

Aug 2013



Ministry of Health & Population



Health Workforce Plan and Projections Nepal



Draft

Developed by
MoHP's Core Technical Team
(a sub-group of the Workforce Planning and
Projections Technical Working Group)

Strengthening Health Systems—Improving Services

COMPOSITION OF THE WORKING GROUP AND TECHNICAL TEAM

Composition of the Technical Working Group (TWG)

1. Mr Chandra Man Shrestha, Joint Secretary, MoHP
2. Mr Radha Raman Prasad, Director General, Department of Drug Administration (DDA)
3. Dr Debkala Bhandari, Director General, Department of Ayurveda
4. Dr Guna Raj Lohani, Deputy Director General, Department of Health Services (DoHS)
5. Dr Bal Krishna Suvedi, Director, NHASC, DoHS
6. Dr Babu Ram Marasini, Chief, HeSRU, Ministry of Health and Population
7. Mr Hari Prasad Lamsal, Under Secretary, Ministry of Education
8. Mr Puspa Raj Katuwal, Under Secretary HRH/ MoHP
9. Mr Atma Ram Satyal, Under Secretary, Ministry of General Administration (MOGA)
10. Mr Sagar Acharya, Under Secretary, National Planning Commission
11. Dr Trilok Pati Thapa, Principal, Nepal KIST Medical College
12. Dr Arjun Karki, Professor, Patan Academy of Health Sciences
13. Mr Ramchandra Man Singh, Health Governance Advisor, NHSSP
14. Mr Bal Govinda Bista, HRH Consultant, LATH/NHSSP
15. Mr Kamal Khadka, National HRH Officer, LATH/NHSSP

Composition of the Core Technical Team (CTT), a sub-group of the TWG

1. Mr Chandra Man Shrestha, Joint Secretary, MoHP
2. Dr Bal Krishna Suvedi, Director, NHASC, DoHS
3. Dr Babu Ram Marasini, Chief, HeSRU, MoHP
4. Mr Kabi Raj Khanal, Under Secretary, MoHP
5. Mr Hari Prasad Lamsal, Undersecretary, MoE
6. Dr Trilok Pati Thapa, Principal, Nepal KIST Medical College
7. Dr Arjun Karki, Professor, Patan Academy of Health Sciences
8. Mr Sudip Pokhrel, Technical Coordinator, WHO
9. Mr Ramchandra Man Singh, Health Governance Advisor, NHSSP
10. Mr Bal Govinda Bista, HRH Consultant, LATH/NHSSP
11. Mr Kamal Khadka, National HRH Officer, LATH/NHSSP

This process was supported by Rupa Chilvers, workforce planning international consultant, LATH/NHSSP, with technical backstopping by Margaret Caffrey and Tim Martineau, LATH/NHSSP, support from the other members of the NHSSP human resources team, Kamal Khadka and Balgovinda Bista, Dr Frank Paulin of WHO Nepal, and DFID.

CONTENTS

ACKNOWLEDGEMENTS	Error! Bookmark not defined.
COMPOSITION OF THE WORKING GROUP AND TECHNICAL TEAM	i
CONTENTS	ii
LIST OF TABLES	iii
LIST OF FIGURES	iii
ACRONYMS	iv
1 INTRODUCTION	1
1.1 Background	1
1.2 Methodology	2
1.3 Purpose and Guiding Principles	4
1.4 Nepal Policy Context	5
2 WORKFORCE PROJECTIONS	6
2.1 The Context.....	6
3 OPTIONS AND PRIORITISATION	23
3.1 Key Messages.....	23
3.2 Implications for Policy and Strategy Development.....	24
3.3 Monitoring and Evaluation Options	25
REFERENCE LIST	26
Annex 1: Development of Vision for Health Care in 2030	27
Annex 2: Salary and Cost Information for the Public Health Sector	31
Annex 3: Analysis for Workforce Stock Estimations and Production Capacity	33
Annex 4: HRH requirement Inputs and Assumptions Used for the Projections	37

LIST OF TABLES

Table 0:	Timelines for developing and implementing current and future health policies	5
Table 1:	Definitions of workforce groupings used in the HRH projections	8
Table 2:	Three supply scenarios used for estimating future HRH supply from the labour market.....	9
Table 3:	Non-coverage factors important for scenario-based HRH planning.....	10
Table 4:	Statements related to health services in government budget speech 2011/12	11
Table 5:	Five scenarios used for estimating future HRH requirements for the public sector.....	14
Table 6:	Population estimates used for all five scenarios	15
Table 7:	Economic estimates used in all five scenarios.....	15
Table 8:	Stock and new entry estimates for estimating availability of HRH in Nepal	15
Table 9:	Baseline scenario estimates for current sanctioned posts by occupation and facility level	16
Table 10:	Baseline scenario estimates for current sanctioned posts by occupation and health facility level for lower level facilities	17
Table 11:	Projected availability by workforce categories for 2030.....	18
Table 12:	Five yearly breakdowns of projected availability up to 2030.....	19
Table 13:	Projected requirements under five scenarios by workforce categories for 2030 for public sector	20
Table 14:	Projected cost of requirement scenarios by workforce categories for public sector (NPR million/yr).....	21
Table A2.1:	Health budget allocation by type of expenditure	31
Table A2.2:	MoHP budget allocation by authorities	31
Table A2.3:	Salaries information for Health Services Act employees.....	32
Table A3.1:	Calculating input estimations for HRH workforce stock.....	33
Table A3.2:	Background data for informing input estimates for new graduates in the labour market	35
Table A4.1:	Building on existing system scenarios staffing norms and number of facilities.....	37
Table A4.2:	Vision for health care in 2030 projection statements and staffing norms	39
Table A4.3:	Primary health care centre staffing norms.....	40
Table A4.4:	Rural hospital (15 bed) staffing norms.....	40
Table A4.5:	District hospital (50 bed) staffing norms.....	41
Table A4.6:	Regional hospitals (500 bed) staffing norms	42
Table A4.7:	Number of facilities used for requirement estimates for Vision for health care in 2030 scenarios	43

LIST OF FIGURES

Figure 1:	Process for developing the Nepal health workforce plan and projections	3
Figure 2:	Key health service areas for Nepal	6
Figure 3:	Estimated growth in workforce required compared to no-change baseline	20
Figure 4:	Projected public health workforce gaps for estimated availability and requirements.....	22

ACRONYMS

AHW	auxiliary health worker
ANM	auxiliary nurse midwife
BAMS	bachelor of ayurvedic medicine and surgery
B.S.	Bikram Sambat (Nepali dates)
CPD	continuing professional development
CTT	Core Technical Team
ENT	ear, nose and throat
GDP	gross domestic product
HA	health assistant
HeSRU	Health Sector Reform Unit
HR&FM division	Human Resources and Financial Management Division
HRH	human resources for health
HRHPPT	HRH Planning and Projection Tool
HuRIS	Human Resources Information System
LATH	Liverpool Associates in Tropical Health
MBBS	bachelor of medicine and bachelor of surgery,
MCHW	Mother and Child Health Workers
MoHP	Ministry of Health and Population
NCASC	National Centre for Aids and Sexually Transmitted Disease Control
NHSP	Nepal Health Sector Programme–I (
NHSSP	Nepal Health Sector Support Programme
NHTC	Nepal Health Training Centre
NPR	Nepalese rupee
OPD	out-patient department
PCL	proficiency certificate level
PHCC	primary health care centre
SAHW	senior auxiliary health worker
TSLC	technical school leaving certificate
TWG	Technical Working Group
VDC	village development committee
VHW	village health worker
WHO	World Health Organisation

1 INTRODUCTION

1.1 BACKGROUND

This plan and projections for Nepal's health workforce has been jointly developed by the Ministry of Health and Population's (MoHP) Workforce Planning and Projections Technical Working Group (TWG) and the Core Technical Team (CTT), which is a sub-group of the TWG. This initiative has proceeded under the leadership of the Joint Secretary of MoHP's Human Resources and Financial Management Division with technical assistance from NHSSP's human resources team.

This workforce plan and projections are key outputs of MoHP's 2012–2015 Human Resources for Health (HRH) Strategic Plan. One of the key messages and lessons learned from international experiences of workforce planning is the critical importance of stakeholder engagement in health workforce planning (adapted from Dussault et al., 2010; McQuide et al. 2008; Dreesch et al., 2005).

The TWG and the CTT were made up of senior MoHP officials, decision- and policy-makers, and a range of external stakeholders from the supply side and the service delivery side. These stakeholders were from other government ministries and agencies, the private sector, academia, and development partners and agencies involved in the employment and regulation of health workers. The workforce plan and projections will serve as the framework for identifying HRH requirements and production for Nepal's health sector.

Workforce projections can be developed for the long term (up to 20 years) with a view to informing health plans and policies in the short to medium term. The main concepts for workforce projections to inform planning are estimations of 1) HRH supply, 2) new entries (from the country and outside) and 3) leavers (including migration and retirements). HRH requirements can be estimated using health personnel to population ratios, facility staffing norms and/or service targets, with specific aims and objectives translating to workforce requirements. The gap between current supply and future requirements requires analysis to identify and assess the most appropriate solutions for addressing gaps and how best solutions can be achieved for the entire health sector.

The types of decisions that can be made using this workforce plan and projections include:

- re-designing services;
- reviewing health service infrastructure and staffing;
- testing workforce implications for health sector plans; and
- commissioning and planning staff education and training.

These are mostly related to public sector planning processes. In the private sector, workforce plans can be used to inform strategic engagement with the private sector to ensure that private health services are aligned with government health objectives.

Plans and projections also have implications for regulation and governance, service commissioning and the development of effective management structures to ensure quality of care across all types of service provider. For the education and training sector, workforce plans can be used to ensure that the curriculum for a given profession is aligned with future health needs and/or demand, to make decisions about restricting or expanding training intakes, private/other sector needs, and about developing new training programmes.

These projections provide an evidence set that can be used to guide workforce planning processes. As long term projection models can be subject to a level of uncertainty as a result of changing structures and priorities, the short to medium implications (over the next 10 years) can be used as levers for change. Five scenarios have been developed to model different options and potential realities. A multi-sectoral stakeholder group led the development of these scenarios. Because these projections are based on what is known at a certain point in time (i.e. now), the continuous monitoring of supply and human resource trends, as well as emerging health service needs and demands, will be critical for testing and modifying them and developing new scenarios.

1.2 METHODOLOGY

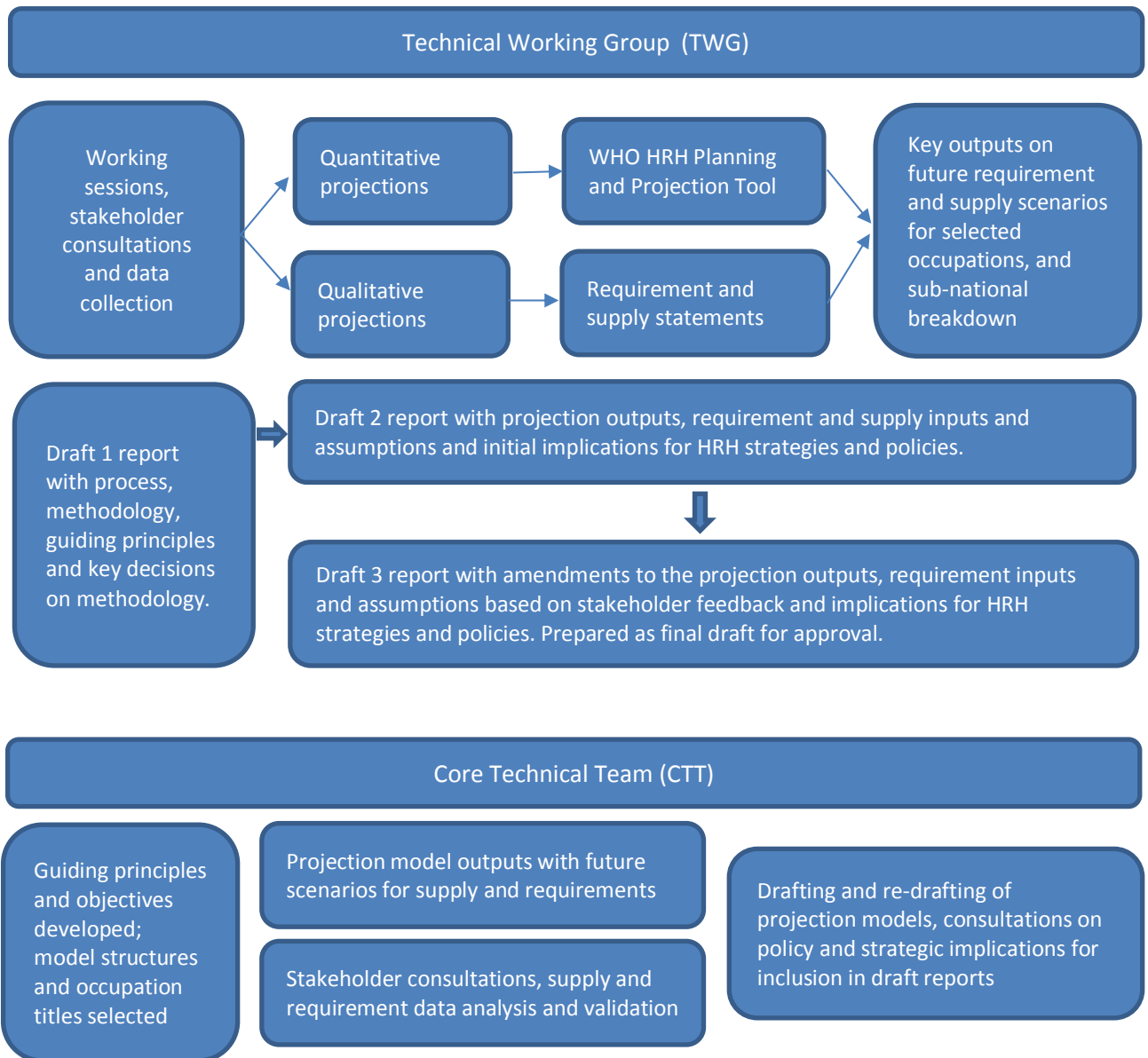
This workforce plan and projections were developed using data collected from a national HRH assessment undertaken by MoHP in 2012 (MoHP 2012) across the public and private health sectors. This was a key activity of the 2011-2015 HRH Strategic Plan. This HRH assessment and data collection has generated a comprehensive dataset, containing data on the location, age, gender and other key characteristics of the health workforce. This dataset can be maintained and built on to provide a more in-depth understanding of the current and future potential of the health workforce.

Following extensive data entry and cleaning processes applied to the dataset¹, further analysis was carried out and the results have been used to develop the projections (see Chapter 2) that are presented in this plan for the key public sector workforce groups.

The CTT identified the current and future service delivery needs, reviewed available HRH data, developed planning assumptions and projection scenarios, and drafted the workforce plan (see Figure 1 for process undertaken). In a number of working sessions the CTT refined and modified the planning assumptions and scenarios using a series of data reports and available human resources data.

¹ See the HRH Profile for further details on the methodology used for the Assessment, the analysis of the HRH dataset and results.

Figure 1: Process for developing the Nepal health workforce plan and projections



The following four scenarios (plus the baseline scenario) were developed based on current priorities and a vision of the health care system required for Nepal by the year 2030:

1. **The baseline scenario** is the current context with no changes in the future.
2. **Building on the existing system, scenario A** — with changes to staffing norms and classifications for the current number of health facilities.
3. **Building on the existing system, scenario B** — with changes to staffing norms and classifications for the current number of health facilities with an emphasis on building the role of health professionals at the local level.
4. **Vision for health care in 2030 scenario A²** plans for a new system to meet emerging health needs with the required increases in bed capacity and the specialist services that are required to impact on the health of the population (see Annex 1).
5. **Vision for health care in 2030 scenario B** plans for a new system to meet emerging health needs with the specialist services required to impact on the health of the population but with no change in the number of facilities that currently exist.

The World Health Organisation's (WHO) HRH Planning and Projection Tool (HRHPPT), which is currently being piloted, was selected for use in developing the quantitative projections in Nepal. The qualitative projections and the scenarios are based on the knowledge and expert opinions of the members of the TWG and CTT on the context, the health system, service delivery requirements and supply capacity within Nepal.

1.3 PURPOSE AND GUIDING PRINCIPLES

Purpose of the workforce planning process — The purpose of the workforce planning process is to develop plans and projections based on agreed service needs and the current supply and conduct a gap analysis based on a best estimate of currently available information.

Guiding principles for planning and projections — The following guiding principles were adopted in the workforce planning process:

- *Interim Constitution, 2007*: It is the right of all Nepali citizens to free basic health services, the right to a clean environment, access to education and a means of livelihood, all in a social environment free of discrimination and institutionalized inequality.
- *Health*: In line with the aims and objectives of the HRH Strategic Plan, 2011-2015, the health sector is working “to ensure the equitable distribution of appropriately skilled human resources for health (HRH) to support the achievement of health outcomes in Nepal” in the short, medium and long terms.
- *Education of the health workforce*: The system will be designed in such a way that it will produce technically competent, compassionate and socially accountable human resources for health.

² The vision for health in 2030 is the long term approach for Nepal where health needs and priority areas are envisaged to be different to the current context. The HRH required to deliver care is expected to be more specialised, delivering care for non-communicable diseases and long term conditions, with oral and eye health care as part of the basic health care package. Further details on the vision included as part of the scenarios are provided in Annex 1.

- *Quality of care for the population*: Ensure equity driven quality health services for all citizens by implementing standards and quality assurance mechanisms for the health sector at large as an integral part of health service delivery systems.
- *Affordability and feasibility*: Alignment with current and new policies across line ministries and maintaining a practical perspective on implementation.

1.4 NEPAL POLICY CONTEXT

Nepal’s first Five Year Plan, 1956 outlined health policies and plans for the country. These have been followed by subsequent national planning documents that have highlighted the importance of human resources for health for effective and quality health service delivery. The key policies and plans have included:

- First Long Term Health Plan, 1974 (2033 BS)
- The National Health Policy, 1991
- The Second Long Term Health Plan (SLTHP) 1997–2017
- The Health Sector Strategy, 2004
- Nepal Health Sector Programme–1 (NHSP-1, 2004-2010).

The timelines for the development and implementation of current and future health policies and plans up to 2030 are shown in Table 0:

Table 0: Timelines for developing and implementing current and future health policies

	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079
	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2020/21	2021/22	2022/23	2023/24
Workforce Plan and Projection										
NHSP-2										
Draft HRH Strategic Plan										
NHSP-3										
Second Long Term Health Plan										
	2080	2081	2082	2083	2084	2085	2086			
	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31			
Workforce Plan and Projection										

2.1 THE CONTEXT

Spatial disaggregation and time period

The national perspective was applied to the projections, and reported for mountain, hill, and Terai ecological zones. Where appropriate, and based on the availability of data, regional disaggregation has also been provided for the projections.

The scope of the workforce plan and projection is 17 years — up to 2030. This is to ensure that long term sustainability is built into health workforce development policies, and for guiding education commissioning in the future. The short-term is up to 2015, medium term to 2020, and long term to 2025 and 2030.

Health service categories

In Nepal, health services are officially categorised as either promotive and preventative, curative, rehabilitative, or disaster/epidemic services. The following three main categories for health care delivery were considered for the development of this workforce plan and projections:

- ayurvedic medicine;
- alternative and traditional medicine; and
- health services.

The latter category has been broken down into the twelve areas as shown in Figure 2.

Figure 2: Key health service areas for Nepal

<ul style="list-style-type: none"> a. Essential health care: <ul style="list-style-type: none"> i. Maternal, new-born and child health* ii. Oral health* iii. Eye health and ENT* iv. Communicable diseases* b. Non-communicable diseases and chronic health c. Injury and trauma d. Rehabilitative care e. Health of the elderly 	<ul style="list-style-type: none"> f. Mental health** g. Self-care and health promotion h. Population health and cross-cutting areas i. Health informatics j. Drugs and vaccinations k. Diagnostics and health technologies l. Ancillary services (e.g. patient transport)
<p>* Note: These services are included as part of essential health care but there may be variation in packages and definitions over the next 20 years.</p> <p>** Note that counselling is considered as part of other services as well as mental health.</p>	

As a part of creating the long term vision for Nepal's health workforce (the vision for health care in 2030 scenarios), a more detailed breakdown of the services for primary and secondary care has been developed (see latter part of Annex 1). Note that the plan and projections do not cover projections and planning for alternative and traditional medicine.

The private sector data taken used for the workforce estimates excludes services provided by small private businesses including small retail-based pharmaceutical companies and clinics and similar services provided by individuals. References to the private sector in this plan relate mainly to private hospitals and private health centres.

The HRH requirement projections have been applied for the main categories of health care professionals and mid-level and assistant health workers that make up the majority of the contributions to direct health care delivery from sub-health posts at the community level through to the regional hospitals, which provide regional level care. As the HRH requirements up to the regional level are impacted by the scale of the services, the implications for planning will change with small variations in assumptions. An estimation of the requirements for health services above regional level and private sector facilities have been included as a fixed estimate based on current employment data.

Health workforce occupational categories

The workforce within the public health sector is governed by the Health Service Act, 1997/98 and the Civil Service Act, 1993, and in some cases through other service acts relating to professions. Schedule 3 of the Nepal Health Service Rules (1999) (which guides the sanctioning of posts in Nepal³) lists 417 post titles plus two official posts at the Level 12 for Chief Expert and Director General of Health Services.

These post titles are used for creating sanctioned posts. Most of the workforce is located between Levels 4 and Levels 11 (of the workforce) although a Level 3 hospital cleaner post may be created). The majority of the workforce groupings are categorised by the type of specialty or expertise required for the job, except for the miscellaneous category, which includes a mix of clinical, support, management and administrative staff.

The workforce covered by the Civil Service Act mainly consists of administrative and management staff and other contracted workers depending on the type of public service they are recruited by.

The private sector health worker cadres vary depending on the type of institution and organisation they are employed in, but the structures and staff groups are similar to those in the public sector. These typically comprise a management group, a health professionals group, plus mid-level and support staff groups. The key differences are that health workers employed in the private sector may be retired from the public sector, work less than full-time and have dual roles in the private and public sectors.

Where required, both the public and private sectors are required to recruit health workers who have undergone a specified period of training and are professionally registered with the appropriate professional council. The professional registration process in Nepal is guided by:

- The Nepal Medical Council Act, B.S. 2020 (1963/64)
- Nepal Medical Council Regulations, B.S. 2024 (1967/68)
- Ayurveda Medicine Council Act, B.S. 2045 (1988/89)
- Nepal Nursing Council Act, B.S. 2052 (1995/96)
- Nepal Health Professional Council Act, B.S. 2053 (1996/97)
- Nepal Health Professional Council Regulation, B.S. 2056 (1999/2000)
- Nepal Pharmacy Council Act, B.S. 2057 (2000/2001)

³ Schedule 3 (Relating to Rule 7; Nepal Health Service Rule 2055 (1999) Name of Posts in the Service.

For this exercise, it is acknowledged that every health personnel is valuable and has a resource implication. However, qualitative and quantitative projections need to be focussed and prioritised. Therefore, the selection criteria for the qualitative and quantitative human resources projections are as follows:

- The time needed for training to produce HRH creates a lag time between production and availability.
- The absence of the workforce would result in disruption in clinical service delivery.
- There is quantitative information available on the production of the workforce and supply in the health sector.

The health workforce that contributes to health care services, management, policy and planning have been categorised into workforce groupings (see Table 1). Note however that health personnel are not limited to direct front-line workers as it is recognised that the role of support staff for clinical information, and technical management and planning skills are essential for ensuring the effective delivery of health care services.

Table 1: Definitions of workforce groupings used in the HRH projections

	Groupings	Definition
1	High level management staff	Level 12 level staff, ministry level officials and health policy makers.
2	Education, training, research and knowledge staff	Continuing professional development (CPD) trainers, lecturers, academics, researchers, policy planning and implementation technical specialists including health economists, monitoring and evaluation officers.
3	Operational management staff	National, district, hospital, and local management staff who are responsible for running service delivery and implementing policies. Personnel that are responsible for management and have clinical roles are also included in this grouping.
4	Administration and office staff	This grouping includes a wide range of office support staff working at national, district, hospital, and local levels providing secretarial, legal, accounts, finance, computing and other related services.
5	Health care professionals	These are identified by level and registration to professional councils including for nurses, medical officers (MBBS), specialists, pharmacists, dentists, ayurvedic <i>chikitsak</i> (BAMS), public health, midwives (starting training), lab/medical technologists, radiographers, physiotherapists, and occupational therapists.
6	Mid-level, auxiliary and other clinical service staff	These are identified by level and registration to professional councils including for dental assistants, anaesthetic assistants, physiotherapy assistants, nutritionists, health assistants, auxiliary nurse midwives, auxiliary health workers, community medical assistant, ayurvedic <i>kabiraj/vaidhyas</i> , and pharmacy assistants.
7	Clinical service support staff	These are identified by level and general support staff, theatre assistant, nursing assistant, technician and technical assistants, medical records/clinical information staff, laboratory staff, and other clinical roles.
8	Hospital facilities and associated staff	These include the general facilities staff, including cleaners, cooks, electricians, ward helpers, and other categories.
9	Other staff	This grouping is to be defined later following the final analysis of post titles.

The data used for the projections is from the 2012 HRH Dataset generated through the MoHP HRH Assessment, 2012, which includes information on approximately 55,000 health workers in the public sector (32,809) and private sector (21,368). One of the key messages and lessons learned from international experiences of workforce planning is that the better the information base and the

technical capacity to use it, the better the diagnosis and selection of interventions and the more reliable the projected workforce requirements and supply will be (adapted from Dussault et al., 2010; McQuide et al. 2008; Dreesch et al., 2005).

The teams involved in developing this workforce plan and projections made every effort to ensure that the data used were accurate and of the highest possible quality. In addition the national and international consultants worked closely with the CTT and TWG members to familiarise them with workforce planning models and techniques and ensure that the workforce planning process would be institutionalised and would continue to be used to review and modify the plan and projections.

The database was digitised through a number of data entry and re-entry processes, with two teams categorising the data, and carrying out manual re-coding and peer reviews of the key assumptions, such as the current workforce occupational categories. Further validation of the stock size was carried out using MoHP information on post titles, sanctioned posts and registration information from the professional councils (see Annex 2). The age profile by cadre/occupational category was used to inform estimates on the proportion of the workforce expected to exit the workforce over five year periods in the next two decades (see Table 12).

Considerations for estimating workforce availability

The projections were applied to fifteen professions including the medical, nursing, midwifery, allied health and other selected clinical support groups that met the inclusion criteria. The groups included are general medical doctors, specialist medical doctors, ayurvedic doctor, nursing professionals, midwifery professionals, dentists, pharmacists, pharmacy assistant, physiotherapists, medical technologists, lab assistants/technicians, imaging and therapeutics (non-medical), kabiraj (ayurveda), auxiliary nurse midwives (ANMs) and auxiliary health workers (AHWs). The specialist medical group was projected as one group due to the small numbers of specific specialist cadres available and required. Quantitative projections were not considered appropriate for use with this group.

Three supply scenarios were used for estimating the availability of HRH based on expected levels of attrition due to retirement (based on age profile by type of health worker) (see Table 2). The majority of the occupations had a baseline exit assumption of 5% over each five year period. However, some groups such as specialists, ANMs, ayurvedic doctors and kabirajs were adjusted to take into account their aging workforces.

Table 2: Three supply scenarios used for estimating future HRH supply from the labour market

	Baseline scenario	Low supply scenario (2% lower)	High supply scenario (1% higher)
Numbers produced (graduates/trainees)	Same as current	Low	High
Number of joiners	Same as current	Low	High
Proportion of leavers	Same as current	High	Low

Considerations for estimating workforce requirements

Although both the government and private sector estimated requirements are of interest; projecting requirements for the private sector is not feasible based on the staffing norms and number of health facilities. This is mainly because there are too many uncertainties about the numbers and types of health workers that the private sector may require in the future. The workforce requirement

estimates were adjusted for potential demand from the private sector and other sources based on the current level of contribution.

The following key methodologies were applied for the quantitative projections:

- The estimation of service coverage (based on home, community, and health facilities).
- The estimation of population-based requirements using baseline and new developments in the scenario-based planning.

These are applicable given the available data and the current methods used for allocating resources to the health workforce at the government level.

This approach outlined the quantities of HRH required for the future and the potential supply gap. In addition to coverage, the concepts in Table 3 have also been put forward as important features of the planning process.

Table 3: Non-coverage factors important for scenario-based HRH planning

Important concepts	Concepts for consideration
Team-based planning:	The fact that workforce teams are responsible for delivering healthcare is an underlying assumption for planning HRH provision.
Quality:	Competent providers work to an evidence-based standard of care within an ethical framework (e.g. without conflicts of interest or compromising patient care).
Feasibility and affordability:	There are financial and capacity barriers to the immediate implementation of the expansion of the HRH workforce and other recommendations in this report. However, it is expected that the projections and plan highlight the desired goals for health care in the future that can be implemented using a phased approach, as opposed to compromising the vision based on cost or other considerations.
Government in a coordinating and facilitating role:	The government needs to play a coordinating and facilitating role for smooth operation and health impacts through autonomous boards, local areas, private sector and cross-cutting interventions ensuring investment for the future production and distribution of the health workforce.

As with all health systems, the pace of change may lead to new developments that may have implications for the workforce. It is therefore critical that this plan and projections are updated and adjusted throughout the plan period in line with such developments.

Key national level recent relevant developments are as follows:

- The government's **2011/2012 budget speech** outlined proposals for improvements and expansion in the country's health services (see relevant sections in Table 4). These have been taken into consideration while developing these projections and also informed the proposed options and recommendations in the section below.
- Changes to the **Health Service Act** in 2013 resulted in the movement of female volunteer health workers to AHW status and MCH workers to ANMs as part of the general direction for defining a minimum qualification level for health workers (entering into Level 4). In addition, policies are currently being developed that may introduce new sanctioned posts for pharmacists to be located outside of large hospitals. The implications of these changes to the supply of the health workforce for district and community levels are addressed as part of the analysis.

- The government has requested that a process be implemented for **policy dialogue and development** across the public sector. This is currently underway and the outputs and outcomes may influence the direction of future health policy and planning and have implications for the workforce plan and projections.
- Activities will start for the **development of NHSP-3** in late 2013. The key priority areas and recommendations from the workforce plan and projections should inform this process. In addition, the work carried out on the categorisation of workforce groups and health service areas will inform future developments of health and human resources information management systems.
- The **right to health care services** has been outlined in law for citizens and was one of the key planning assumptions in the development of this plan and projections. However, it is also acknowledged that related developments aimed at increasing or redesigning Nepal's health care system may impact on estimates of future supply and requirements. Therefore it will be necessary to maintain and update the projections in line with major changes in the country's delivery of health care services.

Table 4: Statements related to health services in government budget speech 2011/12

Statement	Statement no.
Addressing Equity	
Integrated Public Health Campaign will be carried out by targeting the remote and backward districts having low human development index.	273
Addressing Equity / New Interventions/ Treatments/ Services/ Upgrades	
Under the basic health service, package of Women's Health Improvement, Integrated Child Health Management, and Health Security of Backward Area, Marginalized and Senior Citizen Health Security and Model Health Village programs will be developed and carried out effectively. Yoga and natural health clinics will be encouraged to provide institutional services.	271
I have arranged to upgrade the hospitals situated in remote and backward areas.	275
Continuing Interventions/ Treatments/ Services	
As per the Nepal Health Sector Program Implementation Plan, I have continued the ongoing health services including safer motherhood, child health and nutrition, control of communicable/ non-communicable disease and management of hurt and mental health.	272
In order to strengthen health service, the present Government has the policy of establishing health institution at appropriate place, physical improvement and expansion of beds. Capacity development programmes of all health personnel including female health volunteers will be implemented. In addition to allocating additional amount in the Female Health Volunteers Trust located in each Village Development Committee, I have proposed to increase the uniform allowance that is provided annually.	282
For the sake of making necessary legal provision, Immunization Bill will be drafted in the coming year to integrate various immunization programmes, mobilize foreign aid in immunization in an organized way and make immunization service more effective.	284
New Interventions/ Treatments/ Services/ Upgrades	
Coming to the end of the current Fiscal Year, the task of upgrading 1000 sub health posts of different parts of the country to the level of health posts has been completed. In the coming Fiscal Year, additional 500 sub health posts will be upgraded to health posts and birthing centre will be established in additional 150 health institutions.	274
I have continued the services provided from Teaching Hospital of Tribhuvan University and	276

Martyr Ganga Lal National Heart Centre with a view to provide free heart disease treatment to the senior citizen above 75 years of age and the children under 15 years of age.	
The service of kidney treatment will be initiated in the newly constructed building of Bhaktapur Hospital. This hospital will be developed as a well-equipped hospital for human organ transplantation.	277
The National Ayurved Research and Training Centre, constructed under the assistance of the Government of China, will be brought into operation. The Trauma Centre, which is established in Bir Hospital with the assistance of the Government of India for the effective treatment of patients suffering from accident of serious nature, will be made operational next year.	278
Basic health service will be expanded up to health posts with the participation of local bodies. Diagnostic service and response system will be strengthened at all levels. "Village Clinic Programme", which is implemented under people's participation with a view to provide easily available and effective health services at local level, will be made more effective.	280
The medical garbage has become risky from the viewpoint of public health and environment. A model medical garbage management programme will be initiated in the coming Fiscal Year in Pokhara under the concept of Public Private Partnership in order to emphasize scientific and well managed treatment of such garbage.	283
Strategy for social health insurance will be prepared and brought into implementation.	285
I have proposed a programme of hospital mapping within the coming Fiscal Year. I have arranged to strengthen the Zonal Hospitals. The current structure of health sector, physical infrastructure and human resources will be restructured according to population and physical location.	286
Policy	
New Health Policy will be formulated and implemented in order to establish health service as the fundamental right of the citizen.	270
As per the main slogan of "Need of New Nepal, Cooperatives in Health", special programmes will be brought into operation for the increased participation of cooperative institutions in the health service delivery.	279
Arrangement will be made to provide all kinds of health services free of cost to the families of Martyrs, and people injured in people's movement and poor.	281
In order to avoid and manage sporadic accusations and fighting between the patient and doctors during the course of medical treatment, guidelines.	287

There are a number of socio-demographic, cultural, and external influences associated with health seeking behaviour and the use of health services. The future demand for health services can be partially determined by studying the socio-demographic profile of the population and measures of health status. However, there are also other considerations that can impact on future demand for health services and therefore the requirement for HRH. The following such themes were considered while developing the projections:

- **Local level decisions** from autonomous management boards that would probably lead to the increased and systematic use of block grants to provide health services and recruit new health personnel in the public sector outside of the requirements outlined by sanctioned posts.
- **Health insurance** in the form of government or other schemes for specific health service areas or defined geographical areas that would increase the demand for HRH.
- **Increased utilisation levels** influencing service expansion and new service development.
- **Higher out of pocket** expenditure from households from communities experiencing greater wealth or showing higher preferences towards health-related services.

All the above anticipate growth in health sector expenditure and health workforce expansion to meet health needs and demands. The drivers for increased requirements in the future are based on a number of factors, some of which include the impact of upgrading facilities, and the potential recruitment of cadres with a range of alternative clinical skillsets in the private sector. Currently a review is underway on how to designate urban and rural areas. This is expected to result in the recategorisation of many village development committee (VDC) areas as municipalities in Nepal. With changing dynamics and continuing trends towards urbanisation, it is important to consider the needs of the urban poor as well as the rural and geographical barriers to accessing health care.

The type of health services that may be required in the future are expected to change through greater involvement of the private sector and the double burden of infectious and non-communicable disease (NCDs). The latter will become a major public health threat in coming decades. Related developments such as technology, e-health, gender-based social inclusion, social service units, and improved transport links and community infrastructure are also expected to impact future demands for health care. This may result in opportunities for adopting new ways of working and delivering services.

HRH requirements were estimated based on:

- the implications of increased health service demand for HRH;
- health personnel to population ratios; and
- facility-based coverage.

The requirements were viewed as having to be responsive to emerging health needs, with a new set of occupation titles being needed for healthcare by 2030. As well as maternal, neonatal and child health (MNCH) and nutrition continuing to be priority areas, there are new areas of concern including non-communicable diseases (also referred to as chronic diseases) and mental health. These may also have short to medium term implications for training, with new technical skills and competencies needed to address emerging and new disease patterns and the behavioural aspects of caring for the population. Team approaches to delivering health care services were also considered while developing the plan and projections.

Some of the main considerations for projecting demand for health services and/or health needs of the population are as follows:

- The proportion of private sector service delivery in the current context and the future will be based on the new service themes.
- Services have been categorised as promotive and preventative, curative, rehabilitative, or disaster/epidemic services for the purposes of outlining scenarios. More appropriate groupings may be applied later.
- The consideration of current or new roles that may require expansion in the future such as specialist health care delivery teams, medical diagnostics, technical support for management and planning, and the needs of regional hospitals.

The five main scenarios used for estimating future requirements were informed by existing data and expert stakeholders' knowledge and inputs and assumptions about health service delivery from the community to the regional levels (Table 5).

Table 5: Five scenarios used for estimating future HRH requirements for the public sector

	Future scenarios	Description
1. Baseline scenario	Based on the current context with no changes in the future.	This scenario is based on the Essential Health Care Package Report in NHSP-2 and is updated with the developments during NHSP-2 and NHSP-2. Information on the upgrading of facilities and plans that are awaiting approval are considered.
2. Building on the existing system A	Building on the existing system with changes to staffing norms and classifications for the current number of health facilities.	This scenario builds on current developments in NHSP-2 and considers implications for moving all sub-health posts to health post status and making 15-bedded hospitals into 50-bedded hospitals and maintains some of the variation in staffing levels at zonal and district level hospitals.
3. Building on the existing system B	Builds on the existing system with changes to staffing norms and classifications for the current number of health facilities with an emphasis on building the role of health professionals at the local level.	This scenario uses the assumptions from the above scenario, and standardises the staffing norms for all zonal hospitals as well as considering the implications of having medical health care professionals at health post level and obstetrician/paediatrician specialists at the district level.
4. Vision for health care in 2030 A	Plans for new specialisations and services in line with emerging health needs, with an increase in bed capacity.	The scenarios were developed by defining basic health care, delivery of health services and health facility structure/norms required to meet the future needs of the country. See Annex 1 for how these were developed. This scenario puts forward a four tier system of primary health care centres (PHCCs), 15-bedded rural hospitals, district hospitals of between 50–100 beds, and regional hospitals (100-500 beds) delivering specialised services with a medically-led team in line with emerging needs.
5. Vision for health care in 2030 B	Plans for new specialisations and services in line with emerging health needs, but with no change to the number of facilities.	This scenario uses the assumptions for the vision for health care in 2030 scenario A, and applies the current number of facilities.

Planning assumptions

The following were considered while developing the five scenarios:

- levels of population growth (Table 6);
- levels of economic growth (Table 7);
- levels of personnel expenditure (Table 8);
- stock and new HRH entry estimates (Table 8 and Annex 3); and
- staffing norms (Table 9 for baseline scenario, Table A4.1 for scenarios building on existing system and Tables A4.2 to A4.6 for vision for health care in 2030).

The details of these planning assumptions are presented in Tables 6 to 10.

Table 6: Population estimates used for all five scenarios

	Total population (2011 census)	Projections for 2016	Projections for 2021	Projections for 2026	Projections for 2031
Mountain	1,781,792	1,831,927	1,883,473	1,936,469	1,990,956
Hill	11,394,007	12,043,487	12,729,989	13,455,623	14,222,619
Terai	13,318,705	14,617,549	16,043,057	17,607,581	19,324,677
Nepal	26,494,504	28,492,963	30,656,519	32,999,673	35,538,252

The projected change in population was based on growth in the last 10 years by ecological zone (mountain, 0.56%, hill, 1.11%, and terai, 1.88%).

Table 7: Economic estimates used in all five scenarios

Variable	Inputs for 2011 baseline
Base year gross domestic product (GDP) in (millions, national currency):	<ul style="list-style-type: none"> NPR 1,346,816 million at start of 2012 NPR 1,558,174 million at end of 2012 <i>Source: Ministry of Finance Economic Analysis, 2012</i>
Assumed annual average % change (0.0) in GDP:	<ul style="list-style-type: none"> 3.6% to be applied for projections <i>Estimates from World Economic Outlook Report, 2012 and CBS 2013</i>
Total recurrent expenditure (entire public sector):	NPR 384,900 million
Recurrent public health sector expenditures on personnel:	Total recurrent expenditure – NPR 8,803.1 million <ul style="list-style-type: none"> NPR 4,429.3 million (pay-related); NPR 4,400.8 million (pay-related – non-training)

Table 8: Stock and new entry estimates for estimating availability of HRH in Nepal

Occupations	Active Supply 2011	New entrants to supply	Estimated losses/year in next 5 yrs
General Medical Doctors	1,553	1,015	5%
Specialist Medical Doctors	1,559	240	10%
Nursing Professionals	4,885	3,500	5%
Midwife Professionals	1	0	1%
Dentists	105	295	5%
Pharmacists	400	365	5%
Physiotherapists	84	4	5%
ANMS	6,780	1,130	5%
AHWs	7,761	1,000	5%

Table 9: Baseline scenario estimates for current sanctioned posts by occupation and facility level

Post titles	Regional Hospital - A	Zonal Hospital - A	Zonal Hospital - B	District Hospital - A	District Hospital - C	District Hospital - D
Physician	2	2	1			
Senior Medical Officer	1	1				
Medical Officer	22	10	6	1	2	3
Medical Superintendent	1	1	1	1	1	1
Anaesthesiologist	2	1	1			
Dermatologist	1	1	1			
Obstetrics/gynaecology	2	2	1			1
Orthopaedic Surgeon	1	1				
Pathologist		1	1			
Paediatrician	2	2	1			1
Psychiatrist	2	1	1			
Radiographer		1	1			
Radiologist	2	1				
Surgeon	2	2	1			
ENT Surgeon	1	1	1			
Hosp. Nursing Inspector						1
Matron (Nursing Admin.)	2					
Nursing (Asst Matron)		1	1			
Sister	6	3	2			
Staff Nurse	67	24	18	2	4	9
Dental Officer	1					
Dental Surgeon	2	2	1			
Physiotherapist	1					
ANM	1	3	4	2	2	3
MCHW						
AHW	9	4	5	3	2	4
VHW						
Section Officer	1					
Anaesthetist Assistant	2					
Counsellor (ANM)	2					
Dietician Assistant	1					
Health assistant (HA)		1	1			
HA/SAHW					1	1
Lab. Technician		4	1	1	1	1
Lab. Assistant		2	1		1	1
Medical Technician		1	1			
Pharmacy Assistant	2	1				
Physiotherapy Assistant	1	1				
Radiographer Assistant	2				1	1
Medical Records Assistant	2	1	1		1	1
Medical Records Officer	1					

Table 10: Baseline scenario estimates for current sanctioned posts by occupation and health facility level for lower level facilities

Post Titles	PHCCs	Health posts A	Health posts B	Sub-health posts
Medical Officer	1			
Staff Nurse	1			
ANM	3	1	1	
MCHW				1
AHW	2	2	1	1
VHW				1
HA/SAHW	1	1	1	
Lab Assistant	1			

Projection results

The estimated supply of HRH for Nepal in 2030 shows that the supply of all workforce groups is expected to grow over the next two decades, with the highest growth in general medical doctor (12,500), nursing (43,000) and pharmacy professional groups by 2030. This is based on both public and private sector supply and is estimated for joiners and leavers, the results of which are shown in Table 11 for the 2030 estimate and Table 12 for the five yearly breakdowns.

However, there are some caveats for projections based on supply:

- Firstly, the supply of ANMs and AHWs will be slowed by the high number of exits with nearly half expected to leave the service due to retirement in the next 20 years.
- Secondly, the specialist medical workforce is expected to grow at a slower pace as it is estimated that approximately 20% of the workforce will exit in the next 20 years. Although the total numbers projected for the specialist medical workforce are highlighting trends, these mask the shortage in critical skills such as for anaesthesia, and obstetrics and gynaecology. These are currently produced in quantities of less than ten per year and this specialised workforce tends to be more mobile and more likely to migrate to other countries or locations.

Table 11: Projected availability by workforce categories for 2030

	Supply 2011	Estimated availability 2030 - baseline	Estimated availability 2030 - low attrition	Estimated availability 2030 - high attrition
General Medical Doctors	1,553	12,531	14,918	11,537
Specialist Medical Doctors	1,559	3,053	3,650	2,807
Ayurveda Doctor	58	661	754	623
Nursing Professionals	4,885	43,012	51,169	39,618
Midwife Professionals	0	598	598	598
Dentists	105	3,499	4,134	3,230
Pharmacists	400	4,440	5,272	4,093
Pharmacy Assistants	453	5,927	7,029	5,464
Physiotherapists	84	84	102	76
Medical Technologists	40	824	976	762
Lab Assistants/Technicians	1615	8,563	10,249	7,865
Imaging and Therapeutics (non-medical)	265	872	1,053	795
Kabiraj	382	831	1,028	765
ANMs	6,780	7,198	8,248	6,726
AHWs	7,761	7,987	9,256	7,459

Note: *availability* is equivalent to supply in the country based on the production and current stock estimates. These do not indicate the numbers that will be employed in the public and private sector.

Table 12: Five yearly breakdowns of projected availability up to 2030

	Baseline attrition				Lower than baseline attrition				Higher than baseline attrition			
	2015	2020	2025	2030	2015	2020	2025	2030	2015	2020	2025	2030
General Medical Doctors	4,635	8,420	9,948	12,531	4,890	9,245	11,496	14,918	4,514	8,042	9,275	11,537
Specialist Medical Doctors	1,522	2,066	2,214	3,053	1,641	2,309	2,600	3,650	1,467	1,956	2,049	2,807
Ayurvedic Doctor	217	253	395	661	234	280	443	754	212	246	378	623
Nursing Professionals	15,692	28,733	34,145	43,012	16,541	31,524	39,417	51,169	15,286	27,458	31,853	39,618
Midwife Professionals	41	185	396	598	41	185	396	598	41	185	396	598
Dentists	1,133	2,227	2,776	3,499	1,183	2,424	3,175	4,134	1,108	2,136	2,598	3,230
Pharmacists	1,569	2,927	3,524	4,440	1,650	3,204	4,057	5,272	1,530	2,799	3,291	4,093
Pharmacy Assistants	2054	3878	4704	5927	2157	4,237	5,407	7,029	2,004	3,710	4,394	5,464
Physiotherapists	67	84	67	84	71	93	80	102	63	76	59	76
Medical Technologist	274	530	653	824	288	579	750	976	269	510	614	762
Lab Assistants/Technicians	3,439	5,961	6,802	8,563	3,649	6,585	7,915	10,249	3,339	5,677	6,321	7,865
Imaging and Therapeutics (non-medical)	399	644	692	872	427	719	817	1,053	386	610	639	795
Kabiraj	566	910	974	831	605	1,013	1,147	1,028	547	862	899	765
ANMS	8,915	12,361	9,208	7,198	9,246	13,555	10,841	8,248	8,594	11,666	8,463	6,726
AHWs	6,678	8,085	6,728	7,987	7,217	9,046	7,867	9,256	6,425	7,655	6,247	7,459

The projected workforce requirements reflect some of the uncertainties that exist about future service delivery (see Table 13), with nearly a six-fold increase in nursing professionals (Figure 3). Requirements for pharmacy, physiotherapy, imaging and therapeutics personnel are not shown to be substantial in the public sector, but demand from the private sector may grow beyond current estimates.

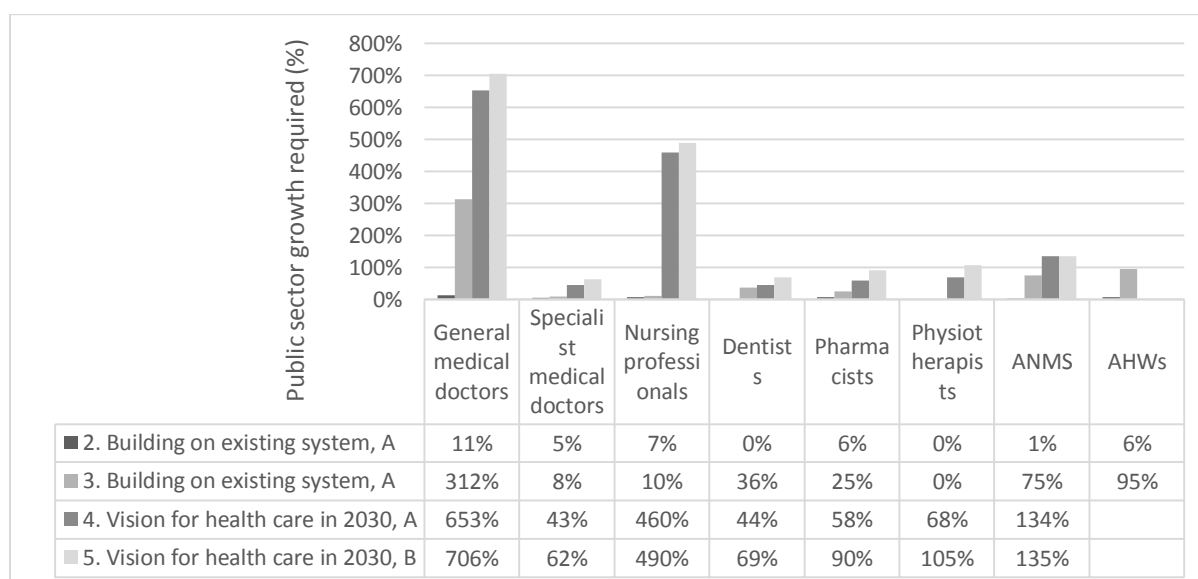
Table 13: Projected requirements under five scenarios by workforce categories for 2030 for public sector

Occupations	1. No change baseline	2. Building on existing system A	3. Building on existing system B	4. Vision for health in 2030 A	5. Vision for health in 2030 B
General Medical Doctors	1,286	1,432	5,298	9,686	10,364
Specialist Medical Doctors	1,784	1,868	1,926	2,559	2,889
Nursing Professionals	3,608	3,860	3,970	20,193	21,273
Midwife Professionals				301	469
Dentists	449	449	611	645	759
Pharmacists	360	381	450	570	684
Pharmacy Assistant	330	330	492	362	362
Physiotherapists	81	81	81	136	166
Lab Assistants/Technicians	1,214	1,214	1,400	5053	5,236
Imaging and Therapeutics (non-medical)	251	251	405	202	202
ANMS	5,161	5,203	9,013	12,078	12,105
AHWs	8,549	9,057	16,685	776	776
Totals	23,073	24,126	40,331	52,561	55,285

Note 1: Ayurvedic requirements could not be projected from currently available information.

Note 2: Constant requirement estimation has been included for the private sector based on current estimates. These impact all five scenarios equally.

Figure 3: Estimated growth in workforce required compared to no-change baseline



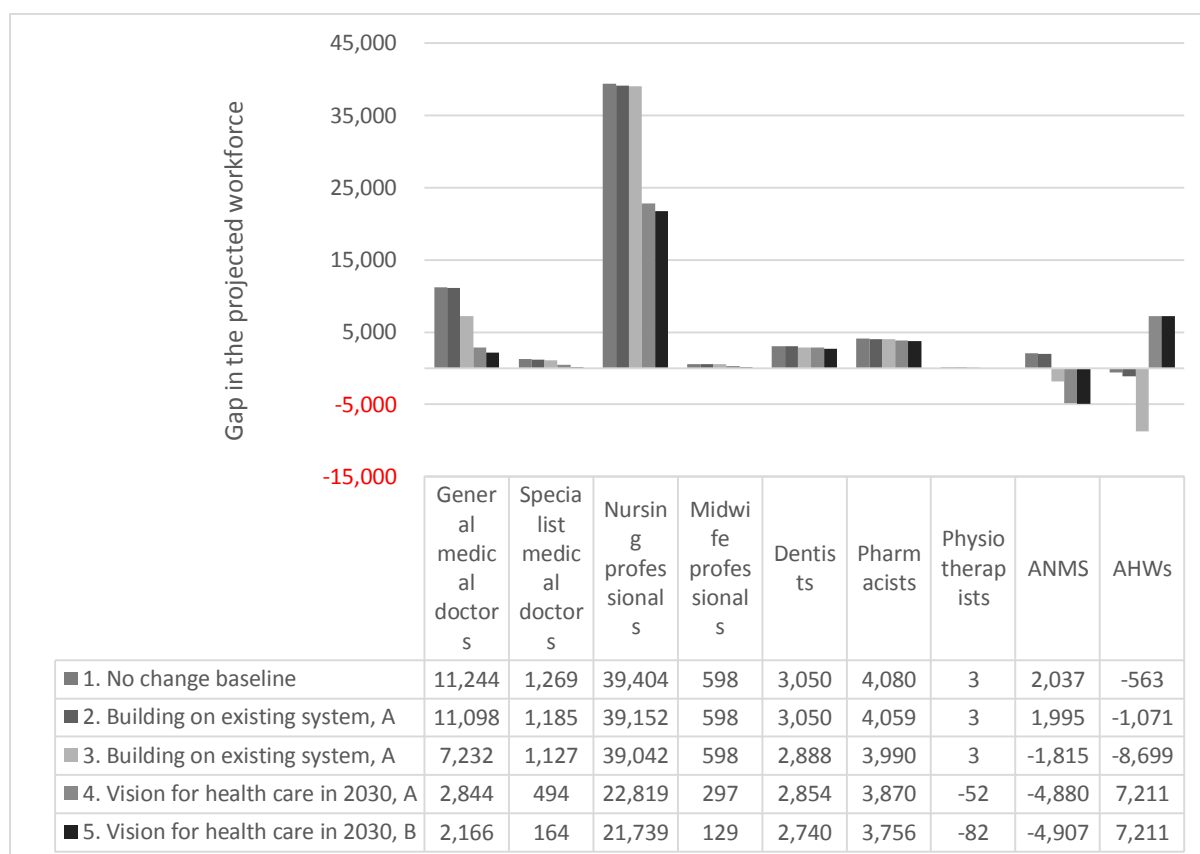
Moving from the baseline scenario through all scenarios to the vision for health care in 2030 scenario B, there is a progressive increase in the requirement for general and specialist medical doctors. As one of the more expensive tiers of the workforce, this leads to a considerable increase in the cost of delivering health, especially for vision for health care in 2030 scenario B where the cost rises by three times from the baseline to over NPR 1 billion (Table 9). These costs only take into account salaries and therefore do not reflect the additional expenses for recruiting and distributing the workforce. Given that the current estimate of GDP growth is 3.6% per annum and anticipating similar levels of growth for the health sector, it is expected that the costs associated with the scenarios are not affordable for the country. However, a phased implementation of the scenarios with a long term view beyond 2030 may be realistic and can be considered as part of reviewing the most appropriate scenario for Nepal.

Table 14: Projected cost of requirement scenarios by workforce categories for public sector (NPR million/yr)

Occupations	1. No change baseline	2. Building on existing system A	3. Building on existing system B	4. Vision for health care in 2030 A	5. Vision for health care in 2030 B
General Medical Doctors	18.09	22.06	127.23	246.61	265.05
Specialist Medical Doctors	6.49	8.91	10.59	28.85	38.36
Nursing Professionals	29.81	36.26	39.07	454.20	481.83
Midwife Professionals				7.68	11.98
Dentists			5.20	6.12	9.22
Pharmacists			2.30	5.37	8.29
Physiotherapists				1.54	2.30
ANMS	94.00	94.88	174.76	239.03	239.60
AHWs	162.98	173.63	333.57		
Total	311.37	335.75	692.73	989.39	1,056.64

Note: projections for lab assistants/technicians, imaging and therapeutic non-medical staff, and pharmacy assistants were not costed (in Table 14) due to a high level of uncertainty about coverage.

Figure 4: Projected public health workforce gaps for estimated availability and requirements



Note: A fixed requirement estimation has been included for the private sector based on current estimations. These impact all five scenarios equally.

From a system perspective, expansions in the clinical workforce have implications for the health sector workforce including administrative and support roles. In addition to the need for increasing numbers of specific health workers highlighted in the projections, it is expected that there will be a need to:

- provide specialist training for administrative and operational staff working at facility level to strengthen the health system;
- increase the capacity of MoHP and associated institutions for strategic planning, policy development, and research and monitoring; and
- review the role of mid-level and clinical support staff and their basic knowledge requirements as part of delivering on the vision for health care in 2030.

This workforce plan and projections for Nepal are based on the evidence for supply and consensus-based estimations of future requirements in the public sector, with adjustments made for the private sector.

3.1 KEY MESSAGES

The following key messages arise from the plan and projections exercise. These need to be taken forward for implementing the HRH Strategic Plan, the workforce plan and projections and for future health system strengthening activities:

1. **Absorbing qualified health workers** — The production of the main health professionals that are already in the health system is sufficient, given the likely high numbers of these HRH in the future. The requirement scenarios emphasise the need to ensure that there are effective strategies in place, such as those contained in the HRH Strategic Plan, to absorb the qualified health workers produced and available for work into the public and private health sectors.
2. **Scaling up the workforce** — A number of key services identified as essential for Nepal in the coming decades, such as non-communicable disease treatment, injury and trauma treatment and diagnostics, have a small number of professional and mid-level health workers with the competencies to deliver quality care. Currently there are only a few training places available for these cadres and the numbers being produced are insufficient unless their production is scaled up alongside the implementation of the recruitment and attraction, deployment and retention strategies in the HRH Strategic Plan. A phased scale-up approach should be adopted to implement this plan and projections. One of the key messages and lessons learned from international experiences of workforce planning is that health workforce planning and assessing future health worker needs is not only about projecting the numbers. It must also address issues such as recruitment, distribution and retention, education and training, and the management of health workers (adapted from Dussault et al., 2010; McQuide et al. 2008; Dreesch et al., 2005).
3. **Need for specialist medical personnel** — There are already shortages within the specialist medical group when individual specialist areas are taken into account. These shortages will become more critical as this group ages and exits and there are insufficient training places to produce new specialists to replace them.
4. **Maintaining enough community level health workers** — The availability of health workers at the community level appears to be sufficient given the changes that have taken place over the last year, such as the upgrading of MCHWs and other health workers to higher positions. However, the replacement of this group should be carefully monitored given that delivering health services closer to communities is a high priority area within Nepal's health system.
5. **Potential for new growth** — The fifteen types of health workers highlighted in this report is part of a larger team that is required for health care delivery in 2030, and the potential for new growth needs to be considered for the mid-level and clinical support groups, operational and management staff, as well as strategic and high level management. Requirements may also differ as local contexts are taken into account through autonomous decision-making for delivering health.

6. **HRH planning as a continuing process** — Adopting a ‘visionary’ approach to articulating and forecasting future requirements for the Nepal health sector is a guiding principle of this workforce planning exercise. The vision provides the direction for health service delivery and the composition of the health workforce that can be used for long term planning. The quantification of the requirements for fifteen types of health workers takes into account the changing and evolving status of health in Nepal. Forecasting and anticipating health care services that do not currently exist is a continuous step-wise process of testing assumptions and refining the details. One of the key messages and lessons learned from international experiences of workforce planning is that: “a workforce plan is not a ‘one-off’ product; HRH planning must be a continuing process, must be regularly monitored and evaluated, using clearly defined indicators and regularly revised” (adapted from Dussault et al., 2010; McQuide et al. 2008; Dreesch et al., 2005).

Among the above points the following should be prioritised for HRH planning so that it is made up of allied health professionals, scientifically trained personnel and more advanced specialists:

- increasing the number of training places;
- absorbing trained health workers into the health system; and
- improving the skills mix and composition of the future workforce:

The absorption of new graduates and the existing HRH supply into the health workforce is essential for meeting future requirements. This is important for all health worker groups and, as illustrated in the two visions for health care in 2030 scenarios, there needs to be clinical and non-clinical teams trained working across a spectrum of specialist and general service delivery areas.

It is expected that, given the variation in the requirement estimates for the proposed scenarios, that further stakeholder discussions and consultations will be needed to refine and get a consensus on the most feasible scenario following which a phased implementation approach should be adopted. This process should continue to promote collaborative and multi-stakeholder engagement and the participatory approaches as adopted in developing this plan and projections.

3.2 IMPLICATIONS FOR POLICY AND STRATEGY DEVELOPMENT

The development of this health workforce plan and projections has initiated discussion and debate about new ways of delivering service and meeting the health needs of the population. This thinking needs to drive and inform future health policy, strategy and plans. Building on the existing system is fairly straightforward; however, it will be the initial strategies that are developed and implemented that will be crucial for setting the direction for the coming decades. In line with the projections presented in this plan, the future requirements can vary substantially based on the scenario selected. These need to be considered further and tested for applicability to new and emerging developments in health and the Nepal context.

The financial feasibility of the scenarios will also need further consideration and need to be aligned with the goals and objectives of national development and health policies and plans. This type of feasibility assessment should be conducted with a view to including the private sector, local decision-makers and other stakeholders who can continue and support the achievement of the 2030 vision.

3.3 MONITORING AND EVALUATION OPTIONS

The projections and plans delivered here require continuous monitoring, updating and adjustment. The following options are put forward for the near future as well as part of a long term health system strengthening approach:

1. Update the projections after 12 months based on changes in the pharmacy, ANM, AHW and other relevant health cadres to ensure that the projection assumptions are in line with new developments in these areas.
2. Pilot innovative training and education approaches to expand specialisations and competencies for clinical teams as part of delivering evidence-based care.
3. Facilitate studies into the new health service areas identified while developing the plan and projections, focusing on service delivery by clinical, operational and management teams.
4. Conduct a comprehensive internal review of the evidence, vision and projections presented, and ensure their inclusion into the wider health and public sector planning processes.
5. Strengthen health information systems to ensure ongoing data collection in the public sector on the newly defined workforce categories and implement monthly reporting using the future profile of health service delivery.

REFERENCE LIST

- CBS (2013) National Account Estimate 2013. Kathmandu: Central Bureau of Statistics. Available at: <http://cbs.gov.np/wp-content/uploads/2013/04/GDP-2013-ALL.pdf>
- Dreesch N, Dolea C, Dal Poz MR, et al. An approach to estimating human resource requirements to achieve the Millennium Development Goals. *Health Policy and Planning*. 2005;20(5):267-276. Available at: <http://heapol.oxfordjournals.org/cgi/reprint/20/5/267>
- Dussault, G., Buchan J., Sermeus W., and Padaiga, Z. (2010) Assessing future health workforce needs. Policy summary prepared for the Belgian EU Presidency Conference on Investing in Europe's health workforce of tomorrow: scope for innovation and collaboration (La Hulpe, 9–10 September 2010).
- McQuide, P., Stevens, J. and Settle, D. (2008) An Overview of Human Resources for Health (HRH) Projection Models. Capacity Project. Technical Brief No 12; WHO 2010.
- MoF (2011). Government of Nepal's budget speech 2011/12. Official translation into English. Kathmandu: Ministry of Finance. Available at http://www.mof.gov.np/uploads/document/file/Final%20Translation%20Bud%202011-12_20130812023859.pdf
- MoHP (2012). National Human Resources for Health (HRH) Assessment, 2012. Kathmandu: Ministry of Health and Population.

ANNEX 1: DEVELOPMENT OF VISION FOR HEALTH CARE IN 2030

This annex provides an overview of the participants (Table A1), purpose and outputs from the vision for health care in 2030 scenarios development exercise, which took place in July 2013 in Kathmandu.

Table A1: Participants in the vision for health care in 2030 development workshop:

Name	Organization	Designation
Mr Kedar Adhikari	HR&FM, MoHP	Joint Secretary/ Chair
Dr Bal Krishna Suvedi	NCASC	Director
Dr Babu Ram Marasini	MoHP	Chief, HeSRU
Dr Arjun Karki	Patan Academy of Health Science (PAHS)	Professor
Mr Mahendra Shrestha	NHTC	Director
Mr Sudip Pokharel	NHSSP	Consultant
Mr Kamal Khadka	LATH/NHSSP	National HR Officer

A. Purpose and outcome

The vision for health care in 2030 development workshop was chaired by the Joint Secretary - HR&FM Division, MoHP. The purpose and expected outcome of the workshop were as follows:

Purpose: To develop vision for health care in 2030 for health services of the country by defining basic health care, delivery of health services and health facility structure/norms.

Expected outcome: The developed vision for health care in 2030 will be modelled as the fourth and fifth scenarios for the Workforce Plan and Projection 2013–2030.

B. Background:

MoHP is conducting workforce plan and projection for the period 2013–2030. Three [actually five] scenarios for the supply and requirement will be considered as follows:

1. No change in the existing workforce
2. Building on existing and upgraded infrastructure with expansion of workforce, and
3. New developments in health service delivery and workforce.

Workshop participants concentrated on developing the 2030 Vision, which would be fourth and fifth scenarios for the purpose of workforce plan and projection 2013–2030.

The workshop meeting discussed and agreed on the following to develop Vision 2030:

1. Statement for health.
2. Statement for health workforce.
3. Define health services:
 - a) Primary health care
 - b) Holistic/comprehensive (preventive, promotive, curative, and rehabilitative)
 - c) Effective secondary and tertiary service system
 - d) Robust referral system

- e) Ayurveda and Alternative health care/services
 - f) Well defined service responsibilities between primary, secondary and tertiary level health care institutions
 - g) Establish strong quality assurance mechanism for every level of health care institutions
 - h) Motivated and accountable health workforce
 - i) Regular capacity development including continuous professional development.
 - j) Creation of enabling working environment.
4. Health service structure/staffing norms
- a) Primary health care centres
 - b) 15 bedded hospitals
 - c) Rural hospital - 50 beds
 - d) District hospital - 50 beds
 - e) Regional hospital - 100 to 400 beds
 - f) Central level hospital – 1000s bed.
5. Projection Statement.

C. Define health services:

a) Primary health care:

- • Accident prevention and rehabilitation
- • Appropriate treatment of common disease and injuries
- • Community based rehabilitation
- • Control of AIDS and sexually transmitted disease (condom promotion and distribution)
- • Elderly health
- • Emergency preparedness and management
- • Environmental sanitation and hygiene
- • Expanded program on immunization
- • Integrated management of childhood illness (IMCI)
- • Leprosy control
- • Mental health services
- • Non-communicable diseases
- • Nutrition supplementation, enrichment, education and rehabilitation
- • Occupation health
- • Oral health services
- • Prevention and control of blindness
- • Prevention of deafness
- • Reproductive health services

- School health services
- Substance abuse including tobacco and alcohol control
- Tuberculosis control
- Vector borne diseases control
- Violence and injuries prevention (VIP).

b) Holistic/comprehensive (preventive, promotive, curative, and rehabilitative)

c) Effective secondary and tertiary service system:

- Effective: responsive, dependable, credible, efficient
- Secondary care service: availability of specialist services
- Tertiary care service: availability of sub-specialist services.

d) A robust referral system:

- Appropriate (specific) and practical (feasible) referral system
- Responsive, fast-track
- Two-way communication and feedback
- Adequate cost coverage
- Appropriate transportation service especially for emergency patients with life threatening condition.

e) Ayurveda and Alternative health care services:

- Ayurveda should be well integrated with health service system up to district level
- Integrated: One door service system with common administrative management and diagnostic facilities.

f) Well-defined service responsibilities between primary, secondary and tertiary level health care institutions:

- Service responsibilities should be well defined for each level of health care institution
- Defined services should be available
- Strengthening primary health care services capacities will lessen burden on secondary and tertiary care facilities.

g) Establish strong quality assurance mechanism for every level of health care institutions:

- Defined quality standards
- Mandatory and regular accreditation of all (state and non-state sector) health care facilities.

h) Motivated and accountable health workforce:

- Review and update roles, responsibilities and authority of each level of health workforce (e.g. each individual's job description)
- Regular (periodic) performance appraisals and timely feedback

- Transparent, performance based incentive system
- Reward and punishment system to ensure individual accountability.

i) Regular capacity development including continuous professional development:

- Identify learning needs of each individual health workforce members
- Establish mechanisms and processes to identify and address those needs
- Develop and provide opportunities for relevant induction, in-service and refresher training as necessary and appropriate
- Encourage self-learning, peer learning and group learning including the use of information and communication technology (ICT).

j) Creation of enabling working environment:

- Selection and empowerment of team leaders and supervisors
- Appropriate physical infrastructure including adequate residential facilities for essential staff
- Adequate equipment and support services
- Supportive supervision and regular communications
- Secure and safe working environment
- Provision of appropriate technical back-stopping system
- Transparent and clear professional and career development plans.

D. Health service structure/staffing norms

The workshop discussed and agreed to project the number of staff for the following levels of health facilities:

- **Primary health care centres** — It was agreed that all health posts will be upgraded to PHCCs by 2020 AD (see Table A4.3 staffing norms).
- **Rural hospitals (15 bed)** — Fifteen bedded hospitals will be established in VDCs with populations of more than 20,000. See Table A4.4 staffing norms.
- **District hospitals (50 bed)** — By 2020, remaining district hospitals will be upgraded to minimum 50 bedded hospitals with specialist service. Additional beds might be added depending upon health need, population density, distance, and geographical characteristics. See Table A4.5 for staffing norms.
- **Regional hospitals (100 to 500 bed)** — Regional hospitals will be upgraded into 500 bedded hospitals with all major sub specialty services. See Table A4.6 for staffing norms.
- **Central level hospital (1000 bed)** — Central hospital will be upgraded to 1000 beds. The central level public hospitals are Kanti Children’s hospital, the Maternity hospital, the Mental hospital and Sukraraj Tropical Hospital

The number of doctors and paramedics will be added on central level hospital (1,000 bedded), but Sukraraj and Mental Hospital may be 200–500 bedded.

ANNEX 2: SALARY AND COST INFORMATION FOR THE PUBLIC HEALTH SECTOR

This annex provides an overview of the financial information that informed the planning process. Please note that completed detailed expenditure information was available for 2009/10 and up to 2011/12 for other datasets.

Table A2.1: Health budget allocation by type of expenditure⁴

Budget category (NPR million)	Budget 2009/10	Actual Expenditure 2009/10	Budget 2010/11	Actual expenditure 2010/11	Budget 2011/12
Pay related	2,984.3	4,149.5	3,862.4	4,174.7	4,429.3
Pay related (non-training)	2,791.3	4,013.3	3,765.8	4,150.3	4,400.8
Non-pay related recurrent	11,143.1	8,691.0	13,988.8	9,525.3	14,561.3
Capital	3,713.1	3,077.2	5,998.8	4,437.9	5,912.1
Total	17,840.5	15,917.8	23,814.0	18,137.9	24,902.7

Note: this excludes the budget allocated through block grants and autonomous boards.

Table A2.2: MoHP budget allocation by authorities

Ministry (allocation in NPR millions)	2009/10	2010/11	2011/12
MoHP	1336	1870	2082
Department of Health Services	12,751	17,258	17,380
Department of Drug Administration	34	39	38
Centres	1128	1407	2237
Department of Ayurveda	423	501	527
Hospitals	2161	2730	2660
Alternative medicine	9	10	10
Total	17,840	23,814	24,935

⁴ Budget Analysis 2011/12 by Tiwari, S., Lekhak, S C., Baral, P., Adhikari, R., Poudel, L R., Thapa, M.B., Lieuens, T., Kathmandu, January 2012.

Table A2.3: Salaries information for Health Services Act employees

Note: Effective from July 2013, (NPR per month for 13 months/year)

S.N.	Post	Salary scale	Grade	Grade rate	Total	Additional 2 grade on basic scale (Employees appointed before July 2000)		Level
1	Assistant 1	10,000	20	80	11,600	10,000	11,760	
2	Assistant 2	10,610	15	90	11,960	10,610	12,140	
3	Assistant 3	11,290	15	100	12,790	11,290	12,990	
4	Assistant 4	13,650	15	110	15,300	13,650	15,520	
5	Assistant 5	14,480	17	120	16,520	14,480	16,760	
6	Senior Assistant	15,820	10	130	17,120	15,820	17,380	5
7	Officer 6	18,790	8	160	20,070	18,790	20,390	6
8	Officer 7	19,770	7	180	21,030	19,770	21,390	7
9	Officer 8	21,080	7	190	22,410	21,080	22,790	8
10	Officer 9	22,750	5	200	23,750	22,750	24,150	9
11	Officer 10	24,740	5	230	25,890	24,740	26,350	10
12	Officer 11	26,420	6	230	27,800	26,420	28,260	11
13	Officer 12	31,680			31,680			12

ANNEX 3: ANALYSIS FOR WORKFORCE STOCK ESTIMATIONS AND PRODUCTION CAPACITY

Table A3.1: Calculating input estimations for HRH workforce stock

Title	Private (HRH dataset 2012)	Public (HRH Dataset 2012)	Grand Total (HRH Dataset 2012)	HRH Dataset notes and HuRIS public sector estimates for comparison	Council data on total registrations (not new) in 2011/12 for comparisons	Recommended action for stock numbers
Generalist medical doctors	1,231	1,061	2292	1,636 for doctors including specialists of which 709 were in general or identified as medicine	10,194 MBBS registered in 2011/12	Use public sector data. Take into account dual roles in the private sector. Estimation of 60% of private sector works in public sector based on under 48 hours calculation for work-time.
Specialist medical doctors	1,409	995	2,404	1,636 for doctors including specialists of which 709 were in general or identified as medicine		Use public sector data. Take into account dual roles in the private sector. Estimation of 60% of private sector works in public sector based on under 48 hours calculation for work-time.
Nursing professionals	3,620	3,256	6,876	1,266 under general nursing and 5,177 under public health nursing identified, with a total of 6,443		Use public sector data. Take into account dual roles in the private sector. Estimation of 55% of private sector works in public sector based on under 48 hours calculation for work-time.
Dentists	74	31	105	31 identified under doctor with no other types of workers included for dentistry	Dentists data not available, 91 Specialist dental with MDS	Expectation for public sector to be hospital based specialists. Recheck the numbers for the private sector use the totals for the draft version.
Dental Assistants/ Hygienists					403 TSLC and 263 PCL in 2011/12	
Pharmacists	68	32	100	254 identified for pharmacy in the category of paramedics and professions allied to medicine (unclear on definitions and if assistants are included). Even with assistants in the public sector the total for HRH dataset goes to 413 including private sector. 400 identified as part of pharmacy projections in 2009 including both public and private sector	1,066 registered in 2011/12 and 2,597 Pharmacy Assistants registered	Update numbers to 400 based on 2009 Pharmacy Projections with 100 working in public sector (recheck assumptions in the report).
Physiotherapists	69	15	84	18 identified under physiotherapy in category of paramedics and professions allied to medicine (unclear on definitions and if assistants included). 136 in total when assistants from both public and private are included for HRH Dataset.	9 Consultant Physiotherapists, 218 BSc Physiotherapists, 92 TSLC in Physiotherapy, 88 PCL for Physiotherapy Assistants in 2011/12	Use HRH Dataset

Title	Private (HRH dataset 2012)	Public (HRH Dataset 2012)	Grand Total (HRH Dataset 2012)	HRH Dataset notes and HuRIS public sector estimates for comparison	Council data on total registrations (not new) in 2011/12 for comparisons	Recommended action for stock numbers
Optometrists and opticians including other eye health workers	18	13	31	10 Ophthalmologists identified in private sector for HRH dataset; no estimates available in HuRIS HRH dataset reports up to 154 in private sector and 42 in public sector including other eye health care workers	106 Consultant Ophthalmology, 448 PCL on Optometry and 58 BSc (Optometrists)	Do not use due to small numbers
ANMs	1,489 and 4 MCHWs	4,409 and 878 MCHWs	5,898 and 882 MCHWs	No equivalent estimates available in HuRIS	19,910 registered in 2011/12	Use HRH Dataset
AHWs	333	6,624 and 804 VHWs	6,957 and 804 VHWs	No equivalent estimates available in HuRIS	35,503 CMAs and AHWs registered in 2011/12	Use HRH Dataset
CMAs	657	47	704	No equivalent estimates available in HuRIS	35,503 CMAs and AHWs registered in 2011/12	Use HRH Dataset
Medical Technologists	18	22	40	No equivalent estimates available in HuRIS	719 Medical Technologists registered in 2011/12	Use HRH Dataset
Lab Assistants/ Technicians	899	716	1,615	No equivalent estimates available in HuRIS	7,305 Assistants and Technicians registered in 2011/12	Use HRH Dataset
Imaging and Therapeutics Staff (Non-Medical)	171	94	265	No equivalent estimates available in HuRIS		Use HRH Dataset
Ayurvedic Doctor	0	58	58			Use HRH Dataset
Kabiraj and Ayurvedic Assistant	0	382	382		191 Registered Kabiraj and Ayurvedic Assistant	Use HRH Dataset
Pharmacy Assistant	97	34	131	No equivalent estimates available in HuRIS	2,597 Pharmacy Assistants registered in 2011/12	Update numbers to 453 based on 2009 Pharmacy Projections with 153 working in public sector (recheck assumptions in the report). Note that this excludes estimated 1,200 providing community pharmacy

Table A3.2: Background data for informing input estimates for new graduates in the labour market

Title	No. Institutions that offer the programme	Production capacity per yr	Enrolled per yr	Graduated per yr	Estimated student completion from the data	Expected capacity for full production	Expected graduates	New entrants (include attrition)	Estimated losses in next 5 years (include retirements)
Generalist medical doctors	18 MBBS	1,760	1,074 Nepali	1,014 Nepali	0.94	1,760	1,100		
Specialist medical doctors		10 D Gyn Obs (DGO)	5 Nepali D Gyn Obs (DGO)	5 Nepali D Gyn Obs (DGO)	1.00	10	5		
		267 MD	228 Nepali MD	222 Nepali MD	0.97	14	230		
		14 MDGP	14 MDGP	14 MDGP	1.00	14	14		
Nursing professionals	28 BSC	610 BSC	607 BSC	607 BSC	1.00	610	610		
	25 BN/BPN	666 BN/BPN	530 BN/BPN	461 BN/BPN	0.87	666	530		
	101 PCL Nursing –Staff Nurse	4,017 PCL Nursing – Staff Nurse	1,756 PCL Nursing – Staff Nurse	1,451 PCL Nursing – Staff Nurse	0.83	1,760	1760		
		6 M Nursing	6 M Nursing	6 M Nursing	1.00	6	6		
Midwifery professionals	Private sector pilots underway with phased training estimated to be approximately 20 in the first year								
Dentists	12 for BDS	370 BDS	321 BDS	296 BDS	0.92	370	325		
		32 M Dental Surgeon	32 MDS	32 MDS	1.00	32	35		
Dental Assistants/ Hygienists		200 PCL	160 PCL	102 PCL	0.64	200	160		
		80 TSLC Oral Hygiene	80 TSLC Oral Hygiene	80 TSLC Oral Hygiene	1.00	80	80		
Pharmacists	11 B Pharma	495 BPharma	368 BPharma	368 BPharma	1.00	495	370		
		15 M Pharma	14 M Pharma	14 M Pharma	1.00	15	14		
Physiotherapists		5 BPT	4	4	1.00	5	4		
Optometrists and opticians		7 B Optometry	7 B Optometry	7 B Optometry	1.00	7	7		
		40 D Ophthalmic Science (DOS)	30 Nepali D Ophthalmic Science (DOS)	20 Nepali D Ophthalmic Science (DOS)	0.67	40	30		
ANMs	48	1,910	1,680	1,133	0.67	1,910	1,680		
AHWs	Training route into profession varied								
CMAs	76	3,036	2,677	2,677	1	3,036	2,670		
Medical Technologists and		115 BSc Medical	105	69	0.7	115	6,965		

Title	No. Institutions that offer the programme	Production capacity per yr	Enrolled per yr	Graduated per yr	Estimated student completion from the data	Expected capacity for full production	Expected graduates	New entrants (include attrition)	Estimated losses in next 5 years (include retirements)
associated staff		Lab Technologist							
Lab Assistants/ Technicians	44 PCL Lab Technician 31 TSLC Lab Assistant	1,320 PCL Lab Technician 1,240 TSLC Lab Assistant	580 PCL Lab Technician 680 TSLC Lab Assistant	102 PCL Lab Technician 572 TSLC Lab Assistant	0.5	2560	674		
Imaging and Therapeutics Staff	15 PCL Radiology/Radiography BSc Magneto Imaging Technology	438 PCL Radiology/Radiography 26 BSc Magneto Imaging Technology	120 PCL Radiology/Radiography 21 BSc Magneto Imaging Technology	44 PCL Radiology/Radiography 21 BSc Magneto Imaging Technology	0.5	464	65		
Ayurvedic Doctor		83 BAMS	68	68	1	83	68		
Kabiraj and Ayurvedic Assistant	6 TSCL Auxiliary Ayurveda health Worker PCL in Ayurveda	240 TSCL Auxiliary Ayurveda health Worker 120 PCL in Ayurveda	200 TSCL Auxiliary Ayurveda health Worker 40 PCL in Ayurveda	61 TSCL Auxiliary Ayurveda health Worker 30 PCL in Ayurveda	0.4	360	91		
Pharmacy Assistant	25 PCL Pharma	1000	850	490	0.5	1000	490		

ANNEX 4: HRH REQUIREMENT INPUTS AND ASSUMPTIONS USED FOR THE PROJECTIONS

Table A4.1: Building on existing system scenarios staffing norms and number of facilities

Post Titles	Sub-health post	Health Post A	Health Post B	24/7 future Health Post	PHCC without Beds	PHCC with Beds	Future PHCC	15-bedded hospitals	District Hospital C	District Hospital D	Future District Hospital	Zonal Hospital A	Zonal Hospital B	Regional Hospital
No. Facilities - Baseline Scenario	2,618	767	424	0	104	50	0	9	42	18	0	3	8	5
No. Facilities – Building on existing system A scenario	0	3809	0	0	0	154	0	0	9	60	0	3	8	5
No. Facilities - Building on existing system B scenario	0	0	0	3,809	0	0	154	0	0	0	69	11	0	5
AHW	1	2	1	3	2	2	2	2	2	4	4	4	5	9
Anaesthetist Assistant											1			2
Anaesthesiologist												1	1	2
ANM		1	1	1	3	3	3	2	2	3	3	3	4	1
Counsellor (ANM)														2
Dental Officer							1							1
Dental Surgeon												2	1	2
Dermatologist												1	1	1
Dietician Assistant							1							1
ENT Surgeon												1	1	1
HA												1	1	
HA/ SAHW		1	1	1	1	1	1	1	1	1	1			
Hosp Nursing Inspector										1	1			
Lab Technician							1	1	1	1	1	4	1	
Lab Assistant					1	1	1	1	1	1	1	2	1	
Matron (Nursing Admin.)														2
MCHW	1			1										
Medical Officer					1	2	2	2	2	3	3	10	6	22
Medical Records Assistant								1	1	1	1	1	1	2

Post Titles	Sub-health post	Health Post A	Health Post B	24/7 future Health Post	PHCC without Beds	PHCC with Beds	Future PHCC	15-bedded hospitals	District Hospital C	District Hospital D	Future District Hospital	Zonal Hospital A	Zonal Hospital B	Regional Hospital
Medical Records Officer														1
Medical Superintendent								1	1	1	1	1	1	1
Medical Technician												1	1	
Nursing (Asst Matron)												1	1	
Obstetrics/ Gynaecology										1	1	2	1	2
Orthopaedic Surgeon												1		1
Pathologist												1	1	
Paediatrician										1	1	2	1	2
Pharmacy Assistant							1					1		2
Physician				1								2	1	2
Physiotherapist														1
Physiotherapy Assistant							1					1		1
Psychiatrist												1	1	2
Radiographer												1	1	
Radiographer Assistant							1	1	1	1	1			2
Radiologist												1		2
Senior Medical Officer												1		1
Sister												3	2	6
Staff Nurse					1	1	1	4	4	9	9	24	18	67
Surgeon												2	1	2
VHW	1			1										
Pharmacist											1	1	1	2
Grand Total	3	4	3	8	9	10	16	16	16	28	29	76	53	143

Table A4.2: Vision for health care in 2030 projection statements and staffing norms

	Projection statements:
a	All sub-health posts and health posts will be upgraded into primary health care centres by 2030.
b	15 bedded hospitals will be established in VDCs with more than 20,000 populations
c	Every municipality, other than district headquarters, will have at least 15 bed hospitals. However, municipalities with populations more than 100,000 will have 50 bed hospitals.
d	By 2020, remaining (currently upgrade on-going) district hospitals will be upgraded to minimum 50 bedded hospitals with specialist services. Additional beds might be added depending upon health needs, population density, distance, and geographical characteristics.
e	Regional hospitals will be upgraded to 500 bed hospitals with all major sub specialty services.
f	50 bed regional and 150 bed zonal ayurveda hospitals will be established.
g	Organ specific super-specialty hospitals should be developed only as an integral part of the general hospital system.
h	Academic medical institutions should be developed and supported to evolve national centres of excellence.
i	Sub-regional and zonal hospitals will be upgraded to 100–400 beds depending upon population needs and geographical proximity.
j	Central hospitals will be upgraded to 1,000 beds (Bir Hospital, Teaching Hospital, Kanti Children's Hospital, Maternity Hospital, Mental Hospital, Sukraraj Tropical Diseases Hospital).
k	One primary health centre will be established in all industrial zones and corridors for occupational safety and protecting the health of industrial workers (Industrial zones and corridors: Kathmandu, Hetauda, Patan, Pokhara, Nepalgunj, Simara/Birganj, Biratnagar, Bhairahawa)
l	It is expected that at least 855 VDCs will be converted into 285 municipalities, which will substantially reduce the expenses for HRH as municipalities will bear at least 50% of costs. It is assumed that municipalities will agree to take over health workforces working in PHCCs with 50% grant from the government.
m	Other health providing agencies under the government, private sector and NGOs and community still need to be analysed.

Table A4.3: Primary health care centre staffing norms

S. N.	Title	No. of staff
1.	MDGP Doctor	1*
2.	MBBS Doctor	1*
3.	Health Assistant	3*
4.	Nurse	4
5.	Health Inspector	1
6.	Kabiraj (1 for 4 VDC/Health Care centre)	1
7.	Administrative Assistant	1
8.	Community Nurse (3 for 1 VDC)	3*
9.	Lab Assistant	1
10.	Peon (grant for peon)	3
Total		19

Table A4.4: Rural hospital (15 bed) staffing norms

S. N.	Title	No. of staff
1	Accountant	1
2	Anaesthetist Technician	1
3	Ayurveda doctor (Chikitsak)	1
4	Dentist	1
5	Health Assistant	2
6	Kabiraj	1
7	Lab Technician	1
8	MBBS Doctor	3
9	MDGP Doctor	1
10	Midwife	2
11	Nurse	6
12	Ophthalmic Assistant	1
13	Pharmacist	1
Lump sum grant		
15	Helper	4
16	Ambulance Driver	1
17	Security guard	4
18	Cleaning Staff	2
19	Housekeeping staff	1
Total		34

Table A4.5: District hospital (50 bed) staffing norms

S. N.	Title	Officer/Assistant	No. of staff
1	General Surgeon		1
2	Paediatrician		1
3	Obs/Gynaecologist		1
4	Internal Medicine		1
5	Anaesthesiologist		1
6	Pathologist		1
7	ENT Doctor		1
8	Dental Surgeon		1
9	MDGP Doctor		2
10	MBBS Doctor		10
11	Ophthalmologist		1
12	Hospital Manager		1
13	Radiologist		1
14	Psychiatrist		1
15	Physiotherapist		1
16	Ayurveda Chikitsak		1
17	Dietician		1
18	Medical Recorder		1
19	Bio-med-Tech		1
20	Health Assistant		10
21	Nurse		24
22	Midwife		2
23	Dentist		1
24	KabiRaj		2
25	Physiotherapist Asst.		2
26	Accountant Officer		1
27	Accountant		1
28	Lab Technician		3
29	Radiographer		2
30	Pharmacist		2
31	Anaesthetist Assistant		1
32	Ophthalmic Assistant		1
33	Housekeeping staff		2
Lump sum grants			
1	Helper		8
2	Ambulance Driver		2
3	Security guard		8
4	Cleaning Staff		4
	Total		105

Table A4.6: Regional hospitals (500 bed) staffing norms

	Department	Title	Specialist Sub-specialist	Paramedics	Nurse	Officer	Assistant	Total
1	Allergy and Immunology	Allergy and immunologist	2	2				
2	Anaesthesia	Anaesthetist	10	14				
3	Bio-chemistry	Bio-Chemist	1	4				
4	Bio-medical	Bio-medical Engineer	1	3				
5	Cardiology	Cardiologist	2	4				
		Cardio Surgeon	2	6				
6	Critical Care	Intensives	2	5				
7	Dental	Dentist	5	10				
8	Dermatology	Dermatologist	2	2				
9	Emergency medicine	Emergency medicine specialist	4	12				
10	Endocrinology	Endocrinologist	2	2				
11	ENT	ENT specialist	3	6				
12	Eye	Ophthalmologist	3	6				
13	Finance	Finance officer	0	0		2	10	
15	Forensic / Medico legal	Medico legal Specialist	2	4				
17	Food & Nutrition	Nutritionist	2	4				
18	General practice	Family physician	10	3				
19	General surgery	General Surgeons	4	4				
20	Geriatrics	Geriatrics	2	2				
21	Gastroenterology	Gastroenterologist	2	2				
22	Gynaecology	Gynaecologist	6	6				
23	Haematology	Haematologist	2	4				
24	Health Informatics	Health IT Specialist	0	0		3	6	
25	Hospital Security		0	0		1	18	
26	House Keeping		0	0		1	6	
27	Infectious disease	Infectious Disease Specialist	2	2				
28	Internal Medicine	Internist	4	4				
29	International Health	Family/MDGP Physician	1	2				
30	Microbiology	Microbiologist	1	4				
31	Nephrology	Nephrologist	2	4				
32	Neurosurgery	Neurosurgeon	2	4				
33	Neurology	Neurologist	2	2				
34	Oncology department	Oncologist / Radiotherapist (2+2)	4	10				
35	Orthopaedics	Orthopaedics	4	8				
36	Paediatrics	Paediatrician	4	4				
37	Pathology	Pathologist	4	8				

	Department	Title	Specialist Sub-specialist	Paramedics	Nurse	Officer	Assistant	Total
38	Physiotherapy	Physiotherapist	2	2				
39	Psychiatrics and Counselling	Psychiatrists	2	4				
40	Pulmonary medicine	Pulmonologist	2	2				
41	Radiology	Radiologist	2	6				
42	Rheumatology	Rheumatologist	2	2				
43	Social Service	Public relations / Social Service Officer				2	4	
44	Plastic Surgery	Plastic Surgeon	2	2				
45	Urology	Urologist	2	2				
46	Virology	Virologist	1	2				
47	Wellness Centre	Wellness officer/physician (1+1)	2	4		0	0	
		Nurses			150			
		MBBS Doctor	50					
		Pharmacist				2	9	
		Storekeeper				1	3	
48	Administration	Manager/ officer / legal officer				3	6	
		Property manager				1	1	
		Procurement manager				1	2	
		Reception					6	
		Electrician					3	
		plumber					2	
		Gardener					8	
		Cleaning					36	
		Driver					15	
		Medical superintendent				1	0	
		Secretariat staff					20	
			166	183	150	18	155	672

Table A4.7: Number of facilities used for requirement estimates for Vision for health care in 2030 scenarios

Public health facilities	Scenario A	Scenario B
Regional hospitals	5	5
PHCCs	3,800	3,809
Rural hospitals (15 bedded)	100	154
District hospitals (50–100 bedded)	50	80