Global strategy on human resources for health: Workforce 2030
DRAFT December 2015

To be read in conjunction with EB138-36: Draft global strategy on human resources for health: workforce 2030. Report by the Secretariat

This version will be copy-edited and translated to inform discussions by Member States at the Executive Board in January 2016.
INTRODUCTION

1. In May 2014, the Sixty-seventh World Health Assembly adopted resolution WHA 67.24 on the Follow-up of the Recife Political Declaration on Human Resources for Health: renewed commitments towards universal health coverage. In paragraph 4(2) of that resolution, Member States requested the WHO Director-General to develop and submit a new global strategy for human resources for health for consideration by the Sixty-ninth World Health Assembly.

2. Development of the draft global strategy was informed by a process launched in late 2013 by Member States and constituencies represented on the Board of the Global Health Workforce Alliance, (GHWA) - a hosted partnership within WHO. Over 200 experts, from all WHO regions, contributed to consolidating the evidence around a comprehensive health labour market framework for universal health coverage. A synthesis paper was published in February 2015\(^1\) and informed the initial version of the draft global strategy.

3. An extensive consultation process on the draft version was launched in March 2015. This was aligned with and informed by the Secretariat’s consultation on the draft framework on integrated people-centred health services. The consultation resulted in inputs from Member States and relevant constituencies, including civil society and health care professional associations. It included discussions in the WHO regional committees, technical consultations, online forums and a briefing session to Member States’ Permanent Missions of the United Nations in Geneva. Feedback and guidance from Member States and relevant constituencies are reflected in the draft global strategy.

4. The draft global strategy is primarily aimed at planners and policy makers of WHO Member States, but its contents are of value to all relevant stakeholders in the health workforce area, including public and private sector employers, professional associations, education and training institutions, labour unions, bilateral and multilateral development partners, international organizations, and civil society.

5. Throughout this document, the understanding of the concept of universal health coverage entails recognition that this term may have different connotations in countries and regions of the world. In particular, in the PAHO - WHO Regional Office for the Americas – universal health coverage is part of the broader concept of universal access to healthcare.
**Global strategy on human resources for health: Workforce 2030 – Summary**

<table>
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<th>Vision</th>
<th>Accelerate progress towards universal health coverage and the Sustainable Development Goals by ensuring universal access to health workers</th>
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<td>Overall goal</td>
<td>To improve health and socio-economic development outcomes by ensuring universal availability, accessibility, acceptability and quality of the health workforce through adequate investments and the implementation of effective policies at national, regional and global levels</td>
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| Principles | • Promote the right to health  
• Provide integrated, people-centred health services  
• Foster empowered and engaged communities  
• Uphold the personal, employment and professional rights of all health workers, including safe and decent working environments and freedom from all kinds of discrimination, coercion and violence  
• Eliminate gender-based violence, discrimination and harassment  
• Promote international collaboration and solidarity, in alignment with national priorities  
• Ensure ethical recruitment practices in conformity with the provisions of the WHO Global Code of Practice on the International Recruitment of Health Personnel  
• Mobilize and sustain political and financial commitment and foster inclusiveness and collaboration across sectors and constituencies  
• Promote innovation and the use of evidence |
| Objectives | 1. To optimize performance, quality and impact of the health workforce through evidence-informed policies on human resources for health, contributing to healthy lives and well-being, effective universal health coverage, resilience and health security at all levels.  
2. To align investment in human resources for health on the current and future needs of the population taking account of labour market dynamics, to enable maximum improvements in health outcomes, employment creation and economic growth.  
3. To build the capacity of institutions at sub-national, national and international levels for an effective leadership and governance of actions on human resources for health.  
4. To strengthen data on human resources for health, for monitoring of and ensuring accountability for the successful implementation of both national strategies and the global strategy. |
| Global milestones (by 2020) | • All countries have inclusive institutional mechanisms in place to coordinate an intersectoral health workforce agenda.  
• All countries have a human resources for health unit with responsibility for development and monitoring of policies and plans on human resources for health.  
• All countries have regulatory mechanisms to promote patient safety and adequate oversight of the private sector.  
• All countries have established accreditation mechanisms for health training institutions.  
• All countries are making progress on health workforce registries to track health workforce stock, distribution, flows, demand, supply, capacity and remuneration.  
• All countries are making progress on sharing data on human resources for health through national health workforce accounts and submit core indicators to the WHO Secretariat annually.  
• All bilateral and multilateral agencies are strengthening health workforce assessment and information exchange. |
| Global milestones (by 2030) | • All countries are making progress towards halving inequalities in access to a health worker.  
• All countries have reduced to 20% or less the prequalification attrition rates in medical, nursing and allied health professionals training institutions.  
• All countries are making progress towards halving their dependency on foreign-trained health professionals, implementing the WHO Global Code of Practice.  
• All bilateral and multilateral agencies are increasing synergies in official development assistance for education, employment, gender and health, in support of national health employment and economic growth priorities.  
• As partners in the Sustainable Development Goals, to create, fill and sustain at least 10 million full-time additional jobs in health and social care sectors in low- and middle-income countries. |

\* Policy and actions at “country level” or at “national level” should be understood as relevant in each country in accordance with sub-national and national responsibilities.

December 2015.
| Core WHO Secretariat activities in support of implementation of the strategy | Develop normative guidance; set the agenda for operations research to identify evidence-based policy options; facilitate the sharing of best practices; and provide technical cooperation — on health workforce education, optimizing the scope of practice of different cadres, evidence-based deployment and retention strategies, gender mainstreaming, quality control and performance enhancement approaches, including regulation. Facilitate the collection of evidence and data on attacks on health workers. | Provide normative guidance and technical cooperation, and facilitate the sharing of best practices, on health workforce planning and projections, health labour market analysis, and costing of national strategies on human resources for health. Strengthen evidence on and the adoption of macroeconomic and funding policies conducive to greater and more strategically targeted investments in human resources for health. | Provide technical cooperation and capacity-building to develop core competencies in policy, planning and management of human resources for health. Foster effective coordination, alignment and accountability of the global agenda on human resources for health by facilitating a network of international stakeholders. Systematically assess the health workforce implications resulting from technical or policy recommendations presented at the World Health Assembly and regional committees. Provide technical cooperation to develop health system capacities and workforce competencies to manage the risks of emergencies and disasters. | Develop, review the utility of, and update tools, guidelines and databases relating to data and evidence on human resources for health for routine and emergency settings. Facilitate yearly reporting by countries to the WHO Secretariat on a minimum set of core indicators of human resources for health, for monitoring of and accountability for this strategy. Support countries to strengthen and standardize the quality and completeness of national health workforce data. Streamline and integrate all requirements for reporting on human resources for health by WHO Member States. Adapt, integrate and link the monitoring of targets in the global strategy on human resources for health to the emerging accountability framework of the Sustainable Development Goals. |
Background: the 21st century context for a progressive health workforce agenda

1. Health systems can only function with health workers; improving health services coverage and health outcomes is dependent on their availability, accessibility, and capacity to deliver accepted and quality services. Mere availability of health workers is not sufficient on its own: only when they are equitably distributed and accessible by the population, when they possess the required competencies, and are motivated and empowered to deliver quality care which is appropriate and acceptable to socio-cultural expectations of the population can theoretical coverage translate into effective service coverage (figure 1). However, countries at all levels of socioeconomic development face, to varying degrees, difficulties in the education, deployment, retention, and performance of their workforce. Health priorities of the post-2015 agenda for sustainable development – such as ending the AIDS, tuberculosis and malaria epidemics, achieving drastic reductions in maternal mortality, ending preventable deaths of newborns and under-5 children, reducing premature mortality from non-communicable diseases, promoting mental health and guaranteeing universal health coverage – will remain aspirational unless accompanied by strategies involving transformational efforts on health workforce capability. Countries in, or emerging from, conflict, other nature or man-made disasters, those hosting refugees, and those with climate change vulnerabilities present specific challenges that should be taken into account and addressed. Furthermore, every Member State should have the ability to protect the health of their populations, manage risks associated with emergency and disasters from local to global levels, and fulfil their obligations towards collective global health security envisaged in the International Health Regulations. This requires a skilled, trained and supported health workforce.

![Figure 1. Human resources for health: availability, accessibility, acceptability, quality and effective coverage (Source: Campbell et al, 2013)](image_url)
2. **The health workforce has a vital role in building the resilience of communities and countries to respond to emergencies and disasters.** The health consequences of these events are often devastating, including high numbers of deaths, injuries, illnesses, disabilities, and major disruptions of health systems. They can set back development gains by decades. They interfere with health service delivery through loss of health staff, damage to health facilities, interruption of health programmes, and overburdening of clinical services. Investments in the health workforce, improving health service coverage and in emergency and disaster risk management not only build health resilience and health security, they also reduce health vulnerabilities and provide the human resources required to prevent, prepare for, respond to, and recover from emergencies. Greater focus is required on the various roles of the entire health workforce for emergencies, including in planning for staffing requirements (including surge capacity for emergency response), training, protection and involving them in preparedness and response.

3. **Despite significant progress, there is a need to boost political will and mobilize resources for the workforce agenda** as part of broader efforts for strengthening and adequately financing health systems. Past efforts in health workforce development have yielded significant results: examples abound of countries that, by addressing their health workforce challenges, have improved their health outcomes.\(^5\)\(^6\) In addition, at the aggregate level, health workforce availability is improving for the majority of countries for which data are available, although often not rapidly enough to keep pace with population growth.\(^7\) However, progress has not been fast enough, nor deep enough: shortages, maldistribution, skills mix imbalances, barriers to inter-professional collaboration, inefficient use of resources, poor working conditions, a skewed gender distribution of the health workforce, limited availability of health workforce data persist, with a challenge of an ageing workforce further complicating the picture in many contexts. And in contexts characterized by conflict and civil unrest, health workers are particularly vulnerable to attacks and violence. Reviewing the experience of past efforts in the implementation of national, regional and global strategies and frameworks, it is apparent that the key challenge is how to mobilize political will and financial resources for the health system agenda and its critical human resources for health component in the longer term.\(^8\)\(^9\)

4. The health workforce will be critical to achieving health and wider development objectives in the next decades. The United Nations General Assembly has adopted a new set of Sustainable Development Goals (SDGs) for 2016-2030. The SDGs follow the Millennium Development Goals of the period 2000-2015, with a call to action to people and leaders across the world to ensure a life of dignity for all.\(^10\) The health workforce underpins the proposed health goal, with a target to “increase substantially... the recruitment, development and training and retention of the health workforce in developing countries, especially in Least Developed Countries and Small Island Developing States”. In 2014, the World Health Assembly recognized that the health goal and its 13 health targets - including a renewed focus on equity and universal health coverage - will only be attained through substantive and strategic investments in the global health workforce. Through the adoption of resolution WHA67.24 Member States requested the Director General of the World Health Organization to develop a global strategy on human resources for health and submit this to the Sixty-ninth World Health Assembly in May 2016.\(^11\)

5. **Globally, investments in the health workforce are lower than is often assumed**; reducing the sustainability of the workforce and health systems. The chronic underinvestment in education and training of health workers in some high-income countries and the mismatch between education strategies in relation to health systems and population needs are resulting in continuous shortages and deficits. These are compounded by difficulties in deploying domestically-trained health workers to rural, remote and underserved areas. Deficits and distribution challenges contribute to global labour mobility and the international recruitment of health workers from low resource settings. In low- and middle-income countries, in addition to major
under-investment in education, particularly in underserved areas, imbalances between supply capacity and the market-based demand determined by fiscal space, and between demand and population needs, result in challenges in providing equitable and effective coverage of essential health services, and sometimes in the paradoxical situation of health worker unemployment co-existing with major unmet health needs.

6. **The foundation for a strong and effective health workforce able to respond to the 21st century priorities requires matching effectively the supply and skills of health workers to population needs, now and in the future.** Evolving epidemiologic profiles and population structures are increasing the burden of noncommunicable diseases and chronic conditions on health systems throughout the world. The health workforce also needs to respond to man-made and public health crises. This is accompanied by a progressive shift in the demand for patient-centred care, community-based health services, and personalized long-term care. At the same time, emerging economies are undergoing an economic transition that will increase their health resource envelope, and a demographic transition that will see hundreds of millions of potential new entrants into the active workforce. The demand for the global health workforce is therefore expected to grow substantially. Attaining the necessary quantity, quality and relevance of the health workforce will require that policy and funding decisions on both the education and health labour market are aligned with these evolving needs (figure 2).

![Diagram](image)

**Figure 2: policy levers to shape health labour markets (source: adapted from Sousa et al, 2013, Bulletin of the WHO).**

7. **Persistent health workforce challenges, combined with these broader macro-trends, require the global community to re-appraise the effectiveness of past strategies, and adopt a paradigm shift in how we plan, educate, deploy, manage and reward health workers.** Transformative advances alongside a more effective use of existing health workers are both
needed and possible through: the adoption of inclusive models of care encompassing promotive, preventive, curative, rehabilitative and palliative services; by reorienting health systems towards a collaborative primary care approach built on team-based care; and by fully harnessing the potential stemming from technological innovation. In parallel, much-needed investments and reforms in the health workforce can also be leveraged for the creation of qualified employment opportunities, in particular for women and youth. These prospects create an unprecedented opportunity to design and implement health workforce strategies that address the equity and effective coverage gaps faced by health systems, while also unlocking economic growth potential. Realizing this potential hinges on the mobilization of political will and building institutional and human capacity for the effective implementation of this agenda.

8. The vision that by 2030 all communities should have universal access to health workers, requires combining the adoption of effective policies at national, regional and global levels with adequate investment to address unmet needs. Realistically, the scale-up required in the coming decades to meet increasing demand, address existing gaps and counter expected turnover is greater than all previous estimates. Projected requirements developed by WHO and the World Bank (annex 1) to attain high and effective coverage of the broader range of health services that are required to ensure healthy lives for all imply the need to train and deploy 40–50 million new health and social care workers globally, including at least 18 million additional health workers in low- and middle-income countries.

9. We have long known what needs to be done to address critical health workforce bottlenecks; but we have now better evidence than ever before on how to do it. The draft WHO Global Strategy on Human Resources for Health: Workforce 2030 reflects on the contemporary evidence on what works in health workforce development across different aspects, ranging from assessment, planning and education, across management, retention, incentives and productivity, and refers to the tools and guidelines that can support policy development, implementation and evaluation in these various areas (annex 2). The global strategy addresses in an integrated way all these aspects in order to inspire and inform more incisive action by all relevant sectors of government and all key stakeholders, based on new evidence and best practices, at national level by planners and policy makers, and at regional and global level by the international community. Given the inter-sectoral nature and potential impacts of health workforce development, the global strategy is meant to inform and inspire the development of national health and HRH strategies, but also the broader socio-economic development frameworks that countries adopt.

10. As human resources for health represents a cross-cutting enabler to many service delivery priorities, this strategy complements and reinforces a range of related strategies produced by WHO and the United Nations, reaffirming in particular the importance of the WHO Global Code of Practice on the International Recruitment of Health Personnel, which called upon countries to strive to meet their health personnel needs with their own human resources for health, to collaborate towards more ethical and fair international recruitment practices, and to respect the rights of migrant health workers. The strategy also supports, amongst others, the goals and principles of the United Nations Global Strategy for Women’s, Children’s and Adolescents’ Health, the WHO Strategy for People-Centred and Integrated Health Services, the Every Newborn Action Plan, the Family Planning 2020 objectives, the Global Plan towards the Elimination of New HIV Infections, the emerging UNAIDS 2016-2021 strategy, the Global Action Plan for the Prevention and Control of Noncommunicable Diseases, the WHO Disability Action Plan, and the Sendai Framework for Disaster Risk Reduction 2015-2030.
11. **This is a cross-cutting agenda which represents the critical pathway to the attainment of coverage targets across all service delivery priorities.** It affects not only the better known cadres of midwives, nurses and physicians, but all health workers, from community to specialist levels, including but not limited to: community-based and mid-level practitioners, dentists and oral health professionals, hearing care and eye care workers, laboratory technicians, pharmacists, physical therapists and chiropractors, public health professionals and health managers, supply chain managers, and other allied health professions and support workers. The strategy recognizes that diversity in the health workforce represents an opportunity to be harnessed through strengthened collaborative approaches to social accountability, inter-professional education and practice, and closer integration of the health and social services workforces to improve long-term care for ageing populations.

12. **The Global Strategy on Human Resources for Health outlines policy options for WHO Member States, responsibilities of the WHO Secretariat and recommendations for other stakeholders on how to:**

   - Optimize the health workforce to accelerate progress towards Universal Health Coverage and the Sustainable Development Goals (objective 1);
   - Understand and prepare for future needs of health systems, harnessing the growth in health labour markets to maximize job creation and economic growth (objective 2);
   - Build the institutional capacity to implement this agenda (objective 3); and
   - Strengthen data on human resources for health, for monitoring of and ensuring accountability for the successful implementation of both national strategies and the Global Strategy itself (objective 4).
1. **Objective 1:** To optimize performance, quality and impact of the health workforce through evidence-informed policies on human resources for health, contributing to healthy lives and well-being, effective universal health coverage, resilience and health security at all levels.

**Milestones:**
- 1.1: By 2020, all countries have established accreditation mechanisms for health training institutions.
- 1.2: By 2030, all countries are making progress towards halving inequalities in access to a health worker.
- 1.3: By 2030, all countries have reduced to 20% or less the prequalification attrition rates in medical, nursing and allied health professionals training institutions.

Addressing population needs for the SDGs, UHC and universal access to healthcare requires making the best possible use of limited resources, ensuring they are employed strategically through adoption and implementation of evidence-based health workforce policies tailored to the local context. The ongoing challenges of health workforce deficits and imbalances, combined with ageing populations and epidemiologic transformations, imply that the attainment of health goals with unprecedented levels of ambition requires a new, contemporary agenda on the health workforce. Achieving a better alignment to population needs while improving cost-effectiveness requires recognizing that the provision of integrated and people-centred health care services can benefit from the provision of team-based care at the primary level, harnessing the potential contribution of different typologies of health workers, operating in closer collaboration and according to a more rational scope of practice. This translates into a need for the adoption of more effective and efficient strategies and appropriate regulation for health workforce education, a more sustainable and responsive skills mix, improved deployment strategies and working conditions, incentive systems, enhanced social accountability, inter-professional collaboration, continuous professional development opportunities and career pathways tailored to gender-specific needs, so as to enhance both capacity and motivation for improved performance.

14. **Dramatic improvement in efficiency can be attained by strengthening national institutions to enable them to devise and implement more effective strategies and appropriate regulation for the health workforce.** There are major opportunities to ensure a more effective and efficient use of resources and a better alignment with community needs by adopting a health care delivery model and a diverse, sustainable skills mix geared to a primary health care approach, and supported by effective links to the social services workforce and referral to secondary care. Similarly, major gains are possible in performance and productivity by improving management systems and working conditions for HRH, and by harnessing the full potential of collaboration with the private for-profit, voluntary and independent sectors, regulating them and incentivizing them so as to align their operations and service delivery profiles more closely to public sector health goals. Realizing these efficiency gains requires the institutional capacity for the implementation, assessment and improvement of HRH planning, education and management policies.

**Policy options for WHO Member States**
15. Most of the proposed policy options in this and subsequent sections are of general relevance and may be considered by countries at all levels of socio-economic development. Where some policy options might be particularly pertinent to countries in specific income groups or in fragile contexts, this has been explicitly indicated. This distinction should not be interpreted as a rigid
one, considering that the situation of countries can change over time, that the income level does not always directly correspond to the status of health workforce policies, and that similar health workforce and health systems challenges may apply in different settings, albeit with context-specific implications on funding, employment and labour market dynamics. Ultimately the relevance and applicability of policy options must be determined and tailored to the specific reality of each WHO Member State.

**All countries**

16. **Strengthen the content and implementation of HRH plans as part of long-term national health and broader development strategies**, ensuring consistency between health, education, employment, gender, migration, development cooperation and fiscal policies. This will benefit from intersectoral dialogue and alignment among relevant ministries (health, labour, education, finance, etc), professional associations, labour unions, civil society, employers, other constituencies and the private sector, and local government authorities. Workforce planning should take into account the whole workforce needs, rather that treating each profession separately. Only such an integrated approach can ensure adjusting investment volumes, education policies on the intake of trainees and incentive systems to redress prevalent labour market failures – such as unemployment of health workers co-existing with unmet health needs. HRH development is a continuous process, which requires regular appraisal of results and feedback loops to inform and adjust priorities.

17. **Promote decent working conditions in all settings.** Ministries of Health, civil service commissions and employers should adopt gender-sensitive employment conditions, remuneration and non-financial incentives to ensure fair terms for health workers, merit-based career development opportunities and a positive practice environment to enable their effective deployment, retention and adequate motivation to deliver quality care and build a positive relationship with patients. Violence and harm of health workers, together with gender-based discrimination, violence and harassment during training, recruitment/employment and in the work place, should be eliminated. It is particularly important to find pragmatic solutions to overcome deeply entrenched rigidities in public sector rules and practices that hinder the adoption of adequate reward systems, working conditions and career structures for health workers, with appropriate levels of flexibility and autonomy.

18. **Ensure the effective use of available resources.** Globally between 20% and 40% of all health spending is wasted, and health workforce inefficiencies and weaknesses in appropriate governance and oversight are responsible for a large proportion of that. Accountability systems should be put in place to improve efficiency of health and HRH spending. In addition to measures such as excising ghost workers from the payroll, it will be critical to adopt appropriate and cost-effective population health approaches to provide community-based, person-centred, continuous and integrated care. This entails implementing health care delivery models with an appropriate and sustainable skills mix in order to equitably meet population health needs. Health systems should therefore align market forces and population expectations towards primary health care, UHC and people-centred integrated service delivery, supported by effective referral to secondary and specialized care, while avoiding over-medicalization. There is a need to modify and correct the configuration and supply of specialists and generalists, advanced practitioners, the nursing and midwifery workforce, and other mid-level and community-based cadres. Enabling regulation is needed to formally recognize all these positions and allow them to practice to their full scope; appropriate planning and education strategies and incentives, adequate investments in the primary health care workforce, including general practice and family medicine, are required to provide community-based, person-centred, continuous and integrated care.
19. **Adopt transformative strategies in the scale-up of health worker education.** Public and private sector investments in health personnel education should be linked with population needs and health system demands. Education strategies should prioritize investment in training providers for which there is good evidence of high social rate of return, regulating training curricula to balance pressures to provide training for international markets and ensure focus on producing professionals capable of meeting local needs. A coordinated approach is needed to link HRH planning and education, including in support of an adequate and gender-balanced education pipeline of qualified trainees from rural areas, and encouraging inter-professional education and collaborative practice. Education standards and funding should be established in national policies and monitored: radical improvements in the quality of the workforce are possible if the higher education and health sector collaborate by implementing a transformative education agenda, based on competency-based learning, and which should equip health workers with skills to work collaboratively and effectively in inter-professional teams, and knowledge on social determinants of health and public health. This must include epidemic preparedness and response to advance the global health security agenda and the implementation of the International Health Regulations. Equally critical is nurturing in health workers the public service ethics, professional values and social accountability attitudes requisite to deliver responsive and respectful care, taking into particular account the needs of vulnerable groups such as children, adolescents and people with disabilities, ethnic or linguistic minorities and indigenous people, as well as the need to eliminate discrimination related to gender, ageing, mental health, sexual and reproductive health and HIV and AIDS. Opportunities for North-South and South-South collaboration, as well as public-private partnerships, on training and investment, including advances in e-learning, should be considered; with mechanisms in place to track and manage education investments to the individual health worker and their continuing professional development.

20. **Optimize health worker motivation, satisfaction, retention, equitable distribution and performance.** While urbanization trends and the potential of telemedicine may make in some contexts the challenge of geographical maldistribution less acute, in the majority of settings access to health workers remains inequitable. The decent employment agenda entails similar strategies to improve both performance and equitable distribution of health workers, including: an integrated package of gender-sensitive attraction and retention policies, such as job security, a manageable workload, supportive supervision and organizational management, continuing education and professional development opportunities, enhanced career development pathways (including rotation schemes where appropriate), family and lifestyle incentives, hardship allowances, housing and education allowances and grants, adequate facilities and working tools, a working environment free from any type of violence, discrimination and harassment. The adoption of specific measures in a given country context has to be determined in relation to cost-effectiveness and sustainability considerations, and may be aided from employee satisfaction surveys to adapt working conditions to health workers’ feed-back. Critical to ensuring equitable deployment of health workers are the selection of trainees from and delivery of training in rural and underserved areas, financial and non-financial incentives, regulatory measures or service delivery reorganization.

21. **Harness - where feasible, cost-effective and beneficial to patients’ health outcomes – information and communication technology (ICT) opportunities.** In particular in relation to e-learning, electronic health records, clinical decision-making tools, connection among professionals and between professionals and patients, supply chain management, performance management and feedback loops, patient safety and service quality control, and promotion of patient autonomy. New professional qualifications, skills and competences are needed to
harness the potential of ICT solutions to healthcare delivery.\textsuperscript{35} Standards and accreditation procedures should be established for the certification of training delivered through blended approaches that include e-learning, appropriate regulations for the provision of m-Health services, and for the handling of workforce data that respects confidentiality requirements.\textsuperscript{36}

22. **Build greater resilience and self-reliance in communities**, engaging them in shared decisions and choice through better patient-provider relations, investing in health literacy, and empowering patients and their families with knowledge and skills to encourage them to become key stakeholders and assets to a health system, actively collaborating in the production and quality assurance of care, rather than being passive recipients of services.

23. **Strengthen capacities of the health workforce in emergency and disaster risk management for greater resilience and health security.** Prepare health systems to develop and draw upon the capacities of the workforce in risk assessments, prevention, preparedness, response and recovery. Invest in providing resources, training and equipping for the health workforce and include them in policy, planning and operations for all types of emergencies at local, national and international levels.

**Low- and middle-income countries**

24. **Strengthen the capacity and quality of education institutions and their faculty through accreditation of training schools and certification of diplomas** to meet current and future education requirements to respond to population health needs and changing clinical practice. In some contexts this may entail redesigning health workforce intake approaches through joint education and health planning mechanisms. Particularly in some low-income countries there is a need to collaborate with Ministries of Education and renew focus on primary and secondary education to enhance science teaching at secondary school level and to ensure an adequate and gender-balanced pool of eligible high school graduates, reflective of the population’s underlying demographic characteristics and distribution, to enter health training programmes. The faculty of health training institutions represents a priority investment area, both in terms of adequate numbers and in relation to building and updating their competencies required for teaching on the basis of updated curricula and training methodologies, and to independently lead research activities.

25. **Ensure that the foreseen expansion of the health resource envelope leads to cost-effective resource allocation, and specifically to prioritise the deployment of inter-professional primary care teams** of health workers with broad-based skills, avoiding the pitfalls and cost-escalation of overreliance on specialist and tertiary care. This requires adopting a diverse and sustainable skills mix, harness the potential of community-based and mid-level practitioners in extending service provision to poor and marginalized populations\textsuperscript{37,38}. In many settings developing a national policy to integrate, where they exist, community-based health practitioners in the health system, can enable these cadres to benefit from adequate system support and operate more effectively within integrated primary care teams,\textsuperscript{39,40} a trend already emerging in some countries. Support from national and international partners targeting an expansion of these cadres should be harmonized and aligned to national policies and systems.\textsuperscript{41} In some contexts primary health care teams need to identify strategies to effectively collaborate with traditional healers and practitioners.

26. **Optimize health workforce performance through a fair and formalized employment package, within an enabling and gender-sensitive working environment.** This includes providing health workers with clear roles and expectations, guidelines, adequate processes of work, opportunities to correct competency gaps, supportive feedback, group problem-solving\textsuperscript{42}, and a suitable work environment and incentives; but also – and crucially - a fair wage appropriate to
their skills and contributions, with timely and regular payment as a basic principle, meritocratic reward systems and opportunities for career advancement.

**Fragile states and countries in chronic emergencies**

27. **In addition to the policy options above, in contexts characterized by fragility, insecurity and political instability there is an even more acute need than in other contexts to guarantee protection of health workers from attacks and harm,** including gender-based violence and health worker physical, verbal and psychological abuse. Health workers must be provided with the tools and supplies needed to carry out their roles and enabled to fulfil and adapt their public health roles in these settings.

28. **Implement early in the recovery process key measures aimed at improving efficiency, such as excising, where applicable, ghost workers;** this requires the creation as a matter of priority of a register of the practicing workforce linked to the payroll (see also objective 4).

**Responsibilities of WHO Secretariat**

29. **Develop normative guidance, support operations research to identify evidence-based policy options, and provide technical cooperation** – as may be relevant to the needs of Member States – on health workforce education, optimizing scope of practice of different cadres, evidence-based deployment and retention strategies, gender mainstreaming, quality control and performance enhancement approaches, including regulation. WHO should also facilitate the systematic collection of evidence and data on attacks on health workers, in collaboration with other relevant stakeholders.

**Recommendations to other stakeholders and international partners**

30. **Education institutions to adapt institutional set-up and modalities of instruction to respond to transformative education needs,** aligned with country accreditation systems, standards and needs, promoting social accountability, inter-professional education and collaborative practice. Reflecting the growth in private education establishments, it is critical to attain harmonization of quality standards across public and private training institutes. Both public and private education institutions need to overcome gender discrimination in admission and teaching, and more generally to contribute to national education and student recruitment objectives.

31. **Professional councils, other regulatory authorities, or – where relevant to the national institutional context - departments of line ministries, to adopt “right touch” regulation** that is transparent, accountable, proportionate, consistent and targeted. Advancing this agenda requires building capacity of regulation and accreditation authorities; this may take different forms in different countries, depending on whether regulating authorities are governmental, quasi-governmental or independent self-governing entities. Regulatory bodies should be actively engaged in policy-setting processes for improved development and enforcement of standards and regulations, and introducing competency-based national licensing and relicensing assessments for graduates from both public and private institutions. These bodies play a central role in ensuring that public and private sector professionals are competent, sufficiently experienced and adhere to agreed standards relative to the scope of practice and competencies, enshrined in regulation and legislative norms; countries should be supported in establishing them or strengthening them to provide continuous updates to accreditation and credentialing. To avoid potential conflicts of interest, professional councils and associations should create appropriate mechanisms to separate their role as guarantor of the quality of practice from that of representing the interests of their members, where there are no clear boundaries between these functions. Regulators should keep a live register of the health workforce; oversee
accreditation of pre-service education programmes; implement mechanisms to assure continuing competence, including accreditation of post-licensure education providers; operate fair and transparent processes that support practitioner mobility and simultaneously protect the public; and facilitate a range of conduct and competence approaches that are proportionate to risk and efficient and effective to operate.\textsuperscript{47} Both professional councils and associations should collaborate towards appropriate task sharing models and inter-professional collaboration, and ensure that all cadres with a clinical role, beyond dentists, midwives, nurses, pharmacists and physicians, also benefit in a systematic manner from accreditation and regulation processes.
2. **Objective 2:** To align investment in human resources for health on the current and future needs of the population, taking account of labour market dynamics, to enable maximum improvements in health outcomes, employment creation and economic growth.

**Milestones:**
- **2.1:** By 2030, all countries are making progress towards halving their dependency on foreign-trained health professionals, implementing the WHO Global Code of Practice on International Recruitment of Health Personnel.
- **2.2:** By 2030, all bilateral and multilateral agencies are increasing synergies in official development assistance for education, employment, gender and health, in support of national health employment and economic growth priorities.
- **2.3:** By 2030, as partners in the Sustainable Development Goals, to create, fill and sustain at least 10 million full-time additional jobs in health and social care sectors in low- and middle-income countries.

32. The demand for and the size of the global health workforce are forecasted to grow substantially in the next decades as a consequence of population and economic growth, combined with demographic and epidemiologic transitions. Health care provision will also change in nature in order to cover a growing range of patient services – such as community care. There are however substantial mismatches in the needs of, demand for and supply of health workers nationally, sub-nationally and globally, leading to inequitable distribution and deployment of health workers. Efforts to scale up essential interventions to achieve the health-related targets of the Sustainable Development Goals and universal health coverage might be compromised by massive shortage of health workers in low- and middle-income countries (annex 1), which are in turn also leading to an over-reliance and over-burdening of mid-level and community-based practitioners. In parallel, many high-income countries struggle to match supply and demand of health workers under existing affordability and sustainability constraints, experiencing periodic swings between shortages and over-supply. These trends, sometimes exacerbated by ageing populations, often result in underproduction and/or a maldistribution of health workers, and a continued overreliance on recruiting foreign-trained health personnel.

33. **Public sector intervention to correct for the insufficient provision of health workers, their inequitable deployment or their inadequate motivation and performance is needed.** Implementing an HRH agenda conducive to the attainment of the health goals in the post-2015 period will require greater availability of resources, as well as more efficient use of existing ones. Domestic spending on HRH averages 33.6% of total government expenditure on health in countries with available data; in many low- and middle-income countries greater efforts at mobilization of domestic resources are both necessary and possible, and should be supported by appropriate macro-economic policies at both national and global levels. The funding levels should reflect the value of effective HRH to the country’s economy by factoring the potential for improved worker productivity in other sectors. But several low-income countries and fragile States will still require overseas development assistance for a few more decades to ensure an adequate fiscal space for the necessary HRH investments; in this context, a high-level policy dialogue is warranted to explore how to make international mechanisms for development assistance (across education, employment, gender and health) fit-for-purpose and allow them to provide sustained investment in both capital and recurrent costs for HRH.

34. **New evidence is starting to emerge on the broader socioeconomic impacts of health workforce investments.** Health care employment has a significant growth-inducing effect on
other sectors.\textsuperscript{51} this, together with the expected growth in health labour markets, means that investing and supporting health care education and employment will increasingly represent a strategy for countries at all levels of socioeconomic development to create qualified jobs in the formal sector,\textsuperscript{52} an opportunity likely to be harnessed in particular by women due to the trend of feminization of the health workforce. To fully exploit these opportunities, it will be critical to remove broader societal barriers that prevent women from joining the health workforce, or confine them to its lower tiers. Such issues include higher illiteracy levels, violence and sexual harassment in the workplace, traditional customs that require them to have permission from a male family member to work/ be trained in a different location than their habitual residence, traditional social role expectations that translate in a greater burden of family responsibilities, and limited provisions for life course events, such as maternity and paternity leave.

**Policy options for WHO Member States**

**All countries**

35. **Build planning capacity to develop or improve HRH policy and strategies that quantify health workforce needs, demands and supply** under different possible future scenarios, in order to manage health workforce labour markets and devise effective and efficient policies that respond to today’s needs while anticipating tomorrow’s expectations. HRH needs should be quantified in terms of future predicted workloads rather than by population or facility-based norms. HRH plans should be costed, financed, implemented and continually refined so as to address (a) estimation of number and category of health workers required to meet public health goals and population health needs in routine and emergency situations; (b) capacity to produce sufficient qualified workers (education policies); and (c) labour market capacity to recruit, deploy and retain health workers (economic and fiscal capacity, workforce deployment, remuneration and retention through financial and non-financial strategies). Estimates should be based on full-time equivalents – rather than simple head counts – to reflect flexibility (job sharing, part-time) in work arrangements; this is particularly important to allow for and to plan for equality of opportunities for female health workers.

36. **Catalyse multi-sectoral action on health workforce issues** to generate required support from ministries of finance, education and labour (or equivalent), and to ensure alignment of different sectors and constituencies and stakeholders in society to the national health workforce strategies and plans, harnessing its benefits on job creation, economic growth and gender empowerment.

37. **Invest strategically through long-term (10-15 years) public policy stewardship and strategies in decent conditions of employment** that respect the rights of workers of both genders,\textsuperscript{53} better working environments, including at the very least the provision of a living wage (including for community-based practitioners), and incentives for equitable deployment and retention, in line with the Decent Work agenda (SDG 8). This should also develop and promote the elimination of stigma and discrimination by health workers and to health workers.

**High-income countries**

38. **Invest in the education and training, recruitment, deployment and retention of health workers to meet national and sub-national needs through domestically trained health workers**

Educational investment strategies should match current and anticipated demand of the health labour market, also taking into account challenges related to an ageing workforce. Strategies for destination countries to decrease reliance on foreign-trained health workers may include: increasing investment in domestic health professional education and aligning government educational spending with employment opportunities; adopting innovative financing mechanisms, allowing local and private entities to provide complementary funding to government subsidies to health worker training; not hiring directly from the countries with the
lowest healthcare worker–to-population ratios; encouraging more cost-effective ways to educate health professionals; planning a more diversified skill mix for the health team, better harnessing the complementarity of different cadres, including mid-level providers.\(^{54}\)

39. **Consider opportunities to strengthen the skills and employment agenda within countries.** This may include re-skilling workers from declining sectors and industries of the economy (e.g. manufacturing, agriculture, depending on the country) to be redeployed into the health and social care sectors, particularly in jobs and roles where the duration of training is short, and entry barrier is relatively low, without compromising quality of education and care. Actions should also assist newly qualified students to enter the employment market, particularly during times of recession.\(^{55}\)

**Low- and middle-income countries**

40. **Low- and middle income countries to increase investments to boost market-based demand and supply of health workforce, and align them more closely with population health needs**, including through appropriate strategies and incentives to deploy health workers in under-served areas, e.g. through advanced practice or expansion of community-based practitioners. In many upper middle-income countries this will entail increasing the supply capacity of health workers, to cope with rising domestic demand fuelled by economic growth and contain cost escalation.\(^{56}\) While acknowledging the potential for mutual benefits of migration for health systems of source and destination countries, education and retention strategies should aim at retaining health workers in the country, while respecting the right to mobility of individual health workers, consistently with the principles of the WHO Global Code of Practice on International Recruitment of Health Personnel.

41. **Low-income countries to mobilize resources for HRH investment from both traditional and innovative sources**, including the general budget, progressive taxation, social health insurance, dedicated earmarked funds, ring-fenced excise taxes, and adequate and fair taxation of private corporations, including extractive industries such as mining and petroleum.\(^{57}\) Such investments depend on the Ministries of Finance to allocate adequate resources to the health sector, and should be consistent with and aligned to the broader national health and social protection agenda.\(^{58}\)

**Small island developing states**

42. **Countries with particularly small or sparse populations, such as small island developing states**, require the adoption of creative strategies to overcome the challenges posed by their population or geographic structure. These may include: entering into long-term partnerships with other countries to pool health workforce education, accreditation and regulation needs, given that their small size may make the capital investment and recurrent costs required in the establishment and running of health training institutions and/ or regulatory authorities not cost-effective or unfeasible; adopting tailored staffing profiles for health care units responsible for service delivery at the peripheral level; harnessing the potential of telemedicine to complement the service offer by primary health care teams; and ensuring the functionality of referral systems.

**Fragile states and countries in chronic emergencies**

43. In addition to the policy options above, in contexts characterized by fragility, insecurity and political instability there is a specific additional need to **develop national capacity to design, adapt and implement HRH policies and actions, and to absorb and effectively and transparently utilize both domestic and international resources.** Especially in these settings, support by development partners on HRH should be predictable and long-term.

**Responsibilities of WHO Secretariat**
44. Provide normative guidance and technical cooperation – as may be relevant to the needs of Member States – on health workforce planning and projections, health labour market analysis, costing of national HRH strategies, and tracking of national and international financing for HRH. Acknowledging the continued need for external assistance in some low-income and fragile countries, WHO should also provide estimates of HRH requirements (and the socio-economic impact of their education and employment) to global and regional financial institutions, development partners and global health initiatives for adoption of macro-economic and funding policies conducive to greater and more strategically targeted investments in HRH. Recognizing the need to progressively transition towards national ownership and financing of HRH policies and strategies, WHO should also support Member States in identifying suitable approaches for mobilizing sufficient domestic resources and allocating them efficiently in support of HRH.

Recommendations to other stakeholders and international partners

45. The International Monetary Fund, the World Bank, regional development banks and others to recognize investment in the health workforce as a productive sector, with the potential to create millions of new jobs and that could help spur economic growth and broader socioeconomic development, and adapt their macroeconomic policies to allow greater investment in social services.

46. Global Health Initiatives to establish governance mechanisms to ensure all grants and loans include an assessment of the health workforce implications, and a deliberate strategy and accountability mechanisms on how specific programming will contribute to HRH capacity-building efforts at institutional, organizational and individual levels, beyond disease-specific in-service training and incentives. Emphasis should be given to increasing sustainable investment and support for HRH. The recruitment of general service staff by disease-specific programmes weakens health systems, and should be avoided through integration of disease-specific programmes into PHC strategies.

47. Development partners to coordinate their investments for HRH, and align it to long-term national needs as expressed in national sector plans, consistently with aid effectiveness principles and the International Health Partnership and related initiatives, and the outcomes of the Third International Conference on Financing for Development. In line with the recommendations of the High Level Taskforce for Innovative International Financing of Health Systems, bilateral and multilateral aid mechanisms should make progress towards allocating 25% of their development assistance for health to HRH, and align their support on education, employment, gender and health to national human resource development strategies. Global health initiatives should realign their health workforce support to strengthen sustainably HRH, including the possibility for investment, where necessary to achieve health goals, in both capital and recurrent expenditure (including salaries) for general service staff, overcoming the current preferential focus on short-term disease-specific in-service training. Related to that, development partners should consider the establishment of a multilateral funding facility to support international investment in health systems as a strategy to support the realization of human rights, the attainment of global health security and the Sustainable Development Goals, while continuing to advocate for the increase of allocation of domestic resources to HRH. Development partners should also support low- and middle-income countries to strengthen their capacity for tax collection.

48. The OECD – and other relevant mechanisms, such as the Humanitarian Financial Tracking System - should establish mechanisms to enable tracking the proportion of development assistance for health which is allocated to HRH, as current processes and data requirements for tracking international aid flows to health don’t allow capturing reliably and consistently health workforce investments.
49. **Regional or sub-regional bodies can bolster political and financial commitment to the implementation of this agenda.** Entities such as the African Union, the European Union, the Arab League, UNASUR, ASEAN and other similar entities, can play an important role in facilitating policy dialogue, peer review among countries with a comparable socio-economic structure or cultural background, contributing to generating or sustaining the political will required for supportive investment and policy decisions. Regional strategies and efforts – such as the Toronto call to Action\textsuperscript{65} in the American Region, and the African Roadmap on Human Resources for Health,\textsuperscript{66} and related similar ones – provide a solid foundation that the implementation of the WHO Global Strategy on HRH can build upon.
3. **Objective 3**: To build the capacity of institutions at subnational, national and international levels for effective leadership and governance of actions on human resources for health.

**Milestones:**

- 3.1: By 2020, all countries have inclusive institutional mechanisms in place to coordinate an intersectoral health workforce agenda.
- 3.2: By 2020, all countries have a human resources for health unit with responsibility for development and monitoring of policies and plans on human resources for health.
- 3.3: By 2020, all countries have regulatory mechanisms to promote patient safety and adequate oversight of the private sector.

50. Effective governance and strengthening of institutional capacities are required for the implementation of a comprehensive health workforce agenda in countries. Despite considerable advances in the last decades, progress in the HRH area has not been fast enough, nor deep enough. Health workforce development is partly a technical process, requiring expertise in HRH planning, education and management, and the capacity to root this in the long-term vision for the health system; but it is also a political one, requiring the will and the power to coordinate efforts by different sectors and constituencies in society, and different levels of government. The key challenge is how to simultaneously ensure effective intersectoral governance and collaboration among stakeholders, strengthen technical capacity and mobilize financial resources for the contemporary HRH agenda. This requires the political will – and accountability of – heads of government.

51. Technical and management capacities are needed to translate political will and decisions into effective implementation. There is a need to professionalize and ensure equality of opportunities across gender, race and linguistic/ethnic groups in the field of health workforce planning and management – from the national to the local level - as part of the public health workforce: just as we need capable clinicians and health professionals, we need capable, professional health managers, HRH scientists, planners and policy makers. This is essential in order to provide political leaders with the required evidence and technical advice, and to guarantee effective implementation and oversight of policies, norms and guidelines once these are developed. Crucially, this capacity needs to be built alongside accountability mechanisms, and to be available at the appropriate administrative level: in federal countries, or those with a decentralized health and health workforce administration, relevant competencies, human capital and institutional mechanisms need to be built at the sub-national and local levels, including the professionalization of HRH management by clinicians in management positions.

52. Appropriate global health governance mechanisms can support the implementation of national HRH agendas. Political commitment and action at the country level are the foundations of any effective response to health workforce challenges. However, some HRH issues, such as the creation and sharing of global public goods and evidence, the provision or mobilization of technical and financial assistance, the ethical management of health labour mobility, the assessment of HRH implications of global health goals and resolutions, are transnational, and require a global approach underpinned by a commitment to international solidarity.

**Policy options for WHO Member States**

**All countries**

53. Ensure that all countries have an HRH unit or department within the Ministry (Director General or Permanent Secretary), with capacity, responsibility and accountability for a standard set of core functions of HRH policy, planning and governance, data management and reporting. These
could include at a minimum: advocating HRH development; mobilizing and using effectively and accountably resources; championing better working conditions, reward systems and career structures for health workers; leading short- and long-term health workforce planning and development; identify suitable strategies to collaborate with the private sector; analysing workforce data and labour economics; effectively tracking international mobility of health workers, and manage migratory flows to maximize benefits for source countries; monitoring and evaluating HRH interventions and trends; and building alliances with data producers and users.

54. **Establish the national case for investment in HRH as a vital component of the SDGs, UHC and universal access to healthcare, use it for demanding plans and budgets to mobilize adequate resources, and support it by necessary regulations and mechanisms for policy coordination and oversight.** The effective implementation of a national workforce agenda requires marshalling support from ministries of finance, education, labour, civil service commissions, local government and the private sector, including through sound healthcare economics arguments. The coordination among these actors can be enabled by establishing national mechanisms for coordinated HRH governance and policy dialogue among different sectors and constituencies; these should accommodate in the political decision making process the legitimate involvement and interests of a range of stakeholders, including civil society, citizens, health workers, health professionals and their unions or associations, regulatory bodies, employers’ associations, insurance funds, so as to broaden political ownership and institutional sustainability of HRH policies and strategies, while not losing sight of public policy objectives.

55. **Strengthen technical and management capacity for effective development and implementation of HRH policies, norms and guidelines.** This will accelerate the adoption of innovative processes, technologies, service organization and training delivery modalities for effective use of resources.

56. **Ensure that the public health workforce aligns health workforce development efforts with the social services workforce** and the wider social determinants of health, including access to housing, food, education, employment and the local environment conditions. The clinical health workforce should be educated on the social determinants for health and promote this agenda in their practice.

**High-income countries**

57. **Develop capacity to align incentives for health workforce education and health care provision to public health goals.** This entails creating institutional mechanisms to balance the growing needs related to an ageing population and new and ever more expensive health technologies with a realistic forecast of the available resource envelope.

**Low- and middle-income countries**

58. **Strengthen the institutional environment for health workforce production deployment, retention and performance management.** This entails building up the human and institutional capacities required for the design, development and delivery of pre-service and in-service education of health workers; development of health professional associations to support effective relationships with health workers; the design of effective performance management and reward systems; the collaboration with and regulation of private sector educational institutions and health providers. In decentralized contexts, where the functions of workforce planning, recruitment, performance management, remuneration may be carried out at the sub-national or peripheral level, these capacities needs to be built or strengthened at the relevant administrative levels.

**Fragile states and countries in chronic emergencies**

59. In addition to the policy options above, in contexts characterized by fragility, insecurity and political instability, in cases where the central system of governance is weak there may be a need to adopt **flexible approaches to HRH development that are tailored to the specific reality**
of the country. Multiple modalities of intervention for HRH will need to be considered with different starting points, which will be determined by the typology of fragility for each context, by the governance structures (whether centralized or devolved to peripheral authorities), and by agreeing on entry points that make most impact. In settings without a strong central system of governance, health workforce interventions may be more effective if targeted at a decentralized level or through non-State actors, where results can be seen more quickly and lessons learned for scaling up.

60. **Exploit the window of opportunity – when availability of donor funding and opportunity for reform is greatest – to make rapid progress towards stronger institutions.** This requires coordination mechanisms for achieving a common understanding of context and interventions that brings all the stakeholders together, with the State in a coordinating role and targeted interventions with an explicit capacity building objective.

**Responsibilities of WHO Secretariat**

61. **Provide Member States with technical cooperation and capacity building to develop core competencies in HRH policy, planning, projections, resource mobilization, and management.** Capacity building efforts may also be aided by facilitating the development of an internationally recognized, postgraduate professional programme on HRH policy and planning, with an international mentoring and professional network to support the implementation of workforce science.

62. **Strengthen global capacity to implement the trans-national HRH agenda by fostering effective coordination, alignment and accountability** through facilitation of a network of international HRH stakeholders and actors. Building on the experience and the achievements of the Global Health Workforce Alliance over its 10 years of existence (200-2016), WHO will support the establishment of a global mechanism for HRH governance in order to create and maintain high-level political commitment, facilitate the alignment of global health initiatives to the HRH investment priorities outlined in this strategy, promote public-private collaboration and inter-sectoral and multi-lateral policy dialogue, and foster global coordination and mutual accountability, effectively linked with United Nations system processes for monitoring of universal health coverage and the Sustainable Development Goals.

63. **Provide Member States with technical cooperation to develop health system capacities and workforce competencies to manage the risks of emergencies and disasters** through facilitation of: the assessment of the availability of human resources before, during and after emergencies, integration of emergency risk management into relevant policies and technical programmes and associated workforce development, education and training, support to coordination mechanisms for planning and deployment of personnel for emergencies (including international health teams and Global Health Cluster), and advocacy for the protection of workforce health and safety in emergency settings.

**Recommendations to other stakeholders and international partners**

64. **Parliaments and civil society to contribute to sustained momentum of HRH agenda through oversight of Government activities and accountability** mechanisms to monitor the performance and advocate the improvement of both public and private sector education institutions and employers.

65. **The international community, development partners, and global health initiatives to systematically examine the health workforce implications of any health goals that are considered and adopted.** As part of this, the WHO Secretariat should also cooperate with its Governing Bodies mechanisms to create the conditions that all future resolutions presented at the World Health Assembly and regional committees include an assessment of the health workforce implications resulting from the technical or policy recommendations.
4. **Objective 4: To strengthen data on human resources for health, for monitoring of and accountability for successful implementation of both national strategies and the global strategy.**

Milestones:
- **4.1** By 2020, all countries are making progress on health workforce registries to track health workforce stock, distribution, flows, demand, supply, capacity and remuneration.
- **4.2:** By 2020, all countries are making progress on sharing data on human resources for health through national health workforce accounts and submit core indicators to the WHO Secretariat annually.
- **4.3:** By 2020, all bilateral and multilateral agencies are strengthening health workforce assessment and information exchange.

66. **Better HRH data and evidence are required as a critical enabler for enhanced advocacy, planning, policy making, governance and accountability at national and global levels.** The evidence-to-policy feed-back loop is an essential feature of resilient health systems, defined as those with the capacity to learn from experience and adapt according to changing needs. Projections of future workforce requirements, informed by reliable and updated health workforce information, labour market analyses, and scanning of scenarios, can inform the development, implementation, monitoring, impact assessment and continuous updating of workforce strategies. This field presents the potential for major improvements in the coming decade, with opportunities stemming from technological innovation, connectedness, the Internet and the beginning of a “big data” era, characterized by a dramatic growth in the types and quantity of data collected by systems, patients and health workers.

67. **The post-2015 development objectives require aligning the public policy agenda on governance, accountability and equity with strategic intelligence on the national and global health labour market.** There is a need to stimulate demand for and proactive use of health workforce data in international public policy, encouraging a global discourse on assessment of the health workforce implications of any public health objective; this, in turn, will trigger demand for and analysis of workforce data (including in the context of emergency settings), particularly on global health initiatives and programming linked to the health targets in the sustainable development goals and universal health coverage. Improvements in HRH information architecture and interoperability can generate core indicators in support of these processes. Data collected should include a comprehensive overview of the workforce characteristics (public and private practice); remuneration patterns (multiple sources, not only public sector payroll); workers’ competences (including the role of different health workers, disaggregated across cadres and between different levels of care); performance (systematic data collection on productivity and quality of care); absence and absenteeism and their root causes; labour dynamics of mobility (rural vs. urban, public vs. private, international mobility; violence or attacks against health workers; and the performance of the HRH management systems themselves (such as the average time it takes to fill a vacancy, the attrition rates during education and employment, the outcomes of accreditation programmes, etc).73

68. **This strategy includes an accountability framework to assess progress on its recommendations.** At the country level, the policy options identified as most relevant to individual Member States should be embedded in national health and development strategies and plans. Specific HRH targets and indicators should be included in national policies, strategies and development frameworks, and multi-sectoral and multi-constituency mechanisms strengthened to reflect the key HRH interventions and accountability points from inputs to impact. Existing processes and mechanisms for health sector review at country level should include a regular assessment of
progress in advancing the health workforce agenda in the national context. Global accountability will include a progressive agenda to implement national health workforce accounts with annual reporting by countries on core HRH indicators and against the targets identified under the four objectives in this strategy. Reporting requirements for Member States will be streamlined by this progressive improvement in HRH data, effectively linking monitoring of the strategy with that of the WHO Global Code of Practice on International Recruitment of Health Personnel and other relevant HRH-focused WHA resolutions and strategic documents and resolutions adopted at regional level. Global monitoring will also be linked and synchronized with the accountability framework of the emerging sustainable development goals.

**Policy options for WHO Member States**

**All countries**

69. **Invest in analytical capacity of HRH and health system data on the basis of policies and guidelines for standardization and interoperability of HRH data, such as the WHO Minimum Data Set to establish and implement national health workforce accounts.** National or regional workforce observatories and similar or related mechanisms can represent a useful implementation mechanism for this agenda, as well as a platform to share and advocate best practices. Opportunities for greater efficiency can be exploited by harnessing technological advances, connectedness and the Internet, as well as the rise of new approaches for health workforce futures, in the design of systems for HRH data collection, gathering and utilization.

70. **Establish national health workforce registries of the competent and practising, rather than those that have simply completed a training programme.** The registries should progressively extend the Minimum Data Set to a comprehensive set of key performance indicators on health workers’ stock, distribution, flows, demand, supply capacity and remuneration, in both the public and private sector, disaggregated by age, sex, ethnic or linguistic groups, place of employment, as a precondition for the understanding of health labour markets and the design of effective policy solutions. Systems should also be put in place to enable also the systematic collection and reporting on data on attacks and violence on health workers.

71. **Put in place incentives and policies for the collection, reporting, analysis and use of reliable and impartial workforce data to inform transparency and accountability, and public access for different levels of decision-making.** In particular, countries should facilitate national and subnational collection and reporting of health workforce data through standardized, annual reporting to the WHO Global Health Observatory. All workforce data (respecting personal confidentiality and relevant data protection laws) should be treated as a global public good to be shared in the public domain for the benefit of different branches of government, health care professional associations and development partners.

72. **Embed in national health or HRH strategies the relevant policy options included in this strategy, and the corresponding monitoring and accountability requirements.** Accountability for HRH at the national level should be accompanied by mechanisms for accountability of HRH at the grassroots, harnessing the voice and capacity of communities and service users to generate feedback loops to improve quality of care and patient safety. Similarly, at the global level countries should request the United Nations Secretary-General’s office to ensure the Sustainable Development Goals accountability framework includes health workforce targets or indicators.

**High-income countries**

73. **Apply big data approaches to gain a better understand of the health workforce**, including its size, characteristics and performance to generate insights into the gaps and possibilities for health workforce strengthening. This should be done in compliance with existing norms and legislative frameworks regulating collection and use of personal data, guaranteeing absolute confidentiality and anonymity of individual health workers.
Low- and middle-income countries

74. **Strengthen HRH information systems and build the human capital required to operate them** in alignment with broader health management information systems, at all levels, as well as the capacity to use data effectively for dialogue with policy-makers.

75. **Exploit leapfrogging opportunities through the adoption of ICT solutions** for HRH data collation and storage, avoiding the capital-heavy infrastructure needed in the past.

Fragile states and countries in chronic emergencies

76. In addition to the policy options above, in contexts characterized by fragility, insecurity and political instability there is a specific additional need to **professionalize the development of HRH information systems through targeted capacity-building initiatives** and the establishment or strengthening and protection of relevant institutions (both the Government/Ministry of Health and professional councils) at national level. In the short term, the fragmentation of health workforce information systems may make it necessary to develop the ability to work effectively with patchy quantitative data and to complement them with qualitative methods.

Responsibilities of WHO Secretariat

77. **Develop, review the utility of and update and maintain tools, guidelines and databases relating to data and evidence on human resources for health for routine and emergency settings.**

78. **Facilitate the progressive implementation of national health workforce accounts** as a mechanism to support countries to strengthen and standardize quality and completeness of national health workforce data. Improved HRH evidence in countries will contribute to a global digital reporting system for countries to report on a yearly basis on a minimum set of core HRH indicators, including information on health workforce production, recruitment, availability, composition, distribution, costing and migratory flows, disaggregated by sex, age and place of employment.

79. **Streamline and integrate all requirements for reporting on human resources for health by WHO Member States**, integrating in the annual reporting on HRH the monitoring of the implementation of the WHO Global Code of Practice on the International Recruitment of Health Personnel, other HRH-focused WHA resolutions, and progress in implementation of the Global Strategy on HRH. Adapt, integrate and link the monitoring of targets in the Global Strategy on HRH to the emerging accountability framework of the Sustainable Development Goals.

Recommendations to other stakeholders and international partners

80. **The International Labour Office to revise the International Standard Classification of Occupations** (ISCO), for greater clarity on classification and delineation of health workers and health professions, moving towards definitions that reflect worker competences together with the tasks they perform. Of particular urgency is the need to streamline and rationalize the categorization and nomenclature of community health workers and other types of community-based practitioners.

81. **Research and academic institutions to address priority evidence gaps.** Examples of areas where further research is required include approaches to effectively regulate dual practice, strategies to optimize quality and performance of the health workforce, the optimal institutional and regulatory context for task sharing and skills delegation approaches, among others. Further, there is a need to leverage strengthened HRH data and measurement for impact evaluations and research on cost-effectiveness and return on investment of health workforce interventions. The early involvement of decision makers and stakeholders in the setting of research priorities can be instrumental in enabling the scale up and utilization of research results.
82. **Professional associations and civil society should collaborate with the research community to facilitate the uptake and utilisation of evidence in the policy making process.** The advocacy, communications and accountability functions of these constituencies can represent an important strategy to bridge the evidence-to-policy gap.

83. **Development partners to support the development of national HRH data collection and analysis systems for improved planning and accountability.** This should include a provision that bilateral and multilateral agencies routinely make available in the public domain the health workforce information and evidence collected as part of the initiatives they support.
Annex 1: health workforce requirements for implementation of Global Strategy on human resources for health

Note: Since April 2015, WHO has been facilitating an inter-agency and multi-constituency collaborative effort at estimating health workforce requirements to 2030. This initiative is ongoing.

Annex 1 reflects the extent that the analysis has reached in December 2015. The annex will be finalized for the submission to the World Health Assembly in May 2016.

Table 1: Current stock of health workers

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<tr>
<th>Region</th>
<th>2013</th>
<th>MDs</th>
<th>Nurses/Midwives</th>
<th>All other cadres</th>
<th>Total</th>
<th>MDs per 1,000</th>
<th>Nurses/Midwives per 1,000</th>
<th>All other cadres per 1,000</th>
<th>Total per 1,000</th>
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<td>1,039,709</td>
<td>620,315</td>
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<td>1,062,373</td>
<td>2,776,662</td>
<td>2,093,276</td>
<td>5,932,311</td>
<td>0.57</td>
<td>1.50</td>
<td>1.13</td>
<td>3.20</td>
<td></td>
</tr>
<tr>
<td>Western Pacific</td>
<td>2,721,036</td>
<td>4,624,862</td>
<td>2,959,246</td>
<td>10,305,145</td>
<td>1.49</td>
<td>2.54</td>
<td>1.62</td>
<td>5.66</td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>144,826</td>
<td>399,478</td>
<td>323,979</td>
<td>868,284</td>
<td>0.19</td>
<td>0.51</td>
<td>0.41</td>
<td>1.11</td>
<td></td>
</tr>
<tr>
<td>Lower-middle</td>
<td>1,977,455</td>
<td>4,475,914</td>
<td>3,543,241</td>
<td>9,996,609</td>
<td>0.77</td>
<td>1.75</td>
<td>1.39</td>
<td>3.91</td>
<td></td>
</tr>
<tr>
<td>Upper-middle</td>
<td>3,880,669</td>
<td>6,603,520</td>
<td>4,259,087</td>
<td>14,743,276</td>
<td>1.61</td>
<td>2.74</td>
<td>1.77</td>
<td>6.12</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>3,725,300</td>
<td>8,263,597</td>
<td>4,471,607</td>
<td>16,460,504</td>
<td>2.92</td>
<td>6.48</td>
<td>3.51</td>
<td>12.91</td>
<td></td>
</tr>
<tr>
<td>World ¹</td>
<td>9,728,249</td>
<td>19,742,509</td>
<td>12,597,914</td>
<td>42,068,673</td>
<td>1.38</td>
<td>2.81</td>
<td>1.79</td>
<td>5.99</td>
<td></td>
</tr>
</tbody>
</table>

¹ Income-specific “all other cadres” multipliers are as follows: High Income: 0.373; Upper Middle Income: 0.406; Lower Middle Income: 0.549; Low Income: 0.595.

² Refers to the other seven broad categories of the health workforce, as defined by WHO Global Health Workforce Statistics Database (dentistry personnel, pharmaceutical personnel, laboratory health workers, environment and public health workers, community and traditional health workers, other health workers, and health management and support workers). We arrived at a cadre multiplier by taking, for each World Bank Income Region (i.e., High, Upper Middle, Lower Middle, and Low) with non-missing “all other cadres” values, the average number of “all other cadres” relative to MDs/Nurses/Midwives. This process yielded the following workforce multipliers: 0.373 (High), 0.406 (Upper Middle), 0.549 (Lower Middle), and 0.595 (Low). Multiplication of the total MD/Nurse/Midwives by this cadre multiplier yields the estimated number of “all other cadres” for that country.

³ Counts and rates may not sum to row/column totals due to rounding or to missing data on income or region.

We estimate that in 2013 (latest available data) the global health workforce was slightly over 42 million workers, including 9.5 million physicians, 19.7 million nurses/midwives, and approximately 12.5 million other health workers. The current global nurse/midwife to physician ratio is 2.07.
Projected growth in workforce on current trends

Table 2: Forecasted estimate for health workers by cadre and income group in 2030 (and percent change from 2013)

<table>
<thead>
<tr>
<th>Income</th>
<th>MDs</th>
<th>Nurses/Midwives</th>
<th>Others</th>
<th>Total Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2013</td>
<td>2030</td>
<td>% Change</td>
<td>2013</td>
</tr>
<tr>
<td>Low</td>
<td>144,826</td>
<td>183,424</td>
<td>27%</td>
<td>399,478</td>
</tr>
<tr>
<td>Lower-middle</td>
<td>1,977,4</td>
<td>2,345,1</td>
<td>19%</td>
<td>4,475,91</td>
</tr>
<tr>
<td>Upper-middle</td>
<td>3,880,6</td>
<td>4,265,9</td>
<td>10%</td>
<td>6,603,52</td>
</tr>
<tr>
<td>High</td>
<td>3,725,3</td>
<td>3,922,9</td>
<td>5%</td>
<td>8,263,59</td>
</tr>
<tr>
<td>World</td>
<td>9,728,2</td>
<td>10,723,1</td>
<td>10%</td>
<td>19,742,5</td>
</tr>
</tbody>
</table>

If current trends in education and employment continue to 2030, there will be significant increases in the numbers of all cadres of health workers for low income countries, including a 27% increase in physicians in low-income countries from 2013-2030, a 40% increase in nurses/midwives, and a 36% increase in other health care workers.

In contrast, high-income countries are forecasted to have a 5% increase across all cadres which reflects their already satisfactory health worker densities and low population growth. The aggregate forecasted increase in the global health work force from 2013 to 2030 across all income groups is 11%, which results in 46.7 million health care workers if current trends continue.

An updated needs-based “SDG index” of minimum density of doctors, nurses and midwives

The 2006 World Health Report broke new ground by developing an evidence-based model for health worker need. This model was based on achieving 80% coverage of assisted deliveries. This threshold recommended 2.3 skilled health workers per 1,000 population. The threshold has enabled policy advocates to push for goals and countries to measure their progress. However, this threshold has its limitations as it is based on one single study of one single health service (assisted deliveries).

In considering a new health workforce threshold for the SDG Global Goals, the focus must shift to reflect the broader range of services that are targeted by UHC and the SDGs.

Box 1: SDG tracer indicators

<table>
<thead>
<tr>
<th>SDG Tracer Indicator</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antenatal care</td>
<td>MNCH</td>
</tr>
<tr>
<td>Antiretroviral therapy</td>
<td>ID</td>
</tr>
<tr>
<td>Cataract</td>
<td>NCD</td>
</tr>
<tr>
<td>Diabetes</td>
<td>NCD</td>
</tr>
<tr>
<td>DTP3 immunization</td>
<td>ID</td>
</tr>
<tr>
<td>Family planning</td>
<td>MNCH</td>
</tr>
<tr>
<td>Hypertension</td>
<td>NCD</td>
</tr>
</tbody>
</table>
12 tracer of indicators for UHC were selected to reflect NCDs, MNCH, and infectious disease priorities. Box 1 lists the twelve indicators and their primary classification as Infectious Disease (5 indicators) MNCH (3 indicators) or NCDs (4 indicators). Coverage data for all countries available for these 12 indicators were combined in an aggregate coverage indicator, which weighted the importance of different indicators on the basis of the contribution of the diseases that they refer to the Global Burden of Diseases.

**12 UHC tracers weighted according to GBD (SDG index)**

Countries were then ranked according to the coverage of this composite SDG index, and a regression analysis was performed to identify the aggregate density of doctors, nurses and midwives corresponding to 50th percentile (median) rank. It was not possible to factor in the analysis other health worker cadres (such as community-based and mid-level practitioners, other allied health professionals) due to extensive data limitations on their availability that prevented their inclusion in the model.

Alternative regression techniques, based on data envelopment analysis and simultaneous equation models, were attempted, but the gaps in availability of service coverage data made these techniques more vulnerable to evidence gaps, and restricted the applicability of these alternative methodologies to a narrower sub-set of coverage data indicators that do not reflect the scope of UHC. These alternative estimates of the threshold are not presented here and will be discussed in a forthcoming background paper.

On the basis of the analysis conducted according to the SDG index methodology described above, an indicative threshold of an aggregate density of 4.45 doctors, nurses and midwives per 1,000 population was identified, as it corresponds to the median score of SDG tracer indicator attainment (25%). This value and has been used for the subsequent needs based estimates in this analysis.

At the same time, it should be emphasised that this figure does not represent a planning target for countries, nor for the global level; further, it should be acknowledged that this threshold reflects only doctors, nurses and midwives, an inherent limitation that it was not possible to overcome due to paucity of data on other cadres, which restricted the scope of this analysis.

Planning targets for countries should rather be set in the context of national level policy dialogue, taking into account the context-specific health system needs, service delivery profile, and labour market conditions; further they should reflect a more diverse skills mix, going beyond the cadres of doctors, nurses and midwives, harnessing the potential contribution of other cadres to a more responsive and cost-effective composition of health care teams.
Figure 1. SDG Composite Method: Percentage of twelve SDG tracer indicators achieved as a function of aggregate density of doctors, nurses and midwives per 1,000 population (n=210 countries).

Table 3: Forecast of needs-based worker supply to 2030 by income group for all cadres and their percent increase from 2013

<table>
<thead>
<tr>
<th>Income Level</th>
<th>MDs</th>
<th>Nurses/Midwives</th>
<th>Others</th>
<th>Total Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>988.23</td>
<td>2,487.81</td>
<td>2,069.05</td>
<td>5,545.1</td>
</tr>
<tr>
<td>Lower-middle</td>
<td>3,234.67</td>
<td>8,142.99</td>
<td>6,247.07</td>
<td>17,624.67</td>
</tr>
<tr>
<td>Upper-middle</td>
<td>3,049.917</td>
<td>7,677.95</td>
<td>4,358.17</td>
<td>15,085.45</td>
</tr>
<tr>
<td>High</td>
<td>1,613.380</td>
<td>4,061.57</td>
<td>2,116.68</td>
<td>7,791.65</td>
</tr>
<tr>
<td>World</td>
<td>8,886.182</td>
<td>22,370.3</td>
<td>14,790.9</td>
<td>46,047.04</td>
</tr>
</tbody>
</table>

The index of 4.45 health workers per 1,000 population was used to estimate the number of health workers that would be needed in 2030 to reach adequate coverage of the 12 SDG tracer indicators. In 2013, the needs based forecasted estimate in low-income countries is 988,000 physicians, nearly 2.5 million nurses, and just over 2 million cadres of other health workers, with a total needs based estimate for physicians in 2013 is 1.6 million, nurses and midwives just over 4 million, and for other healthcare workers 2, 216,000. Globally, the needs-based estimate for physicians is 8.8 million, for
nurses and midwives 22.3 million, and for other health care workers 14.7 million, resulting in a
global needs-based estimate for health care workers of 46,047,000 in 2013. Forecasting the needs
based estimate to 2030, produces a global estimate for the need for health care workers of 54
million, representing an 18% increase in the overall number of health care workers needed from
2013 to 2030. This increase is not uniform, in low-income countries, the increase is forecasted to be
40%, 23% in lower-middle income countries, 11% in upper-middle income countries, and 6% in high-
income countries.

**Health worker deficit (difference between SDG calculated need and supply) in 2013 and 2030 by
cadre and country income group**

**Table 4: SDG Composite Method (4.45). Estimates of health worker deficits relative to current supply, by
region and income, 2013.**

<table>
<thead>
<tr>
<th>Region</th>
<th>MDs</th>
<th>Nurses/Midwives</th>
<th>All other cadres</th>
<th>Total Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>860,362</td>
<td>1,787,513</td>
<td>1,511,497</td>
<td>4,159,373</td>
</tr>
<tr>
<td>Americas</td>
<td>48,050</td>
<td>518,501</td>
<td>214,363</td>
<td>780,913</td>
</tr>
<tr>
<td>Eastern Mediterranean</td>
<td>241,115</td>
<td>871,788</td>
<td>605,258</td>
<td>1,718,160</td>
</tr>
<tr>
<td>Europe</td>
<td>1,911</td>
<td>362,228</td>
<td>43,313</td>
<td>407,453</td>
</tr>
<tr>
<td>South-East Asia</td>
<td>1,283,457</td>
<td>3,129,308</td>
<td>2,448,532</td>
<td>6,861,297</td>
</tr>
<tr>
<td>Western Pacific</td>
<td>127,915</td>
<td>2,532,414</td>
<td>1,040,82</td>
<td>3,701,155</td>
</tr>
<tr>
<td><strong>World</strong></td>
<td><strong>2,562,811</strong></td>
<td><strong>9,201,752</strong></td>
<td><strong>5,863,78</strong></td>
<td><strong>17,628,351</strong></td>
</tr>
</tbody>
</table>

Here we examine the deficit of health care workers in 2013 and 2030 by cadres. Deficits are defined
by the needs-based estimates described above minus the supply projections presented earlier.
Hence, deficits are defined as need for health care workers minus the supply of health care workers.

Globally, the deficit of health care workers in 2013 is estimated to be 17,628,000, of which 2,562,000
million are doctors, 9 million are nurses and midwives, and all other health care cadres are 5.8
million. The larger deficits of healthcare workers are in low-middle income countries, followed by
low-income countries. Regionally, the largest deficit of health care workers is 6.8 million in South
East Asia followed by Africa with a deficit of 4.1 million health care workers.
Table 5. SDG Composite Method (4.45). Estimates of Health worker deficit in 2030 relative to projected supply in 2030, by WHO region and country income group.

<table>
<thead>
<tr>
<th>Region</th>
<th>MDs</th>
<th>Nurses/Midwives</th>
<th>All other cadres</th>
<th>Total Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>963,300</td>
<td>2,425,105</td>
<td>2,204,926</td>
<td>5,593,331</td>
</tr>
<tr>
<td>Americas</td>
<td>56,648</td>
<td>142,656</td>
<td>174,825</td>
<td>374,129</td>
</tr>
<tr>
<td>Eastern Mediterranean</td>
<td>162,088</td>
<td>408,116</td>
<td>536,537</td>
<td>1,106,741</td>
</tr>
<tr>
<td>Europe</td>
<td>1,414</td>
<td>3,564</td>
<td>14,090</td>
<td>19,068</td>
</tr>
<tr>
<td>South-East Asia</td>
<td>1,651,921</td>
<td>4,159,017</td>
<td>3,735,904</td>
<td>9,546,842</td>
</tr>
<tr>
<td>Western Pacific</td>
<td>128,029</td>
<td>322,340</td>
<td>296,429</td>
<td>746,797</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Income Group</th>
<th>MDs</th>
<th>Nurses/Midwives</th>
<th>All other cadres</th>
<th>Total Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>1,007,506</td>
<td>2,536,415</td>
<td>2,282,424</td>
<td>5,826,346</td>
</tr>
<tr>
<td>Lower-middle</td>
<td>1,801,449</td>
<td>4,535,484</td>
<td>4,339,197</td>
<td>10,676,131</td>
</tr>
<tr>
<td>Upper-middle</td>
<td>150,495</td>
<td>378,944</td>
<td>321,514</td>
<td>850,953</td>
</tr>
<tr>
<td>High</td>
<td>3,950</td>
<td>9,953</td>
<td>19,575</td>
<td>33,479</td>
</tr>
<tr>
<td>World</td>
<td>2,963,400</td>
<td>7,460,797</td>
<td>6,962,711</td>
<td>17,386,908</td>
</tr>
</tbody>
</table>

Using this “SDG Index” (4.45 per 1,000) the projected deficits to 2030 have been estimated. The deficit of physicians in Africa will be just under a million (953,000), nurses and midwives at 2.4 million, and other workers at 2.2 million. In contrast, in Europe there will be almost no deficit of physicians.

Looking at these estimates by income group produces similar results, showing that the total health care worker shortage is 5.8 million, while in LMICs is 10.6 million. Interestingly, the global deficit of health care workers is projected to be above 17 million in 2030, a value close to the deficit of health care workers in 2013 (see table above). Hence, current trends of health worker production and employment will have virtually no impact on reducing the needs based deficit for healthcare workers by 2030.

**Assessing market-based demand for health workers to 2030**

*Forthcoming from the World Bank – will confirm mismatch between needs and demand at the aggregate level in low-income and lower middle-income countries and in Sub-Saharan Africa.*

**Projecting fiscal space and resource requirements**

*Forthcoming*
Annex 2: annotated list of key tools and guidelines for HRH

- WHO Education guidelines
- WHO Retention guidelines
- WHO Guidelines: task shifting HIV and optimizing RMNCH
- WISN
- One Health Tool
- MDS
- NHWA
- HRH advocacy toolkit (HWAI)
- WHO Code
- The labour market for health workers in Africa (WB)
- Handbook on Monitoring and Evaluation of Human Resources for Health with special applications for low- and middle-income countries
- HRH indicator compendium (USAID)
- ISCO (ILO)
- IHR – HRH module
- Analysing disrupted health sectors – HRH module
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