Nationwide Coverage and Functionality Status of Water Supply and Sanitation in Nepal

Final Report

National Management Information Project (NMIP),
Department of Water Supply and Sewerage (DWSS)

Panipokhari, Kathmandu

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ACKNOWLEDGEMENTS

The Department of Water Supply and Sewerage (DWSS) in the Ministry of Physical Planning and Works is the lead agency for the water supply and sanitation sector in Nepal. It has been gearing up its efforts to meet the national goal of providing access to water and sanitation facilities for all by 2017. Among other activities, it has launched the National Management of Information Project (NMIP) to conduct a national survey of water and sanitation coverage and functionality. This useful tool will be used to enhance future planning and programming processes as well as monitoring and evaluation. The NMIP Water and Sanitation Survey has collected an immense amount of valuable data that can be used for a range of local and national planning processes.

On behalf of my team, I would like to thank the NMIP/DWSS for giving us the opportunity to analyse the data collected by the survey. I express my sincere thanks and appreciation to Mr Krishna Prasad Acharya , Director General of DWSS, Mr Hari Prasad Rijal, NMI Section Chief, Mr Him Prasad Gautam, Senior Divisional Engineer of DWSS responsible for overall NMIP administration , and all other participants who have given their invaluable time and suggestions during the drafting of this report.

I would like to offer my heartfelt thanks to Mr Madhav Pahari, UNICEF, Water and Sanitation Section, and Mr Nanda Khanal, SEIU Section Chief, for their constructive and encouraging suggestions. Last but not least, I strongly express my thanks to all those who have tirelessly spent their time and energy to accomplish the Herculean task of completing the NMIP Water and Sanitation Survey.

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EXECUTIVE SUMMARY

There have been a number of surveys of the water supply and sanitation situation in Nepal by various agencies over the years since 1991. However, as these surveys were sample-based with different sampling sizes, methods and procedures, the results have been quite variable, making it difficult to assess trends over time as well as provide reliable information on progress for the nation as a whole.

In order to tackle the lack of valid statistics on nationwide coverage and functionality of water supply and sanitation facilities, the Department of Water Supply and Sewerage (DWSS) launched the National Management of Information Project (NMIP) with the aim of collecting and publishing such information in a database. This is the first nationwide survey on the status of drinking water supply and sanitation facilities and their functionality to be conducted in Nepal. The survey's methodology used four survey formats as well as qualitative survey techniques to collect information from households in 36,038 wards of 58 municipalities and 3,815 Village Development Committees (VDCs). It was started in 2007 and completed in 2008.

Analysis of the data identified the following major findings.

- National water supply coverage is 80.4 per cent of the population and national sanitation coverage is 43.0 per cent of the population.
- There is substantial disparity in water supply coverage among the five development regions: the Western Development Region has the highest coverage at 84.6 per cent and the Mid-Western Development Region has the lowest at 76.3 per cent.
- There is also disparity in sanitation coverage: the Western Development Region again has the highest at 53.5 per cent and the Far Western Development Region has the lowest at 29.1 per cent.
- Geographically, the Hills have the highest sanitation coverage at 52.9 per cent and the Mountains have the lowest at 33.6 per cent.
- Some 17.9 per cent of the population with a water supply are served by well-functioning projects, 38.9 per cent are served by projects that need minor repair, 11.8 per cent are served by projects that need major repair, 21.0 per cent are served by projects that need rehabilitation, 9.1 per cent are served by projects that need reconstruction, and 1.6 per cent are served by projects that are non-refunctionable.
- There is a big gap between coverage and functionality of water supply projects.
- Of the population with a toilet, 42.2 per cent have pit latrines, 53.9 per cent have water seal toilets and 3.9 per cent have other types of toilet (biomass, eco-san, etc.). About 1.8 per cent of the population with a constructed toilet did not use them; these have been excluded from sanitation coverage figures.
- Of the population covered by a toilet in use, 8.8 per cent have poorly managed toilets that were hygienically satisfactory but with unmanaged superstructures and 11.8 per cent have dirty, unhygienic toilets.
- There are currently a total of 76 open-defecation-free (ODF) VDCs in the country.

The following major recommendations have been suggested.

- The NMIP/DWSS Water and Sanitation Survey information should be utilized for planning, prioritizing and implementing processes for future water supply and sanitation interventions.
- Proportional and regionally balanced resource allocation and development priorities must be utilized while preparing national plans and programmes for water supply and sanitation interventions.
- A programme for reconstruction and rehabilitation of water supply projects with improved water quality must be initiated in order to achieve national goals by 2017.
- Improvement in functionality and quality of water supply projects must be taken into consideration by sector stakeholders.
- To accelerate sanitation coverage, intensively focused awareness programmes and stand-alone sanitation programmes with sufficient resource allocation, capacity enhancement and supportive institutional mechanisms must be implemented.
- To reach national targets on sanitation, culturally acceptable approaches and geographically suitable technology must be promoted, along with focused as well as stand-alone intensive sanitation programmes.
- School-led total sanitation programmes, stand-alone sanitation programmes, community-led sanitation programmes and a campaign for ODF declaration should be combined to make synergistic efforts to achieve desired progress in sanitation.
- Standardization of the water supply and sanitation database and sharing mechanisms for stakeholders must be agreed upon for the database's updating and user-friendly utilization. Updating the database should be a regular part of DWSS activities.

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ACRONYMS

CDR	Central Development Region
DWSS	Department of Water Supply and Sewerage
EDR	Eastern Development Region
FWDR	Far Western Development Region
HH	household
IRC	International Reference Centre for Community Water Supply and Sanitation
MDG	Millennium Development Goal
MIS	management information system
MWDR	Mid-Western Development Region
NMIP	National Management of Information Project
O&M	operation and maintenance
ODF	open-defecation-free
UNICEF	United Nations Children's Fund
VDC	Village Development Committee
WDR	Western Development Region
WSST	Water Supply and Sanitation Technician
WSUC	Water and Sanitation Users' Committee

CHAPTER 1: INTRODUCTION

1.1 Background

Safe drinking water and basic sanitation are essential needs for modern human beings. Access to safe water and sanitation plays a vital role in the overall socio-economic development of any community or country. Therefore, this sector should be given high priority for development in a sustainable and socially acceptable manner with the use of appropriate technologies. The people of Nepali have traditionally considered flowing water to be 'pure' and 'safe'. However, modern systematic and planned development of public water supply and sanitation system only started with the First Five-Year Plan 1956–1961. Since then, it has always been one of the State's priority areas. In more recent times, non-State actors have also supported drinking water and sanitation programmes in Nepal. Today, government plans have also given importance to attainment of targets for water supply and sanitation in the Millennium Development Goals (MDGs). With the help of the donor community, the government formulates policy, implements projects and monitors overall progress.

The Department of Water Supply and Sewerage (DWSS) was established in 1972 and has become the lead agency for the water supply and sanitation sector in Nepal. It possessed long term institutional and personal experience. At present, it has an Institutional Network throughout the country as the Divisional and Sub-Divisional Office at district level and five Regional Monitoring and Supervision Offices (RMSO) at the regional level. In addition to these regulation organization set up, the department opens project offices to perform special tasks for the specified time. The prevailing organizational structure of DWSS is presented in annex. Its main goal is to attain sustained improvement in the health status and productivity of the Nepali people as a whole with particular emphasis on lower-income groups through the provision of adequate, locally managed and sustainable water supply and appropriate sanitation facilities in association with improved personal, household and community hygiene behaviour. In line with this objective, the DWSS aims to provide access to safe water supply and sanitation facilities for all by 2017.

Mainly the DWSS and many other agencies are currently working in the sector to expand the coverage of water supply and sanitation facilities. The sectoral challenge is to integrate the fragmented practices of various agencies working in the sector for the achievement of national targets including MDGs.

1.2 Water and sanitation surveys in Nepal

There have been a number of surveys of the water supply and sanitation situation in Nepal by various agencies over the years since 1991 (Table 1). However, as these surveys were sample-based with different sampling sizes, methods and procedures, the results have been quite variable, making it difficult to assess trends over time as well as provide reliable information on progress for the nation as a whole. Nevertheless, the latest figures suggest that Nepal has already achieved its MDG target for water supply, with current national coverage of 80 per cent against a target of 73 per cent by 2015. The MDG target for sanitation is yet to be achieved, with current national coverage of 43 per cent against a target of 53 per cent by 2015 (NPC/UNCT, 2010).

Table 1: Water supply and sanitation coverage as surveyed by various agencies

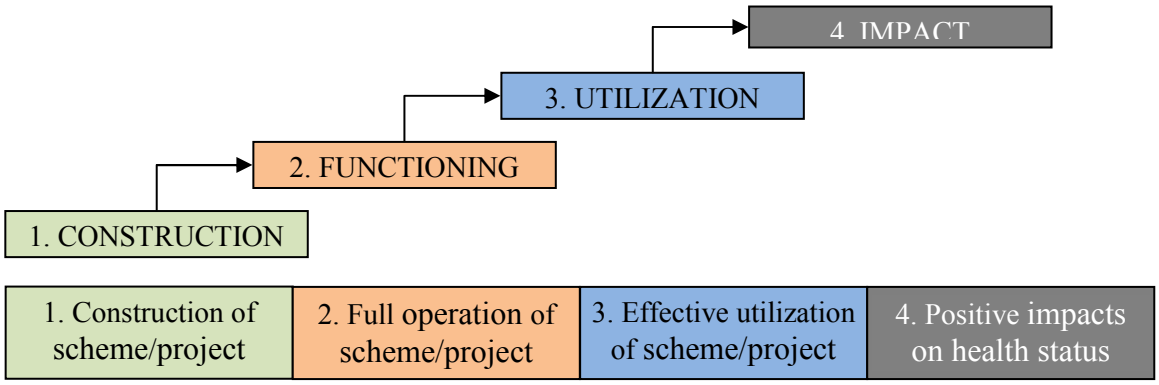
Survey and year	Water supply						Sanitation	
	Urban			Rural			Urban	Rural
	Piped	Other	Total	Piped	Other	Total	Total	Total
NFHS 1991	51.3	43.6	94.9	16.3	50.4	66.7	65.8	12.0
NDHS 1996	57.4	32.6	90.0	29.1	47.0	76.1	71.3	13.4
BCHIMES 2000	61.9	36.7	98.6	46.3	47.1	93.4	66.5	22.6
Census 2001	66.1	31.0	97.1	51.1	37.6	88.7	72.3	33.6
NDHS 2001	55.2	40.4	95.6	33.0	49.0	82.0	76.6	19.4
NLSS 2004	67.6	25.4	93.0	39.2	39.8	79.0	79.5	25.3
NDHS 2006	50.5	39.5	90.0	38.9	41.1	80.0	77.0	29.4

Notes: NFHS = Nepal Family Health Survey; NDHS = Nepal Demographic and Health Survey; BCHIMES = Between Census Household Information, Monitoring and Evaluation System; NLSS = Nepal Living Standards Survey.
Source: NMIP/DWSS 2010.

In order to tackle the lack of valid statistics on nationwide coverage and functionality of water supply and sanitation facilities, the DWSS launched the National Management of Information Project (NMIP) with the aim of collecting and publishing such information in a database. Furthermore, the NMIP also aims to facilitate the networking of information sources and the formation of a sectoral coordination forum with a focus on the functionality of water supply and sanitation systems.

This is the first nationwide survey on the status of drinking water supply and sanitation facilities and their functionality that has been conducted in Nepal. In comparison with previous surveys, the NMIP Water and Sanitation Survey covered all of Nepal's 36,038 wards in 58 municipalities and 3,915 Village Development Committees (VDCs). It was started in 2007, preliminary completed in 2008 and verified and updated in 2009/10. It used a participatory survey method, with four types of format devised to collect qualitative and quantitative information. With clearly defined objectives and the involvement of all stakeholders from the beginning in devising survey procedures, sample sizes and participatory methods/techniques, the information collected in the NMIP is the most comprehensive yet. Over the long term, it is anticipated that the survey will be extended to include impact assessment, as shown in Figure 1.

Figure 1: Levels of survey evaluation



1.3 Methodology for the NMIP Survey

In order to formulate the methodological procedures as well as provide inputs and guidance to the NMIP Survey, a Taskforce Team was formed, consisting of representatives from the

DWSS, Ministry of Physical Planning and Works, Department of Local Infrastructure Development and Agricultural Roads, Rural Water Supply and Sanitation Fund Development Board, UNICEF, Water Aid and NEWA.

While initially developing the various survey formats, the Netherlands-based International Reference Centre (IRC) for Community Water Supply and Sanitation provided valuable inputs. After the initial formats were tested in VDCs of Rasuwa, Lalitpur and Parsa districts, they were further improved following the recommendations and suggestions provided by the IRC.

The following key indicators were selected for the survey.

- Quantity and type of project (piped system, tube-well system, protected spring, dug well, rainwater harvesting, etc.)
- Quantity and type of toilet (water sealed, pit, etc.)
- Functional status of project/scheme
- Community management system

Before launching the nationwide NMIP Survey, formats were pre-tested in VDCs of Chitwan, Nuwakot, and Dadeldhura districts and revised as appropriate.

A two-day workshop was conducted for DWSS officials to orientate them and clarify any uncertainties regarding the survey. Next, a five-day workshop was conducted for field-based monitors in each development region to obtain their inputs. This was followed by pilot testing of all formats in the five development regions. After this, the Taskforce Team finalized all formats and operating procedures.

Four main formats were used to collect information from the field; one format on piped water was sub-divided into three parts (Table 2). In wards of VDCs and small municipalities with low population densities, only these four formats were used to collect information. In wards of big, densely populated municipalities, additional formats and separate note-taking or other suitable tools/techniques were also used.

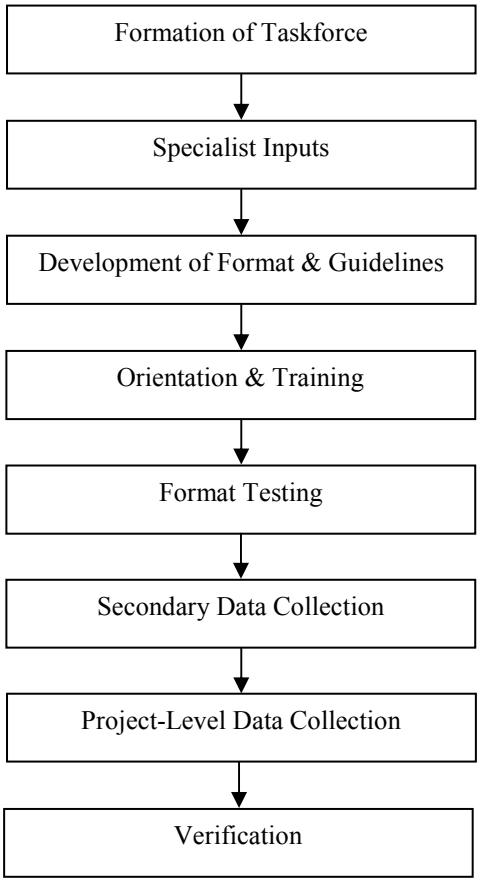
Table 2: Types of formats and purpose

S.N.	Name of format	Key methods of information collection
1.A	Description of piped water supply scheme	Social mapping
1.B	Area covered by piped water supply scheme	Social mapping
1.C	Operational status of completed piped water supply scheme	Interview, FGD, observation
2.	Description of tube-well in VDC	Social mapping
3	VDC profile of drinking water supply	Interview, FGD, observation
4.	VDC profile of sanitation facility	Social mapping & observation

Note: For details refer to NMIP Survey Procedural Booklet.

Although one of the main purposes of the survey is eventually to be able to evaluate the impact of drinking water supply and sanitation services on the health status and livelihoods of the people through the proxy indicators of water supply and sanitation coverage and their functional status, at this stage more focus was placed on data collection, using the steps detailed in Figure 2.

Figure 2: Data collection steps

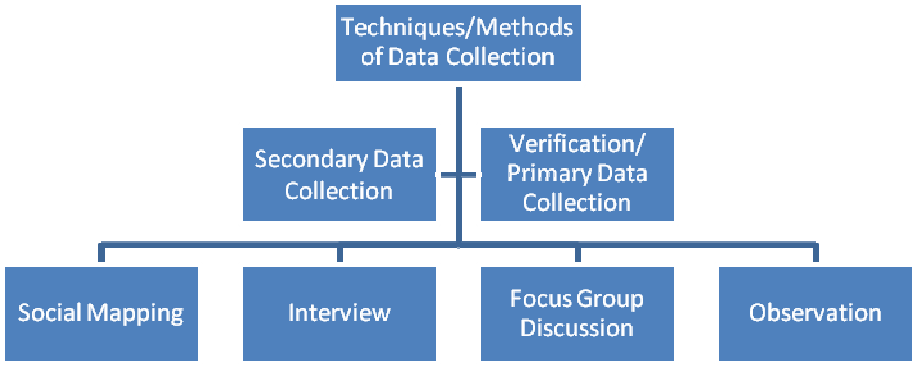


In order to ensure that data collection was smooth, fast and reliable, the following procedures were undertaken by the supervisor.

- One-day workshop conducted for stakeholders to disseminate goals and objectives.
- Roles and responsibilities of stakeholders (from enumerators to DWSS officials) clarified.
- Enumerators selected and assigned to various VDCs.
- Two-day training provided for enumerators before field survey.
- Enumerators supervised at different stages of the work.

To collect data from the entire country using various methods/techniques within a given timeframe and in a reliable and efficient manner was an extremely challenging task for enumerators. Therefore, they needed be attentive and skilful in carrying out their assignment. First, water and sanitation data were collected from concerned agencies/organizations as a source of secondary information (Figure 3). Then, primary field data were collected as a form of verification. The NMIP used various methods of primary data collection such as social mapping, interview, focus group discussion (FGD) and observation.

Figure 3: Data collection techniques/methods



Social mapping was to collect visual information on water and sanitation facilities and their functionality. It was also used to triangulate information collected by other methods. A map was drawn on the floor/ground, on a wall or on chart paper, according to the field situation. When it was drawn on the ground or a wall, it was transcribed on to chart paper sheet by an enumerator. Some 6–10 knowledgeable persons from different castes/ethnicities, classes, genders, etc. participated in this exercise in each designated area to ensure that information was comprehensive and inclusive. Key participants included members of the Water and Sanitation Users' Committee (WSUC), the Village Health Worker, teachers and other interested men and women. Information on religious institutions, public buildings, educational/health institutions, individual houses, rivers, big trees, big rocks, ponds, streets, roads, agricultural/grazing/forest land, etc. was incorporated. Households with improved water supply and sanitation facilities as well as those covered by traditional water sources were indentified. Demographic information was also included. Extra sheets were attached to map when needed to ensure that it was as complete as possible. At the same time, information related to Format 1(A) and Format 2 was noted down. A detailed description of each tap stand (status, service, functionality) and `sanitation facility was mentioned on the map. Key information needed for Format 3 was also noted.

Formal interviews were used to collect information by means of the questionnaire survey/interview schedule as found in the NMIP Survey Procedural Booklet. Focus group discussions (FGD) were conducted to collect information on the daily availability of water and its duration in months, causes of unavailability, status of the WSUC, operation and maintenance status, and information on the condition of beneficiary households. Information collected from FGDs was used for filling relevant formats as well as triangulating information collected by other methods. The same checklist was used for all FGDs.

Observation generated information on the condition of water supply and toilets such as availability, functionality, status of WSUC, minutes of meetings during the past 12 months, operation and maintenance, and status tools for maintenance. Ten per cent of all toilets in a ward were observed, with a minimum of 12. If there were less than 12 toilets in a ward, all were observed; if 10 percent was smaller than 12, then at least 12 were observed.

1.4 Scope of this report

This report aims to disseminate information obtained from the NMIP water and sanitation survey to a wide audience. The report also makes recommendations on upgrading the digitalization of data for monitoring water supply and sanitation status, and on expanding and improving the quality of the country's water supply and sanitation coverage and functionality.

1.5 Limitations of the study

The study acknowledged the following limitations.

- Survey data consisted of only basic information on water supply coverage.
- Functionality of water supply is only related to piped water supply systems (it does not cover other sources).
- Detail of water quality information is not included.
- Use of the toilet was considered the key indicator for sanitation coverage.
- The survey does not provide qualitative data, although it used qualitative techniques.

Data on water and sanitation coverage were collected at ward/community level. These data were then used to compile information at VDC, municipality, district, regional and national levels. However, this report centred its attention on district-level coverage and functionality, as in light of the upcoming restructuring of the State, it is not yet clear what the new federal structure of Nepal will be. District-level information is presented by development region. For those interested, further information can be made available on request.

The sanitation survey data was collected on a household basis and population was calculated using the average family size of the corresponding district.

Some 1.6 per cent of all projects were in a state of 'not possible for re-operation' and were not taken into account in any calculations in this report.

CHAPTER 2: ANALYSIS OF DATA

2.1 National water supply and sanitation coverage

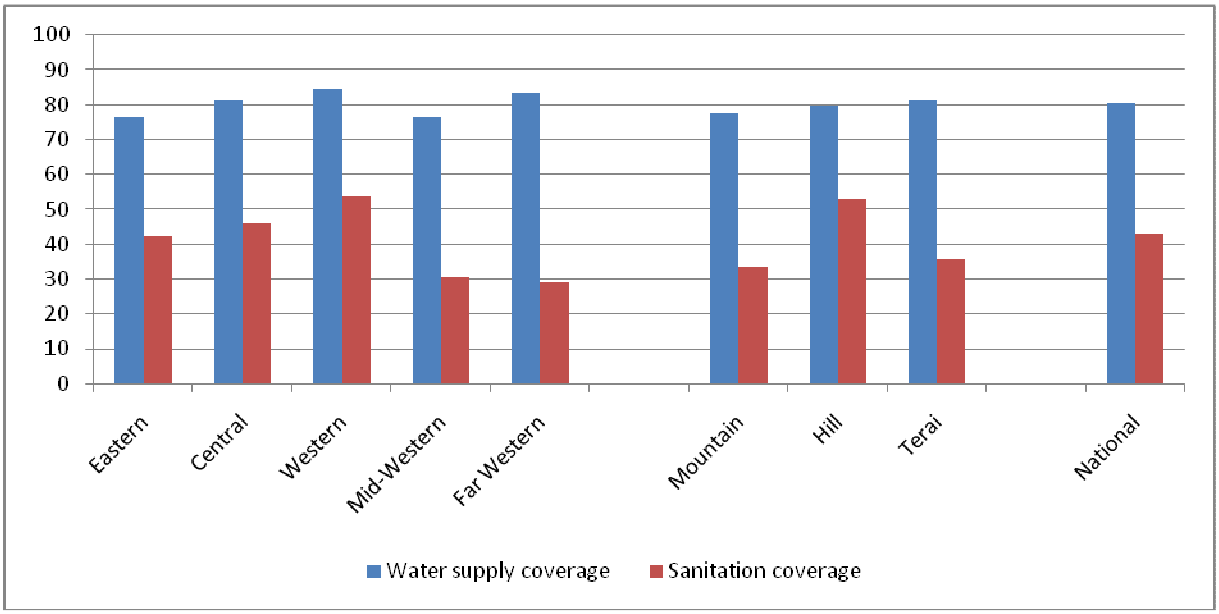
Analysis of survey data found that national water supply coverage is 80.4 per cent and national sanitation coverage is 43.0 per cent (Table 3 and Figure 4). For water supply coverage, the Eastern Development Region (EDR) and Mid-Western Development Region (MWDR) fall below the national average, as do the Mountain and Hill geographic regions. For sanitation coverage, the EDR, MWDR and Far Western Development Region (FWDR) as well as the Mountain and Terai fall below the national average. The Central Development Region (CDR) has the second highest water supply and sanitation coverage, and the Western Development Region (WDR) has the highest coverage for the whole country.

Table 3: National water and sanitation coverage

Region	Total population	Water supply coverage		Sanitation coverage	
		Population	Percentage	Population	Percentage
EDR	6,374,298	4,871,651	76.4	2,692,909	42.2
CDR	9,859,227	8,017,531	81.3	4,543,201	46.1
WDR	5,468,946	4,624,967	84.6	2,927,999	53.5
MWDR	3,646,321	2,782,076	76.3	1,120,285	30.7
FWDR	2,694,765	2,245,110	83.3	784,647	29.1
Mountain	1,987,700	1,542,782	77.6	668,549	33.6
Hill	12,292,169	9,827,087	79.9	6,501,912	52.9
Terai	13,763,788	11,171,466	81.2	4,899,480	35.6
National	**28,043,657**	**22,541,335**	**80.4**	**12,069,941**	**43.0**

Source: NMIP Water and Sanitation Survey 2010.

Figure 4: Water and sanitation coverage by development region and geographic area



Source: NMIP Water and Sanitation Survey 2010.

2.2 District water supply and sanitation coverage

To ease the presentation of data, district coverage has been analysed by development region in the following sections. However, it is worth mentioning here the names of the top and bottom

five districts in the country in terms of water supply and sanitation coverage. The five districts with the highest water supply coverage are: Manang (WDR) 96.1 per cent; Kathmandu (CDR) 93.2 per cent; Kaski (WDR) 92.2 per cent; Rupandehi (WDR) 91.8 per cent; and Bhaktapur (CDR) 91.7 per cent. The five districts with the lowest water supply coverage are: Humla (MWDR) 48.4 per cent; Dailekh (MWDR) 55.7 per cent; Salyan (MWDR) 57.3 per cent; Bajhang (FWDR) 58.2 per cent; and Sindhuli (CDR) 61.8 per cent. The five districts with the highest sanitation coverage are: Kathmandu (CDR) 93.8 per cent; Kaski (WDR) 87.5 per cent; Bhaktapur (CDR) 87.1 per cent; Lalitpur (CDR) 83.7 per cent; and Chitwan (CDR) 83.1 per cent. The five districts with the lowest sanitation coverage are: Bajura (FWDR) 10.6 per cent; Bajhang (FWDR) 14.0 per cent; Salyan (MWDR) 16.4 per cent; Darchula (FWDR) 16.4 per cent; and Mahottari (CDR) 17.1 per cent.

2.3 Water and sanitation coverage by development region

2.3.1 Eastern Development Region

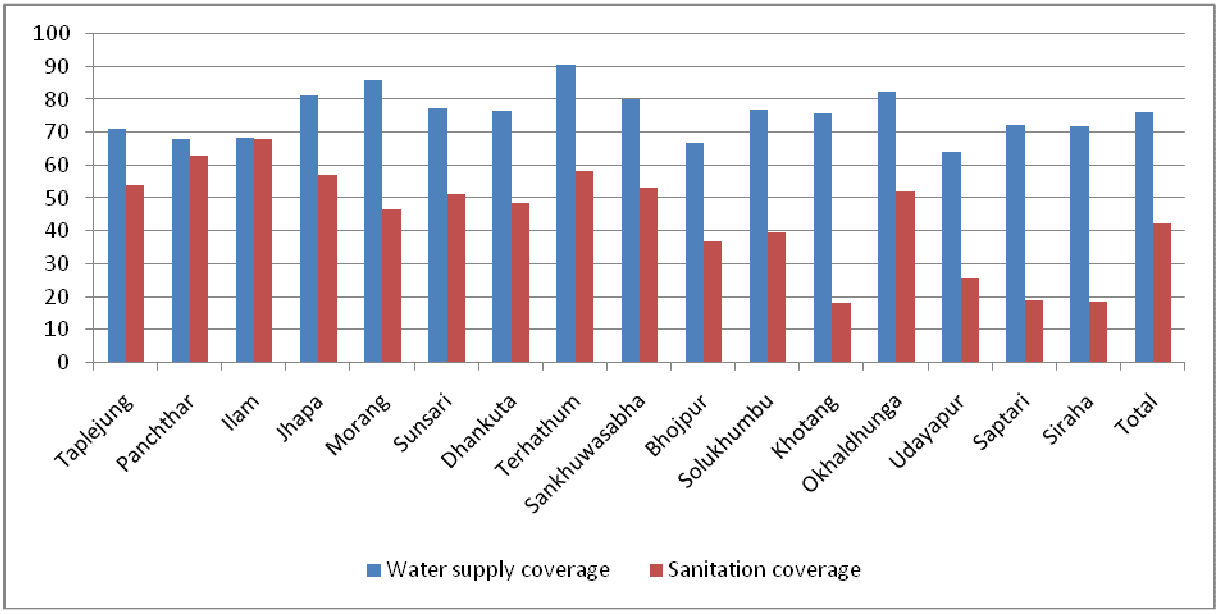
Across the EDR as a whole, water supply coverage is 76.4 per cent and sanitation coverage is 42.2 per cent (Table 4). Terhathum (90.8 per cent) has the highest water supply coverage and Udayapur (64.2 per cent) has the lowest (Figure 5), giving a range of 26.6 percentage points. Ilam (68.0 per cent) has the highest sanitation coverage and Khotang (18.1 per cent) has the lowest with a gap of 49.9 percentage points.

Table 4: Water supply and sanitation coverage by district in EDR

District	Total population	Water supply coverage		Sanitation coverage	
		Population	Percentage	Population	Percentage
Taplejung	156,398	111,527	71.3	84,166	53.8
Panchthar	237,020	161,458	68.1	149,074	62.9
Ilam	340,185	232,108	68.2	231,233	68.0
Jhapa	808,674	657,048	81.3	462,036	57.1
Morang	1,019,083	873,966	85.8	473,812	46.5
Sunsari	778,061	603,075	77.5	399,407	51.3
Dhankuta	194,274	148,464	76.4	94,504	48.6
Terhathum	130,346	118,341	90.8	75,767	58.1
Sankhuwasabha	184,845	148,375	80.3	98,692	53.4
Bhojpur	227,585	152,482	67.0	83,761	36.8
Solukhumbu	124,447	95,824	77.0	49,328	39.6
Khotang	264,074	200,617	76.0	47,899	18.1
Okhaldhunga	182,044	150,004	82.4	95,031	52.2
Udayapur	352,855	226,462	64.2	90,676	25.7
Saptari	684,101	494,673	72.3	130,028	19.0
Siraha	690,306	497,227	72.0	127,495	18.5
EDR	**6,374,298**	**4,871,651**	**76.4**	**2,692,909**	**42.2**

Source: NMIP Water and Sanitation Survey 2010

Figure 5: Water supply and sanitation converge by district in EDR



Source: NMIP Water and Sanitation Survey 2010

2.3.2 Central Development Region

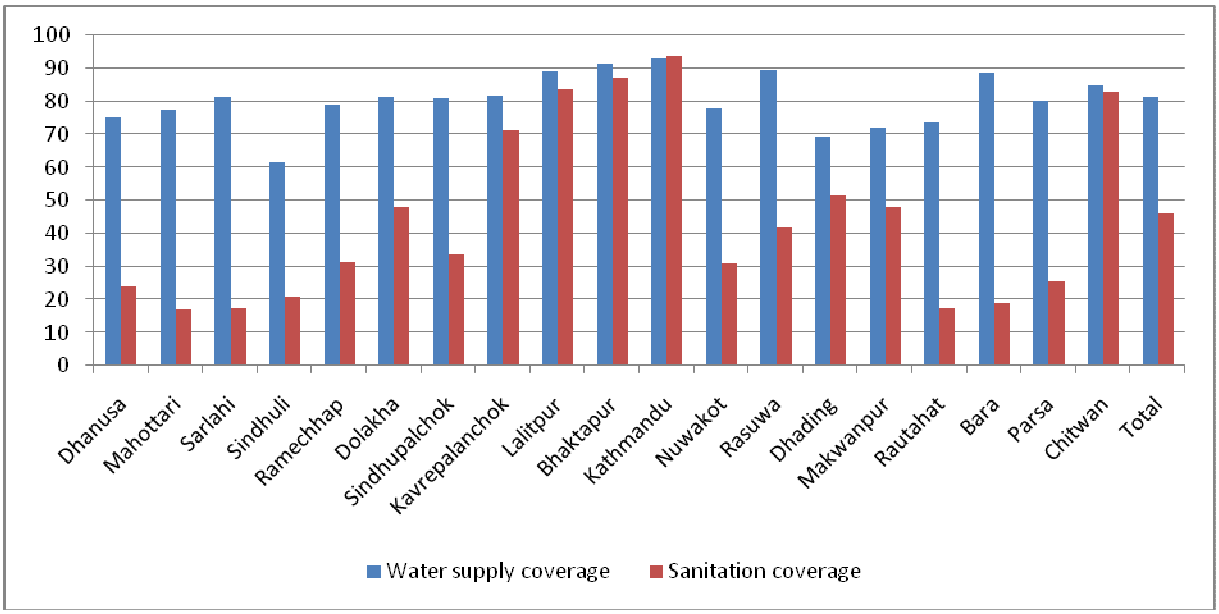
Across the CDR as a whole, water supply coverage is 81.3 per cent and sanitation coverage is 46.1 per cent (Table 5). Kathmandu (93.2 per cent) has the highest water supply coverage and Sindhuli (61.8 per cent) has the lowest (Figure 6), giving a range of 31.4 percentage points. Kathmandu (93.8 per cent) also has the highest sanitation coverage and Mahottari (17.1 per cent) has the lowest, giving a range of 76.7 percentage points.

Table 5: Water supply and sanitation coverage by district in CDR

District	Total population	Water supply coverage		Sanitation coverage	
		Population	Percentage	Population	Percentage
Dhanusa	807,151	605,363	75.0	192,646	23.9
Mahottari	669,940	520,476	77.7	114,658	17.1
Sarlahi	776,694	631,145	81.3	135,677	17.5
Sindhuli	337,913	208,729	61.8	71,007	21.0
Ramechhap	246,989	195,245	79.1	77,238	31.3
Dolakha	241,318	196,505	81.4	116,141	48.1
Sindhupalchok	360,587	291,823	80.9	122,047	33.8
Kavrepalanchok	457,184	373,474	81.7	325,511	71.2
Lalitpur	415,581	371,239	89.3	347,805	83.7
Bhaktapur	276,577	253,510	91.7	240,909	87.1
Kathmandu	1,432,290	1,334,894	93.2	1,343,113	93.8
Nuwakot	340,579	265,379	77.9	106,082	31.1
Rasuwa	53,494	47,845	89.4	22,410	41.9
Dhading	405,045	280,494	69.3	208,301	51.4
Makwanpur	473,861	341,749	72.1	227,667	48.0
Rautahat	671,223	495,363	73.8	118,001	17.6
Bara	693,913	614,668	88.6	132,251	19.1
Parsa	615,232	493,231	80.2	156,829	25.5
Chitwan	583,656	496,399	85.0	484,908	83.1
CDR	**9,859,227**	**8,017,531**	**81.3**	**4,543,201**	**46.1**

Source: NMIP Water and Sanitation Survey 2010

Figure 6: Water supply and sanitation coverage by district in CDR



Source: NMIP Water and Sanitation Survey 2010.

2.4.3 Western Development Region

Across the WDR as a whole, water supply coverage is 84.6 per cent and sanitation coverage is 53.5 per cent (Table 6). Manang (96.1 per cent) has the highest water supply coverage and Gorkha (70.1 per cent) has the lowest (Figure 7), giving a range of 26.0 percentage points.

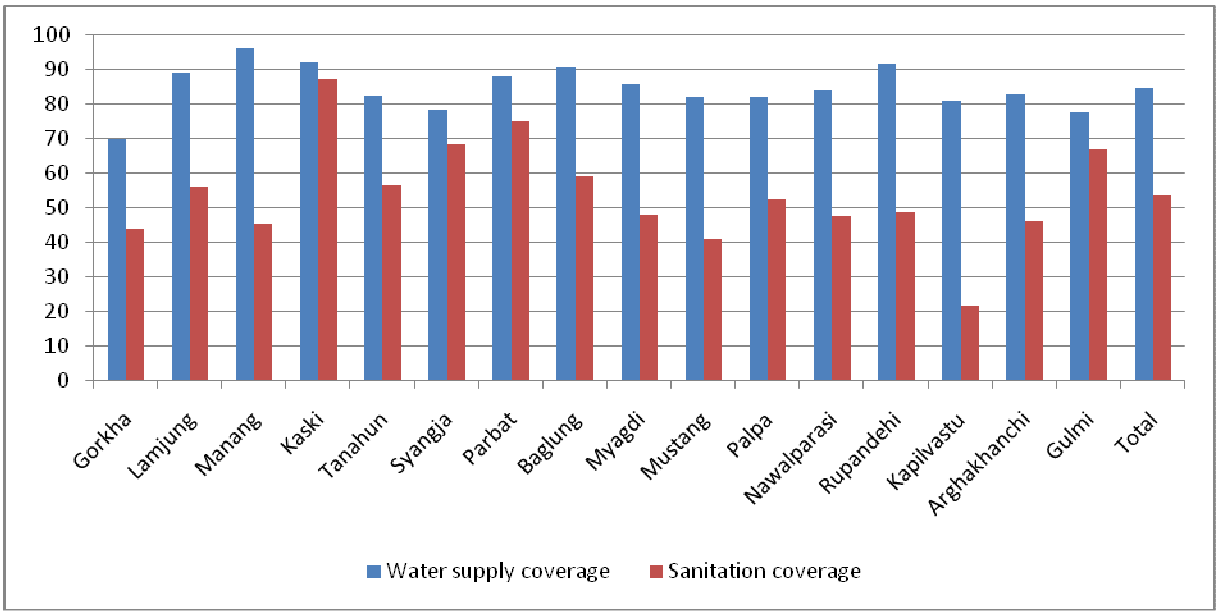
Kaski (87.5 per cent) has the highest sanitation coverage and Kapilvastu (21.8 per cent) has the lowest, giving a range of 65.7 percentage points.

Table 6: Water supply and sanitation coverage by district in WDR

District	Total population	Water supply coverage		Sanitation coverage	
		population	Percentage	Population	Percentage
Gorkha	336,518	235,933	70.1	148,561	44.1
Lamjung	207,677	185,248	89.2	116,702	56.2
Manang	13,216	12,698	96.1	6,026	45.6
Kaski	466,379	430,141	92.2	407,922	87.5
Tanahun	372,329	306,948	82.4	210,844	56.6
Syangja	363,205	285,152	78.5	248,420	68.4
Parbat	181,795	160,034	88.0	136,975	75.3
Baglung	315,702	286,878	90.9	187,265	59.3
Myagdi	133,541	114,565	85.8	64,367	48.2
Mustang	16,953	13,952	82.3	6,960	41.1
Palpa	313,186	257,439	82.2	164,980	52.7
Nawalparasi	688,166	577,715	83.9	327,357	47.6
Rupandehi	882,367	810,101	91.8	430,048	48.7
Kapilvastu	590,298	478,200	81.0	128,558	21.8
Arghakhanchi	244,257	202,660	83.0	112,857	46.2
Gulmi	343,357	267,303	77.8	230,157	67.0
WDR	**5,468,946**	**4,624,967**	**84.6**	**2,927,999**	**53.5**

Source: NMIP Water and Sanitation Survey 2010.

Figure 7: Water supply and sanitation coverage by district in WDR



Source: NMIP Water and Sanitation Survey 2010.

2.4.4 Mid-Western Development Region

Across the MWDR as a whole, water supply coverage is 76.3 per cent and sanitation coverage is 30.7 per cent (Table 7). Banke (90.6 per cent) has the highest water supply coverage and Humla (48.4 per cent) has the lowest (Figure 8), giving a range of 42.2 percentage points.

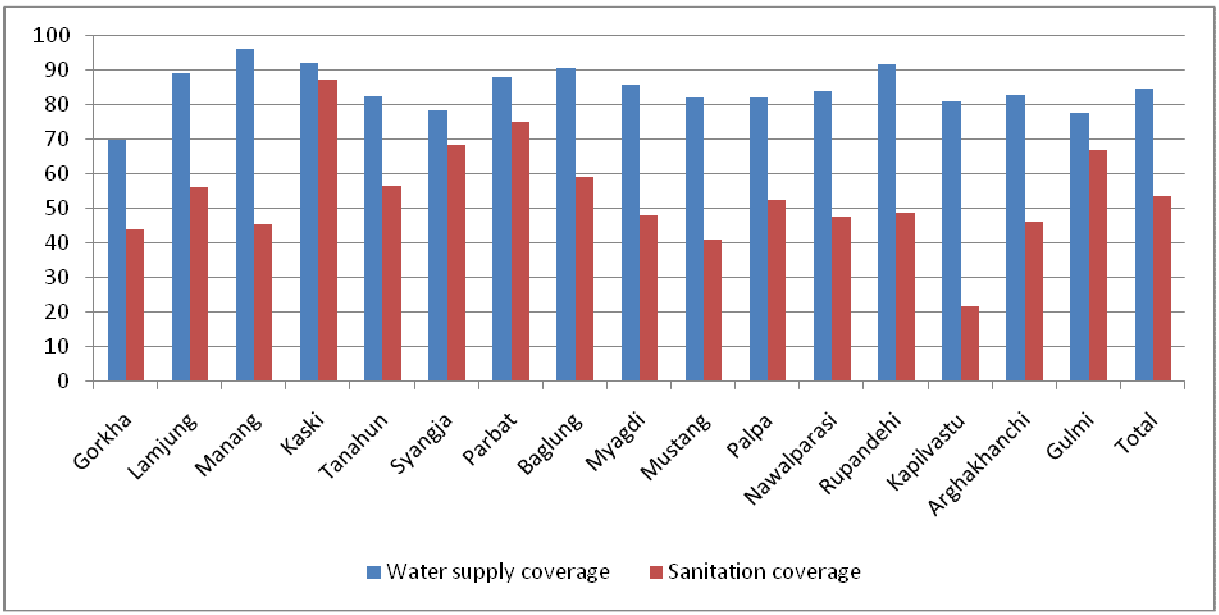
Dang (44.1 per cent) has the highest sanitation coverage and Salyan (16.4 per cent) has the lowest, giving a range of 27.7 percentage points.

Table 7: Water supply and sanitation coverage by district in MWDR

District	Total population	Water supply coverage		Sanitation coverage	
		Population	Percentage	Population	Percentage
Rukum	224,334	177,336	79.0	45,586	20.3
Salyan	250,372	143,563	57.3	40,986	16.4
Rolpa	245,725	187,242	76.2	50,161	20.4
Pyuthan	253,881	225,370	88.8	53,401	21.0
Dang	570,603	395,143	69.3	251,665	44.1
Banke	484,266	438,551	90.6	174,174	36.0
Bardiya	474,561	389,994	82.2	185,848	39.2
Surkhet	352,516	273,129	77.5	128,757	36.5
Jajarkot	158,752	122,318	77.0	40,090	25.3
Dailekh	267,050	148,827	55.7	53,023	19.9
Dolpa	34,744	24,213	69.7	6,130	17.6
Jumla	104,994	92,342	87.9	39,066	37.2
Kalikot	124,552	98,496	79.1	27,229	21.9
Mugu	52,241	42,451	81.3	12,739	24.4
Humla	47,730	23,101	48.4	12,330	25.8
MWDR	**3,646,321**	**2,782,076**	**76.3**	**1,120,285**	**30.7**

Source: NMIP Water and Sanitation Survey 2010

Figure 8: Water supply and sanitation coverage by district in MWDR



Source: NMIP Water and Sanitation Survey 2010

2.4.5 Far Western Development Region

Across the FWDR as a whole, water supply coverage is 58.2 per cent and sanitation coverage is 29.1 per cent (Table 8). Baitadi (89.7 per cent) has the highest water supply coverage and Bajhang (58.2 per cent) has the lowest (Figure 9), giving a range of 31.5 percentage points.

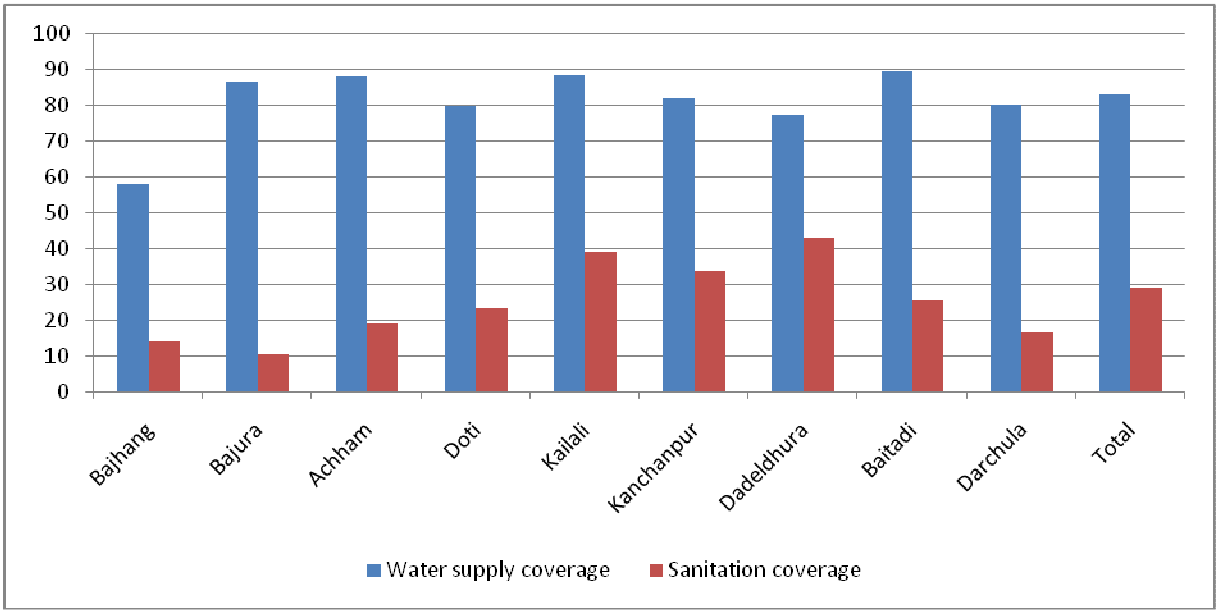
Dadeldhura (43.1 per cent) has the highest sanitation coverage and Bajura (10.6 per cent) has the lowest, giving a range of 32.5 percentage points.

Table 8: Water supply and sanitation coverage by district in FWDR

District	Total population	Water supply coverage		Sanitation coverage	
		Population	Percentage	Population	Percentage
Bajhang	198,588	115,638	58.2	27,868	14.0
Bajura	128,590	111,642	86.8	13,590	10.6
Achham	272,064	239,444	88.0	51,908	19.1
Doti	249,064	199,152	80.0	58,054	23.3
Kailali	791,596	701,592	88.6	310,333	39.2
Kanchanpur	483,797	397,536	82.2	163,749	33.8
Dadeldhura	150,224	116,449	77.5	64,719	43.1
Baitadi	275,839	247,317	89.7	70,599	25.6
Darchula	145,003	116,350	80.2	23,827	16.4
FWDR	**198,588**	**115,638**	**58.2**	**784,647**	**29.1**

Source: NMIP Water and Sanitation Survey 2010

Figure 9: Water supply and sanitation coverage by district in FWDR



Source: NMIP Water and Sanitation Survey 2010

2.5 District water supply coverage by source

Table 9 presents water supply coverage by type of source in all districts. Nationally, 43.3 per cent of the population with a water supply is served by public taps, 12.5 per cent is served by private taps, 12.7 per cent is served by public tube-wells, 27.4 per cent is served by private tube-wells, 2.3 per cent is served by springs and 1.9 per cent is served by dug wells.

Table 9: Coverage of various types of water supply sources (by %)

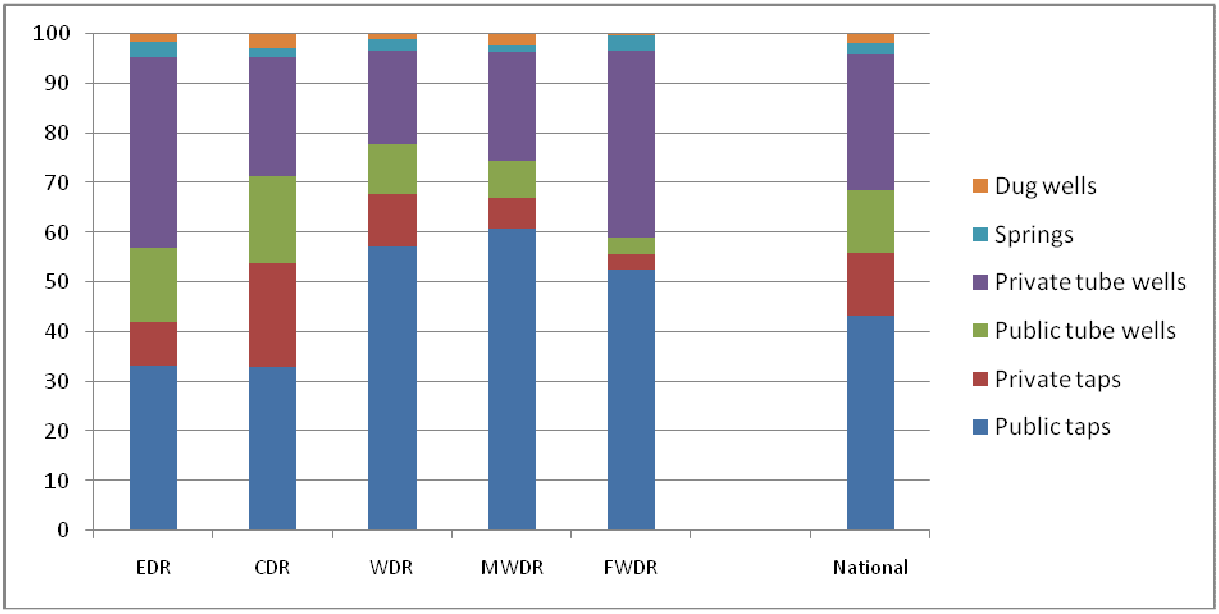
District	Public taps	Private taps	Public tube-wells	Private tube-wells	Springs	Dug wells
Taplejung	70.8	1.4	0.0	0.0	27.8	0.0
Panchthar	89.9	7.0	0.0	0.0	3.0	0.1
Ilam	67.6	10.2	0.7	2.6	16.3	2.7
Jhapa	7.0	11.2	9.6	65.8	0.3	6.1
Morang	8.2	9.4	24.0	58.1	0.3	0.1
Sunsari	11.1	15.2	18.7	53.4	1.2	0.3
Dhankuta	85.4	12.0	0.0	0.0	2.6	0.0
Terhathum	70.2	22.4	0.0	0.0	7.4	0.0
Sankhuwasabha	82.8	10.3	0.0	0.0	6.9	0.0
Bhojpur	85.7	5.3	0.0	0.0	6.8	2.3
Solukhumbu	84.0	12.3	0.0	0.0	3.7	0.0
Khotang	88.0	3.9	0.0	0.0	8.1	0.0
Okhaldhunga	93.8	2.5	0.0	0.0	3.5	0.1
Udayapur	60.7	10.8	5.6	21.0	0.2	1.7
Saptari	0.7	2.3	33.6	61.6	0.0	1.8
Siraha	1.6	3.6	34.4	58.8	0.0	1.7
EDR	**33.3**	**8.6**	**15.0**	**38.4**	**3.1**	**1.5**
Dhanusa	1.4	4.0	34.1	57.4	0.2	3.0
Mahottari	5.0	4.8	54.4	32.3	0.0	3.5
Sarlahi	3.3	2.3	31.1	51.5	0.0	11.8
Sindhuli	80.3	4.1	1.0	1.2	9.5	4.0
Ramechhap	88.1	4.3	0.0	0.0	7.1	0.5
Dolakha	91.0	6.4	0.0	0.0	2.5	0.0
Sindhupalchok	93.5	1.6	0.0	0.0	4.8	0.2
Kavre	84.2	13.0	0.0	0.0	2.5	0.3
Lalitpur	38.9	54.3	0.0	0.0	1.4	5.4
Bhaktapur	25.7	54.1	0.3	5.8	4.1	9.9
Kathmandu	14.9	82.9	0.0	0.0	1.3	1.0
Nuwakot	94.7	3.1	0.0	0.0	2.0	0.3
Rasuwa	97.2	2.2	0.0	0.0	0.6	0.0
Dhading	88.6	3.2	0.0	0.0	8.2	0.0
Makwanpur	79.5	17.0	1.2	0.8	1.2	0.3
Rautahat	1.1	1.8	28.8	66.8	0.0	1.6
Bara	4.0	8.5	41.7	45.2	0.2	0.5
Parsa	5.7	9.1	49.4	35.7	0.0	0.1
Chitwan	22.5	12.6	7.0	50.5	1.0	6.3
CDR	**33.0**	**20.9**	**17.4**	**24.1**	**1.8**	**2.8**
Gorkha	85.7	3.5	0.0	0.0	10.6	0.2
Lamjung	93.2	5.9	0.0	0.0	0.9	0.0
Manang	84.4	14.5	0.0	0.0	0.5	0.6
Kaski	63.7	35.6	0.0	0.0	0.6	0.1
Tanahun	77.5	15.9	0.1	0.1	6.3	0.1
Syangja	87.2	7.9	0.0	0.0	4.6	0.4
Parbat	95.1	4.0	0.0	0.0	0.9	0.0
Baglung	92.0	5.5	0.0	0.0	2.5	0.0
Myagdi	82.8	6.5	0.0	0.0	10.7	0.0

District	Public taps	Private taps	Public tube-wells	Private tube-wells	Springs	Dug wells
Mustang	96.0	3.6	0.0	0.0	0.4	0.0
Palpa	91.0	4.8	0.0	0.8	3.2	0.2
Nawalparasi	33.8	8.7	12.3	38.5	0.4	6.3
Rupandehi	5.6	17.9	23.6	52.2	0.0	0.7
Kapilvastu	2.4	3.4	41.5	52.1	0.0	0.6
Arghakhanchi	96.0	2.3	0.0	0.4	1.3	0.0
Gulmi	95.1	3.0	0.0	0.0	1.5	0.5
WDR	**57.2**	**10.7**	**9.8**	**19.0**	**2.3**	**1.1**
Rukum	88.5	0.1	0.0	0.0	9.0	2.4
Salyan	66.0	0.7	0.0	0.0	7.0	26.4
Rolpa	89.1	1.5	0.0	0.0	3.7	5.7
Pyuthan	98.4	1.4	0.2	0.1	0.0	0.0
Dang	54.1	16.6	7.4	21.9	0.0	0.0
Banke	0.8	7.0	25.9	66.4	0.0	0.0
Bardiya	1.5	2.1	22.4	74.0	0.0	0.0
Surkhet	81.9	17.6	0.0	0.5	0.0	0.0
Jajarkot	98.8	1.2	0.0	0.0	0.0	0.0
Dailekh	97.5	2.5	0.0	0.0	0.0	0.0
Dolpa	96.6	3.4	0.0	0.0	0.0	0.0
Jumla	96.8	3.2	0.0	0.0	0.0	0.0
Kalikot	99.5	0.6	0.0	0.0	0.0	0.0
Mugu	96.9	3.1	0.0	0.0	0.0	0.0
Humla	94.6	5.4	0.0	0.0	0.0	0.0
MWDR	**60.7**	**6.2**	**7.5**	**21.9**	**1.3**	**2.3**
Bajhang	97.7	1.6	0.0	0.0	0.7	0.0
Bajura	81.9	0.6	0.0	0.0	17.0	0.6
Achham	90.1	0.6	0.1	0.0	9.1	0.2
Doti	90.0	2.8	0.0	0.0	6.3	0.8
Kailali	11.1	4.7	6.2	77.8	0.2	0.0
Kanchanpur	6.1	4.1	7.8	82.0	0.0	0.0
Dadeldhura	94.8	3.9	0.0	0.0	1.0	0.3
Baitadi	91.7	0.7	0.0	0.0	6.9	0.7
Darchula	92.5	5.4	0.0	0.0	2.2	0.0
FWDR	**52.5**	**3.2**	**3.2**	**37.6**	**3.3**	**0.2**
National	**43.3**	**12.5**	**12.7**	**27.4**	**2.3**	**1.9**

Source: NMIP Water and Sanitation Survey 2010 development regions, the MWDR has the highest proportion of the population with a water supply served by private taps (60.7 per cent), the CDR has the highest proportion served by private taps (20.9 per cent), the CDR also has the highest proportion served by public tube-wells (17.4 per cent), the EDR has the highest proportion served by private tube-wells (38.4 per cent), the FWDR has the highest proportion served by springs (3.3 per cent), and the CDR has the highest proportion served by dug wells (2.8 per cent).

Figure 10 shows the breakdown by source type for each development region.

Figure 10: Water supply coverage by source type by development region



Source: NMIP Water and Sanitation Survey 2010

Table 10 presents information on the number of water supply schemes by district. Nationally, of 37,541 schemes, 99.2 per cent are gravity flow, 0.4 per cent are surface pumping, and 0.4 per cent are overhead. In addition, some 14.7 per cent of all schemes are older than 20 years.

Table 10: Number of water supply schemes by district

District	Total schemes	Gravity flow	Surface pumping	Overhead	Older than 20 years
Taplejung	337	337	-	-	36
Panchthar	742	742	-	-	101
Ilam	863	859	4	-	101
Jhapa	44	28	-	16	11
Morang	124	111	1	12	19
Sunsari	78	70	-	8	5
Dhankuta	852	849	3	-	149
Terhathum	459	459	-	-	52
Sankhuwasabha	757	756	1	-	62
Bhojpur	990	990	-	-	98
Solukhumbu	459	459	-	-	40
Khotang	1,155	1,153	2	-	150
Okhaldhunga	882	882	-	-	106
Udayapur	280	280	-	-	27
Saptari	8	6	-	2	1
Siraha	15	5	2	8	4
EDR	**8,045**	**7,986**	**13**	**46**	**962**
Dhanusa	34	22	3	9	8
Mahottari	57	38	9	10	14
Sarlahi	15	12	-	3	1
Sindhuli	501	499	2	-	25
Ramechhap	1,030	1,028	2	-	96

District	Total schemes	Gravity flow	Surface pumping	Overhead	Older than 20 years
Dolakha	1,256	1,256	-	-	201
Sindhupalchok	1,143	1,143	-	-	315
Kavre	902	891	9	2	110
Lalitpur	182	179	3	-	58
Bhaktapur	136	121	1	14	13
Kathmandu	316	278	29	9	122
Nuwakot	1,466	1,466	-	-	323
Rasuwa	182	182	-	-	31
Dhading	911	905	6	-	166
Makwanpur	584	570	12	2	46
Rautahat	10	7	-	3	1
Bara	12	7	-	5	4
Parsa	20	13	-	7	4
Chitwan	219	215	1	3	10
CDR	**8,976**	**8,832**	**77**	**67**	**1,548**
Gorkha	1,011	1,002	9	-	166
Lamjung	783	783	-	-	155
Manang	40	40	-	-	4
Kaski	999	994	5	-	292
Tanahun	1,292	1,283	9	-	204
Syangja	1,334	1,329	5	-	290
Parbat	829	829	-	-	143
Baglung	1,062	1,062	-	-	153
Myagdi	446	446	-	-	40
Mustang	63	63	-	-	10
Palpa	1,434	1,428	6	-	253
Nawalparasi	318	312	1	5	38
Rupandehi	21	10	1	10	3
Kapilvastu	13	5	-	8	7
Arghakhanchi	1,215	1,215	-	-	114
Gulmi	1,229	1,229	-	-	138
WDR	**12,089**	**12,030**	**36**	**23**	**2,010**
Rukum	382	382	-	-	93
Salyan	598	598	-	-	70
Rolpa	553	551	2	-	98
Pyuthan	818	813	5	-	113
Dang	234	227	-	7	14
Banke	11	7	-	4	1
Bardiya	10	7	1	2	1
Surkhet	465	461	2	2	60
Jajarkot	267	267	-	-	81
Dailekh	563	563	-	-	24
Dolpa	78	78	-	-	12
Jumla	165	165	-	-	12
Kalikot	188	188	-	-	19
Mugu	132	132	-	-	23
Humla	56	56	-	-	9

District	Total schemes	Gravity flow	Surface pumping	Overhead	Older than 20 years
MWDR	**4,520**	**4,495**	**10**	**15**	**630**
Bajhang	422	422	-	-	21
Bajura	349	348	1	-	29
Achham	661	661	-	-	64
Doti	356	356	-	-	66
Kailali	152	146	-	6	3
Kanchanpur	19	12	2	5	3
Dadeldhura	501	501	-	-	43
Baitadi	913	911	2	-	89
Darchula	538	538	-	-	65
FWDR	**3,911**	**3,895**	**5**	**11**	**383**
National	**37,541**	**37,238**	**141**	**162**	**5,533**

Source: NMIP Water and Sanitation Survey 2010

Table 11 presents a description of tube-wells in the 32 districts that have them. The number of tube wells and the number of households (HH) covered by them is given for public and private shallow and deep tube-wells. Nationally, there are 95,185 public shallow tube-wells covering 443,728 households, 1,584 public deep tube-wells covering 23,102 households, 1,022,176 private shallow tube-wells covering 1,034,402 households, and 5,887 private deep tube-wells covering 7,262 households.

Table 11: Number of tube-wells (shallow and deep)

District	Public shallow tube-wells		Public deep tube-wells		Private shallow tube-wells		Private deep tube-wells	
	No.	HH	No.	HH	No.	HH	No.	HH
Ilam	76	516	0	0	1,788	1,788	114	114
Jhapa	4,893	14,743	15	37	100,969	100,969	0	0
Morang	12,764	57,625	67	386	130,117	130,198	134	146
Sunsari	7,949	19,952	5	77	56,538	56,558	547	547
Udayapur	399	2,082	18	102	8,109	8,112	0	0
Saptari	7,109	28,854	7	42	50,049	52,864	0	0
Siraha	5,557	24,531	2	28	42,005	42,005	0	0
EDR	**38,747**	**148,303**	**114**	**672**	**389,575**	**392,494**	**795**	**807**
Dhanusa	4,548	32,599	4	98	55,070	55,070	1	1
Mahottari	2,140	31,500	385	14,461	26,197	26,434	198	1,461
Sarlahi	5,735	26,112	16	291	43,688	43,688	8	8
Sindhuli	41	325	0	0	412	412	0	0
Bhaktapur	1	30	8	95	3,366	3,366	61	61
Kathmandu	0	0	0	0	102	102	0	0
Makwanpur	83	722	0	0	420	420	0	0
Rautahat	3,637	19,973	7	6	46,274	46,370	0	0
Bara	3,983	29,908	34	989	33,522	33,522	0	0
Parsa	4,813	30,614	11	121	21,987	22,101	72	72
Chitwan	1,432	5,647	0	0	40,510	40,563	0	0
CDR	**26,413**	**177,430**	**465**	**16,061**	**271,548**	**272,048**	**340**	**1,603**
Tanahun	4	35	0	0	67	67	0	0
Palpa	0	0	0	0	25	11	339	344
Nawalparasi	2,596	11,258	304	1,,019	32,835	37,799	545	545
Rupandehi	4,538	25,498	126	2,323	61,505	61,543	1	1
Kapilvastu	5,052	27,394	62	352	34,929	34,819	8	8
Arghakhanchi	0	0	0	0	89	153	0	0
WDR	**12,190**	**64,185**	**492**	**3,694**	**129,450**	**134,392**	**893**	**898**
Pyuthan	14	57	0	0	26	26	0	0
Dang	715	3,757	2	41	10,064	11,226	0	0
Banke	5,508	15,424	165	710	41,328	41,328	0	0
Bardiya	8,466	23,928	327	1,817	55,207	57,910	3,570	3,665
Surkhet	0	0	0	0	454	454	0	0
MWDR	**14,703**	**43,166**	**494**	**2,568**	**107,079**	**110,944**	**3,570**	**3,665**
Achham	4	35	0	0	5	5	0	0
Kailali	1,922	6,189	0	0	77,234	77,234	0	0
Kanchanpur	1,206	4,420	19	107	47,285	47,285	289	289
FWDR	**3,132**	**10,644**	**19**	**107**	**124,524**	**124,524**	**289**	**289**
National	**95,185**	**443,728**	**1,584**	**23,102**	**1,022,176**	**1,034,402**	**5,887**	**7,262**

Source: NMIP Water and Sanitation Survey 2010

2.6 Functionality of projects

The survey assessed coverage and functionality of projects but did not examine the level of service/quality of systems. First, projects were assessed for whole-year supply. Then the status of physical components and management systems were observed. Projects that are functioning and need no repairs are categorized as 'well-functioning'. Projects that are functioning and need repairs that are within the capacity of users (with no external inputs

required) are categorized as 'need minor repair'. The projects that are functioning but need major repairs (with external inputs for construction components and technical supports required) are categorized as 'need major repair'. Projects that are functioning at their design level but are incapable of meeting present demand in quantity and/or quality are categorized as 'need rehabilitation'. Projects that are defunct and need major technical and financial inputs from external sources as well as sizeable contributions from users before they can function again are categorized as 'need reconstruction'. Key indicators of good management include technical human resources (Water Supply and Sanitation Technician (WSST)), availability of essential tools and plant, institutionalization of the users' organization (Water and Sanitation Users' Committee (WSUC)), and the existence of an operation and maintenance (O&M) fund. The following table shows the district-wise performance scenario on these key indicators of functionality. Those projects that cannot be made to operational again even with rehabilitation or reconstruction owing to a variety of reasons (e.g., dried-out source) is categorized as 'non- refunctionable'.

Table 12 presents functionality of projects by district, including management and maintenance aspects (based on number of schemes).

Table 12: Functionality of projects (incl. management and maintenance aspects)

District	No. of schemes	Percentage of the population									
		Whole-year supply	Well-functioning	Need minor repair	Need major repair	Need rehabilitation	Need reconstruction	Have WSST	Adequate tools	WSUC registered	O&M fund
Taplejung	337	32.1	4.8	62.3	18.1	5.6	9.2	29.4	41.8	0.9	0.0
Panchthar	742	55.4	13.3	46.0	12.5	19.5	8.6	34.9	33.8	19.8	0.0
Ilam	863	100.0	14.6	50.8	18.7	10.4	5.6	46.1	38.7	66.9	0.0
Jhapa	44	34.1	20.5	20.5	25.0	20.5	13.6	93.2	68.2	104.6	4.6
Morang	124	34.7	7.3	50.8	7.3	26.6	8.1	62.9	58.1	35.5	0.0
Sunsari	78	52.6	14.1	34.6	1.3	50.0	0.0	39.7	34.6	29.5	0.0
Dhankuta	852	81.7	17.7	52.2	12.4	8.2	9.4	30.3	22.9	41.1	0.0
Terhathum	459	78.4	12.9	42.5	13.3	22.2	9.2	25.9	20.3	35.5	0.0
Sankhuwasabha	757	44.8	22.5	41.9	17.4	9.6	8.6	12.8	15.2	9.9	0.0
Bhojpur	990	56.0	14.9	51.9	21.0	6.9	5.4	14.1	13.4	22.6	0.0
Solukhumbu	459	100.0	24.0	48.4	10.7	10.0	7.0	17.2	30.7	32.2	0.0
Khotang	1,155	58.7	32.5	40.2	5.2	14.9	7.3	14.9	16.3	41.5	0.0
Okhaldhunga	882	58.7	42.9	42.3	8.1	4.5	2.3	17.7	13.7	14.5	0.0
Udayapur	280	56.4	21.8	30.7	16.4	24.6	6.4	45.4	39.3	43.6	0.0
Saptari	8	12.5	37.5	50.0	0.0	0.0	12.5	37.5	25.0	62.5	0.0
Siraha	13	46.2	0.0	76.9	15.4	0.0	7.7	46.2	30.8	100.0	0.0
Dhanusa	34	2.9	8.8	29.4	20.6	2.9	38.2	41.2	64.7	50.0	0.0
Mahottari	57	63.2	36.8	49.1	7.0	5.3	1.8	19.3	10.5	36.8	0.0
Sarlahi	15	40.0	0.0	6.7	20.0	40.0	33.3	40.0	20.0	46.7	0.0
Sindhuli	501	83.2	8.2	69.9	14.4	2.6	5.0	38.5	68.7	50.1	0.0
Ramechhap	1,030	45.0	20.9	53.3	12.8	7.0	6.0	22.7	23.0	21.0	0.0
Dolakha	1,256	54.9	14.0	39.8	12.3	23.7	10.3	9.3	16.7	6.2	0.0
Sindhupalchok	1,143	59.1	19.1	42.6	14.9	15.2	8.2	15.8	8.8	27.9	0.0
Kavrepalanchok	902	82.4	15.2	61.2	13.9	2.9	6.9	38.9	30.6	95.6	0.0
Lalitpur	182	35.7	13.2	60.4	2.8	20.9	2.8	38.5	42.9	25.8	0.0

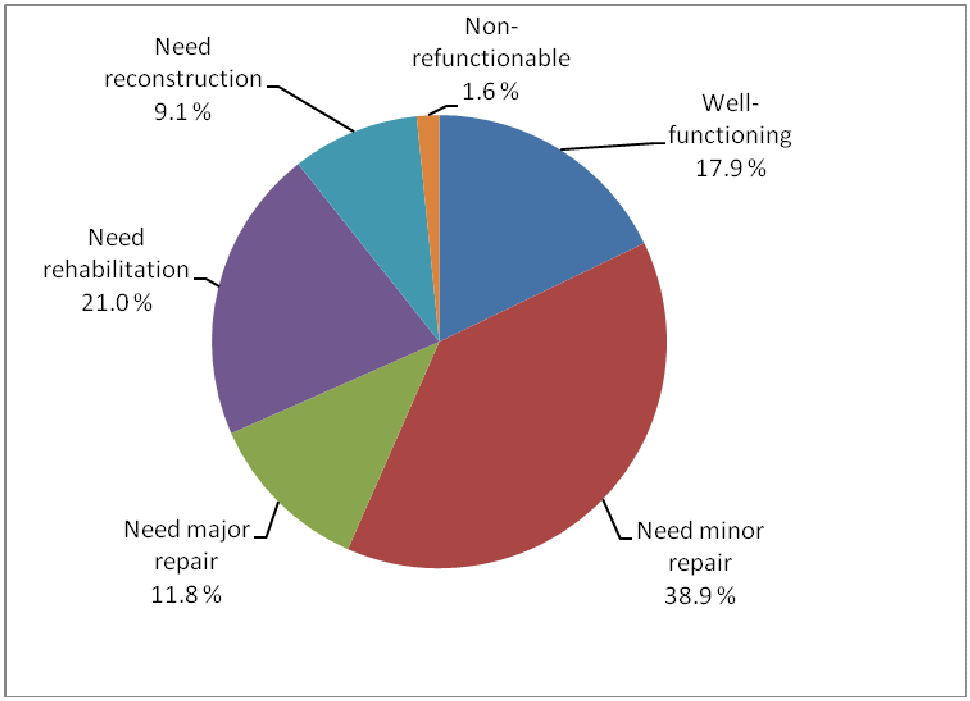
District	No. of schemes	Percentage of the population									
		Whole-year supply	Well-functioning	Need minor repair	Need major repair	Need rehabilitation	Need reconstruction	Have WSST	Adequate tools	WSUC registered	O&M fund
Bhaktapur	136	10.3	37.5	44.9	0.0	13.2	4.4	36.8	24.3	33.1	0.7
Kathmandu	316	98.7	19.9	55.7	3.5	18.4	2.5	73.1	70.9	66.8	0.0
Nuwakot	1,466	84.2	26.9	55.7	6.3	9.3	1.8	8.7	24.6	31.2	0.0
Rasuwa	182	51.7	11.0	40.1	13.2	14.3	21.4	26.9	51.7	53.9	0.0
Dhading	911	85.8	23.9	45.1	13.4	9.6	8.0	30.7	33.8	71.4	0.1
Makwanpur	584	79.6	20.2	35.5	13.0	23.5	7.9	48.5	70.7	59.1	0.0
Rautahat	10	70.0	10.0	50.0	40.0	0.0	0.0	60.0	30.0	20.0	0.0
Bara	12	75.0	75.0	0.0	16.7	0.0	8.3	83.3	91.7	83.3	0.0
Parsa	20	30.0	0.0	45.0	5.0	40.0	10.0	70.0	85.0	40.0	0.0
Chitwan	219	54.8	30.6	53.0	10.5	3.2	2.7	33.8	41.6	59.8	0.0
Gorkha	1,011	41.5	9.9	43.8	12.7	14.1	19.5	24.4	22.2	28.2	0.0
Lamjung	783	100.0	12.4	54.8	6.1	21.3	5.4	37.4	50.5	30.7	0.0
Manang	40	67.5	37.5	32.5	5.0	10.0	15.0	42.5	30.0	45.0	0.0
Kaski	999	59.7	18.3	55.8	9.6	10.0	6.3	29.5	29.4	26.3	0.0
Tanahun	1,292	82.8	24.9	36.7	16.4	14.2	7.9	34.5	31.9	32.4	0.0
Syangja	1,334	68.7	23.6	38.9	10.6	20.3	6.5	23.1	21.8	22.6	0.0
Parbat	829	76.1	25.6	52.4	6.5	8.3	7.2	26.1	29.0	26.8	0.0
Baglung	1,062	55.2	15.4	46.4	5.5	19.3	13.5	31.6	37.9	59.0	0.0
Myagdi	446	81.6	14.1	61.2	8.3	10.5	5.8	22.0	25.8	9.4	0.0
Mustang	63	58.7	25.4	54.0	6.4	4.8	9.5	14.3	60.3	33.3	0.0
Palpa	1,434	68.7	20.8	53.6	5.0	13.7	6.9	18.8	28.8	5.4	0.0
Nawalparasi	318	54.7	16.7	49.4	13.5	12.3	8.2	67.3	43.7	51.6	0.0
Rupandehi	21	100.0	42.9	28.6	4.8	23.8	0.0	100.0	100.0	42.9	0.0
Kapilvastu	13	46.2	7.7	38.5	30.8	23.1	0.0	0.0	0.0	0.0	0.0
Arghakhanchi	1,215	74.7	19.2	56.2	6.7	12.3	5.7	18.6	21.7	25.8	0.1
Gulmi	1,229	71.0	19.4	53.2	5.9	11.5	10.0	24.4	19.6	23.9	0.0
Rukum	382	50.8	26.4	20.7	8.4	20.7	23.8	15.2	27.5	21.5	0.0
Salyan	598	70.1	23.4	30.6	11.4	23.9	10.7	34.5	18.4	33.1	0.0
Rolpa	553	71.8	8.9	35.4	13.9	19.9	21.9	33.1	33.6	33.6	0.2
Pyuthan	818	68.0	25.4	46.8	6.6	9.8	11.4	31.7	32.3	24.7	0.0
Dang	234	58.1	20.1	40.2	22.2	12.0	5.6	46.6	29.5	41.9	0.0
Banke	11	81.8	45.5	36.4	18.2	0.0	0.0	81.8	72.7	90.9	0.0
Bardiya	10	30.0	10.0	30.0	10.0	20.0	30.0	40.0	70.0	20.0	0.0
Surkhet	465	60.4	10.8	55.5	15.7	10.8	7.3	41.3	35.7	41.3	0.0
Jajarkot	267	59.9	10.1	25.8	7.9	7.1	49.1	42.7	49.1	19.5	0.0
Dailekh	563	45.8	13.3	21.7	23.8	15.3	25.9	26.1	25.9	29.7	0.0
Dolpa	78	25.6	9.0	19.2	7.7	12.8	51.3	29.5	29.5	3.9	0.0
Jumla	165	44.2	12.7	37.6	13.3	18.2	18.2	35.8	25.5	20.0	0.0
Kalikot	188	56.4	21.8	20.2	9.6	26.6	21.8	22.3	13.8	46.3	0.0
Mugu	132	22.7	3.0	22.0	18.9	16.7	39.4	8.3	15.9	81.8	0.0
Humla	56	71.4	0.0	48.2	19.6	12.5	19.6	26.8	50.0	12.5	0.0
Bajhang	422	41.7	16.1	38.2	17.8	11.4	16.6	24.9	33.2	33.7	0.0

District	No. of schemes	Percentage of the population									
		Whole-year supply	Well-functioning	Need minor repair	Need major repair	Need rehabilitation	Need reconstruction	Have WSST	Adequate tools	WSUC registered	O&M fund
Bajura	349	49.0	18.6	39.3	16.9	10.3	14.9	26.7	25.2	34.7	0.0
Achham	661	66.4	23.9	33.1	13.5	18.8	10.7	17.4	35.0	50.4	0.0
Doti	356	18.5	5.6	70.5	19.9	2.5	1.4	50.8	90.5	56.7	0.0
Kailali	152	38.2	17.1	32.9	24.3	12.5	13.2	42.8	46.7	60.5	0.0
Kanchanpur	19	5.3	15.8	31.6	15.8	21.1	15.8	42.1	36.8	31.6	0.0
Dadeldhura	501	100.0	27.0	31.9	21.4	11.6	8.2	27.7	51.7	66.5	0.0
Baitadi	913	61.5	36.9	35.3	14.4	9.0	4.5	10.5	16.5	28.2	0.1
Darchula	538	56.5	18.8	32.3	21.0	14.9	13.0	26.8	35.1	61.7	4.5

Source: NMIP Water and Sanitation Survey 2010.

Figure 11 shows the situation for the country as a whole. Some 17.9 per cent of the piped water systems are in well-functioning state, 38.9 per cent belong to the need minor repair category, 11.8 per cent are in major repair status, 21.0 per cent need rehabilitation, 9.1 per cent need reconstruction, and 1.6 per cent are in non-refunctionable condition.

Figure 11: Condition of piped water supply systems nationally



Source: NMIP Water and Sanitation Survey 2010

Table 13 indicates the functionality of piped water supply systems by region, excluding those that are non-refunctionable. The highest well-functioning piped water supply systems are in the FWDR and the lowest is in the MWDR. Likewise, the highest proportion of minor repair systems fall in the CDR; the highest proportion that needed major repair is in the FWDR; the highest proportion of needing rehabilitation is in the MWDR; and the highest proportion served by projects needing reconstruction is also in the MWDR.

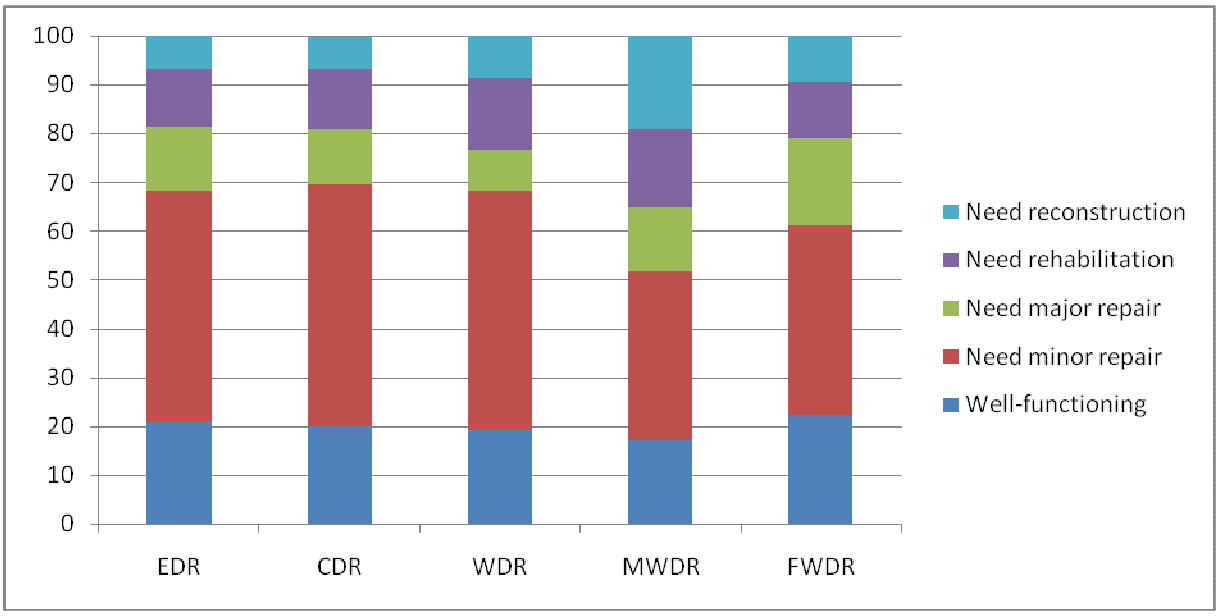
Table 13: Region-wise functional status of piped water supply system (in %)

Status of scheme	EDR	CDR	WDR	MWDR	FWDR
Well-functioning	20.8	19.9	19.1	17.2	22.4
Need minor repair	47.5	49.7	49.1	34.6	38.9
Need major repair	13.1	11.4	8.5	13.2	17.7
Need rehabilitation	11.7	12.3	14.7	15.8	11.7
Need reconstruction	6.9	6.6	8.6	19.3	9.3

Source: NMIP Water and Sanitation Survey 2010

Figure 12 shows functionality of projects by region by percentage of the population with a water supply that is served.

Figure 12: Functional status of piped water supply systems by development region



Source: NMIP Water and Sanitation Survey 2010

Table 14 shows the percentage of the piped water supply systems from management/ maintenance aspects. Nationally, 23.11 per cent had WSST, 24.52 per cent had filter plants, 24.93 per cent had adequate tools, 21.79 per cent had WSUC registered, and 24.40 per cent had O&M fund.

Table 14: Piped water supply systems from certain management indicators

	Have WSST	Have filter	Have adequate tools	Have WSUC registered	Have O&M fund
EDR					
Well-functioning	20.38	40.84	25.78	23.30	24.61
Need minor repair	45.65	28.24	46.47	43.49	44.64
Need major repair	14.32	16.03	11.12	13.71	12.85
Need rehabilitation	14.86	9.54	12.71	12.61	12.68
Need reconstruction	4.25	4.96	3.65	5.30	4.52
Non-refunctionable	0.54	0.38	0.26	1.59	0.69
CDR					
Well-functioning	25.02	17.81	23.36	25.08	23.52
Need minor repair	49.56	46.58	50.64	47.52	50.30
Need major repair	9.88	8.22	9.96	10.58	11.53
Need rehabilitation	11.88	24.20	10.85	10.87	10.59
Need reconstruction	3.52	3.20	5.05	5.45	3.86
Non-refunctionable	0.13	0.00	0.14	0.50	0.20
WDR					
Well-functioning	23.23	17.96	26.02	21.68	26.11
Need minor repair	45.18	49.03	49.67	47.16	44.11
Need major repair	9.18	2.91	6.37	8.83	7.25
Need rehabilitation	15.08	24.76	12.68	14.26	16.03
Need reconstruction	6.81	5.34	4.91	7.45	6.04
Non-refunctionable	0.51	0.00	0.34	0.61	0.47
MWDR					
Well-functioning	23.34	21.47	25.00	16.38	24.93
Need minor repair	38.71	25.15	38.66	37.68	34.88
Need major repair	12.93	21.47	11.26	14.81	10.25
Need rehabilitation	15.09	10.43	14.86	14.67	15.76
Need reconstruction	9.43	20.25	9.46	14.10	13.50
Non-refunctionable	0.56	1.23	0.83	2.42	0.69
FWDR					
Well-functioning	23.62	19.59	24.16	18.46	20.66
Need minor repair	40.15	25.26	43.99	38.79	42.11
Need major repair	16.74	15.46	15.85	18.34	19.38
Need rehabilitation	12.18	13.40	10.02	13.08	9.05
Need reconstruction	6.78	9.28	5.08	8.64	6.24
Non-refunctionable	0.53	17.01	0.89	2.69	2.56
National					
Well-functioning	23.11	24.52	24.93	21.79	24.40
Need minor repair	44.89	35.15	47.28	44.16	43.91
Need major repair	11.64	12.55	9.96	12.37	11.29
Need rehabilitation	14.03	16.48	12.13	12.93	13.33
Need reconstruction	5.91	7.85	5.30	7.46	6.27
Non-refunctionable	0.44	3.45	0.41	1.30	0.80

Source: NMIP Water and Sanitation Survey 2010

2.7 Sanitation

Table 15 shows the percentage of the households with a toilet with a particular type (pit latrine, water seal, other) and the percentage of the households with a toilet with poorly

managed, dirty or unused toilets. Figures have been extrapolated from observed toilets. In addition, the number of open-defecation-free (ODF) VDCs in each district is given.

Table 15: District-wise functionality of toilets

District	Total toilets	No. observed	Percentage of the population						No. of ODF VDCs
			Pit latrine	Water seal	Other types	Poorly managed	Dirty toilet	Unused toilet	
Taplejung	15,472	6,383	81.69	18.31	0.00	0.00	0.00	0.00	
Panchthar	27,504	5,812	76.67	14.37	8.96	10.56	14.66	3.20	
Ilam	44,640	7,071	50.76	48.41	0.83	11.06	11.88	1.19	
Jhapa	92,223	10,950	46.27	49.26	4.47	3.89	12.94	0.31	
Morang	94,384	10,856	28.88	68.98	2.14	6.63	12.44	2.93	
Sunsari	76,809	10,863	33.72	62.98	3.30	3.53	9.71	1.49	2
Dhankuta	18,494	6,174	67.35	29.69	2.96	19.34	23.78	2.93	
Terhathum	13,851	8,702	74.20	22.55	3.25	0.00	1.79	0.32	
Sankhuwasabha	19,089	4,008	86.55	13.45	0.00	21.11	25.00	0.12	
Bhojpur	16,296	7,100	80.92	17.14	1.94	30.06	44.97	1.31	
Solukhumbu	9,925	4,739	73.20	26.29	0.51	3.14	25.79	2.13	
Khotang	8,870	5,760	63.39	21.74	14.88	14.13	28.77	1.35	
Okhaldhunga	18,275	6,371	76.13	22.67	1.21	5.95	18.98	0.78	
Udayapur	16,250	3,562	45.90	54.07	0.03	5.92	7.83	0.22	
Saptari	23,054	10,886	50.72	45.66	3.62	0.38	1.00	0.01	
Siraha	22,290	11,412	35.42	64.25	0.33	0.31	0.41	0.32	
EDR	**517,426**	**120,649**	**56.46**	**40.51**	**3.03**	**9.62**	**13.14**	**1.13**	**2**
Dhanusa	33,679	11,704	56.57	42.87	0.56	3.59	15.97	0.00	
Mahottari	19,533	10,045	31.61	67.24	1.15	0.50	4.47	0.68	
Sarlahi	23,720	11,228	32.69	67.22	0.09	0.74	3.58	0.07	
Sindhuli	12,371	3,924	42.13	55.10	2.78	0.33	1.50	0.00	
Ramechhap	14,684	6,226	37.42	62.14	0.43	3.97	9.81	0.39	
Dolakha	24,555	7,705	52.41	47.48	0.12	14.99	16.86	1.18	
Sindhupalchok	24,120	8,355	36.01	60.07	3.91	4.63	6.30	2.03	
Kavre	59,508	12,106	31.18	64.54	4.28	4.06	13.98	0.30	2
Lalitpur	70,692	8,110	44.27	50.05	5.68	7.20	8.91	3.63	
Bhaktapur	44,042	4,259	26.72	65.81	7.47	8.78	29.11	0.38	
Kathmandu	291,981	21,362	19.81	60.52	19.67	2.08	2.34	0.02	
Nuwakot	19,536	7,294	28.28	71.13	0.59	0.95	2.63	0.29	
Rasuwa	4,360	2,996	44.43	55.57	0.00	1.47	10.31	1.00	
Dhading	38,574	8,300	57.07	42.76	0.17	24.12	37.57	1.77	
Makwanpur	41,244	5,443	34.06	63.05	2.88	11.72	26.53	4.83	
Rautahat	19,094	9,872	45.64	53.31	1.04	5.59	9.76	2.97	
Bara	20,729	9,643	43.48	52.84	3.68	1.35	2.26	0.20	
Parsa	25,052	10,179	35.69	63.52	0.79	1.57	1.98	1.20	
Chitwan	95,455	10,400	19.26	72.61	8.13	0.00	1.87	0.00	18
CDR	**882,929**	**169,151**	**36.39**	**59.02**	**4.59**	**4.64**	**9.47**	**0.95**	**20**
Gorkha	30,380	11,579	59.89	29.55	10.55	13.25	35.60	4.74	2
Lamjung	24,062	7,676	32.89	44.28	22.82	11.18	10.63	0.30	5
Manang	1,087	1,113	45.91	54.09	0.00	0.00	2.07	0.00	

District	Total toilets	No. observed	Percentage of the population						No. of ODF VDCs
			Pit latrine	Water seal	Other types	Poorly managed	Dirty toilet	Unused toilet	
Kaski	91,258	9,882	33.57	61.36	5.07	9.54	14.89	0.71	15
Tanahun	42,085	7,311	27.62	72.38	0.00	9.64	10.52	0.67	4
Syangja	50,698	9,006	44.19	55.69	0.12	10.47	12.55	0.19	
Parbat	28,418	7,268	35.91	63.99	0.10	3.38	2.81	0.29	2
Baglung	37,304	8,086	39.43	54.22	6.36	9.83	12.60	0.26	1
Myagdi	13,754	5,248	48.00	49.83	2.17	4.90	14.50	1.41	3
Mustang	1,634	1,221	13.60	86.40	0.00	0.00	0.00	0.00	
Palpa	30,666	8,121	32.59	64.38	3.03	3.93	14.10	1.21	
Nawalparasi	57,230	30,402	26.28	71.74	1.98	2.62	4.10	1.28	
Rupandehi	71,556	9,562	8.05	91.95	0.00	1.21	7.12	0.27	
Kapilvastu	19,449	5,678	17.35	77.26	5.39	2.64	4.00	1.41	1
Arghakhanchi	22,129	5,000	54.24	45.54	0.22	9.74	17.28	0.52	
Gulmi	45,939	9,826	38.15	61.85	0.00	12.95	11.26	0.73	
WDR	**567,649**	**136,979**	**34.04**	**62.10**	**3.86**	**6.88**	**11.38**	**1.11**	**33**
Rukum	8,111	4,034	71.22	28.56	0.22	0.30	1.44	0.50	
Salyan	7,943	3,122	54.55	40.36	5.09	21.56	3.56	2.79	
Rolpa	9,204	4,664	93.55	6.45	0.00	22.92	17.24	8.08	
Pyuthan	10,095	3,355	36.66	63.13	0.21	8.41	18.72	1.40	1
Dang	44,940	6,905	16.63	80.61	2.77	10.33	12.63	2.06	1
Banke	30,344	16,101	12.01	84.99	3.00	0.00	6.27	0.61	
Bardiya	28,948	7,097	51.73	36.49	11.78	19.32	20.15	0.18	
Surkhet	24,111	8,797	42.83	52.90	4.26	17.77	15.12	4.84	1
Jajarkot	7,172	3,023	69.37	26.60	4.04	25.50	27.59	11.91	
Dailekh	9,693	3,232	34.07	65.75	0.19	20.42	14.76	11.20	1
Dolpa	1,207	814	48.89	10.07	41.03	6.14	20.76	14.50	
Jumla	6,927	3,936	83.94	0.38	15.68	0.18	23.27	5.51	
Kalikot	4,769	3,336	68.02	31.98	0.00	9.26	8.00	16.46	2
Mugu	2,395	1,664	86.18	7.45	6.37	5.17	18.33	7.33	
Humla	2,111	1,663	97.65	2.35	0.00	28.50	30.97	17.32	
MWDR	**197,970**	**71,743**	**45.88**	**49.60**	**4.52**	**11.21**	**13.56**	**4.50**	**6**
Bajhang	4,772	3,814	70.71	26.40	2.88	23.34	31.86	7.52	
Bajura	2,545	2,193	74.33	16.96	8.71	44.05	40.08	14.14	1
Achham	9,868	2,637	36.10	63.67	0.23	19.26	28.02	12.40	11
Doti	10,220	4,608	73.11	26.89	0.00	0.00	0.00	0.00	
Kailali	47,524	7,148	39.13	57.88	2.99	78.83	6.95	5.37	
Kanchanpur	26,075	3,290	40.97	50.79	8.24	13.98	15.74	2.98	
Dadeldhura	11,276	2,816	31.75	68.25	0.00	5.43	11.54	5.22	2
Baitadi	12,172	4,267	27.40	69.84	2.77	4.24	9.75	2.04	
Darchula	4,690	3,621	25.52	72.80	1.68	39.30	24.22	6.05	1
FWDR	**129,142**	**34,394**	**45.88**	**51.3**	**2.82**	**29.70**	**15.89**	**5.41**	**15**
National	**2,295,116**	**532,916**	**42.22**	**53.86**	**3.92**	**8.84**	**11.76**	**1.80**	**76**

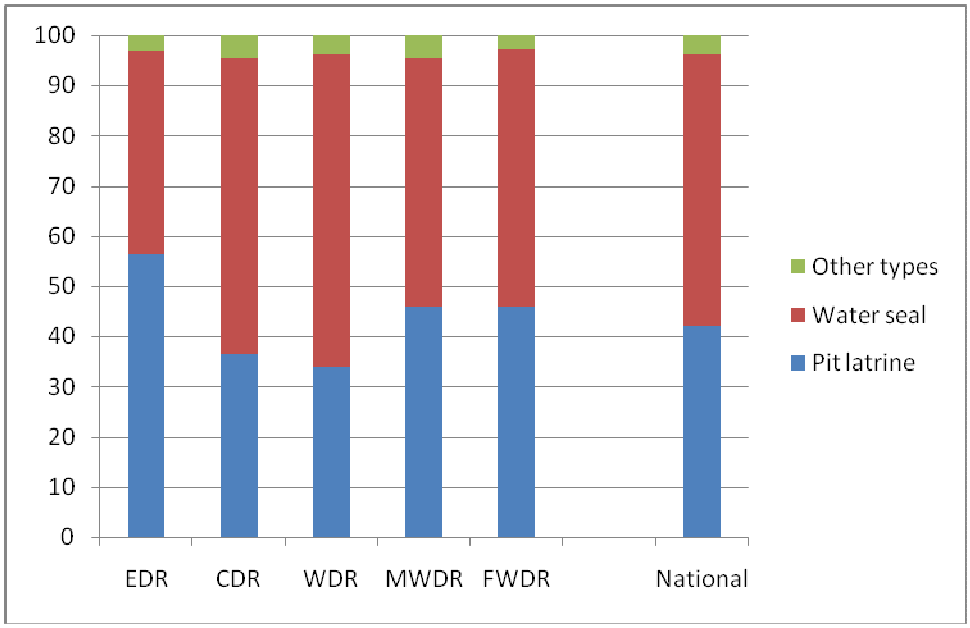
Source: NMIP Water and Sanitation Survey 2010

Nationally, of the households with a toilet, 42.2 per cent have pit latrines, 53.9 per cent have water seal toilets and 3.9 per cent have other types of toilet (biomass, eco-san, etc.). About 1.8 per cent of the households having toilet did not use them; these have been excluded from sanitation coverage figures.

Of the households covered by a toilet in use, 8.8 per cent have poorly managed toilets that were hygienically satisfactory but with unmanaged superstructures and 11.8 per cent have dirty, unhygienic toilets. There are currently a total of 76 ODF VDCs in the country.

Figure 13 shows the percentage of the households with a toilet by type for each development region.

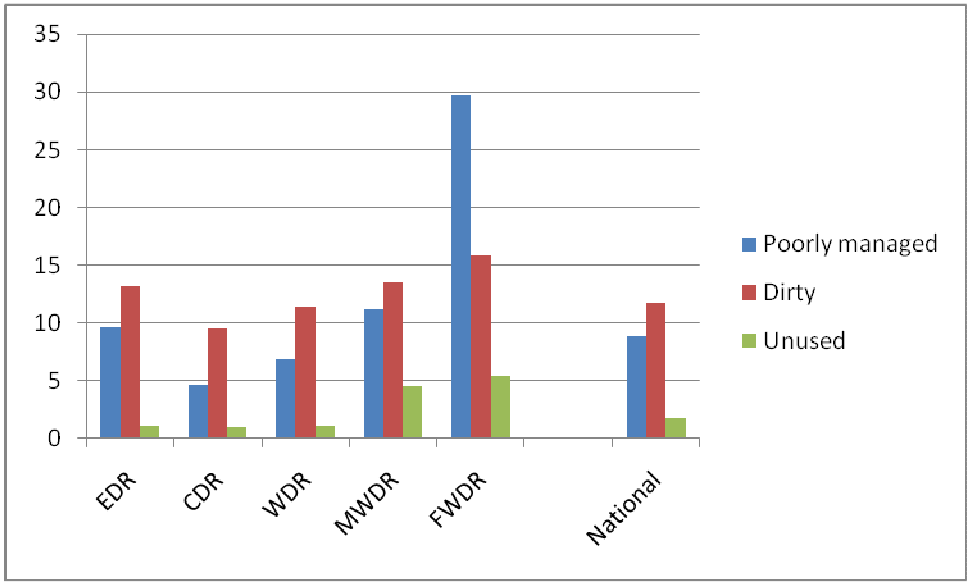
Figure 13: Types of toilets by development region



Source: NMIP Water and Sanitation Survey 2010.

Figure 14 shows the percentage of the households with a toilet by the condition of the toilet for each development region.

Figure 14: Functionality of toilets by development region



Source: NMIP Water and Sanitation Survey 2010

CHAPTER 3: DIGITALIZATION OF SURVEY DATA

3.1 Introduction

Data for the NMIP Water and Sanitation Survey were collected by Division/Sub-Division Offices at district. A hard copy of the data was sent to the NMIP in Kathmandu. A database management information system (MIS) was developed in the Oracle platform by a private software consulting firm, Nepal Soft Private Ltd. The coding system adopted for administrative units—regions, zones, districts, municipalities and VDCs—is as codified by the *Nepal National Standard Code for Information Inter-Exchange* (NASCII) (नेपाल राष्ट्रिय मानक संकेत पुस्तिका).

The Oracle-based software for the database system has a user-friendly interface for inputting data from the prescribed formats. It is a single-user data-entry system. The back-in of data is also on the Oracle system. The database system has developed many standard report formats (queries) for information at the ward level, VDC/municipality level, district level, regional level and national level, as required. The system is built in English and Nepali (Unicode).

3.2 Upgrading the system

The single-user entry system is not versatile enough for multiple sharing of data with multiple users. The system should be standardized and data transfer made possible among various authorities. The system is lacking in this regard. Project-level information is mixed up with scheme information; and project identification numbers and scheme identification numbers are found to overlap. Formats 1A, 1B and 1C contain append nature records and Formats 2, 3 and 4 contain overwrite nature records. Similarly, Formats 1, 2 and 3 are related to water supply and Format 4 is for sanitation. Since, in comparison to the water supply component, updating of toilet use is simpler and of higher frequency, it is useful and practical to separate the water supply database system and the sanitation database system for the updating process.

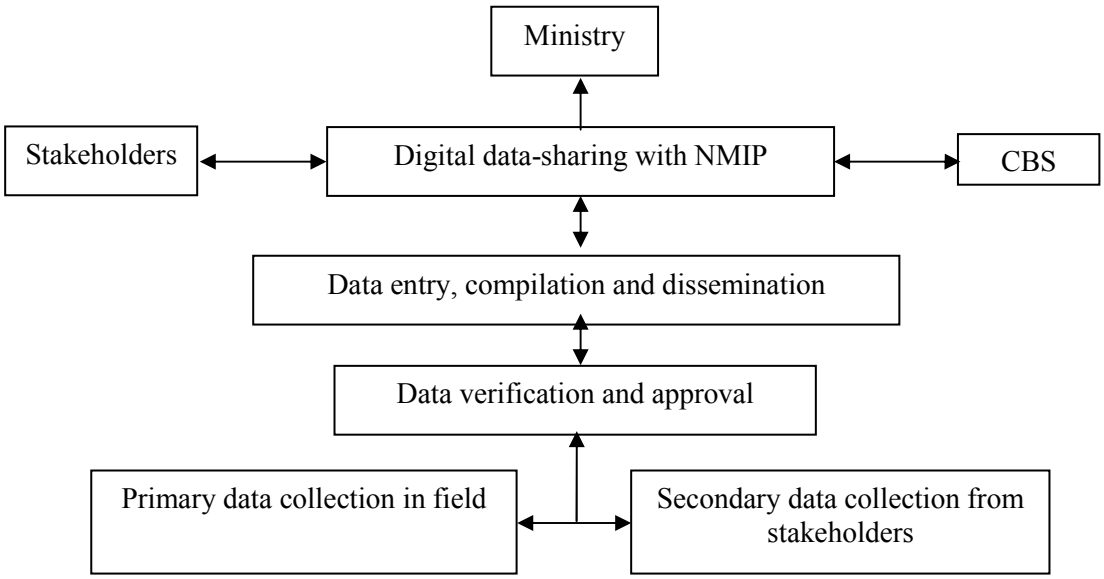
Some errors were detected in the system; in particular, the code numbers of VDCs were sometimes repeated or missed, and identification of VDCs and municipalities with their categories was not included in system programming. There was duplication of a few records (data) and ward-level information of some VDCs was found to be missing (void). In addition, much information mentioned in the formats was found to be blank or duplicated.

The MIS needs reprogramming (re-coding) and upgrading to eliminate these shortcomings.

3.3 Updating mechanism

After the collection, entry, compilation and dissemination of the NMIP Water and Sanitation Survey data, work is now concentrating on regular updating and upgrading of the database system at the local level. It is using the concept as presented in Figure 15.

Figure 15: Conceptual framework of data updating and sharing mechanism



To operationalize this concept, the NMIP has already developed a district-level system for updating the database to enable efficient and effective information-sharing among stakeholders as well as digitally with the NMIP from district-based institutions. Digital data-transfer between NMIP and the ministry is not yet fully functional owing to incompatibility of the database system between the NMIP and the Monitoring and Evaluation Unit of the Ministry of Physical Planning and Works. To put the existing system into an automatic data transferable mode, upgrading of the Oracle-based programme is currently in the planning phase. Hopefully, it will be completed within one year.

CHAPTER 4: KEY FINDINGS AND RECOMMENDATIONS

Prior to the NMIP Water and Sanitation Survey, a number of surveys had been conducted by various organizations/institutions. However, as these surveys were sample-based with different sampling sizes, methods and procedures, the results were quite variable, making it difficult to assess trends over time as well as provide reliable information on progress for the nation as a whole. This is the first nationwide survey on the status of drinking water supply and sanitation facilities and their functionality that has been conducted in Nepal. The survey covered all 36,038 wards in 58 municipalities and 3,915 VDCs and it was carried out during 2007, 2008 and updated in 2009/10.

4.1 Findings

- Analysis of survey data found that national water supply coverage is 80.4 per cent and national sanitation coverage is 43.0 per cent.
- There is substantial disparity in water supply coverage among the five development regions: WDR has the highest coverage at 84.6 per cent and MWDR has the lowest at 76.3 per cent.
- There is also disparity in sanitation coverage: WDR again has the highest at 53.5 per cent and FWDR has the lowest at 29.1 per cent.
- Geographically, the Hills have the highest sanitation coverage at 52.9 per cent and the Mountains have the lowest at 33.6 per cent.
- Some 17.9 per cent of the piped water supply systems are well-functioning, 38.9 per cent need minor repair, 11.8 per cent need major repair, 21.0 per cent need rehabilitation, 9.1 per cent need reconstruction, and 1.6 per cent are non-refunctionable again.
- There is a big gap between coverage and functionality of water supply systems.
- Of the households with a toilet, 42.2 per cent have pit latrines, 53.9 per cent have water seal toilets and 3.9 per cent have other types of toilet (biomass, eco-san, etc.). About 1.8 per cent of the households having toilet did not use them; these have been excluded from sanitation coverage figures.
- Of the households covered by a toilet in use, 8.8 per cent have poorly managed toilets that were hygienically satisfactory but with unmanaged superstructures and 11.8 per cent have dirty, unhygienic toilets.
- There are currently a total of 76 ODF VDCs in the country.

4.2 Recommendations

- The NMIP/DWSS Water and Sanitation Survey information should be utilized for planning, prioritizing and implementing processes for future water supply and sanitation interventions.
- Proportional and regionally balanced resource allocation and development priorities must be utilized while preparing national plans and programmes for water supply and sanitation interventions.
- A programme for reconstruction and rehabilitation of water supply systems with improved water quality must be initiated in order to achieve national goals by 2017.

- Improvement in functionality and quality of water supply systems must be taken into consideration by sector stakeholders.
- To accelerate sanitation coverage, intensively focused awareness programmes and stand-alone sanitation programmes with sufficient resource allocation, capacity enhancement and supportive institutional mechanisms must be implemented.
- To reach national targets on sanitation, culturally acceptable approaches and geographically suitable technology must be promoted, along with focused as well as stand-alone intensive sanitation programmes.
- School-led total sanitation programmes, stand-alone sanitation programmes, community-led sanitation programmes and a campaign for ODF declaration should be combined to make synergistic efforts to achieve desired progress in sanitation.
- Standardization of the water supply and sanitation database and sharing mechanisms for stakeholders must be agreed upon for the database's updating and user-friendly utilization. Updating the database should be a regular part of DWSS activities.

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ANNEXES: FORMATS

फारम – १ (क) पाईप प्रणली आयोजनाहरुको विवरण) सम्पन्न , निर्माणधीन,तथा अध्ययन भएका) जिल्ला .....गा. वि.स .

क्र.स	आयोजनाना र वा स्किमको नाम	दातृ संस्था	कार्यान्वयन गर्ने निकाय	गा. िव.स	बडाहरु	आयोजना चरण[1] (छान्ने)	सम्पन्न भएको वा हुने साल (वि.स)	प्रणाली किसिम [2](छान्ने)	श्रोतको किसिम[3] (छान्ने)	पानी प्रशोधन[4] (छान्ने)	पानी पोखरी (संख्या)	वितिपि (संख्या)	पाईप[5] लम्बाई किमि	धारा संख्या		लाभान्वित घर धुरी	कैफियत
														निजि	सार्व		

१ आयोजनाको चरण –(१) सम्पन्न,(२) निर्माणधिन ,(३) सम्भाव्यता अध्ययन (सकिएको वा भइरहैको),

२ प्रणलीको किसिम (१) पाईप ग्रेभिटि, (२) सतही पम्पज्ञछ

३ श्रोतको किसिम (१) भुल ,(२) खोला, (३)भूमिगत ,(४) अन्य

४ पानी प्रसोधन : १)

५ पाइप लम्बाई–मौनुदा अभिलेख अनुसार वा उपभोत्ता माझ सामान्य अलफलको आधारमा लेख्ने,नाप्न नपर्ने ।

फारम–१ (ख) पाइप प्रणली आयोजनाले ओगटेको क्षेत्र (सम्पन्न निर्माणाधीन तथा अध्ययन भएका) जिल्ला

क्र.स	आयोजना र /वा स्किमको नाम	समुदाय टोल	निजि धारा भएका घर धुरी संख्या र सार्वजनकि धारा तथा सोले ओगटेका घरधुरी संख्या																															कैफियत
			भा. वि.स	वार्ड १			वार्ड २			वार्ड ३			वार्ड ४			वार्ड ५			वार्ड ६			वार्ड ७			वार्ड ८			वार्ड ९			जम्मा			
				सार्वजनकि		निजि धारा भएका घर धुरी	सार्वजनकि		निजि धारा भएका घर धुरी	सार्वजनकि		निजि धारा भएका घर धुरी	सार्वजनकि		निजि धारा भएका घर धुरी	सार्वजनकि		निजि धारा भएका घर धुरी	सार्वजनकि		निजि धारा भएका घर धुरी	सार्वजनकि		निजि धारा भएका घर धुरी	सार्वजनकि		निजि धारा भएका घर धुरी	सार्वजनकि		निजि धारा भएका घर धुरी	सार्वजनकि				
				धारा	घर धुरी		धारा	घर धुर		धारा	घर धुर		धारा	घर धुर		धारा	घर धुर		धारा	घर धुर		धारा	घर धुर		धारा	घर धुर		धारा	घ र धु र	निजि धारा भएका घर धुरी	धारा	घ र धु र	निजि धारा भएका घर धुरी	

फारम–१ (ग) पाईप प्रणाली सम्पन्न आयोजनाहरुको सञ्चालनको स्थिति जिल्ला – ..... गा.वि.स

क.स	आयोजनाको/स्किमको नाम	पानी सञ्चालनको अवस्था							उपभोक्ता समिति सम्बन्धि जानकारी						मर्मत संभार सम्बन्धि जानकारी						
		नचल्ने धार संख्या		नचल्ने धारका घर संख्या	चलेका धारामा		१२ महिना प्रयापानी सञ्चालन नभए,नहुनका कारणहरू[6] (छान्ने)	पानी प्रशोधन प्रयोग भएको र नभएको	दर्ता भएको वा नभएको	उपभोक्ता समितिका पदाधिकारीहरुको संख्या				विगत १२ महिनामा बसेको बैठक संख्या	मर्मत संभार कार्यकर्ता भए / नभएको	मर्मत संभार कार्यकर्ता को मासिक ज्याला (रु)	पानी महशुल,प्रति घर प्रति महिना (रु)	संचित मर्मत संभार कोष रकम (रु)	आवश्यक औजार भएको / नभएको	मर्मत संभार को स्थिति (छान्ने)	कैफियत
										अध्यक्ष,सचिव र कोषध्यक्ष		जम्मा पदाधिकारी									
		निजि	सार्व.		विगत १ वर्षमा प्रया पानी चलेको महिना(औसत)	औसत दैनिक पानी चलेको घण्टा				पुरुष	महिला	पुरुष	महिला								

६१२ महिना प्रयास पानी संचालन नभए,नहुनाका कारणहरु –१) मुहानमा कम पानी भएको वा हुने २) मुहान बिग्रेको वा चुहिने , ३) पानी पोखरी बिग्रेको वा चुहिने,

४) बिपिटि,भल्ब च्याम्वर आदि बिग्रेकोवा चहिने

५) पाईपलाईन चुहिएको या जाम भएको ,६) पानी सबै धाराहरुमा बराबर वितरण हुन नसकेको, ७) विवाद ८) अन्य ।

मर्मत सम्भारको स्थिति–१) राम्रो सँग मर्मत सम्भार भएको २) सामान्य मर्मत गर्नु पर्ने ३) ठूलो मर्मत गर्नु पर्ने ४) सुधार विस्तार गर्नु पर्ने ५) पूनः निर्माण गर्नु पर्ने ६) पुनः संचालनमा ल्याउन नसकीने ।

फारम –२ गाविसमा सञ्चालनमा रहेका ट्युबवेल विवरण

जिल्ला –.....गा. वि. स .....

जिल्ला –.....गा. ि व.स .....

क.स	प्रणली बर्गीकरण	सञ्चालनमा रहेका वडागत कल संख्या तथा लाभान्वित घर धुरी संख्या																				कैफियत
		वडा १		वडा २		वडा ३		वडा ४		वडा ५		वडा ६		वडा ७		वडा ८		वडा ९		जम्मा		
		कल संख्या	घर धुरी	कल संख्या	घर धुरी	कल संख्या	घर धुरी	कल संख्या	घर धुरी	कल संख्या	घर धुरी	कल संख्या	घर धुरी	कल संख्या	घर धुरी	कल संख्या	घर धुरी	कल संख्या	घर धुरी	कल संख्या	घर धुरी	
१	सामुदायिक स्यालो ट्युबवेल																					
२	सामुदायिक डिपसेट ट्युबवेल																					
३	जम्मा सामुदायिक टुयुबवेल११																					
४	निजी डिप सेट ट्युबवेल																					
५	आईरन युक्त टुयुबवेल (कुनै परिक्षण भएको भए सो को आधारमा भर्ने)																					
६	आर्सनिक युक्त टुयुबवेल (कुनै परिक्षण भएको भए सो को आधारमा भर्ने)																					
७	कैफियत																					

[8] संचालनमा नरहेका कल सम्बन्धी मुख्य जानकारी समष्टिगतमा कैफियतमा जनाउने

9 निजीको साथै सामुदाियक ट्युबवेल प्रयोग गर्ने घरधुरीलाई कुनै एकमा मात्र गणना गर्ने ।

[10] कार्यान्यन गर्ने निकाय,संरचनाको अवस्था,संचालनमा नरहेका संरचना जस्ता विषयमा देखापरेका महत्वपूर्ण जानकारी उल्लेख गर्ने ।

[11] एक घरमा एक भन्दा धेरै निजी टुयुबवेल भए कल संख्या एक मात्र मान्ने ।

फाराम –३ गा. वि.स को खानेपानी प्रोपाmइल जिल्ला ..... गा. िव.स .....

खानेपानीको प्रणाली तथा स्रोत को वर्गिकरण					धारा (वा कल, ईनार,स्रोत , आदि) संख्या तथा लाभान्वित घरधुरी संख्या																		जम्मा गा. वि.स		गा. वि.स को %
					वडा १		वडा २		वडा ३		वडा ४		वडा ५		वडा ६		वडा ७		वडा ८		वडा ९				
					धारा	घर	धारा	घर	धारा	घर	धारा	घर	धारा	घर	धारा	घर	धारा	घर	धारा	घर	धारा	घर	धारा	घर	
क) व्यवस्थित प्रणली प्रयोग	१)	पाईप प्रणली (फाराम १ ख बाट)	सर्वजनिक धारा	जम्मा																					
			निजि धारा	जम्मा																					
	२	जडित ट्युबवेल (फाराम –२ बाट	सार्वजनिक / सामुदयिक ट्यूबवेल																						
			निजि ट्यूबवेल																						
	३)	व्यवस्थित प्रणाली (सहायक फारमबाट	क) बर्षाते पानी																						
			ख) संरक्षित मूल , ढङ्गे धारा																						
			ग) संरक्षित इनार																						
	छिमेकीको निजी प्रणाली मुख्य स्रोतको रुपमा प्रयाग गेर्न घरधुरी																								
	क) बाट लाभान्वित जम्मा घरधुरी संख्या																								
ख) असुरक्षित खानेपानीका स्रोत	माथि (क) का व्यवस्थित प्रणाली नपरेका क्षेत्रको स्थिति		१ मुल																						
			कुवा इनार																						
			३ खोला, कुलो																						
			ख) बाट समेटिएका जम घर संख्या																						
ग) भावि योजना (फाराम १ ख बाट)	१		निर्माणधिन पाइप प्रणाली																						
	२		सम्भाव्यता अध्ययन सकिएको / भइरहेको) पाईप प्रणली																						
	ग) बाट लामान्वित हुने जम्मा घरधुरी संख्या																								
घ) वडामा वर्तमान जम्मा घर घुरी संख्या																									
ङ) हाल सम्म कुनै व्यवस्थित प्रणाली पर्न नसकेका घरघुरी																									
कुनै व्यवस्थित प्रणालीमानपरेका घरधुरी को अवस्था (छान्ने)																									

फारम –४ गा. वि.स.को चर्पी सम्बन्धि जानकारी

जिल्ला ..... गा. िव.स : .....

		वार्ड नं १	वार्ड नं २	वार्ड नं ३	वार्ड नं ४	वार्ड नं ५	वार्ड नं ६	वार्ड नं ७	वार्ड नं ८	वार्ड नं ९	गाविस को जम्मा	कैफियत
क	व्यवस्थित चर्पी भएका घरधुरी संख्या											
ख)	प्रत्यक वडाका चर्पी अवलोकन विवरण											
ख) १	अवलोकन गरेको चर्पी संख्या											
ख)२	अवलोकन गरेको चर्पीको प्रकार											
ख)२ –१	खाल्टे चपीको संख्या											
ख)२ –२	वाटर सिल भएको चर्पी संख्या											
ख)२ –३	अन्य चर्पी संख्या											
ख)३	फोहर चर्पी संख्या											
ख)४	प्रयोग नभएको चर्पी संख्या											
ख)५	व्यवस्थित नदेखिएको चर्पी संख्या											
ख)६	पक्का चर्पी –घर भएका संख्या											
ख)७	कच्चा चर्पी –घर भएका संख्या											
ग)												

कैफियत -बडाको जम्मा वर्तमान जम्मा घर धुरी संख्या

ख २–१ देखि २–३ सम्मको जम्मा संख्या ख१ को संख्या बरावर हुनु पर्छ ।

प्रत्यक वडामा रहेका व्यवस्थित चर्पीको संख्या फारमको क) खण्डमा लिइन्छ भने ख) खण्डमा तीमध्ये छनोट गरिएका चपीहरुको अवलोकन गरिन्छ। चर्पीको अवलोकनको लागि संख्या

निर्धारण निम्न अनुसार गर्ने।१) कुनै वडामा रहेका जम्मा चपीको संख्या १२ वा कम भए सम्पूर्ण चर्पी अवलोकन गर्ने

२ वडाका जम्मा चर्पी संख्या १२ भन्दा धेरै तर जम्मा चपर्पि संख्याको १० प्रतिशत हुन आउने संख्या १२ वा कम भए, कम्तीमा १२ चर्पि छनोट गरि अवलोकन गर्ने ।

३) प्रत्येक वडामा रहेका चपी संख्याको १० प्रतिशतले हुन आउने संख्या १२ भन्दा वढि भए उक्त १० प्रतिशतले हुन आउने सबै च्रर्पीहरु अवलोकनको गर्ने

क्रमवद्ध ढाँचामा ९बौ घर छाडी १० औ अवलोकनको लागि छानेर छनोट गरी अवलोकन गर्ने ।

नोट : –१) एक गाविसको लागि एक पाना प्रयोग गर्ने । २ गाविस प्रोफाइलमा चाहिने जानकारीहरु स्थलगत भ्रमणको बेला संकलन गर्न अनुसूची २ मा दिएको सहायक फारम प्रयोग गर्नु पर्ने हुन्छ।

३)फोहर चर्पी भन्नाले दिशा देखिने वा भिंगा भन्केको वा गनाउने चर्पीलाई लिनु पर्छ । ४) फारमा समावेश गरिएको क्र.स. ख २ –१ देखि ख २–३ सम्मका चर्पी प्रणालीको किसिम बारे जानकारी निर्देशिकाको अनुसूची –३ को चित्रबाट लिन सकिन्छ ।

Figure: 1.1 Organizational Structure of DWSS

DWSS - Organization Chart

Director General

Deputy Director General-1

Administration Section			
Chief Administrative Officer	**1**		
Section Officer	2		
Nayab Subba	10	Librerian	1
Computer Operator	1	Typist	3
Kharidar	2	Telephon Operator	2
Heavy V.Driver	1	Light V. Driver	8
Support Staff	9	Security Guard	2

Human Resource Development, Training and Research Section	
S.D.E.	**1**
Engineer	2
Sub-Engineer	1

Rain Water Harvesting And Appropriate Technology Section	
S.D.E.	**1**
Engineer	2
Sub-Engineer	2

Water Quality Improvement and Monitoring Section			
S.D.E.	**1**	Computer Operator	1
Engineer	2		
Sub-Engineer	2		

Central Water Quality Test Laboratory Unit		
Chemist	**1**	
Asst. Chemist	3	

Sewerage Development and Management Section			
S.D.E.	**1**		
Engineer	2		
Sub-Engineer	1		

Environmental Sanitation and Disaster Management Section	
S.D.E.	**1**
Engineer	2
Sub-Engineer	2
Sociologist	1
Computer Operator	1

NGO and Community Mobilization Section	
S.D.E.	**1**
Engineer	1
Sub-Engineer	1

Deputy Director General-2

Progress Monitoring & Project Degin and Evaluation Section	
S.D.E.	**1**
Engineer	2
Sub-Engineer	1

Electro-Mechanical and Maintenance Sfection			
Mech. S.D.E.	**1**	S. Mechanics	1
Mechanical Eng	1	Driller	1
Mech. Sub-Enginee	1		

National Management of Information Section	
S.D.E.	**1**
Engineer	2
Sub-Engineer	1

Foreign Aid, Cordination and Planning Section	
S.D.E.	**1**
Engineer	2
Sub-Engineer	1

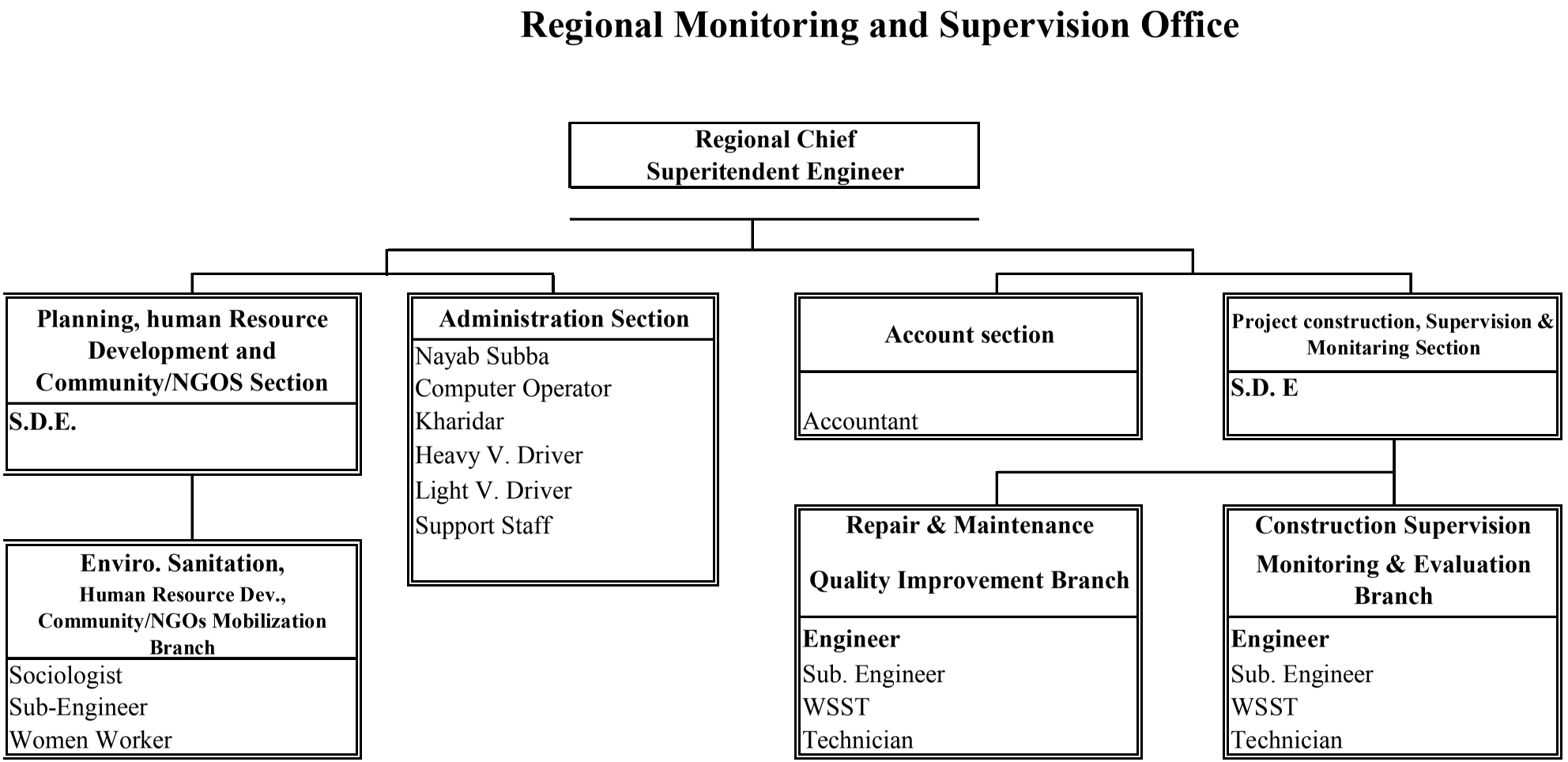
Financial Administration Section	
Chief Account Controler	1
Account Officer	2
Accountant	4
Computer Operator	1

Description of Total Posts

Gazetted	**38**	**Non-Gazetted**	**64**
First Class	**3**	First Class	**23**
Second Class	**10**	Second Class	**2**
Third Class	**19**		
Technical	**32**		**25**
First Class		first class	**17**
Second Class	**2**	Second Class	**2**
Third Class	**4**	Support Staff	**20**
Administrative	**6**		**39**
Total			**102**

Pool			
Sup. Engineer	**2**	**Engineer**	**20**
S.D.E.	**7**	**Sub-Engineer**	**25**
Total	**9**		**45**

Figure 1.2 RSMO Organization Chart



DWSS in Human Resource Development

Table: 1.1 Existing Staff Plan (*Darbandi*) within DWSS

Class	S.N	Post	Existing Staff					
			DWSS	Poll	RMSO	WSSDO	WSSSDO	Total
Gazetted First Class	1	Director General	1					**1**
	2	Dy. Director General	2					**2**
	3	Superintendent Engineer		2	5			**7**
	Total		**3**	**2**	**5**	**0**	**0**	**10**
Gazetted Second Class	1	Senior Divisional Engineer	9	7	10	43		**69**
	2	Mech. Sen. Divisional Engineer	1					**1**
	3	Senior Sociologist	1					**1**
	4	Chief Admin. Officer	1					**1**
	5	Chief Account Controller	1					**1**
	Total		**13**	**7**	**10**	**43**	**0**	**73**
Gazetted Third Class	1	Engineer	17	20	10	43	27	**117**
	2	Mech. Engineer	1					**1**
	3	Sociologist	1		5			**6**
	4	Section Officer	2					**2**
	5	Account Officer	2					**2**
	6	Chemist	1					**1**
	7	Micro-Biologist	1					**1**
	Total		**25**	**20**	**15**	**43**	**27**	**130**
Non-Gazetted First Class	1	Sub-Engineer	12	25	25	141	57	**260**
	2	Mech. Sub-Engineer	1					**1**

	3	Nayab Subba	10		5	43	27	**85**
	4	Accountant	5		5	43	27	**80**
	5	Librarian	1					**1**
	21	Computer Operator	5		5	43	27	**80**
	6	Typist	7					**7**
	7	Asst. Chemist						**0**
	8	Driller	1					**1**
	9	Sr. Mechanics	1					**1**
	Total		**43**	**25**	**40**	**270**	**138**	**516**
Non-Gazetted Second Class	1	Kharidar	2		10	43		**55**
	2	Asst. Account	1					**1**
	3	Women Worker			5	43	27	**75**
	4	WSST			15	129	81	**225**
	5	Telephone Operator	2					**2**
	6	Mechanics						
	Total		**5**	**0**	**30**	**215**	**108**	**358**
	Grand Total of DWSS HR		**89**	**54**	**100**	**571**	**273**	**1087**