CHAPTER 3

COMMUNITY-BASED DEVELOPMENT

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3-1 CHARACTERISTICS OF COMMUNITIES IN BUJUMBURA CITY

3-1-1 Current Community Structure in Bujumbura City

(1) Community Transition

Bujumbura City, which consists of 13 Communities at present, was formed about 7 years ago in 1999 to 2000. The basic frame of the communities, formed originally in 1962 when Burundi became independent from Belgium, has not gone through any major changes in the central area but to cope with the expansion of the city, expansion and division of the communities has been done. Areas like Buterere and Kinama in the north, and Kanyosha in the south were not included in the city by 1999. Due to the increase in population, some communities in the newly developed areas have been divided to create new communities such as Gihosha, Kinindo, Kanyosha, etc. In these areas, roads and other infrastructures have comparatively been developed and are becoming the residential areas for comparatively wealthy habitants.

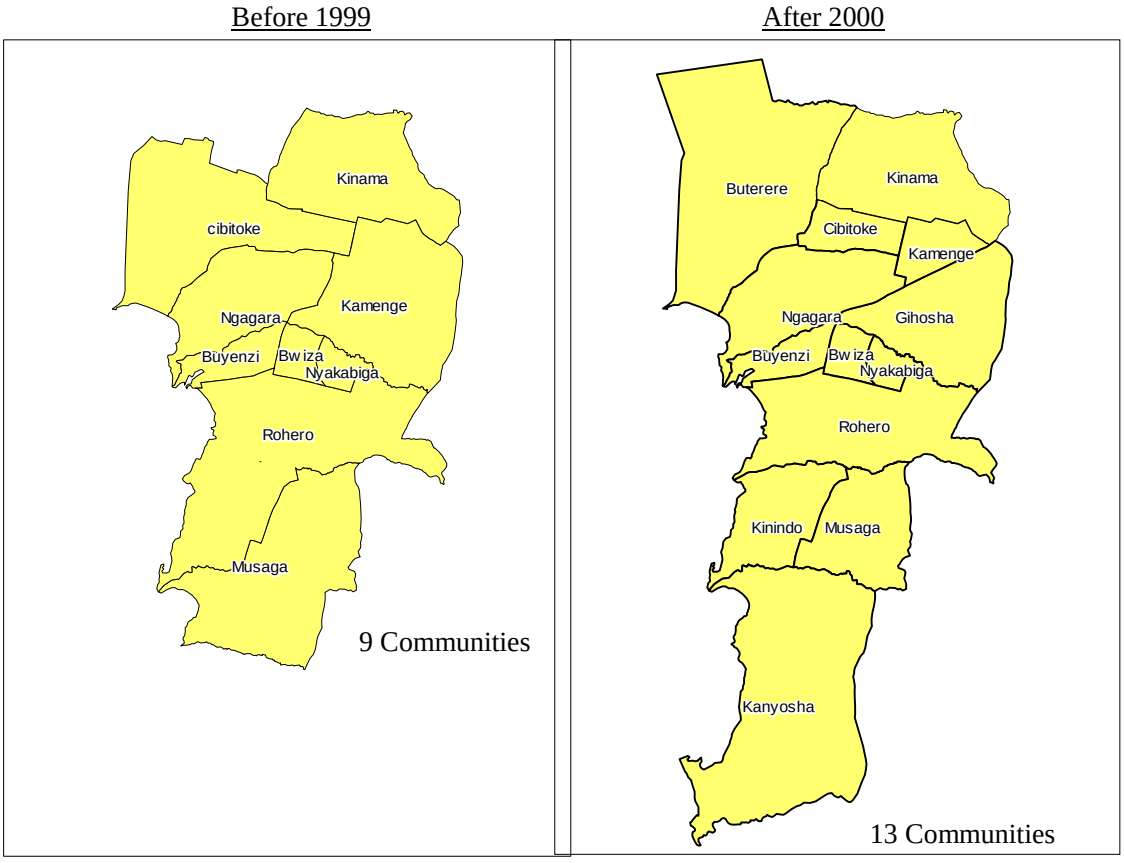


Figure 3.1.1 Transition of Community Boundary in Bujumbura City around 1999 2000

(2) Organization and Activity

The 13 communities of Bujumbura city are formed as follows:

A community is generally consists of 5 to 10 Quarters which are the regional organizations under the communities. Under a quarter, there are regional organizations called Colline; and furthermore, the collines consists of regional units called Nyumbakumi. Nyumbakumi is an organization composed of about 10 households. A community is lead by an Administrator and a quarter is lead by a Chief of Quarter. The organizations, mentioned here, basically organize and operate the communities.

In each community there are 25 members of the Community Council and the Administrator is elected by votes of the council members. 25 members of the Community Council are elected by registered habitants and the Chief of Quarter is also elected similarly by the registered habitants. In a quarter, there are 5 members of Quarter Council and the Chief of Quarter plays a role to respect the decisions of the Quarter Council and to convey the matters to and from the Community Council.

The terms of service for the Administrators of the communities and the Chiefs of the quarters are both 5 years. But there are cases of substitution before the term ends and actually, it seems that such cases usually occur quite often.

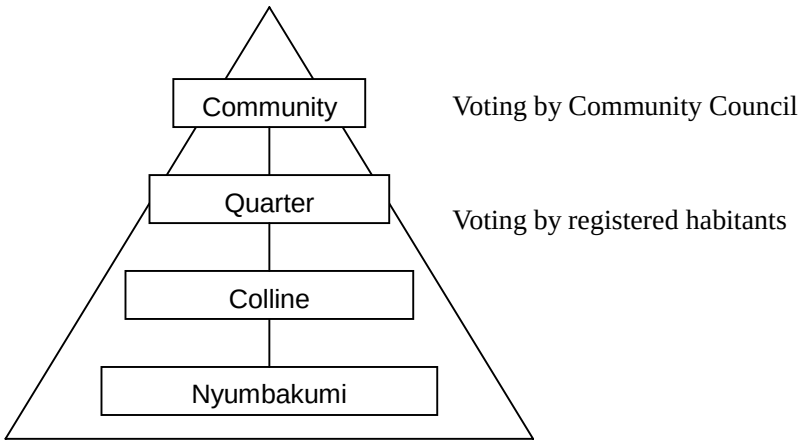


Figure 3.1.2 Community Organization

In addition to the Administrator elected by the Community Council and the Chief of Quarter

positioned under the Administrator, Police department from the National Police Department is stationed in the community. There are also other departments in charge of various administrations of the community such as registration, taxation, market commission, etc.

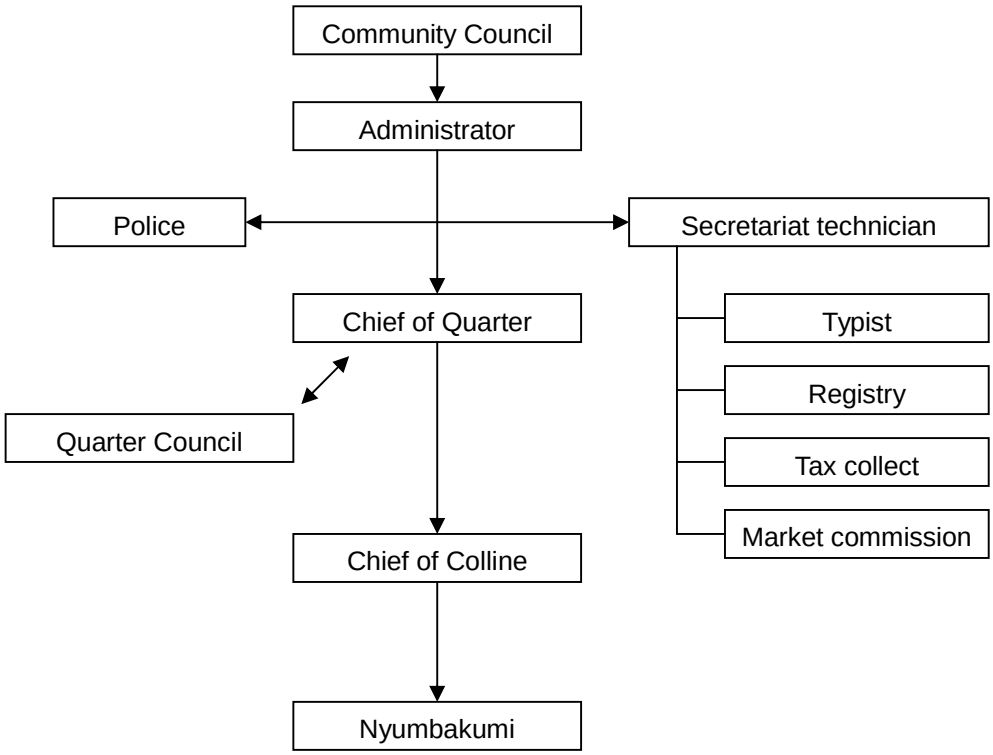


Figure 3.1.3 Present Organization of each Community in Burundi

Periodical meetings are held in many communities to discuss about the administration, policies and other considerations for the community. In average, meetings between the Administrator and the Chiefs of Quarters are held weekly or monthly and meetings including members of Community Council are held monthly or once in 3 months. And the annual general meetings are held in the frequency of once or twice a year. The frequency of meetings is slightly different for each community. Beside these periodical meetings, the Administrator can also call the Chiefs of Quarters to discuss about various matters whenever necessary. These non-periodical meetings are mainly called to discuss about the law and order situation in the area.

As a community activity involving the habitants, all the communities are conducting social activities such as cleaning of roads and public facilities, collection of rubbish, grass cutting, etc. on every Saturday from 8 to 10 am.

3-1-2 Profile of Community

(1) Methodology for Recognition

In order to recognize the characteristics of each community, it is necessary to know the conditions of social infrastructure and living circumstances of its habitants. The following two surveys were conducted as the means to recognize the conditions.

- Interview Survey of the habitants
- Hearing Survey from the community representatives

Interview Survey of the habitants was carried out mainly in order to grasp the living conditions of the habitants. The survey was conducted to collect data from every household in all communities regarding the information about “family members”, “income and expenditure”, “circumstances of life infrastructures”, “characteristics of daily activities”, “use of public transport (Bus)”, etc.

Hearing Survey from the community representatives was carried out in order to know about the progress of social infrastructure development and the needs of improvement in the whole community area, as well as the outline and history of each Community. The survey was conducted by distributing questionnaires to the Administrators of the communities as they are familiar with these matters.

(2) Interview Survey with the habitants

a) Number of samples

The survey was carried out for the households living in the 13 communities of Bujumbura City. The number of samples required for statistical process can be determined from the relative tolerance calculated by the following formula considering the population of Bujumbura City, number of members in the household and number of characteristic categories (number of communities).

$$RSD = K \times \sqrt{((N-n) / (N-1) \times (1-ZK) / (n \times ZK))}$$

RSD : Error (normally 20%)
K : t-value at confidence interval α% (1.96 at α=95%)
ZK : Category ratio (Number of categories: 13)
n : Required sample ratio
N : Universe (Number of households in Bujumbura City)

As that number of categories (communities) is 13 and if the relative tolerance is set to be 20%, the target sample ratio shall be 1.5% or some 1,375 samples shall be required as shown in the table below. Therefore, the survey was conducted to collect 1,500 samples in the whole Bujumbura City as a target.

Table 3.1.1 Required Sample Ratio of Community Survey

Number of category	Sampling rate					
	0.5%	**1.0%**	**1.5%**	**2.0%**	**3.0%**	**50%**
13	32%	22%	18%	16%	13%	10%

Note: It means that sample ratio of about 1.5% is required at least to satisfy the relative tolerance not to be greater than 20%.

In case the sample ratio is 1.0%, relative tolerance will become 22% exceeding the target of 20%.

Required number of sample = Universe × Sample Ratio

= (Population / Number of members in a household) × Sample Ratio

= (550,000 / 6) × 1.5%

= 1,375 ≈ (1,500 samples)

b) Question Items

The interview survey to grasp the living conditions of the habitants was conducted questioning the following items. The questionnaire was prepared in French language and the interviewers acknowledging the contents of the questionnaire visited the habitants and interviewed in French or in local language.

- Family Members
  Name, gender, age, occupation and level of education were asked.
- Living duration
  The time they moved in, and the reason were asked.
- Income and Expenses
  Monthly earnings of the householders during last year as well as major expenses in a month (expenses for house rent, food, clothing, electricity, water supply, communication, education, transport, health care) were asked.
- Housing and Life Infrastructures
  Structure type and accompanied rooms/facilities (toilet, bathroom, etc.) of housing were asked. In addition, the conditions of infrastructures such as electricity, water supply

(well), drainage, telephones, etc., transport means (vehicle) possessed by the households were also asked.

- Accessibility to Major Facilities
  The accessibility (required transportation time) to the facilities such as schools, hospital or medical center, market, water source (in case no water supply or well in the house), etc. were asked.
- Medical Conditions
  Latest utilization of hospitals and medical center was asked.
- Utilization of Public Transport (Bus)
  For the utilization of bus, purpose and frequency of utilization, distance to the nearest bus stop, and availability of any public transportation mode other than bus were asked.

(3) Hearing from the Representatives of Community

a) Methodology

The hearing survey from the Community Representative was conducted by the following procedure.

- Request for hearing was submitted to the Administrators
  Request letter for cooperation for the hearing survey was submitted to the Administrator of each Community through the Technical Adviser of Bujumbura City Corporation who is a counterpart of the Study.
- Distribution of questionnaire to the Administrators
  The questionnaire signed by the Technical Adviser of Bujumbura City Corporation was distributed by mail, and after confirmation of receipt, appointment for collection of the questionnaire and hearing was made.
- Collection of questionnaire and hearing
  Hearing was made for about an hour mainly on the items not filled in.

b) Hearing Items

- Outline of the Community
  History, land use and condition of returnee were asked.
- Community Activities
  Community organization, contents of activities, election method, terms of service, and authority of representatives were asked.
- Demand from the habitants regarding improvement of public infrastructures
  In spite of the existing development in the fields of electricity, water supply and drainage, communication, bus service, schools, medical facilities in the community, if they have any

further demand (priority) of improvement in the said fields was asked.

(4) Profile of Community Formation based on survey

Profile of each community was formulated in a common format including the items such as social infrastructure and living conditions described below based on analyzing the interview and hearing surveys.

Interview survey carried out on March 22 and finished on 26th of the same month. The persons who contributed to the realization of this operation were divided into five teams, each of which was directed by a controller and composed of ten investigating agents. The survey was processed through a sensitizing mission by the administrative authorities, who went all round the communities two days before the deployment of the teams. The households which were interviewed are recapitulated in the following table.

Table 3.1.2 Number of Samples for Community Formation Survey

Community	number of District	Number of households
BUYENZI	4	112
ROHERO	4	112
GIHOSHA	3	83
BWIZA	2	56
KININDO	5	132
KANYOSHA	5	140
MUSAGA	5	140
NYAKABIGA	6	168
CIBITOKE	7	196
BUTERERE	5	140
KAMENGE	2	56
KINAMA	6	168
NGAGARA	3	84
Total	**57**	**1587**

The results of the surveys were compiled into the format and they are shown in Appendix I

3-1-3 Living Conditions of the Communities

Living conditions in each community were analyzed by comparing major index based on profile of the community.

- Utility Services & Infrastructures (Electricity, Water supply, Sewerage, Communication, Car)
- Income and Expenditure
- Utilization of Medical facilities
- Accessibility to Major Facilities
- Utilization of Public Transport (Bus)

(1) Utility Services & Infrastructures (Electricity, Water supply, Communication, Car)

In and around the central area (Rohero, Buyenzi, Bwiza, Nyakabiga) and the communities with relatively wealthy population (Kinindo, Gihosha), the covered share of electricity (including private generators) is as high as around 60~90%. In other communities, however, it is low to be around 30% or less, indicating a very large disparity between the communities. In particular, the spread of electricity is very slow (less than 5%) in those communities in the north (Buterere, Kinama) and south (Kanyosha), where new housing development is advancing.

Table 3.1.3 Covered Share of Electricity

Community	Population	Pop/familiy	Householeds	Coverd share (%)	Coverd population
Buterere	33,500	5.38	6,227	0.7	235
Kinama	61,423	5.37	11,438	8.4	5,159
Cibitoke	70,263	5.48	12,822	32.8	23,047
Kamenge	42,068	6.21	6,774	10.7	4,501
Ngagara	21,901	5.51	3,975	90.5	19,822
Gihosha	50,843	6.31	8,058	62.7	31,880
Buyenzi	47,413	5.63	8,421	72.2	34,230
Bwiza	37,763	4.95	7,629	71.4	26,963
Nyakabiga	24,345	5.87	4,147	62.2	15,141
Rohero	14,711	5.00	2,942	77.7	11,430
Kinindo	22,097	6.01	3,677	83.3	18,408
Musaga	78,541	5.62	13,975	33.1	25,997
Kanyosha	42,892	5.73	7,486	4.3	1,844
Total	547,760	5.57	98,341	43.6	238,823

Source: Summary of the Interview survey results from each Community

The communities were compared in terms of the covered share of public water supply (including wells) and sewerage (including ground infiltration within own house). The situation was found to be extremely similar to that for electricity. Covered share was high in and around the central area (Rohero, Buyenzi, Bwiza, Nyakabiga) and the communities where relatively wealthy classes live (Kinindo, Gihosha), and were extremely low in other communities. Regarding sewerage, the dissemination rate is even low in communities around the central area (Buyenzi and Bwiza), and the situation is not much different than the conditions of other communities.

Table 3.1.4 Covered share of Water Supply

Community	Population	Pop/familiy	Householeds	Coverd share (%)	Coverd population
Buterere	33,500	5.38	6,227	7.8	2,613
Kinama	61,423	5.37	11,438	7.2	4,422
Cibitoke	70,263	5.48	12,822	38.1	26,771
Kamenge	42,068	6.21	6,774	10.7	4,501
Ngagara	21,901	5.51	3,975	95.2	20,851
Gihosha	50,843	6.31	8,058	63.9	32,491
Buyenzi	47,413	5.63	8,421	58.3	27,640
Bwiza	37,763	4.95	7,629	75.0	28,323
Nyakabiga	24,345	5.87	4,147	84.8	20,643
Rohero	14,711	5.00	2,942	75.7	11,135
Kinindo	22,097	6.01	3,677	85.5	18,894
Musaga	78,541	5.62	13,975	30.9	24,269
Kanyosha	42,892	5.73	7,486	6.5	2,788
Total	547,760	5.57	98,341	46.5	254,708

Source: Summary of the Interview survey results from each Community

Table 3.1.5 Covered Share of Sewerage

Community	Population	Pop/familiy	Householeds	Coverd share (%)	Coverd population
Buterere	33,500	5.38	6,227	5.0	1,675
Kinama	61,423	5.37	11,438	15.6	9,582
Cibitoke	70,263	5.48	12,822	17.5	12,296
Kamenge	42,068	6.21	6,774	26.8	11,274
Ngagara	21,901	5.51	3,975	86.9	19,033
Gihosha	50,843	6.31	8,058	60.2	30,609
Buyenzi	47,413	5.63	8,421	35.7	16,925
Bwiza	37,763	4.95	7,629	41.1	15,521
Nyakabiga	24,345	5.87	4,147	59.1	14,387
Rohero	14,711	5.00	2,942	73.0	10,738
Kinindo	22,097	6.01	3,677	79.7	17,613
Musaga	78,541	5.62	13,975	21.0	16,493
Kanyosha	42,892	5.73	7,486	2.9	1,244
Total	547,760	5.57	98,341	37.2	203,766

Source: Summary of the Interview survey results from each Community

Covered share is even lower concerning the telecommunication (fixed telephones) facilities. Apart from rates of between 70%~90% in the central area (Rohero) and communities with relatively wealthy population (Kinindo, Gihosha), telecommunications have not been advanced as a whole. However, since mobile phones are becoming more and more widespread, it is guessed that means of communication are more widely available than shown in the above table. Though the use of fixed telephones in each household is low, public phones are available with comparatively economical call rate and are provided on the streets all around in Bujumbura City.

Figure 3.1.4 Public Communication (Fixed Phones) in Bujumbura City

Table 3.1.6 Covered Share of Communication (Fixed Phone)

Community	Population	Pop/familiy	Householeds	Coverd share (%)	Coverd population
Buterere	33,500	5.38	6,227	0.7	238
Kinama	61,423	5.37	11,438	8.4	5,159
Cibitoke	70,263	5.48	12,822	5.6	3,935
Kamenge	42,068	6.21	6,774	17.9	7,530
Ngagara	21,901	5.51	3,975	70.2	15,375
Gihosha	50,843	6.31	8,058	41.0	20,847
Buyenzi	47,413	5.63	8,421	18.3	8,676
Bwiza	37,763	4.95	7,629	10.7	4,041
Nyakabiga	24,345	5.87	4,147	23.8	5,794
Rohero	14,711	5.00	2,942	67.0	9,856
Kinindo	22,097	6.01	3,677	68.1	15,049
Musaga	78,541	5.62	13,975	13.7	10,760
Kanyosha	42,892	5.73	7,486	5.0	2,145
Total	547,760	5.57	98,341	24.6	134,749

Source: Summary of the Interview survey results from each Community

The private car ownership rate is 50% in Rohero and Kinindo and around 30% in Ngagara and Gihosha. Whereas there is at least one car for every two or three households in these communities, the rates are far less in the other communities, where the situation is more like one car for every 20~30 households or even 100 or more.

Table 3.1.7 Private Car Ownership Rate

Community	Population	Pop/familiy	Householeds	Ownership rate (%)	Householdes/car	Poplation/car
Buterere	33,500	5.38	6,227	0.7	143	769
Kinama	61,423	5.37	11,438	1.2	83	448
Cibitoke	70,263	5.48	12,822	3.6	28	152
Kamenge	42,068	6.21	6,774	1.8	56	345
Ngagara	21,901	5.51	3,975	32.1	3	17
Gihosha	50,843	6.31	8,058	28.9	3	22
Buyenzi	47,413	5.63	8,421	4.3	23	131
Bwiza	37,763	4.95	7,629	1.8	56	275
Nyakabiga	24,345	5.87	4,147	6.1	16	96
Rohero	14,711	5.00	2,942	51.4	2	10
Kinindo	22,097	6.01	3,677	50.0	2	12
Musaga	78,541	5.62	13,975	3.6	28	156
Kanyosha	42,892	5.73	7,486	0.0	-	-
Total	547,760	5.57	98,341	13.2	8	42

Source: Summary of the Interview survey results from each Community

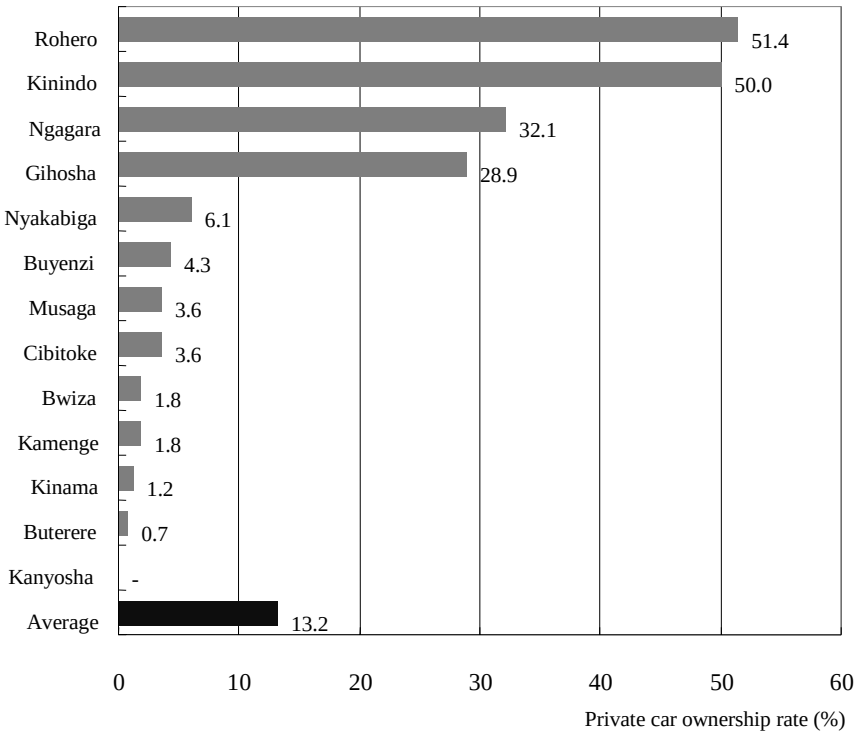


Figure 3.1.5 Private Car Ownership Rate

(2) Income and Expenditure

Average income in all Bujumbura City is around 50,000 FBu/month per person. When children aged seven or less and students are left out, this becomes 96,000 FBu/month and comes out as 277,000 FBu/month per household. However, Rohero and Kinindo, where the average income is high, boost the overall average, so 9 out of the 13 communities have lower income groups than the average. The disparity between Buterere, with the lowest income, and Rohero, with the highest, is approximately 12 times.

Table 3.1.8 Monthly Average Income by Community

Unit: FBu/month

Community	per population	per popultion (cxcept under7 and student)	per Householdes
Buterere	12,695	27,787	68,337
Buyenzi	46,366	91,149	261,260
Bwiza	34,922	76,525	172,740
Cibitoke	25,479	48,606	139,742
Gihosha	93,968	177,652	521,918
Kamenge	24,534	42,924	152,463
Kanyosha	28,732	61,665	164,743
Kinama	15,697	29,404	84,218
Kinindo	95,731	176,307	575,082
Musaga	42,536	83,416	238,996
Ngagara	61,113	91,410	336,851
Nyakabiga	48,679	95,488	285,543
Rohero	157,332	297,420	785,240
Average	49,791	95,518	277,349

Source: Summary of the Interview survey results from each Community

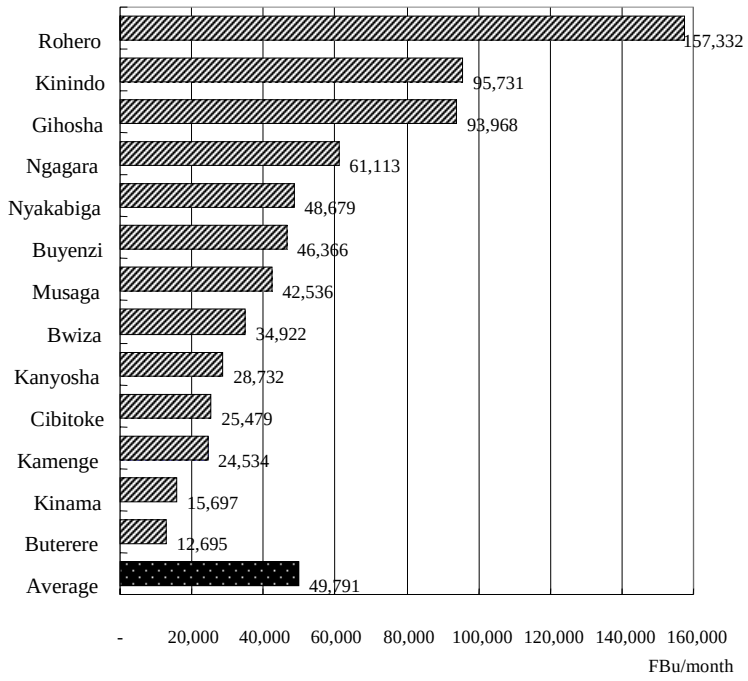


Figure 3.1.6 Monthly Average Income by Community

From the viewpoint of major household expenditures (food, medical care, heating and lighting (fuel, electricity), water, clothing, housing, transport and education), the average expenditure throughout all the communities is approximately 229,000 BFu/month, which corresponds to around 90% of income. The size of total expenditure in each community is proportional to the order of communities in terms of income. According to the breakdown of expenditure items, food expenses and heating and lighting expenses involve a high ratio of spending; and medical and transport expenses are also comparatively high and put a lot of pressure on households in the communities with low income. In the communities where income is high, the households can comfortably afford education and housing expenses; and even though there is a higher ratio of car ownership, the ratio of expenditure on transport is lower than in the communities with low income.

Table 3.1.9 Monthly Average Expenditure by Community

Unit: FBu/month

	Food	Medical	Fuels	Clothing	Housing	Electricity	Water	Transport	Education	Total
Buterere	50,003	8,120	9,101	3,535	2,211	320	190	4,395	5,426	83,303
Buyenzi	92,315	20,106	12,638	10,587	11,900	6,917	4,102	24,330	18,932	201,827
Bwiza	85,286	6,436	13,688	16,673	28,393	3,816	2,765	11,866	17,973	186,896
Cibitoke	78,945	12,342	15,409	6,778	18,399	2,016	2,068	13,544	14,993	164,494
Gihosha	143,404	7,133	16,258	21,287	37,795	4,648	4,823	30,457	37,946	303,750
Kamenge	57,845	16,474	9,690	8,298	43,059	566	549	15,681	9,865	162,027
Kinama	60,946	11,101	10,411	5,389	6,160	1,390	1,130	10,105	6,582	113,214
Kinindo	167,616	31,720	17,288	22,412	73,145	11,351	10,024	29,474	51,815	414,844
Kanyosha	50,189	19,164	10,671	13,483	3,254	320	1,773	10,772	7,177	116,802
Musaga	83,196	18,897	14,930	16,976	27,011	2,522	3,053	18,421	30,284	215,290
Ngagara	125,360	28,083	16,936	19,470	56,487	6,740	4,148	54,390	65,650	377,263
Nyakabiga	113,376	18,327	14,032	16,626	27,384	4,788	5,114	16,091	31,958	247,696
Rohero	198,734	21,074	19,386	23,559	85,378	12,668	10,993	32,020	96,649	500,461
Average	98,256	23,278	13,827	13,484	29,257	4,294	3,866	19,339	28,670	234,271

Source: Summary of the Interview survey results from each Community

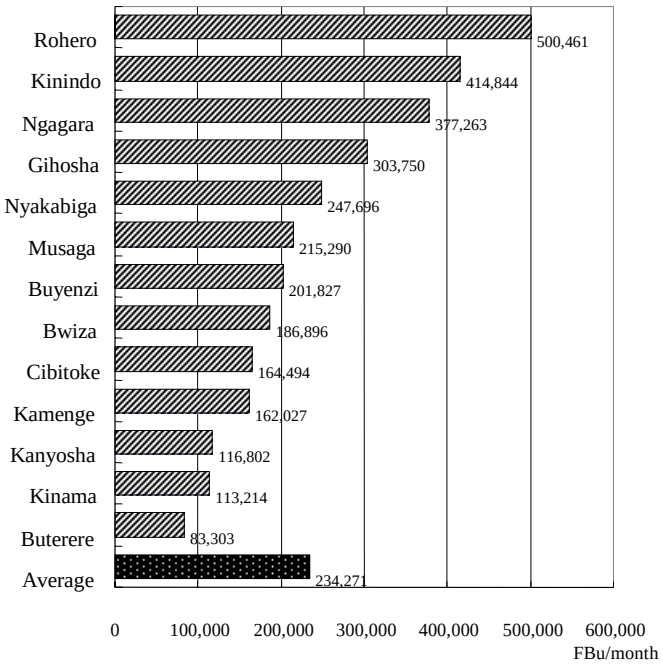


Figure 3.1.7 Monthly Average Expenditure by Community

Table 3.1.10 Ratio of Average Expenditure in a Month by Community

Unit: %

	Food	Health	Fuels	Clothing	Housing	Electricity	Water	Transport	School	Total
Buterere	0.60	0.10	0.11	0.04	0.03	0.00	0.00	0.05	0.07	1.00
Buyenzi	0.46	0.10	0.06	0.05	0.06	0.03	0.02	0.12	0.09	1.00
Bwiza	0.46	0.03	0.07	0.09	0.15	0.02	0.01	0.06	0.10	1.00
Cibitoke	0.48	0.08	0.09	0.04	0.11	0.01	0.01	0.08	0.09	1.00
Gihosha	0.47	0.02	0.05	0.07	0.12	0.02	0.02	0.10	0.12	1.00
Kamenge	0.36	0.10	0.06	0.05	0.27	0.00	0.00	0.10	0.06	1.00
Kinama	0.54	0.10	0.09	0.05	0.05	0.01	0.01	0.09	0.06	1.00
Kinindo	0.40	0.08	0.04	0.05	0.18	0.03	0.02	0.07	0.12	1.00
Kanyosha	0.43	0.16	0.09	0.12	0.03	0.00	0.02	0.09	0.06	1.00
Musaga	0.39	0.09	0.07	0.08	0.13	0.01	0.01	0.09	0.14	1.00
Ngagara	0.33	0.07	0.04	0.05	0.15	0.02	0.01	0.14	0.17	1.00
Nyakabiga	0.46	0.07	0.06	0.07	0.11	0.02	0.02	0.06	0.13	1.00
Rohero	0.40	0.04	0.04	0.05	0.17	0.03	0.02	0.06	0.19	1.00
Average	0.42	0.10	0.06	0.06	0.12	0.02	0.02	0.08	0.12	1.00

Source: Summary of the Interview survey results from each Community

(3) Utilization of Medical facilities

Comparing among the communities in terms of usage of medical facilities for illness or injury in past two weeks time, the degree of usage is higher in those communities with relatively higher average income and standard of living; however, the disparity among the communities is not very high. Accordingly, it is inferred that the minimum required environment for receiving medical care is there and it is a normal custom for people to use the medical facilities; however, for households with low average income, the cost of medical care tends to be a heavy burden.

Table 3.1.11 Utilization of Medical Facilities

Community	Yes	No
Kinindo	88.0	12.0
Rohero	86.3	13.7
Nyakabiga	83.5	16.5
Buyenzi	82.7	17.3
Kinama	81.3	18.7
Kanyosha	79.1	20.9
Musaga	78.3	21.7
Cibitoke	78.1	21.9
Gihosha	76.7	23.3
Bwiza	73.8	26.2
Kamenge	71.5	28.5
Buterere	70.9	29.1
Ngagara	58.3	41.7
Total	78.2	21.8

Source: Summary of the Interview survey results from each Community

(4) Accessibility to Major Facilities

Concerning the utilization of schools, medical facilities, markets, bus stops and other public facilities necessary for everyday living, survey was carried out into the state of facilities

utilization within the own communities and the ratio of population that can access the closest facilities within 15 minutes walk. Concerning schools, the survey focused on primary schools and elementary schools. In whole of Bujumbura City, 86% of people utilize primary schools within their own communities, while the figure is 65% for secondary schools. The ratio of people who can reach their schools within 15 minutes walk is 63% for primary schools and 42% for secondary schools. In Kanyosha, which is a wide and newly developed area, these access times are longer. In the communities apart from Kanyosha, conditions of poor accessibility can be numerously seen even in Buyenzi and Bwiza; and the needs for new school construction were found to be high in the hearings held with the community representatives.

Table 3.1.12 Utilization and Accessibility of School

Community	Primary Shcool		Secondary Scool	
	utilization of facilities in own	Ability less than 15 min on foot	utilization of facilities in own	Ability less than 15 min on foot
Buterere	98.8	77.4	85.7	42.9
Buyenzi	84.6	55.4	62.7	38.5
Bwiza	71.4	50.0	37.5	29.2
Cibitoke	81.7	61.5	56.5	36.2
Gihosha	88.9	68.9	72.0	32.0
Kamenge	96.9	56.3	86.4	38.1
Kinama	79.7	77.2	57.9	44.7
Kinindo	81.0	56.9	54.7	50.9
Kanyosha	100.0	38.8	85.7	30.6
Musaga	85.7	70.1	64.3	50.0
Ngagara	64.3	64.3	61.5	48.7
Nyakabiga	83.5	69.0	74.4	51.9
Rohero	91.9	56.8	64.9	29.7
Bujumbura	86.4	62.8	65.9	41.9

Source: Summary of the Interview survey results from each Community

Concerning shops, where people purchase everyday supplies, more than 90% of people can reach a shop within 15 minutes walk from their home. As for larger markets, since the numbers are limited, the ratio of people within 15 minutes walk is less; however, even so 56% of people can gain easy access. Communities where it takes a little bit longer time for people to reach markets are Buyenzi, Kamenge, Kinindo, Kanyosha and Rohero.

Table 3.1.13 Utilization and Accessibility of Shop and Market

Community	Shop		Market	
	utilization of facilities in own	Ability less than 15 min on foot	utilization of facilities in own	Ability less than 15 min on foot
Buterere	97.8	89.9	82.2	58.9
Buyenzi	96.2	95.2	70.3	43.4
Bwiza	98.2	100.0	67.9	60.7
Cibitoke	95.8	94.7	52.4	54.0
Gihosha	97.6	95.2	77.2	59.5
Kamenge	100.0	78.9	90.5	44.2
Kinama	83.5	90.2	82.9	67.4
Kinindo	97.7	96.9	66.9	40.0
Kanyosha	98.1	84.4	97.8	47.1
Musaga	94.2	95.7	90.6	73.2
Ngagara	81.8	87.9	78.5	78.5
Nyakabiga	94.5	88.4	64.6	55.2
Rohero	99.1	92.5	96.3	49.1
Total	94.9	92.1	76.9	55.9

Source: Summary of the Interview survey results from each Community

Concerning health centers, almost 90% of people utilize health centers located within their own communities, and 60% of people have access to health centers within 15 minutes. Communities where people need to travel longer distances to reach health centers are the wide area communities like Buterere and Kanyosha.

Table 3.1.14 Utilization and Accessibility of Health Center

Community	Health Center	
	utilization of facilities in own	Ability less than 15 min on foot
Buterere	76.4	46.1
Buyenzi	92.4	79.7
Bwiza	93.0	61.4
Cibitoke	86.8	66.2
Gihosha	100.0	71.4
Kamenge	96.7	50.0
Kinama	81.8	67.7
Kinindo	83.8	60.8
Kanyosha	97.3	38.1
Musaga	91.9	67.7
Ngagara	81.4	69.8
Nyakabiga	85.3	65.7
Rohero	80.9	47.1
Total	87.5	60.7

Source: Summary of the Interview survey results from each Community

Concerning bus stops, nearly 90% of people use facilities located within their own communities, and 80% of people can reach a bus stop within 15 minutes walk. However, the ratio is relatively lower for the residents of Buterere; and the accessibility to the bus stops is relatively worse in Buterere, Kamenge and Kanyosha.

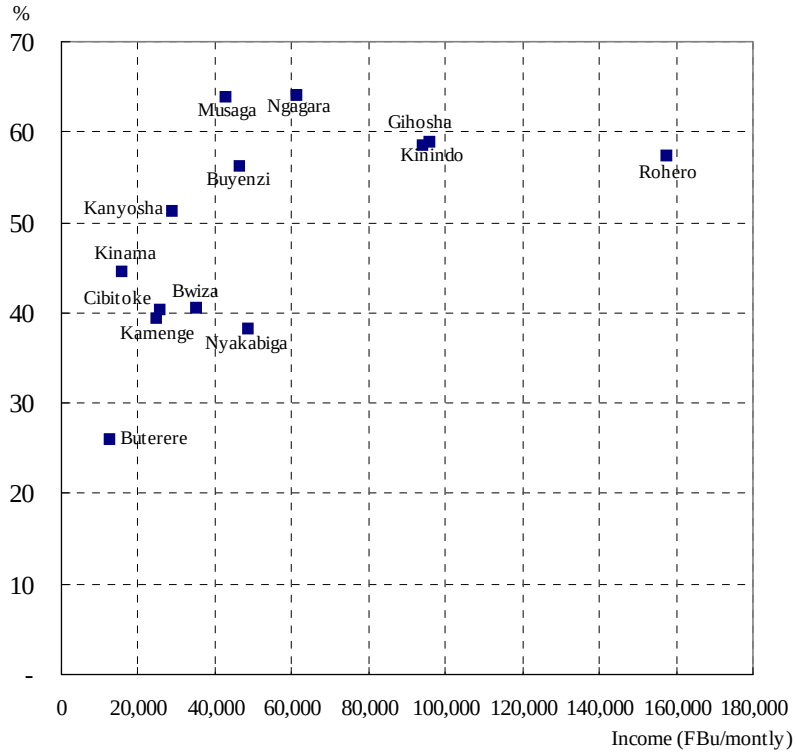
Table 3.1.15 Utilization and Accessibility of Bus Stop

Community	Bus Stop	
	utilization of facilities in own	Ability less than 15 min on foot
Buterere	68.7	59.0
Buyenzi	93.2	92.1
Bwiza	85.7	95.2
Cibitoke	81.5	88.7
Gihosha	97.2	91.5
Kamenge	100.0	58.1
Kinama	81.1	77.4
Kinindo	97.5	93.4
Kanyosha	97.2	61.1
Musaga	93.2	84.1
Ngagara	75.7	71.4
Nyakabiga	90.2	89.4
Rohero	97.8	82.4
Total	88.8	81.7

Source: Summary of the Interview survey results from each Community

(5) Utilization of Public Transport (Bus)

In the survey, the ratio of people who use buses for some reason or other according to income and community, it was found that bus usage increases in communities with relatively higher income levels. This is obviously an opposite trend to the situations in many other developing countries, where high income groups tend to use private cars and the lower income groups tend to use buses. In Bujumbura City, since the bus capacity levels are upheld and the riding environment on buses is relatively pleasant, it is thought that the high income groups feel comfortable using the buses too. However, at the same time, it can be inferred that even the bus fares constitute a major financial burden for the low income groups.



Source: Summary of the Interview survey results from each Community

Figure 3.1.8 Relation of Bus Utilization Rate and Monthly Income by Community

3-2 BASIC NEEDS FOR COMMUNITY DEVELOPMENT

3-2-1 Community-based Development Aspects

Acknowledging the conditions of infrastructure development in each community, needs and demands for further development in different sectors were asked to the Administrators. The survey results show, as an overall tendency, the need of road improvement is the highest, and has been highly ranked by more than half of the 13 communities. However, the needed quality for road improvement seems rather different among the communities. For example, rehabilitation of existing roads is strongly desired in Rohero, while pavement of the unpaved roads within the community is strongly desired in Cibitoke, Kamenge, Kinindo and Musaga. In the communities like Bwiza and Nyagabiga, the demand for new road network is stronger since the paved roads are provided only at the edges of those communities or the trunk road passing through the center of the community is not connected with other truck roads. There are higher demands for water supply and electricity than for the roads in Buterere and Kanyosha where the infrastructures development is insufficient.

Need for medical facility is ranked in the second place following the need for roads. Although not even a single community ranked the medical facilities in the first place, many communities ranked it in the second or third places, which means that the existing medical facilities may be satisfying the minimum requirement but it is not sufficient enough as for the whole Bujumbura City.

Needs for water supply and drainage are ranked next following the top two. The need for water supply is limited to those particular districts where water supply to households is still insufficient or no public water supply is provided even for the whole community. However, the overall drainage system covering the whole area of a community including drainage line and ancillary facilities, it is desired for improving the drainage system even in Rohero having the privilege of comparatively higher infrastructural circumstances. And in Rohero, the need for drainage facility is ranked in the first place.

Following the above rankings, the needs for schools, markets and electricity are ranked in respectively. There are also some other particular demands like multi-purpose facility buildings, accommodations for public employees, multi-purpose training centers installed with computers, etc.

Table 3.2.1 Demands of Infrastructure Development in each Community

Commune	Sector: Roads	Water supply	Electricity	Hospital, Health center	School	Sewerage, Drainage system	Market	Commune office	Garbage collection sysytem	Public Park	etc
Buterere		△	◎	○			○				△
Kinama	△	○	△		△			◎			
Cibitoke	◎			○		△	○				
Kamenge	◎	○	○		△	○					
Ngagara	○			○				◎		△	△
Gihosha	○	○	△	△			◎				
Buyenzi		○	△		○	◎					
Bwiza	△			○	◎	○	△				
Nyakabiga	◎				○		○				△
Rohero	○			○		◎					
Kinindo	◎			△	△	○			○		
Musaga	◎	○	△	○	△						
Kanyosha		◎	△	○	△		○				
Total	23	14	10	16	12	13	12	6	2	1	3

◎ : 3 Points, ○ : 2 Points, △ : 1 Point

Source: Summary of hearing results from each Community

3-2-2 Assessment of the Community-based Development Needs for the Current Communities

(1) Roads

The roads in the residential area of each community are comparatively well developed but most of the roads are unpaved, and the roads paved with asphalt or by stones blocks are limited to trunk roads in the city or frame roads in the communities. The roads in the whole area of Rohero in the center of Bujumbura city, in some quarters of Ngagara industrial zone, and in a part of new community Gihosha are comparatively well developed, but paved roads in other communities are limited. The roads paved with stones blocks are not so much and concentrated in some particular districts. It seems that stone pavements were mainly implemented as community development through participation of the inhabitants.

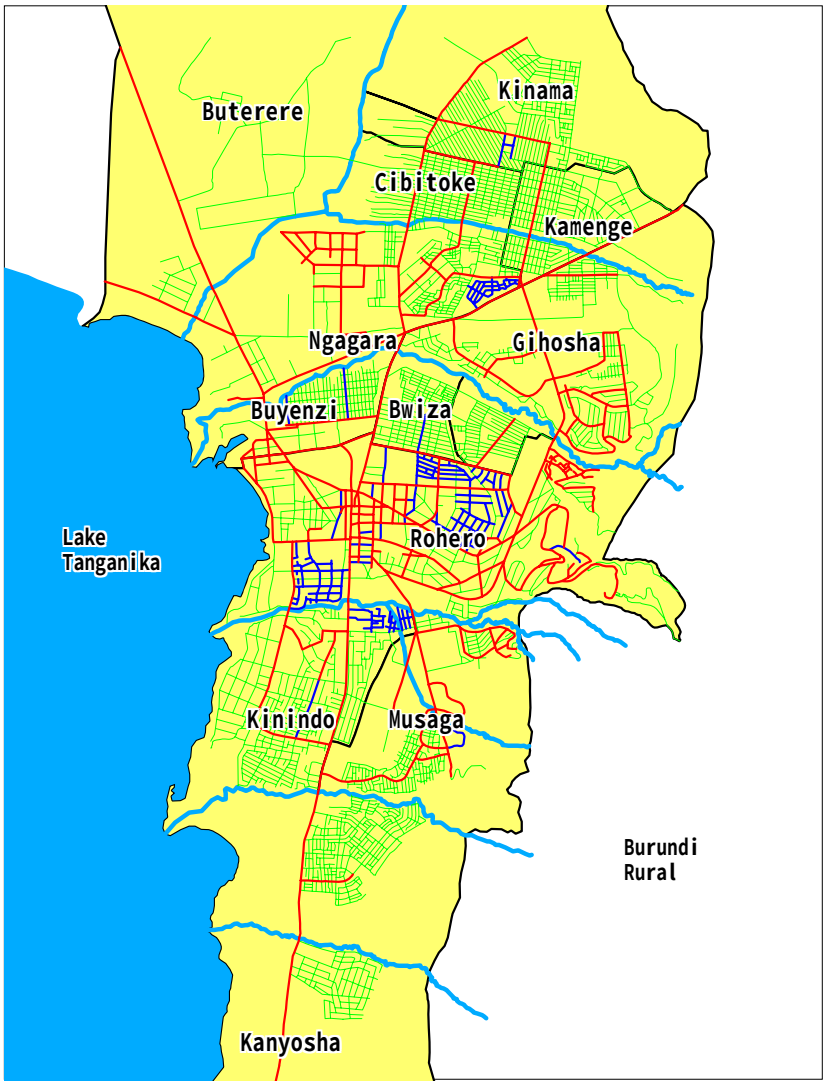


Figure 3.2.1 Road Network in Bujumbura City

The value of road density, which is the ratio of road length against the land area of the community, for Rohero, Buyenzi, Ngagara, Bwiza and Kinindo exceeds 2.0km/km2. As the road density of the trunk roads in the urbanized area in Japan is desired to be about 3.5km/km2 and those for major cities are in the range of 2.0 to 3.5km/km2; it can be said that the road density in Bujumbura city is comparatively high.

On the other hand, from the view point of road length (including unpaved roads) corresponding to the population, it can be said that Kinindo and Ngagara are the communities with relatively high service level beside Rohero which is located in the center of Bujumbura city with least population. The service levels in the other communities are in the range of 1/3 to 1/6 of those in Kinindo and Ngagara. The service levels in Musaga, Cibitoke, Bwiza and Nyagabiga

where population is high, and in Buterere where road development is insufficient in comparison with the area, are low.

Table 3.2.2 Road Length and Density of each Community

Community	Area	Population	Road length (km)					Road length density (km/km^2)				Length per pop.
			Paved			Unpaved	Total	Paved			Unpaved	
	(km^2)	(person)	Asphalt	Stone	sub total			Paved	Stone	sub total		(m/person)
Buterere	20.7	33,500	5.24	0.00	5.24	19.18	24.42	0.25	0.00	0.25	0.93	0.73
Buyenzi	2.5	47,413	8.23	1.19	9.42	23.50	32.92	3.29	0.48	3.77	9.40	0.69
Bwiza	1.5	37,763	3.02	0.57	3.59	24.66	28.25	2.01	0.38	2.39	16.44	0.75
Cibitoke	2.7	70,263	3.12	0.00	3.12	42.28	45.40	1.16	0.00	1.16	15.66	0.65
Gihosha	9.8	50,843	17.69	0.00	17.69	44.27	61.96	1.81	0.00	1.81	4.52	1.22
Kamenge	2.6	42,068	4.43	0.00	4.43	41.10	45.53	1.70	0.00	1.70	15.81	1.08
Kanyosha	23.1	42,892	7.52	0.00	7.52	51.96	59.48	0.33	0.00	0.33	2.25	1.39
Kinama	11.1	61,423	5.46	0.99	6.45	57.93	64.38	0.49	0.09	0.58	5.22	1.05
Kinindo	6.4	22,097	8.17	4.92	13.09	56.89	69.98	1.28	0.77	2.05	8.89	3.17
Musaga	7.2	78,541	12.82	0.79	13.61	28.16	41.77	1.78	0.11	1.89	3.91	0.53
Ngagara	8.9	21,901	22.16	3.86	26.02	39.56	65.58	2.49	0.43	2.92	4.44	2.99
Nyakabiga	1.2	24,345	1.57	0.00	1.57	15.87	17.44	1.31	0.00	1.31	13.23	0.72
Rohero	13.1	14,711	50.30	24.30	74.60	45.80	120.40	3.84	1.85	5.69	3.50	8.18
Total	110.8	547,760	149.73	36.62	186.35	491.16	677.51	1.35	0.33	1.68	4.43	1.24

Source: Population is based on the survey result
Areas of Community and road lengths are measured on scale from the map.
Roads on the boundaries are included in both Communities.

In order to compare the relative conditions of road development, comparisons with sharing of areas and population were carried out as shown in the following Table. The shares of road length are equal or more than the shares of area and population in 4 communities of Ngagara, Gihosha, Rohero and Kinindo show that their roads are relatively well developed compared to the other communities. On the contrary, the shares of road length in 3 communities of Buterere, Kinama and Musaga are less than the shares of area and population, so there are great gaps of road development among the communities.

Table 3.2.3 Comparison of Road Development in Communities

Community	Share (%)				
	Area	Poplation	Road length		
			Paved	Unpaved	Total
Buterere	18.7	6.1	2.8	3.9	3.6
Buyenzi	2.3	8.7	5.1	4.8	4.9
Bwiza	1.4	6.9	1.9	5.0	4.2
Cibitoke	2.4	12.8	1.7	8.6	6.7
Gihosha	8.8	9.3	9.5	9.0	9.1
Kamenge	2.3	7.7	2.4	8.4	6.7
Kanyosha	20.9	7.8	4.0	10.6	8.8
Kinama	10.0	11.2	3.5	11.8	9.5
Kinindo	5.8	4.0	7.0	11.6	10.3
Musaga	6.5	14.3	7.3	5.7	6.2
Ngagara	8.0	4.0	14.0	8.1	9.7
Nyakabiga	1.1	4.4	0.8	3.2	2.6
Rohero	11.8	2.7	40.0	9.3	17.8
Total	100.0	100.0	100.0	100.0	100.0

Source: Population is based on the survey result
Community areas and road lengths are measured on scale from maps

(2) Electricity

Provision of electric supply is well facilitated in the areas surrounding Rohero in the central area of Bujumbura City and in Kinindo and Gihosha, where many wealthy people live in. The provision of electricity in each community seems to have tendency of bipolarization and electricity is provided in the 70% of the areas which are already developed while the areas not yet developed have no electricity. Electrification is delayed in the areas far from the city center such as the whole of Buterere, Kanyosha and Kinama as well as some quarters in Gihosha, Cibitoke and Musaga.

The communities where electrification is very poor are Buterere, Kanyosha, Kinama and Kamenge and beneficiaries in these areas are still less than 10% of the population. Therefore, it seems that development of electricity supply is necessary as soon as possible in those communities.

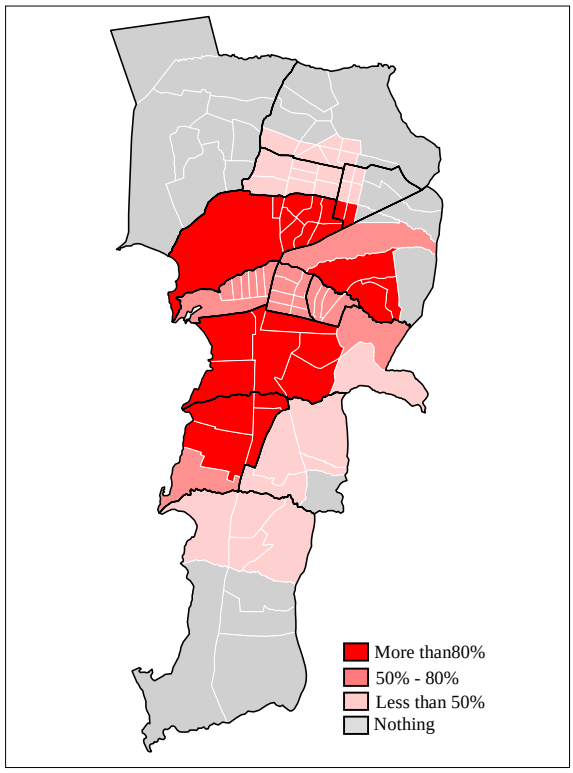


Figure 3.2.2
Electrification Area in Bujumbura City

(3) Water Supply

Water supply facilities have been well developed in the areas surrounding Rohero in the central areas of Bujumbura City. Similar to the electrification, the development of water supply shows the tendency of bipolarization so that more than 70% of water supply is provided in the developed areas while no water supply is provided in the undeveloped areas. Among the undeveloped areas, there are areas having public water supply facility in the quarters; while there are quarters having no public water supply facilities. The habitants in the area where no public water supply is available seem to collect water from the rivers or from public water supply facilities of the adjacent areas; and the households are seemed buying or obtaining water from the neighbors also. The trend of development of water supply has

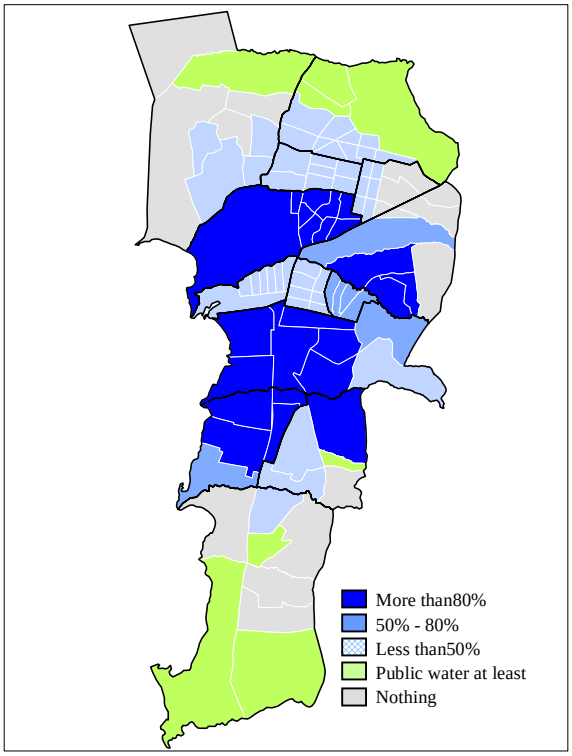


Figure 3.2.3
Water Supplied Area in Bujumbura City

similarity with the electrification. Development of water supply is delaying in the area far from the city center such as the whole of Buterere, Kanyosha, Kinama and Kamenge as well as some quarters in Gihosha, Rohero and Musaga. Therefore, it seems that development of water supply is necessary as soon as possible in those areas.

Figure 3.2.4 Photograph of Development of Water Supply in Bujumbura City

(4) Sewerage

Sewerage service in Bujumbura City is only provided in Nyakabiga, Bwiza and some parts of Rohero (Centreville and Quartier Asiatique), but households in the other communities rely on ground infiltration in their own premises. Therefore, it is urgently needed to disseminate sewerage facilities to those areas not currently served. From the communities that do not have sewerage infrastructure, i.e. Buterere, Kinama, Kamenge and Kanyosha, wastewater is drained into the Lake Tanganyika through the rivers and roadside ditches; there is major concern over the impact on environmental problems and it is necessary to build the infrastructure including public sewerage treatment plants.

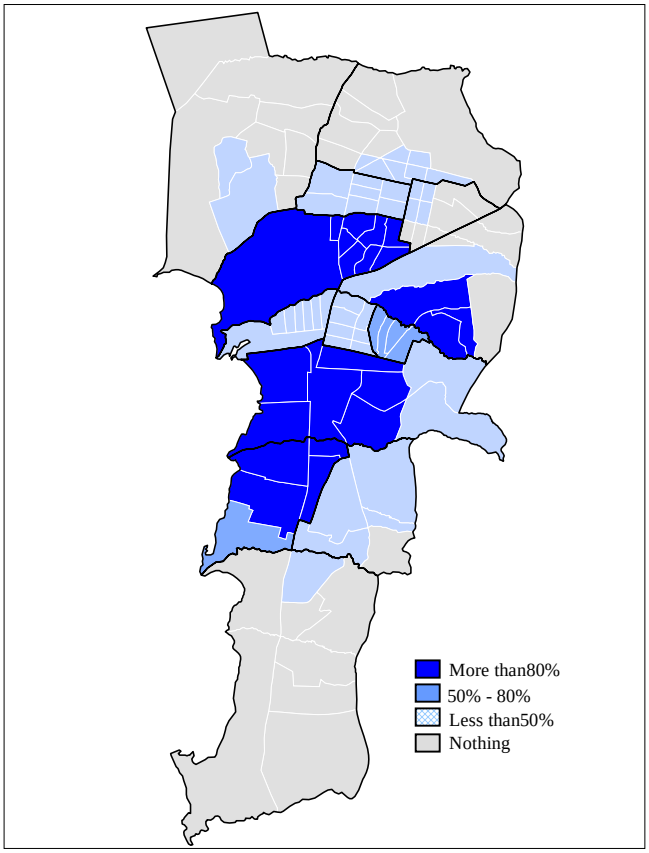


Figure 3.2.5
Sewerage System Covered Area in Bujumbura City

(5) Communication (Fixed phone)

Although the tendency of development is similar to those of electrification and water supply, the grade of development is low. More than 70% of the developed areas are limited to Rohero, Kinindo, Ngagara and Gihosha. On the contrary, the areas in which the development is delaying are Buterere, Kinama, Cibitoke and Kanyosha and almost none of the household in these communities have fixed phones.

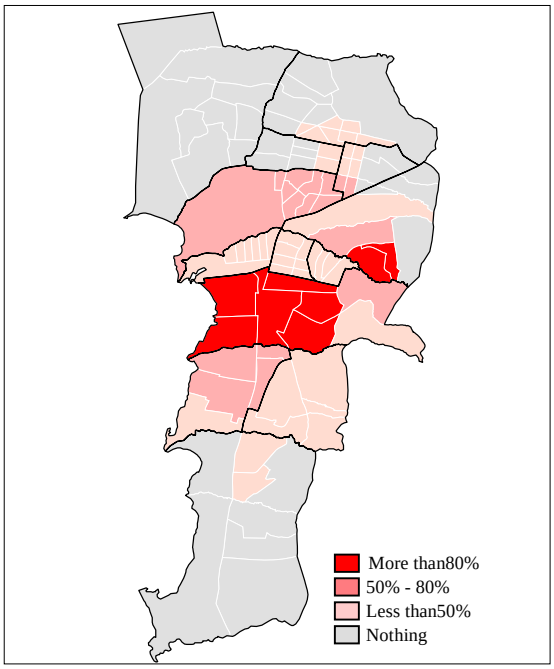


Figure 3.2.6 Communication (Fixed phone) Service Area in Bujumbura City

(6) School

There are 100 primary schools in Bujumbura City. The number of pupils in a school varies widely from 400 to 2,000. The communities having schools with particularly large numbers of pupils are Cibitoke, Kamenge, Gihosha and Musaga, which have 1,500 to 2,000 pupils in a school. Classes are divided into morning shift and afternoon shift in most of the primary schools. While a desk and a chair installed in the schools are usually for 4~6 pupils (i.e. in morning 2~3 pupils and in afternoon 2~3 pupils) and it is commonly used by more than 6 pupils; particularly in the communities where the number of pupils are high a pair of desk and chair is shared by many pupils.

Table 3.2.4 Numbers of School and Pupil of each Community

Zone	Community	Area	# of Primary school students			# of desk, chair	# of Primary school				
		(km^2)	Public (person)	Private (person)	Total (person)	in Public Primary school	Public #	Private #	Total #	student per school	student per desk
1	Buterere	20.7	4,505	513	5,018	677	3	3	6	836	6.7
	Kinama	11.1	8,259	940	9,199	1,242	5	5	10	920	6.6
	Cibitoke	2.7	8,126	925	9,051	1,222	5	1	6	1,509	6.6
2	Kamenge	2.6	5,888	1,066	6,954	1,189	2	3	5	1,391	5.0
	Ngagara	8.9	3,065	555	3,620	619	8	1	9	402	5.0
	Gihosha	9.8	7,116	1,288	8,404	1,438	5	0	5	1,681	4.9
3	Buyenzi	2.5	5,837	2,220	8,057	1,029	4	4	8	1,007	5.7
	Bwiza	1.5	4,749	1,806	6,555	837	3	4	7	936	5.7
	Nyakabiga	1.2	2,931	1,114	4,045	517	3	3	6	674	5.7
4	Rohero	13.1	3,833	1,565	5,398	968	5	6	11	491	4.0
	Kinindo	6.4	6,036	2,465	8,501	1,524	3	5	8	1,063	4.0
5	Musaga	7.2	11,876	401	12,277	2,096	4	2	6	2,046	5.7
	Kanyosha	23.1	6,485	219	6,704	1,144	6	6	12	559	5.7
	Total	110.8	78,706	15,077	93,783	14,502	56	43	99	947	5.4

Source: Summary of the hearing results from each Community

The number of pupils taken care by one teacher is around 70 and there is no big difference by the communities. Classes are divided into morning shift and afternoon shift in most of the primary schools so that the number of pupils actually taken care by a teacher is deemed to be the half of the prescribed figure.

Table 3.2.5 Number of Teacher of each Community

Zone	Community	Area (km^2)	Students			Teacher	student per teacher
			Public (person)	Private (person)	Total (person)		
1	Buterere	20.7	4,505	513	5,018	67	75
	Kinama	11.1	8,259	940	9,199	124	74
	Cibitoke	2.7	8,126	925	9,051	122	74
2	Kamenge	2.6	5,888	1,066	6,954	100	70
	Ngagara	8.9	3,065	555	3,620	52	70
	Gihosha	9.8	7,116	1,288	8,404	120	70
3	Buyenzi	2.5	5,837	2,220	8,057	110	73
	Bwiza	1.5	4,749	1,806	6,555	90	73
	Nyakabiga	1.2	2,931	1,114	4,045	55	74
4	Rohero	13.1	3,833	1,565	5,398	70	77
	Kinindo	6.4	6,036	2,465	8,501	110	77
5	Musaga	7.2	11,876	401	12,277	210	58
	Kanyosha	23.1	6,485	219	6,704	114	59
	Total	110.8	78,706	15,077	93,783	1,344	70

Source: Statistiques de l'Enseignement Pre-primaire, Primaire et Secondaire, Ministry of education

(7) Medical facilities

Including both public and private ones, there are 65 medical facilities (hospitals and health centers) in Bujumbura City. There are 5 comparatively large hospitals among the 13 general hospitals. A health center is a smaller medical facility having a consultation room and a treatment room. It is rare that a doctor is always available in the health center and it is not unusual for a doctor to see the patients in as many as 5 health centers.

Comparing the number of population per medical facility, the service level in Musaga is extremely bad than the other communities. Therefore, it seems necessary to develop health centers in this community.

There is a big difference in the cost for the patients comparing public and private medical facilities. For example, it is said that consultation fee for flu by physician is about 700FBu in public hospitals in average while it is about 5,000FBu in private hospitals. Consequently, it is creating difference in medical service for the communities like Gihosha, Buyenzi, Nyakabiga and Kinindo where no public health center is provided. As regards this point, it is also necessary to develop the public health centers or hospitals in the communities which have no such public services.

Table 3.2.6 Numbers of Medical Facility (Hospital, Health Center) in each Community

Community	Population	Hospital			Heath center(CDS)			Number per pop.
		Public	Private	Total	Public	Private	Total	
	(person)	#	#	#	#	#	#	(person/1Hos. CDS)
Buterere	33,500	0	0	0	1	2	3	11,167
Kinama	61,423	0	0	0	1	4	5	12,285
Cibitoke	60,436	0	0	0	1	6	7	8,634
Kamenge	42,068	0	0	0	1	7	8	5,259
Ngagara	21,901	0	0	0	1	1	2	10,951
Gihosha	50,843	1	1	2	0	3	3	10,169
Buyenzi	49,850	1	0	1	0	6	6	7,121
Bwiza	40,554	0	1	1	1	4	5	6,759
Nyakabiga	25,034	0	0	0	0	2	2	12,517
Rohero	14,711	1	5	6	1	6	7	1,132
Kinindo	23,162	2	1	3	0	3	3	3,860
Musaga	78,541	0	0	0	1	3	4	19,635
Kanyosha	42,892	0	0	0	2	8	10	4,289
Total	544,915	5	8	13	10	55	65	6,986

Source: Summary of the hearing results from each Community.

3-2-3 Community-based Development Needs for the Increasing Population

We gathered information, concerning the shortage of schools and hospital facilities and the lack of infrastructures, which is a cause for concern in light of the expected future increase in population of the city. According to the data received from the Ministry of Education and the results of the fact-finding survey, the number of registered students and their attendance rates at the primary schools in each community are as tabulated below. Concerning the registered number of children at the primary schools in future 10 years, it has been assumed that the ratio compared to population will be the same as at present; and as for attendance rate, forecasts have been made assuming that it will be increased to almost 100%.

Table 3.2.7 Numbers of Primary School Pupils Forecast

Community	2007				2017				
	Population	Number of pupils	Share of primary school pupils	School attendance rate	Population	number of pupils			
						School attendance rate			
						Present rate		100%	
Buterere	33,500	7,115	0.21	0.85	59,993	12,742	1.8	15,047	2.1
Buyenzi	47,413	7,990	0.17	0.89	47,413	7,990	1.0	8,949	1.1
Bwiza	37,763	6,912	0.18	0.95	37,763	6,912	1.0	7,285	1.1
Cibitoke	70,263	12,019	0.17	0.83	70,263	12,019	1.0	14,505	1.2
Gihosha	50,843	9,082	0.18	0.96	76,555	13,675	1.5	14,269	1.6
kamenge	42,068	7,565	0.18	0.63	42,068	7,565	1.0	12,104	1.6
Kanyosha	42,892	9,375	0.22	0.86	111,231	24,312	2.6	28,328	3.0
Kinama	61,423	12,298	0.20	0.62	91,260	18,272	1.5	29,321	2.4
Kinindo	22,097	3,569	0.16	0.93	31,274	5,051	1.4	5,420	1.5
Musaga	78,541	13,204	0.17	0.92	98,979	16,640	1.3	18,072	1.4
Ngagara	21,901	1,722	0.08	0.64	25,166	1,978	1.1	3,078	1.8
Nyakabiga	24,345	3,685	0.15	0.85	24,345	3,685	1.0	4,344	1.2
Rohero	14,711	1,484	0.10	0.88	19,834	2,001	1.3	2,265	1.5
total	547,760	93,037	0.17	0.83	736,144	125,034	1.3	150,903	1.6

Source: Statistiques de l'Enseignement Pre-primaire, Primaire et Secondaire, Ministry of education

The desks (and chairs) currently provided in primary schools are around 110 cm in length and are normally used by two students at a time, although they are sometimes used by three students when there are not enough room to go around. Some communities, where the number of students is relatively high, have already a shortage of desks (and chairs), and it is estimated that there is a shortage of at least 500 desks (and chairs) over the whole of Bujumbura City. However, according to the forecast for 10 years from now, it is estimated that the shortage of desks will be 5,300 in the case if the attendance remains the same as present, and approximately 9,900 desks (and chairs) if the attendance rate increases to 100%. On average, each primary school has approximately 1,000 registered students and around 170 desks (and chairs).

Judging from the average figures, currently there is a shortage of one or two primary schools in three communities, and it will be necessary to construct at least around 30 new primary schools in next 10 years. Communities where the shortage of primary schools is especially acute are Buterere, Kanyosha and Kinama.

Table 3.2.8 Required Numbers of Desk (Chair) to Primary School in Bujumbura City

Community	Number of desks	Required number of desk (Chaire)					
		Present		School attendance rate			
				Present rate		100%	
		Number	Shortage	Number	Shortage	Number	Shortage
Buterere	1,062	1,186	-124	2,124	-1,062	2,508	-1,446
Buyenzi	1,402	1,332	0	1,332	0	1,491	-89
Bwiza	1,213	1,152	0	1,152	0	1,214	-1
Cibitoke	1,821	2,003	-182	2,003	-182	2,418	-597
Gihosha	2,220	1,514	0	2,279	-59	2,378	-158
kamenge	1,513	1,261	0	1,261	0	2,017	-504
Kanyosha	1,645	1,562	0	4,052	-2,407	4,721	-3,076
Kinama	1,863	2,050	-187	3,045	-1,182	4,887	-3,024
Kinindo	892	595	0	842	0	903	-11
Musaga	2,317	2,201	0	2,773	-456	3,012	-695
Ngagara	344	287	0	330	0	513	-169
Nyakabiga	646	614	0	614	0	724	-78
Rohero	371	247	0	334	0	377	-6
total	17,309	16,003	-493	22,140	-5,349	27,164	-9,855

Source: Summary of the Interview survey results from each Community

Next, projection was made concerning CDS (excluding hospitals), which are community medical facilities. The current number of CDS per community and population covered by each CDS are listed below. The average population covered by a CDS over the whole of Bujumbura City is 8,400 persons per facility; however, as the covered population is around two times higher, and therefore the standard of services is two times lower in Musaga and Gihosha.

Table 3.2.9 Current Situation of Covered Population by Health Center

Community	Population	Heath Center(CDS)			Number per pop.
		Public	Private	Total	
	(person)	#	#	#	(person/CDS)
Buterere	33,500	1	2	3	11,167
Buyenzi	47,413	0	6	6	7,902
Bwiza	37,763	1	4	5	7,553
Cibitoke	70,263	1	6	7	10,038
Gihosha	50,843	0	3	3	16,948
Kamenge	42,068	1	7	8	5,259
Kanyosha	42,892	2	8	10	4,289
Kinama	61,423	1	4	5	12,285
Kinindo	22,097	0	3	3	7,366
Musaga	78,541	1	3	4	19,635
Ngagara	21,901	1	1	2	10,951
Nyakabiga	24,345	0	2	2	12,173
Rohero	14,711	1	6	7	2,102
Total	547,760	10	55	65	8,427

Source: Summary of the hearing results from each Community.

The desirable population coverage for each CDS was estimated from the results of the field survey. The ratio of people who have used a medical facility (CDS or hospital) for some illness or injury in the past 15 days was 16.8% over the whole of Bujumbura City. Upon converting this into a daily total and assuming that approximately 70% of patients utilize CDS (local medical facilities), it works out that 4,294 people utilize the CDS every day. This figure is equivalent to 0.78% of the overall population of Bujumbura City. In other words, each CDS needs to treat 0.78% of its covered population each day. The number of patients that each CDS can treat in a day is computed as follows based on the assumptions shown:

- Doctors per CDS: 1
- Examination time per patient: 15 minutes
- Treatment time per day: 9 hours (08:00~12:00, 14:00~19:00)

In this case, each CDS can only deal with a maximum of 36 patients per day. Therefore, the population coverage of each CDS is estimated as follows:

36 / 0.0078 = 4,600 people

Table 3.2.10 Required Numbers of CDS in Future at each Community

Community	2007			2017				
	Population	Number of CDS	Covered Pop.	Population	Required number of CDS			
					Desireble 4600pop/CDS		Present 8400pop/CDS	
	(person)		(person/CDS)	(person)	Number	Shortage	Number	Shortage
Buterere	33,500	3	11,167	59,993	13	-10	7	-4
Buyenzi	47,413	6	7,902	47,413	10	-4	6	0
Bwiza	37,763	5	7,553	37,763	8	-3	4	0
Cibitoke	70,263	7	10,038	70,263	15	-8	8	-1
Gihosha	50,843	3	16,948	76,555	17	-14	9	-6
Kamenge	42,068	8	5,259	42,068	9	-1	5	0
Kanyosha	42,892	10	4,289	111,231	24	-14	13	-3
Kinama	61,423	5	12,285	91,260	20	-15	11	-6
Kinindo	22,097	3	7,366	31,274	7	-4	4	-1
Musaga	78,541	4	19,635	98,979	22	-18	12	-8
Ngagara	21,901	2	10,951	25,166	5	-3	3	-1
Nyakabiga	24,345	2	12,173	24,345	5	-3	3	-1
Rohero	14,711	7	2,102	19,834	4	0	2	0
Total	547,760	65	8,427	736,144	159	-97	87	-31

It is desirable that the whole of Bujumbura City will have 159 CDS facilities in 2017, and this means that 97 more CDS than the present numbers will be required. Even if it is assumed that the same standard of present services will be maintained, an additional 31 facilities will be needed at least.

Looking at the present situation by community, Rohero has a suitable number of facilities already, and Kamenge almost satisfies the required conditions. However, additional facilities are required in the other communities, especially in Musaga, Kinama, Kanyosha, Gihosha and Buterere, where increase of the facilities are required even if assumed the case that the present service level is to be maintained after 10 years.

3-3 PROJECTS/PROGRAMMES FOR COMMUNITY-BASED DEVELOPMENT

3-3-1 Major Projects/Programmes for Community-based Development

Habitant Participation Type Community Development Program already exists there, prepared through the TECHNICAL SECRETARIAT OF PROJECT OF PUBLIC WORKS AND JOBS CREATION (PTPCE), which is a department of Ministry of Public Works, as a measure to implement the development of social infrastructures in the communities. PTPCE which is the implementation body of this program was established in year 2001. The notable feature of the program is that the development is based on participation of the habitants, i.e. habitants are participating from the initial planning stage of the development and the decision is made in the discussions involving the habitants. Furthermore, the system, that a part of the fund required for the development is to be borne by the habitants, has been introduced. The shares of the fund to be borne by the habitants for economical infrastructures and social infrastructures are 5% and 10% respectively, and it is allowed to be borne by supplying materials or labor force. The maintenance of the infrastructures after completion, in principle, is carried out by the habitants themselves.

This program is based on the requests from the communities throughout the country including Bujumbura City, and it is implemented according to the process that the Administrator of the community submits a request letter using a form, specified by PTPCE, which is examined and approved by PTPCE. After the approval, the program is handed over to another organization (ABUTIP) who employs a consultant for the technical study. Then the successive processes of preparation of tender documents, tendering and construction go on. After completion, the project is handed over to PTPCE again and the services start for the habitants. The maintenance of the facilities is carried out by the habitants.

During the period from the establishment of PTPCE till the year 2007; 1,131 request letters have been submitted and out of those 124 projects, approximately 10% of the requests, have been approved and implemented or under execution; while 48 projects are waiting for the required funds after approval. The progress of the projects after approval is reported in the technical committee meetings held once in every 3 months.

Among the selected projects, 40 are related with Bujumbura City so far sharing 32% (40 out of 124) of those for the whole nation in numbers, or 39% in amount (refer Table below).

Table 3.3.1 Share of Projects in Bujumbura City against Total Approved Projects

Stage	Burundi (FBu)	Bujumbra (FBu)	Share (FBu)
1.Pirot Project	409,712,901	246,779,141	60.2
2.First	7,347,496,886	1,829,580,674	24.9
3.Second	9,323,419,229	3,322,940,774	35.6
4.Third	19,634,050,001	8,568,281,796	43.6
5.Forth	20,917,799,851	8,492,637,511	40.6
Total	57,632,478,868	22,460,219,896	39.0

Source: Summary based on materials of PTPCE

The achievement based on the amount of the selected projects within Bujumbura City for each community so far is summarized in the Table below. Projects in Rohero, located in the center of Bujumbura City, are the highest and shares about 27% of the total followed by Ngagara, Buyenzi and Kinindo sharing more than 10% each. On the contrary, not any project for the 4 communities, Cibitoke, Bwiza, Buterere and Nyakabiga, has been approved so far. These are communities where infrastructure facilities are basically underdeveloped. Concerning community development techniques including funding by habitants, there exist various constraints such as contributions of the habitants of low income, however, since there is provisions to provide labor and materials, it is desirable that infrastructure development programs be carried out based on the highly deserved development works of the communities under the initiative of the community leaders.

Table 3.3.2 Achievement of Selected Projects for each Community in Bujumbura City

Commune	Amount (FBu)	Share (%)
Rohero	5,914,674,902	27.1
Ngagara	4,412,872,054	20.2
Buyenzi	3,471,329,449	15.9
Kinindo	2,794,447,187	12.8
Kinama	1,560,326,506	7.1
Kanyosha	1,492,216,887	6.8
Gihosha	858,764,225	3.9
Kamenge	858,764,225	3.9
Musaga	488,875,532	2.2
Cibitoke	0	0.0
Bwiza	0	0.0
Buterere	0	0.0
Nyagabiga	0	0.0
Total	21,852,270,966	100.0

Notes: Those not able to define the Community are excluded.
Source: Summary based on materials of PTPCE

Concerning the related amount, the most demanded field of the projects is related with roads (many of them are to provide stone pavement), which shares about one third of the total amount, followed by the sequence of market, drainage, river protection, construction of elementary school.

Table 3.3.3 Achievement of Selected Projects for each Sector Bujumbura City

Sector	Amount (FBu)	Share (%)
Road	7,191,366,773	32.0
Market	4,280,826,642	19.1
Drainig	3,375,300,275	15.0
River	2,548,003,285	11.3
School	1,020,732,923	4.5
Etc	4,043,989,998	18.0
Total	22,460,219,896	100.0

Source: Summary based on materials of PTPCE

Table 3.3.4 List of PTPCE Community Development Projects in Bujumbura City

Stage	No.	Designation of sub Project	Sector	Commune	Cost of sub project (FBu)	Participation rate (%)	Amount of participation (FBu)
1. Pilot Project	1	Rehabilitationand Drainage 9 avenue Buyenzi	Road	Buyenzi	59,025,995	5	2,951,300
	2	Rehabilitationand Drainage 21 avenue Buyenzi	Road	Buyenzi	44,684,338	5	2,234,217
	3	Paving avenue des Euphorbes	Road	Rohero	35,894,260	5	1,794,713
	4	Paving avenue de la Mission	Road	Rohero	70,621,708	5	3,531,085
	5	Paving avenue de la victoire	Road	Rohero	36,552,780	5	1,827,639
2. First Portfolio	6	Draining of 5 avenue Buyenzi	Drainig	Buyenzi	110,881,440	5	5,544,072
	7	Kinindo Market construction	Market	Kinindo	674,758,699	5	33,737,935
	8	Reimprovement of Musaga Market	Market	Musaga	410,603,264	5	20,530,163
	9	Paving of Gihogazi avenue(1km)at Musaga	Road	Musaga	78,272,258	5	3,913,613
	10	Paving of Busoni avenue(0,8km) at Kinama	Road	Kinama	60,608,000	5	3,030,400
	11	Paving Buyengero avenue(0,8km) at Kinama	Road	Kinama	54,852,000	5	2,742,600
	12	Draining of 10 avenue Buyenzi	Drainig	Buyenzi	149,170,000	5	7,459,500
	13	Draining of 25 avenue Buyenzi	Drainig	Buyenzi	101,269,000	5	5,063,450
	14	Rehabilitation of Kinama Market	Market	Kinama	189,188,008	5	9,459,300
3. Second Portfolio	15	Rehabilitation of Road (quartier INSS)	Road	Rohero	1,348,299,368	5	67,414,968
	16	Paving of Road avenue de grece(0,5Km)	Road	Rohero	132,823,217	5	6,641,161
	17	Paving of Road avenue Muniwa/Kinindo s/m	Road	Kinindo	171,106,565	5	8,555,328
	18	Construction of primary school Kinanaira III	School	Kinindo, Kanyosha	232,797,764	5	11,639,888
	19	Collector of Kinama	Etc	Kinama	104,562,922	5	5,228,146
	20	Passing around Kinindo Market	Road	Kinindo	146,203,009	5	7,310,150
	21	Development of street	Road	-	232,597,850	5	11,629,893
	22	Development and paving of street Rohero II	Road	Rohero	954,550,109	5	47,727,505
4. Third Portfolio	23	Buyenzi Market construction	Market	Buyenzi	3,006,298,676	5	150,314,934
	24	Muha River development	River	Rohero	444,311,778	5	22,216,589
	25	Kanyosha River development	River	Kanyosha	549,886,020	5	27,449,301
	26	Gatoki gully development	River	Rohero	461,890,110	5	23,094,506
	27	Kiriri gully development	River	Rohero	1,092,815,377	5	54,640,769
	28	Draining&Liquid wast Ngagara quarter	Drainig	Ngagara	3,013,979,835	5	150,698,992
6. Forth portfolio	29	Kinanira-Muha road draining and paving	Road	Kinindo	889,167,760	2	17,783,355
	30	Kabondo street draining and paving	Road	Kinindo, Rohero	1,593,624,580	2	31,872,492
	31	Avenue du marche paving	Road	Rohero	104,532,015	2	2,090,640
	32	Rue du Progres paving	Road	Rohero	43,604,426	2	872,089
	33	Avenue des paysans paving	Road	Rohero	149,038,355	2	2,980,767
	34	6Q.NgagaraDraining and paving	Road	Ngagara	986,306,130	2	19,726,163
	35	Kanyosha olympafrica center constr.	Etc	Kanyosha	826,831,990	2	16,536,640
	36	Carama III servicing	Etc	Kinama	1,151,137,578	2	23,022,752
	37	Ngagara college construction	School	Ngagara	412,684,099	2	8,251,682
	38	School infrastructure development	School	-	375,351,080	2	7,507,022
	39	Planning Gikungu-Gihosha-kamenge	Etc	Gihosha, Kamenge	1,717,628,449	2	34,350,569
	40	Saint Marc co.construction.	Etc	Rohero	249,929,059	2	4,678,581
Total					22,460,219,896	-	868,231,872

Source: Summary based on materials of PTPCE

The approval of the requested projects is carried out in accordance with the criteria specified by PTPCE and the implementation priority is decided based on the effectiveness/benefit of the projects. To select the projects the Technical Committee meeting is held once a year and roughly 20 to 30 projects are generally selected which means that approximately 10% of the requested projects are selected based on the data. At the time of actual selection, it is not only necessary to satisfy the criteria but the balance for the region is also taken into account. The criteria specified by PTPCE are as follows.

- The project shall be proposed and confirmed in the Beneficiary Meeting or Community Development Committee in the Community.
- The object of the development shall be the fundamental socioeconomic infrastructures and facilities of the community such as road, market, drainage, medical center, erosion prevention structures, schools, water supply facilities, etc.
- The labor cost including miscellaneous expenses shall be not less than 20% of the total project cost.
- The beneficiaries shall contribute in the range of 2% to 5% by investment, material supply or labor force supply.
- The beneficiaries have to prove that they have the will as well as the fund and technology to maintain the completed facility and installed utilities.
- The implementation of the project shall not disturb the environment.
- The project shall not overlap with the project(s) funded by other donor(s).

3-3-2 Local Authority Capacity Building and Community Formulation/Enhancement

(1) Role assignment of Central and Local authority related to community development

The community development project in 13 communities of Bujumbura is firstly selected by each CDC (Community Development Committee) and submitted its proposal to the PTPCE (Technical Secretariat of Project of Public Works and Jobs Creation) of the Ministry of Public Works and Equipment respectively. After the PTPCE deliberates the proposals, the nominated projects are approved by the member of CTI (Internal Meeting Technical Committee) which consists of representatives of several ministries and agencies.

ABUTIP (Burundian Agency of Works of Public Interest) of the Ministry of Public Works and Equipment takes charge of implementation of the project. The PTPCE is taking charge of supervision in parallel with project implementation and monitoring after its completion. Activity of the PTPCE started since the 2001 except for the unsafe place. Many citizens understood that the selection and implementation method of the community development project undertaken by the PTPCE because of the publicity work being conducted nationwide.

Implementation of the approved projects will be greatly influenced by the project selection criterion which is imposed to the community side as a duty of sharing of the project cost. The CDC and the Ministry of Public Works and Equipment (PTPCE/ABUTIP) always need to improve each role assignment about the monitoring activities after implementation and from the project finding for cooperation of the project implementation. Role assignment of each party is drafted for reference as shown below.

a) Community Development Committee

- Participating to each stage of project (Project Finding & Formation, Prioritizing, Implementation Method, Implementation, Monitoring & Evaluation), considering especially opinion of women and young men.
- Preparation of project proposal according to the designated form
- Evaluation of project request made by Chief of Cartier and discussion with the residents in the Community.
- The check of quality and quantity of the materials and equipments delivered at the site.
- Proper storage and theft prevention of the materials and equipments.
- Supply of local materials such as wood, sand & gravels, rocks, etc., if necessary
- Supply of unskilled labors, if necessary.
- Preparation of implementation schedule in consideration of seasonal condition and other project progress situations, etc..
- Procurement of materials and equipments, if necessary.
- Setting up the project sign board
- Preparation and proper keeping of minutes of meeting and other related documents.
- Preparation and submission of the evaluation report at the project completion

b) Assignment of the PTPCE and the ABUTIP

- Explanation on the project development concept to the residents in a community.
- Technical guidance and support to the community for project formation, preparation of proposal and submission schedule.
- Technical examination for project feasibility and sustainability according to the plan.
- Materials and equipments procurement and delivery after project approval and implementation support, if possible, materials to be procured by a community.
- Notice and report of all the expenditure in the project cost to a community
- Reservation of the accountability concerning a project budget.
- Support of project monitoring and evaluation performed by a community and training of capacity development of the CDC.

- Report of the matter relevant to the refugees and internally displaced persons (IDPs) protection in a community.
- Preparation and submission of implementation schedule, monthly progress reports and completion report of the project.
- Follow up guideline of the project implementation under the foreign fund by a donor.
- Getting approval for project requested by a community from a donor.
- Dissemination and diffusion of the project information under implementation and planning nationwide.
- Periodical report of the progress of project to a donor and participating meeting with a donor.

(2) Participating of residents and selecting of projects

CDC and PTPCE / ABUTIP had better improve following problems because there are many problems about selecting of projects and consideration of residents participating in each authority.

a) Community Development Committee (CDC)

- Fair Project Selection

  The requests of development projects from the communities are approved by the committee composed of each community representative, however, it is not clear how far the opinions of the habitants are reflected and how much fairness is ensured in this decision making process. Accordingly, at the time of selecting the projects in the communities, it is necessary to introduce accountability so that it can be clear how the committee reflects the opinions of the habitants and why the projects are adopted.

- Reconfirmation of the Imbalanced Road Construction

  Upon conducting hearing of the community representatives about the developments they consider necessary, the most communities pointed to the need for roads. Since roads are the important infrastructure not only for the cars but also for pedestrians and bicycle users; they are very much essential for the vitalization of the communities. However, in those communities where there is too much poverty, many districts still do not have sufficient water or electricity supply. In these communities, it is considered more essential to provide safe and stable water supply (at least community water supply, if home to home supply is not possible) and electricity supply (including road lighting, etc.) before constructing new roads.

  When selecting any community development project in future, rather than simply

following the examples of the past developments, it is necessary to examine the districts overall infrastructures' conditions to find out the really needed development programs fully gauging the living environment and needs of the local inhabitants. Moreover, in addition to the basic infrastructure, as was voiced in some of the communities, it is anticipated that various ideas such as programs for job training schools, multipurpose halls and public computer centers, etc. will be generated.

- Understanding and Dissemination of Contents of the PTPCE Program

Currently it is thought that utilization of PTPCE programs is the best way to carry out community development. However, the chances for a project to be adopted by PTPCE are low – only around one in 10 requested projects are usually adopted. There are even some communities where not a single PTPCE project has been implemented so far. Therefore, it is important for the committee members and administrators in each community to submit written requests upon first understanding and studying the purport and selection process of PTPCE projects. It is also important to build a system for disseminating the correct information about the program to the inhabitants and obtaining various opinions from them.

b) PTPCE and the ABUTIP

- Review of the definition of resident participation

Current community development programs are largely based on funding by the residents, and resident participation tends to be stressed in relation to this point. In other words, the residents tend only to be called on for providing the funds. In its original meaning, resident participation refers to the process whereby the residents participate in all the stages starting from the project formulation and selection, implementation and maintenance; and the opinions of the residents are to be incorporated as much as possible in all those stages. In this sense, the existing program that encourages the residents only to help in funding and maintenance; runs counter to the original definition. Accordingly, it is necessary to properly redefine the participation of residents in the present PTPCE program and establish new criterion for selecting projects to confirm the resident participation and the reflection of their opinions.

- Review of funding criteria

In the existing resident participation projects, local residents bear part of the project cost. Although resident participation also includes provision of labor and supply of materials, it is limited to funding assistance in many cases, and this makes it difficult to advance the development works in communities with higher degree of poverty. However, in reality,

the poorer communities are the ones that need the most basic infrastructure developments. The PTPCE should rectify such situation and it is desirable that the current system of funding should be improved. For example, the following measures can be considered: 1) give priority to funding from the government for the communities with higher level of poverty, 2) depending on the importance of the infrastructure to be developed, abandon funding for some other basic infrastructure, 3) rather than depending on funding by the residents that are benefited from the development, implement development according to the community budgets, and so forth.

- Thinking on local fund

  Local balance can be raised as one of the criteria for selecting PTPCE projects out of the development requests from the communities. However, simply judging the districts that require basic infrastructure along with the other districts from the viewpoint of local balance only may conversely lead to a widening of local disparities. Therefore, regarding the selection of PTPCE projects, priority should first be given to the basic infrastructures that are needed, while local balance should be considered with respect to other projects.

3-3-3 Urban Livelihood Improvement

A feature of living infrastructure development in Bujumbura city is polarization between the communities that have relatively advanced development and the communities that don't, and also polarization within the relatively well developed communities between developed districts and poorly developed districts. In general, since the standard of basic infrastructure development is still low in many communities, it is thought that priority should be given to promote the basic infrastructure developments. Accordingly, priority should be given to the following six sectors, i.e. water supply, electricity, sewerage/draining, roads, schools (primary schools) and medical facilities (health centers).

(1) Water Supply

There are still numerous districts in the communities that do not even have any public water supply, let alone water supply to individual households. Specifically, these are the districts located at northwest of Buterere, east of Kamenge, east of Gihosha, parts of the south of Musaga and the central and western part of Kanyosha. Since all these districts have a lot of poverty, it is necessary to be given priority to the construction of public water supply. Concerning Kanyosha, in addition to its urban development, it is necessary to construct a pipe line system to supply water to each household.

(2) Electricity

Communities where there is hardly any electricity supply are Buterere, Kinama and Kanyosha. Since these communities cover a wide area, it will be appropriate to promote diffusion from the districts of relatively high population concentration. Moreover, since Kanyosha and the north of Kinama include newly developed districts, it will be desirable also to plan the construction of infrastructure for supplying electricity to each household.

(3) Sewerage / Draining

Apart from Rohereo, Kinindo and Ngagara, the level of sewerage development is low all over Bujumbura city. Therefore, it is necessary to develop the sewerage system almost for the whole city. However, considering the burden that would be placed upon each household, it will be difficult to disseminate sewerage in this way. For the public sewerage developments, sewerage systems including pipe line connection to each household can be developed in Rohero, Kinindo, Ngagara and Gihosha; while piping and treatment facilities capable of treating wastewater from the roadside ditches should be considered for Bujumbura city as a whole. It is also necessary to develop these facilities from the viewpoint that there occur many floods in Bujumbura city frequently.

(4) Roads

Leaving aside the construction of arterial roads and distributor roads that link the communities, local roads including the unpaved roads within each community are relatively well developed. Since the communities other than Rohero, Kinindo, Ngagara and Gihosha still have low car ownership rates, it may be desirable to stone-pave the main local roads that provide access to the council offices and markets, etc. Since Kinindo, Ngagara and Gihosha have relatively high car ownership rates, it is desirable that the roads that join the arterial roads should be paved with asphalt or stone blocks.

(5) Schools (Primary Schools)

As mentioned in the previous section, schools in the communities of Buterere, Kinama and Cibitoke have students well in excess of the capacity. Accordingly, it is thought that priority should first be given to the construction of facilities in these three communities. Next, since Gihosha, Kanyosha and Musaga will not be able to handle the predicted population increases in future, it will be necessary to build new school facilities in these communities following the first three mentioned above.

(6) Medical Facilities (Health Centers)

Judging from the present state of facilities, priority should be given to construction of new facilities in Musaga, where there is relatively shortage compared to other communities. Moreover, it is desirable to construct public health centers in Buyenzi, Nyakabiga, Gihosha and Kinindo, which at present have no such facilities and the economic burden in these communities is unfairly high compared to the other communities. Next, in order to respond to the future population growth, it will also be need to construct facilities in Buterere, Kinama and Kanyosha.

3-3-4 Considerations on Implementation of the Above Projects

Project formation for community development in Bujumbura made through the residents participatory approach. 120 or more projects focusing on an infrastructure building issue have been carried out by the PTPCE under financial support of the World Bank from the year 2001 until now. For project implementation from now, it is considered the following matters based on lesson learned from the previous projects.

(1) It is a premise that the benefit of development project can widely contribute to the living of a local resident in the community. On the other hand, in a community, the residents with higher income are given preference in selecting the project than those with lower income, as the partial expenses are to be bear by the residents according to the project priority selection guideline. Though it is difficult to formulate the whole local residents' consensus, which is a time consuming process, it is require to formulate their consensus to avoid the project benefit to be contributed only to a specific group of residents in the community. Therefore, Administrator and Community Development Committee (CDC) need to have strong leadership to formulate a local resident's consensus through many discussions meetings with the residents for the project materialization.

(2) There are 13 communities in Bujumbura. Since the characteristic of a community is not uniform, a certain project may not be so important for a certain community, but that one may be an important project in another community. Although the project selection guideline of PTPCE is uniformly applied for the whole country, it is required to consider the characteristic of the community's needs for selection of the project.

(3) It seems that some communities of Bujumbura have an experience to suspend the selected project which is already formulated by the resident's consensus in the community unit at the selection stage because of objections in project cost sharing or mobilization is not enforced as scheduled after getting approval of the PTPCE. Therefore, it is required to draft countermeasures against various problems to be arisen during the project implementation.

(4) It is required to establish implementation system by community or quarter basis to avoid problems to be arisen by the illiteracy and lack of count ability of a few residents.

(5) It might happen that a project to be carried out without total coordination among all the projects from the viewpoint of integrated regional development as the projects is formulated depending on each community's demand. The Bujumbura city office and the Ministry of Public Works and Equipment are required to evaluate and propose the project from a viewpoint of comprehensive development of an area.

(6) Since it seems that the project implementation organization is not well established in community, it is required to examine an implementation organization including required staff assignment for every project in each stage, i.e., planning, implementation and operation and maintenance of a project.

(7) Mayor and Administrators of each community are holding the meeting periodically at every week in Bujumbura city. Through this meeting, the community development information are exchanged enough right from the project planning stage, and it is necessary to share the lesson learned from implementation of a project.

(8) In Burundi, the damage due to flood occurs nationwide every year in the rainy season. The serious damage of residences and fields in KANYOSHA occurred in February and March 2007. An urgent project as the measure against this type of natural disasters should be required to carry out in the shortest period preferentially.

(9) Most of the community development projects are based on infrastructure buildings for the time being. Investigation and research activities towards development of cash earnings business such as setting of some industries are needed to carry out by community basis.

(10) There are major disparities between the communities of Bujumbura city in terms of the infrastructure development. The existing system whereby communities autonomously implement their own development projects resulted into this situation. Accordingly, in order to have balanced development over the whole of Bujumbura city in future, it will be desirable to prioritize the construction of basic infrastructures in the communities that are presently underdeveloped.

(11) Each community first needs to construct the basic necessary infrastructures mentioned above. However, the opinions of many community representatives are not in agreement with this, and there is thought to be a lot of subjectivity involved when determining the priority of projects. In order to eliminate such bias and encourage the representatives to discern what is required for the development of the communities as well as the overall Bujumbura city, it

will be necessary to raise the awareness of the officials. For this reason, a possible measure would be required for Bujumbura city as well as for the whole country to take the initiative to organize regular trainings and education opportunities and calling on the community representatives to attend.

(12) From the background of major disparities in basic living infrastructure, it is necessary to define a role for coordinating the selection of projects that takes equity between all the communities of Bujumbura city into account. For this purpose, it may be effective to organize a department, may be within the City Council, devoted to the community development; and establish a coordination agency for selecting the community development projects from the viewpoint of reducing the local disparities.

3-4 RECOMMENDATIONS IN IMPLEMENTAITON OF PROJECTS/PROGRAMMES

In Burundi, the community service works is already introduced as part of community development (this service works was, considerably introduced before the start of the civil conflict, it was interrupted by the dispute and again it is resumed by the new President from July, 2006).

All citizens are to participate in the Community Service Works by taking part in a certain work in their community from 7:00 AM to 10:00 AM for 2 hours on every Saturday morning (in fact, cars or motorbikes, other than the vehicles which obtained prior permission, are not found in the city at all during that time). All residents excluding children and old aged persons are obligated in this service. However, there are some residents who dislike participating. Since this, it is considered that enforcement of low is necessary for those who do not participate. The main voluntary work is cleaning of the streets, surrounding garbage collection, tree planting, etc., and is also to provide service for construction of a school, health center, a residence, etc. by means of donated bricks and cement in rural areas.

Chief of Quarter decides for the people who could participate in what kind of work in consultation with the Administrator (chief of Commune) upon the requests from the residents. Residents are engaged in works according to his directions. The name is registered into the participants list for the residents who participated in the community service work each time. When one cannot participate for the sake of one's individual inconvenience, it is necessary to inform the Chief of Quarter each time and to obtain permission. For not participating, there are no provisions of penalties or fine, but participation is urged as such that there is a life risk like penalty. Thus, it can be highly evaluated that the base of fundamental activity of community development is already established in Burundi. Based on these conditions, the recommended subjects of community development of Bujumbura from now on are shown below.

(1) Project selection and implementation targeted mid and long-term

The projects should be selected for activating the communities in the presently stable society of Bujumbura after the civil conflict and is trying to lead the same social life as before. If the project contributes to some local residents only, project benefit would affect the unity of Bujumbura which is already consisting of different income level communities.

In order to increase unity of Bujumbura, it is required that i) the project corresponds to the needs of the whole community, ii) the project provides service for the whole community, iii) the project equipped with the mechanism in which the convenience of generated benefit is returned to the community, and iv) the project can be continuously maintained by the residents themselves in the future. For these fundamental subjects, it is assumed that the residents of Bujumbura is shifting urgently or within a short period from the time of the living infrastructures to the time of developing the infrastructure buildings needed from a medium-to-long term viewpoint.

In addition to this, infrastructure development is needed in Bujumbura from a viewpoint of comprehensive community development through implementing individual projects and also in viewpoint of having mid and long-term than the urgent and short-term development projects to maintain the comparatively stable situation prevailing at present. Moreover, the contents of the infrastructure should differ from the status of development of a community (the community located in the center of Bujumbura desires to develop urban-function such as a sewer, a streetlight, etc. on the other hand, the community located in a circumference part expects to develop fundamental infrastructures, such as a road, water supply and electricity). So it needs the infrastructure development according to the maturity of the community.

(2) Community development project for securing job

PTPCE is now carrying out the community development projects which are supported by World Bank. These projects are generated as the places for job creation since the community development projects are based on infrastructure from procurement of materials and supply of the labour force in the community. Moreover, the community can make residents participate in the project and it contributes to the residents' income. Thus infrastructure building is an important project to secure job creation. Construction of new market is also preferred since the construction work of a market involves more craftsmen and labourers in the several different fields more than a road construction. The market construction also provide with the place of jobs for many people who want to do business and therefore, it is an important community development project as a base of a physical distribution center.

On the other hand, it is especially remarkable in Buyenzi Communethat there are many

work places for car repairing, and bed and furniture fabrication on the street. As the one of the community development project demonstration it is essential to assemble these operating business on the street in a specific area (tentative name: collective small business center) which can perform group work.

(3) Diversification of residents participatory in community

Since PTPCE is extremely restricted by source of revenue, it selects one among 10 projects proposed by the different communes of the whole country. Although a project is selected by the resident on the priority basis, one of the project selection criterion which PTPCE has defined is that the partial share (2% or 5%) of the project cost are to be paid by the community. Another option of contribution from the community is to provide the labour force or offer local materials (sand, wood, etc.) free of cost. Therefore, in a case of community with lower level of poverty, a provisionally selected project may not be implementation without the ability to collect the burden charge from the residents of the community. About the duty of communities, such as to provide the labour force or offer local materials free of charge depends upon the community characteristic. It means that the method of citizens' participation in the project should be examined for each project and for every community.

(4) Information dissemination on project selection reasons and effects

Although the priority of the project to gender or socially vulnerable groups is not shown in the project selection criteria, PTPCE takes in consideration of these in the selection stage. It is necessary for a community or residents to know what kind of projects having been selected for what kind of reasons, and this information are very useful when selecting a project for the next time and forming the internal consensus in a community.

Moreover, it is necessary to disclose the reason for selection widely and to urge competition among the communities. Radio broadcasting is the major form of media in Burundi. Many people are listening to the radio at the present. If information is disclosed about the project selection reason and effects after project implementation is carried out through radio, it will lead also into a big educational campaign for the project formulation. Moreover, the announcement of the results regarding monitoring of a project can contribute to the durability of the project greatly.

(5) Community development project taking account of increased income

It is necessary to consider job creation opportunity through vocational training and the infrastructure building towards the improvement in income instead of the fundamental social infrastructure building. Especially the job creation for young men is an urgent need which can

avoid a big social problem also. It is necessary to develop people who can be engaged in the service type jobs (repair of a cars and electrical products, manufacture of wooden furniture, manufacture of a brick and concrete block, etc.). Providing such services, they can sustain their family through earnings and also have contribution to the infrastructure development activity.

Income improvement for the farmers and women engaged in agriculture should also be examined for upgrading of the productivity by means of creation of training center and instructors with new technique for the production activity. This is quite difficult to be carried out by a community independently. One of the options is to formulate investigation and research system among the related industries and research institutes (Association of Burundian Employees (ABE), Association of Burundian Industrials (ABI), University of Burundi, etc.). This collaboration can lead to new job creation.

(6) Community vitalization made by community consolidation and creation

The "one article by one Village" activity introduced in Japan is a good example which leads to community development in addition to infrastructure development. This activity is promoted with a regional vitalization measure of Japan as part of a village or town revitalization. Since Administrator and community development committee members understand well the weakness and strong points of their communities, they can try to tackle community development by this "one article by one Village" activity.

The "One article by one Village" activity includes the sharing of wisdom of all the residents together, digging up of local various resources, production of goods for sales which proved to be predominant from other communities; with the cooperation of the whole community. For example, in a project (Sokoine agricultural college community development project) carried out in Tanzania, the culture activities of Tilapia (a kind of fish) showed income generation business regionally. This project is aimed at the cash-earning expansion for a farmer by the activity for tilapia cultivation in a small pond (about 6x12m) at the foot of a mountains area. It is required to study this kind of activity also in Bujumbura because of similar geographical feature being surrounded by the mountain (refer to the photograph of Tilapia). Moreover, since Bujumbura is blessed also with the Lake Tanganyika, expansion of the fisheries by the culture business utilizing the lake can also be considered. Since the indirect effect that securing job leads to dissolution of social unrest for residents in addition to the direct effect of the improvement in income is also expectable, so it is recommended to consider the community development by "one article by one Village" activity for Bujumbura.

Figure 3.4.1 Photographs of Culture activity of Tilapia in Tanzania

CHAPTER 4

TRAFFIC SURVEY

CHAPTER 4 TRAFFIC SURVEY

4-1 OBJECTIVE OF THE SURVEY

Traffic surveys were carried out on the study area, for the purpose of developing a traffic model which could be used to assess the impacts of improvement of the road network. The objectives of the surveys were to collect data on the scale as well as the pattern of the traffic movement.

The data found from the surveys were analyzed to determine the existing traffic volumes and composition on the network, and was also used in conjunction with the economic forecasts to provide future traffic demand.

4-2 AVAILABLE TRAFFIC DATA

The latest traffic data available is in the "REPORT FOR STUDY FOR THE Rehabilitation OF URBAN ROADS IN BUJUMBURA, MARCH 2002" prepared by the MOF, Burundi.

The objectives of the survey were to have basic data to formulate the Traffic Control Management in Bujumbura on long term and also to have a reference to justify the feasibility for the road improvement project which was introduced in the same report.

4-2-1 Traffic Survey Results

In that Report, the previous survey results of 1985 and 1991 were also shown for comparison.

Survey was done at 56 points (actual locations of points were not available) and they covered almost the entire area of Bujumbura city but they were not on the major truck roads.

The survey results are shown in the following table 4.2.1:

Table 4.2.1 Traffic Count Results of the Survey at 2002

No.	Names of Road	1985 (N)	1991 (N)	2002 (N)	Traffic Mode Composition (%)			
					Private Vehicle	Small Size Truck	Heavy Vehicle	Mini Bus
1	Avenue de I'imprimerie	44	1,197	268	65.5	15.3	9.7	9.5
2	Avenue de la Croix Rouge	NA	1,000	1,000	64.0	13.4	6.9	15.6
3	Rocade Kamenge	NA	NA	NA	NA	NA	NA	NA
4	Boulevard de I'UPRONA	1,495	2,672	11,257	71.4	12.1	2.8	13.7
5	Dessert Mutakura-Buterere	NA	495	367	15.7	6.1	23.2	55.0
6	Chaussee Kigobe	NA	278	603	67.1	17.4	5.4	10.1
7	Avenue Ngozi	NA	NA	812	85.3	5.7	2.5	6.5
8	Avenue des paysans	NA	3,088	2,000	68.0	10.5	5.4	16.0
9	Transversale Buyenzi	805	903	712	54.1	16.5	13.6	15.7
10	Avenue Nzero	NA	NA	2,283	93.5	2.1	0.9	3.6
11	Boulevard Mutaga III	NA	NA	1,976	52.9	14.5	8.5	24.1
12	Avenue de la jeunesse	516	3,098	1,822	70.5	14.1	3.6	11.8
13	Avenue Ngendandumwe Muramvya	NA	2,625	937	85.3	5.7	2.5	6.5
14	Avenue de Grece	NA	1,476	3,000	64.0	13.4	6.9	15.6
15	Chaussee Prince Louis Rwagasore	NA	1,258	3,000	68.0	10.5	5.4	16.0
16	Desserte Kamenge &Kinama	NA	NA	250	64.0	13.4	6.9	15.6
17	Boulevard Mwezi Gisoba RN3	1,505	2,559	4,403	62.1	8.0	5.8	24.1
18	Rue des Swahili	NA	2,505	1,114	78.1	10.6	5.8	5.4
19	Desserte Mutaga-Kanyosha	NA	NA	513	26.9	10.2	3.8	59.1
20	Avenue de Mosso	169	2,200	2,553	73.9	6.9	2.2	16.9
21	Avenue de France + Avenue de I'Angola	NA	2,220	3,218	78.0	17.9	2.1	2.1
22	Avenue Belvedere	NA	886	1,774	62.7	9.4	1.8	26.1
23	Avenue d' octobre	NA	NA	625	76.8	10.6	2.4	10.2
24	Avenue des travailleurs	NA	NA	600	64.0	13.4	6.9	15.6
25	Avenue Mumirwa	NA	NA	2,523	89.4	5.3	1.0	4.4
26	Avenue du progress	NA	1,200	600	64.0	13.4	6.9	15.6
27	Avenue des Palmiers	NA	1,200	600	64.0	13.4	6.9	15.6
28	Avenue ravin/juilet	NA	257	250	64.0	13.4	6.9	15.6
29	Avenue de I'UNESCO	NA	421	577	69.9	18.0	6.0	6.1

No.	Names of Road	1985 (N)	1991 (N)	2002 (N)	Traffic Mode Composition (%)			
					Private Vehicle	Small Size Truck	Heavy Vehicle	Mini Bus
30	Avenue Muyinga + zone Nyakabiga	129	597	1,009	73.2	13.7	3.5	9.6
31	Dorsale de Kinama	23	170	250	28.6	15.4	13.0	43.0
32	Acces a la station d'epuration	NA	NA	50	64.0	13.4	6.9	15.6
33	Chaussee de I'Agriculture	NA	958	359	62.2	27.5	10.0	0.3
34	Rue Ruvyironza	NA	566	350	64.0	13.4	6.9	15.6
35	Boulevard Mao	NA	600	509	87.8	7.5	1.4	3.3
36	Rue Yaranda	NA	NA	738	91.1	7.1	1.9	0.0
37	Rue Huhuhuma	NA	NA	1,000	64.0	13.4	6.9	15.6
38	Rue Gasibe	NA	NA	1,313	72.3	5.8	9.7	12.2
39	RN7 Bd Ntare Rushatsi	NA	NA	4,766	46.2	7.3	5.5	41.0
40	Rue du Congo	NA	1,418	2,500	68.0	10.5	5.4	16.0
41	Rue JRR	NA	NA	2,000	68.0	10.5	5.4	16.0
42	Avenue Kigamba (quartier OUA)	NA	NA	2,283	68.0	10.5	5.4	16.0
43	Ave Buragame	NA	NA	2,283	68.0	10.5	5.4	16.0
44	Avenue du 18 septembre	NA	NA	600	68.0	10.5	5.4	16.0
45	Avenue de Rusizi	NA	615	250	64.0	13.4	6.9	15.6
46	Avenue du Luxembourg	NA	2,200	600	64.0	13.4	6.9	15.6
47	Avenue des Etats Unis	NA	996	1,125	73.7	18.5	2.6	5.2
48	Avenue de I'ONU	NA	1,431	600	64.0	13.4	6.9	15.6
49	Avenue Beau site	NA	NA	100	64.0	13.4	6.9	15.6
50	Avenue Bel air	NA	NA	100	64.0	13.4	6.9	15.6
51	Avenue Ntahanga	NA	227	300	64.0	13.4	6.9	15.6
52	Avenue Janvier	NA	NA	100	64.0	13.4	6.9	15.6
53	Rue des Grands Lacs	NA	NA	50	64.0	13.4	6.9	15.6
54	Avenue d'Italie	NA	NA	600	64.0	13.4	6.9	15.6
55	Avenue Par (Desengorgement)	NA	NA	100	64.0	13.4	6.9	15.6
56	Avenue 1er Novembre	NA	NA	8,766	68.0	10.5	5.4	16.0

4-2-2 Traffic Forecast

In the Report, it was mentioned that establishment of detailed traffic forecast had not been possible due to the lack of necessary information; the most of necessary information was

missing because of the Civil Conflict continued for the previous 10 years.

Although the Study had met some difficulties of collection of information, it could reach to have some estimation of Traffic Growth Rate as follows;

- 9.5% from year 2002 to 2004
- 14% from year 2004 to 2009
- 9.5% after year 2010

The study was also aimed to justify the feasibility of Road Improvement Project which covered the roads listed in Tables 4.2.1. The traffic growth rates were estimated with an assumption that the Project might be implemented according to the schedule; the Project was scheduled to be completed by 2004. So the second rate mentioned above was supposed to be a post-project one. However, the project has not been implemented yet.

In the report, there was also a description regarding the traffic generation; it was that, the Project might bring some lowering of transport cost through competition among the transporters because transport cost was supposed to decrease as a result of road improvement. The demand for reasonable price to the transporters would be increased; especially the areas along the arterial road connecting between south and north parts of Bujumbura, and the traffic might be more generated from these areas.

The report also suggested a need for strengthening of the arterial road connecting between north and southern areas of Bujumbura.

4-3 SURVEY SPECIFICATION BY THIS JICA STUDY

For this JICA study, as shown in Table 4.3.1 three types of traffic survey were carried out from 13th to 20th February 2007.

Traffic count survey and OD survey were carried out at 22 locations and 5 locations respectively. Among the 22 locations of traffic count survey, 24 hours survey were performed at 2 locations and the rest of the locations were for 12 hours survey, which was carried out from 7:00 to 19:00.

Table 4.3.1 Survey Schedule, February 2007

Day	Date	Day	Survey Items	Remarks
1	13th FEB	Tue	Briefing of Survey Methodology Training	
2	14th FEB	Wed	7 Locations of 12 Hours Traffic Counts Survey	
3	15th FEB	Thu	5 Locations of 12 Hours Traffic Counts Survey	
4	16th FEB	Fri	2 Locations of 24 Hours Traffic Counts Survey	
5	19th FEB	Mon	3 Locations of 12 Hours Traffic Counts Survey 3 Locations of OD Interview Survey	
6	20th FEB	Tue	5 Locations of 12 Hours Traffic Counts Survey 2 Locations of OD Interview Survey	

Traffic counts survey were carried out by the vehicle categories as shown in Table 4.3.2

Table 4.3.2 Vehicle Categories for Traffic Counts Survey

Categories		Remarks
LIGHT VEHICLES	Private Passenger Car	i.e. Toyota Corolla, Toyota Land Cruiser, Land Rover etc.
	Taxi	Including wagon taxi
	Minibus and Light Bus	< 20 passengers (single tyre on rear wheel)
HEAVY VEHICLES	Medium / Large Bus	20+ passengers (double tyre on rear wheel)
	Medium Goods Vehicle	2-axle Truck and more
	Heavy Goods Vehicle	Articulated Truck/Trailer combination
OTHERS	Pedestrian	No particular specification
	Motor Bicycle	No particular specification
	Bicycle	No particular specification

4-4 TRAFFIC SURVEY RESULTS

4-4-1 Aggregate Traffic Count Results

The following Figure 4.4.1 shows the aggregate traffic survey results; the largest traffic number is 24,921 per 12 hours at Point 13 at the T-junction on Bd. I'Uprona near the hotel Novotel.

From the survey result, following traffic characteristics on each road are obtained;

RN5: The majority of traffics are heading to the Airport, the ratio of passenger car is high and heavy vehicle is low. (Point 2, 4)

RN9: The majority of traffic found are transport vehicles within the area, the ratio of passenger car is relatively low, and mini bus and taxi are high. (Point 3, 5), this composition is common in other neighbouring roads. (Point 6, 7)

Bd. 1 er Novembre: Although the road is located in the industrial area, the ratio of heavy vehicle is low; the majority of traffic counted are passenger cars and their origin and destination are mainly market and/or UN located on area after the section. (Point 9)

Ch du Peple Murundi: This road can be identified as a main road in Bujumbura; it plays a double role i.e. as bypass and area's main road; the role of bypass is to access two areas located between south and northern parts of Bujumbura, the other role is to collect the generated traffic from neighbouring areas of the road and to convey them to CBD. The ratio of mini bus was relatively high and the heavy vehicle was low. (Point 10)

Bd. Mwambutsa: This road is a part of the ring road. Its characteristic is like an area's main road which collects traffic from northern area and conveys to CBD. The ratios of mini bus and taxi are relatively high and heavy vehicle is low; seemlier with RN9. (Point 11)

Bd. du 28 Novembre: The majority of the traffic counted on this road are mainly the through traffic, the road conveys the traffic generated from northern part of Bujumbura; it played a roll of bypass, the ratio of passenger car is extremely high and heavy traffic is low. (Point 12)

Bd. de I'Uprona: This road can also be identified as another main road in Bujumbura, there is no through traffic generated at the neighbouring areas; it can also be categorized as an area's arterial road; the ratios of mini bus and taxi are relatively high. (Point 13, 14)

Bd. Mwezi Gisabo: The road consist of many through traffic and the ratio of passenger car is high. The road played a role as an arterial road connecting between north and southern areas of Bujumbura. At around point 15 in CBD, there is always some traffic movement even at midnight. (Point 15, 19)

Bd. Ntare Rusnatsi (RN7): This road plays a role of an area arterial road collecting traffic from connected feeder roads and conveys to CBD. On this road, the ratios of mini bus and taxi are relatively high. (Point 20, 21)

An interesting phenomenon is found at Point 13; there was a significant difference in the number of traffic between the up-bound line (west to east) and the down-bound line (east to west). The number on down-bound line reaches just 7,582 while on up-bound line is 17,339, which is more than double of the former. From this result, it is recognized that vehicles going from east to west were tending to avoid passing the Bd. I'Uprona and majority of the traffic is diverting and using other roads.

Referring Bd. I'Uprona point, if the available traffic data are compared with those described above, it is observed that the numbers of traffic (ADT) have been increased and become as much as 3 times of those found in the survey result in 2002.

The number of peak hours is identified to occur 3 time namely at morning, lunch hour and evening time. But in some points, traffic at lunch hour is rather decreased. So there are two types of traffic behaviours; the behaviours with 3 peaks can be seen at suburb areas and with 2 peaks at CBD area.

Concerning heavy vehicle ratio in Bujumbura city, it is only 4.6% by simple average. Compared with other major cities of East-African countries, this ratio of Bujumbura is ranked as very low. When checked in detail, high ratios of around 20% are found out on the National Roads such as No. 2, 3, 4 and 8, while the ratios at CBD areas only reaches up to 3%.

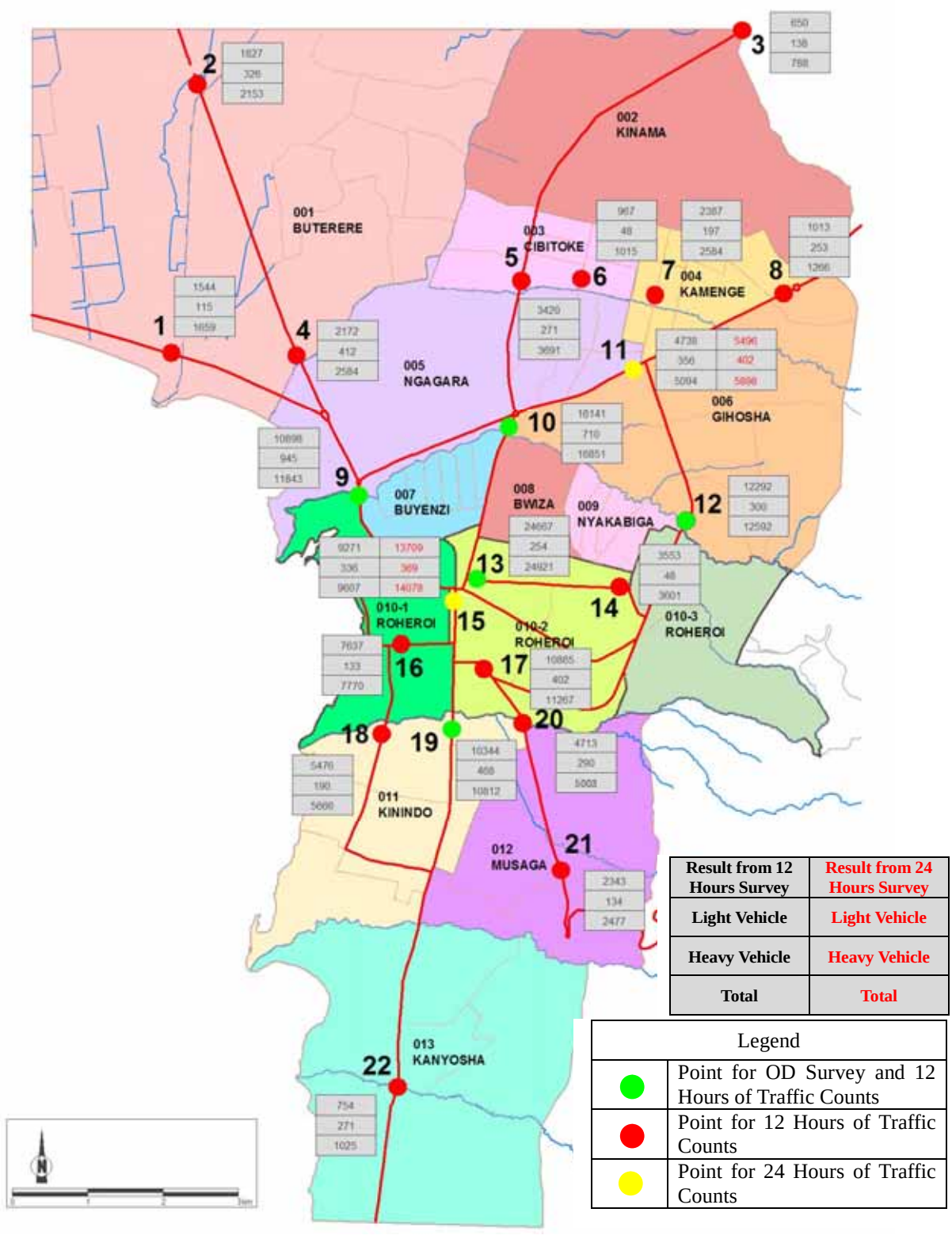
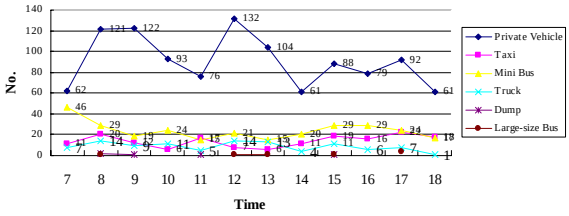
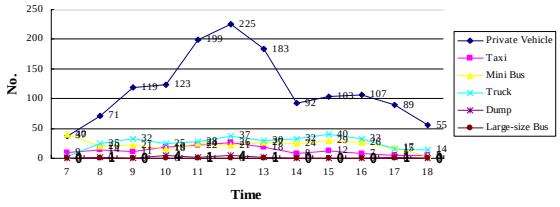


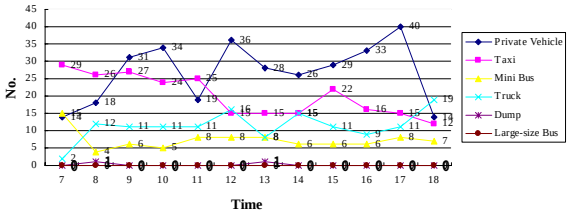
Figure 4.4.1 Results of Aggregate Traffic Survey



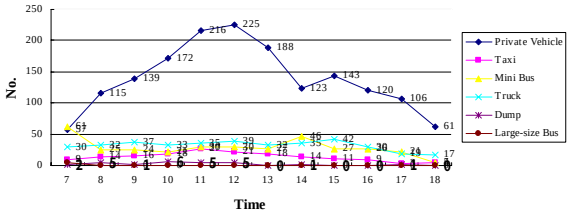
Point 1: RN4



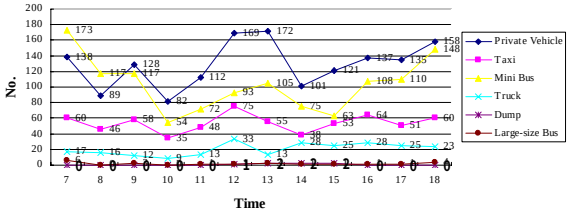
Point 2 :N5



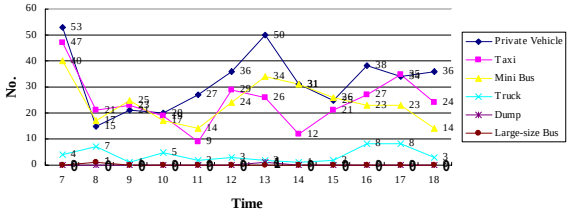
Point 3 :RN9



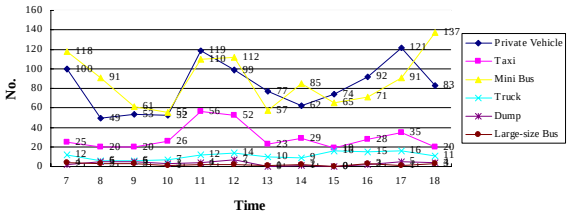
Point 4:RN5



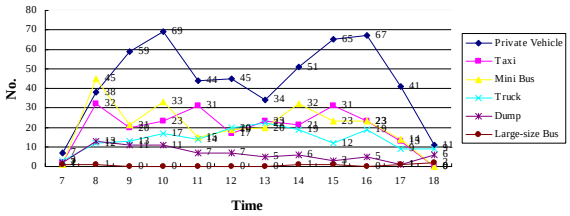
Point 5:RN9



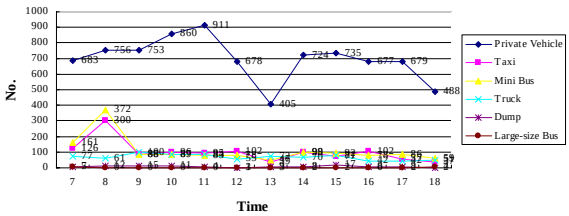
Point 6:Av.Misugi



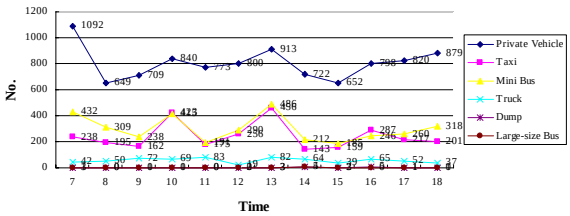
Point 7:Bd. de Unite



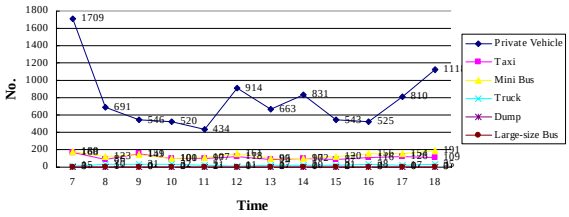
Point 8:RN1



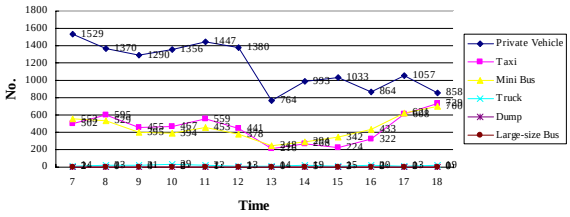
Point 9:Bld 1er Novembre



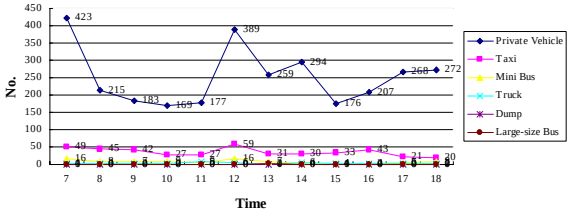
Point 10:Chaussee du Peuple Murundi



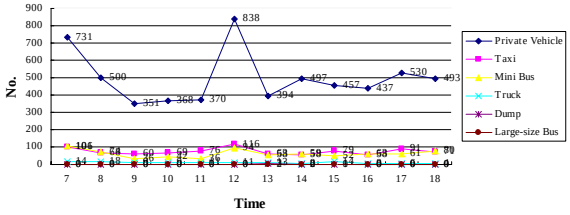
Point 12:Bld du 28 Novembre



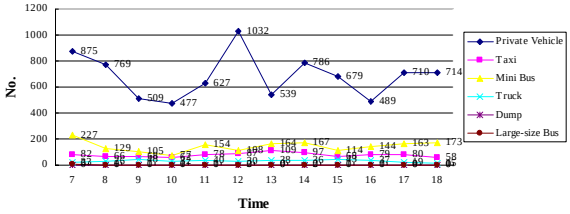
Point 13:Av.de I'UPRONA



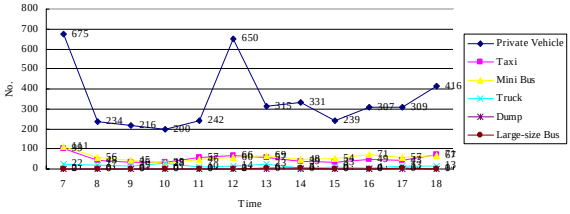
Point 14 Av.de I'UPRONA



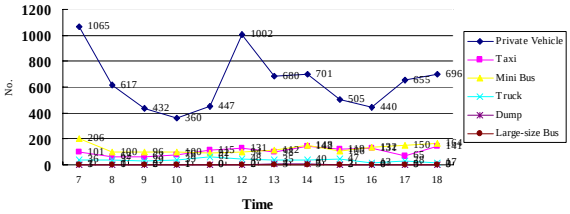
Point 16 Av.du 13 Octobre



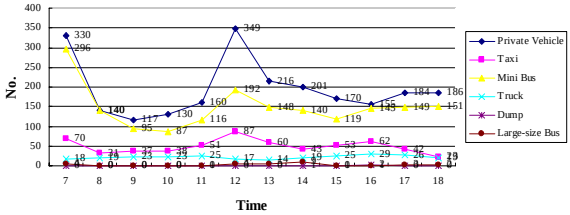
Point 17 Av.du 13 Octobre



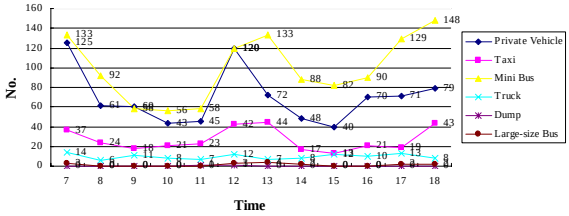
Point 18 Av.du Large



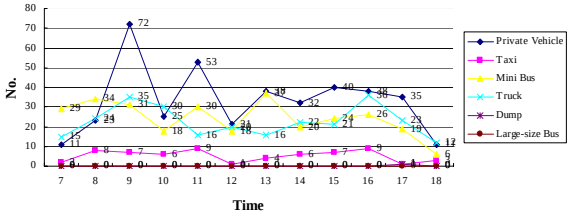
Point 19 Bd.Mwezi Gisabo



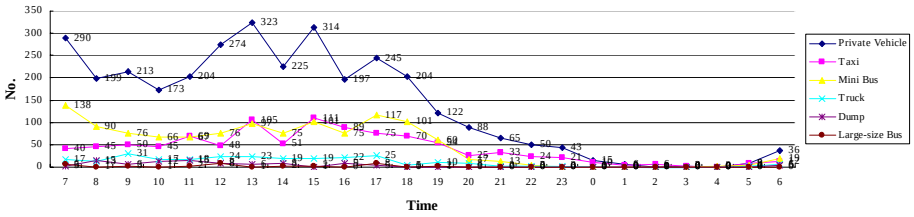
Point 20 Bd. Ntare Rusnatsi



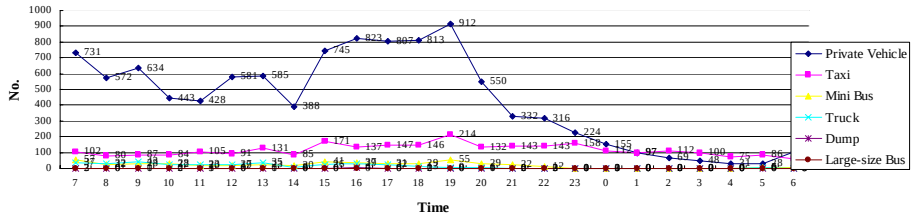
Point 21 RN 7



Point 22 RN



Point 11 Bd. Mwambutsa for 24 hours



Point 15 Bd. Mwezi Gisabo for 24 hours

Figure 4.4.2 Hourly Traffic Variation

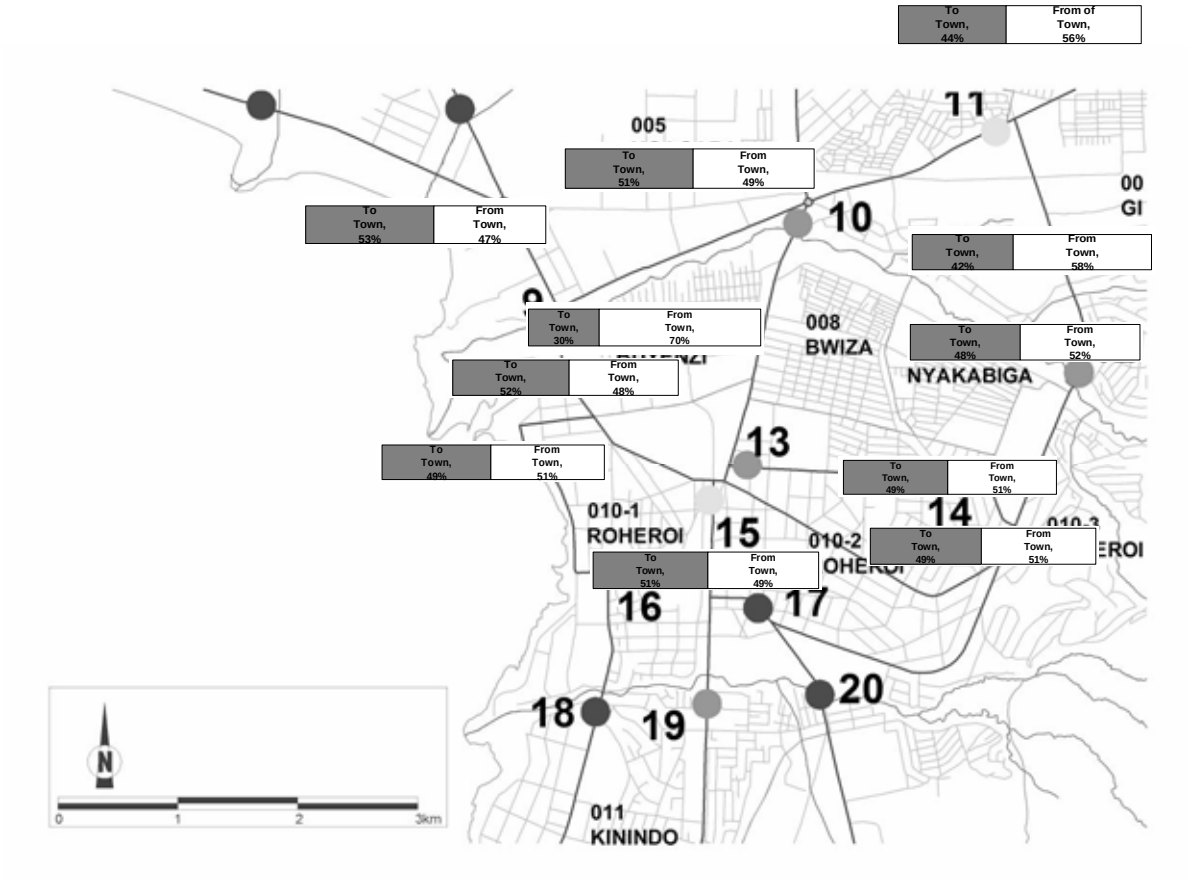


Figure 4.4.3 Distribution of Traffic by Direction

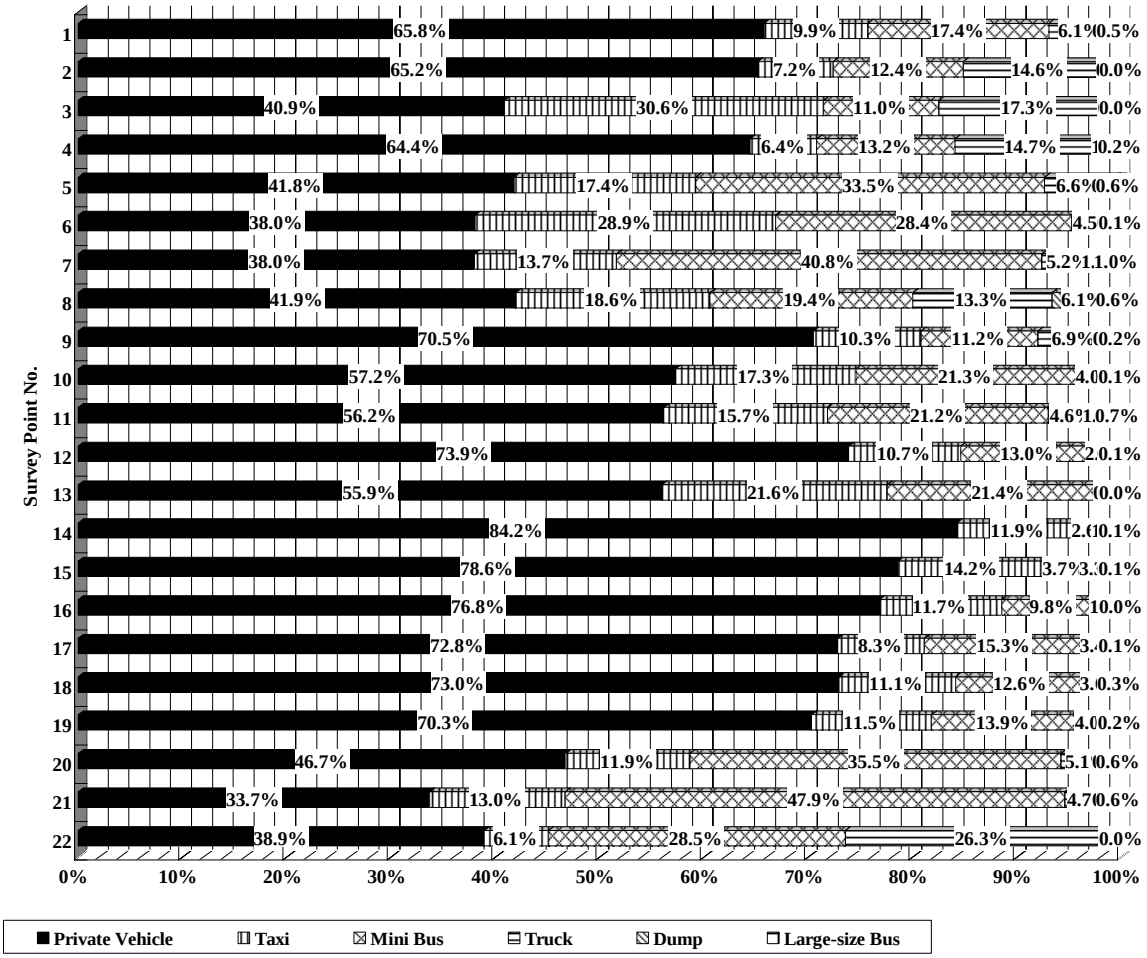


Figure 4.4.4 Vehicle Composition by Survey Point

Table 4.4.1 Heavy Vehicle Ratio at Survey Point

No	Name of Road	Heavy Vehicle Ratio (%)	Area	No	Name of Road	Heavy Vehicle Ratio (%)	Area
1	RN 4	6.9	Buterere	12	Bd. du 28 Novembre	2.4	Gihosha
2	RN 5	15.1	Buterere	13	Bd. de I'Uprona	1.0	Rohero
3	RN 9	17.5	Kinama	14	Bd. de I'Uprona	1.3	Rohero
4	RN 5	15.9	Buterere	15	Bd. Mwezi Gisabo	3.5	Rohero
5	RN 9	7.3	Cibitoke	16	Av. du 13 Octobre	1.7	Rohero
6	Av. Misugi	4.7	Cibitoke	17	Bd. du 28 Novembre	3.6	Rohero
7	Bd. de Unite	7.6	Kamenge	18	Av.du Large	3.4	Kinindo

No	Name of Road	Heavy Vehicle Ratio (%)	Area	No	Name of Road	Heavy Vehicle Ratio (%)	Area
8	RN 1	20.0	Kamenge	19	Bd. Mwezi Gisabo	4.3	Kinindo
9	Bd. 1er Novembre	8.0	Buyenzi	20	Bd. Ntare Rusnatsi	5.8	Musaga
10	Ch du Peuple Murundi	4.2	Ngagara	21	RN 7	5.4	Musaga
11	Bd. Mwambutsa	7.0	Gihosha	22	RN 3	26.4	Kanyosha
					Average	4.6	

4-4-2 ADT Conversion Factor

Data for 12-hour surveys need to be converted to 24-hour (Average Daily Traffic (ADT)) in order to simulate the existing traffic movement. Factors for converting 12-hour counts into 24-hour counts is available from this survey, as shown in Table 4.4.2. The conversion factor from 12-hour to 24-hour counts is 1.36 in average.

The resultant ADT's are shown in Table 4.4.3

Table 4.4.2 Conversion Factor for 12-Hour to 24-Hour

	Total	Point 11	Point 15
7:00 -19:00	14,701	5,094	9,607
19:00 - 7:00	5,275	804	4,471
Total	19,976	5,898	14,078
Ratio of Daily to Daytime	1.36	1.16	1.47

Table 4.4.3 ADT Volume

No	Name of Road	ADT	Area	No	Name of Road	ADT	Area
1	RN 4	2,256	Buterere	12	Bd. du 28 Novembre	17,125	Gihosha
2	RN 5	2,928	Buterere	13	Bd. de I'Uprona	33,893	Rohero
3	RN 9	1,072	Kinama	14	Bd. de I'Uprona	4,997	Rohero
4	RN 5	3,514	Buterere	15	Bd. Mwezi Gisabo	14,076	Rohero
5	RN 9	5,020	Cibitoke	16	Av. du 13 Octobre	10,567	Rohero
6	Av. Misugi	1,380	Cibitoke	17	Bd. du 28 Novembre	15,323	Rohero
7	Bd. de Unite	3,514	Kamenge	18	Av.du Large	7,706	Kinindo
8	RN 1	1,722	Kamenge	19	Bd. Mwezi Gisabo	14,704	Kinindo
9	Bd. 1er Novembre	16,106	Buyenzi	20	Bd. Ntare Rusnatsi	6,804	Musaga
10	Ch du Peuple Murundi	22,917	Ngagara	21	RN 7	3,369	Musaga
11	Bd. Mwambutsa	5,898	Gihosha	22	RN 3	1,394	Kanyosha

4-4-3 Existing Road Capacity

Several methods are there to confirm the capacity of an existing road. An idea of "Standard Design Volume" has been introduced based on the Japanese Road Guidelines, and it can be used as a reference value for the confirmation of any road capacity even if the roads are not located in Japan.

The Standard Design Volume has been defined as the maximum traffic volume (capacity) per 1 lane and the volume were prepared depending upon the road categories, classes and terrain.

Table 4.4.4 Road Category by Japanese Road Guidelines

Area / Road Character	Rural	Urban
Highway, Expressway	I	II
Others	III	IV

Table 4.4.5 Road Class by Japanese Road Guidelines

Road Category \ Estimated Traffic Volume	More than 10,000	More than 4000 Less than 10,000	More than 500 Less than 4,000	Less than 500
National Road	Class-1		Class-2	
Regional Road	Class-1	Class-2	Class-3	
Others	Class-1	Class-2	Class-3	Class-4

Table 4.4.6 Capacity Check by Japanese Road Guidelines

Survey Point	Name of Road	Traffic Volume (day)	No. of Lane	Category by Japanese Standard	Japanese Standard Value (day)	Check Result
1	RN 4	2,256	2	IV-2	10,000	OK
2	RN 5	2,928	2	IV-2	10,000	OK
3	RN 9	1,072	2	IV-2	10,000	OK
4	RN 5	3,514	2	IV-2	10,000	OK
5	RN 9	5,020	2	IV-1	12,000	OK
6	Av. Misugi	1,380	2	IV-3	9,000	OK
7	Bd. de Unite	3,514	2	IV-3	9,000	OK

Survey Point	Name of Road	Traffic Volume (day)	No. of Lane	Category by Japanese Standard	Japanese Standard Value (day)	Check Result
8	RN1	1,722	4	IV-2	10,000	OK
9	Bd. 1er Novembre	16,106	4	IV-1	12,000	OK
10	Ch du Peuple Murundi	22,917	4	IV-1	12,000	OK
11	Bd. Mwambutsa	5,898	2	IV-2	10,000	OK
12	Bd. du 28 Novembre	17,125	4	IV-1	12,000	OK
13	Bd. de I'Uprona	33,893	4	IV-1	12,000	OK
14	Bd. de I'Uprona	4,997	4	IV-2	10,000	OK
15	Bd. Mwezi Gisabo	14,076	2	IV-1	12,000	NG
16	Av. du 13 Octobre	10,567	2	IV-1	12,000	OK
17	Bd. du 28 Novembre	15,323	2	IV-1	12,000	NG
18	Av.du Large	7,706	2	IV-2	10,000	OK
19	Bd. Mwezi Gisabo	14,704	2	IV-1	12,000	NG
20	Bd. Ntare Rusnatsi	6,804	2	IV-2	10,000	OK
21	RN 7	3,369	2	IV-2	10,000	OK
22	RN 3	1,394	2	IV-2	10,000	OK

From the above figures, it can be confirmed that there were over capacity of traffic at points 15, 17 and 19; however points 15 and 19 are located on the same road.

The rest of the roads have still some reserve room, so there is no problem from aspect of road capacity.

4-4-4 OD Survey Result

A road side OD Survey was conducted at 5 locations on major roads as shown in Figure 4.4.1. The Survey was carried out for 12 hours (7:00-19:00) on weekdays which were regarded as the normal days of the week. The passing vehicles were stopped by the help of policemen and interviewed by the surveyors according to the prepared questionnaire. The contents of the questionnaire consisted several items such as: origin and destination, objective and number of passengers on board.

Prior to the Survey, the OD zones were listed. The zoning was done in accordance with the administrative areas of Bujumbura city in order to make the drivers be able to answer questions according to the locations in the list of zones.

In addition, neighbouring provinces, major cities in Burundi other than Bujumbura, major cities of the neighbouring countries were also introduced on the list of zones.

Table 4.4.7 OD Zone

Zone No	Name of Zone	Zone No	Name of Zone
001	Buterere	030	Gitega
002	Kinama	031	Ngozi
003	Cibitoke	032	Rumonge
004	Kamenge	033	Makamba
005	Ngagara	034	Cibitoke
006	Gihosha	035	Bubanza
007	Buyenzi	036	Bugarama
008	Bwiza	037	Others in Burundi
009	Nyakabiga	100	Kigali (Rwanda)
010-1	Rohero-1	101	Rwanda (Other than Kigali)
010-2	Rohero-2	102	Nairobi (Kenya)
010-3	Rohero-3	103	Kenya (Other than Nairobi)
011	Kinindo	104	Kampala (Uganda)
012	Musaga	105	Uganda (Other than Kampala)
013	Kanyosha	106	Dar es Salaam (Tanzania)
		107	Tanzania (Other than DSM)
021	Bujumbura Rural	108	Kinshasa (Congo)
		109	Congo (Other than Kinshasa)

Table 4.4.8 OD Table for Existing Vehicle Movement

OD-all			Bujumbura City																			Bujumbura Rural	Principal City of Burundi															Out of Burundi																
			001	002	003	004	005	006	007	008	009	010-1	010-2	010-3	011	012	013	021	030	031	032	033	034	035	036	037	100	101	102	103	104	105	106	107	108	109
Bujumbura City	001	Buterere	0	78	0	0	0	0	0	0	0	39	186	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	002	Kinama	0	0	0	0	30	0	39	154	0	77	231	0	0	0	77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	003	Cibitoke	0	0	0	0	0	0	261	77	0	154	454	77	139	0	77	0	61	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	004	Kamenge	0	0	0	69	0	0	292	77	244	534	1,733	321	39	0	0	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	005	Ngagara	30	0	0	39	0	107	878	107	215	509	1,536	285	164	173	433	241	0	0	0	0	0	0	0	48	0	0	0	0	0	0	0	0	0	0
	006	Gihosha	77	0	39	61	0	0	199	382	183	640	2,119	335	178	122	144	39	0	0	0	61	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	007	Buyenzi	77	77	338	154	525	424	324	154	0	262	846	146	192	0	144	0	77	0	0	0	39	0	0	378	0	0	0	0	0	0	0	0	0	0
	008	Bwiza	77	77	77	215	462	122	77	0	0	60	150	30	96	0	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	009	Nyakabiga	0	0	77	61	367	0	0	0	0	30	60	0	48	30	0	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	010-1	Roheroi-1	39	0	261	514	895	680	293	30	0	837	3,348	438	432	48	384	195	0	0	109	48	39	39	107	30	0	60	0	0	0	0	0	0	39	0
	010-2	Roheroi-2	156	39	860	1,572	3,009	2,248	832	90	30	2,877	11,508	1,551	1,488	192	1,326	702	39	100	404	282	78	117	214	246	0	287	0	0	0	0	0	0	0	78
	010-3	Roheroi-3	39	0	154	199	478	390	108	0	0	429	1,716	249	240	48	192	117	0	0	0	0	0	39	0	0	0	30	0	0	0	0	0	0	0	0
	011	Kinindo	0	48	0	0	164	138	48	96	125	546	1,777	312	48	0	0	0	0	0	0	0	0	0	0	77	0	0	0	0	0	0	0	0	0	0
	012	Musaga	0	0	0	109	154	61	48	0	30	78	295	78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	013	Kanyosha	0	0	0	61	154	218	48	0	0	312	997	156	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bujumbura Rural	021	Bujumbura Rural	0	0	0	48	77	138	39	39	39	0	139	0	312	0	0	0	0	0	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Principal City of Burundi	030	Gitega	0	0	0	0	0	0	193	0	0	0	0	0	77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	031	Ngozi	0	0	0	0	30	0	193	30	61	0	77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	032	Rumonge	0	0	0	0	125	0	78	0	0	78	312	78	0	0	0	39	0	0	0	0	0	0	0	39	0	0	0	0	0	0	0	0	0	0
	033	Makamba	0	48	0	0	0	0	0	30	0	234	624	78	61	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	034	Cibitoke	0	0	30	0	77	0	30	0	0	78	195	39	0	0	39	0	61	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	035	Bubanza	0	0	0	0	0	0	77	0	0	77	231	0	0	0	48	0	0	0	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0
	036	Bugarama	0	0	0	0	0	0	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	0	0	0	0	0	0	0	0	0	0
	037	Other	0	0	0	0	0	0	30	0	0	78	389	39	39	0	0	0	0	0	0	0	0	0	0	90	0	0	0	0	0	0	0	0	0	0
Out of Burundi	100	Kigali (Rwanda)	0	0	0	0	0	0	0	0	0	77	154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	101	Rwanda (Other than Kigali)	0	0	0	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	102	Nairobi (Kenya)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	103	Kenya (Other than Nairobi)	0	0	0	0	0	0	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	104	Kampala (Uganda)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	105	Uganada other than Kampala	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	106	Dar es Salaam (Tanzania)	0	0	0	0	0	0	0	0	0	0	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	107	Tanzania other than Dar es Salaam	0	0	0	0	0	0	0	0	0	39	78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	108	Kinshasa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	109	R.D.Congo (other than Kinshasa)	0	0	0	0	0	0	0	0	0	0	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

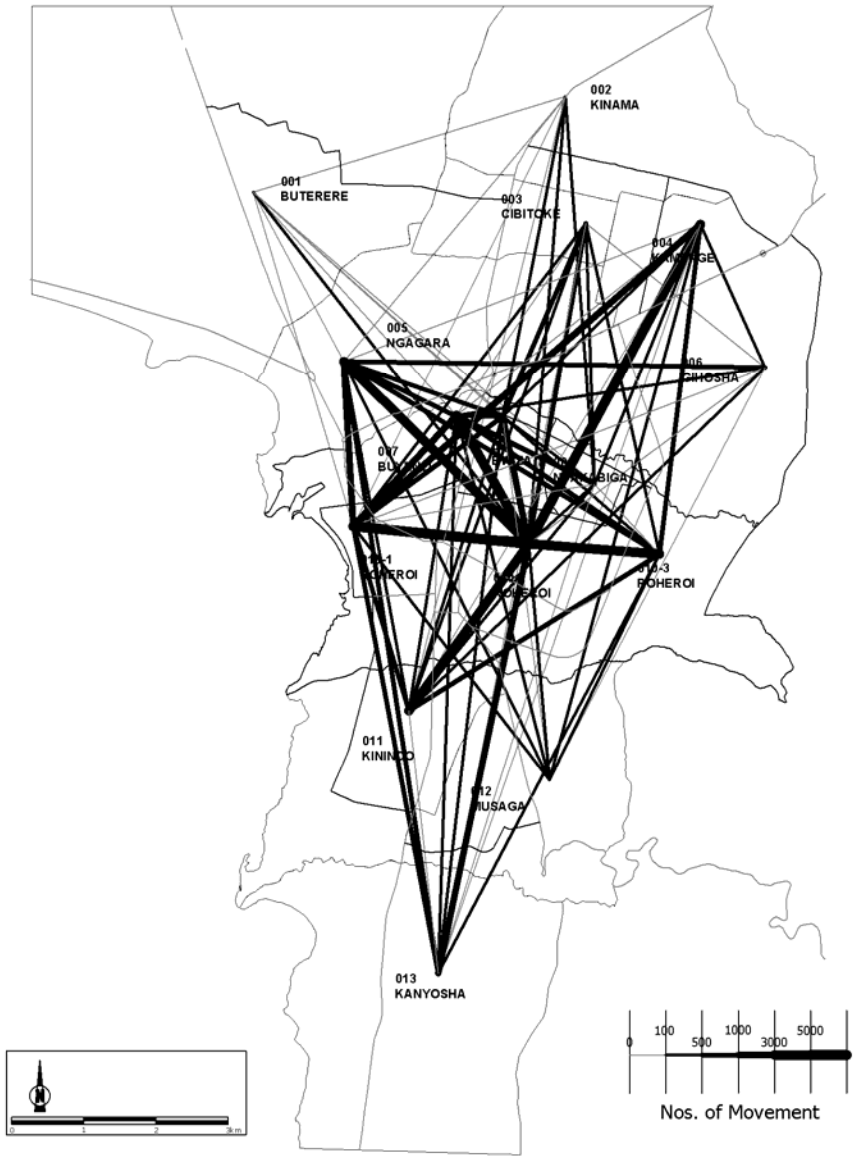


Figure 4.4.5 Existing Movement Demand in the Study Area

Both Table 4.4.8 and Figure 4.4.5 show that the movements are concentrated in Rohero area, and the biggest OD is the movements within Rohero (2). There are some movements from Bujumbura to some other cities in Burundi, but the number is low. Furthermore, considering the road net work, some passing movement through Bujumbura city is predicted, and the number is in fact very low.

So, it can be concluded that there is few long trips movements on Bujumbura road network, and the majority of the movements which can be observed is the one within the Bujumbura network.

CHAPTER 5

EXISTING PROBLEM

CHAPTER 5 EXISTING PROBLEM

5-1 EXISTING PROBLEM

Through the review and analysis of the present condition of study area, following problems in the city were observed.

5-1-1 Land use

(1) Problems on population density

The method of improvement of the overcrowded state of the residential areas was the first raised main problem of the land use of Bujumbura city. Looking on the communes state, it was pointed out that there is a quartier of the high population density of more than 500 persons/ha. There are also areas with narrow streets or insufficient drainage system. These areas have problems on disaster prevention and sanitation. It is required to control the increase in population in these areas, and to improve the local living environment from now on.

In order to control the increase of population in these areas, the new allocation of residential areas corresponding to the assumed increase of urban population is required. The development and distribution of housing lots which have been conventionally performed in Bujumbura were aimed to some extent at the high income level. In addition, pertaining to the development of housing, construction of apartment houses and its rental marketing is required. Also, it is recommended to offer public housing facilities for the middle class income earners.

(2) Problems on each land demands

According to each land use category, it is necessary to consider the following problems and its solution.

- Residence, community facilities

  In some communes, required lots for the community institution (such as schools, hospitals, health centers, etc.) and residential areas are not fully secured. It is required therefore to plan in advance sufficient lots for institution arrangement and residence, to correct the gap between the communes.

- Mixed use building (Complex facility)

  There exists many residential buildings attached with small work places or kiosks, whereby basic commercial service and activities are provided and, it has formed

nowadays one of the main working places in the area. In respect to that, it is necessary to study redevelopment of these mix use facilities considering future urbanisation of the Bujumbura city.

- Park

  Except for the central part of Bujumbura, the park (recreation area, open spaces etc.) is not prepared in almost all areas. The elementary school ground, the industrial site, the agricultural lot, etc. have now been substituted to take the role of a park nowadays. It is desirable in the future city planning to establish general development plan for parks and green spaces (plan for green spaces should including the areas on the perimeter of the mountains).

(3) Prospected future development

The sites, which can be developed corresponding to the expected future increase in population, are extremely limited in Bujumbura city. There are remaining sites that can be developed located in the northern and southern parts which are quite distant from the city center. To control the congestion of population in central area of the city, it is necessary to enhance the attraction of the newly developed areas. Moreover, since there is a long distance from the central city area, it is more desirable to examine the employment facilities and opportunities corresponding to the number of migrants into the newly developed areas. In addition to the existing ones, a new industrial zone is to be developed gradually near the newly developed places.

5-1-2 Infrastructure

(1) Electric supply

The problem about the electric power supply in Bujumbura city is not that of the city itself but a problem of the whole country. For this reason, the government level will be entailed to consider this matter to secure the electric power capacity to cope with actual demand. The reservation of a substation lot according to the future demand assumed beforehand corresponding to Bujumbura city's growth and planning of a power transmission network are needed.

(2) Water supply

For water supply services, a correction of gap between districts regarding the residents who use common water taps is required. At present condition, there is severe problem about the

service level which might provoke a sanitary problem in the areas where the population per water service tap exceeds 3,000 persons. During the improvement of this situation, it is necessary to consider the expense burden concerning the installation and development of new pump stations. The present amount of water supply is about 174 l/day per one person in the area. If new pump stations are not built in the future, this figure may fall even to under 150 l/day. For a city like Bujumbura, it is generally thought that about 200-250 l/day per one person needs to be supplied including the industrial water usage.

(3) Sewer service

Regarding the sewer services, the expansion of services in the area will be needed as well as the correction of gap between each district. As it may become a pollutant of an epidemic, its improvement is required in the area where the sewer system is not yet constructed. Under the present facilities, the maximum treatment capacity per capita is 118 l/day. Considering the expanding services citywide, it cannot be sufficient to meet the needed treatment capacity. In the future, it is necessary to expect the sewer service growth of about 1.5 to 2 times of the present area covered, and the treatment capacity to be about 150 to 200 l/day. In accordance with these, it is necessary to reserve a sewage treatment plant lot.

(4) Water drainage

Currently the rain water drainage system has been connected into the sewer network in Bujumbura city. However the drainage system does not function properly in some certain areas due to flooding caused by the heavy and prolonged rainfall. Considering this situation the improvement of the storm water drainage system is expected.

5-1-3 Urban Transport

(1) General urban transport characteristics

One of the characteristics of land use in Bujumbura city can be expressed as single eye land use in which urban functions such as governmental agencies and commercial establishments are concentrated at CBD area, located in the western part of Rohero commune. This characteristic forms the urban transport characteristics in which major movement is massive traffic flow into the CBD and therefore the present road network and bus network is made to consist mainly of radial routes.

As population grows and economy becomes more activated in the future, the measures to alleviate the traffic concentration in the CBD should be implemented through improvement of both land use and transport network system.

(2) Vehicle traffic

- Road network

Most of the arterial road network in the city is radial road which connect between city center and suburban areas. Since most of traffic volume concentrates to the city center, congestions are observed along the arterial road near the city center. Road network system including the ring road which is able to release traffic to other arterial road should be introduced without forgetting the strengthening of radial road.

Road is basic infrastructure to create safe and comfortable living environment in residential areas, in preventing spread of fire disaster, being open space for ventilation and sunshine and so also the space for drainage and water supply. Although road network for living environment is needed more in densely inhabited areas, many of the regional roads in the developed area are unpaved without adequate drainage facilities. Therefore, establishment of local road network in residential area with paved roads and drainage system is required.

- Road facilities and operation

The insufficient road facilities and its improper operation described below, causes the occurrence of congestions at many points around the city center and along the radial roads.

- ✓ No proper traffic control system at intersections
- ✓ No sufficient traffic facilities to separate the pedestrians and cyclists from vehicle traffic carriageway such as footpath, crosswalk and busbay
- ✓ Many pedestrians overflow from footpath and are walking on the carriageway due to lack of sufficient facilities for pedestrians
- ✓ RHS driving vehicles causes traffic confusion

- Road maintenance

Many potholes along the roads and intersections resulting from poor road maintenance disturb smooth traffic flow. Moreover, it has been pointed out that the absence of clarification of classification and responsibility of each road together with shortage of budget has resulted into the delay and lack of road improvement and maintenance.

(3) Public Transportation

- Limited role in urban transport

According to the OD survey conducted by the study team, total number of vehicle trips generated/attracted in Bujumbura city is 190,000, in which bus vehicle trips comprises about 17%. Improvement of urban transport should be based on the policy that emphasizes role of public transport, because in all the countries, development of roads cannot catch up the increase of vehicle traffic. Therefore, proper means shall be explored in both the promotion of bus use and the increase in efficiency of bus transportation.

- Inconsistency with passengers' needs

Although bus service in Bujumbura city plays important role for people's transportation, the service provided does not meet the passenger's requirement. According to the result of passenger interview survey conducted by the Study Team, 75% of passengers are not satisfied with current services. Biggest reasons of un-satisfaction are "shortage of bus routes and service", "uncomfortable" and "expensive". Various measures to meet the passenger's needs, such as re-examination of bus routes, frequencies and fare system and betterment of facilities including bus bodies and bus terminals, are required.

- Insufficient control to bus operation

Currently, the regulation and management system on bus operations are limited, and thus provision of services concentrates on profitable areas and routes, complying with the market mechanism. Strict control over the operation routes and frequency are expected so as to increase the convenience and to fulfil the responsibility of public transport.

- Difficulty in OTRACO as a bus enterprise

At present, a little less than 30% of total expenditure of OTRACO is supplied by the government subsidy every year. Since OTRACO as a national transporter has the role to enable people to move all over the country easily, it is inevitable to operate on less profitable route. But paying attention to the public benefit, review of role of OTRACO in transport is necessary to achieve profitability of management and to reduce the burden to the government finance.

(4) Motorcycle, Bicycle, Pedestrian

As existing width of footpath is not wide enough for walking, pedestrians tend to overflow on carriageway and creating conflict with vehicle's traffic flow.

Movement of motorcycles and bicycles are being mixed with vehicle's traffic. These transportation modes are forced to face danger of traffic accidents. Measures to protect cyclist and pedestrians should be introduced.

CHAPTER 6

DEVELOPMENT PLANS AND PROGRAMMES

CHAPTER 6 DEVELOPMENT PLANS AND PROGRAMMES

6-1 DEVELOPMENT PLANS/PROJECTS OF THE GOVERNMENT

6-1-1 Development Plans of the Government of Burundi

Ministry of Planning, Development and Reconstruction is preparing a Poverty Reduction Strategy Paper (PRSP) to be submitted to IMF and World Bank. The PRSP is based on an interim growth recovery, prepared after the Peace and National Reconciliation Accord that created a number of transitional institutions, including establishment of the National Unity Government on November 1, 2001, and a Parliament and Senate that were expanded to include all political parties as of February 2002.

The PRSP describes the characteristics and factors for poverty alleviation in Burundi and highlights regional disparities. It represents a long-term vision of development, as well as the main strategic themes for promoting sound economic growth, which will be both durable and equitable, and will progressively reduce the level of poverty.

PRSP Strategic **Themes and Priority actions**

Strategic theme 1: Promoting peace and good governance.

Strategic theme 2: Improving the microeconomic environment and promoting high quality economic growth that will help to reduce poverty.

Strategic theme 3: Enhancing the quality and accessibility of basic social services (health, education, hygiene), in order to promote the development of human capital.

Strategic theme 4: Addressing the socio-economic consequences of the civil conflict directly. This aims at reintegrating victims and disadvantaged groups into the economy, so that they will be in a better position to take their own destiny in hand.

Strategic theme 5: Combating HIV/AIDS. This is a cross-cutting theme.

Strategic theme 6: Advancing the role of women in development. This is also a cross-cutting theme.

The nationwide public bus service is the only rural transportation service provided in Burundi. In other words, if public transportation is further substantiated through the Project which aims at maintaining and strengthening public bus routes as a transporting means necessary for the sustainable development and exchanges between the regions; this will not only contribute to the economic growth in rural areas through regional development, but will also facilitate refugees' repatriation and post-civil conflict reconstruction.

6-1-2 Development Plans of Bujumbura City

'Schema directeur d'amenagement et d'urbanisme de Bujumbura' (1982) is a long-range master plan of the urban planning for Bujumbura city. The master plan consists of the short-range planning whose target year was 1987 and the long-range plan for the year 2000. At the planning time in 1982, the master plan estimated the population of Bujumbura city in year 2000 as to be 707,000 persons. Residential areas' development, road improvement projects, etc. are studied and planned corresponding to this estimated population.

Some projects provided in the master plan have been completed, but there are also many incomplete ones. Moreover, in 1982 the master plan was planned on the strategy that the city area would expand towards the north including the neighbouring areas of Bujumbura city. However, in the northern areas, the GOB determined not to develop beyond Kinama commune which is the northern border of Bujumbura city.

Even now, this master plan is referred for the city developing projects in the central city area. When it is required to have any advanced studies and plans to perform in line with the present urban development trend and in case of consideration of the development plan for the whole city or the environmental planning of its peripheral areas, the contents of the master plan of 1982 are often referred.

6-1-3 Bujumbura City Rehabilitation Projects by the Government

(1) Housing, urban development

The area where the large scale developing project was undertaken in Bujumbura city in recent years and the examined area for the development project are shown in Fig 6.1.1 and Table 6.1.1.

Except for the projects with donor support, there is few on-going projects which can be noted.

As a government organization, Direction General de l'Urbanisme et de l'Habitat of

Ministere des Travaux Publics et de l'Equipement is engaged in new urban or housing development projects. In addition, the following are the other two organizations which also carry out urban development projects on receiving fund from the government.

- Ecosat

- Sip

These organizations all together are concerned with the development of housing construction and related supplies in the newly developed areas. Moreover, they also manage planning, design, and constructions of project consistently in urban development projects. For instance, being requested from a government organization, a large-scale project implemented by them is the development of a former public land which was subdivided and sold to the citizens as housing sites after development.

Apart from developing the central areas in Bujumbura city, both organizations are also undertaking development works in Kinama area on the northern side of the city only. In recent years, the government also intends to provide urban functions to other cities of Burundi. Because there is scarcity of public lands suitable for new urban developments, both organizations are engaged in quite few development projects in Bujumbura city area at the moment.

Moreover, due to the delay of construction of life infrastructure services such as water, electricity, etc., even if site work is completed, construction of buildings will be delayed to some extent.

The common technical index and the index of lot distribution are not defined for the above-mentioned large-scale development project.

Through the committee formed by the parties in the area and relative administrative organization, the lot plotting plan and surface area of public facilities (such as commercial establishment, market area, schools, parks, etc.) other than housing site were defined, after taking into consideration every individual situation.

This process is based on the idea that development project provides required institutional facilities which lack in the whole area in addition to the institution demand of the areas concerned.

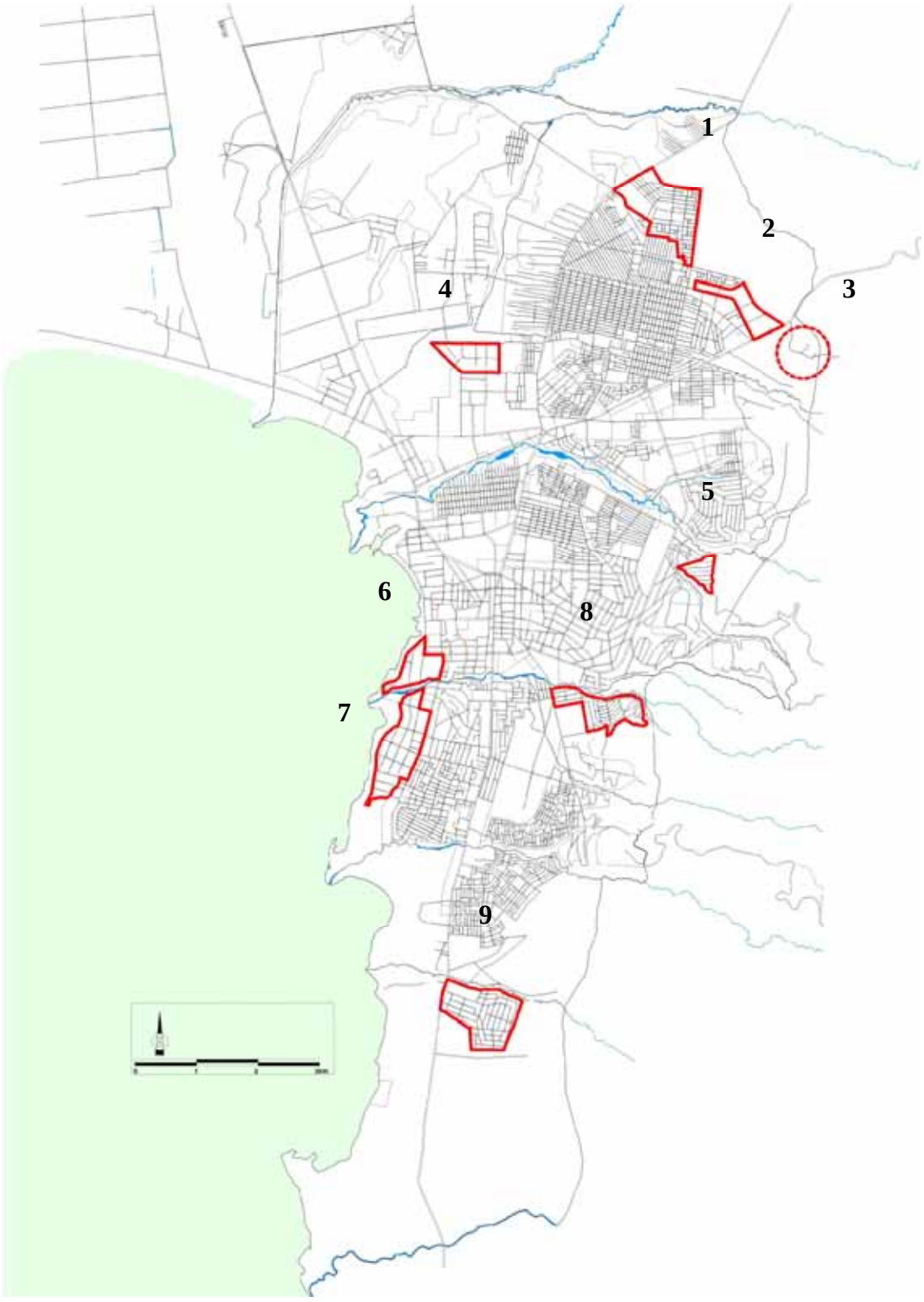


Figure 6.1.1 Major development project in recent years

Table 6.1.1 Major development work and plan places in recent years

Number	Area name	Organization	Status of development, planning	A land use plan, the principal facilities
1	Carama	Ecosat	Land development completed, district institutional arrangement and plotting is under study.	Residence, Commercial Facilities
2	Nord de Kamenge	Sip	Project Discontinued	
3			Under study	The President, relative governmental institutions
4	Zone Industrielle G3		Development completed	Industrial factories
5	Sorore 20	DGUH	Development completed	Only residence (utilizing institutions located in neighboring area),
6	Kinindo Ouest	DGUH	Development completed	Touristic station, Hotel, Condominium, Apartment
7	Kabondo Ouest	DGUH	Development completed	Same as the above
8	Gaserkebuye		Development completed, Institutional facilities layout planning completed	Residence, School, Health Center, Park, Church, Commercial Facilities
9	Prilec	Sesco + Sip	Development completed, Institutional facilities layout planning completed (part of)	Residence, Commercial Facilities

(2) Legal systems on permission for construction

To develop an individual site, it is necessary to submit a planning drawing and relative document to Direction General de l'Urbanisme et de l'Habitat of Ministere des Travaux Publics et de l'Equipement, in order to obtain a building permit.

Permission of construction is judged based on i) general regulation, ii) regulation on concerned area (commune, quartiers), iii) instructions according to lot environment and composition of new building.

i) General regulation

Few contents are defined as general regulation. Only the regulation showing the relation between the border line of lot and buildable areas is defined as shown in Fig 6.1.2. Through this regulation, the substantial maximum building coverage ratio according to the form and the scale of the site will be set. Site form and the relation with building coverage are shown in Table 6.1.2.

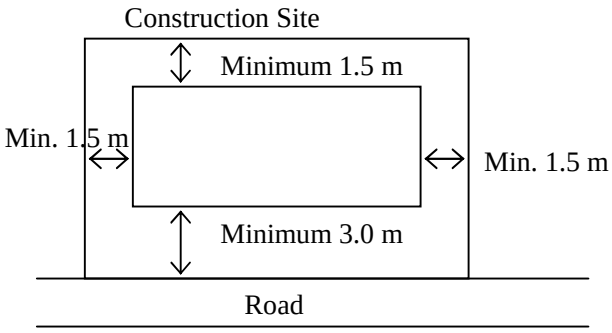


Fig 6.1.2 Relation on buildable area in the site

Table 6.1.2 Relation between site form and building coverage ratio

		Width of Frontage (m)						
		10	15	20	25	30	35	40
depth (m)	10	0.39	0.44	0.47	0.48	0.50	0.50	0.51
	15	0.49	0.56	0.60	0.62	0.63	0.64	0.65
	20	0.54	0.62	0.66	0.68	0.70	0.71	0.72
	25	0.57	0.66	0.70	0.72	0.74	0.75	0.76
	30	0.60	0.68	0.72	0.75	0.77	0.78	0.79
	35	0.61	0.70	0.74	0.77	0.78	0.80	0.81
	40	0.62	0.71	0.75	0.78	0.80	0.81	0.82

ii) Area (district) regulation, the contents of individual guidance

The contents of the main regulation are as follows.

a) Building coverage ratio

The restriction contents of the above-mentioned position (plot) that can be built serve as maximum limit of the substantial building coverage ratio. In fact, too little buildings in a plot are being built in many cases. Because of plot underdevelopment and also there is no enough progress on beneficial construction corresponding to development cost, directions that suggests enlarging its building scale are given.

b) A floor surface ratio, number of stories

Like building coverage ratio, directions are given to enlarge a building floor surface ratio and a number of stories. Request to design a building of two or three stories with ground floor is

suggested in many cases. But because of the insufficient ability of building equipment, more floors are seldom requested.

c) Building use

There is no regulation defining building use restrictions. Individual direction is given to get harmony with the surrounding environment when the new construction is expected to cause an extreme danger.

d) Control of maintenance of public space

The restoration/maintenance of public space (such as road etc.) are requested if they will be temporarily used during construction.

e) Tree planting regulation

The tree planting is requested in the space between road (public space) and a site.

f) Restriction about the height of a wall

g) Restriction corresponding to an adjoining site situation

The position of the window of a building is restricted at site, for example a building contiguous to military facilities.

6-2 DEVELOPMENT ASSISTANCES BY VARIOUS DONORS

6-2-1 EU

EU started to support roads rehabilitation in Bujumbura with budget amount of 13 million EUROS. This support program was a compliance of "Report for Study for the Rehabilitation of Urban Roads in Bujumbura, March 2002" prepared by the MOF, Burundi.

In the said report, 56 roads were listed as scope of the rehabilitation, but 46 roads, in fact, were selected for the implementation, the list of selected roads is as follows:

Table 6.2.1 Scope of the Rehabilitation Programme by EU

Names of the Road	Length in metre	Type of Pavement
1. Av. de l'imprimerie	2 032	Asphalt Pavement
2. Bd. de l'Uprona	2 154	-Ditto-
3. Dess Mutakura-Buterere	4 833	-Ditto-
4. Chaussée Kigobe	2 372	-Ditto-
5. Av. Ngozi	1 062	-Ditto-
6. Transversale de Buyenzi	2 200	-Ditto-
7. Bd Mutaga III	2 145	-Ditto-

Names of the Road	Length in metre	Type of Pavement
8. Av.Ngendandumwe ,Muramvya	2 516	-Ditto-
9. Chaussée PL Rwagasore	1 033	-Ditto-
10. Av de la Jeunesse	1 900	-Ditto-
11. Av de la RDC	431	-Ditto-
12. Av Belvédère-PL Rwagasore	1 580	-Ditto-
13. Av Nzero	973	-Ditto-
14. Av de la Croix Rouge	642	-Ditto-
15. Av Muyanga+Zone Nyakabiga	2 854	-Ditto-
16. Chaussée de l'Agriculture	1 550	-Ditto-
17. Rue Yaranda	1 362	-Ditto-
18. Rue Ruhuhuma	1 100	-Ditto-
19. Rue Gasibe	1 010	Stone Pavement
20. Av du 18 Septembre	1 300	-Ditto-
21. Av du 1er Novembre	550	-Ditto-
22. Bd Mao	1 200	-Ditto-
23. Av des Travailleurs	1 300	-Ditto-
24. Dess Musaga-Kanyosha	500	-Ditto-
25. Av de JRR	800	-Ditto-
26. Rocade Kamenge	3 550	-Ditto-
TOTAL	**42 949 ml**	

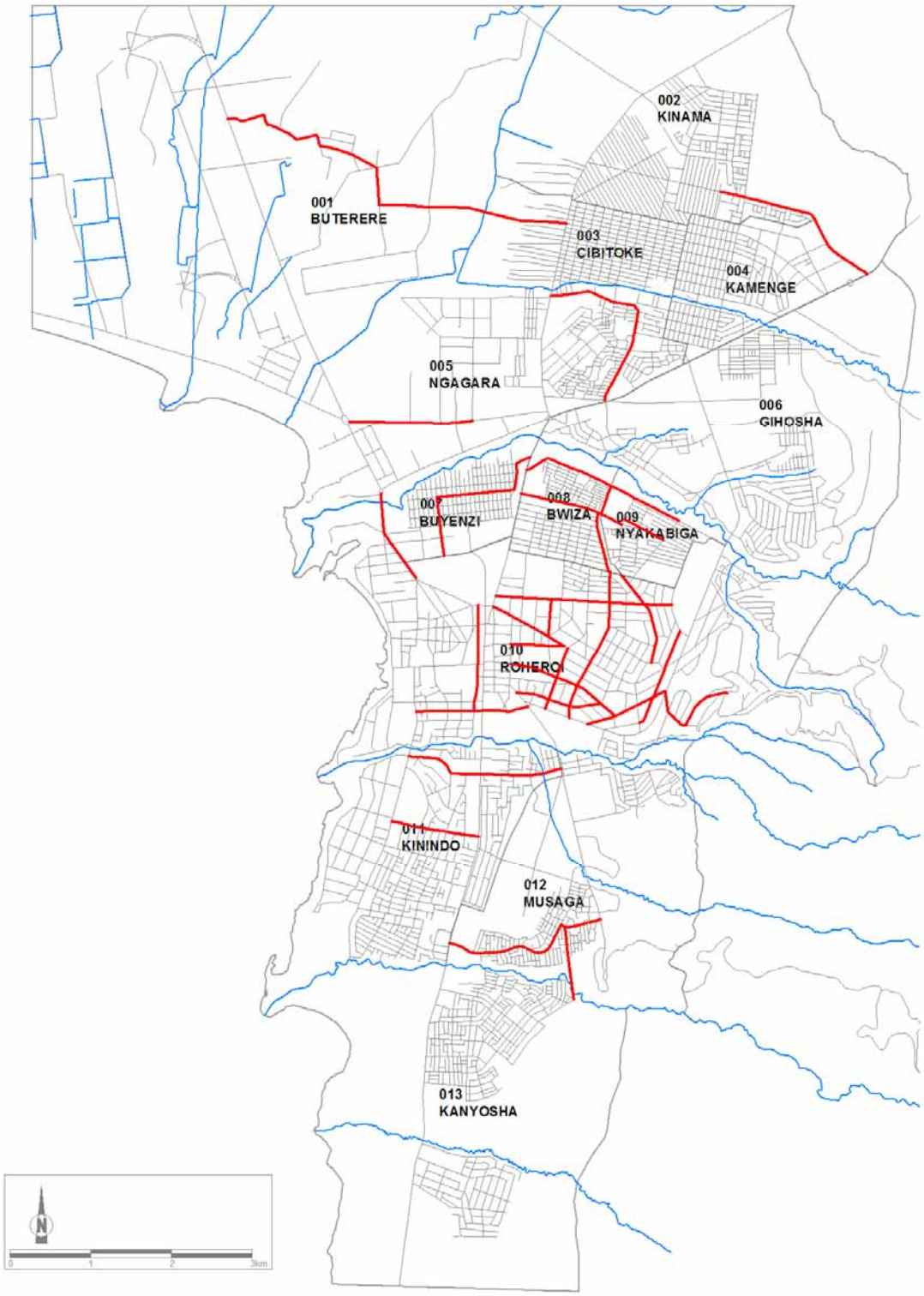


Figure 6.2.1 Location Map for Programmed Roads

The program also includes pavement rehabilitation and new installation of drainage system, traffic safety facilities such as traffic light and sign, and a new construction of Kanyosha Bridge.

SETEMU was appointed as the executive agency, and the tender opening for the programme was held on March 2007 and the evaluation is in process.

6-2-2 World Bank

The World Bank has given a credit of US$51.17 Million to the Burundi Government to support Burundi's economic recovery by rehabilitating the severely damaged primary, secondary and communal road network, and also by helping to establish and strengthen the analytical, planning and management capacity of the institutions involved in improving and maintaining the road system.

The institutions under the Ministry of Public Works and Equipment are responsible for overall project oversight and coordination, and the National Road Agency is responsible for all road rehabilitation/construction works and the protection of the environment.

The roads to be rehabilitated includes: the Bujumbura-Kigali - National Road 1 and the highways to Uganda and Kenya, through which most of Burundi's imports and exports pass as the priorities.

Beside, the highway to Kenya will be completely overhauled because of its severe degradation and frequent landslides in the mountain areas.

Part of the World Bank loan will be used to construct tarmac road links between five provinces in central and north-eastern Burundi and others in the country.

A portion of the World Bank loan will also be spent on projects to prevent the flooding of certain rivers, which threaten residential areas and roads in Bujumbura during the rainy season.

On the other hand, there are rehabilitation projects such as community based area roads rehabilitation, rehabilitation of river training, and construction of markets, schools, medical centres within Bujumbura city.

World Bank determines the available projects in consideration of the capacity of the solvency and maintenance by each commune. For a project, requested from a commune, to be evaluated by the World Bank, World Bank requests PTPCE (Projet de Travaux Publics et de Creation d'Emplois) to make the implementation program for it. The programs are planned by PTPCE which is the planning agency under the Ministry of Public Works and Equipments.

Project site map in Bujumbura City are shown in Figure 6.2.3.

Figure 6.2.2 Project Site Map by WB

6-2-3 BTC

There is a community based urgent rehabilitation project at Bwiza and Nyakabiga communes funded by BTC. The contents of this project are rehabilitation of area roads of approximately 10km by stone pavement, and new installation of sewerage systems and storm water open drainage systems. Construction is scheduled to be completed by September 2008. Total budget of this project is approximately 3.5 million Euros. The project is implemented by ABUTIP (Agence Burundaise pour la Realisation des Travaux d'Interet Public) which is the executive agency under the Ministry of Public Works and Equipments.

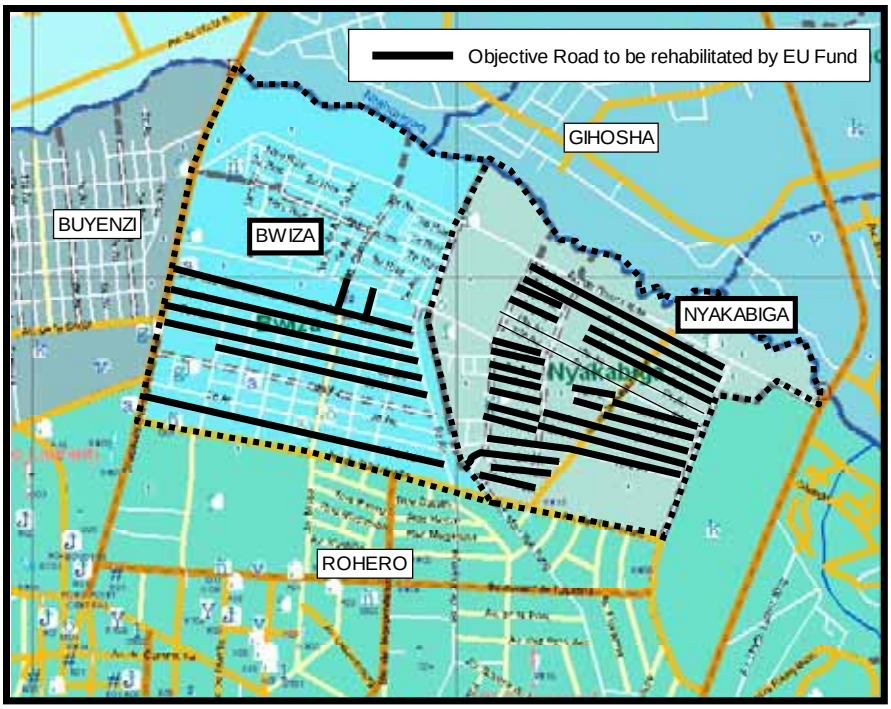


Figure 6.2.3 BTC Project at Bwiza and Nyakabiga Commune

6-3 ACTIVITIES OF NON-GOVERNMENTAL ORGANIZATIONS

6-3-1 International Non-governmental Organizations

Many countries are supporting the peace reconstruction after the civil conflict of Burundi through Non-governmental Organizations (NGO). In total 96 NGOs are registered into the Ministry of Foreign Affairs as of April 2007. The countries with many NGOs are America, Belgium, U.K, Italy, etc., there are also NGOs from African countries including the neighbouring countries of Burundi as shown in Table 3.3.1

Most of the NGOs are providing their support services for the rural communities; even their registered office is located in Bujumbura.

Table 6.3.1 Number of International NGOs in Burundi (As of April 2007)

Name of the Country	Number of NGOs
German	3
United State of America	18
Austria	3
Belgium	12
United Kingdom	10
Canada	2
Denmark	2
Spain	2
Ethiopia	1
France	5
Holland	4
India	1
Ireland	1
Italy	13
Ivory coast	1
Kenya	1
Mauritius	1
Norway	2
Rwanda	1
Japan	1
South Africa	2
Sweden	1
Switzerland	7
Multi National	2
Total	**96**

Source: Ministry of Foreign Affairs, Burundi

For about one week, starting from the beginning of May 2007, the study team conducted interview survey over telephone with 14 out of those 96 NGOs to have the ideas about what kind of services they are providing at present in Bujumbura. The result of interview is tabulated as follows.

Table 6.3.2 Summaries of Activity of Interviewed NGOs' Activities in Bujumbura (As of May 2007)

No	Name	Country	Activities
1	DAI	America	Build public toilets at Buyenzi Commune in Bujumbura.
2	PADCO	America	Support the ex-combatants by giving funds (800,000FBu each) which is used to buy small livestock for rearing and cultivate some crops and fruits so as to get income.
3	SFCG	America	Work with youth associations and finance their projects.
4	World Relief	America	Rehabilitate houses of the returning families and give them livestock for rearing.
5	SOS Kinderdof International	Austria	Build orphan children's village including the schools. And also help the children living in poor families by giving them food, school fees and small livestock for rearing so as to help them to continue studying without problems.
6	ACORD (Association de Cooperation de Recherche pour le Development)	U.K	Work through microfinance with unmarried mothers, raped ladies and women who have undesired children, and child soldiers, without forgetting the pygmy by giving them livestock for rearing and seed for cultivating some crops and fruits so as to get income. Rehabilitate houses of repatriate, settling back and rehabilitation of returning families. Train people of Kamenge commune in peace consolidation. Through this project, ACORD build some schools, health centers. Train child soldiers, unmarried mothers, raped ladies and woman who have undesired children in brickwork, sewing, carpentry and bakery.
7	Christian Aid	U.K	Train ex-combatants, street children in brickwork, carpentry and sewing.
8	AVSI (Association des Volontaires pour le Service International)	Italy	Help vulnerable children by paying their school fees, give them cloth and help the families who take care of these children.
9	Mulindi Japan One Love Project	Japan	Manufacturing of Prosthesis.
10	CNR (Conseil Norvegien pour les Refugies)	Norway	Assistance to the refugees by constructing their houses, give them food and lawyer if needed. Help children by giving them what they need during their studies.
11	Helpage Burundi	Rwanda	Environment protection. Water conveyance. Reinstallation and rehabilitation of repatriates, returning families, child soldiers, and demobilized persons.
12	Coalition du Mouvement Nord-Sud en Flandre 11.11.11	Belgium	Has four partners, OAG (Analyses of political situation), OAP (Construction of school, health centers), Ligue Ikeka (Human rights defense) and AFG (Help raped women and women who have problems of heritage by giving them lawyers)
13	Oxfam QUEBEC	U.K	Help handicapped persons by training them in sewing, carpentry and give them small livestock for rearing. Rehabilitate the demobilized persons.
14	Solidarites	France	Water conveyance. Give food to children who suffer form malnutrition.

Note: The interviewed NGOs are only those, who could be contacted over phone during the survey, and whose provide there activities mainly in Bujumbura.

6-3-2 Local Non-governmental Organizations

At present, 6 local NGOs are registered into the Chamber of Commerce, Industry, Agriculture and Artisan of Burundi. Local NGOs are acting under the financial support of the international NGOs. The study team visited the following two NGOs and interviewed for their activities as described below.

(1) Foundation "STAMM"

- STAMM is performing support service focusing on Refugee Camp since the year 2000. Their main activity is the poverty alleviation by means of food reservation focusing on agriculture. Modern techniques for agriculture are introduced through the vocational training center.
- Since this country is an agricultural one, it is an important subject how the latest agricultural technology can be provided to the agriculturists. The basic idea of STAMM is that teaching of modern technique is important rather than giving food.
- The sphere of their activity is not only limited in Bujumbura but also includes towns like GITEGA, MUYINGA, etc., for construction of housing of the refugees supported especially by GTZ.
- Regarding availability of the housing construction sites for the refugees who want to move into their own houses from the refugee camps, STAMM point out the problems and try to settle the mater with the government.

(2) ASSOCIATION JAMAA

- The contents of JAMMA's activity are in two different categories. One is to foster entrepreneur such as handicrafts, livestock rising, etc., using micro credit for cash earnings. Second one is to provide information exchanging facility at places like community centers where the people can assemble.
- Entrepreneur supporting activities, since the year 1993, for enterprises which wants to have financial support for a micro project. For example, people who wish to have a hair salon store, JAMMA will provide them the financial support. There are 25 shops in the city now. Moreover, it is also supporting in small-scale agriculture.
- Concerning to the community center development, although the center building is constructed by financial support of NGO (Christian Aid) of Britain and NGO of Canada,

equipments such as a computer required for gathering and transmitting information are not yet installed. When the fund for the equipment procurement will be available is still unknown.

- The number of personnel is depending on the numbers of projects. Three persons are always working in headquarters and 7 to 10 persons are working in the field.