6. ACTION AREA PLAN FOR LIVING ENVIRONMENT IMPROVEMENT OF EIGHT UUSS

6.1 Target Level of Social Services Development in UUS

Considering the present conditions and development standard regulated in Zambia, the target level of social services in UUS was assessed and proposed below.

	C t - n	Standard Level for Social Services				
	Sector	Lusaka/Zambian	UUS			
Ι	Water Supply					
	a. Water supply system	individually piped water	Individual/Public tap/Well			
	b. Treatment	Chlorination	Chlorination			
	c. Unit of supply amount	100 - 280 lpcd	20 - 40 lpcd			
	d. Residual water height	5 m	5 m			
	e. Distribution Line	network	single pipeline			
Π	Sewerage					
	a. Personal Toilet	Flush/septic tank	VIP Latrine			
	b. Public Toilet	Flush/septic tank	VIP Latrine			
	c. Collection system	Separate/on-site	On-site without treatment			
	d. Disposal system	Centralized public	Individual			
Ш	Solid Waste					
	a. Domestic Waste	Public collection & disposal	Compound collection			
	Industrial Waste	Public collection & disposal	-			
	Solid waste generation	0.5 kgpcd	0.5 kgpcd			
	b. Collection System	LCC (charged)	RDC (charged)			
	c. Transportation	City Council	LCC shall take care.			
	d. Disposal system	Damping & firing	Damping in final disposal site			
IV	Road and Drainage a. Main Road	Paved Road, Formation width: 24 m (4 lanes), 13.5 m (2 lanes), 12.7m (2 lanes), 10.5m (2 lanes)	Gravel Road, Two lanes (Width: 6.0m), Sidewalk (Width: 3.0), Formation width: 9.0 m, Open drain with stone pitching			
	b. District Road	Paved Road, Formation width: 9.5m (2	Unpaved Road,			
		lanes), 7.5 m (2 lanes),	One lane(Width: 5.5 m)			
	c. Drainage	5 years return period	2 years return period			
	d. Ditch	open	open			
	e. Material of ditch	Concrete/stone/brick/soil	Stone/brick/soil/sodding			
V	Education					
	a. Pre-School	4 for 4,000 pop.	4 for 4,000 pop.			
	b. Primary School	2 for 10,000 pop.	2 for 10,000 pop.			
	c. Junior High School	2 for 20,000 pop.	2 for 20,000 pop.			
	d. Community School	-	(Indispensable)			
VI	Medical/Public Health					
	a. Sub-center (Health post)	-	1 for 3,000 pop. (Indispensable)			
	b. Health Center	1 for 30,000 - 50,000 pop.	1 for 30,000 - 50,000 pop.			
	c. Hospital	1 for over 80,000 pop.	1 for over 80,000 pop.			
	d. Health and hygiene education	-	conduct continuously			
VII	Community					
	a. Community Center	1 for 10,000 pop.	1 for one UUS (indispensable)			
	b. Play Garden	1.2 ha per 4,000 pop.	1 for one zone with sport ground and			
		(22	тасниту			
1 7777	a	(SIII2 per capita)				
VШ	a. Police Post	1 for 10,000 pop.	1 for 10,000-20,000 pop.			

Target Level of Social Services for Living Environment Improvement in UUS

Resource: Lusaka/Zambian standard data is from Lusaka City, peri-urban section. Compound standard is assumed by JICA Study Team.

6.2 Improvement Plan of Eight UUSs

Action area plan for the living environment improvement of eight UUSs in Lusaka was elaborated to show the master plan of the development.

As an integrated development is recommended under the following planning principles.

- Integrated improvement with water supply system improvement, health and hygiene education, communal VIP latrine development, garbage disposal system development, community school development, road and drainage improvement, and income generation program are proposed to realize the target level of social services in eight UUSs.
- Design, community participation method, implementing program, etc. were made referring the evaluation results and lessons of the pilot projects.
- The interventions by other donors and NGOs are paid due attention to avoid the duplication.
- The implementing program was planned considering the priority projects such as water supply improvement, health and hygiene education, VIP latrine development, solid waste disposal, community school development as proposed in Chapter 5 "Development Guideline of Living Environment Improvement in eight UUSs".

The concept of action area plan with relevant background identified by the evaluation and lessons of pilot projects is tabulated in the Table 6.1 and project component of the action area plan is presented in Figure 6.1.

6.3 Detailed Action Area Plan

- 6.3.1 Water supply system improvement project
 - (1) Water Demand Projection

Future unit water consumption per capita is proposed as 20 lpcd for the present, 30 lpcd for the year 2005 and 40 lpcd for the year 2010, considering the examination of the present condition and information from LWSC. Based on the forecasted population and unit water consumption, water demand projection of 4 unplanned urban settlements is determined as shown in the following table.

Summary



Nippon Koei / Global Link M.

Environmental Improvement of UUS in Lusaka F/R

		Present	2005	2010
	Bauleni (LWSC area)	620	830	1,060
Water	Bauleni Clinic	7	9	11
demand	Freedom	210	230	250
(m^3/d)	Kalikiliki	180	280	370
	Ng'ombe	690	1,100	1,630
	Bauleni (LWSC area)	27,000	36,000	46,000
Estimated	Freedom	9,000	10,000	11,000
Population	Kalikiliki	8,000	12,000	16,000
	Ng'ombe	30,000	48,000	71,000

Water Demand

(2) Target level and Basic Plan of water supply improvement

Target levels and basic plan of water supply are proposed below:

	Target Service Level and Basic plan
Bauleni	- Augment of water supply up to 20 lpcd of minimum demand and meet
(LWSC area)	the future demand of 40 lpcd by 2010
	- Reduction of UFW by 15%
	- Securing the minimum residual water pressure of 5m
	- Rehabilitation of existing water supply facilities
	- O&M is to be conducted by RDC
Bauleni Clinic	- Urgent water supply development for normal clinic function
	- Construction of new borehole and elevated tank
Freedom	- Served area is to be 100% of the area with minimum demand of 20 lpcd
	and water supply is strengthened to meet the future demand of 40 lpcd
	by 2010
	- Securing the minimum residual water pressure of 5m
	- Water supply to be established under auspices of RDC/committee
Kalikiliki	- Served area is to be 100% of the area with minimum demand of 20 lpcd
	and water supply is strengthened to meet the future demand of 40 lpcd
	by 2010
	- Water supply to be established under auspices of RDC/committee
Ng'ombe	- Served area is to be 100% of the area with minimum demand of 20 lpcd
	for urgent and future demand of 40 lpcd
	- Securing of water supply to meet water demand of residents according
	to increase population
	- Water supply to be established under auspices of RDC/committee

Summary of Water	· Supply	System	Action	Area	Plan
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(3) Community center for levy collection window/room

JST proposes that the water levy collection window/room be built in order to conduct the money collection safely. Monthly or weekly basis contract ticket/card will be sold at the room. Daily basis levy that tap attendants receive from households will be collected in community center before bank deposit.

Community center will be developed by facilitation of meeting rooms in addition to levy room. Meeting rooms can be utilized for RDC and subcommittee meetings as well as for community training. LCC site office is attached to the center and sub-health center (health post) as described in 6.3.3 (4) can be established in the center.

Necessary floor area of the center will be approximately 130 m².

6.3.2 Road Improvement Plan

The road and drainage improvement projects in eight UUSs are selected based on the following evaluation criteria.

Necessity: priority needs for road improvement as rated by community leaders

Importance: population of the compound and expected traffic volume Development ease: surface and drainage condition, road reserve, etc.

Urgency: existence of JST pilot projects

The results of the selection of road and drainage improvement is shown below.

- Chainda is recognised as having road improvements that are almost completed.
- The other 7 UUSs road and drainage are selected as the project of action area plan.
- The trunk road in UUS shall be improved in the action area plan, while the feeder road in UUS are left for the community participatory work such as 'Food for Work' program by PUSH.

	Necessity	Importance			Deve	lopment Easi	ness	Urgency	
UUS	Priority Needs/RDC	Population	Traffic Volume	Improvement of Road Network	Surface Condition	Drainage Condition	Road Reserve	Other Project	Total Rate
Bauleni	1	3	3	3	3	3	3	3	22
Chainda	1	1	1	1	1	1	3	1	10
Chazanga	5	1	1	3	5	3	1	1	20
Chibolya	2	1	3	3	5	5	1	3	23
Freedom	5	1	1	3	5	3	1	1	20
Kalikiliki	5	1	1	3	5	3	1	1	20
Ng'ombe	5	3	5	5	5	3	1	3	30
Old Kanyama	3	3	5	3	5	5	1	1	26

Evaluation Rate for Improvement of Road and Drainage in Eight UUSs

Design and Length

Road improvement design was amended in accordance with the lessons of the pilot project conducted in Ng'ombe as shown in the Figure 6.2. Road length for proposed road improvement is summarized below.





	Road Length
Bauleni	L=6,450m
Chainda	
Chazanga	L=1,950m
Chibolya	L=2,880m
Freedom	L=1,100m
Kalikiliki	L=1,330m
Ng'ombe	L=3,900m
Old Kanyama	L=5,250m

Length of Proposed Road Improvements

6.3.3 Health and Sanitation Improvement Project

(1) Community-based Health and Hygiene Education Project

The following table shows current situation and priorities in this component.

Area	Health centre	Existing NHC	Existing RDC-HC	Other community based volunteers	Training needs	Water project completion	Pri- ority	NGO working in the area
Bauleni	Yes (Small size, MCH only)	Yes, active working closely with the clinic	Yes active Health educators trained by JST	Peer Educators (drama group)	 Training of NHC Upgrading existing health educators to CHW 	2010	3	None
Chainda	Yes (Medium size, MCH only)	Yes, not very active	NO	CBHP (community based healthcare provider) only covers HIV/TB	 Training of NHC Refresher course for CBHP 	Already in use	2	World Vision
Chazanga	NO	NO	NO	NO	 Training of CHW Formation & training of NHC 	2003	1	CARE PROSPECT (planning)
Chibolya	NO	Yes, a few are active	Yes (HEs trained by JST)	5 CHPs (Community Health Promoters) from each zone	Not necessary	2001	×	CARE PROSPECT
Freedom	NO	NO	NO	NO	 Training of CHW Formation & training of NHC 	2007	1	
Kalikiliki	NO	NO	NO	NO	 Training of CHW Formation & training of NHC 	2007	1	
Ng'ombe	Yes (Medium, MCH only)	Yes: just formed, not trained	Yes, not very active	CHW already trained by an SCDP/JICA PHC	 Training for NHCs Refresh training for CHWs 	2004	3	
Old Kanyama	Yes (1 st referral)	Yes, active under clinic	No	CHW, CHP trained by DHMT/JICA PHC	Not necessary	2001	×	CARE PROSPECT

Priorities for Community-based Health and Hygiene Education

(1): First Priority (2): Second Priority (3): Third Priority X: No need

6 - 7

The subcontractor (NGO) with good experience in the community health in collaboration with health officers such as EHT, public health nurses and nutrition officers will play key role to back up actual work implemented by the community. A Venn diagram indicates relationship among various stakeholders involved in the project (Refer to Figure 6.3).



Figure 6.3 Venn Diagram of Stakeholders

(2) School-based Health and Hygiene Education/Services and Rehabilitation of Sanitary Facilities Project

In school health and hygiene programs, we need to improve both <u>hardware</u> component (total package of sanitary conditions and facilities available in and around the school and provide school health services) and <u>software</u> (activities aiming to promote conditions at school and practices of school staff and children that help to prevent water and sanitation-related diseases).

The following table shows current situation and priorities in this component.



Figure 6.3 Venn Diagram of Stakeholders

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The following table shows current situation and priorities in this component.

Area	Target School	Number of students (teachers)	Sanitation Problem	Water problem	SH activities in place	PTA support	Priority ranking
Bauleni	Bauleni Basic School	1400 (30)	80% broken Flush toilet No VIP	2 taps (too low: no clean surroundings)	Yes (Health Education)	Middle	1
Bauleni	Community school	160 (6)	Not yet	Not yet	Not yet	Not yet	3
Chainda	Community School	160 (6)	Not yet	Not yet	Not yet	Not yet	2
Chazanga	Community school	160 (6)	Not yet	Not yet	Not yet	Not yet	3
Chibolya	Community School already in place	160 (6)	Not yet Observed	Not yet observed	Not yet started	Yes	1
Freedom	Community School	160 (6)	Not yet	Not yet	Not yet	Not yet	3
Kalikiliki	Community School	160 (6)	Not yet	Not yet	Not yet	Not yet	3
Ng'ombe	Ng'ombe JICA school	N/A	N/A	N/A	Planned by Japanese embassy	Yes	×
Old Kanyama	New Kanyama Government School	1800 (35)	90%Broken Flush toilets No VIP	NO	Yes (Health Education, Health checks)	Yes	1

Priority Setting for School Based Health and Hygiene Education and Rehabilitation of Environmental Health Facilities (EHF)

(1): First Priority (2): Second Priority (3): Third Priority (4): Forth Priority (X): No need

A NGO with good experience in the school health in collaboration with DHMT, DEO and health officers from the health centres (such as EHT, nutrition officer and Public Health Nurse) will play key role to back up actual work implemented by the SHCC.

(3) Communal (Public/Household) VIP Latrine Development Project

The majority of latrines in the settlements are traditional ordinary pit latrines with both home (often shared by a number of households) and communal pits in existence. The pilot study proved that there is a strong demand for safe and sanitary latrine such as VIP, than existing ordinary pit latrine. However, a particular challenge was faced where rock outcrops at the surface, making excavation difficult, and high water table was present increasing risk of contamination of the aquifer. In such places, there is a need to build pit latrines, which are up-lifted from the ground and completely lined, not perforated. Latrine projects should not be conducted with a top-down approach but, rather a bottom-up approach, in which the community themselves can select affordable and acceptable, but sanitary and safe latrine options. Considering that there are

still quite a few numbers of shallow well users in UUS, it is important to plan this project after sufficient safe water supply is in place.

Area	Ordinary pit latrine Coverage (*)	Shallow -well users	Renting house	Target Number of household (**)	Water supply	Priority ranking	NGOs interested in working in the area
Bauleni	80% (ordinary)	Low	45%	4200	Master Plan	3	
Chainda	Fair (ordinary)	Low	70%	1250	Already in place	1	WORLD VISION
Chazanga	Fair (ordinary)	High	Not many	2100	Under construction	2	CARE PROSPECT
Chibolya	90% (ordinary)	Middle	80%	2500	Under construction	2	CARE PROSPECT
Freedom	Fair (ordinary)	None	75%	800	Master Plan	2	
Kalikiliki	Very little (ordinary)	Low	80%	900	Master Plan	2	
Ng'ombe	50% (ordinary pit)	High	75%	3400	Master Plan	2	
Old Kanyama	50% (ordinary pit)	Middle	80%	4100	Already in place	1	CARE PROSPECT

Priority Setting for Communal (Public/Household) VIP Latrine Development Project

(1): First Priority (2): Second Priority (3): Third Priority

*Obtained by interview at health centre and to health volunteer and observation

** Cover 50% of total population, one family is 7 people, one pit shared by 2 households

A NGO with good experience in urban sanitation program in collaboration with DHMT and health officers from the health centre (namely EHT) shall play key role to back up actual work implemented by the community. A Venn diagram exhibited indicates relationship among various stakeholders involved in the project (Refer to Figure 6.4).



Figure 6.4 Venn Diagram of Stakeholders

(4) Rehabilitation of Existing Health Centre and Sub-health Centre Construction Project

Considering high incidence of preventable diseases such as diarrhea, cholera and malaria, self-help developmental preventive measures, such as garbage removal and door-to-door health and hygiene education campaigns could be successfully instituted by the efforts of community based health volunteers explained in previous section. However, when it comes to curative measures, it is necessary to have service provision at the health centre by professional staff since health volunteers are not professionals. In this regard, it is necessary to consider building health centres in areas, which have no good access to health services. Not only constructing sub-health centres, but also rehabilitation of the existing health centre facilities, especially the environmental health facilities, are crucial for the health service improvement in UUS.

The following table shows current situation and priorities in this component.

Area	Current Health	Priority		Target Intervention items
	Problems	Kanking		
Bauleni	No water	1	≻	Rehabilitation of existing health center
	supply		≻	Urgent water supply development for normal clinic function
			\triangleright	Construction of new borehole and elevated tank
Chainda	Not observed	Х		
Chibolya	No health	2	\succ	Construct sub-health centre and provide basic PHC,
	centre			MCH/family planning services
Chazanga	No health	2	\succ	Construct sub-health centre and provide basic PHC,
	centre			MCH/family planning services
Freedom	No health	2	\succ	Construct sub-health centre and provide basic PHC,
	centre			MCH/family planning services
Kalikiliki	No health	2	≻	Construct sub-health centre and provide basic PHC,
	centre			MCH/family planning services
Ng'ombe	Bad sewerage	1	\triangleright	Rehabilitation of existing health center
-	No water		≻	Urgent water supply development for normal clinic
	supply			function
			≻	Construction of new borehole and elevated tank
			\triangleright	Rehabilitation of sewerage system
Old	Not observed	X		
Kanvama				

Priorities for Sub-health Centre/ Health Centre Rehabilitation

(1): First Priority (2): Second Priority (3): Third Priority X: No need

6.3.4 Income Generating Project

In designing the action area plan, it has to be recognised that microfinance is not easy to practice without experience and lesson learnt, and no one can expect to see such dramatic changes and impacts in the short run. Hence, in order to minimise any risks and failure, the feasibility of this project must be studied over time especially by reflecting the experience and results of the pilot project in Bauleni.

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Considering lack of financial services in community, this Study discovered that 3 settlements have potential to receive support.

	Existing financial institution	Priority ranking
Bauleni	MF (AMDA) MC(HUZA)	×
Chainda	MC (World Vision)	×
Chazanga	MC (HUZA)	×
Chibolya	None	
Freedom	None	
Kalikiliki	None	
Ng'ombe	MC (HUZA)	×
Old Kanyama	MF (CARE PROSPECT)	×
ML.M	ing Einen of MC, Ming Cardit	

Priority Ranking in Eight Settlements

Note MF: Micro Finance MC: Micro Credit

Microfinance practice needs strict management and discipline since it is a cash related operation. Practice of microfinance should be supported by experienced NGOs. NGO plays a key role in screening beneficiaries, training, loan disbursement, reimbursement, counselling, monitoring and cash management/accounting. RDC and other subcommittee such as market committee and churches shall cooperate in identifying and screening beneficiaries and monitoring operation.



Figure 6.5 Stakeholders Relationships (Venn Diagram)

6.3.5 Community School Development

Considering that a great number of school-aged children in settlements are out-of-school, the project aims to give more education opportunities through non-formal education, i.e. community schools for underprivileged children.

The process of community school development may differ depending on what status of school should be targeted. If a new school is to be built, it has to be considered to construct school building and establish organisational set-up/system of management and running. On the other hand, if the Projects is to expand and strengthen an existing community school, there is usually already organisational support (PTA) and system of school running assisted by both an NGO and the community. Generally speaking, it is easier and quicker to support the latter type of school as long as community (RDC and PTA) agree and cooperate in developing a school.

Identifying school availability and needs in the eight settlements, this Study maps out community school development in the action area plan and gives priority as following table. Freedom and Kalikiliki have neither public nor community school within or nearby the communities, so first priority must be given to these areas. Chazanga has the only one community school which accommodates more than 1,000 children in two classrooms and the quality of education is a serious problem. Chainda is getting a new government school by Japanese grant aid from the year 2001, but only 180 children will be enrolled, while one community school is run by World Vision in a small room rented from a church, but this school also accommodates hundreds of children in a ramshackle building.

	No. of Closest	No. of Community	Priority	Establish new or
	Public School	School	ranking	expand existing
Bauleni	2	1	2	New
Chainda	1	1	1	Expanding*
Chazanga	0	1	1	New
Chibolya	1	4	×	N/A
Freedom	0	0	1	New**
Kalikiliki	0	0	1	New **
Ng'ombe	1	5	×	N/A
Old Kanvama	1	5	x	N/A

Priority Setting and Planning for Community School

* World Vision is planning to rehabilitate the school. ** If land is available in those communities.

Design of school building can adopt the Micro Project standard by GRZ. It has two classrooms with a storage room and an office. According to the regulation of Zambian Community School Secretariat, children to accommodate in one class should not exceed more than 40 to maintain the quality control of education. Community school covers from level 1 to 4. If a two shift system is arranged, the school can arrange classes for four levels in one day.

Community school cannot be developed unless there is strong support from outside experts providing construction skills, mobilising participation, training teachers and running school. NGO with great experience will play as an implementing agency in collaboration with RDC. Also technical supports from LCC, MOE, ZCSS (Zambian Community School Secretariat) are necessary. Particularly, MOE and ZCSS are key organisations to assist teachers training, provide textbooks and sustainable school operation.



Figure 6.6 Stakeholders Relationship (Community School Development)

6.3.6 Garbage Disposal Program

The existing conditions in connection with solid waste collection are evaluated at each settlement below.

UUS	Peoples' desire	Present Collection	Hygienic Condition	Status of Plan/ Project	Popu- lation Density	Number of Beneficiaries	Priority Ranking
Bauleni	High	Illegal	Bad	No	351	45,000	1
Chainda	Low	Illegal	Bad	No	270	17,000	1
Chazanga	Low	Illegal	Good	Plan exist by CARE	954	29,000	-
Chibolya	Medium	Illegal	Serious	Plan exist by CARE	761	25,000	-
Freedom	Low	Illegal	Serious	No	209	9,000	2
Kalikiliki	Low	Illegal	Bad	No	131	8,000	3
Ng'ombe	Medium	Communal	Serious	In place by SLP	329	30,000	-
Old Kanyama	Low	Illegal	Serious	Plan exist by CARE	114	57,000	-

Evaluation and Priority Setting for Garbage Disposal in Eight UUSs

(Remarks) 1: First Priority, 2: Second Priority, 3: Third Priority, -: Planned/on-going projects exist

From the result of the evaluation of the present conditions concerning garbage disposal, the garbage disposal program in four UUSs consisting of Bauleni, Chainda, Freedom, and Kalikiliki is selected for implementation.

The implementation schedule of the garbage disposal program at each settlement shall be determined in consideration with the implementation schedules of water supply system and health/sanitation improvement projects since the garbage disposal program is correlated closely with these projects as mention later. The programs in Chainda, Freedom and Kalikiliki are classified as short-term projects and in Bauleni as long-term projects.

Under the assumption that the solid waste management of LCC is improved in the near future, the basic plan of garbage disposal programs in selected compounds is formulated as described below. Domestic waste generation rates at each 5 years were 0.3 kgpcd in 1999, and are estimated to be 0.5 kgpcd in 2005 and 0.8 kgpcd in 2010. Garbage will be collected at each zone and a midden box is constructed as a garbage collection point. A concrete-brick midden box is to be prepared at each zone by the collection group under the waste management committee in order to collect and store domestic waste. For separate collection, residents shall classify domestic waste into combustibles and incombustible refuse. Separated plastics, bottles, cans and metal shall be recycled. A transfer station also is provided at the location nearby the main road in order to transfer collected garbage to the final disposal site.

The waste collection committee is to be organized by RDC for keeping sustainable collection system. Workers of the community entrepreneur to be

employed collect storage waste from the midden boxes and move it to the transfer station under supervision of the committee. The service charge is to be collected by the waste collection committee at a room of the community center. It is recommended that the service charge is collected based on the registration and ticket/card contract. LCC or private collectors will collect and transport waste periodically based on request from each RDC. Collection frequency should be twice a month at least.

6.4 Development Cost of Action Area Plan

The total development cost for the action area plans of the eight UUSs is estimated at approximately US\$31.85 million. The detailed cost estimate for the implementation of the action area plan by UUS and by sector was done and summarized in the table below.

									(anne. Or	σφ1,000)
	Item	Water Supply System	Health/ Hygiene Education	VIP Toilet	Community School	Garbage Disposal	Community Center	Road Improv.	Income generation	Total
Ι	Development Cost	12,970	644	2,136	380	89	822	5,929	130	23,100
	1) Bauleni	3,724	111	382	71	30	111	1,398		5,827
	2) Chainda		105	138	82	20				345
	3) Chazanga		105	208	81		113	423		930
	4) Chibolya		37	346			113	959	41	1,496
	5) Freedom	2,236	74	98	81	20	187	238	46	2,980
	6) Kalikiliki	2,796	74	108	65	19	187	288	43	3,580
	7) Ng'ombe	4,214	101	318			111	845		5,589
	8) Old Kanyama		37	538				1,778		2,353
Π	Community capacity building									2,502
III	Physical Contingency									1,280
IV	Price Contingency									4,969
V	Total									31,851

Implementation	Cost	of A	Action	Area	Plan
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(unit: US\$1,000)

Note: Construction cost, engineering cost, administration cost are included in the development cost. Cost for cap workshop and community training are inclusive in Community capacity building cost Operation and Maintenance cost is not included.

Source: JST

6.5 Initial Environmental Examination on Action Area Plan

(1) Objectives and Procedure of IEE

An initial environmental examination (IEE) is a first-round environmental impact assessment concerning the planned projects. The IEE is conducted at an early stage of project development, and could be an effective tool to identify possible environmental impact and to guide the countermeasures to prevent the adverse impact in the first planning stage. The IEE has been carried out for the proposed projects for action area plan. Major objectives of the IEE are:

- To identify possible environmental impact in case of implementation of the proposed projects based on available data/information and limited field reconnaissance, and
- To judge needs for an Environmental Impact Assessment (EIA).

Classification of environmental elements taken into consideration is shown below.

Class				Elements
А.	Natural and	Biological	1.	Surface Water
	Environment		2.	Ground Water
			3.	Soil Erosion
			4.	Topography and Geology
			5.	Weather / Climate
			6.	Animals and Plants (Wildlife habitat)
			7.	Coastline and Sea
			8.	View
В.	Social Environment		9.	Resettlement
			10.	Population distribution (Racial, Ethnic)
			11.	Economic Activities
			12.	Transportation
			13.	Community facilities & Services
			14.	Separation / Sprit of Community
			15.	Cultural Assets and Archaeology
			16.	Water and Common Rights
			17.	Health and Sanitary Condition
			18.	Waste
			19.	Landscape (Degradation Risk)
C.	Pollution		20.	Air Pollution
			21.	Water Pollution
			22.	Soil Contamination
			23.	Noise and Vibration
			24.	Ground Subsidence
			25.	Noxious odors

Environmental Elements for IEE

(2) Results of IEE

Projects of water supply system improvement, road improvement, VIP toilet development, community school development, garbage disposal, and community center development were examined by the IEE procedure, while health education as well as income generation projects were excluded from the IEE examination.

IEE results show that this living environment improvement project in eight UUS of Lusaka will give significant positive impacts on natural and social environment. Some slight adverse impacts can be sorted out by appropriate countermeasures. Therefore, it can be concluded that none of projects proposed in the Action Area Plan requires EIA.

6.6 Implementing Schedule of Action Area Plan

All projects proposed in the action area plan is scheduled to implement by 2010 as shown in Figure 6.7. Priority projects such as water supply improvement, health and hygiene education, VIP latrine development, solid waste disposal, community school development will be developed in the short term.



Priority Projects to be implemented in the short term.

Figure 6.7 Implementing Schedule of Action Area Plan

Action area plan is schematically presented by each UUS in Figures 6.8 - 6.15.

Evaluation & Lessons from Pilot Projects 1. Pilot scheme of Water supply system developing participation should be replicated to the other UU 2. Training of management skill and engineering skin in the project. 3. Careful/detailed support should be inclusive component) for the operation and maintenance at the management system, especially including water limportant. 1. Effect of road improvement in UUS is admissive extreme increase of traffic volume on the pilot improvement in UUS should be carried out pilot program of gravel pavement, erosion of ditch, speed control, etc. 1. It is recommended that pilot program of gravel pavement, nonunity health education as well as school which were verified effective for the sanitary and UUS, should be carried out in line with develk system, toilet improvement, and garbage disposal minorvement in School based health education as well as school which were verified effective for the sanitary and UUS, should be considered that pilot program of BaueniChiloy ashould be replicated in the other system, toilet improvement, and garbage disposal system, toilet improvement, and garbage disposal system, toilet improvement, and garbage disposal improvement in school is necessary. 5. In addition, it is proposed that sub-health cer	Concept of Action Area Plan for 8 U	 nent by the community New water supply system should be a Freedom, Kalikiliki, Ng'ombe by the participation. Ill should be carried out in the project (soft in the project (soft be start-up stage. Aftercare project for system management is evy collection system is inclusive in the project. 	 in consideration of the runk/access roads of UUS will be improved and Thus, trunk road in the attention to project planning project. Training of fully discussed with the fully discussed with the fully discussed with the provident of the project. Provident of the pilot project, while feeder road for Work community contribution, e.g. Food for Work for Work for the pilot project, while feeder road for Work community contribution, e.g. Food for Work for Work community contribution, e.g. Food for Work for Work for project. Training of the pilot project is the feeder road for Work community contribution, e.g. Food for Work for Work for Work community contribution, e.g. Food for Work for Work for project. 	 health education of health education and school based health education, based health education, a health improvement in system. based health improvement in proposed in action area plan. community health education project should before water supply system is developed (year before water supply system) because hyle health educators before water actually starts in which first aid CARE is participating in health education will be carrie existing public schools (Bauleni and Ne and the Community Schools to be developed to be and the community Schools to be developed to be dev
ц 	Evaluation & Lessons from Pilot Projects	Pilot scheme of Water supply system developm participation should be replicated to the other UUS Training of management skill and engineering ski in the project. Careful/detailed support should be inclusive component) for the operation and maintenance at t Management system, especially including water la important.	Effect of road improvement in UUS is admissive extreme increase of traffic volume on the pilot 1 improvement in UUS should be carried out p following items. CAP (Community Action Planning) Work Sho should be held more intensively than pilot maintenance/ repairing skill for community is inev Design of the road improvement should be caref community considering the narrowness, needs of gravel pavement, erosion of ditch, speed control, 0 etc.	It is recommended that pilot program of Bauleni/Chibolya should be replicated in the other Community health education as well as school which were verified effective for the sanitary and UUS, should be carried out in line with develc system, toilet improvement, and garbage disposal In conjunction with school based health educa improvement in school is necessary. Seed money should be considered for Health E sustainable activity.
		<u>1</u>		. <u>.</u>

Table 6.1Evaluation and Lessons of Pilot Projects – Action Area Plan (1/4)

F/R

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Community/Co mmon Home **VIP** Latrine

6 - 20

Income

Evaluation & Lessons from Pilot Projects	 Concept of Action Area Plan for 8 UUSs
Needs for VIP (Ventilated Improved Pit) toilet was verified through the	• VIP toilet development scheme shall be replicated to all
pilot project in Bauleni.	UUS principally.
House owners took chance for upgrading of the house facility under the	• 50% service coverage of all the compound is planned
consultation with the tenants.	assuming that four (4) households share one double pits
Only 10 VIP toilets were constructed in case of no subsidy in Chibolya. In	latrine = approximately 12 people ($*$) sharing one pit.

total

of %

25

resident was

Cost contribution by

* one household consists 0f 6 people.

this context, it can be said that replication of VIP toilet without subsidy is

Water supply system with an intake of deep borehole should be developed prior to VIP toilet promotion to

In designing the Action Area Plan, it has to be recognised that microfinance is not so much easy to practice without experience and lesson learnt, and no one can expect to see such dramatic changes and impacts in the short run.

avoid the contamination of shallow wells.

development cost, which costs the much expenditure on

ow-income residents in Bauleni.

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Longer implementing period should be planned in consideration of management capacity of supervising organization and influence of rain for the action area plan.
Water quality contamination of existing shallow wells should be paid due
auenuon.
Lower repayment rate and insufficient revolving fund unveiled low
efficiency and unsustainability. Also lack of group responsibilities could not
achieve project purposes entirely.

rather difficult

skills & knowledge and self-reliance, and confidence. In response to the As microfinance project should be evaluated for a long time, it is too early National goal and the community needs in poverty reduction, it is concluded However, impacts on beneficiaries are significant in terms of expenditure, to evaluate whether the pilot project succeeded or not. It might be difficult to introduce microfinance immediately now in all areas unconditionally that relevance is high. Generation

project must have its feasibility studied over time Chibolya, Freedom, Kalikiliki, could be candidates for especially by reflecting on the experience and results of Considering lack of financial services in community by other donors, JST discovered that 3 settlements, he pilot project in Bauleni.

urther experience.

other communities, and NGOs to collaborate and availability of source of

fund

After observing the results of Phase II in Bauleni, careful and long-term plans must be made only if there are high needs and strong feasibility for

Hence, in order to minimise any risks and failure, this

(3/4)
Plan
Area
- Action
rojects –
of Pilot F
essons o
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aluation
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Table 6.1

	Evaluation & Lessons from Pilot Projects			Concept of Actio	n Area Plan for 8	UUSs
	Because this is the first RDC based community school, community voluntary labours were not so much promoted and inputs (costs).	↑	Commu replicate	nity school pilo d to the other UI	t project in Chil JS.	olya could be
	• However, CS in Chibolya was built and commissioned. KUC and PIA named the CS "Chibolya Community School".	•	settleme	ng school av nts. this Study	allability and maps out com	needs in 8 nunity school
	Management/operation plan of Chibolya Community School was agreed		developi	ment in the Acti	on Area Plan and	gives priority
	among NGO (CIM) and KDC with PIA. Fund raising method for teachers salary, school text, consumable materials, etc. was also planned.		as follov : Firs	vs. t Priority	: Second Prior	ty ×: No
						need
				No of closest	No of existing	Priority (No of CS
Community				school	2)	needed within the
SCII001						community)
		B	auleni	2	1	(1)
		Ū	hainda	1	1	(1)
		U	hazanga	0	1	(1)
		Ū	hibolya	1	4	×
		Fr	.eedom	0	0	(1)
		X	alikiliki	0	0	(1)
		Z	g'ombe	1	5	×
		Ö	ld	1	5	×
		K	anyama			
	• Garbage disposal scheme of SLP (Sustainable Lusaka Program) can be		SLP pilc	ot concept shall b	e replicated to all	UUS.
	replicated to 8 UUS, although JST did not carry out the garbage pilot project.	•	Conside	ring the exister	nce of CARE H	ROSPECT in
	• In Ng'ombe, 2 entrepreneurs are established for the garbage transport business		Chiboly:	a, Chazanga, and	d Old Kanyama,	and SLP pilot
	in the SLP garbage disposal scheme. By 500 K per month contract,		program	in Ng'ombe, fo	ollowing three UL	S will receive
	entrepreneur transports garbage from the first garbage station appointed per		new pro	grams concerning	g garbage disposa	
Garhaga	20-30 households to the second garbage stations.		-	Bauleni		
Disnosal	• Support to the entrepreneur concerning investment capital, construction of	_	J	 Chainda 		
mender	garbage stations, training for collection, etc, were carried out in the SLP pilot		J	Freedom		
	 Eron the count outpoor station 1 CC is boing adout to transmost without to 		•	Kalikiliki		
	the final dumping station.		rior to the	introduction of	new garbage disj	osal programs
		<u>. </u>	three UI	JSs, garbage tra	insportation metho	od to the final
		ฮ	imping sit	e should be reso	Ived.	

Nippon Koei / Global Link M.

Environmental Improvement of UUS in Lusaka F/R

Community center in which RDC office, LCC site office, sub-health center, levy office, meeting room is proposed make Park for athletic game, community safety patrol. Full participation and contribution of community will Concept of Action Area Plan for 8 UUSs to be built in the following UUS. Kalikiliki Ng'ombe Freedom Bauleni are necessary for community management. Workshops for various kind of training for community empowerment will also be held in the community center. Levy collection office as well as sub-health center will be Development of play garden and safety patrol system in UUSs are also strongly required by the community, though financial support of donors is Community center including meeting room, RDC office, LCC site office, etc. Evaluation & Lessons from Pilot Projects difficult because of lower priority. cooperatively developed. • Others

 Table 6.1
 Evaluation and Lessons of Pilot Projects – Action Area Plan (4/4)











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Environmental Improvement of UUS in Lusaka

F/R







Summary

7. DEVELOPMENT PLAN OF PRIORITY PROJECTS

7.1 Selection of Priority Projects for Short Term Development

It should be said that the projects proposed in the action area plan are all urgent and necessary to be implemented for improving the living environment of the UUS of Lusaka. However, financial constraints will not allow carrying out of all projects concurrently. Phased development will be necessary to overcome the financial and human resource constraints, so priority projects should be selected for urgent implementation by short-term target of year 2005. It is noted that the target year for short-term may be extend the year of 2007, although it is basically set the year of 2005. Followings are considered for the selection of priority project for short term development.

<u>Urgency</u>: To select priority projects, urgency of the project should be the first criteria. JST understands that the health and hygiene improvement project is urgent and is requested by the community enthusiastically. Thus, it is recommendable that water supply system development/improvement, health/hygiene education, sanitary toilet development, and garbage collection should be selected as the priority projects out of the action area plan to implement in the short run.

<u>Effectiveness</u>: For the sustainability of the community development, basic education of children should also be a high priority criteria. Because of stagnation of formal basic education in Zambia due to the shortage of the budget, community school is the best choice for UUSs to educate their children. The JST pilot project community school has proved the success possibility in UUSs if the initial development cost was borne by the donor contribution. The community school with cost efficient development and community management will be effective for the improvement of education condition in UUSs. JST recommends that the community schools be the priority project in the environment improvement project in UUSs of Lusaka.

<u>Sustainability</u>: Income generation of micro finance is also an urgent scheme to overcome the poverty problem in UUSs of Lusaka. However, the pilot micro finance scheme was not proved sustainable during the implementation. Therefore, follow-up of the pilot project is necessary, and JST recommends that income generation program continuous to be studied and wider program covering UUSs should start in the long run based upon further experience and lessons.

<u>Specific Conditions by UUS:</u> Bauleni water supply system improvement projects will be a long-term project due to the comparative nonurgency. Projects of health education in the community and schools in Bauleni will be automatically long term projects. VIP toilet development project in Bauleni is also advised to commence in the long term after the implementation of a clean and safe water supply system in consideration of the possibility of pollution of shallow groundwater by the VIP toilet.

<u>Conclusion</u>: The priority projects to implement in the short tem are summarized in the Table 7.1.

7.2 Implementing Plan

7.2.1 Implementing Work Flow

The key organizations of the Zambian Government for the implementation of the priority projects concerning the living environment improvement in UUS will be MLGH and LCC. Communities will also play key roles in the actual implementation of the projects.

Figure 7.1 shows the actual work-flow for the implementation of the priority projects as explained hereunder in detail.

Start-up Stage

MLGH should undertake to formulate the fund source for the priority project implementation (of Figure 7.1). Several sources are conceivable as shown subsequent section, MLGH with the cooperation of Ministry of Finance and Economic Development shall arrange the finance source not only from foreign aid but also the central government finance such as counter value fund.

Considering the presence of several donors, partnership and work sharing for the priority projects should be initiated by MLGH with LCC. The forum for peri-urban development is an opportunity to exchange policy dialog and sharing principles (of Figure 7.1).

Project Implementing Stage

MLGH will subcontract implementation works of the priority projects (of Figure 7.1) and the subcontractor should work under the cooperation with LCC and communities. This cooperation is most important for the smooth and effective implementation and sustainability of the priority projects. LCC will

	Table 7.1 Pri	iority Projects of 8 UUS (Projects	presented by red colo	r mean priority	y projects to be	done in the short ter	m)
NUS	Water Supply	Health Education	Communal/Common Home VIP Toilet	Garbage Disposal	Community School	Road and Drainage	Income Generation
Bauleni	 Upgrading of existing LWSC part Clinic water 	 Community health education School based health education in Bauleni CS and Bauleni Basic school 	• Communal/comm on home VIP	• New project by SLP scheme	• New School	• Improvement of trunk road in UUS	
Chainda		 Community health education School based health education in Chainda CS 	Communal/comm on home VIP		• Improvem ent of existing CS	,	1
Chazanga		 Community health education Sub-health center School based health education in Chazanga CS 	Communal/comm on home VIP	1	• New School	• Improvement of trunk/access road in UUS	1
Chibolya	1	 Sub-health center School based health education in Chibolya CS 	Communal/comm on home VIP	1	1	• Improvement of trunk road in UUS	• New Micro Finance
Freedom	New Project is proposed	 Community health education Sub-health center School based health education in Freedom CS 	• Communal/comm on home VIP	• New project by SLP scheme	• New School	• Improvement of trunk/access road in UUS	• New Micro Finance
Kalikiliki	New Project is proposed	 Community health education Sub-health cente School based health education in Kalikiliki CS 	• Communal/comm on home VIP	• New project by SLP scheme	• New School	• Improvement of trunk/access road in UUS	• New Micro Finance
Ng'ombe	New Project is proposed	 Community health education Health center rehabilitation 	Communal/comm on home VIP	1	1	Road improvement of first priority road	
Old Kanyama	1	Basic school sanitary education	• Communal/comm on home VIP	I	I	 Improvement of trunk road in UUS 	1

play a key role in this cooperation work. In LCC, peri-urban section of the Housing Department will take a lead for actual implementation work.

Organization of a task force is recommended to make this cooperation work effective(of Figure 7.1). Progress supervising, problem solution, decision making, agreement among stakeholders, etc. shall be carried out in the task force member meeting.

In addition to this governmental implementation work, non-governmental aid by NGOs is also conceivable. NGO will assist the community to develop the priority projects through subcontracted consultants and contractors (of Figure 7.1).

Aftercare Stage

After the implementation of the priority projects, operation and maintenance work should be done for the project sustainability. Peri-urban section and relevant departments of LCC and LWSC as well as relevant ministries shall support the community for the operation and maintenance work (of Figure 7.1). On the basis of the pilot projects experience, JST proposes that the aftercare work should carried out for at least 6 months after implementation of the priority projects. The task force members as shown in Figure 7.2 should contribute effectively to the support of the community in the operation and maintenance work.



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7.2.2 Implementing Schedule

Priority projects will be implemented by two phases. Phase 1 is designated from 2002 till 2004 while phase 2 is from 2005 till 2007. The other projects proposed in the Action Area Plan are planned to be implemented after 2007. Implementing schedule of priority projects is shown in Table 7.2.

7.3 Development Cost of Priority Project

The total development cost for the priority project of eight UUSs is estimated at approximately US\$ 17.39 million. Cost by phased development is also estimated at US\$7.57 million for Phase 1 development as well as US\$9.82 million for Phase 2 development cost respectively as summarized in the table below.

Summary of Priority Projects Cost for Short Term Development

(unit: US\$1,000) Health/ Water Community Garbage Communit Phase VIP Toilet Total Item Supply Hygiene School y Center Disposal Education System 1 Development Cost 4,583 317 456 309 20 224 5,909 Phase 1 2 Community capacity 834 (2002 building 825 2004) 3 Contingency 7,568 4 Sub total 5.032 1 Development Cost 253 1,298 71 39 487 7,180 2 Community capacity Phase 2 834 (2005building 1,810 2007) 3 Contingency 4 Sub total 9,824 Total 17,392

Note: Community center includes water levy collection room, sub-health center, etc.

Physical contingency as well as price contingency are included in the contingency cost. Operation and Maintenance cost is not included.

Source: JST

Detailed cost by UUS and sector is shown below.

(unit: U								S\$1,000)
	Item	Water Supply System	Health/ Hygiene Education	VIP Toilet	Community School	Garbage Disposal	Community Center	Total
Ι	Development Cost	4,583	317	456	309	20	224	5,909
	1) Bauleni	369	37					406
	2) Chainda		105	138	82	20		345
	3) Chazanga				81			81
	4) Chibolya		37		81		113	231
	5) Freedom							
	6) Kalikiliki				65			65
	7) Ng'ombe	4,214	101	318			111	4,744
	8) Old Kanyama		37					37
II Community capacity building								834
III Physical Contingency							337	
IV	Price Contingency							488
V	Total							7,568

Summary of Priority Projects Cost for Phase 1 Development

Note: Construction cost, engineering cost, administration cost are included in the development cost. Cost for cap workshop and community training are inclusive in Community capacity building cost

Operation and Maintenance cost is not included.

Source: JST

	(unit: US\$1,000								
	Item	Water Supply System	Health/ Hygiene Education	VIP Toilet	Community School	Garbage Disposal	Community Center	Total	
Ι	Development Cost	5,032	253	1,298	71	39	487	7,180	
	1) Bauleni				71			71	
	2) Chainda								
	3) Chazanga		105	208			113	426	
	4) Chibolya			346				346	
	5) Freedom	2,236	74	98		20	187	2,615	
	6) Kalikiliki	2,796	74	108		19	187	3,184	
	7) Ng'ombe								
	8) Old Kanyama			538				538	
Π	Community capacity b						834		
III Physical Contingency							401		
IV Price Contingency							1,410		
V Total								9,824	

Summary of Priority Projects Cost for Phase 2 Development

Note: Construction cost, engineering cost, administration cost are included in the development cost. Cost for cap workshop and community training are inclusive in Community capacity building cost

Operation and Maintenance cost is not included.

Source: JST

	UUS	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
(1)	Bauleni		Clinic	water						LW SC ar	5a
(2)	Chainda										
(3)	Chazanga) 						
(4)	Chibolya										
(5)	Freedom)						
(6)	Kalikiliki										
(7)	Ng'ombe										
(8)	Old Kanyama										
Development Phase			Pha	ise 1		←	Phase 2		•		
				Priority Pro	ojects for Sl	nort Term	Develop me	nt	Subs	equent Phas	se
Leg	end	Water Su Health/H VIP Toile Commun	ipply Syste ygiene Ed t ity School	em Improv ucation	rement		Garbage I Communi Road Imp Income g	Disposal ity Center provement eneration			



7.4 Institutional Improvement Plan

In the course of the implementation of the pilot project, the Peri-urban section of Housing Department, LCC has worked out effectively and efficiently. In the same manner, LCC will play key role in the realization of the action area plan and be a counterpart organization with communities who can participate in the implementation work of the priority projects.

Despite the remarkable achievement of relevant departments of LCC in the pilot project implementation and expected role for the realization of the action area plan, several institutional capacity improvements is necessary to cope with the much work of the action area plan implementation.

Further, considering that LCC has the responsibility for supervision of the community organization of UUS, LCC should supervise the community to keep transparent management concerning developed projects.

In this regard, the institutional capability improvement and strengthening of LCC is discussed hereunder for the purpose of the implementation of the action area plan and sustainability of the projects.

- 7.4.1 Organization Strengthening
 - (1) Enhancement of Peri-Urban Section

The Peri-urban section is responsible for the development of UUS in Lusaka City. Staff organization with one assistant director and five core staff (Community Development Officer: CDO) is insufficient to manage the additional projects of action area plan. If the projects of the action area plan start, the assistant director as well as CDO will concentrate on the projects and may forget the daily business. In this regard, distribution of staff to UUS should be rearranged properly and appropriate training for staffs should conduct in order to implement the action area plan smoothly.

(2) Institutional Building of EHTS (Environmental Health Technician)

In realization of Action Area Plan, in which hygiene and sanitation improvement component shall be the major component, EHTs should be involved fully from the beginning of the project so that the effectiveness and sustainability of the projects are ensured. EHTs' knowledge and skills on sanitation are proved to be high but they are not well trained for participatory methods for promoting hygiene behaviour, sanitation improvements and community management of health, hygiene and sanitation projects. In this regard, the project shall include training for those EHTs to acquire knowledge and skills for participatory health and hygiene project cycle management as well as refreshing their technical knowledge and skills.

7.4.2 Manpower Enhancement

(1) Recruitment of Water Service Staff

LCC does not have a water supply and sewerage department. These are the most urgent and basic needs of the community, and Lusaka Water and Sewerage Company is taking responsibility for the water management in UUS of Lusaka City. Considering that LWSC is the private company since the privatization in 1990, JST supposes that public service for low-income area is rather difficult for LWSC.

In case of the action area plan realization, in which water supply improvement will be the major component with numerous works, the full assistance of water engineers is necessary. A new water engineer should be stationed in the Peri-urban section or in Engineering Department to substitute the LWSC's performance.

In addition to the engineering aspect, management skill of water system is also crucial. Specialists in water supply management techniques shall be recruited for the water project management.

(2) Recruitment of Community School Staff

Although the Ministry of Education (MOE) exclusively handles education matters in Zambia, it is desirable that staff concerning development, management, and operation of the community school in Lusaka City be appointed by LCC.

MOE takes responsibility for the policy matter such as the role of community school in UUS, coordination with regular schools, training of teachers, setup of education goal and curriculum development, while LCC shall supervise the development of community school and assist the community and PTA for operation and management. Staff will belong to the Peri-urban section of Housing Department.

7.4.3. Regularlization of Partnership Forum

To strengthen the partnership among the donors, NGOs, relevant Ministries and LCC, policy dialogue and aid work sharing and cooperation have being discussed in the Partnership Forum. The partnership forum was commenced from 1999

chaired by the LCC Town Clerk with the cooperation of MLGH, however, the expected outcomes have not yet been satisfactorily attained due to the time constraints of members.

For the implementation of action area plan, effective functioning of the forum is important. Namely, avoiding the duplication, sharing of role and job, work collaboration, cost sharing, standardization of operation and management, etc. shall be taken through the meeting of the forum.

7.4.4 Financial Management

LCC shall take the following measures to improve its financial status and social srevices.

(1) Strict budget management

Taxes comprising Rates (Property Tax) and Personal Tax are the main fiscal sources for LCC to manage and implement its expenditure budget. Besides, Salary and Wage bills for the employees share the single largest portion of the whole expenditure. Due to a shortage of revenue and stricter cash budget management, LCC is forced to delay the payment to the civil servants, which is obviously creating significant problems in the area of unreliable basic social services delivery and even deteriorating Tax and Dues collection powers. Therefore, LCC shall conduct strict budget management in terms of both the revenue and expenditure sides.

(2) Updating rateable value

Taking account of the high inflation since 1995, over 25% annually, the property value deems unrealistic. Under the financial assistance from World Bank and USAID, LCC is trying to update the value base of the rateable properties (land and building) for the Rates. It is necessary to strengthen the City revenue base in relation to Rates.

(3) Retrenchment of LCC staff

In order to improve LCC's financial status after stoppage of the budgetary support from the Central Government, LCC has tried to reduce the number of staff. LCC shall make efforts to encourage retrenchment of staff. Also, LCC shall consider the adverse effects on its capacity to deliver its legitimate services to the citizen without sufficient staffing. (4) Strengthening secured revenue base

The most urgent task of LCC would be strengthening its secured revenue base, particularly those from Rates and Rents. LCC has organized Rates collection teams, which achieved a certain success in FY2000, but it is not sufficient to keep up with provision of delivery of the City's basic social services. It is urgent for LCC to update the rateable value to realistic and practicable level and to fully cover the rateable property without leakage of legitimate properties liable to Rates, and to properly enforce the Rating Act, coupled with good governance and professional civil servants.

7.5 Financial and Economic Evaluation

- 7.5.1 Financial Evaluation
 - (1) Financial Internal Rate of Return (FIRR)

In this sub-section, financial evaluation is focused on the water supply projects in Ng'ombe, Freedom and Kalikiliki, which are generally considered to be profitable. The other projects such as health / hygiene education, VIP toilet construction, community school construction, garbage disposal, community center construction, road improvement and income generation project shall be developed as public works, because they are considered to be non-profitable and of high public benefit for the communities of the unplanned urban settlements.

The FIRRs for the three water projects could not be computable due to the low benefits. This indicates that the water supply projects in these three settlements are not profitable if the initial investment cost is considered.

The conditions of break-even point of revenues and expenses/cost were analyzed and are shown below. For reference, the sample of Ng'ombe under the water tariff condition of 8,500 (Kwacha /household/month) is shown in the following table.

Conditions	Water Tariff (K/household/month)	Annual Increasing Ratio of Water Tariff (%)	FIRR (%)
1. Ng'ombe	8,500	-	0.03
	-	9	0.06
2. Freedom	40,000	-	0.95
	-	25	3.12
3. Kalikiliki	30,000	-	1.99
	-	22	3.24

Conditions of Break-even Point of Revenues and Expenses/Cost

However, the above conditions for break- even point are not realistic and comprehensive for the community. Therefore, it is necessary for investment at the initial stage to be financed by grant aid and/or counter value fund.

(2) Financial Viability for Operation and Maintenance (O&M)

The financial viability for O&M is evaluated on the basis of cash flow analysis (table of statements) considering price escalation.

The cash flow statement for water supply system projects of Ng'ombe, Freedom and Kalikiliki with preconditions of 5,000 Kwacha/household/year as registration fee and 3,000 Kwacha/household/month as water levy shows that there will be no years of deficit. This means that operation of the community water supply system in each of the three settlements can financially cover the O&M cost and replacement cost.

The marginal collection ratio of water levy to attain the financial viability is calculated in the table below. 32%, 72%, 32% are estimated for Ng'ombe Freedom and Kalikiliki.

UUS	Marginal Collection Ratio for Financial Viability (%)					
Ng'ombe	32					
Freedom	72					
Kalikiliki	32					

Marginal Collection Ratio

7.5.2 Economic Evaluation

The socio-economic impacts/effects of the projects of the action area plan are assessed on both qualitative and quantitative terms hereinafter.

(1) Socio-economic Impacts/Effects

The socio-economic impacts/effects can be analyzed by comparing the situations for no implementation of development projects ("Without Project") with the situation after implementation of the development projects ("With Project"). Although both short and long term impacts/effects are studied by each project, a study on water supply improvement projects is described in this summary.

The water supply projects in Ng'ombe, Freedom and Kalikiliki and will generate the socio-economic impacts/effects shown below.

	Short term Impacts/Effects			Long term Impacts/Effects			
	Socio-economic Impacts/Effects	Beneficiary		Socio-economic Impacts/Effects	Beneficiary		
1	Sales revenue of water	Water Committee	1	Availability of sustainable O&M of water supply system	Water committee and residents		
2	Increase of production activities time caused by reduction of drawing water time	Residents	2	Reduction of disease	Residents		
3	Ensuring purified water	Residents	3	 Contribution to upgrading consciousness for sustainable O&M Increasing land value 	Residents		
4	Facilitation of knowledge and skill on pipe installation (by community participation)	Residents					

Socio-economic Impacts by Water Supply System Improvement Projects

(2) Economic Evaluation

In this sub-section, the economic evaluation is focused on the water supply projects in Ng'ombe, Freedom and Kalikiliki, taking project scale and availability of quantitative analysis into account. It is difficult for the other projects to assess economic impacts/effects in monetary value, due to relatively small scale and characteristics of their software components.

The economic evaluation aims at assessing the economic feasibility of the project from the viewpoint of the regional/national economy. In principle, the economic feasibility is evaluated in terms of economic internal rate of return (EIRR) using following economic cost and benefit.

Economic Cost

- Construction cost of water supply projects in Ng'ombe, Freedom and Kalikiliki;
- O&M cost of water supply projects in Ng'ombe, Freedom and Kalikiliki; and
- Replacement cost of equipment of water supply projects in Ng'ombe, Freedom and Kalikiliki.

Economic Benefit

- Cost saving of water transportation thanks to installment of public standpipes;
- Land incremental value in Ng'ombe, Freedom and Kalikiliki, and
- Cost saving of medical expenditure thanks to supply of clean potable water.

Results of economic analysis

Under the preconditions mentioned above, the EIRR is calculated to be 3.7%. Although this value demonstrates that the water supply projects are not economically viable, it is noted that the items available adopted for economic benefits are limited to converted in monetary value.

As described before, it should be recognized that the development projects including the water supply projects are indispensable for low-income residents in the UUSs to ensure civil-minimum social/public services and projects regardless of the results of economic feasibility/impact.

8. **RECOMMENDATIONS**

8.1 Recommendation on Development Plan

(1) Urgent Environment Improvement of UUS

While the living environment of the township in Lusaka City was improved to a certain extent thanks to the international aid as well as the inheritance developed in the past, the living environment of UUS, where half the population of the city is said to reside, remains untreated and suffering from poor conditions. The improvement of the living environment in UUSs was urgent and GRZ legalized the status of the UUS to allow improvements to commence.

Although some donors and NGOs are intervening for the improvement of the USS environment in a sector-wise manner, comprehensive and integrated development has not been attempted.

The following table summarizes the present condition of the eight target UUSs of this study.

UUS	Water Supply	Road/	Primary	Health Center	Waste	Toilet
(population)		Drainage	Education		Disposal	
Bauleni (45,000)	Old LWSC facility (JST developed pilot project)	Undeveloped	Public schools are developed near some UUSs,	Developed	Undevel- oped	Pit Latrine is mainly utilized.
Chainda (17,000)	Developed by World Vision	Developed by World Vision	approximately 50 % of out-of-school	Developed	Undevel- oped	
Chazanga (29,000)	Developing by CARE	Undeveloped	children are reported due to the shortage of	Undeveloped	CARE Develop-i ng	
Chibolya (25,000)	Developed by JST & CARE	Undeveloped	the school, expensive cost of tuition,	Undeveloped	CARE Develop-i ng	
Freedom (9,000)	Undeveloped	Undeveloped	uniform, etc.	Undeveloped	Undevel- oped	
Kalikiliki (8,000)	Undeveloped	Undeveloped		Undeveloped	Undevel- oped	
Ng'ombe (30,000)	Undeveloped	Undeveloped		Developed	CARE Develop-i ng	
Old Kanyama (57,000)	Developed by CARE	Undeveloped except for access road		Developed	CARE Develop-i ng	

Present Condition of Present Social Services in UUS

(2) Action Area Plan

As mentioned above, the integrated development covering various sectors of water supply, road and drainage improvement, primary education, health care, waste disposal, shall be done for the environment improvement of UUSs. The master plan, called the action area plan in the Study, was designed to realize appropriate social services in the eight target UUSs by implementation of integrated development. It means that every social service except for these already developed by donors and NGOs, were planned to be developed in the action area plan.

In this context, the water supply system improvement, health education, VIP toilet development, health center development, garbage disposal, community school development, and road and drainage improvement were planned for the environment improvement of the eight UUSs in the action area plan.

(3) Characteristic of the Action Area Plan

The action area plan proposed in the Study has the following advantageous characteristics;

- Relatively inexpensive development cost will be possible because of community participatory development. Development costs of the action area plan by conventional method and the community participatory method are estimated at 43.8 million US\$ and million 31.8 US\$ respectively. Community will participate in the construction directly to cut the project development cost. Furthermore, lower quality of facilities of the project, designed for community participatory method with assumption of the repair and facility replacement by the community will realize the cheaper project cost.
- Ownership nourishment for vandalism prevention will be attained by the community participation from the planning stage of the project.
- Sustainability of the projects will be attained by the self-sustained operation and maintenance work by the community. Lower O/M cost, prompt action to emergency faults in the system, ideas and measures for improvement, and better management will arise from the self-sustained community O/M work.
- (4) Plan of Priority Projects

It is understood that every project proposed in the action area plan cannot be implemented simultaneously due to the financial, time and human resources constraints. Therefore, the Study proposed a plan of priority projects to be implemented preferentially. The JST judged that sanitary environment

improvement as well as primary education enhancement, the basic elements of social services, shall be the priority projects in consideration of the community needs and present situation of the target UUSs.

In detail, following projects are proposed as the priority projects.

- water supply system improvement
- health and hygiene education
- VIP latrine development
- Sub-health center development
- Garbage disposal
- Community school development
- Community center development (for community empowerment facility and water levy collection facility)

8.2 Recommendation on Development Method

(1) Necessity of Integrated Development

Environmental improvement in UUS shall be effective and efficient when integrated with the development of social services. It is apparent that the integrated developments of water system improvement, health and hygiene education, garbage disposal system improvement, sewerage system improvement, and drainage improvement will improve sanitary conditions of the UUSs drastically. Development of community schools in line with water supply system development and garbage disposal improvement will make the projects more efficient.

Therefore, it is strongly recommended that the integrated development of the environmental improvement projects be undertaken for the UUSs.

(2) Implementing Organization

1) Social service development in UUSs should be carried out by community participation in order to attain sustainability in the operation and maintenance work and management of developed system, and to prevent vandalism. For this purpose, participation in the project planning, participation in the construction work by voluntary basis as well as employed labor basis, participation in the project evaluation, participation in the O/M and management skill training shall be necessary for the community. The community participation method is the only way to nurture a sense of ownership and understanding of

responsibility.

It should be acknowledged that the pilot projects verified that voluntary participation was not inevitable to nourish the ownership sense of the community, if the community participate in the projects from the start of the project.

- 2) ABO such as Resident Development Committee (RDC) represents the community. The members of RDC, Zone Development Committee (ZDC) under RDC, and sub-committee such as water committee or education committee will participate in the projects directly. More direct participants should be invited in addition to those representatives. For instance, the residents along the road should participate in the road improvement project.
- 3) A public organization who will play a major role for the project implementation will be the Peri-urban Section of the Housing Department of LCC. However, the Peri-urban Section is too weak to cope with the integrated projects implementation. A Task Force should be set up by the participation of relevant organizations for the smooth and efficient implementation of the projects. It should be made up as follows: the chief of the Peri-urban Section as the chairperson, staff responsible for target UUSs, representatives of the community, subcontractor of the project such as NGO, contractor, supervising consultant, relevant department staff of LCC, and relevant ministry staff from MOE and MOH.

The Task Force will exist to cope with problems, decision making, progress management of the projects.

4) To play a core role in the Task Force, there will need to be enhancement of the Peri-urban Section, such as manpower strengthening. Since only five staffs are carrying out daily service for 27 UUSs under a manager and an assistant manager in the Peri-urban section, specific staff to engage in the project implementation exclusively will be necessary. In addition, recruit of a water technician will be necessary in the Peri-urban Section considering that the water supply system improvement project is the most important. The number of water engineers responsible for the UUS is limited in LWSC and the service for UUS area is insufficient. Therefore, allocation of a water engineer in the Peri-urban Section to specifically work for projects proposed in the Study will be necessary for the success of the water supply system

improvement project. At the same time, a specialist for community school development as well as management will be necessary in consideration of the limited staff of the Ministry of Education.

- 5) The projects will be implemented smoothly and efficiently if work is sublet to NGOs, that have plenty of experience in the social service development of UUS. From the international NGO, CARE PROSPECT in the field of health and hygiene education, and Africare for VIP latrine development are leading agencies of the local NGO, Challenge International Ministry (CIM) will contribute for the community school development. These NGOs are collaborating with the communities and have the know-how concerning the community participatory development method.
- 6) Employment of a local or international consultant will be necessary to supervise the several subcontractors' performance as well as undertake community capacity building program. A capable international consultant will coordinate and induce the multiple effect in the integrated development.

(3) Implementing Program

- 1) As described before, the improvement of sanitary conditions and the primary education enhancement are the priority projects. However, simultaneous implementation of all priority projects seems difficult because of the financial, time, and human resource constraints that require phasing of the priority projects. In the Study, some priority projects, which should be implemented in the short run because of urgent needs, were selected as short-term priority projects and studied in detail.
- 2) The water supply system development of Ng'ombe, Freedom and Kalikiliki, where no system is serving, were selected as short-term priority projects. In line with the water supply system development in the three UUSs, the health and hygiene education, VIP latrine development, garbage disposal, sub-health center and community center development are selected as the short-term priority projects. Moreover, the health and hygiene education and VIP latrine development in Chainda, Chibolya, Old Kanyama, where water supply systems are already developed by cooperation of NGOs, are recommended as the short-term priority projects. Further the community school

development for the primary education enhancement is also recommended as a short-term priority project. A detailed plan of the short-term priority projects is explained in Chapter 9.

- 3) The short-term priority projects will be implemented in two phases. In Phase 1 during the three years from 2002 to 2004, the water supply system development, health and hygiene education, VIP latrine development, and the community center development were planned to be implemented in Ng'ombe where the population is large and top urgency is admitted. Among three UUSs with the developed water supply system, Chainda was selected to implement the health and hygiene education, VIP toilet development, and garbage disposal and Chibolya for the sub-health center development in the short-run to respond to the strong needs. Concerning the community school development, Chainda, Chazanga, Freedom, Kalikiliki were selected for development during phase 1 in consideration of the urgent needs.
- 4) In phase 2, from 2005 to 2007, the remaining priority projects such as water supply facility development together with health and hygiene education, VIP latrine development, garbage disposal, sub-health center and community center development in Freedom and Kalikiliki are proposed for implementation.

(4) Finance Arrangement for the Priority Project Implementation

Although economic internal rate of return (EIRR) of water supply projects in the short-term priority projects is estimated at 3.7%, it is expected to contribute sufficiently to the environmental improvement of UUS in Lusaka by means of qualitative analysis. With respect to financial internal rate of return (FIRR), none of the water supply projects show a positive rate of return, which is financially unfeasible with far lower than the required investment rate to provide opportunity for private investment. This means the investment is recommended, but public investment is necessary.

Since the local public finance is not available due to the financial constraints of LCC, international aid is the sole measure to arrange finance for the implementation of the projects. Japanese grant aid, counter value fund, grass root grant aid, and other donor's grant aid and loan, as well as NGO's grant aid are possible sources of aid for consideration.

8.3 Recommendation on Sustainability

- (1) It is concluded from the experience of the pilot projects that a minimum of six months care after the project implementation is mandatory even though the projects are the self-sustained by the community. In the early stages of self-operation and management, several problems and obstacles will occur that the community cannot cope with. For instance, the saving of the water levy is not enough and the community cannot treat sudden fault in the system during the start-up stage. Although one year guarantee is available by the project contractor, urgent treatment will not be available and support from the donor will be necessary during at least six months.
- (2) An inspection system for the operation and management situation of the implemented projects should be developed for transparency of fund use. Even the community basis operation and management should be carefully supervised, especially through audit of the levy account of the water supply system. Development of Inspection program and training of inspection staff to be stationed in Peri-urban Section of LCC should be done by the Legal Department, Finance Department and Housing Department of LCC.
- (3) The community should carry out operation and management of the implemented projects with the assistance of public support from LCC and relevant governmental organizations. The community, for instance, dispatches the tap attendant and accountant for the levy management of water supply system. This community participation in the operation and management induces 100 % cooperation of the community and guarantees the sustainability of the water project.
- (4) Skill and know-how are necessary for the operation and management of the implemented projects. Therefore, training of the community members in the requisite skills and know-how should be done during the project implementation. Repairing skill, accounting and bank account management know-how, fund raising measures know-how, personnel affairs management know-how, etc. will be important. Theoretical knowledge and field training will be useful for the practical training of the community members concerning the operation and management of the projects.
- (5) For development sustainability, it is necessary to establish the monitoring and evaluation system for O&M of the proposed projects. Continuous evaluation utilized by quantitative indicators and measures to be improved for the projects will contribute to enhance significant and values of the projects.

8.4 Other Recommendations

- (1) Flood problem and poor drainage in Chibolya, Old Kanyama located in the center of Lusaka City should be addressed. However, to settle the flood problem the improvement of not only drains inside the UUS but also development of downstream rivers is necessary. Therefore, a careful study on the improvement of the downstream rivers is proposed in addition to the road and drainage improvement projects in UUS.
- (2) In the road improvement project, resettlement issues should be paid due attention. In the densely populated UUS residential area, the roadside is occupied by the residents and once the road width expansion is planned, resettlements of the roadside residents will be inevitable. Although, a precedent of relocation due to the road development is reported in Bauleni, densely populated UUSs such as Chibolya have no room for relocation. So, the road improvement plan should be designed to minimize the need for relocation. This problem should be sorted out within community with the assistance of LCC.
- (3) The settlement of the replacement of the existing final dumping site and realization of transportation method between the UUS and the final dumping site are the precondition for the garbage disposal projects in UUS.
- (4) A manual for the environment improvement by community participation was developed during the Study. JST wishes for the manual to be utilized by relevant organizations, especially the community, LCC staff and NGOs to improve the social service in UUS.