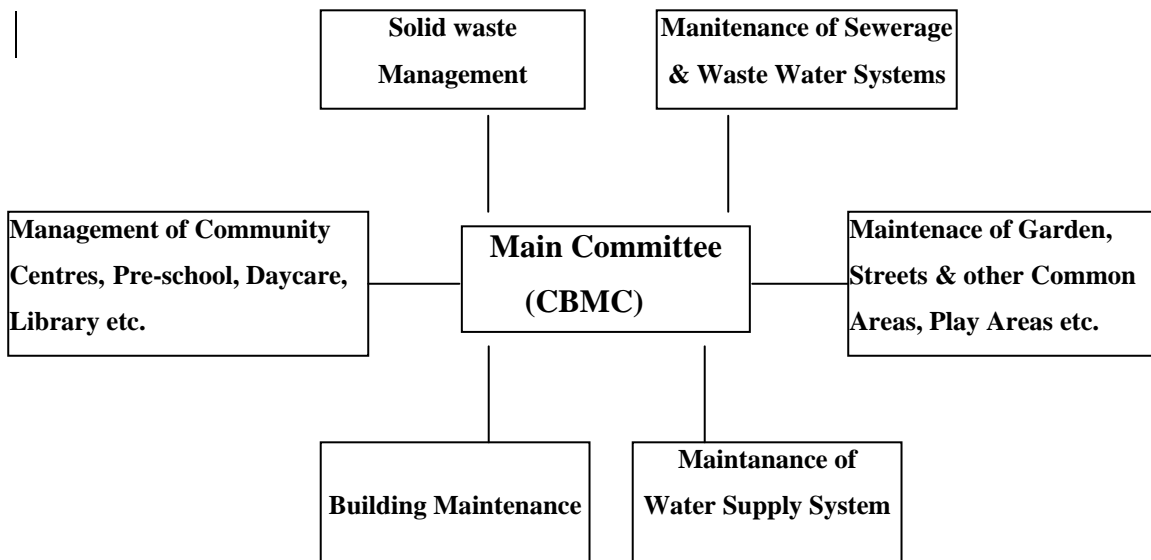


Fig. 1-2

The selection of communities for a different management committees is a vital factor upon which the sustainability of maintenance systems are greatly dependent. Hence there should be a thorough mobilization programme for these communities to be organized by relevant authorities, in order to internalize the importance of their participation on the maintenance and management of their neighbourhood. And also to inculcate the good habits on preventive maintenance and healthy environmental aspects especially for women and children group. Hence the Board of Management can decide to hire suitable NGO or any other Volunteer Organization for this task. Hence with proper interaction and participation of all relevant components, it is expected to create better maintenance programme for public housing schemes carried out for urban communities.

4.2.4 Implementation of the Preventive Maintenance Structure

Implementation of the above structure will be commenced with the Sinhapura Housing Scheme. At the beginning it is suggested to carry out the awareness programme for Sinhapura community group, and in relation to participatory preventive maintenance methodologies with the assistance of relevant authorities. Then to select a community group for the CBMC. And then to identify key

maintenance areas, and prepare the maintenance plans. Also to identify the areas where community group can be directly involved and where the external assistance required. Then to prepare a Hand Book to address the maintenance aspects and its frequency of operation, which is based on incentive schemes. Considering the priority areas and the practicality, the Hand Book should address the the maintenance plans while incorporating the frequency of the maintenance activities for the areas of Solid waste management, Management of sewerage and other wastewater systems, Management of water supply system, Management of common areas, garden, play areas etc and Building Maintenance.

These plans will be implemented in Sinhapura Housing Scheme through CBMC, to see the feasibility and the outcome could be analysed in short term. If further changes or improvements in the methodologies required, while incorporating those, the better participatory mechanism for preventive maintenance could be designed.

5.0 Swot Analysis

5.1 Strengths

- Obtaining the participation of relevant agencies/authorities
- Possibility of getting a professionally qualified management team for BOD
- Recognize the communities as managers, in the management arm.
- Strong legal enforcement through CMA
- Ability to cooperate with government agencies
- Collection of Maintenance Fund as a financial resource
- Prevailing skilled and unskilled labour within the housing scheme
- Existence of a considerably high number of people in a neighbourhood
- Existence of well designed and appropriate infrastructure in the new environment

5.2 Weaknesses

- Non existence of an appropriate model for the proposed management corporation
- Inherent negative attitudes and lack of awareness of the communities
- Possibility of appointing non competent community persons for CBMC
- Non familiarity of the community with the new building and its environment
- Unsteady income of the communities

5.3 Opportunities

- Willingness of the community for relocation
- Possibility of obtaining the assistance from government agencies, and NGO's
- Possibility of collecting a maintenance fund within the project construction period.
- Possibility of creating a awareness on new living habits and usage of facilities during the mobilization phase (project construction phase)

5.4 Threats

- Tendency of decreasing the interest rates of the banks
- Insufficient Funds for long term
- Difficulties in Strengthening the Maintenance Fund

6.0 Action Plan

6.1 Short Term : Application of the Model for Sinhapura Housing Scheme

Activity	Responsibility	Target Dates	Progress
1. Present the Proposal to REEL Management	Me	End May, 2007	Accepted
2. Discussion with relevant authorities to introduce the proposal in order to get their active participation	Me and other relevant officials in Planning & Marketing Division of REEL	June, 2007	1 st Meeting held
3. Awareness creation of the community on the importance of participatory maintenance	Planning & Marketing Division and relevant officials in other agencies	June, 2007	1 st Discussion held
4. Collection of Maintenance Fund from the Community	Planning & Marketing Division	2006 to 2007	Collected during the project construction period
5. Formation of CBMC	Planning & Marketing Division	At the next community meeting (November)	
6. Preparation of maintenance plans for management of infrastructure and the common elements	Planning & Marketing Division, relevant officials in other agencies and CBMC	November to December	
7. Formation of Sub-Committees	Planning & Marketing Division, relevant officials in other agencies and CBMC	November to December	
8. Implementing the proposal	Me and Planning & Marketing Division	January	
9. Analysis of the feasibility of the proposal	Me and Planning & Marketing Division		

6.2 Long Term

1. Identification of other Strategies for strengthening the Maintenance Fund.
2. Application of the proposal for other present and future housing schemes of REEL.
3. Publishing the proposal as a model for application of Public Urban Housing Schemes.

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