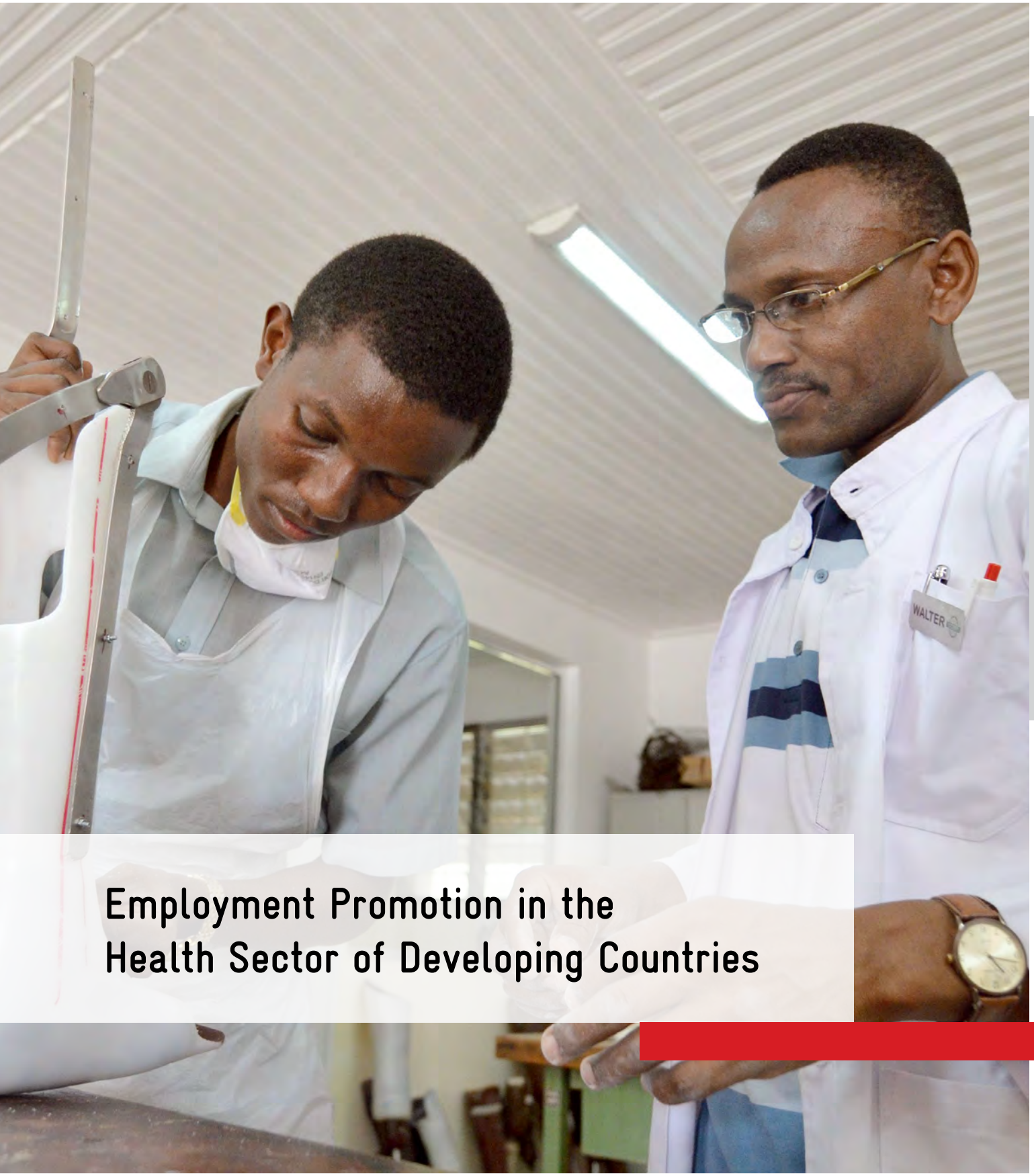

Employment Promotion in the Health Sector of Developing Countries

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Employment Promotion in the Health Sector of Developing Countries

Background Paper on Education and Training for Health Workers

PREFACE

More than one billion people worldwide have no access to adequate healthcare. One major reason for this is the deficit of skilled health workers, an issue that has developed into a serious global crisis. The main causes of this shortage are the increased burden on health systems due to illnesses, primarily as a result of larger and older populations, chronically underfunded health systems and a lack of training opportunities.

In most countries, the health sector is a major economic and growth driver and also one of the largest employers. Worldwide, around one-third of all healthcare providers work in the private sector. Private providers are also playing an increasingly important role with regard to vocational education and training in healthcare occupations. Integrating the private sector into the health and education sector is therefore essential for promoting employment.

Employment is a key topic in the health sector. Primary healthcare in many cooperation countries can only be guaranteed and improved if education and training in the health sector is strengthened and accompanied by reforms in the education and health system. A multi-faceted, sustainable approach is needed that will allow cooperation countries to start educating and training staff and improve the conditions for vocational training and employment.

This background paper offers an initial framework for discussion of this topic as it relates to German development cooperation. The integrated approach to employment promotion in the health sector offers ideas for boosting employability. This can be achieved through vocational and academic training in conjunction with the development of the public and private health sector and improved coordination of supply and demand on the labour market.

This integrated approach allows the quantity and quality of healthcare to be improved and also helps reduce unemployment, under-employment and poverty through positive employment and income effects. For this reason, it is important that vocational education and training, health and labour market policy in cooperation countries are better coordinated with private sector development and economic policy.

At this point we would like to thank the Sector Projects *Technical Vocational Education and Training* and *Strengthening of Health Systems* for the production of this publication. Special thanks to the lead authors Bianca Köllner and Julia Gering and to Natalia Melkoserov, Sarah Buch, Yodit Measho and Lisa Reigl. The background paper was created in cooperation with KfW Development Bank.

BMZ Divisions – "Education and the Digital World" and "Health; Population Policy and Social Protection"

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ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
ADB	Asian Development Bank
BA	Bundesagentur für Arbeit [German Federal Employment Agency]
BMAS	Bundesministerium für Gesundheit und Soziales [German Federal Ministry of Labour and Social Affairs]
BMG	Bundesministrium für Gesundheit [German Federal Ministry of Health]
BMI	Bundesministerium für Inneres [German Federal Ministry of the Interior]
BMZ	Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung [German Federal Ministry for Economic Cooperation and Development]
CAT	Computed Axial Tomography
DFID	Department for International Development, UK
EC	European Commission
ECG	Electro Cardio Gramm
ETF	European Training Foundation
FC	Financial Cooperation
GAVI	Global Alliance for Vaccine and Immunisation
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
GHWA	Global Health Workforce Alliance
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
HR	Human Resources
HRH	Human Resources for Health
HSPF	Health Systems Funding Platform
IHME	Institute for Health Metrics and Evaluation
ILO	International Labour Organization
ISCED	International Standard Classification of Education
ISCO	International Standard Classification of Occupations
ISIC	International Standard Industrial Classification of All Economic Activities
KfW	Kreditanstalt für Wiederaufbau
MDG	Millennium Development Goals
OECD	Organisation for Economic Co-operation and Development
ODA	Official Development Assistance
OGAC	Office of the U. S. Global AIDS Coordinator
PPP	Public Private Partnership
SDGs	Sustainable Development Goals
SSAMS	Sub-Saharan African Medical Schools Study
TC	Technical Cooperation
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNESCO	United Nations Educational, Scientific and Cultural Organization
WHO	World Health Organization

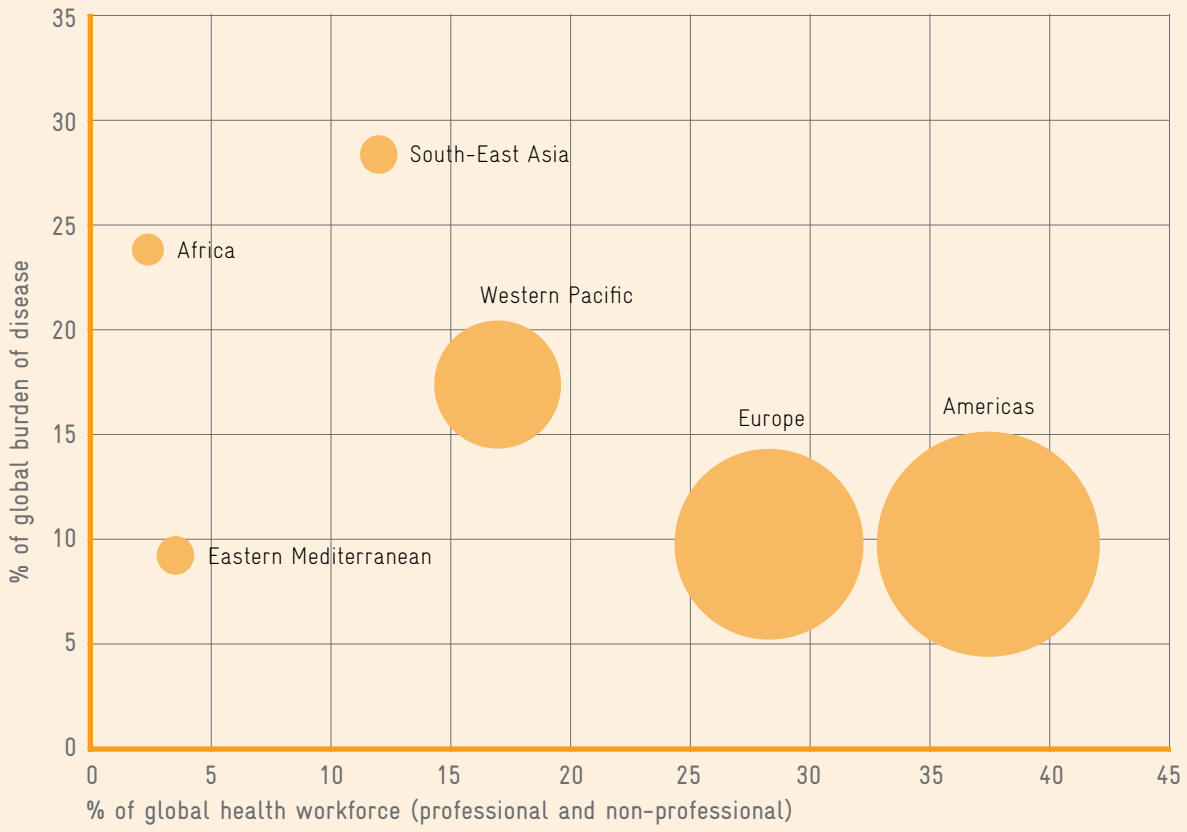
INTRODUCTION

More than one billion people worldwide have little or no access to adequate healthcare, and one reason for this is the international shortage of skilled health workers. This is documented by the World Health Organization (WHO) using an indicator of the density of skilled workers in the core occupations of doctor, nurse and midwife. The lack of health workers may in fact be even more acute in many countries, as the indicator does not include all healthcare occupations required in the health sector (working hypothesis).

According to the latest figures, in 83 countries worldwide the density of skilled health workers ranges below the minimum threshold defined by the WHO for providing the population with basic medical care. The problem is most acute in sub-Saharan Africa, home to 11% of the world's population.

The region accounts for around a quarter of the global burden of disease, but has only 3% of the global health workforce (see Figure 1). In addition, although half of the world's population lives in rural areas, 75% of doctors and 60% of nurses work in cities.

The rising burden of disease is attributable in part to the ageing population; constant population growth and changes in lifestyles and living conditions, and chronically underfunded health systems are largely unable to provide services and products to cope with these challenges. The problem is also exacerbated by the fact that the sector lacks sufficient capacity for training and continuing education structures and rarely has an active labour market policy.



Source: World Health Report 2006 – Working together for health.

FIGURE 1: Distribution of Health Workers by Burden of Disease (WHO 2006)

Another aspect is the growing international demand for skilled health workers, which also leads to migratory movement. The immigration flows of human resources for health is concentrated in a selected number of OECD and non-OECD destination countries, mainly in Europe but also in Australia, Canada, and the United Kingdom. As a result, it is often impossible to retain staff over a long term.

Despite numerous international agreements aiming to improve global health care (including the *Kampala Declaration and Agenda for Global Action,* 2008), no solution has yet been found to the current skilled health worker crisis. There is still a shortage in nearly all countries worldwide, which is projected to raise the next years.

In Germany, several departments are responsible for the topic. The development policy aspect of the issue is regularly addressed in the informal working group *Skilled Health Workers in Developing Countries.* In 2013, the German Federal Government provided more than EUR 786 million of ODA (official development assistance) for healthcare as part of its development cooperation.

Stopping this lack of skilled workers in developing countries over the long term and developing professional structures and processes calls for evidence-based political decisions and targeted strategies and programmes that address national and international interdependencies. This includes in particular developing an active labour market policy that takes the needs of the overall health sector into account. Secondary and tertiary-level vocational education and training also needs to be structured in line with labour market requirements to meet the health sector's need for qualified and skilled workers. The way to achieve this is through various training programmes in various fields and at various levels of expertise. Corresponding matching mechanisms must therefore also be designed to help adjust for supply and demand.

The integrated approach (GIZ 2015) to employment promotion presented in this paper is a central concept of German development cooperation for the sustainable and economic development of the health sector. It focuses on the training of staff for the health sector. On that basis, this background paper highlights opportunities to reform health systems as labour markets and gear the key element of secondary and tertiary-level vocational education and training more closely to the demand for skilled workers in the health sector.

1

KEY INTERNATIONAL CHALLENGES

1.1 SHORTAGE OF SKILLED WORKERS

The WHO's (2013) report on skilled health workers estimated that some 7.2 million skilled health workers would be needed worldwide to close the current gap. Almost half of those (3.4 million) are needed in Southeast Asia, home to more than a quarter of the world's population (27%). Africa is also heavily affected, with a deficit of 1.8 million skilled health workers. In Africa, for example, there are on average 2.3 skilled medical workers per 1,000 inhabitants, compared with 18.9 in Europe. While Africa bears 24% of the global burden of disease, just 3% of the world's health workers are based there. Without appropriate measures to secure the workforce, the WHO and the *Global Health Workforce Alliance* (GHWA) estimated in 2013 that the global shortage of skilled workers will exceed 12 million by 2035. Southeast Asia (5 million) and Africa (4.3 million) will be particularly affected due to population dynamics.

The WHO defines the shortage of skilled health workers (doctors, nurses, midwives) using an indicator of the density. The theoretical threshold[1] is 2.28 skilled health workers per 1,000 inhabitants. In all countries below this threshold, secure access to healthcare for the population is no longer assured and the health-related *Millennium Development Goals* (MDGs) can no longer be met. The need to better prioritise health systems and human resources for health is recognised in the new *Sustainable Development Goals* (SDGs), which build on the MDGs and were adopted in 2015. Promoting health and well-being is one of the 17 Global Goals that make up the *2030 Agenda for Sustainable Development*. For example, there are new targets to 'achieve universal health coverage' (target 3.8) and 'substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States' (target 3.c).

The WHO definition on occupations within the health sector points out that it only includes the "core professions" (doctors, nurses, midwives). In fact, the deficit of skilled health workers throughout the entire health system can be expected to be even higher in many developing countries.

A broader definition of the demand for skilled workers[2] in the health sector would provide a more realistic picture of the real situation on the labour market. In developing countries, the shortage of skilled health workers is generally due to a lack of financial resources for secondary and tertiary-level vocational education and training. Other aspects contributing to the shortage are:

- National and international trends in demand for specific skilled health workers or specific qualifications;
- Higher demand in rural regions, even though they are unattractive to health workers;
- Poor pay and difficult working conditions;
- Lack of political programmes for active labour market policy;
- Lack of reform processes in initial and continuing vocational education and training for health workers.

1 For statistical reasons, a threshold of 2.28/1,000 was selected and the range from 2.02– 2.54 defined as the statistical margin of error.

2 Overview of healthcare occupations in the Annex.

Since industrialised countries also began to suffer an acute shortage of health workers, due in part to demographic change, developing countries have also faced increasing emigration of skilled health workers, tempted by better earning opportunities and working conditions and in some cases actively head-hunted by industrialised countries. This brain drain exacerbates existing bottlenecks and has had catastrophic consequences in many developing and emerging countries.

Precarious working conditions (see KfW 2013)

In most developing countries, working conditions in the public health sector are characterised by heavy workloads, poor working environments, low job security and relatively low pay (especially for nurses and support staff). The sector has one of the highest risks for workplace-related illness and absence from work. In many developing countries health workers also face an above-average threat of violence and sexual assault at work. They are also at risk of infection, particularly in sub-Saharan Africa due to poor hygiene standards and a high proportion of HIV/AIDS patients in healthcare facilities.

These difficult working conditions primarily affect women, who make up the majority of health workers, up to 80% in some countries.

1.2 MIGRATION OF STAFF

Migration of skilled health workers is a problem for developing countries. Many factors contribute to employment migration, both within a country and across international borders. These include insufficient healthcare infrastructure, poor pay, unreasonable workloads and a lack of opportunities for continuing education and career prospects. This applies in particular to fragile contexts and countries subject to poor living conditions.

It is estimated that each time an African doctor migrates outside of Africa it costs the continent almost EUR 140,000. To compensate for this acute lack of skilled workers, African countries together spend over EUR 3.4 billion each year on foreign skilled health workers (Naicker et. al. 2009).

To make jobs in rural areas more attractive, so-called “push factors” such as unsatisfactory working and living conditions have to be minimised. By contrast, there must be a greater focus on “pull factors” such as stable socio-political conditions, a suitable working environment, continuing education and training and appropriate salaries.

1.3 URBAN/RURAL DISPARITY

The major difference between living conditions in rural and urban areas is a global problem that also affects many industrialised countries. The urban/rural disparity leads to a situation where an estimated one billion people in rural areas have no access to basic medical care. In sub-Saharan Africa, for example, just 17% of medical school graduates are still working in rural areas five years after graduation (see also Figure 2).

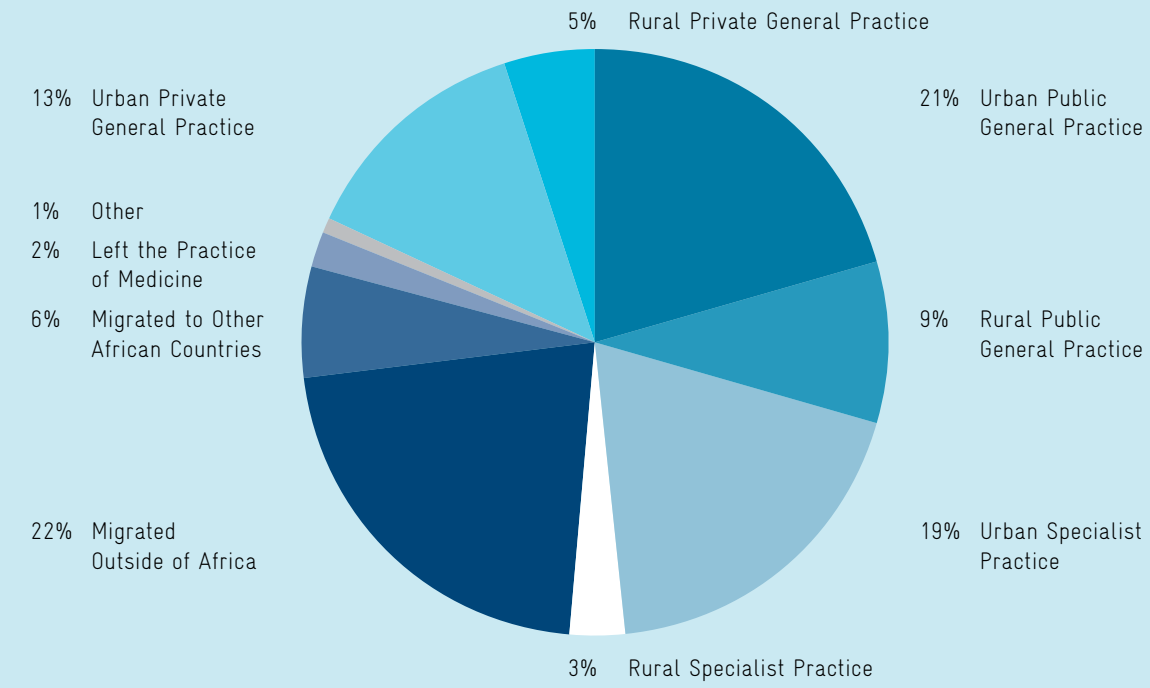


FIGURE 2: Estimated Retention of Medical School Graduates After Five Years in sub-Saharan Africa (WHO 2011b)

In Bangladesh, some 30% of nurses work in four metropolitan regions, but serve just 15% of the total population. In South Africa, 48% of the total population lives in rural areas, served by 12% of doctors and 19% of nurses. This trend can also be observed in several Francophone African countries such as Ivory Coast, Mali and the Congo, where more skilled health workers are educated and trained than are needed in the urban health labour market. This leads not to labour mobility in rural areas, but to unemployment among skilled health workers in urban areas (ibid.).

This raises two questions: How can policies and programmes be designed to remove this disparity? And how can rural work be made more attractive for doctors, nurses and other health workers?

One approach is "outreach services (ibid.)". These are intended to establish incentive structures for skilled health workers from urban areas and thus ensure primary health-care for under-served and remote areas. Under this model approach, skilled workers do not have to live permanently near a rural healthcare facility but instead work there for a limited period on an alternating basis with other skilled health workers. Another variant involves offering telemedicine services in under-served regions, with follow-up measures (such as referral to specialists in urban areas) based on remote diagnoses.

The attractiveness of rural areas cannot be increased solely through reforms to the health sector itself.

The decision taken by skilled workers is influenced by social, economic and political factors and by national and international conditions. The following is therefore recommended (ibid.):

- Provide targeted training and support for medical students and trainees from rural areas, for example through special grants for this target group.
- Open education and training centres outside metropolitan areas and link them to employment promotion measures.
- Encourage a practical placement in rural areas during studies or training.
- Establish rural healthcare provision in the curriculum.

1.4 RELEVANCE OF QUALIFICATIONS

Despite the demand for skilled health workers, there are still unemployed health professionals in some developing countries (WHO 2006). In many countries the structural composition of the different healthcare occupations (skilled worker mix) is limited and not geared towards the actual needs of the population, the health sector and the health economy. In absolute terms, the need for less qualified staff is considerably higher than the need for doctors with extensive medical and technical expertise (see also Figure 3). A needs-oriented mix and targeted deployment of health workers are therefore crucial for the effectiveness and efficiency of a health system. The WHO recommends a skilled health worker mix of 85% primary care[3], around 14% secondary care[4] and about 1% tertiary care[5]. Community health workers play an important role in improving care in rural areas by turning local staff into skilled health workers.

In Kenya, for example, some 40,080 people were registered as nurses in 2004; by 2007 this figure had risen to 55,169. According to statistics however, only 16,146 nurses were registered as "employed" in 2004, falling to 15,036 by 2007. The unemployment rate for nurses was thus roughly 60% in 2004, rising to 78% just three years later (Campbell/Stilwell 2008). One reason for this incongruity is the frequent lack of public funding to employ the necessary skilled health workers.

Many countries struggle to establish a suitable skilled worker mix. Multi-disciplinary teams that organise working procedures and tasks within the team or among various service providers are especially efficient. This is particularly true for primary healthcare, where various areas of responsibility have to be covered by the same team.

3 Primary care is understood to mean basic medical care and consultation, including referral for further outpatient and impatient treatment („gatekeeper" role).

4 Secondary care is understood to mean specialist treatment. Specialist treatment may be provided either on an outpatient bais or as an impatient at a hospital or specialist clinic. It also includes treatment and examinations in emergency clinics, operating theatres and intensive care stations, examinations related to laboratory and x-ray diagnostics and all forms of physical therapy.

5 Tertiary care is understood to mean maximum care, with treatment and convalescence in exposed clinics that provide specialised, expensive and medically intensive services and treatment for patients. Such specialist clinics may include cancer centres, burns and transplant clinics or neonatal centres for premature and newborn babies.

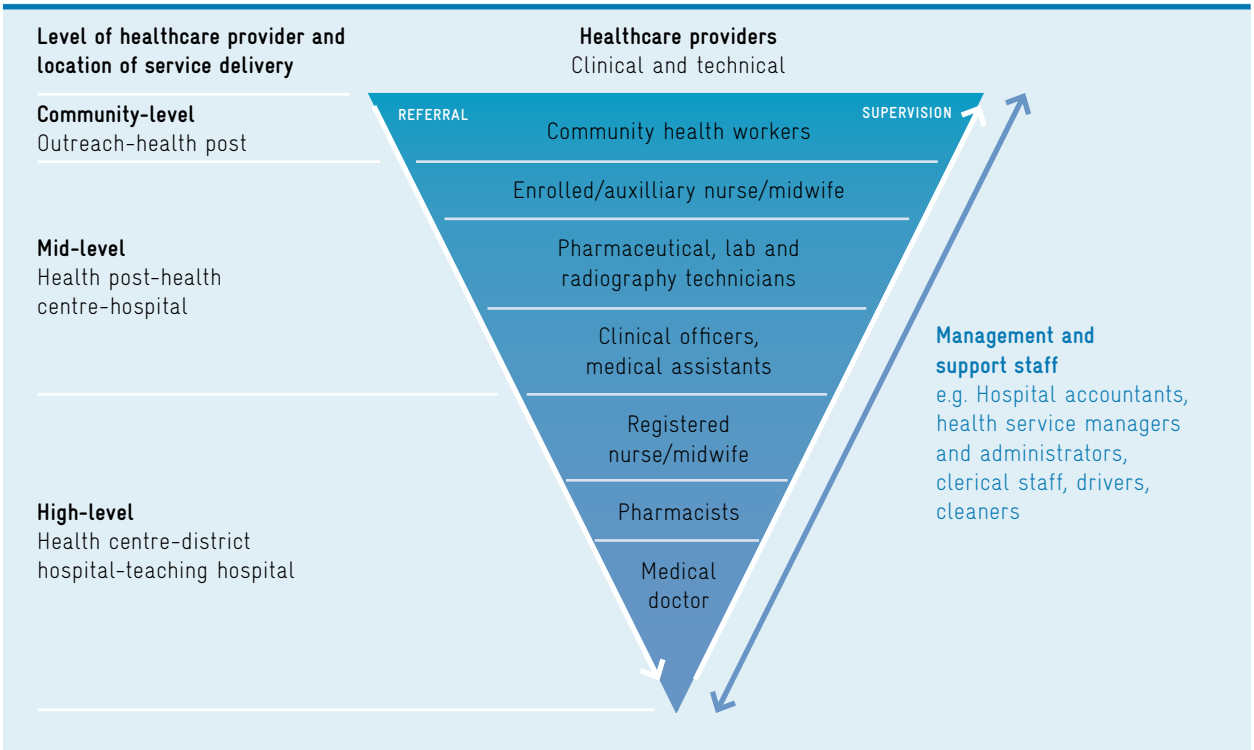


FIGURE 3: Ideal skilled worker mix (WHO 2008C)

In Figure 3, the different healthcare occupations are classified based on their level of responsibility within the health system. This classification can vary from system to system. What is clear is that healthcare generally needs more community health workers than doctors or even nurses. For this reason, national human resources management plans should increasingly focus on secondary and tertiary-level vocational training for local skilled health workers in the communities. Continuing education and training for skilled health workers promotes knowledge transfer and cooperation among colleagues and makes professional classes more permeable. This would permit flexible, needs-oriented deployment of skilled workers at national and regional level and make healthcare a more attractive job and career option.

For example, midwives have learned how to perform simple caesarean sections, eliminating the need for a doctor. This reduces the numbers of deaths during childbirth and allows more mothers and children to enjoy a healthy start to life. One criticism of this concept is that the assumption of activities requiring more advanced skills does not entail an increase in salary or improved career prospects. Such approaches are also criticised for their granularity and their debatable sustainability within the overall system.

The alternative is systematic scaling-up focused on initial and continuing vocational education and training to enable targeted deployment of skilled health workers. This can increase permeability between professional groups, with better career prospects serving as a motivational incentive.

2

CURRENT STATE OF DEVELOPMENT COOPERATION

Health is a major topic on the international agenda: back in 2007 there were already more than 40 bilateral donors, 26 agencies, 20 regional funds and 90 initiatives in the health sector, and the number has further increased since then. The *Institute for Health Metrics and Evaluation* (IHME) estimates that global health funding rose from some USD 6 billion in 1990 to around USD 27 billion in 2010.

The rapid rise in funding and the paradigm shift in the health sector can be attributed largely to the health-related *Millennium Development Goals,* especially for the fight against HIV and AIDS. As a result, a host of public and private institutions and multilateral organisations, such as the *Global Fund to Fight AIDS, Tuberculosis and Malaria* (GFATM), the *Bill and Melinda Gates Foundation* and the *Vaccine Alliance* (GAVI[6]), were established around the turn of the millennium.

Often, however, they follow a disease-related "vertical" approach. As a result, not all of the funding benefited health systems; in some cases it even had a negative effect on national health systems and budgets. Today, these funds are increasingly being invested in the development of the health system as a whole and the establishment of education and training systems within the health sector.

The following three recent trends offer other explanations for the ongoing shortage of skilled health workers:

- To date, few countries have viewed the necessary political support and dialogue on this topic as a national priority.
- Political insight has often failed to lead to a corresponding rise in the national budget and/or volume of funding from international donors.
- Country-specific cooperation between international donors is often insufficiently coordinated and harmonised, in terms of both national plans and priorities.

For this reason, a focus on the *Aid Effectiveness Agenda* and on improving education and training in the health sector is recommended, taking the following aspects into account:

- Increased and sustainable funding of initial and continuing education systems.
- Harmonisation and coordination of policies and programmes.
- Support for sharing experiences through communal learning based on good practices to improve implementation.
- Development of national structures that support and ensure the quality of initial and continuing vocational education and training.
- Assessment of future national and global demand for health workers in order to structure their migration more systematically.

6 Global Alliance for Vaccination and Immunization, see: http://www.gavi.org/

2.1 GLOBAL POLITICAL APPROACHES AND STAKEHOLDERS

The shortage of skilled health workers necessitates comprehensive global solutions. Strengthening the health system is at the centre of the current global health agenda. One basic function of the health system is adequate healthcare provided by skilled workers. This priority has been defined by the WHO as one of six fundamental strategies, as health workers are now seen as the key element for the other components of the system. Under the *Kampala Declaration and Agenda for Global Action* (WHO 2008d), the coordination of essential human resources for health (HRH) needs to be established and the associated strategies adopted.

At international level, many stakeholders are attempting to address the challenge, in particular the WHO's *Global Health Workforce Alliance*[7], which was founded in 2006. The alliance brings together national governments, civil society and international agencies and experts, and acts as a platform for addressing the skilled worker crisis in the health sector. The WHO supports the development of capacity for governance structures and the improvement of global information and evidence to counteract the current shortage of health workers. It has developed six HRH regional observatories[8] with the aim of:

- Helping to improve information and data on health workers;
- Documenting the information, design, validation and evaluation of HRH policy approaches;
- Improving cooperation between skilled health workers as well as the funding and organisation of service delivery.

The topic of education and training for skilled health workers is also anchored within the WHO's programme on *Education and Training*[9]. The WHO's view is that what is needed is not only more skilled health workers per se but also different skills and healthcare occupations. The WHO is pursuing a range of activities in this area, including the WHO *Initiative on Transformative Scale-Up of Health Professional Education*[10] and master's programmes with a focus on HRH development and research programmes.

To find a global answer to the problem of health worker migration, the WHO *Global Code of Practice on the International Recruitment of Health Personnel* (WHO 2010b) (hereinafter: WHO Code of Practice) was ratified in May 2010. The WHO Code of Practice promotes voluntary principles for the ethically responsible international recruitment of health workers. The *German Federal Ministry of Health* (Bundesministerium für Gesundheit, BMG) is the lead agency in Germany for the implementation of the WHO Code of Practice.

The WHO, GAVI, GFATM and World Bank are members of the *Health Systems Funding Platform,* a forum for negotiating, coordinating, consolidating and mobilising new financial resources for strengthening health systems in developing countries. It is intended to prevent overlaps in working areas and funding and promote the development

7 Global Health Workforce Alliance, see http://www.who.int/workforcealliance/en/
8 HRH Regional Observatories, see http://www.emro.who.int/entity/human-resources-observatory/index.html
9 WHO, see http://www.who.int/hrh/education/en/
10 WHO Initiative on transformative scale-up of health professional education, see http://www.who.int/hrh/education/en/

of a joint investment strategy. The results of the World Bank's *Working in Health-Report* (Vujicic / Ohiri / Sparkes 2009) were fed into the *Health Systems Funding Platform* and the funding and management of skilled health workers addressed in the sixth GFATM and GAVI funding round.

The International Labour Organization (ILO) not only promotes social security in the event of illness, but is also committed to improving working conditions for skilled health workers. The ILO also cooperates with the WHO and UNAIDS on matters relating to working conditions for skilled health workers (see WHO / ILO / UNAIDS 2010). In addition to improving working conditions, the ILO is also committed to ensuring that non-hospital healthcare facilities are also recognised as official health sector workplaces.

2.2 POLITICAL APPROACHES AND STAKEHOLDERS IN GERMANY

The topic of skilled health workers is a global challenge and is also gaining importance in Germany. Demand for medical care is set to grow in the future, yet even today there are already gaps in care. In particular, the shortage of skilled paramedical workers and an urban/rural disparity represent massive challenges. The different departments of the German Federal Government, including the German Federal Ministry of Health, the German Federal Ministry of the Interior (Bundesministerium des Inneren, BMI), the German Federal Ministry for Labour and Social Affairs (Bundesministerium für Arbeit und Soziales, BMAS) and the German Federal Ministry for Economic Cooperation and Development (Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung, BMZ), are positioning themselves in this debate, with initial steps already being taken towards a solution. The impact of internal political decisions are often insufficiently considered and reflected upon with regard to third-party countries and developing countries.

For this reason, the development policy aspect of the topic is addressed at the departmental level by the informal working group *Skilled Health Workers in Developing Countries* initiated by the BMZ.

Its members include the BMZ, the BMG, the BMAS, the implementing organisations of German development cooperation and non-governmental organisations. The group's aims include discussing approaches and experiences on the implementation of the WHO Code of Practice and providing support where possible.

The BMZ is also taking measures to address the shortage of skilled health workers by establishing, equipping and expanding adapted training structures and adequate working conditions for healthcare professionals. Since 2016 intensified its engagement through an education and training initiative under the BMZ special programme *Health for Africa*.

The BMZ is also currently providing technical (TC) and financial (FC) cooperation to help establish and expand health systems and combat of disease in around 30 developing countries, including 11 priority cooperation countries (Burundi, Kenya, Malawi, South Africa, Tanzania, Cambodia, Kyrgyzstan, Nepal, Pakistan, Tadzhikistan, Uzbekistan). The ministry is thus actively committed to improving healthcare and strengthening health systems through bilateral cooperation.

3

THE INTEGRATED APPROACH TO EMPLOYMENT PROMOTION IN THE HEALTH SECTOR

As indicated above, there are various reasons for the shortage of skilled health workers, unemployment and under-employment in the health sector. They result from a lack of well-trained and educated workers, limited job openings and inefficient labour market institutions. Unfavourable political conditions can also exacerbate the situation for employers and employees in the health sector.

The integrated approach to employment promotion builds on the development policy strategy laid out in the *Aid Effectiveness Agenda* (OECD 2005 / 2008 / 2014) and looks holistically at the challenges of unemployment and demand for skilled health workers in developing countries.

As such, it is not just employees and their skills that must be taken into account, but also employers and potential jobs. The challenge is to reconcile the supply of skilled health workers with market demand.

Proactively shaping labour market policy plays a key role in ensuring a functional labour market. If sectoral labour market policy is limited because supply and demand information is not gathered, labour market institutions work inefficiently or there are significant mobility barriers for many labour market participants, sustainable and economic development of the health sector cannot be ensured (see also Figure 4).

With this in mind, all three dimensions – demand for labour, supply of labour and placement – must be taken into account in the development of a market-oriented health sector.

These are discussed in more detail below and broken down into the following areas:

- Demand for health workers;
- Labour market development through coordination and placement;
- Training programmes for the health sector geared to the labour market.

The application of the integrated approach to employment promotion to the health sector represents an improvement to previous practice in German development cooperation. The labour market in the health sector was previously not explicitly supported through corresponding measures and training measures were only geared to the medium term. There was also not yet a systemic perspective of the needs of the global labour market.

The focus hereafter is on strengthening national systems with regard to vocational training, the labour market and the development of the health sector and its co-operative mechanisms. Employment policy with a view to improving the framework conditions for employment (enabling environment) is not considered.

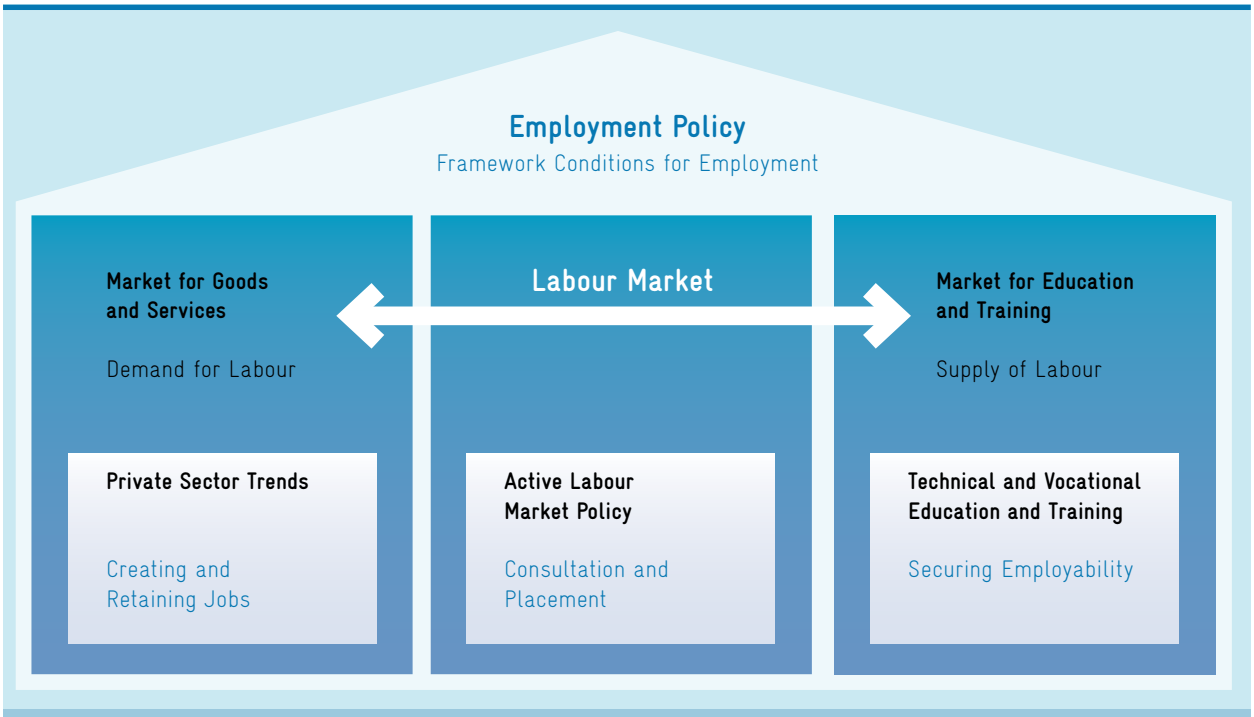


FIGURE 4: The Integrated Approach to Employment Promotion (see GIZ 2015)

3.1 DEMAND FOR HEALTH WORKERS

One important prerequisite for integrating more people into the labour market is the professionalization and creation of jobs. In many developing and emerging countries, professional standards in the health sector are not sufficiently differentiated, which in some instances also means that no clear demand can be articulated. The outcome in both cases is that the productivity of the health sector cannot be sustainably improved and employment potential cannot be fully exploited.

In addition, corresponding training programmes are not implemented with a focus on demand. Discussions regarding employment in the health sector often focus solely on academic/scientific and medical occupations. Other occupations in the health sector are therefore not considered, even though they offer significant employment potential. The focus is expanded below to include general employment opportunities.

3.1.1 DEFINITION OF DEMAND BY TYPE OF FACILITY/INSTITUTION

In general, demand for skilled workers is shaped by public and private stakeholders in the health sector. It arises in part through the facilities in which health workers are employed (see Statistisches Bundesamt 2016). At an aggregated level, facilities and institutions can be divided into seven different types:

- health protection;
- outpatient facilities;
- inpatient and day-patient facilities;
- emergency services;
- administration;
- other institutions and
- upstream industries;[11]

Further differentiation within the health sector can come through the legal forms or operator models of organisations or companies. The key distinction is between public and private organisations and firms.

The role of the private sector (see KfW 2013)

The private sector is playing an increasingly important role in the provision of health services in many developing countries and as such is becoming a major employer. The term private sector refers to a broad spectrum of non-governmental stakeholders and private companies (charitable, religious and "for profit") who are active in the health sector as service providers and investors.

The private sector generally offers better working conditions and better pay than the public health sector. Around 30% of all doctors and over 50% of all other healthcare providers in mid and low-income countries are employed in the private sector. In addition, a significant portion of doctors employed in the public health sector supplement their income with private work.

However, in many countries the private sector is also subject to much less stringent state regulation. As a result there are no binding quality standards or clear rules of conduct.

Given the high demand and expected growth in the health sector, there is immense investment potential and opportunities for private sector participation. Efficient cooperation between government agencies and private companies or charitable operators can provide incentives for investment at the national level in a partner country and boost corporate growth. This in turn has a positive effect on the creation and retention of jobs in the health sector.

11 **Health protection facilities** comprise communal facilities such as health offices, facilities with tasks such as water protection, foodstuff inspection and monitoring, communal hygiene and environmental medicine, health authorities and ministries. **Outpatient facilities** include dentist's and doctor's surgeries as well as medical appliance manufacturers, pharmacists and retailers. **Inpatient and day-patient facilities** include hospitals, preventative care and rehabilitation facilities as well as inpatient and day-patient care companies. **Emergency services** transport patients and carry out emergency rescues. They may be public or private. **Administration** includes statutory and private health insurers, retirement, accident and nursing care insurers and official health economy institutions (such as unions, doctors' and dentists' associations, pharmacists' associations, professional bodies). **Other institutions** include those dedicated to workplace protection and research and educational institutions. Upstream industries include the pharmaceutical, medical engineering and ophthalmology industries as well as medical laboratories and wholesalers. They manufacture products exclusively for the health industry.

In several countries development cooperation already supports dialogue between private and government stakeholders and is generally committed to the efficient integration of the private sector.

With regard to the education and training of health workers, cross-sector networking with private vocational training providers offers the best potential for adapting training measures to facilities' future demand for labour.

3.1.2 DEFINITION OF DEMAND BY OCCUPATION

Demand within the health sector can also be specified by the types of employee within the aforementioned facilities. This includes all people working in the health sector, excluding volunteers and employees of other areas of the economy (such as cleaners) who work in healthcare facilities. The classification of health workers used below is based on the definition of occupations.

An overview of occupations in the health sector can be found in the *International Classification of Health Workers* (see WHO 2008b), which is based on the ILO's *International Standard Classification of Occupations* (ISCO), UNESCO's *International Standard Classification of Education* (ISCED) and other United Nations classifications *(International Standard Industrial Classification of All Economic Activities,* ISIC). The following nine aggregated categories are named:

- Doctors,
- Nurses and midwives,
- Dental workers (including dentists and dental technicians),
- Pharmaceutical staff,
- Public health and environmental health workers,
- Laboratory staff,
- Community health workers and traditional medicine professionals,
- Other health workers (medical assistants, nutritional advisers, medical technicians, physiotherapists, etc.) and
- Health system managers.

The more specific international classification comprises 18 categories:

- Doctors,
- Nurses,
- Midwives,
- Dentists,
- Dental technicians,
- Pharmacists,
- Pharmaceutical technicians and assistants,
- Laboratory scientists,
- Laboratory scientists, technicians and assistants,
- Radiologists,
- Public and environmental health specialists,
- Community health specialists,
- Traditional health professionals,
- Traditional birth attendants,
- Medical assistants,

- Personal care nurses,
- Other skilled health workers and
- Health managers and other skilled support staff.

In Germany, healthcare occupations are classified into four groups (see Statistisches Bundesamt 2011)[12] health service occupations, social occupations, medical appliance technicians and other skilled healthcare occupations.[13]

Differentiation by facility, employee or legal form of facility highlights the potential diversity of demand within the health sector for skilled staff in terms of competencies, qualifications and experience. This change of perspective can help categorise the demand for workers.

Overall it is more relevant to differentiate between actual and artificial demand in development cooperation. The list of occupations given here is shaped by an international perspective and should not supersede the issue as to which structures exist and function efficiently in various developing and emerging countries. Health insurances and associations in particular are a fixture of German and European healthcare culture. Accordingly, development cooperation must always be geared to existing resources, structures and processes. In implementing this approach, the aim is therefore to support dialogue within the health sector on defining the demand for skilled health staff and help develop sustainable professional standards through structures and processes.

By framing dialogue between employers and the education and training system in terms of the skill level of individual occupations, defining professional standards and updating and improving occupations on an ongoing and mutual basis, secondary and tertiary-level vocational training can be geared to the needs of the health sector. This can ultimately lead to interaction between the training system for skilled health workers and real demand within the health system. In the medium term, this exchange can help to fill open positions and improve the productivity and quality of services and products. People thus find employment and earn an income. This also has an impact on the economic and social development of a region and/or country.

Positive effects for the employment situation in other sectors (see KfW 2013)

Promoting the health sector provides indirect but important positive effects for employees in other sectors, and also for employment promotion in rural areas and for women. Local and regional construction industries benefit from investment in the health infrastructure, as do numerous suppliers, producers of technical medical devices and the worldwide pharmaceutical industry and all important employers who make a not insignificant contribution to health investment in developing countries.

12 For more definitions see Annex 5.1 of this volume

13 **Health service occupations** include all employees who provide direct patient care. This includes doctors, dentists and pharmacists, as well as skilled medical and dental staff, dietary assistants, alternative practitioners, healthcare and nursing assistants, nurses, midwives, physiotherapists, massage therapists, hydrotherapists, medical laboratory and pharmaceutical technicians and employees in therapeutic fields. **Social occupations** include geriatric nurses, social care workers and curative education therapists. Social workers and social education therapists are also employed in the health service sector. **Medical appliance technicians** refers to opticians, orthopaedic technicians, dental technicians and other medical appliance technicians such as hearing aid-makers and orthopaedic bootmakers. **Other skilled healthcare occupations** include health engineers, health technicians, pharmaceutical technicians, pharmaceutical sales assistants and occupations that promote health and safety such as disinfection specialists and health supervisors. A fifth group, known as **other healthcare occupations,** comprises all occupations that are not assigned to one of the above groups. These include cleaning and kitchen staff in hospitals, courier services for pharmacies and craftsmen employed by healthcare institutions.

In rural areas especially, good public healthcare is a key prerequisite for businesses locating to a specific region and helping to counteract migration to urban areas. With regard to HIV and AIDS in particular, health promotion and education is frequently aimed at professional groups whose jobs (truck drivers, soldiers, prostitutes or migrant workers) put them at especially high risk of infection from sexually transmitted diseases. Workplace programmes to educate workers and destigmatise the topic of HIV and AIDS, the availability of condoms and voluntary HIV tests improve the working environment and lower the behaviour-related risks of disease that are closely associated with these professions.

In practice, sex education and improved access to family planning services result in women in developing countries having fewer children, thus giving them the chance to engage in productive employment. Together with improved educational opportunities for women, the promotion of mother and child health is thus a fundamental requirement for the improved integration of women into the official labour market. It has also been shown that reducing childhood illnesses boosts school attendance and improves children's chances of employment.

3.2 COORDINATION ON THE LABOUR MARKET IN THE HEALTH SECTOR

Up to now we have looked at demand for skilled workers in the health sector. To ensure a coordinated approach, education and the labour market must maintain a constant dialogue. The instruments required for this are covered in the following chapter.

3.2.1 LABOUR MARKET DATA

Clear information, systematic coordination and targeted placement of workers help match demand with supply on the labour market. Communication of needs and requirements is an essential factor for market analysis, since it forms the basis for decision-making by both employers and employees. Standardised, comprehensive labour market statistics are indispensable to allow for clear statements regarding demand trends and employment potential. They are the prerequisites for:

- Carrying out fundamental analyses of the labour market situation, vocational education and training systems and challenges related to employment policy;
- Developing and implementing labour market policy instruments and reforms within the vocational education and training system;
- Focusing health policy on the creation and retention of jobs and
- Monitoring (national) employment strategies and the impact of programmes and projects on employment.

The data and information base needed for this is mostly unavailable or only partially available in many partner countries of German development cooperation. Due to a lack of uniform standards, a defined recording system or even basic recording skills with regard to data collection, the statistics are often riddled with gaps or inaccuracies. As such they are only suitable for analysis and policy decisions to a limited extent. Collecting data on under-employment and informal employment is a particular problem.

However, the collection, processing and provision of relevant labour market data is not based solely on technical aspects. It also requires structured, institutionalised cooperation from all those who possess such data and those who require it. The basis for the provision of relevant data is a shared understanding of which data is required at which level, how it is collected and how it can be adequately provided to users.

The WHO has indicated urgent need for action in the collection of labour market data in the following fields (see WHO 2011a, pp. 9-10):

Strengthening of the data base: To gain a comprehensive overview of the number of skilled workers, surveys must be conducted of health workers being engaged in the public and private sector, including an evaluation of their education and working status. This is the only way to understand the dynamic trends of the labour market. The requirements for such an overview are uniform sources, standardised quality (including definitions and survey instruments) and general access to the data.

Production and communication of evidence: Long-term trends and adjustment of the labour market often emerge from research. Their results must not stand alone, but should instead be translated from the academic environment into everyday practice and then fed into policy where possible. Information systems and data collections can thus also serve as early warning systems for labour market policy.

Development of governance structures and processes: The WHO sees a clear responsibility in the procedural role of data collection and evaluation. It calls for more than just technical and content skills for the collection of labour market data. Data should be used for critical observations which should also be reflected in public and political discourse, ultimately leading to networks and lobbies. This in turn allows necessary action plans and strategies to be developed.

Since most data collection, processing and analysis is now handled digitally, the technical equipment, including internet and phone connections, is a challenge for the various stakeholder groups. Studies of the retention of medical graduates are very rarely recorded systematically.

Even moderate investments in information systems for the labour market in the health sector may significantly improve the data base. As a result, politicians can actively steer the education and training of health workers. The data base and associated analyses and recommendations can only be improved over time through the sustained expansion of capacities in this area.

The direct impact of meaningful employment data and information gives better overview of the situation and trends in the labour market and in the vocational education and training system for political decision makers, employment services and information and consulting centres. They can then use this knowledge as the basis for their decisions on labour market and employment policy measures, changes to the vocational education and training system and project interventions.

This increases the effectiveness of labour market and employment policy interventions and measures. It also helps to increase employment, as more job seekers have access to information about employment opportunities and companies are presented with suitably qualified candidates for their vacancies.

3.2.2 COOPERATIONS BETWEEN STAKEHOLDERS

Overall, it is crucial that job seekers and employers find one another. Job placement can take place in a variety of ways and depends first and foremost on the availability of labour market data. Depending on the local or national labour market situation, conventional or internet-based job exchanges, direct contact between companies and job seekers and institutionalised government or private agencies all offer opportunities to match supply with demand on the labour market.

The collection and evaluation of information form the basis for coordinating the demand for labour with the supply of labour. In particular, cooperation must be encouraged between the health sector, the education system and vocational training institutions and the ministries of health, education, finance and labour.

A multi-stakeholder approach can achieve a great deal and must involve the following institutions as a minimum:

- National authorities, including the various ministries;
- Regulatory institutions such as industry and professional associations;
- Healthcare providers such as hospitals, doctors, communal health services;
- Training providers in this field and
- Communities and lobbying groups.

There is huge potential for cooperation with private providers of education and training programmes in the health sector, as these are inadequately integrated into education and vocational training policies. This starts with an insufficient flow of information between responsible public agencies and private providers and extends to weak or non-existent regulation by government agencies. For the health system in particular it is important to establish a proper cooperation with all participants, so that not only public and private stakeholders but also NGOs work together. The structures and processes for this kind of cooperation are often missing or do not work efficiently.

This makes it difficult to devise strategic, needs-oriented plans for training health workers and ensuring quality standards in education (e.g. curriculums) and continuing education (e.g. when staff from private institutions are not informed about public sector training and continuing education programmes or are not granted access to them).

The experiences of German development cooperation can offer considerable added value through a focus on dual training programmes. Secondary and tertiary-level vocational education and training is geared directly to the needs of the labour market; theoretical and practical training go hand in hand and are delivered by stakeholders on site and on a cooperative basis. This cooperation between the health economy, the education system and civil society can ultimately offer new opportunities for funding.

Another important area in the cooperation between stakeholders is the provision of systematic career guidance and advice for recruitment. This can help young men and women interested in secondary and tertiary-level vocational training avoid personally frustrating and economically expensive bad decisions. They can also provide the impetus to seek to acquire skills that are oriented more strongly to demand in the sector. In the health sector in particular, clear communication is needed about which occupations and skills play a role for which specific area. This is helpful not just at the

beginning of one's career – those already in employment can also change their career path and take advantage of targeted continuing education offerings. As a result, the supply of labour can be sustainably managed in the health sector in particular.

3.2.3 FUNDING MODELS FOR TRAINING

Training the required number of skilled health workers represents an enormous financial challenge for all countries. The goal can only be achieved if the required financial investment can be made for the long term and through a variety of partners. Cost-benefit analyses should be carried out to convince partner countries that such investment is necessary. There is currently a discrepancy between the funds approved and the funds actually paid out by governments. In many cases public training institutions are poorly financed and provide training of inadequate quality, which in turn leads to poor medical care for the population. Based on these estimates, the WHO projects total costs of USD 26.4 billion for the 1.5 million additional skilled health workers required. The costs for expansion and investment in new schools and equipment still has to be added for each country.

Given these figures, it is essential that various funding and cooperative models are integrated into development cooperation. Regional, cross-border relationships and inter-institutional partnerships not only have a positive impact on the quality of education, but also spread the costs across more shoulders. Since both the supply and demand sides are keen to develop more skilled workers in the health sector, cooperation between the two sides can be extremely efficient.

In addition to considering how to fund the additional skilled health workers required and the new structures, data on the composition of initial education and training costs must also be gathered and evaluated. This is the only way to clearly assess the follow-on costs and additional funds involved in boosting support for education and training for skilled health workers. Expenditure (provision of buildings, salaries of instructors, etc.) is generally paid out of the budget of the Ministry of Education and not of the Ministry of Health.

General estimates have shown that the training costs for a doctor, projected for a year, are five times higher than those for a community health worker. The cost mix varies from country to country. The skilled worker mix proposed above does also offer associated savings, since skilled health workers can be deployed in a targeted manner.

With regard to funding, a high level of stranded costs also has to be expected at present. In many African countries, for example, ongoing funding must be presumed; this factors in the high drop-out rate of 30% of all medical students and migration rate of almost 20% of all trained doctors and nurses (see WHO 2008c).

3.2.4 CLARIFYING RESPONSIBILITIES WITHIN POLITICAL STRUCTURES

To coordinate the aforementioned information and cooperations, including in terms of funding, leadership roles and responsibilities must be clearly defined. At ministerial level several ministries are generally responsible for training and continuing education. Coordination is therefore an extremely relevant aspect in connection with secondary and tertiary-level vocational education and training areas and the active shaping of the

labour market. The shortage of skilled workers in the health sector presents a further challenge: in addition to the general balance between the number of educational institutions and students and the real need for skilled health workers, the high rate of migration must also be taken into account.

With this in mind, cooperations with international partners must also be coordinated. These processes should be clarified by the leading ministries to avoid any overlaps in terms of responsibilities.

The reform of the health system, including secondary and tertiary-level vocational education and training, is a process that must originate from each country's own society. Experience has shown that greater success has been achieved in regions where civil society is integrated into decision making processes and structural reforms. The population can identify and communicate hardships in a more precise and targeted manner. As a result, medical training for skilled workers can focus more strongly on the needs of the population, and the society gains awareness of the potential and challenges in this area.

The third pillar of the integrated approach to employment promotion thus prioritises the collection of labour market data and cooperation between stakeholders and responsibilities. This allows those responsible to better coordinate supply and demand and develop long-term plans. To react adequately to ongoing changes, an institution must carry out research into the education and labour market and observe the labour market on a regular basis. Stakeholders have to be able to rely on this data in order to initiate cooperations and agreements. Leaders have a special responsibility here to identify networks and communicate and negotiate long-term strategies with one another. This is the only way to develop successful learning and change processes (capacity development) and reduce the shortage of skilled health workers over the long term.

3.3 TRAINING PROGRAMMES FOR THE HEALTH SECTOR GEARED TO THE LABOUR MARKET

The ability to exercise an occupation is an elementary prerequisite for enabling sustainable employment. The health system fulfils a double function in this regard. On the one hand it serves as a labour market and an industry with strong growth potential. On the other hand, it guarantees part of the social security system. Workers can only overcome difficult or unusual life situations such as illness, accident or disability if they are supported by an established health system that looks after people in the event of illness. The structures and processes for training health workers and for teaching staff are set out below in order to draw attention to reform aspects. The aim is to focus on vocational training in particular.

3.3.1 GENERAL STATE OF TRAINING SYSTEMS

To meet the demand for skilled health workers, the structures for secondary and tertiary-level vocational training need to be adjusted accordingly. This demand for staff is highly heterogeneous from country to country and varies depending on the factors mentioned above.

The challenges with regard to the training of health workers start with the basic and general education system in each country. In rural areas or among marginalised population groups especially, this results in a lack of skills, abilities and competencies by the time children finish school – if they haven't already left school early. The lack of effective schooling among young men and women interested in initial and continuing vocational education and training creates a first level of selection. In some cases this means that applicants may be accepted for training and study places even though they lack the necessary skills and competencies. This deficit can only be remedied to an extent and, even when applicants are accepted, often means that training cannot be successfully completed. In the Philippines, for example, 94,462 nursing school graduates took the admission exam in 2009, but just 39.7% passed and were certified as nurses (see WHO 2006). As a result, training and studies are often broken off early and the investment is lost.

Education and training of health workers largely takes place at medical universities / education facilities such as medical schools, nursing and midwifery schools, schools of dentistry and schools of public health. In many cases no practical experience is gained until health workers actually start their career, rather than being integrated in line with dual/cooperative training models for secondary and tertiary-level vocational training.

A medical school is a tertiary-level educational institution, whose main focus is training doctors. Graduates can obtain Bachelor's, Master's and doctoral degrees in a wide range of disciplines. Some schools also offer Bachelor's degrees for medical assistants. Many also operate their own hospitals and support research projects. The curricula for individual courses of study and admissions criteria vary both nationally and internationally.

Nurses are trained in nursing schools, whose curricula and admissions policies are also highly heterogeneous.

Aggregated global data on secondary and tertiary-level vocational education and training is not currently available for other occupations in the health sector. The figure below shows a WHO estimate of the global situation (see also Figure 5).

Another notable trend is that education and training providers for the health sector are increasingly organised in private and commercial operations. In the Eastern Mediterranean Region, as defined by WHO[14], the share of private institutions increased from 10% to 60% between 1980 and 2005. In the Philippines, 307 of the 332 nursing schools were privately owned in 2004. In the Congo, the number of graduates of private medical and nursing schools has doubled.

14 WHO Regional Office Eastern Mediterranean (EMRO) see: Human Resources for Health Observatory, see http://www.emro.who.int/entity/human-resources-observatory/index.html

WHO region	Medical	Nursing and midwifery	Dental	Public health	Pharamacy
Africa	66	288	34	50	57
Americas	441	947	252	112	272
South-East Asia	295	1145	133	12	118
Europe	412	1338	247	81	219
Eastern Mediterranean	137	225	35	8	46
Western Pacific	340	1549	72	112	202
Total	**1691**	**5492**	**773**	**375**	**914**

Source: Mercer H, Dal Poz MR. Global health professional training capacity (background paper for The world health report 2006)

FIGURE 5: Global Health Professional Training Capacity (Mercer / Dal Poz 2006 in WHO 2006)

Regulation of the educational system with government assistance will therefore play an increasingly important role, as this is the only way to ensure sustainable quality and transparent documentation on the demand side. At the same time, it must also be assumed that private-sector providers provide education and training specifically for those occupations that promise an especially high profit, and as such do not base their strategy on the needs of the national labour market or local communities (see WHO 2006, p. 46).

3.3.2 QUALITY STANDARDS IN TRAINING AND EDUCATION

At present, only around 60% of medical school graduates in developing countries have a state-certified qualification. In Africa and Southeast Asia, the rate is around 40%. For this reason, countries in Latin America and sub-Saharan Africa are beginning to develop national quality standards for the execution, accreditation and certification of training units. This is also happening in response to the growing density of private training providers. Vocational training and education standards systematically organise the skills offered by a country's vocational education and training system and target continuous improvement of educational standards. In the health sector in particular, skilled workers must be trained according to general high standards to ensure care for the population based around services and products.

This includes not only the learning performance of graduates, but also curricula and the quality of the training of teachers/instructors. Framework specifications applied as general standards allow governments to issue licences to private and public educational institutions (accreditation), including the option to revoke such licences in the event of non-compliance. Educational standards thus describe occupation profiles and the core competencies needed for them. They communicate to students what is expected from them, while also informing interested parties in the health economy about the abilities of skilled workers. National standards also allow education to be compared at international level.

Professional standards and standards for secondary and tertiary-level vocational education and training should always be defined, discussed and agreed with stakeholders in the health and education sector. An authority under ministerial supervision is also required to ensure the validity of training standards. The Responsibility for this typically lies with either the labour or education department.

As an example, the WHO developed its *Global Standards for the Initial Education of Professional Nurses and Midwives* (WHO 2009) to help developing countries establish national training frameworks. These standards are intended as a fixed point of reference for competency-based educational standards.

3.3.3 CRITICAL SUCCESS FACTORS FOR EDUCATIONAL REFORMS

For educational reforms and standards to be implemented successfully, past experience has shown that a number of critical success factors need to be in place. They can be broken down into three groups and are based on the proposals in the WHO publication *Scaling Up, Saving Lives* (WHO 2008c):

- **Political commitment and good governance:**
  - Political commitment, including sustained government involvement and support;
  - Collaboration around a country-led health plan;
  - Significant financial investment.

- **Workforce planning:**
  - Commitment to short-term and long-term health workforce planning;
  - Commitment to produce appropriately trained health workers to meet health needs;
  - Significant expansion of education and training for teachers.

- **Enabling environment:**
  - Good information systems for monitoring and evaluating skilled health workers and their education for health workforce and education, with monitoring and evaluation;
  - Effective management and leadership;
  - Labour market capacity and policy to absorb and sustain an increase in health workers.

Drawing on the factors set out above, general guiding principles were developed based on evidence, case studies and the experiences of managers:

- Incorporate the health needs of the population into initial and continuing vocational training and education within the health system;
- Take equity aspects and the broad impact of education into account both in curriculum planning and in teaching itself;[15]
- Strengthen the management and cooperation to ensure quality.

15 The WHO refers in this regard mainly to a focus on the training needed for primary healthcare. Too often, training is concentrated on tertiary care, meaning that skilled workers are not sufficiently prepared for work in rural communities. This in turn can result in non-urban populations being neglected to a certain extent.

Drawing on these principles, the following objectives can be derived to promote the supply of skilled health workers:

- Prevent migration of students and instructors and improve access to healthcare occupations;
- Support both theoretical and practical initial and continuing vocational education and training and combine the two;
- Create educational institutions that provide training in various healthcare occupations and promote dialogue between future skilled workers;
- Integrate communities, facilities and the health economy into secondary and tertiary-level vocational training in order to link modular curricula with active learning;
- Increase the use of information systems and communications technology;
- Improve the quality of academic and vocational training through accreditation mechanisms and the establishment of assessment rules that test both theoretical and practical skills;
- Develop institutions' capacity to act (for example by improving and expanding teaching skills and methods, promoting international partnerships and cooperation between institutions and making use of public private partnerships (PPPs)).

Moreover, the education systems for training experts in the health sector (instructors, trainers and managers) are often inadequately adapted to the diverse challenges they face. Lacks of teaching and learning materials and outdated methods have a negative impact on the dissemination of expert knowledge. It should thus be assumed that the teaching itself has didactic/methodological weaknesses. To organise training and education properly for all parties, schools also need trained managers.

The introduction of quality management systems is necessary not only in direct initial and continuing vocational education and training, but also at an overarching level for the continuing education of instructors, education managers and trainers. Experts are required to update training standards and teaching/learning materials, develop curricula, improve and accredit school management systems, so that secondary and tertiary-level vocational education and training institutions can guarantee the quality of the training they provide. This 'meta' level is often neglected, but it is extremely important as it is the only way to establish long-term training systems thanks to the efforts of trained staff. Only then training in the health sector can be assured on a sustainable basis.

3.3.4 DATA ON EDUCATION AND TRAINING SYSTEMS

The collection of valid data on initial and continuing vocational education and training systems is of enormous importance for evidence-based approaches for policy consultation and for the long-term planning and implementation of reform-oriented programmes and projects. To fully reflect the quality and impact of educational institutions, the collection and documentation of data on the following fields of interest is highly desirable:

- Educational institutions (number of institutions, universities, private educational institutions, public educational institutions);
- Education and occupation profiles (courses of study, list of all occupational fields in the health sector);
- Class sizes and number of registered students by subject;
- Ratio of initial training to continuing education and training programmes;
- Tools for quality assurance for schools, universities and in training institutions;
- Analysis of local needs (demand);
- Studies on graduate retention.

There are currently no internationally comparable facts and definitions in this area either (see WHO 2008a). One possibility for an indicator-based description of the education system was proposed by the *Inter-Agency Working Group on TVET Indicators*[16] in its report *Proposed Indicators for Assessing Technical and Vocational Education and Training* in April 2012, referring explicitly to vocational education and training.

16 The participants were the United Nations Educational, Scientific and Cultural Organization (UNESCO), the Organisation for Economic Co-operation and Development (OECD), the World Bank, the International Labour Organization (ILO), the European Commission (EC), the European Training Foundation (ETF) and the Asian Development Bank (ADB).

4

RECOMMENDATIONS FOR GERMAN DEVELOPMENT COOPERATION

In many developing and emerging countries, primary healthcare for the general population can only be provided if accompanied by an education and training offensive that includes coherent reforms of the education and health system. The private sector has a key role to play in this, and should be increasingly integrated into education and labour market policy. Non-governmental stakeholders often have major innovation potential that can be harnessed for the education system and the sector. Governments must also demonstrate better leadership and guidance to introduce binding quality standards. Correspondingly, the necessary reforms should impact all levels and be implemented through the involvement of all relevant interests groups.

The following recommendations draw on key aspects of the BMZ strategy paper *Vocational Education and Training in German Development Policy* (BMZ 2012) and the *BMZ Education Strategy* (BMZ 2015) and take into account the sector concept *German Development Policy in the Health Sector* (BMZ 2009), which defines contributions to the education and training and development of skilled workers as a priority for German development cooperation activities in the area of health.

4.1 TECHNICAL COOPERATION TO PROMOTE EMPLOYMENT IN THE HEALTH SECTOR

A multidimensional approach to establishing and developing structural, organisational and staffing capacities is required to achieve sustainable success in employment promotion in the health sector and the education and training of health workers. The integrated approach to employment promotion in the health sector as presented in this background paper could serve as a framework for this, taking into account the respective health strategies and situations in the cooperation countries.

It is recommended that the following areas be addressed:

- Development and securing of employability in the health sector through systematic integration of approaches for secondary and tertiary-level vocational education and training for skilled health workers;
- Creation of jobs through policy consultation, advisory services regarding sector reform and private sector development to improve and reform legal and financial regulations, and the implementation of national health strategies in the public and private sector (appropriate economic and health policy conditions);
- Improvement of coordination mechanisms and databases and of active labour market policy for the health workforce.

Linking these three areas can have a positive effect on employment and income and on a country's general economic and social development, thus leading to a tangible reduction in unemployment, under-employment and poverty. As such, the German development cooperation should help to sustainably improve the quantity, quality and relevance of educational services in the health sector and further more develop them in conjunction with its partners. The focus of German development cooperation should be expanded to the wider needs of the health sector labour market.

The following aspects should therefore be incorporated more heavily into the development of existing or new programmes and projects:

Establishment of close **cooperation between stakeholders** in the health sector (public and private) and stakeholders in secondary and tertiary-level vocational education and training (public and private) in order to develop and implement sustainable and systemic concepts for promoting the education and training of health workers.

These concepts should

- be based on existing national health strategies and their approaches to strengthening health worker capacity;
- focus in particular on demand-based training structures and programmes;
- strive for enhanced content-related/theoretical, practical and pedagogic quality;
- permit a broader-based offering, for example through new forms of funding for secondary and tertiary-level vocational education and training in the health sector.

The international dialogue on migration and immigration of skilled health workers should be urgently continued and migratory movements tracked. Since migration puts the health sector in many countries under massive pressure, this aspect in particular requires dedicated attention and innovative solutions between national and international stakeholders.

Support for dual learning, i.e. a mix of on-the-job training and classroom learning, is recommended to permit strong, practical and application-related training. This ensures that the participating stakeholders from the health economy and the health sector are more strongly integrated into the funding and implementation of training. Practical company-based phases are embedded into training in various forms and at various levels of intensity, which can actively ensure and improve the quality of training and health services. Emphasis should be placed on developing professional, practice-oriented skills. A modular structure can then be planned for the development of corresponding competency between training programmes, qualification levels and within the training programmes, without threatening the uniformity of the respective occupation profiles. Opportunities for continuing education must also be offered.

Another important aspect is the **development of systems for education and training staff in the health training system.** This should chiefly include education and training programmes for instructors, trainers and management/administrative staff at vocational training institutions. The quantity and quality of the training institutions for staff in the health training system should be geared to demand and practical considerations. The training of academic teaching staff should be incorporated into the national structures for teacher training.

The **development of national standards and qualifications** for educational offerings should be supported, with a key emphasis on close cooperation between all stakeholders. The structure and degree of differentiation of occupation profiles should focus primarily on national needs and refer to international standards only for selected occupations. This must ensure government regulation of the minimum requirements for guaranteeing training quality. The possibilities for recognising non-formal and informally acquired competencies must be taken into account.

On the whole, cooperation between private and public stakeholders, government structures and relevant research institutions in German cooperation countries should also be promoted. This primarily involves developing evidence-based decision-making and

design principles. Correspondingly, **research into education, vocational education and the labour market** can act as a key impetus for the preparation and support of major changes and developments in education, vocational education and labour market policy. The first task is the ongoing development of corresponding expertise, in existing institutions initially, and the use of forms of (international) exchange to reflect and address internal problems.

There should also be support for approaches that take the 'unequal distribution' into account, such as the professionalisation of skilled workers in accordance with needs at international, national and local level as well as the urban/rural disparity in primary healthcare.

4.2 FINANCIAL COOPERATION TO PROMOTE EMPLOYMENT IN THE HEALTH SECTOR[17]

To achieve a broad impact and promote reform of a (healthcare or education) system sustainably, interventions must take place at the same time at several levels. The systemic multi-level approach is characterised by the fact that reforms are initially developed and coordinated at a political level, then tested at micro level before being sustainably integrated on a lasting basis at institutional level. The specific measures at the meso and micro level in turn make a significant contribution to the credibility of political recommendations at macro level. There is also targeted feedback between the implementation and political level, allowing experiences to flow directly into the relevant political and strategic processes at macro level.

However, such projects should only be started, if sufficient resources are available and a long-term commitment is intended. In addition to governmental development cooperation (TC and FC) non-governmental development cooperation stakeholders can also play a meaningful role at the various levels. The relative contributions of the different forms of development cooperation mentioned above should of course dovetail and supplement each other.

Simply interlinking bilateral instruments is not enough to be effective, however. To bundle resources as effectively as possible and promote coordinated development in a single direction, German development cooperation initiatives are aligned with the national strategies of the cooperation countries and coordinated with other donors.

The division of work between German financial and technical cooperation means that TC is generally tasked with executing programmes for targeted employment promotion in the health sector. However, FC involvement in the health sector also has a series of direct and indirect effects on employment.

As part of its commitment to strengthen the health system, FC addresses the topic of employment in its sector dialogue with cooperation countries. Given the high relevance of well-trained skilled worker management for the efficiency and effectiveness of health investment, the quantitative availability, level of training, salary level and motivation of skilled medical workers play a key role in the assessment of a cooperation country's sector policy.

17 See KfW 2013, p. 25

Most of the infrastructure measures funded by FC include a staff training component. For example, funds for financed project measures are not released until correct usage of laboratory devices and operating theatres is assured. Coordinated FC/TC approaches are especially effective in this regard.

A key effect of FC commitment is the direct improvement in working conditions in the health sector. In the public health sector in particular, outdated facilities, a lack of supplies, laboratory equipment and essential medicines impede the work of healthcare providers and the quality of the care provided. Improvements in infrastructure and greater availability of medicines have marked positive effects on workers' motivation and ability to do their job.

Within its possibilities, FC can address the issue with a range of approaches and provide positive impetus for employment in the sector.

As part of its contribution to supporting the health system, FC should bear in mind the various dimensions of effective healthcare provision. Equality of access, quality assurance, the situation of skilled health workers and health funding are four important topics that merit FC attention, both in programme approaches and in sector funding.

FC must focus more actively on human resource policy, both in sector dialogue regarding the implementation of national health strategies and in project-specific cooperation with partners. Topics such as secondary and tertiary-level vocational training, the reduction of inequalities in the regional distribution of skilled health workers and incentive systems for employees in rural areas are of key importance.

In programmes in rural areas, there should be a stronger focus on the integration and promotion of community health workers. They tend to be less likely than fully trained skilled health workers to migrate to urban areas or abroad, and their knowledge of the needs and health issues in the communities make them important liaisons for the health system. This naturally also applies to TC.

In addition to improving the physical working environment (through infrastructure renewal, upgraded laboratory equipment, etc.), FC should also look at improving working conditions, especially for women. Shortcomings in this regard must be identified and remedied through sensible countermeasures (codes of conduct, more female managers, creation of interest groups and expansion of necessary infrastructure).

Where private capital is also mobilised in FC cooperation countries, for example to strengthen specific medical subjects, invest in research and development or set up local production of medicines, new long-term jobs could be created in the health economy.

By funding the construction and equipping of vocational schools and universities, FC can make a direct contribution to improve education and training for skilled workers, particularly when the commitment involves activities related to continuing education of instructors, improvements in national quality standards for accreditation and potentially even regional harmonisation of qualifications.

4.3 OUTLOOK FOR GERMAN DEVELOPMENT POLICY

Given the serious demand for skilled health workers, suitable consideration of employment promotion is a critical success factor for international cooperation in the health sector.

Germany played an active role in drawing up the WHO *Global Code of Practice* on the *International Recruitment of Health Personnel* and is implementing it at national level. The negotiation and implementation of bilateral agreements on the recruitment of skilled health workers should be governed by an ethical and fair structure based on the WHO guidelines. Public awareness should also be raised that the recruitment of health workers from third countries should be the last step in a host of possible approaches and interventions.

In the coming years, German development policy can support the reinforcement of health and education systems through the following measures:

- Discuss employment promotion and education and training of health workers as a course of action with international stakeholders and raise them in appropriate international forums to drive mutual knowledge sharing and learning in this area. This of course includes promoting dialogue with partner countries of development cooperation on this topic and potential starting points.
- Step up the exchange of previous experiences with German stakeholders and aim for systematic assessment of prior experiences and current measures.
- Piloting the cross-sectoral approach of employment promotion and education and training of health workers in cooperation with partners of German bilateral development cooperation. A systematic evaluation will be carried out so that the action plan can be assessed and further improved.
- Support the 10 recommendations of the *Global Health Workforce Alliance, Task Force for Scaling Up Education and Training for Health Workers,* which concentrate on success factors including political commitment, an orientation towards the labour market and the establishment of systems and infrastructures.

5

ANNEX

5.1 DEFINITION OF OCCUPATIONS[18]

5.1.1 HEALTH SERVICE OCCUPATIONS

Health service occupations include all employees, who provide direct patient care (such as doctors, nurses and alternative practitioners).

A1 Doctors, Pharmacists, Psychological Psychotherapists, Dentists	Doctors, pharmacists, psychological psychotherapists, child and adolescent psychotherapists and dentists are health service occupations for which a licence is required in order to practise.
Doctors	Doctors examine people's physical condition, document their findings, make diagnoses and take measures to treat and prevent illness and disease.
Pharmacists	Pharmacists are qualified to supply lawfully prescribed medicinal products to the population. This involves not only preparing and dispensing medicines, but also counselling on their proper use, storage, side effects and risks, and producing medicines in smaller quantities.
Psychological Psychotherapists, Child and Adolescent Psychotherapists	Psychological psychotherapists practice therapeutic psychotherapy for adults or for children and adolescents. Psychotherapy is any scientifically recognised psychotherapeutic procedure used to identify, remedy or alleviate pathological disorders that can be treated with psychotherapy. A somatic examination must also be performed as part of psychotherapeutic treatment. Psychotherapy does not include psychological activities aimed at processing and overcoming social conflicts or other purposes outside the scope of medicine.
Dentists	Dentists prevent, diagnose and treat diseases of teeth, mouth and jaw and correct misaligned teeth.
Other Health Service Occupations	Other health service occupations include all occupations for which a licence is not required in order to practise.

18 See German Federal Statistical Office 2016

A2 **Skilled Medical/Dental Staff** **Dietary Assistants**	Skilled medical/dental staffs assist with examinations and treatment and with minor patient procedures. They can carry out simple treatments themselves, where instructed by a doctor or dentist. They organise practice procedures and carry out administrative and billing responsibilities.
Dietary Assistants	Dietary assistants work with patients to convert a doctor's instructions into nutritional therapy plans, calculate nutritional needs and the costs of dietary foods and monitor the preparation of various forms of dietary food. They generally advise people seeking information regarding nutritional and dietary matters and create new diet recipes.
Alternative Practitioners	Alternative practitioners identify and treat diseases, mainly disorders affecting the entire mental and physical system, by strengthening the immune systems naturally. They use therapeutic procedures taken from natural and traditional medicine.
Healthcare and Nursing Assistants	Healthcare and nursing assistants help nurses care for patients, especially in the areas of basic care and home-based personal care. They accompany patients to examinations and treatments, help prepare and carry out diagnostic and therapeutic measures (such as blood samples) and help handle the deceased. Healthcare and nursing assistants also include emergency care assistants and technicians.
Nurses	Nurses work autonomously to provide care for people, who are sick and in need of nursing care, in either outpatient or inpatient facilities. They perform basic care and treatment services, in other words they wash patients and put them in bed, change dressings and administer medicines as instructed by doctors. They also assist with medical examinations and surgical procedures, operate and monitor medical devices and accompany doctors on their rounds. They help to draw up, assess and document care plans.
Midwives	Midwives advise pregnant women and couples about pregnancy, birth and other matters such as organising day-to-day life after the birth. They prepare expectant mothers for birth both physically and psychologically and take care of standard deliveries on their own. After birth, midwives care for the mother and newborn during the initial post-partum period.
Physiotherapists, Massage Therapists and Medical Bath Attendants	Physiotherapists devise tailored, patient-specific treatment plans based on doctors' prescriptions and their own findings and then carry out the corresponding physiotherapeutic measures (such as movement therapy with and without devices, breathing, electro and heat therapy, and massage). Massage therapists and medical bath attendants provide physiotherapy treatments both to sick, disabled and convalescent patients and to healthy individuals. They offer massage therapy as well as other forms of therapy such as movement therapy, electrotherapy and hydrotherapy.
Medical Laboratory Technicians	Medical laboratory technicians prepare the chemicals and specimens required for subsequent laboratory examinations, perform tests and measurements on specimens, and monitor and document the progress and results of the examinations.
Pharmaceutical Technicians	Pharmaceutical technicians conduct laboratory examinations for the development of new medicines, prepare medicines according to prescriptions, advice consumers and review and sell medicines and other goods. They perform commercial activities such as invoicing for prescriptions.

5.1.2 THERAPEUTIC OCCUPATIONS NOT CLASSIFIED ELSEWHERE

This includes occupational therapists, speech therapists, motopedics, orthoptists and optometrists.

5.1.3 SOCIAL OCCUPATIONS

For the purposes of health worker classification, social occupations include geriatric nurses, social care workers and curative education therapists insofar as they are part of the health system.

Geriatric Nurses	Geriatric nurses provide care for the elderly, whether they are healthy, ill or unable to look after themselves. In addition to social care tasks (such as help with personal care and eating), geriatric nurses also perform medical tasks (e.g. supporting therapeutic rehabilitation measures or executing doctors' instructions, such as changing dressings and administering medicines).
Social Care Workers	The educational and care activities of social care workers extend to all areas of the lives of people with disabilities. They accompany and support their patients in achieving their goal of self-sufficiency. They look after the severely disabled, including those who are bedridden or sick, ensuring that they are kept clean and clothed.
Curative Education Therapists	The aim of curative education is to help people with mental, physical or psychological disabilities integrate into social and professional life. Curative education therapists apply methods that draw on sound pedagogic, psychological, medical and sociological insights (such as psycho and motodiagnostic procedures).

5.1.4 MEDICAL APPLIANCE TECHNICIANS

Medical appliance technicians include opticians, dental technicians and orthopaedic technicians.

Opticians	Based on instructions from ophthalmologists or eye tests, opticians produce spectacles of all kinds and adjust contact lenses.
Orthopaedic Technicians	Orthopaedic technicians manufacture artificial limbs (prostheses), devices to support the rear, arms and legs (orthoses) on prescription and also produce special bandages and corsets. They adjust, repair, service and configure wheelchairs and other technical aids to meet the needs of their customers.
Dental Technicians	Dental technicians receive their orders from dentists. Based on the jaw casts provided, they manufacture items such as crowns, fixed or removable artificial teeth and inlays made from plastics, precious metals, dental ceramic compounds and other materials.
Other Medical Technicians	Other medical technicians include occupations such as hearing-aid acousticians and orthopaedic shoemaker.

5.1.5 OTHER SKILLED HEALTHCARE OCCUPATIONS

Other skilled healthcare occupations include pharmaceutical technicians, health engineers, health technicians, pharmaceutical sales assistants and occupations that promote health and safety.

Pharmaceutical Technicians	Pharmaceutical technicians produce medicines for direct use by consumers. This includes all technological steps needed to produce finished medicines from chemical substances and the packaging of these medicines, including the associated mandatory quality assurance checks.
Health Engineers	Environmental health protection (such as air pollution analysis, hygiene, drinking water quality analysis, infection protection and control etc.) is carried out by health engineers. Pharmaceutical engineers are considered to be a subset of health engineers.
Medical Technicians	Medical technicians operate and maintain medical devices. They instruct users on appropriate operation and provide training. They act as a point of contact for doctors, nurses and administrative staff with regard to the procurement of medical devices. Within the industry, they are involved in device development and are responsible for installation and servicing. They are also involved in selling devices.
Pharmaceutical Sales Assistants	Pharmaceutical sales assistants primarily perform organisational and administrative tasks associated with the handling of pharmaceuticals (such as ordering and correctly storing medicines and common pharmaceutical products). They sell common pharmaceutical products, but not medicines, and support pharmaceutical staff in the manufacture and packaging of own products.
Occupations that Promote Health and Safety	Occupations that promote health and safety include health supervisors, disinfection specialists, pest controllers and meat inspectors.

5.1.6 OTHER HEALTHCARE OCCUPATIONS

Other healthcare occupations comprise all occupations in the health sector that cannot be directly classified as healthcare service occupations, social occupations, medical appliance technicians or other skilled healthcare occupations. These include cleaning and kitchen staff in hospitals, courier services for pharmacies and craftsmen employed by healthcare institutions.

5.2 DEFINITION OF FACILITIES AND INSTITUTIONS

5.2.1 HEALTH PROTECTION

Health protection facilities comprise communal facilities such as health offices, state facilities with tasks such as water protection, food quality control and monitoring, communal hygiene and environmental medicine, state health authorities and state ministries as well as federal facilities such as the Federal Institute for Occupational Safety and Health and the Federal Centre for Health Education. This also includes the ministries and as yet unnamed health authorities.

A1 Outpatient Facilities	In addition to doctor's and dentist's surgeries and other medical practices, this category also includes medical appliance manufacturers and pharmacies and retailers involved in providing outpatient care. This also includes outpatient care facilities and other outpatient facilities.
Doctor's Surgeries	A doctor's surgery is understood to be an outpatient facility with direct patient contact. As well as individual surgeries, this also includes group practices. The definition covers the surgeries of both general practitioners and specialists.
Dentist's Surgeries	A dentist's surgery is an outpatient unit with direct patient contact whose primary aim is to provide dental care. The practices of oral and orthodontic surgeons are not included in this category but are classed as doctor's surgeries. However, orthodontist practices are included.
Other Medical Practices	Other medical practices include those not only of physiotherapists, speech, occupational and music therapists, but also of massage therapists, psychological psychotherapists, child and adolescent psychotherapists, midwives, alternative practitioners and medical podiatrists.
Pharmacies	Pharmacies comprise all public pharmacies, but not hospital and emergency pharmacies. Public pharmacies dispense medicines on prescription to all segments of the population.
A2 Outpatient Care Facilities	Outpatient care services are independent facilities that provide home-based personal care and support to those who need it under the constant supervision of trained nursing staff. The services provided by such facilities generally also include medical treatment.
A3 Other Outpatient Facilities	Other outpatient facilities include a range of different facilities such as self-help groups and self-help contact centres, advice centres, sociopsychiatric and psychosocial services and day care centres for mentally ill and disabled people. Dialysis centres and hospice services are also included here.

5.2.2 MEDICAL APPLIANCE MANUFACTURERS AND RETAILERS

Medical appliance manufacturers generally provide technical services for the health industry. The main role of medical appliance manufacturers (such as opticians and dental technicians) is the production and adjustment of aids designed to compensate for restricted or lost body functions. Retailers of medical and orthopaedic items focus primarily on serving sick people or people with disabilities. Specialist medical dealers or medical suppliers, who provide bandages, walking aids, wheelchairs, prostheses and other medical aids, are also classed as retailers, as are stores selling over-the-counter medicines.

5.2.3 INPATIENT AND DAY-PATIENT HEALTH FACILITIES

Inpatient and day-patient health facilities include hospitals, preventative care and rehabilitation facilities as well as inpatient and day-patient care companies. Hospitals are facilities that provide hospital treatment or obstetrics, including accommodation and food for patients. They are overseen by qualified medical professionals at all times and are set up to identify and treat patients' diseases, prevent their conditions from worsening, alleviate symptoms or deliver babies, primarily by providing medical and nursing assistance. University clinics are also included in this category.

C1 **Preventative and Rehabilitation Facilities**	Preventative and rehabilitation facilities provide inpatient and day-patient services designed to remedy health weaknesses that would be likely to lead to illness in the foreseeable future through the application of treatments (such as physiotherapy or speech therapy) and other appropriate aids, or to treat illnesses, prevent conditions from worsening or guard against the threat of disability or other care needs.
C2 **Inpatient and Day-Patient Care**	Inpatient care facilities comprise all facilities in which patients are looked after under the constant supervision of trained nursing staff and can be accommodated overnight (full inpatient) and fed. Day-patient care facilities differ from inpatient facilities in that patients only attend at certain times of the day. Inpatient and day-patient nursing homes include geriatric care homes and day, overnight and short-term care facilities.
C3 **Emergency Services**	Emergency services transport patients and carry out emergency rescues. They may be public or private and perform lifesaving treatment on people with life-threatening injuries or illnesses at the place of deployment, stabilise them ready for transport and provide expert support using specialist emergency equipment in order to transport them to a healthcare facility where treatment can be continued.

5.2.4 ADMINISTRATION

Administration covers statutory and private health insurances, retirement, accident and nursing care insurances and service providers' organisations (such as health insurance doctors' and dentists' associations, general doctors' and dentists' associations, pharmacists' associations).

5.2.5 OTHER INSTITUTIONS

Other institutions include institutions in other economic sectors that are subsumed into health services or goods (such as taxi companies that transport patients).

5.2.6 F – UPSTREAM INDUSTRIES FOR THE HEALTH INDUSTRY

This sector produces upstream products exclusively for the health industry. It includes the pharmaceutical, medical engineering and ophthalmology industry as well as medical laboratories and wholesalers.

5.2.7 F1 – PHARMACEUTICAL INDUSTRY

The pharmaceutical industry is focused on drug research and development and the manufacture of pharmaceutical products.

5.2.8 F2 – MEDICAL ENGINEERING AND OPHTHALMOLOGY INDUSTRY

The medical engineering industry provides the technical tools and equipment (such as ultrasound, ECG and CAT machines) required by the health industry. The ophthalmology industry manufactures ophthalmological products.

5.2.9 F3 – MEDICAL LABORATORIES AND WHOLESALE

Medical laboratories include laboratory diagnostics facilities, pathology institutes and laboratories for medical examinations. Wholesale encompasses both the wholesale distribution of pharmaceutical products and the wholesale distribution of medical, orthopaedic and laboratory products and dental supplies.

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