APPENDIX VII

RURAL INFRASTRUCTURE

Rural Infrastructure

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CHAPTER 1 SECTRAL OVERVIEW OF RURAL INFRASTRUCTURE DEVELOPMENT

1.1 Road Sector

1.1.1 Responsible Agency

The road in Ethiopia is categorized into 3 classes, national road, regional road and rural road and footpath, which are constructed and maintained by Federal Government, Regional Government and the rural community, respectively.

On the National level, the administration of road transportation is divided between two ministries and one agency. The Federal Ministry of Transport and Communications is responsible for formulation of transport and communications policy as well as for the rehabilitation, maintenance and construction of trunk road through the country. In addition to this, the Federal Ministry of Works and Urban Development is responsible for the design of public works and urban development programmes while the Ethiopian Roads Authority (ERA) is entrusted with the responsibility to design, construct and maintain roads under administration of the Federal Government. ERA also has responsibility to provide support to Regional Government in planning and programming of regional road.

On the regional level, Executive Committee of the Regional State of Oromia has entrusted Oromia Rural Road Authority (ORRA) with the administration of road transportation in Oromia Region. It was established in order to alleviate problems of road transportation in rural Oromia. It has constructed about 1,120km of new roads connecting Wareda capital to all-weather roads since 1994/95. The total length of roads requiring routine maintenance in Oromia is about 4,700km but the maintenance capacity of the ORRA is only 1,100km per year. In this condition, most of the roads in Oromia, including those under the management of the Federal Government, need urgent maintenance and rehabilitation.

1.1.2 Policy and Development Strategy

In order to speed up the development of Ethiopia's road transport infrastructure, the Federal Government has lunched a ten-year road sector development programme covering the period 1995/96 – 2005/6 for implementation in two phases of five years each. The programme includes construction and upgrading major corridor and trunk roads as well as routine maintenance. The total cost of the programme is estimated at Birr. 21.8 billion, out of which Birr. 4.6 billion (around 21%) will be allocated to Oromia Region and 6,400 km of roads will be upgraded and maintained by the programme.

1.2 Water Supply

1.2.1 Responsible Agency

The Federal Ministry of Water, Mineral and Energy Resources has a responsible to formulate the policies, development strategies, standards and guidelines on the water resources sector not only for rural and urban water supply, but also another sectors which is accompanied with water resources development such as irrigation and hydropower.

The organization, which is responsible for the water resources sector of the region, is the Oromia Water, Mineral and Energy Resources Development Bureau. The Bureau has 7 Services, 6 Technical Departments and 12 Zone Water, Mineral and Energy Departments and responsibility on study, planning, design, construction, operation and maintenance of the water resources development.

The zonal offices carry out all water supply construction and Operation and maintenance activities in the region, except drilling operation of bore hole which is managed by Regional Bureau. There are two types of management of water supply system, one is rural water supply system and the other is rural water supply system.

(1) Rural Water supply system

The rural water supply system in Oromia are mainly administrated and managed by water committee formed by election from the beneficiary communities. The numbers of committee members are from 5 to 7 with at least 2 females. The generally accepted principal is for communities to be eventually fully responsible for the water supply systems by managing the systems on self-financing basis. In order to enable the community-base management system without government subsidy, GTZ supporting the committee in this aspect. But currently, rehabilitation and maintenance services for rural water supply systems are carried out by the zones and regions.

(2) Urban Water supply system

The Urban Water Supply and Sanitation Service Offices are under the zonal office and execute their responsibilities with the Audit, Administration and Finance Services and Operation and Maintenance Section.

The Administration & Finance Service has two main branches, i.e. Administration and General Services which in turn has two units namely archives and property administration and budget and finance section serving a staff function. The Operation and Maintenance Section has three units namely Operation & Maintenance Team for urban water supply systems, Operation & Maintenance Team for rural water supply systems and customer service as line function.

1.2.2 Policy and Development Strategy

According to information from the Ministry of Water Resources, as of 2000, the

coverage of water supply in Oromia Region is only 30%: that is 76 % in urban area and 24 % in rural area, and the sanitation coverage is insufficient. The action plan for water resources development in the second 5-year development plan describes that the coverage of the Region should be increased to 47%, that is 84 % in urban area and 47 % in rural area. Further in order to ensure the population in healthy, lively and productive life, Oromia Regional Government is setting up the water supply and sanitation development programme of which the target year 2030. In the programme, the following aspects are considered.

(1) Participation of Community

The community is considered to be a main stakeholder for the operation and maintenance particularly in rural area. In order to ensure sustainable operation and maintenance, it is necessary to formulate sense of ownership among the beneficiaries from the earlier stage. Then, at all the stage community participation should be essential with consideration of the social, cultural and economical condition of the community.

(2) Mitigation of Environmental Impacts

Environmental impacts and mitigation measures can be investigated for proposed water supply projects not only from natural and eco-system point of view but also from social point of view such as equity of accessibility to safe water.

(3) Sustainability in terms of Operation and Maintenance

Development of water supply schemes could be affected using appropriate selection of technology that suites the simplicity in construction and operation and maintenance of the system and that make it economical and sustainable.

(4) Cost Recover

In the case of rural areas living standard is very poor in general and beneficiaries can not afford full cost recovery. Therefore the rural beneficiaries has to be able to contribute about 10% of the capital investment cost and fully cover the operation and maintenance cost for the water supply.

The capital investment cost for the construction of urban supply in the country is in most case financed by loan from out side and certain extent by the government and contribution of the beneficiaries is only the payment of water tariff in which case is not at full cost recovery. As a result, most of the urban water supply schemes are not improving their service due to financial constraints. This has to be improved by putting the appropriate water tariff which gives full cost recovery for the urban beneficiaries.

1.3 Medical Health Care

1.3.1 Responsible Agency

The Federal Ministry of Health is responsible for formulation of health policies, strategies, and guidelines for human resources development, for determining service standards, monitoring and evaluation of policies and strategies. The management of administrative services for health care including planning, administration, regulation, monitoring and evaluation of health service at the regional level is the responsibility for the Regional Government of Health Bureau. A Health Bureau has been established at the regional level with Zonal departments and health offices at Wareda levels.

Health institutions in Ethiopia are organized at six levels including three types of hospitals, health centers, clinics (health stations) and health posts. The definition of each health institution by Ministry of Health is as following.

(1) Hospital

A hospital is a health institution which has at least 50 beds, ambulatory services and diagnostic facilities such as laboratory and x-ray machines etc,. In addition, it is staffed by medical doctors, paramedical professionals and administrative staff. Hospitals are farther categorized into district, regional and referral hospitals by their management bodies and styles.

(2) Health Center

A health center is a middle level categorized health institution next to hospital, which has around 10 beds for emergency treatment of critical ill patients and a few equipment for medical examination and treatment, and is staffed by a few general practitioners, paramedical staff, and a few administrative support personnel.

(3) Health Station (Clinic)

A health station, usually called clinic is the lowest and front–line government health institutions, which has a few rooms and only minor equipment, and is staffed by a few health assistants with no supportive administrative staff.

(4) Health Post

A health post is a relatively new innovation, which was introduced following the primary health care initiative. It is supposed to be owned and managed by a well-defined community both in rural and urban area and staffed by a community health worker with basic training in health and one or more traditional midwives.

1.3.2 Policy and Development Strategy

With the aim of bringing about improvements in the health status, a national health policy and strategy was issued in 1993 for the development of the health sector with

focus on rural area. The major objective of the policy is to ensure the provision of a comprehensive primary health care with decentralization and equitable manner. The principals enunciated in the policy represent an appropriate response to basic health problems and constraints faced by the health sector. Its major aspects are decentralization of the health system, preventive and promotive health care and a more equitable distribution of health services within the limits of available resources.

The policy further comprises nine components for achieving its overall objectives. These include improving health care and the quality of services, efficient management of the health delivery system, financial sustainability, encouraging private sector investment in the health sector, improvements in the pharmaceutical sector, developing an information, education and communication system, increase the availability of health personnel and strengthening institutional capacity for research and development. In order to implement the health policy, the Federal Government has formulated a twenty-year health sector development strategy with a series of five-year programmes, the first of which covers the period from 1997/98 to 2001/2.

The national health sector policy serves as a general framework for regions to formulate and implement of health sector development programs in ways that best serve the particular needs of each region. In order to translate the health policy and strategy of the Federal Government, the Regional Government of Oromia formulated a regionally-focussed program for the development of the health sector in 1998.

1.4 Education

1.4.1 Responsible Agency

The present administrative structure of the education system in Ethiopia consists of the Federal Ministry of Education (MOE), the Regional Education Bureau, Education Departments of at zonal level, education offices at Wareda level and school administration at the base.

Under a decentralized system of education, the executive responsibilities such as the planning and management of education with respect to the operations of all kinds of schools are devolved to regional education bureau. The main functions of the Ministry of Education are regulatory and policy formulation and support of the regional bureaux to develop their capacity in the administrative services.

The formal educational system in Ethiopia comprises primary and secondary, technical and vocational education, tertiary education and teachers training institutions and colleges. According to available data, there were 4,067 primary schools, 128 secondary schools, five technical and vocational and training schools, four teacher-training institutions and one teacher-training college in Oromia Region at 1997/98, and at present, most of the schools are owned and managed by the regional government. The daily management of each school is made by head-teacher who are responsible to school board, members of which are elected by the community, with

help of his staff. The participation of the community is encouraged by this manner.

1.4.2 Policy and Development Strategy

In recognition of the importance of education for attaining sustainable economic development, the Federal Government has introduced policies and strategies, essential elements of which are to fundamentally restructure the educational system with a view to expanding basic education in a form which is directly relevant to the present and future requirements of the economy. The educational system will be recognized at all levels and the content made more relevant to the economy and the vast majority of the population. While the focus will be on expanding primary education, the structure of education will be diversified into technical and vocational education, expansion of that will take place parallel with the expansion of primary education. The emphasis on secondary education will be improved standards and quality. The policy aimed at reducing, and eventually eliminating, regional disparities in the distribution of educational opportunities.

An Education Sector Development Programme was lunched in 1997/98 in order to fulfill the above mentioned policy. One of the main objectives of the programme is to attain the enrollment ratio of 50 percent at the national level in primary education by 2001/02 which is the end of the first phase of the programme. Parallel with this, the equity on educational opportunity should be improved especially for female and nomadic population. The definite plan of the programme is as followings;

- To improve access to school especially for rural pupil, new school will be constructed and old school will be maintained,
- To decrease drop-out rate, improve the classroom management and change the system of examination.
- To upgrade the quality of education, instruction of relevant primary and teacher training curriculum
- To improve student-textbook ratio, increase and deliver textbook.

The investment cost of the programme, both recurrent and capital, was projected at Birr. 2.6 billion over a five-year period increasing Birr 2.3 billion for recurrent expenditure and Birr 344 million for capital expenditure for Oromia Region.

Chapter 2 PRESENT CONDITION OF RURAL INFRASTRUCTURE IN DUGDA BORA WAREDA

2.1 Rural Roads

There are 6 major roads in Dugda Bora Wareda, which are categorized into 3 classes in accordance with its pavement, such as asphalt-paved road, gravel-paved road and unpaved road. In the Wareda, the paved roads with a length of 97km have been equipped as shown below.

Road Network in Dugda Bora Wareda

No.	Name of Road	Pavement	Length in the wareda	Responsible Organization	Remarks
1	Addis Ababa – Awassa Road	Asphalt Paved	59 km	ERA	Trunk road to link national capital to Southern Region under assistance of EU
2	Meki – Koshe – Butajera Road	Gravel Paved	24 km	ORRA	
3	Meki - Habra Road	Gravel Paved	14 km	ORRA	This road is constructed by Ethio-Italian grant aid.
4	Meki – Ejersa Lele Road	Unpaved	20 km	-	
5	Alan Tena – Ombole Road	Unpaved	21 km	-	In the 5-years development plan, ORRA has plan to upgrade the road.
6	Alan Tena – Habra Road	Unpaved	17 km	-	

In order to grasp the transportation methods and condition of the roads in the Wareda, an Origin – Destination survey was carried out by the study team at Meki and Alem Tena market on each market day by interview style. The sample of answer sheets both in Meki and Alam Tena is attached in Attachment 2.1 and 2.2. Transportation methods and average hour to access to markets in dry season and rainy season are shown in the following table.

Transportation Methods and Average Hour to Access to Markets

Transportation	Meki Market			Alam Tena Market		
	Nos. of interviewee	Average hour to access market		Nos. of interviewee	Average hour to access market	
		Dry Season	Rainy Season		Dry Season	Rainy Season
Donkey	3	1.8 h	2.5 h	17	1.6 h	2.5 h
Donkey cart	12	1.6 h	2.3 h	1	2.0 h	2.5 h
House cart	5	1.0 h	1.8 h	2	1.0 h	1.5 h
On foot	37	1.9 h	2.5 h	35	1.7 h	2.6 h
Bus[1)]	5	2.4 h	2.6 h	11	1.3 h	1.3 h
Car	1	0.3 h	0.3 h	1	2.5 h	3.5 h
Others[2)]	5	-	-	3	-	-
Sub-total	68	-	-	70	-	-
From outside	7	-	-	21	-	-
Total	75	-	-	91	-	-

1) : The bus is not regular route bus but hired by business basis.

2) : Others consisted by bicycle and mule

Layout map of the major roads and accessibility to the both markets are shown in Figure VII 2.1. Contour lines in the map show times taken from houses of the interviewee to the markets on foot. Some 40% of inhabitants living in the area the Wareda seldom access to the big two towns, which can be reached within 3 hours on foot. The result shows that main transportation method in the Wareda is donkey, donkey cart and on foot while motorization is not widely spread yet in the area.

There is a difference of 45 minutes on average for transportation on foot in dry and rainy seasons. Asked if the road conditions differ in rainy and dry seasons, some 22% of the interviewee answered that they took the major road in rainy season instead of the rural roads and the footpath, which they usually take in dry season. It suggests that transportation within the Wareda in the rainy season be constrained by a relative bad condition of the rural roads and the footpaths as indicated in the following table.

Constraints of the Roads in Rainy Season in Dugda Bora Wareda

Constraints	Meki	Alam Tena	Total
Muddy Road Condition	52	57	109
River/Gully Crossing	7	31	38
Water Logging on Road	2	16	18
No problem	10	9	19

Multiple answers

Road extension per population and its coverage area presented in the following table.

Road Extension per population and Covered Area

	Road Extension per 1,000 persons	Road Extension per 1,000 km^2
Dugda Bora Wareda	0.62km	66km
Oromia Region	0.50km	27km
Ethiopia	0.43km	21km
Africa	0.61km	50km

Source: The economy of Oromia,1999

The above table shows that the wareda has a better road networks compared with that of the Oromia Region and the Ethiopia average in terms of road densities. Although there are some constraints in the rural roads, and the road network in the Wareda, it can be considered satisfactory in terms of quantitative level.

2.2 Domestic Water Supply

In the district, main source for drinking water is underground water, level of which is almost the same around EL.1,620m through the district. Thus in the mountain area, it is very difficult to fetch the water, while that is easier in lakeside. The water supply scheme in Meki Town is managed by the district office of water bureau, which is

depended on four deep wells, out of which only one is functioning now. Design works for rehabilitation and expansion of the scheme was completed in 1997 and the bureau is seeking an external financing resources for its implementation.

In connection with the rural water supply schemes, the bureau conducted an inventory survey to clarify present condition of the schemes in terms of facilities and their management by communities. Result of the survey is shown in Table VII 2.1 and summarized below and the location of rural water supply scheme is shown in Figure VII 2.2

Condition of the Rural Water Supply Scheme in Dugda Bora Wareda

Water Source			Engine Type		
	Status*	nos.		Status*	nos.
Borehole	○	11	Diesel or Electrical Engine	○	8
	□	17		□	14
	×	17		×	10
	Sub-Total	45		Sub-Total	32
Shallow Well	○	7	Wind Mill	○	5
	□	2		□	5
	×	7		×	13
	Sub-Total	16		Sub-Total	23
Hand Dug Well	○	0	Hand Pump	○	5
	□	0		□	0
	×	2		×	3
	Sub-Total	2		Sub-Total	8
No Data		3	No Data		3
Total		66	Total		66

Status ○ : Functioning with no problem, □ : Functioning with some problems
× : Not functioning

The number of water supply schemes managed by communities is 66, consisting of 45 boreholes, 16 shallow wells and 2 hand dug wells. Planned beneficiaries for the schemes amount to some 117,000.

However, the table indicates that out of 66 schemes, 26 schemes are not functioning and 19 schemes need maintenance works. Taking into account the findings, the number of estimated actual beneficiaries is some 78,000, with a total coverage of 67%. It is remarked that the actual coverage ratio in the wareda has the ratio over zonal average of 23% and the regional level of 16%.

It should be noted that over half of the windmill schemes are not functional, most of which were constructed under assistance of NGOs. The beneficiaries in the schemes pointed out that it was caused by lack of spare parts, and the bureau has taken no action for the repair. It is supposed that the responsibilities for maintenance have not discussed well by the beneficiaries, the bureau and the NGOs during the planning and implementation stage.

A water committee is organised under the assistance the bureau. The committee, consisting of seven members, is responsible for operation and maintenance of motor engine, overhead tank, water points and cattle through, and collection of water charge. Special care is taken to keep cattle away from the water point so that water is not polluted. Water master collects water charge, that is 5 to 15 cents per 25 liters, from beneficiaries at the water points. The committee deposits collected money in a bank to use it for allowance of water master and maintenance of the scheme. The bureau has made much effort to assist the committee, dispatching a maintenance team upon the request of the committee.

It was also observed that some of schemes were abandoned due to water quality problems, such as a high concentration of fluoride and salinity. Such high fluoride contents could cause dental and skeletal fluorosis. To eliminate the constraint, which is widely discussed in the Rift valley area, it is suggested that surface water as alternative water source for domestic water could be sought in the study area.

2.3 Health Care Service

Although the region has been putting emphasis on ensuring the primary health care, there are a limited number of health care facilities and health personnel. A large portion of the population neither has access to safe water nor sanitation facilities, which is afflicted by water-borne diseases. The major causes of morbidity are respiratory infection, malaria, skin infections, diarrheal diseases and intestinal parasitic infections. The ten top diseases in Dugda Bora Wareda are given in the table below.

Ten Top Diseases in Dugda Bora Wareda in 1999

Rank	Diagnosis	Nos. of patients *	%
1	Urticaria	4,973	16.6
2	Malaria	3,035	10.1
3	Intestinal Parasites	2,842	9.5
4	Skin Disease	2,362	7.9
5	Eye Disease	1,851	6.2
6	Diarrhea	1,245	4.2
7	Anaemia	1,025	3.4
8	Gastritis	894	3.0
9	Injury	821	2.7
10	Tonsilitis	750	2.5
	Others	10,110	33.8
	Total	29,908	100.0

Source : Meki Health Center

Table shown below is mortality, which is based on the 1994 population and housing census. It is seen that, in terms of infant mortality, under-five mortality and expectation of life in birth, Meki town shows worse values that those in East Shewa Zone, and Oromia Region.

Mortality in the Study Area

Area	Sex	Infant mortality	Under-five mortality	Expectation of life at birth
Oromia Region	M + F	118	173	50.4
	M	128	182	49.2
	F	108	164	51.7
East Shewa Zone	M + F	128	190	48.6
	M	139	198	47.3
	F	117	181	49.9
Meki Town	M + F	154	229	44.4
	M	179	260	41.1
	F	127	195	48.4
Ziway Town	M + F	96	137	54.8
	M	110	154	52.7
	F	82	120	57.0

Source : 1994 Population and Housing Census

Remarks:

Infant Mortality: the probability of dying between birth and the first birthday per 1000 live birth

Under-five mortality: the probability of dying between birth and the fifth birthday per 1000 live birth

Expectation of life at birth:the average number of years a new born baby is expected to life if he/she is exposed throughout its life to the prevailing pattern of age specific death rates

The responsible of front line service for health care is under health department of wareda. The health care facility is categorized into 1) health center (1no.), 2) district clinic (5 nos.), 3) private clinic (7 nos.), 4) health post (2 nos.) 4) drug store (10nos.). Health center located in Meki town, and clinics, located in Alam Tena and major PA, are providing curative and preventive hearth care services including general consultation, prenatal and baby clinic, examination, treatment, family planning, immunization, health education and promotion of national health campaign (eradication of malaria and polio). A doctor and nurses are assigned at the health center while health assistants mainly run clinics. A health post is managed by a community health worker with basic training in health and mid-wives. But the facility faces to budgetary and manpower problems in terms of number of staff and lack of training. In addition to the government service, in Alam Tena, the Catholic Church established a clinic in 1995. The number of patients visited the facilities in 1999 was reported to be 29,900 for first visit, and 31,900 for the repeated.

Number of medical facilities and personnel with ratio of facilities/medical personnel to population in the wareda, zone and region are shown below, and the location of the medical facilities are shown in Figure VII 2.3.

Medical facilities and Personnel in Dugda Bora Wareda

Facilities / Medical Personnel	Number of Facilities / Personnel	Ratio of Facilities, Medical Personnel to population		
		Dugda Bora Wareda	East Shewa Zone	Oromia Region
Health Center	1	156,358	361,979	272,069
Clinic	13	12,027	54,845	23,826
Government	5	-	-	-
Private	7	-	-	-
NGO	1	-	-	-
Health Post	2	156,358	361,979	272,069
Drug Stores	10	15,636	Not available	Not available
Doctors	1	156,358	30,676	68,714
Nurses	5	31,272	10,969	22,149
Health Assistants	15	10,424	5,954	6,288
Health Worker	6	26,060	Not available	Not available
Saniterian	1	156,358	Not available	Not available
Pharmacy Technicians	4	39,090	Not available	Not available

Source : Wareda Health Department, Meki, 1999 and Zonal Level Health Department in 1996

The above table shows that the wareda has the facilities above the zonal and the regional average while the personnel in the wareda does not reach those average. The availability of health institution and staff does not ensure coverage of health care. However, as long as the facilities and personnel of health care are concerned, it can be seen that the Dugda Bora wareda is not well inferior to the regional level.

A preventive health care service is being carried out by the staff in the department in spite of shortage of staff and equipment. It includes construction of latrine and refuse disposal, inspection of pit latrine, refuse disposal, water source, small-scale industries, food & drink establishment, prison & school health service, vaccination service, and malaria control campaign. Especially, in 1999, the department had malaria control programme in 20 PAs, spraying DDT in houses and mosquito breeding sites and distributing chloroqine and fansidar to the inhabitants. However, those activities were constrained by poor community participation.

The present condition of the health care service in the wareda suggest that of importance is to strengthen the health post, where is a front-line health care institution and awareness of the communities for preventive health care.

2.4 Education

Education plays a crucial role in the process of social and economic development. In this context, while the focus is on expanding primary education, the structure of education is diversified into technical and vocational education whose expansion takes place in parallel with the expansion of primary education. An enrollment ratio and the total literary rate evaluate level of education. The net enrollment ratio is defined as the ration between the number of pupils of eligible age into a particular

level by the population of the corresponding age group. Ratios of pupil to total number of school-aged children for each grade comparing with the ratios of East Shewa Zone and Oromia region is as shown below.

Ratios of Pupil to Total Number of School-aged Children and Literacy (%)

		Primary School	Junior Secondary School	Senior Secondary School	Total Literacy
Dugda Bora Wareda	Male	9.65	3.09	2.02	28.74
	Female	9.36	2.87	1.90	15.05
	Total	9.51	2.98	1.96	21.99
East Shewa Zone	Male	18.98	8.79	10.17	42.40
	Female	18.42	10.31	10.75	29.64
	Total	18.70	9.55	10.46	36.04
Oromia Region	Male	11.86	4.32	4.23	29.29
	Female	9.62	4.41	4.07	15.56
	Total	10.76	4.37	4.15	22.40

Source: The 1994 Population and Housing Census of Ethiopia Result for Oromia Region

In terms of all indicators, East Shewa Zone shows roughly twice as high as the each ratio of regional average, while Dugda Bora District, which is below the East Shewa Zone, shows value as the same as regional one.

There are 27 primary schools and 3 junior high schools in the district for 17,232 pupils administrated by the wareda education department (location of the schools are shown in Figure VII 2.4). There is only one senior secondary school that belongs to the Catholic Church. The pupil population in the primary, junior and high schools is indicated below.

Pupil in Dugda Bora Wareda (1992/93 – 1999/2000)

Year	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00
Primary & junior high school population	2,751	3,196	2,894	5,272	7,501	10,094	14,814	17,232
Senior secondary school population	287	338	399	264	278	278	313	359

Source: Wareda Education Department , Meki 1999

Although the population of the senior secondary school show a slight variations during the period, that of the primary and junior high schools are characterized by a drastically increased, thus, requiring a commensurate increase in schools and school facilities. The shortage of school and teachers can be seen in the following table.

Status of Primary School, Students and Teachers

	No. of School	Nos. of Students	Nos. of Teachers	Students / school	Students / teacher
Dugda Bora Wareda	27	17,232	248	638	69
E. Shewa Zone	301	115,504	3,557	384	32
Oromia Region	4,108	1,401,508	35,585	341	39

Source: Wareda Education Department, Meki 2000 and Zonal Level Education Department in 1996

In response to high needs of school facilities, 2 primary schools are under construction while one junior high school is being upgraded. In the wareda, other than government activities, UNICEF and NGOs are acting an important role in the education sector. UNICEF is conducting a capacity building programme to communities as well as school, such as awareness programme to community, gender issue and children's right. NGO, the Christian Children's Fund, builds and manage a kinders garden, and construct a primary school and employ teachers, which will finally be transferred to the government. It is reported that drop out ratio of 27% in 1998/99 was drastically declined to 18% in 1999/2000. This is because of the awareness activities, expansion of additional classes and employment additional teachers.

The Alam Tena vocational training center covers the training courses for tailoring, carpentry, spinning and weaving, and blacksmith.

Although there are still a lot of constraints in the sector, such as shortage of teachers, school and classes, insufficient training of teachers, the educational administration with external support by UNICEF and NGOs have become established.

Chapter 3 PROBLEMS AND CONSTRAINTS

(1) Unclear Demarcation of Responsibility between Government Organizations

In current situation, it seems not so clear the demarcation of responsibility between executing agencies and in charge level in the same agencies. As the result of this, several problems such as some areas to be left out on the development, government support to be not comprehensive, etc, are taking place.

(2) Insufficient of Human and Financial Resources

Especially at the zonal and wareda level, human resources such as engineer, technician medical personnel, social worker, etc., is insufficient. In addition to this basic equipment also not enough. These restrict the activities of executing agency to support the rural community.

(3) Insufficient Awareness Creation and Community Mobilization

The duty of the beneficiary and community in each stage is not clear. At the planning stage, Government should be explain beneficiary the basic information about the scheme and discuss and make consensus with them the duties of both side with consider of social, cultural and economic condition of the community. Parallel with this, community mobilization and community leader's training should be conducted by Government to ensure sustainable operation and maintenance.

(4) Insufficient Technical and Administrative Support for Operation and Maintenance

The community is expected to be the main stakeholder for the operation and maintenance of the rural infrastructure. But most of the community has no experience for maintenance of schemes. In order to ensure sustainable operation and maintenance, continuous and comprehensive support should be done by the Government.

Chapter 4 DEVELOPMNT PLAN FOR RURAL INFRASTRUCTURE

Although some problems exist on conditions of rural infrastructure in Dugda Bora Wareda, most of the indicator shows exceeded figure than zonal, regional and national average as mentioned in previous chapter. Additional investment for the sector in this area will bring upon expansion of socio-economic gaps between Meki area and other rural areas of the Region. From the point of view of equitable opportunity and optimum allocation of budget and resources, further infrastructure development except maintenance and minor rehabilitation in Meki area would not be prioritized in the plan period (next decade of 2001-2010) of this Master Plan.

APPENDIX VII
RURAL INFRASTRUCTURE

Tables

Table VII.2.1 Data Base of Rural Water Supply Scheme Inventry

General Data										Scheme & Reservoir Data		Cost Coverage & Expense			CPP's Data			
No.	No.	PA	Community	Founding Agency	C. Population	Status	Depth of Well (m)	Yield (l/s)	Year of Const.	Scheme Condition	System Type	Expense	From Livestock (Cent/Cattle)	From Domestic (Birr/m^3)	W.C. Members			Year formed
															Male	Female	Total	
1	29	Tepho Choroke	Tepo 140	EWWCA	200-1,000	×	-	-	1979	Alternator Needs Maintenance, Leakage of Reservoir	Shallow Well, Reservoier ($4m^3$), Water Point (7)	Salary : Br.50/m	-	2.5	6	1	7	1991
2	14	Eela Gebre Daiech	Ela Mikael	EWWCA	4,000	○	124	-	1979	Good	Borehore, Pump, Reservoier ($8m^3$), Cattle Trough ($4m^3$), Water Point (4)	Salary : Br.250/m Fuel : Br.390/m Maintenance : Br.235/y	5	2.5	7	0	7	1992
3	27	Mukiya 2	Dugda 2 (Sarite)	EWWCA	2,700	□	150	4.0	1983	Alternator Needs Maintenance	Borehore, Reservoier ($4m^3$), Water Point (7), Cattle Through ($3m^3$)	Salary : Br.200/m Fuel : Br.450/m Maintenance : Br.150/y	5	2.5	4	1	5	1988
4	11	Mukiye 1	Wederka	SHDI	1,800	□	177	5.0	1987	Leakage of Reservoir	Borehole, Generator, Reservoire ($4m^3$), Water Point (7), Cattle Through ($4m^3$x2)	Salary : Br.180/m Fuel : Br.249/m Maintenance : Br.69/y	5	3.5	7	0	7	1992
5	46	Tuchi Deko	Rado	EBWp	3,800	□	75	5.0	1971	Leakage of Reservoir	Borehole, Generator, Reservoire ($8m^3$), Water Point (7), Cattle Through ($4m^3$)	Salary : Br.260/m Fuel : Br.390/m Maintenance : Br.40/y	5	2.5	5	2	7	1992
6	8	Weyo Gebriel	Wayo Gabriel	EWWCA	1,500	□	80	4.0	1978	Leakage of Reservoir	Borehole, Generator, Reservoire ($4m^3$), Water Point (28)	Salary : Br.150/m Fuel : Br.371/m Maintenance : Br.396/y	-	2.5	6	1	7	1992
7	42	Berta Sami	Berta	Private	3,200	○	120	4.0	1982	Good	Borehore, Reservoier ($3m^3$), Water Point (7), Cattle Through ($4m^3$)	Salary : Br.270/m Fuel : Br.600/m Maintenance : Br.300/y	5	2.5	5	2	7	1990
8	5	Koto Biliti	Bilebi 2		2,500	×	242	5.0 (2.5)	1987	Alternator Needs Maintenance	Borehore, Reservoier ($4m^3$), Water Point (7), Cattle Through ($4m^3$x2)	-	-	4.5	7	0	7	1992
9	27	Mukiya 2	Mukeyw 2	CRS Meki Branch	2,000	×	138	-	1979	Pump Needs Pull out	Borehole, Generator, Reservoir ($5m^3$), Water Point (7), Cattle Through ($4m^3$)	-	-	-	5	0	5	1981
10	52	Malema Jere Bera	Malema Jere Bera	WIBs	1,500	×	76	5.0	1981	The Scheme is not finished yet	Borehole, Disfer, Engine, Water Point (7)	-	-	-	5	2	7	1989
11	5	Koto Biliti	Biliti 3	SHDI	5,000	□	260	2.5	1991	Capacity of pump are not fit	Borehole, Pump, Reservoir ($4m^3$), 1.1km Pipeline, Woter Point (7)	-	-	3.0	5	0	5	1989
12	26	Dongorota	Gusa 1	CKS	3,000	□	118	-	1983	Leakage of Pipeline	Borehole, Mono lift, Reservoir ($6m^3$), Engine, Water Point (7), Cattle Through ($4m^3$)	Salary : Br.80/m Fuel : Br.108/m Maintenance : Br.24/y	-	2.5	7	0	7	1989
13	26	Dongorota	Dangoroga	CKS	1,000	□	107	-	1985	Needs engine	Borehole, Reseroir ($6.5m^3$), Water Point (7), Cattle Through	Salary : Br.170/m Fuel : Br.130/m Maintenance : Br.105/y	-	2.5	7	0	7	1991
14	11	Mukiye 1	Urgocho	SHDI	1,500	×	180	5.0	1989	Leakage of Reservoir	Borehole, Reservoir ($4m^3$), Water Point (7), Cattle Through ($4m^3$)	Salary : Br.120/m Fuel : Br.400/m	5	2.5	5	2	7	1990

Table VII.2.1 Data Base of Rural Water Supply Scheme Inventry

General Data										Scheme & Reservoir Data		Cost Coverage & Expense			CPP's Data			
No.	No.	PA	Community	Founding Agency	C. Population	Status	Depth of Well (m)	Yield (l/s)	Year of Const.	Scheme Condition	System Type	Expense	From Livestock (Cent/Cattle)	From Domestic (Birr/m^3)	W.C. Members			Year formed
															Male	Female	Total	
15	20	Doyo Laman	Kele Doyo	WIBs	2,500	○	130	4.0	1982	Good	Borehole, Reservoir ($4m^3$), Generatoer, Pump, Water Point (7), Cattle Through ($4m^3$)	-	5	2.5	5	2	7	1992
16	42	Berta Sami	Bara Naram	WIBs	2,100	○	150	-	1968	Good	Borehole, Reservoir ($8m^3$), Water Point (7), Cattle Through ($4m^3$)	Salary : Br.170/m Fuel : Br.650/m Maintenance : Br.685/y	8	3.0	5	2	7	1991
17	43	Sori Dolesa	Doleche	WIBs	2,000	×	130	-	1982	Needs well Cleaning and 4 pump installation	Borehole, Reservoir ($4m^3$), Water Point (14), Cattle Through ($4m^3$)	Salary : Br.180/m Fuel : Br.600/m	5	2.5	5	2	7	1991
18	39	Derara Daiecha	Burka Dalocha	EWWCA	2,050	×	46	-	1970	Borehole install after pump cleaning	Shallow Well, Reservoier ($4m^3$), Water Point (14), Cattle Through ($4m^3$)	Salary : Br.120/m Fuel : Br.200/m Maintenance : Br.730/y	5	2.5	7	0	7	1991
19	31	Bekele Girisa	Weuhu Berisa	EWWCA	800	□	30	5.0	1989	Leakage of Reservoir	Shallow Well, Reservoier ($8m^3$), Water Point (21)	Salary : Br.130/m Fuel : Br.128/m	-	2.5	7	0	7	1992
20	54	Dalota Mati	Mati Dalota	EWWCA	1,600	×	126	-	1971	-	Borehole, Generator, Reservoir ($8m^3$), Water Point (7), Cattle Through ($3m^3$)	Fuel : Br.267/m Maintenance : Br.300/y	5	2.5	5	2	7	1991
21	44	Tuka Largamo	Tuka Karemtu	EWWCA	2,500	□	130	3.0	1978	Reservoir needs maintenance	Borehole, Reservoir ($4m^3$), Water Point (1), Water Point (7), Cattle Through ($3m^3$)	Salary : Br.210/m Fuel : Br.400/m	8	2.5	7	0	7	1992
22	30	Giraba Korke Adi	Geraka File	EWWCA	2,000	□	138	-	1978	Leakage of Reservoir	Borehole, Reservoir ($4m^3$), Water Point (7)	Salary : Br.160/m Fuel : Br.140/m Maintenance : Br.400/y	-	2.5	6	1	7	1991
23	43	Sori Dolesa	Teritu	Private	3,500	○	115	-	1962	Good	Borehole, Reservoir ($17m^3$), Water Point (7), Cattle Through ($4m^3$)	Salary : Br.320/m Fuel : Br.600/m	5	2.5	7	0	7	1991
24	12	Birbirsa Guda Sabole	Ela Sable	EWWCA	2,000	×	119	-	1978	Well needs cleaning and Pump maintenance	Borehole, Reservoir ($4m^3$), Water Point (7), Cattle Through ($4m^3$)	Salary : Br.100/m Fuel : Br.390/m	5	3.0	7	0	7	1990
25	43	Sori Dolesa	Asba Gasha	EWWCA	2,500	○	-	-	1972	Good	Borehole, Generator, Reservoir ($8m^3$), Water Point (7)	Salary : Br.200/m Fuel : Br.350/m	-	2.5	7	0	7	1991
26	23	Hafe Kemale	Hefa & Kemebe	SHDI	2,500	□	162	5.0	1989	Pump Capacity is not enough	Borehole, Resevoir(25m3), Water Point (4), Cattle Through ($1m^3$), Pump	Salary : Br.100/m	-	3.0	6	0	6	1989
27	36	Jawe Bofa	Haye Besha	Africa Care	6,000	□	135	4.0	1978	The community is located high area, and the pump engine power is not sufficient	Borehole, Mono lift with Engine, Reservoir ($10m^3$), Water Point (21), Cattle Through ($4m^3$)	Salary : Br.150/m Fuel : Br.350/m	-	2.5	5	0	5	1992
28	45	Gose Korke	Korke Koremutu	EWWCA	1,500	×	165	3.0	1971	Well needs cleaning	Borehole, Reservoir ($8m^3$), Water Point (7), Cattle Through ($4m^3$)	Salary : Br.100/m	5	2.5	3	2	5	1989
29	11	Mukeye 1	Dusda 1	EWWCA	5,000	○	250	-	1963	Good	Borehole, Generator, Pump, Resevoir ($1m^3$), Water Point (5), Cattle Throug ($2m^3$)	Salary : Br.120/m Fuel : Br.396/m Maintenance : Br.1,000/y	5	2.5	6	1	7	1991

Table VII.2.1 Data Base of Rural Water Supply Scheme Inventry

General Data										Scheme & Reservoir Data		Cost Coverage & Expense			CPP's Data			
No.	No.	PA	Community	Founding Agency	C. Population	Status	Depth of Well (m)	Yield (l/s)	Year of Const.	Scheme Condition	System Type	Expense	From Livestock (Cent/Cattle)	From Domestic (Birr/m^3)	W.C. Members			Year formed
															Male	Female	Total	
30	13	Birbirsa Gale	Kure + Galaee	OWMBRD	3,220	□	-	-	1986	Leakage from Reservoir	Borehole, Reservoir ($4m^3$), Water Point (14), Cattle Through ($4m^3$)	Salary : Br.290/m Fuel : Br.250/m Maintenance : Br.300/y	5	2.5	5	1	6	1991
31	13	Birbirsa Gale	Birbirsa Bitisi	SHDI	1,500	□	123	4.5	1982	Leakage from Reservoir	Borehole, Reservoir ($4m^3$), Water Point (14), Cattle Through ($4m^3$)	Salary : Br.120/m Fuel : Br.270/m	5	2.5	6	1	7	1992
32	8	Weyo Gebriel	Wayo (Sariti) Gabriel	WIBs	1,800	○	63	-	1992	Good	Shallow Well, Resavoir ($2m^3$), Water Point(4)	-	-	2.0 Birr/month	5	0	5	-
33	16	Joro Reka	Joro Reka	LVIA	2,500	□	70	-	1989	-	Borehole, Reservoir ($25m^3$), Wind Mill, Water Point (1)	Salary : Br.70/m	-	1.0 Birr/month	5	0	5	1991
34	22	Koye Jejeba	Keyo Jejeba	LVIA	2,500	□	85	-	1989	Needs Pump	Borehole, Reservoir ($25m^3$), Wind Mill, Water Point (4)	Salary : Br.65/m	-	2.5	5	0	5	1991
35	30	Giraba Korke Adi	Geraba Jarso	LVIA	1,200	×	75	-	1979	Wind Mill needs Maintenance on Pump	Borehole, Reservoir ($25m^3$), Wind Mill, Water Point (4)	Salary : Br.80/m	-	1.0 Birr/month	35	0	35	1991
36	10	Dodoti Dembel	Gura Germajie	LVIA	1,500	×	47	-	1983	Wind Mill needs Maintenance	Shallow Well, Reservoir ($25m^3$), Wind Mill, Water Point (5), Cattle Through ($2m^3$)	Salary : Br.50/m	-	1.0 Birr/month	3	1	4	1986
37	8	Weyo Gebriel	Abono 1	LVIA	1,500	×	50	5.0	1983	Wind Mill needs Maintenance on Pump	Borehole, Reservoir ($25m^3$), Wind Mill, Water Point (4), Cattle Through ($2m^3$)	Salary : Br.70/m Maintenance : Br.6,000/y	-	1.0 Birr/month	3	3	6	1991
38	10	Dodoti Dembel	Cheleleka 2	LVIA	1,000	×	110	-	1986	Wind Mill needs Maintenance	Borehole, Reservoir ($25m^3$), Wind Mill, Water Point, Cattle Through ($2m^3$)	Salary : Br.70/m Maintenance : Br.8,640/y	-	1.0 Birr/month	3	2	5	1986
39	24	Weldia Hafa	Welda Kocha	LVIA	1,400	×	94	-	1978	Wind Mill needs Maintenance	Borehole, Reservoir ($25m^3$), Wind Mill, Water Point (4)	Salary : Br.60/m Maintenance : Br.1,600/y	-	1.0 Birr/month	5	2	7	1991
40	17	Korke Adama	Adama Feses	LVIA	1,800	×	145	-	1989	Wind Mill needs Maintenance	Borehole, Reservoir ($25m^3$), Wind Mill, Water Point (4), Cattle Through ($1m^3$)	Salary : Br.50/m	-	1.0 Birr/month	-	-	6	1989
41	37	Oda Bokota	Geraba Fila	LVIA	900(180 H.H)	○	-	-	1991	Good	Borehole, Reservoir ($25m^3$), Wind Mill, Water Point (4)	Salary : Br.70/m	-	1.0 Birr/month	5	0	5	1992
42	36	Jawe Bofa	Bofo	LVIA	750(150 H.H)	×	78	-	1979	Wind Mill needs Maintenance	Shallow Well, Reservoir ($25m^3$), Wind Mill, Water Point (4), Cattle Through ($1m^3$)	Salary : Br.60/m	-	1.0 Birr/month	6	0	6	1990
43	10	Dodoti Dembel	Theleleka 1	LVIA	2,500	○	54	-	1978	Good	Shallow Well, Reservoir ($25m^3$), Wind Mill, Water Point (4)	Maintenance : Br.656/y	-	1.0 Birr/month	3	2	5	1987
44	25	Beyimogusa	Gosa 2	LVIA	1,400	○	45	-	1976	Good	Shallow Well, Reservoir ($25m^3$), Wind Mill, Water Point (4), Cattle Through ($2m^3$)	Salary : Br.70/m	-	1.0 Birr/month	-	-	4	1992

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															Male	Female	Total	
45	30	Giraba Korke Adi	Korke Adi	LVIA	1,500	□	51	-	1979	Reservoir needs maintenance	Shallow Well, Reservoir (25m^3), Wind Mill, Water Point (4)	Salary : Br.60/m Maintenance : Br.250/y	-	1.0 Birr/month	2	1	3	1988
46	-	-	Welesele	LVIA	200	□	92	-	1983	Leakage of Reservoir	Borehole, Reservoir (25m^3), Wind Mill, Water Point (4), Cattle Through (2m^3)	Salary : Br.60/m	-	1.0 Birr/month	3	0	3	1983
47	37	Oda Bokota	Oda	LVIA	1,100	×	28	-	1979	Wind Mill needs Maintenance	Hand Dug Well, Resevoir (25m^3), Wind Mill, Water Point (4)	Salary : Br.70/m	-	2.0 Birr/month	-	-	5	1979
48	38	Sera Wekele	Sera	LVIA	1,200	×	102	-	1981	Wind Mill needs Maintenance	Borehole, Reservoir (25m^3), Wind Mill, Water Point (4), Cattle Through (2m^3)	Salary : Br.65/m	-	1.0 Birr/month	-	-	3	1989
49	11	Mukeye 1	Lalo + Dero	LVIA	2,000	×	100	-	1987	Wind Mill needs Maintenance	Borehole, Reservoir (25m^3), Wind Mill, Water Point (4), Cattle Through (2m^3)	Salary : Br.80/m Maintenance : Br.500/y	-	1.0 Birr/month	4	0	4	1992
50	12	Birbirsa Guda Sabole	Daraba + Birbisa	LVIA	1,840	×	-	-	1990	Wind Mill needs Maintenance	Borehole, Reservoir (25m^3), Wind Mill, Water Point (4), Cattle Through (2m^3)	Salary : Br.50/m Maintenance : Br.200/y	-	2.0 Birr/month	-	-	6	1990
51	8	Weyo Gebriel	Abono 2	LVIA	1,500	×	99	-	1986	Wind Mill needs Maintenance	Borehole, Reservoir (37m^3), Wind Mill, Water Point (4), Cattle Through (2m^3)	Salary : Br.70/m Maintenance : Br.488/y	-	1.0 Birr/month	4	3	7	1991
52	7	Tuchi Denbel	Bada Gosa	LVIA	700	○	72	-	1978	Good	Borehole, Reservoir (37m3), Wind Mill, Water Point (4)	Salary : Br.70/m Maintenance : Br.230/y	-	1.0 Birr/month	3	2	5	1992
53	7	Tuchi Denbel	Tuchi Dembel	LVIA	2,000	×	77	-	1978	Screen needs Maintenance	Shallow Well, Reservoir (37m^3), Wind Mill, Water Point (4)	Salary : Br.60/m Maintenance : Br.234/y	-	1.0 Birr/month	3	3	6	1987
54	28	Hate Liman	Hote Meti	LVIA	1,300	□	75	-	1975	Leakge of Reservoir, Wind Mill needs Maintenance	Borehole, Reservoir (25m^3), Wind Mill, Water Point (4), Cattle Through (2m^3)	Salary : Br.70/m Maintenance : Br.200/y	-	1.0 Birr/month	6	0	6	1992
55	28	Hate Liman	Hafe Furure	LVIA	2,000	□	98	-	1984	Shortage of Water, When no Wind	Borehole, Reservoir (25m^3), Wind Mill, Water Point (4), Cattle Through (2m^3)	Salary : Br.90/m Maintenance : Br.600/y	-	1.0 Birr/month	7	0	7	1991
56	35	Tuchi Sumeyo	Tuchi Someyon	LVIA	915(183H.H.)	○	38	-	1984	Good	Shallow Well, Reservoir (25m^3), Wind Mill, Water Point (4), Cattle Through (1m^3)	Salary : Br.100/m	-	1.0 Birr/month	5	0	5	1984
57	51	Dodo Wedera	Dodo	EWWCA	325(65H.H.)	○	-	-	1979	Good	Shallow Well, Hand Pump	Salary : Br.40/m	-	1.0 Birr/month	-	-	3	1989
58		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
59	50	Wayo	Tara Wayo	WIBs	250(50H.H.)	○	40	-	1989	Good	Shallow Well, Hand Pump	Salary : Br.40/m	-	1.0 Birr/month	4	1	5	1989
60	52	Malema Jere Bera	Tori Beri	WIBs	500(100H.H.)	○	20	-	1989	Good	Shallow Well, Hand Pump	Salary : Br.30/m	-	0.5 Birr/month	4	2	6	1989

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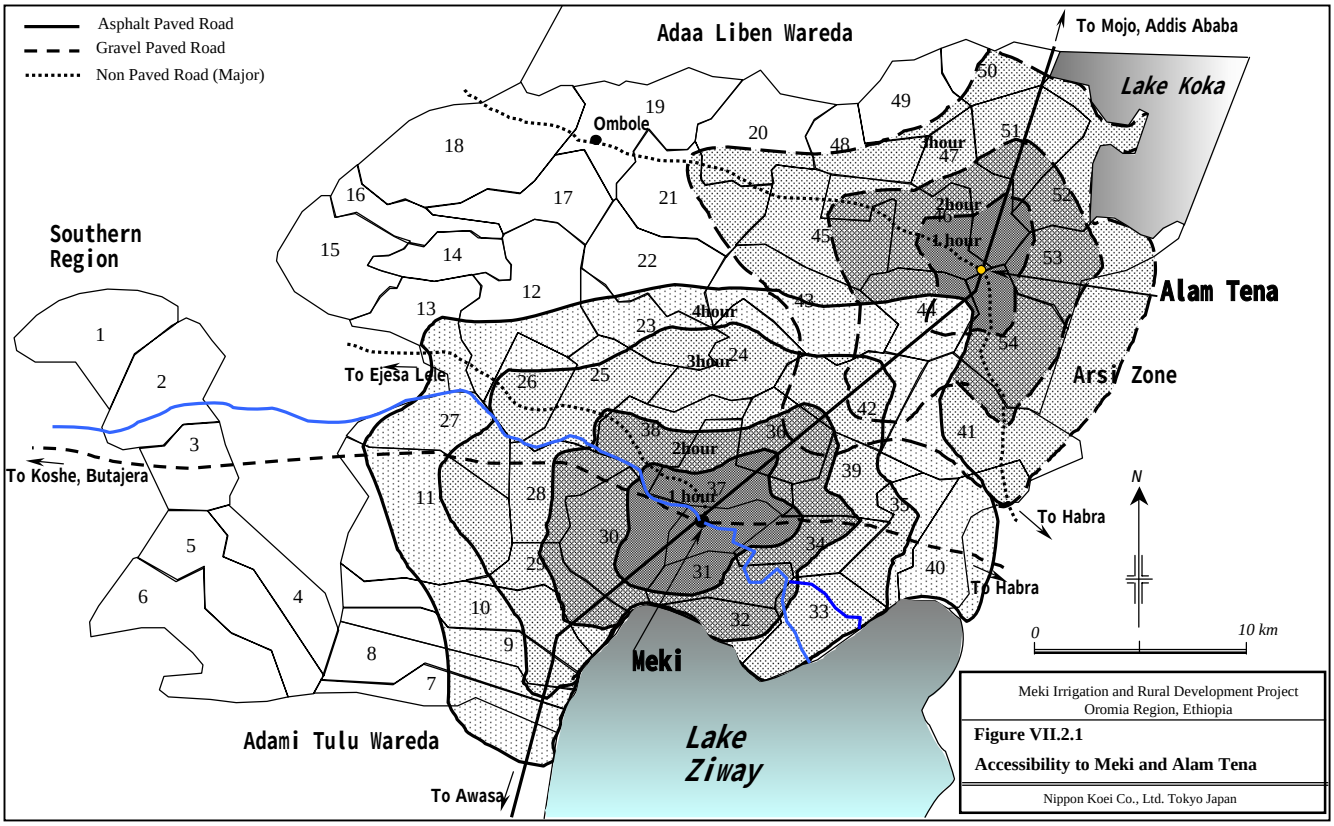
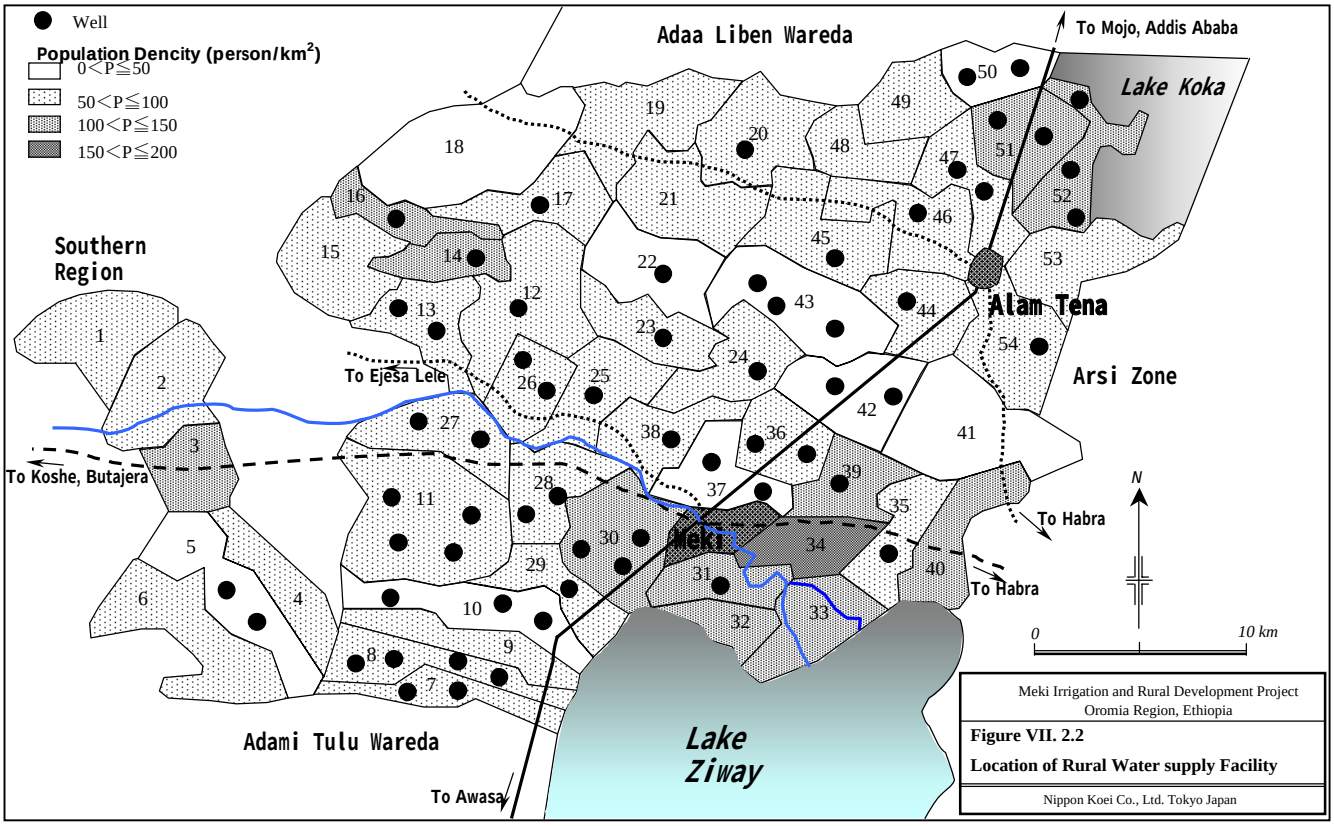
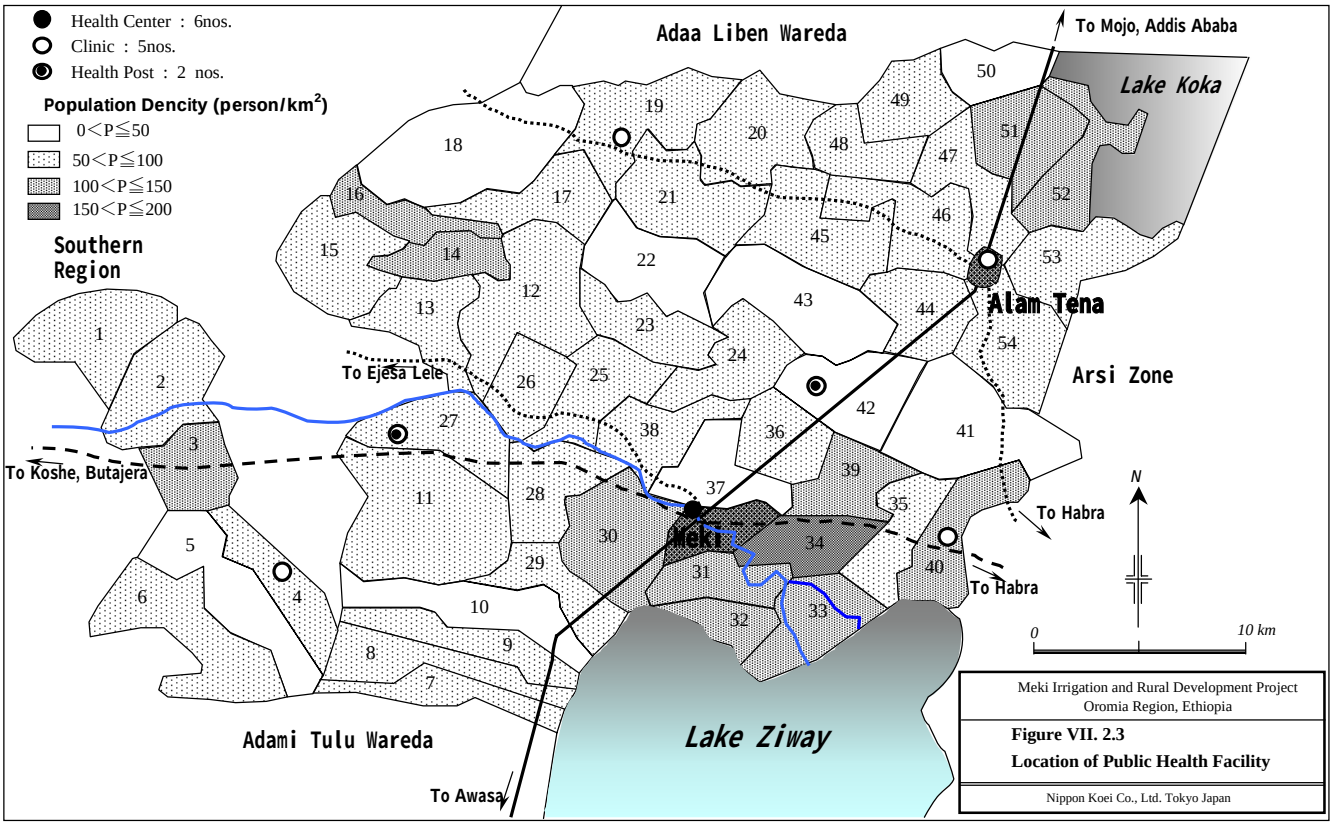
															Male	Female	Total	
61	51	Dodo Wedera	Dodo Kenteri	WIBs	300	×	9	-	1991	Depth of the Well is not enough	Hand Dug Well, Hand Pump	Salary : Br.25/m	-	1.0 Birr/month	3	2	5	1991
62	52	Malema Jere Bera	Milima	EWWCA	250	×	-	-	1979	Needs Maintenance	Shallow Well, Hand Pump	-	-	1.0 Birr/month	5	1	6	1989
63	47	Elen	Gadode 2	WIBs	250(40H.H.)	○	44	-	1989	Good	Shallow Well, Hand Pump	Salary : Br.40/m	-	3.0 Birr/month	4	1	5	1989
64	47	Elen	Golode	WIBs	350(70H.H.)	○	29.3	-	1989	Good	Shallow Well, Hand Pump	Salary : Br.40/m	-	1.0 Birr/month	5	0	5	1989
65	50	Wayo	Tara Ways	WIBs	425(85H.H.)	×	45	-	1989	Hand Pump Needs Maintenance	Shallow Well, Hand Pump	-	-	1.0 Birr/month	5	2	7	1990
66		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

APPENDIX VII
RURAL INFRASTRUCTURE

Figures


Asphalt Paved Road
Gravel Paved Road
Non Paved Road (Major)
Adaa Liben Wareda
To Mojo, Addis Ababa
Lake Koka
Ombole
Southern Region
Alam Tena
Arsi Zone
To Ejesa Lele
To Koshe, Butajera
To Habra
To Habra
Meki
Lake Ziway
Adami Tulu Wareda
To Awasa
N
0
10 km
Meki Irrigation and Rural Development Project
Oromia Region, Ethiopia
Figure VII.2.1
Accessibility to Meki and Alam Tena
Nippon Koei Co., Ltd. Tokyo Japan

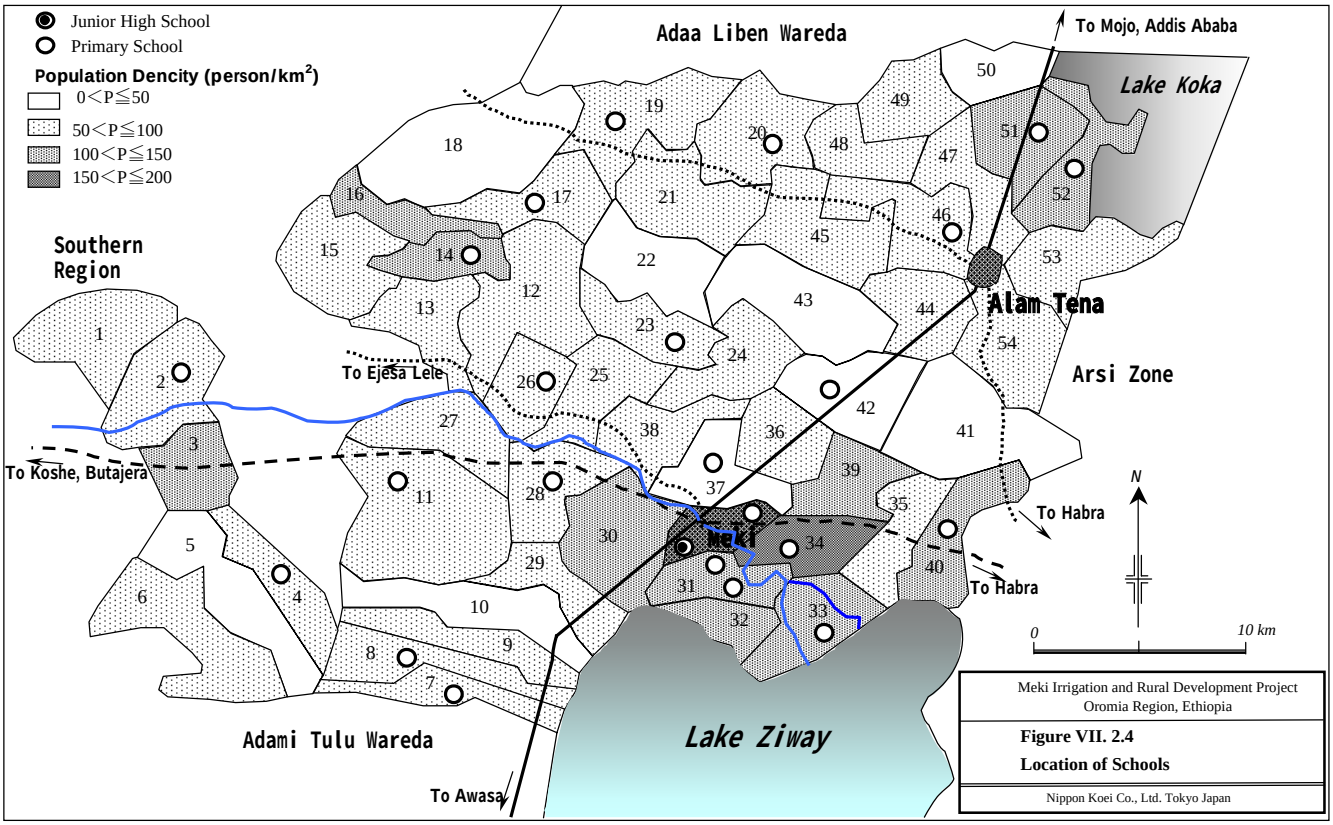

Well
Population Dencity (person/km²)
0<P≦50
50<P≦100
100<P≦150
150<P≦200
Adaa Liben Wareda
To Mojo, Addis Ababa
Lake Koka
Southern Region
Alam Tena
Arsi Zone
To Ejesa Lele
To Koshe, Butajera
To Habra
To Habra
Meki
Lake Ziway
Adami Tulu Wareda
To Awasa
N
0
10 km
Meki Irrigation and Rural Development Project
Oromia Region, Ethiopia
Figure VII. 2.2
Location of Rural Water supply Facility
Nippon Koei Co., Ltd. Tokyo Japan



Meki Irrigation and Rural Development Project
Oromia Region, Ethiopia

Figure VII. 2.3
Location of Public Health Facility

Nippon Koei Co., Ltd. Tokyo Japan



Meki Irrigation and Rural Development Project
Oromia Region, Ethiopia

Figure VII. 2.4
Location of Schools

Nippon Koei Co., Ltd. Tokyo Japan

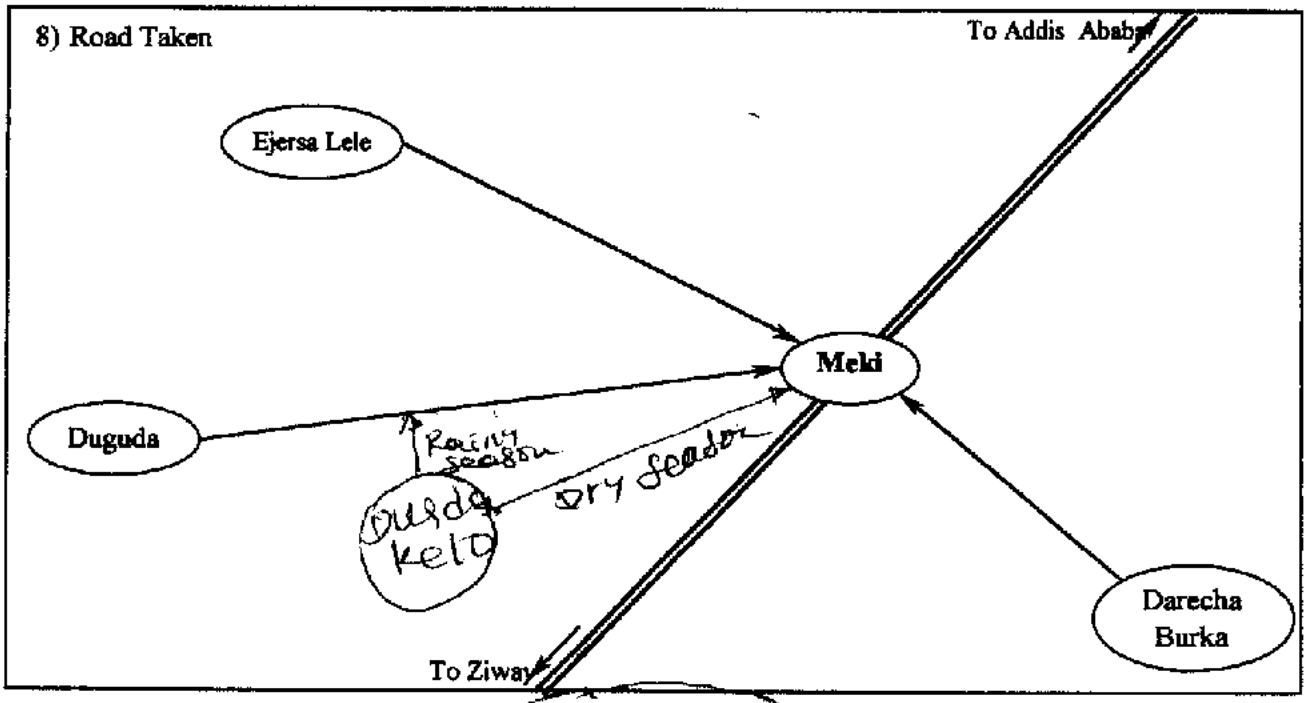
APPENDIX VII
RURAL INFRASTRUCTURE

Attachments

Attachment 2.1 Questioner of Origin Destination Survey

1) Name of Interviewee: Mendatu Legesa
2) Name of his/her PA: dugda
3) Name of his/her Community: Kebele Dire dugda Kelo
4) Time of Departure from his/her House: 7:30
5) Time of Arrival at Meki Market: 11:30
6) Transportation: (Donkey) / Donkey Cart / On Foot / Bus / Hired Car
   Ohters (Mule)
7) Article for Sale and Quanitity:
   ① Wheat 2 Qts
   ② Teff 1 Qt
   ③

8) Road Taken



9) Constraints of Rainy Season Transportation: (Muddy road condition) / River/ Gully crossing / Others ( )

10) Length of Time for Transportation in Rainy Season: Muddy road condition 5 to 6 hours.

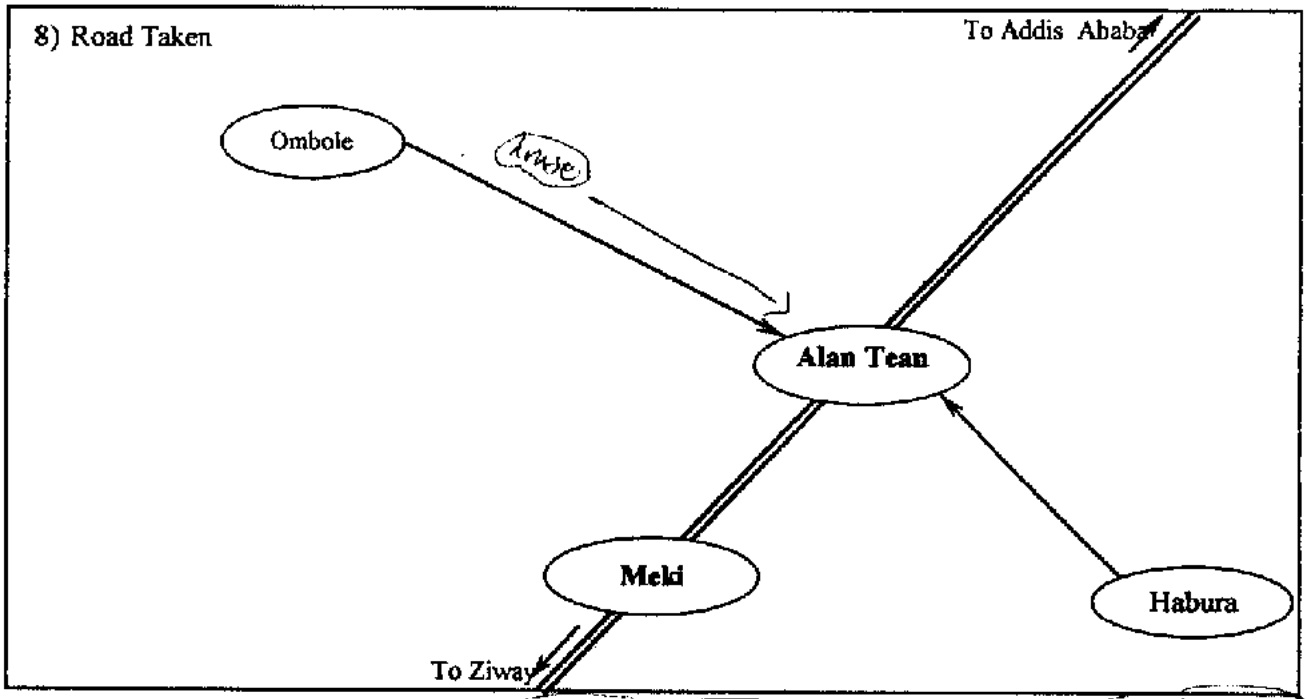
11) Additional Information, if any: In dry season winds the Meki Bauble and dust to

Name of Interviewer: Tes home Amare

Attachment 2.2 Questioner of Origin Destination Survey

1) Name of Interviewee: Tolosa Bekele
2) Name of his/her PA: doyo Leman
3) Name of his/her Community: doyo
4) Time of Departure from his/her House: 7:00 (1:00)
5) Time of Arrival at Meki Market: 10:00 (01:00)
6) Transportation: Donkey, Donkey Cart, Horse Cart, On Foot, Bus, Hired Car
   Ohters ( )
7) Article for Sale and Quanitity: ① Teff 1qt
   ②
   ③

8) Road Taken



9) Constraints of Rainy Season Transportation: Muddy road condition, River/ Gully crossing, Water Logging
   Others ( )

10) Length of Time for Transportation in Rainy Season: 4hrs

11) Additional Information, if any: May use the same road in Rainy Season as well as in dry Season

Name of Interviewer: Bekele Amare