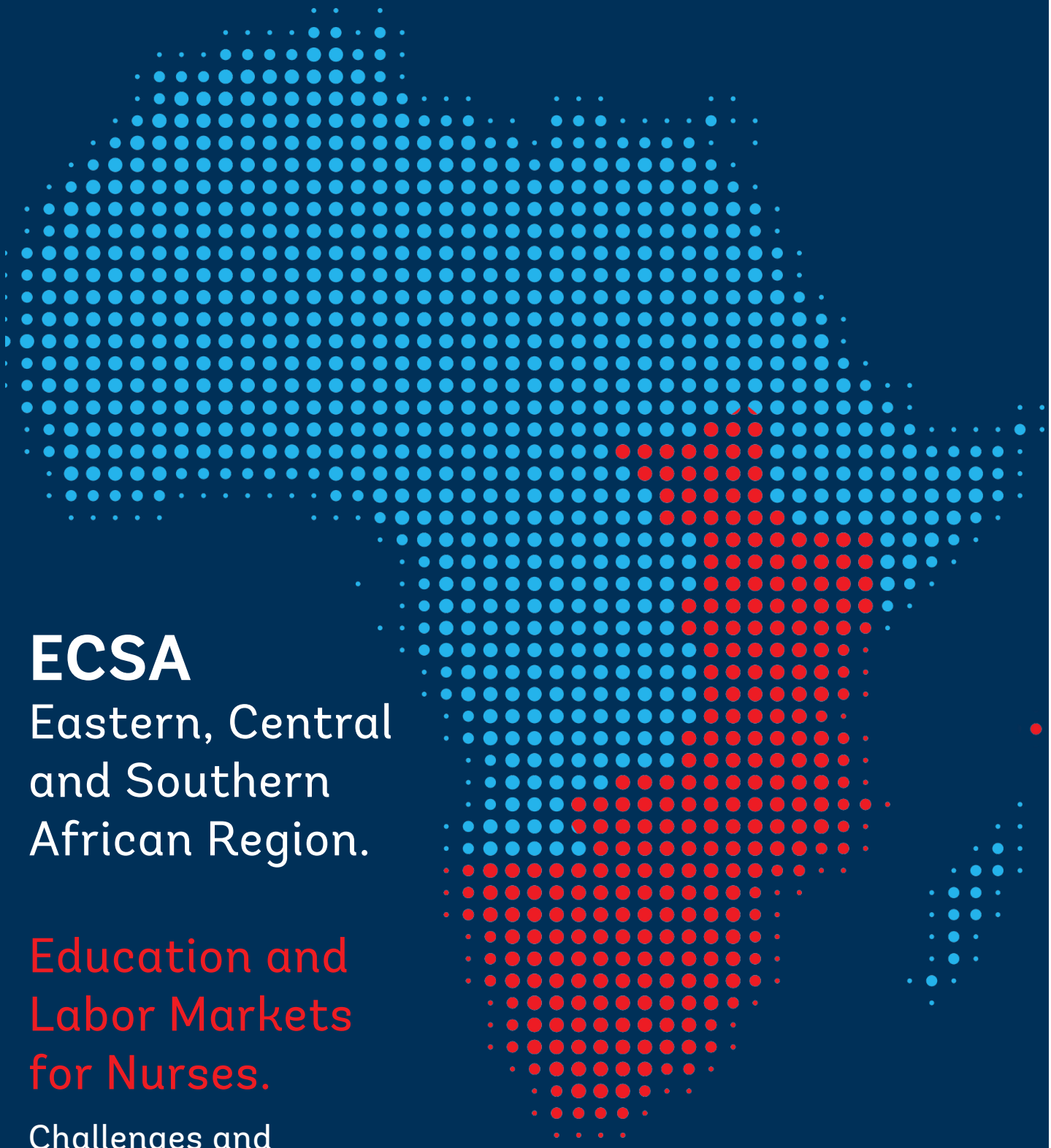
ECSA

Eastern, Central and Southern African Region.

Education and Labor Markets for Nurses.

Challenges and Opportunities



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LIST OF ACRONYMS

CHWs	Community Health Workers
ECSA	Eastern, Central and Southern Africa
ECSACON	The East, Central, and Southern Africa College of Nursing
ICN	International Council of Nurses
IRR	Internal Rate of Return
GDP	Gross Domestic Product
HE	Health Expenditure
HIV	Human Immunodeficiency Virus
HRH	Human Resources for Health
MMR	Maternal Mortality Ratio
NCDs	Non-communicable Diseases
NHWA	National Health Workforce Accounts
NPV	Net Present Value
OECD	Organization for Economic Cooperation and Development
LMICs	Low- and Middle-Income Countries
PEPFAR	President's Emergency Plan for AIDS Relief
PPP	Purchasing Power Parity
ROI	Return on Investment
SSA	Sub-Saharan Africa
SDG	Sustainable Development Goal
UHC	Universal Health Coverage
WHO	World Health Organization

Acknowledgements

This report is a result of a collaboration between the World Bank, the East, Central, and Southern Africa College of Nursing (ECSACON), the International Council of Nurses (ICN), and Jhpiego. The project team included: Edson C. Araujo (Senior Economist and Task Team Leader), Alejandra Garcia-Mexa (consultant), Bernardo Pereira Coelho (consultant), Khama Rogo (Lead Health Specialist), and Daniela Hoshino (Team Assistant) from the World Bank, Alphonce Kalula (Senior Program Officer) from the ECSACON), Judith Shamian (former president) and Erica Burton (Senior Advisor) from ICN, and Peter Johnson (Senior Director, Nursing & Midwifery) and Leah Hart (Technical Advisor, Nursing & Midwifery) from Jhpiego.

The report draws on literature reviews from Patricia Riley and Alexandra Zuber (Ata Health Strategies LLC), and Kelli M. Grunstra (Jphiego), as well as research contributions by the project team. Report-writing was conducted by Dr. Alexandra Zuber (Ata Health Strategies LLC), Edson C. Araujo (Senior Economist, World Bank), Alejandra Garcia-Mexa (Consultant, World Bank), and Bernardo Pereira Coelho (Consultant, World Bank). Data assembly and analysis were conducted by Dr. Jonathan Rothwell and Dr. Zuber (Ata Health Strategies), Bernardo Pereira Coelho, Alejandra Garcia-Mexa, and Edson C. Araujo (World Bank). The qualitative results presented draw on the work of Anna Bryant (Consultant, Jhpiego).

The study design also benefitted from consultation with ECSACON representatives during the workshops held in Nairobi (on March 2018) and in Singapore (June 2019). QUAD members from each of the 16 ECSA countries included in the study. We thank the leadership of ECSACON: President Keoagetse Kgwabi and Director General Yoswe for their support.

The data collection was done in collaboration with the World Health Organization health workforce department, through the reporting via National Health Workforce Accounts (NHWA) during the preparation of the State of the World Nursing report. The data collection from the present report were based on standard definition and using tools developed by WHO to report NHWA indicators and adapted to our study. Special thanks goes to Carey McCarthy, Mathieu Boniol, Deen Lawani and the rest of WHO at regional and country level who provided technical assistance to this joint effort. A special thanks goes to Ms. Semakaleng Phafoli from Jhpiego for her significant support in working with countries to ensure that the data collection tool was filled.

The work was carried out under the general direction of Magnus Lindelow (Practice Manager, HAFH2) and Ernest E. Massiah (Practice Manager, HAFH1).

The paper greatly benefited from comments received from Mickey Chopra, Lead Health Specialist (HHNDR) and Pia Schneider, Lead Economist (HAFH1).

EXECUTIVE SUMMARY

This report presents a comprehensive assessment of the education and labor markets for nurses in the ECSA region. It documents the main challenges to train and deploy nurses and discusses opportunities for government and private sector employers to overcome these challenges. The report provides empirical evidence to support the expansion of nursing education within the region with a focus on private sector engagement, effective labor market regulation, and regional collaboration. A regional focus for investment may be necessary to create enough potential deals, reduce individual country and regulatory risks, encourage good private institutions to move across borders within the region, and seek to create regional standards for regulation.

The report also describes the nursing educational market, including the composition of training institutions & degree types. Finds trends in increasing nursing preparation & expanded clinical responsibilities. Documents impressive growth of 10% of nursing graduates per year from 2012-2018. Examines nursing educational demand, including comparing applications to enrollment and graduation, finding some countries at excess capacity. Documents concerns with nursing educational quality as a result of rapid expansion in the last decade. The production of nursing graduates is correlated to a country's GDP, with higher income countries producing a higher net increment rate of nurses.

Lack of data on the health workforce across all stages of the lifecycle of the health worker (training, regulation, deployment) in the ECSACON countries limit governments availability to plan the health workforce rationally. Investments can in fact exacerbate labor market asymmetries.

The report identifies four policy scenarios for expanding production of nurses to meet needs-based demand (status quo, 25% increase 50%, 75%), attaching a budget estimate to each scenario. The report also documents the positive return on investment in nursing education for the private individual, as well as for the public and society at large, which could be reaped with this investment.

The report concludes with several key recommendations for how to invest in nursing education and labor market. Concomitant investments in nursing education, nursing regulation, and nursing data and analytics are strongly advised, and specific actions are suggested.

1. INTRODUCTION

1. Introduction

1. More than 80 percent of the population in low-income countries cannot access health services because of the lack of sufficiently trained health workers.[1] Most countries face either absolute shortages (not enough health workers) or relative shortages (skills imbalances), sometimes both. A recent World Bank report estimates a global shortage of 15 million workers by 2030.[2] The regional picture of this supply-side shortage suggests that lower-income settings such as Sub-Saharan Africa face the greatest supply shortfall relative to need, estimated in more than 6 million of health workers.[2] In addition to the insufficient number of workers, there is an increasing trend towards specialization among health care workers resulting in shortages of professionals to deliver primary health care (PHC), often leaving the most vulnerable populations underserved. The severe shortage of health workers and competencies is a critical challenge to achieving universal health coverage (UHC).

2. There is wide recognition that nurses are essential to achieving universal health coverage through primary health care.[3,4] With the epidemiological changes occurring in Sub-Saharan Africa and the increasing burden of chronic diseases focus is on adapting current models of primary health care (PHC) to make them stronger and more integrated in order to meet the changing needs of populations. Nurses make up the largest proportion of the health workforce, comprise 90% of the contacts between patients and health professionals, and are integral at all levels of the health system, from primary care, population health, specialized services, and policy and management.[5] Nurses make an essential contribution to all components of PHC and are frequently the highest level provider, on the frontline, providing primary care services.[6] The Declaration of Astana, reaffirming commitments of Heads of State and Government to PHC, firmly establishes PHC as the cornerstone of UHC. Nurses have been essential in expanding the delivery of more advanced services to rural and remote populations, through the informal reallocation of tasks, such as HIV treatment and medical male circumcision. Evidence shows that nurses are instrumental in improving health sector productivity and patient outcomes, and are less expensive to train and deploy than other professional health workers.[7] Further, globally the majority of nurses are women. Investing in the nursing workforce presents a triple return on health, economic growth, and gender equality.[3]

3. The global nursing workforce is insufficient to achieve UHC and deliver the SDGs. The State of the world's nursing 2020 report found that 89% of the 5.9 million global shortage of nurses is in low- and lower-middle income countries with countries in the African region having the greatest gaps.[8] Addressing this

shortage would require, on average, an 8% increase in nursing graduates per year.

4. Much of the expansion in private sector training is currently taking place without enough attention to shaping the market based on real needs and the best value for money for patients and governments. Private investments in skills and higher education institutions are sub-optimal in Africa due to insufficient evidence on regulations, unknown potential return for investors, and the varied ability of the national and regional labor markets to utilize health professionals alongside those from the public sector. A solid evidence base related to the education and labor markets for nurses is a critical pre-condition for the development of an investment case to scale-up nursing education in the region.

5. The education and training of nurses as an integral part of the health workforce calls for a revision of the curricula, an improvement of the infrastructure and addressing faculty shortages. Training of nurses must be modified to effectively address population needs. Nurses are well placed to meet changing health needs by delivering increased levels of health promotion and disease prevention, developing primary care, and by providing support and supervision for community health workers.[9] To prepare strong graduates from nursing schools, there needs to be an increase in the number of nursing faculty and other clinical educators with experience working in resource-constrained settings.

6. The time to act is now, in alignment with the global call for strengthening the nursing workforce. 2020 is the International Year of the Nurse and the Midwife. Furthermore, this year the report State of the world's nursing 2020: investing in education, jobs and leadership was released and presents the opportunity for countries to commit to a decade of action. The report is framed in the context of how investment in the nursing workforce is essential to accelerate progress towards UHC and deliver the Sustainable Development Goals (SDGs) and presents the most up-to-date policy options for the global nursing workforce. The launch of the Nursing Now campaign around the world is a call to raise the profile of nursing and to highlight the importance of the need for more well-trained nurses, of investing in recruitment and retention strategies, and of removing the barriers to the development of advanced nursing roles, which are all proving highly effective at expanding healthcare coverage.[10]

7. This report presents a comprehensive assessment of the education and labor markets for nurses in the ECSA region. It documents the main challenges to train and deploy nurses and discusses opportunities for government and private sector employers to overcome these challenges. The report provides empirical evidence to support the expansion of nursing education within the region with a focus on private sector engagement, effective labor market regulation, and regional collaboration. A regional focus for investment may be necessary to create enough potential deals, reduce individual country and regulatory risks, encourage good private institutions to move across borders within the region, and seek to create regional standards for regulation.

2. CONTEXT

8. Sub-Saharan Africa (SSA) has realized an impressive period of economic development over the last two decades, as witnessed by the over 300% growth rate of total GDP since 2000.[11] Forecasts for 2019-2020 show the region increasing its annual growth rate to 3.8%, surpassing the global growth rate.[12] Although poverty in Sub-Saharan Africa has been decreasing, the number of people living in poverty has increased, mainly due to population growth.5 Since 1990, poverty has dropped to 41% in 2015 but the number of poor people increased from 278 million in 1990 to 413 million in 2015.

9. This growth has been accompanied by increases in health spending and significant gains in health outcomes. Rates of infant and maternal mortality have declined considerably:[13] Maternal mortality has dropped from 626 per 100,000 live births in 2010 to 534 per 100,000 live births in 2017. Under-five mortality rate in the region has decreased from 101.3 per 1,000 live births in 2010 to 77.5 per 1,000 live births in 2018. From 2000-2018, life expectancy increased by the same amount as the previous forty year period (between 1960 to 2000).[14] During the same period, countries in the region increased their total share of spending on health considerably; according to a recent report by the United Nations Economic Commission on Africa, 29 countries in the region have increased their share of spending on health as a proportion of gross domestic product (GDP) since 2000, and the number of countries spending over $44 per capita on health doubled, from 15-31 (2000-2015).[13]

10. Improvements to health care and health outcomes have directly supported the region's economic growth. The High-Level Commission on Health Employment and Economic Growth attributes one-quarter of the region's growth since 2000 to improvements in health. The Commission further considers the health sector itself as a "major and growing source of employment, and a strategic area for investment that translates into more work opportunities than most other industries and sectors, particularly for women and young people."[15] Continued investment in the health sector, and the health workforce in particular, will thus accelerate economic productivity and growth in the Africa region.[16] Despite the progresses, the region struggles with the highest disease burden in the world, including an emerging dual burden of communicable and non-communicable diseases (NCDs).

11. The nursing workforce, providing much of the health promotion, disease prevention and healthcare to populations in low-income countries, needs to be expanded and contracted for more flexible functions to improve health systems coverage, responsiveness and efficiency. In the Africa Region, increased labor market demand has created pressures to expand training opportunities for nurses, a demand increasingly fulfilled by the private

sector. While there is a need to strengthen public sector education systems, the Africa scenario also highlights the need to support governments to take advantage of existing private sector capacity in health workforce to make more efficient resource allocation and policy decisions, which will in turn provide opportunities to expand private sector investments fulfilling a social demand (more nurses/midwives and more training capacity).

12. The COVID-19 pandemic profoundly affects nursing education and practice. The pandemic has strained health systems around the world and will continue to do so for some time. During this time, the health workforce has been on the frontlines and is under immense stress with high risk of exposure, difficult working conditions, long working hours, psychological distress, moral injury, isolation and stigma. This new reality will have long-lasting effects on human resource management, education delivery, working conditions and environments, and the current health workforce shortages. The COVID-19 pandemic experience has exposed gaps and vulnerabilities of health systems and has presented important lessons for future preparedness. Preparedness requires strong and resilient health systems that can only be built through long-term political commitments by leaders and sustained investment to increase capacity and capability of the health workforce. Annex 1 of this report examines the profound impact COVID-19 has had on the nursing workforce.

13. Over the last decade, notable investments have been made in the ECSA region to advance pre-service education and improve regulation of health workers practice, particularly for nurses. There has been a major expansion and growth in pre-service education, boosting quantity of programs and students and quality of educational offerings. To support these investments, countries have also improved nursing licensure and continuing professional development, strengthened human resource information systems, formulated national health workforce plans, and advanced the health workforce research agenda. Still, overall public sector investments in nursing education have been slow in the face of growing needs and demand due to population and economic growth.[17]

14. Several African countries face a paradoxical situation where they have both shortages and unemployment of nurses. This comes from an overproduction of nurses relative to the growth in effective demand, a market disequilibrium that squanders scarce educational resources that could be better directed to producing health workers that are absorbed into the health system. Continuing this pattern of investment in these scenarios could exacerbate underemployment and reduce efficiency of government expenditures.[18] To address this, countries need to harness workforce data to match supply and demand and align workforce flows. Establishing a solid evidence base related to the education and labor markets for nurses is thus a critical pre-condition for the development of an investment case to scale-up nursing education in the ECSA region.

15. The growing demand for health workers has resulted in an expansion of private educational institutions, which capitalizes on the students 'willingness to pay' higher tuition fees. In the Africa Region, increased labor market demand has created pressures to expand training opportunities for nurses, a demand increasingly fulfilled by the private sector. While there is a need to strengthen public sector education systems, the Africa scenario also highlights the need to support governments to take advantage of existing private sector capacity in health workforce to make more efficient resource allocation and policy decisions, which will in turn provide opportunities to expand private sector investments fulfilling a social demand (more nurses/midwives and more training capacity). Nowadays, much of the proliferation of private institutions is occurring without the necessary regulation that would guide allocation of resources to investments with the highest returns (value for money) for governments, patients, and society more generally.

16. Many of the schools in the region operate with limited quality assurance mechanisms due to limited resources or scopes of regulatory authorities. Recent evidence from low-and middle-income countries (LMICs) has raised concerns about the quality of health professionals' education in the context of rapid increase of schools – particularly among nurses in private sector institutions.[19] A recent review of the of nursing and midwifery pre-service education accreditation in the ECSA region found that while in nearly all countries pre-service nursing education accreditation exists, the percent of active programs accredited decreased by program level - from 80% for doctorate programs to 62% for masters nursing to 50% for degree nursing to 35% for diploma nursing programs, and private schools are less likely to be accredited.[20] In the same review, the majority of countries report limited financial resources as a main barrier to increasing accreditation activities. More ambitious private sector investment is limited by the lack of information on regulation, potential return on investment, and the ability of the health systems to absorb graduates alongside those from the public sector.

17. There is a pressing need to identify national and regional nursing education investment strategies in both the private and the public sectors. Investment strategies in an environment of scarce resources should be informed by growing evidence on best buys. Despite the paucity of 'return on investment' analysis in pre-service nursing education, some analyses are emerging that give some direction on investment priorities. Recent analyses of low-income settings suggest very positive returns on investments from the training of frontline workers, including nurses, midwives and community health workers (CHWs). A strong nursing workforce has been shown to increase patient satisfaction, improve health outcomes and increase access to health services.[21] Public private partnerships could provide an opportunity to combine and leverage resources in countries where they are scarce. These partnerships could result in higher quality of nursing education, at lower costs, and allow a rapid increase in the needed supply of nurses.

Box 1: **The Quad Concept**

The "nursing Quad" was formally constituted and institutionalized as a constant mechanism in the ECSA region while implementing the African Health Professions Regulatory Collaborative (ARC) project (2011-2017). It was conceptualized in order to ensure that the nursing and midwifery agenda during implementation of that project is addressed in comprehensive manner to improve practice, regulatory governance, advocacy mechanisms to embrace change as well as strengthened education aspects to ensure sustainability of newly introduced approaches. The Quad included four nursing pillars in a respective country which include representation from: (i) Nursing educators (professors, educators, and preceptors), (ii) Regulators (councils or other regulatory bodies), (iii) Government (the Chief Nursing Officer/Director of Nursing and Midwifery Services or other Ministry-based nurse leaders); and (iv) Professional association leadership. Currently, the Quad arrangement has been institutionalized in the ECSA-CON member countries and has served as a permanent mechanism to support nursing and midwifery strengthening through meetings, advocacy and even common supportive supervision from the national level to the lowest levels of care.

3. METHODS

18. This section offers a brief overview of the research methods used to gather the information presented in this report. This report seeks to answer the following questions:

- How many nurses currently work in the ECSA countries and how has this changed over time. What is the shortage vis a vis labor market demand and need;
- How has the market for nursing education evolved and with what inter-relationships with the health labor and health care markets in the sub-regions?
- What have been the regional trends in the development of nursing education in the ECSA countries context? To what extent are these trends influenced by local, national, regional and global trends in health professional/nursing education?
- How have these trends affected the labor market for nurses in the region (including through increased regional mobility) and, more broadly, how have these affected health service provision in the region?
- What is the current state and capacity of nursing education in the ECSA countries (i.e. what and how many institutions exist, what type of training programs exist, faculty/student ratios, how are institutions and students financed, how many students are produced, how is training regulated/accredited and how are workers licensed etc.);
- What is the evidence base in relation to the value and effectiveness of nursing education (of different types of nurses)? What is the "value added" product (in nursing education) and how to get there (rates of return to investing in nursing workforce).

19. The report adopts a health labor market framework developed in previous World Bank reports.[22,23] A mixed-methods approach was adopted, with three primary streams of work: (i) a literature review to understand the nursing educational and labor market in the region; (ii) a qualitative analysis that documented the input of key stakeholders on the major trends, issues, and opportunities facing the nurse education and labor market in the ECSA region; and (iii) a quantitative analysis of the supply and demand for nursing in each ECSA country, with labor market projections through 2030. This work was complemented by regional consultations. Table 1 below describe the objectives and content of each of these streams, more detailed information on each stream can be found in Annex 2 of this report.

[6] More detailed information on data and methods can be found in the supplement to this report.

Table 1: Research Methods

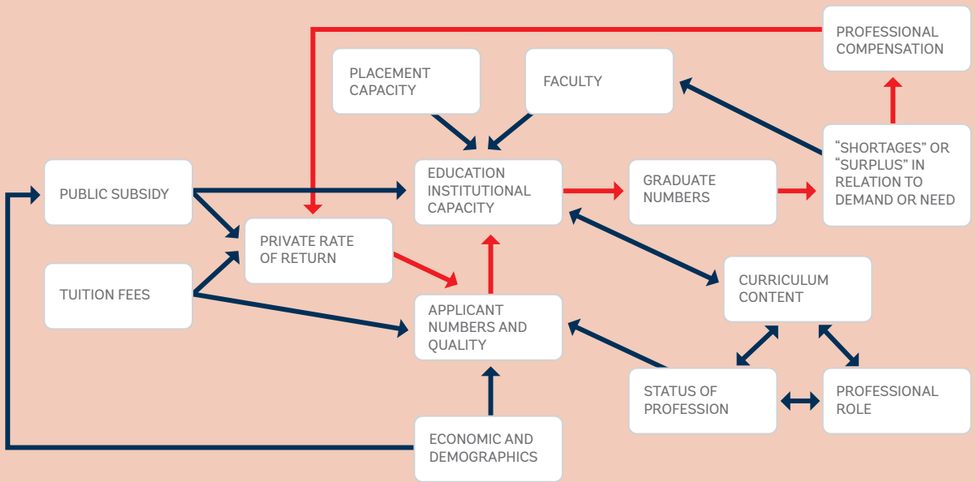
ACTIVITY	OBJECTIVE	DATA STRATEGY	SOURCE
Literature reviews	Identify key constraints related to the quantity and quality of nursing education in ECSA region	Literature review	CINAHL, PubMed, JHU Catalyst and WHO IRIS Nursing Council Websites, global health organization reports
	Trends, issues, and opportunities in nursing education and labor markets in ECSA (2014-2019)	Literature Review	CINAHL, OVID, PubMed Nursing Council Websites, global health organization reports
Qualitative data analysis	Document trends related to nursing education such as curricula, student preferences, capacity constraints of nursing institutions, and regulatory and financial bottlenecks; Understand the policy and regulatory environment related to nursing labor	Stock-taking questionnaire; Focus Group Discussions; and Key Informant Interviews	ECSACON country focal points
Quantitative data analysis	Describe the current state of nursing education market including the number of training institutions (public or private), faculty profile, programs offered, inflow and outflow of students, and costs of training and tuition Describe the labor markets for nurses in the ECSACON countries to include the current composition of the nursing health workforce, demographics, trends in demand, vacancies, and sectoral distribution, and compensation	Data collection tool based on NHWA indicators	Data pooled by country QUADs from each country and official reporting for the NHWA from ECSA countries that are WHO Member States
	Analysis of World Bank Service Delivery Indicators (SDI)	World Bank SDI Database	World Bank SDI data
Regional Consultations	Build consensus and an action plan for investing in nursing education Disseminate preliminary findings and conduct qualitative data collection Consultative meeting in Nairobi to discuss the ECSA nursing labor market and consensus building. ICN Congress presentation of preliminary findings and meetings with country nursing representatives in addition to the NHWA WHO Team		Nairobi, 2018 Singapore, 2019

Box 2: Health labor market framework

The labor market for health workers is a dynamic system responding to supply and demand of health workers within the country's institutional and regulatory structure. The demand for health workers corresponds to the available resources (willingness-to-pay) from government, the private sector, and external donors to hire and retain health workers. A key aspect is that demand cannot be attributed to health needs as willingness to hire (and pay) depends on resources available as well as on the regulatory framework in place (e.g., rigidities of employment contracts and pay regulation). On the other side, the supply of health workers is the number of health workers willing to work in the health sector. The supply of health workers will be influenced by the prospective income health workers can make within the labor market for health workers (or the reservation wages), but also depends on other aspects such as training (pre-service and in-service), working conditions, deployment and utilization, career development prospects and intrinsic and extrinsic motivating factors.

The interaction between the education system (education market) and health system (health care markets) is mediated by the labor market for health workers. The market for health professional training and its outcomes is skewed by market failures inherent to health care, transmitted through a series of derived markets. Most importantly, the wage rate fails to reflect the value of health professional work as judged by its social returns (contribution to public health). For instance, there is evidence that the wage rate is an important influence over the choices made by health professionals among educational and training opportunities. Globally, there is an increasing trend for medical students to specialize in surgical and medical sub-specialties, and a declining trend in the popularity of general practice. The trend towards over-specialization appears to be mainly driven by a significantly higher rate of (private) returns to specialized education. The key interrelationships between the market for health professional education and the market for health care is described in figure B2.

Figure B2: Interrelationships between health professional job market and health professional education market

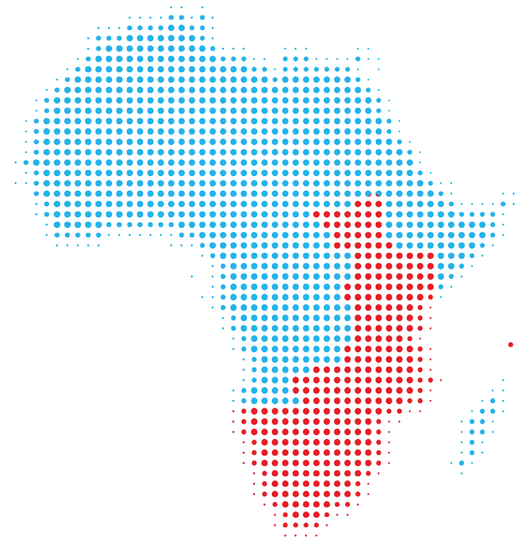


Source: McPake et al., 2015.

4. THE ECSA REGION

4.1 – Socioeconomic Trends

20. The East, Central, and Southern African (ECSA) community consists of 16 countries that collectively established a Health Community to promote regional cooperation in health.[7i] The group has a population of over 320 million people, which represents 25.1% of the total population of the African continent, and 30.2% of Sub-Saharan Africa (SSA).[24] The gross domestic product (GDP) of the ECSA countries together represents 35.3 of the SSA GDP.[24,7ii] The sixteen countries span GDPs ranging from US$1.5 billion in Seychelles to US$368 billion in South Africa. Amongst the 16 countries, six had a 2018 GDP under US$10 billion, namely Lesotho, Malawi, Rwanda, Seychelles, South Sudan, and Eswatini. GDP per capita has a wide variation, from US$305 in Malawi to US$ 15,570 in the Seychelles (both in PPPs). The average GDP growth rate of all ECSA countries (except South Sudan) was 3.8 % in 2018, compared to 3.6% across SSA and 3.1% globally. Growth has been slowing down in the last years, between 2010 and 2018 GDP growth in the ECSA countries averaged 4.9%, with 2017 reaching the lowest growth rate of 3.2% in 12 years.[24,7iii] In the same period, the GDP growth among SSA countries was 3.6% (with a historic low in 2016 of 1.2%). Table 2 below highlights key data on the ECSA countries.



[7i] The member states consist of Botswana, Kenya, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Rwanda, Seychelles, South Africa, South Sudan, Eswatini, Tanzania, Uganda, Zambia, and Zimbabwe.
[7ii] South Sudan's 2018 GDP was not available
[7iii] South Sudan's 2018 GDP growth rate was not available

Table 2: Profile of ESCA Countries

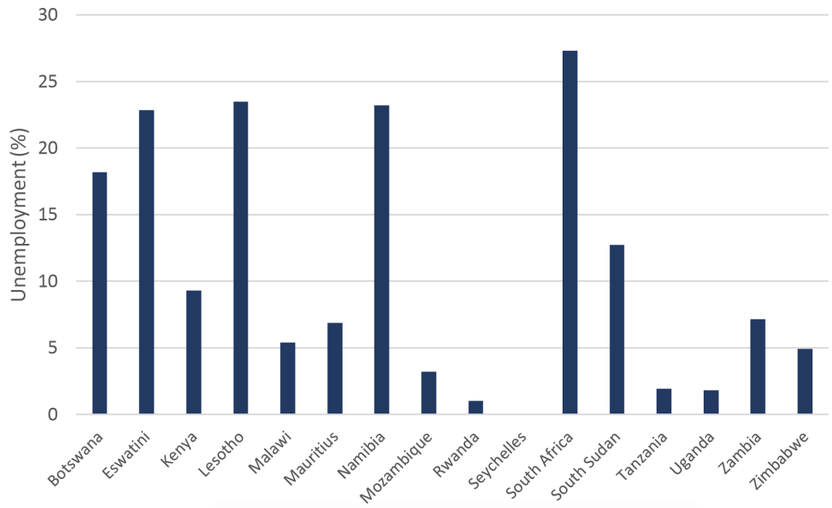
COUNTRY	POPULATION (2018)[1]	GDP PER CAPITA, PPP (CURRENT INTERNATIONAL US$) (2018)[2]	INFANT MORTALITY (PER 1,000 LIVE BIRTHS) (2018)[2]	LIFE EXPECTANCY AT BIRTH (YEARS) (2017)[2]	HDI (2017-2018)[3]	HDI (RANK)[3]
Botswana	2,254,126	$18,583	30.0	68.81	0.717	101
Eswatini	1,136,191	$10,722	43.0	58.32	0.588	144
Kenya	51,393,010	$3,461	30.6	65.91	0.59	142
Lesotho	2,108,132	$3,223	65.7	52.95	0.52	159
Malawi	18,143,315	$1,309	35.3	63.28	0.477	171
Mauritius	1,265,303	$23,709	13.6	74.51	0.79	65
Mozambique	29,495,962	$1,328	54.0	59.31	0.437	180
Namibia	2,448,255	$11,135	29.0	63.02	0.647	129
Rwanda	12,301,939	$2,254	27.0	68.34	0.524	158
Seychelles	96,762	$30,503	12.4	74.30	0.797	62
South Africa	57,779,622	$13,730	28.5	63.54	0.699	113
South Sudan	10,975,920	-	63.7	57.37	0.388	187
Tanzania	56,318,348	$3,227	37.6	64.48	0.538	154
Uganda	42,723,139	$2,033	33.8	62.52	0.516	162
Zambia	17,351,822	$4,216	40.4	63.04	0.588	144
Zimbabwe	14,439,018	$3,024	33.9	60.81	0.535	156

1 https://ecsahc.org/ecsa-hc-at-a-glance/
2 WDI and GDF databases, World Bank (2019)
3 UNDP (2019)

21. Unemployment rates across ECSA countries is nearly twice as high of the average among SSA countries. As of 2017, the modeled ILO estimate indicated an average of 13.51% of the total labor force was unemployed.[11] In comparison to the global average unemployment rate was 5.5% and the average among SSA countries was 7.3%. As for other economic variables, there are large variation in terms of unemployment rates across the ECSA countries. South Africa has the highest unemployment rate followed by Eswatini (WDI, 2014), while Uganda has the lowest unemployment rate, 1.9% in 2015 (WDI, 2015). The graph below summarizes the unemployment rate (data for Seychelles was unavailable).

[11] The modeled ILO estimates were calculated for all countries except for Seychelles

Figure 1: Unemployment Rates, Selected ECSA Countries



Source: ILO modeled estimates (national estimates not available).

4.2 – Health Trends

22. Health expenditure trends have been relatively stagnant over the past few years among ECSA countries. Health expenditure as a percentage of GDP has seen a decrease from 7.1% to 6.6% from 2010 to 2016. Zimbabwe has the highest expenditure (9.4%) while Seychelles has the lowest (3.9%) (data from South Sudan was not available). About half (49.2%) of health expenditure comes from domestic government expenditure, while another 27% comes from domestic private health expenditure. Additional funding may come from external sources such as outside donors. There are strong variations by country on the degree of financing and the financing sources for health. The table below provides a breakdown by country.

Table 3: Health Expenditure (HE) in ECSA countries, 2016

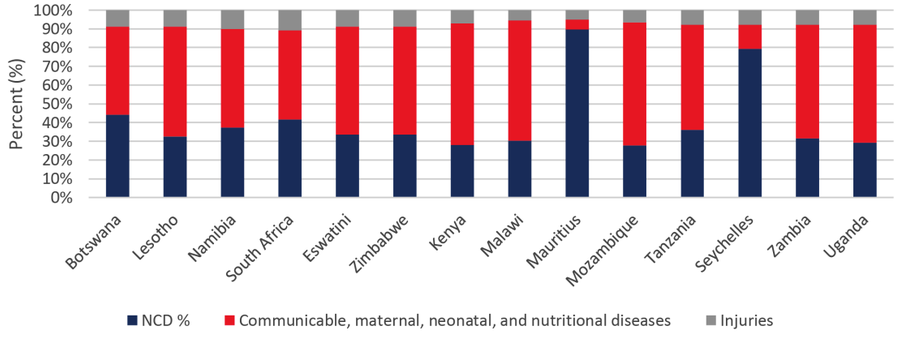
COUNTRY	HE % OF GDP	HE PER CAPITA (IN CURRENT US$)	GENERAL GOVERNMENT HE PER CAPITA (CURRENT US$)	PRIVATE HE PER CAPITA (CURRENT US$)	GOVERNMENT HE (% OF HEALTH EXPENDITURE)	PRIVATE (% OF HEALTH EXPENDITURE)
Botswana	5.5	379.9	212.5	142.0	55.9	37.4
Eswatini	7.7	220.6	152.9	37.3	69.3	16.9
Kenya	4.5	66.2	24.0	29.4	36.2	44.4
Lesotho	8.1	85.5	54.6	16.2	63.8	18.9
Malawi	9.8	29.6	8.3	5.4	28.0	18.2
Mauritius	5.7	553.1	244.0	307.9	44.1	55.7
Namibia	9.1	402.8	249.3	125.3	61.9	31.1
Mozambique	5.1	19.2	10.2	1.6	53.3	8.5
Rwanda	6.8	48.1	16.3	7.5	33.9	15.5
Seychelles	3.9	596.9	572.9	12.9	96.0	2.2
South Africa	8.1	428.2	230.1	189.6	53.7	44.3
South Sudan	NA	NA	NA	NA	NA	NA
Tanzania	4.1	35.5	14.4	8.2	40.6	23.0
Uganda	6.2	37.6	6.2	16.2	16.6	43.1
Zambia	4.5	56.5	21.7	10.9	38.3	19.2
Zimbabwe	9.4	93.9	43.7	26.4	46.5	28.1
Regional average	**6.6**	**203.6**	**124.1**	**62.4**	**49.2**	**27.1**

Source: World Development Indicators.

23. Over the last years, life expectancy has been steadily increasing by roughly one year annually among ECSA countries, reaching 63.7 years in 2017. Mauritius (74.5) and Seychelles (74.3) have the highest life expectancy in the ECSA region, while Lesotho (53), South Sudan (57.4) and Eswatini (58.3) have the lowest life expectancy. The growth can likely be attributed to the global reduction in communicable diseases and investments in reducing maternal, neonatal and childhood mortality. The maternal mortality ration has decreased significantly in the past years (407 per 100,000 population in 2010 vs. 344 per 100,000). This is much lower than the MMR for SSA of 534 maternal deaths per 100,000 population. Average under-five mortality rate has decreased from 69.2 per 1,000 live births in 2010 to 48.5 per 1,000 live births in 2018. The average U5MR is significantly lower than the 77.5 deaths per 1,000 live births in SSA and higher than the global average of 38.6.

24. The main causes of morbidity and mortality in the ECSA countries, are communicable, maternal, neonatal and nutritional diseases, followed by non-communicable diseases and finally injuries. Mauritius was the only country in 2016 with 90% of deaths resulting from non-communicable diseases and the remaining 10% evenly split between communicable, maternal, neonatal, nutritional diseases and injuries. Seychelles had similar distribution with 13% of deaths from communicable, maternal, neonatal, and nutritional diseases, 79% from non-communicable diseases, and the remaining 8% resulting from injuries. All other ECSA countries had majority of their deaths from communicable, maternal, neonatal, and nutritional diseases. Figure 3 below shows the distribution of deaths per country in 2016.

Figure 2: Distribution of deaths per ECSA Country



Source: IHME, 2016.

Box 3: Eastern, Central, and Southern African College of Nursing (ECSACON)

ECSACON was established in 1990 by the Conference of Health Ministers for the then Commonwealth Regional Health Community Secretariat (CRHCS). This has been transformed as the East Central and Southern Africa Health Community (ECSA HC). ECSA HC is an intergovernmental organization mandated to foster regional cooperation for better health through advocacy, capacity building, brokerage, coordination and harmonization of health policies and programs.

The East, Central, and Southern Africa College of Nursing (ECSACON) is a professional body for nurses and midwives in a 16-country region comprising: Botswana, Kenya, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Eswatini, Tanzania, Uganda, Zambia, Zimbabwe, South Sudan and Rwanda. The aim of ECSACON is to improve the quality of health of the communities through strengthening the contribution of nurses and midwives. Its primary goal is to improve the quality of health of communities through programming that strengthens nursing and midwifery education, practice, research, leadership, and management.

ECSACON has led several important regional initiatives to build capacity of nursing education, regulation and practice over the last 3 decades. Most recently, ECSACON helped implement the African Health Professions Regional Collaborative (ARC), an eight-year initiative supported by the U.S. Centers for Disease Control and Prevention, under the President's Emergency Plan for AIDS Relief. The ARC strengthened nursing regulation and policy across the ECSA region related to HIV/AIDS service delivery. As part of this work, ECSACON supported an online continuing professional development database where countries could access state of the art training modules and curricula to supplement their own CPD programs [25]

Over time ECSACON has played a pivotal role in ensuring nursing and midwifery pillars are working together. This includes: regulators, associations, academics, and relevant policy bodies including directorates of nursing and the ministries of health. As the regional body, it has worked with a full range of stakeholders in conducting research on improving nursing education, clinical practice and strengthened nursing leadership at all levels.

One important project since its establishment was harmonization of basic nursing and midwifery education across the region. In an initial review of the basic education programs across the countries, it was found that there were more similarities than differences and that the core dimensions of the programs were alike. Then ECSACON reviewed the scope and standards for nursing and midwifery practice, core competencies, content, and standards of education across the region and came up with the handbook, the Professional Regulatory Framework which served as the prototype curriculum and guiding document to inform the scope of practice for nursing and midwifery for all countries in the ECSA region.[26]

Some other important regionally harmonized guidelines and curricula produced by ECSACON include, Infection Control and Prevention (IPC), Essential Newborn Care, Family Planning, Fistula prevention and care, TB Prevention and Care for Nurses, Prototype Curriculum for Masters in Midwifery and the guideline in offering Continuous Professional Development (CPD) for nurses and midwives. Currently ECSACON is embarking on a project to document migration of nurses and midwives within the ECSA region, to address some gaps highlighted in this report and ultimately inform future investment in Human Resources for Health and nurses and midwives.

5. THE EDUCATION AND LABOR MARKETS FOR NURSES IN THE ECSA REGION

5.1 – Nursing Labor Market

KEY QUESTIONS:

1. How many nurses currently work in ECSA countries and how has this changed over time? What is the shortage vis a vis labor market demand and need?

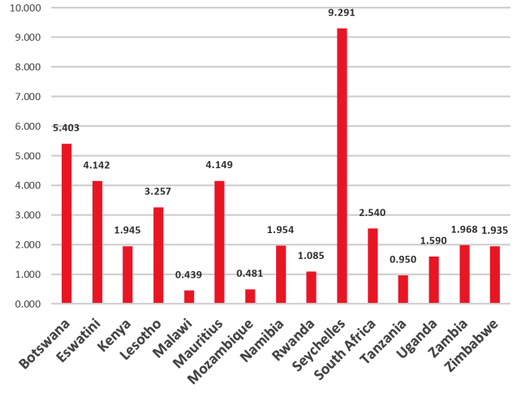
2. How have these trends affected the labor market for nurses in the region (including through increased regional mobility). How have these affected health service provision in the region?

25. The total supply of nurses in the region is approximately 465,000, ranging from 499 in Seychelles to 146,789 in South Africa. Four countries comprise 87% of the nurse workforce in the region, these are: South Africa, Kenya, Uganda, and Tanzania. Over the recent years, the supply of nurses has grown at a rate much higher than population growth. The average rate of growth in nursing graduates from 2013-2018 was over 50%, a rate that surpasses the population growth in the same time period (10%).[20]

This led to increased nursing density in almost all countries that reported data for all five years of analysis. The countries with highest nurse to population densities are Seychelles, Mauritius, Botswana, Eswatini, Lesotho, and South Africa.

Figure 3: The Supply of Nurses in the ECSA region

a) Nurses density per 1,000 pop, 2018*

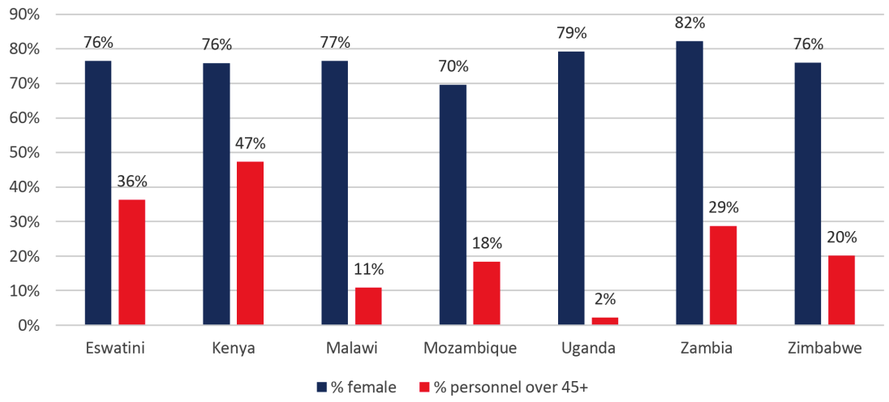


Source: Joint data collection from National Health Workforce Accounts indicators and process, World Bank and World Health Organization, September 2019.

26. Most of the nursing workforce in ECSA countries is under 45 years of age and female. The percentage of the nursing workforce that is over 45 years of age ranges from 2% in Uganda to 47% in Kenya. The average proportion of the nursing workforce that is female in the region is 77%, which is higher than the global percentage (67%).[27] The youthful workforce in the region is a positive indication of longevity of the workforce, and may be explained by the recent scale-up of production observed in many countries. Age may also influence migration patterns, as some evidence in the region exists that younger workers may be more likely to out-migrate.[28]

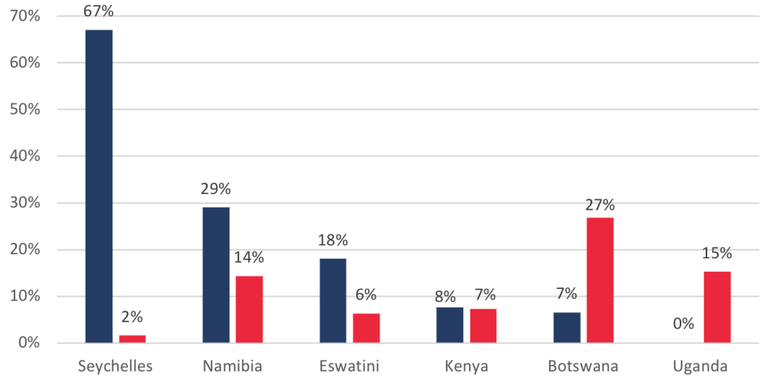
27. The share of foreign-trained nurses varies widely by country and is inversely correlated with the domestic production. There is a wide range in the share of foreign-trained nurses in the ECSA region, from as low as .01% in Uganda to as high as 68% in Seychelles. Our analysis found an inverse correlation (-.067) between a country's share of foreign-trained nurses and their degree of domestic production of nursing graduates (as measured by their net increment rate). Net increment rate is the number of new graduates produced over the total nursing supply. As an example, Seychelles has the lowest net increment rate in the region reporting (1.6%) and has the highest share of nursing workforce that is foreign trained (67%), whereas Botswana as the highest net increment rate and the second lowest proportion of foreign-trained nurses.

Figure 4: Age and Gender Distribution of the Nursing Workforce, Selected ECSA countries – 2018



Source: Joint data collection from National Health Workforce Accounts indicators and process, World Bank and World Health Organization, September 2019.

Figure 5: Share of foreign-trained nurses and net increment rates, Selected ECSA countries - 2019

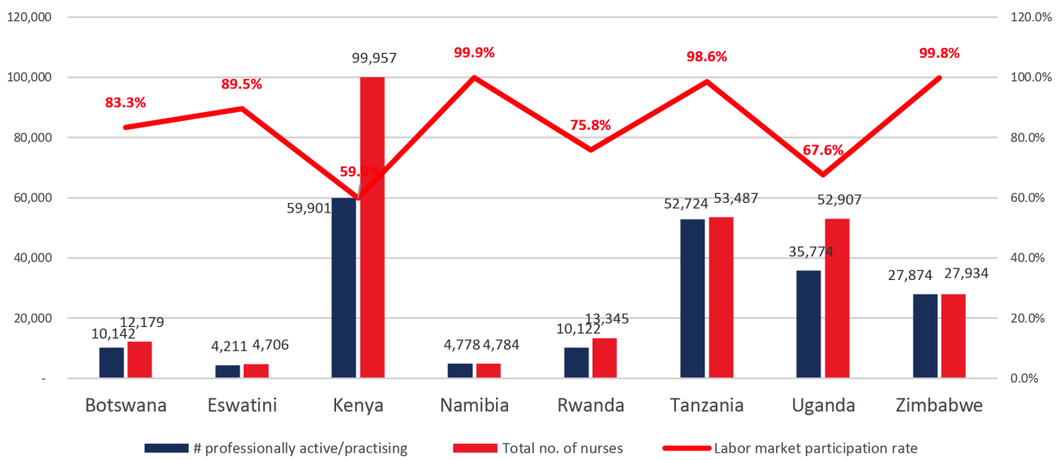


Source: Joint data collection from National Health Workforce Accounts indicators and process, World Bank and World Health Organization, September 2019.

28. As in the rest of the African continent, out-migration of nurses is a reality in many of the ECSA countries. The estimated number of African nurses working in OECD countries in 2011 was 135,970, a number that doubled from the decade prior.[29] Ugandan nurses, for example, commonly out-migrate to the U.S., Canada, and Rwanda. Evidence from Kenya shows that approximately 6% of nurses out-migrated over a ten-year period diminishing the country's nursing workforce by 22 percent Kenya.[23] Expressed a different way, for every 4.5 nurses trained in Kenya, 1 nurse out-migrates, which incurs a cost estimated at $338,868 per nurse-midwife.[31] The cost of each enrolled (or vocationally-trained) nurse-midwife trained in Malawi that out-migrated has been estimated between $71,081 - $7.5 million over a 30-year period, for a degree nurse-midwife trained in the country that out-migrated is estimated between $241,508 - $25.6 million.[32] These are investments in the production of nurses that countries lose (although there is a net effect due to, among other things, remittances, that need to be taken into account).

29. Labor market participation rates among nurses are high in the ECSA countries where data are available. For the 8 countries with available data, the proportion of nurses that are "professionally practicing or active" is 84%- this can be viewed as the average labor market participation rate. The proportion of total nurses that are licensed is 77%. It may be that the ability of these reporting countries to track licensure and practice reinforces nurses to keep their licenses updated; therefore, caution should be applied before generalizing to countries for which data was not available.

Figure 6: Labor Market Participation Rates, Selected ECSA countries - most recent year reported

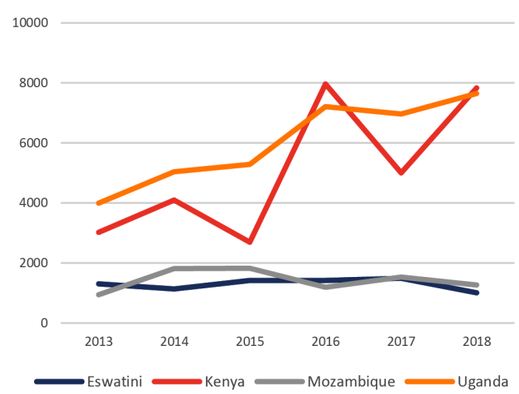


Source: Joint data collection from National Health Workforce Accounts indicators and process, World Bank and World Health Organization, September 2019.

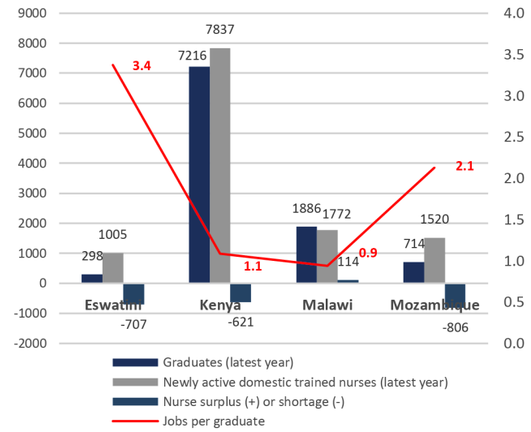
30. Effective demand is growing in the region, but high vacancy rates in the public sector remain a problem. The World Health Organization (WHO) estimates the growth in economic demand for health workers across the Africa region will increase 118% between 2013 to 2030.[29] The data from four countries– illustrated in Figure 7a- show that effective demand for nurses in two countries grew substantially between 2013 and 2018, while it slightly diminished in two countries. A recent study in Uganda revealed that the growth in new private sector health facilities was a greater driver of effective demand for nurses and other health workers, than the public sector, due to the larger number of new positions available.[33] Vacancy rates documented in the literature range from 30-55% among ECSA countries.[33–35] The qualitative data reinforced the challenge countries are facing to fulfill vacancies for new nurses. Key informants indicated that in addition to the lack of job opportunities, nurses do not fill posts due to "poor wage, remote location, lack of amenities, and poor working conditions" or they "move toward roles in academic, research, and with donors" (Qualitative report).

Figure 7: Labor Market participation in selected ECSA countries

a) Trends in the number of newly active nurses (last 12 months), 2013-2018



b) Surplus, Shortages and jobs per graduate - 2019



Source: Joint data collection from National Health Workforce Accounts indicators and process, World Bank and World Health Organization, September 2019.

31. The unfilled vacancies are a reflection of the low absorption rates in of nurses in some ECSA countries. Four countries (Eswatini, Kenya, Mozambique and Malawi) reported the numbers of new graduates and the number of domestic trained nurses that were "newly active in the workforce" over the last 12 months (a proxy for effective demand). By comparing these two indicators, we examined the flow of newly trained nurses in to the workforce, of the four, only Malawi has a 'surplus' of nurse graduates that are not active in the workforce, while Eswatini, Mozambique and Kenya have a 'shortage' of nurse graduates (less nurses graduates than the number of available positions). A recent health labor market analysis conducted in Uganda found a surplus of 5,097 nurses per year.[33]

32. Median earnings for nurses in ECSA region are modestly higher than GDP per capita. On average, ECSA nurses are paid 2.6 times GDP per capita in their countries, however the range is as low as .92 in Botswana and as high as 5.40 in Lesotho. Comparing Table 5 with data on Figure 7b above, we can see that Eswatini and Kenya have among the highest wage ratios to GDP and have the largest number of jobs available per graduate (i.e. shortage). In these countries, higher wages may be a way to address their shortage of nurses and increase demand. Another important consideration is that, given similar educational and professional preparation of nurses in the region, wage differentials could drive migratory flows within the ECSA region.

Table 4: Nurses Median Earnings as a proportion of GDP per capita, in most recent year reported (monthly)

	MEDIAN EARNINGS (USD)	AVERAGE MEDIAN EARNINGS AS A PROPORTION OF GDP PER CAPITA
Botswana	$708.04	0.92
Eswatini	$1,381.31	2.99
Kenya	$444.00	3.86
Seychelles	$500.00	0.36
Tanzania*	$315	3.54
Namibia*	$9,456	1.36
Lesotho*	$724	5.40

Source: Joint data collection from National Health Workforce Accounts indicators and process, World Bank and World Health Organization, September 2019.
*Countries reported data not for median earnings, but for "average of entry-level wages and salaries excluding social contributions (USD).

33. Improvements in performance, patient outcomes and quality of care of nurses have been achieved across the region, but challenges remain. There were important advances through upgrading entry-level academic preparation and establishing advance practice nursing roles. For example, significant productivity gains have been realized with the widespread adoption of nurse-led task-shifted models of care for HIV/AIDS, maternal care, and chronic disease, which have yielded vast improvements to scale-up of services, patient satisfaction and retention in care, as well as health outcomes.[33] Randomized control trials have documented that nurse-led HIV treatment is of equal quality to physician led-care, and even shows some improvements, such as in -patient compliance with care.[37] World Bank service delivery indicators (SDI) survey data shows that a low proportion of providers that adheres to clinical guidelines (generally less than 50%, see table 6). Variations in performance and case load exist between private and public sectors and rural and urban areas.

Table 5: Selected performance Indicators, 2012-14

COUNTRY	YEAR	NATIONAL	PRIVATE	PUBLIC	RURAL	URBAN
ADHERENCE TO CLINICAL GUIDELINES (%)						
Kenya (Nurses)	2012	40.3	39.6	40.4	39.4	47.9
Tanzania (Nurses)	2014	32.8	37.0	32.4	29.0	41.4
Uganda (Nurses)	2013	35.1	34.6	35.5	35.0	35.4
DIAGNOSTIC ACCURACY (%)						
Kenya	2012	69.8	68.7	70.1	69.3	74.0
Tanzania	2014	37.3	32.1	38.4	33.6	45.8
Uganda	2013	50.5	49.9	50.9	50.1	51.2
CASE LOAD (NUMBER OF PATIENTS AT ONE TIME)						
Kenya	2012	9.0	10.4	8.7	8.8	10.2
Tanzania	2014	7.3	8.5	7.1	6.4	9.5
Uganda	2013	6.0	2.1	9.9	8.2	2.0

Source: World Bank, SDI data.

34. A major driver of poor performance and low productivity in the region is poor working conditions. Qualitative data analysis often reports low morale among many nurses, due to being asked to work outside of their scope of practice, heavy workloads due to staffing shortages, being blamed readily for errors, and having inadequate material resources to do their jobs. Table 6 shows that nurses in Kenya, Tanzania and Uganda have high caseloads. Evidence shows that high patient to nurse ratios lead to poor patient outcomes and nurse burnouts, which may drive them to leave the profession. In addition, World Bank SDI data from Kenya, Uganda and Tanzania, show that many health facilities in these countries lack clean water and electricity, and many lacks minimum infrastructure.

Table 6: Select health facility infrastructure data, 2012-2014

COUNTRY	PERCENTAGE OF HEALTH FACILITIES WITH:	NATIONAL	PRIVATE	PUBLIC	RURAL	URBAN
Kenya	Clean water	80.0	97.3	75.4	77.1	97.1
	Electricity	73.0	90.1	68.4	69.2	95.4
	Minimum infrastructure	56.9	85.6	49.2	54.8	68.7
Tanzania	Clean water	7.0	95.3	61.1	60.5	89.3
	Electricity	66.7	85.5	86.2	57.9	86.1
	Minimum infrastructure	5.0	80.4	40.6	36.0	79.2
Uganda	Clean water	92.9	96.9	88.7	89.5	99.3
	Electricity	73.2	90.2	56.6	63.8	90.3
	Minimum infrastructure	63.5	79.2	47.5	54.4	79.9

Source: World Bank Service Delivery Indicator Database. 2019.

5.2 – Nursing Education Market

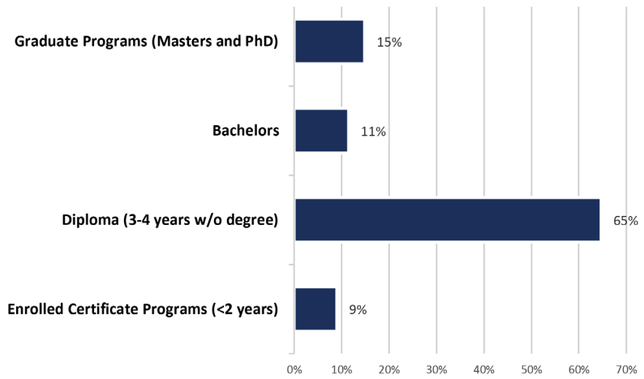
KEY QUESTIONS:

1. What are the trends in the development of nursing education in ECSA countries? To what extent are these trends influenced by local, national, regional and global trends in health professional/nursing education?

2. What is the current state and capacity of nursing education in the ECSA countries (i.e. what and how many institutions exist, what type of training programs exist, faculty/student ratios, how are institutions and students financed, how many students are produced, how is training regulated/accredited and how are workers licensed etc.)

35. There are 459 nursing programs across 15 ESCA countries, the vast majority producing diploma-level nurses. Comparing the number and type of nursing educational programs across the countries reporting, over 65% of the programs were diploma-level programs (3-4 years in length), 15% were graduate programs (Masters and PhD), 11% were bachelor's and 9% were enrolled certificate programs (2 years or less).

Figure 8: Nursing Programs by Category, ECSA countries - most recent year reported



Source: Primary data collection, World Bank. September 2019.

36. There is a trend in many countries in the region to make the Bachelor of Science in Nursing (BSN) the academic entry point of professional nursing as opposed to enrolled or diploma-level programs. Evidence from Kenya shows, between 1999-2010, student entry to enrolled nursing degree programs declined from 42.2% to 6.2%, while the entry of students for BSN degree programs increased from 4.5% to 10%.[38] Countries such as Zambia and Botswana are also introducing advanced practice roles, i.e. Nurse Practitioner, which can function semi-autonomously to deliver comprehensive services, filling the role of much needed clinicians and extending care.[39] Among the ECSA countries, data collected show that only two countries do not presently have a formal advance practice role for nurses.

37. There has been a steady expansion of nursing education capacity in the region over the last years. The most recent data show that a total 35,164 nursing graduates were produced in ten countries of the region. The average net increment rate for the ECSA region is 8% (previously defined). The net increment rate ranges as low as 2% in Seychelles to as high as 27% in Botswana, and overall it is not correlated to country GDP. The net increment rate is close to the 10.5% net increment rate found in a similar nursing labor market analysis produced by the World Bank Group for the CARICOM region.[40]

Table 7: Number of nursing programs, graduates, and net increment rate, ECSA countries - most recent year reported

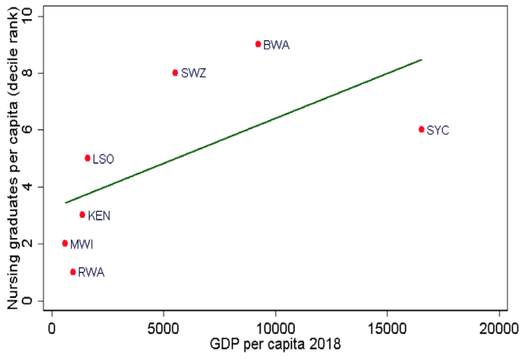
COUNTRY	NUMBER OF NURSING PROGRAMS	NEW GRADUATES (MOST RECENT YEAR)	TOTAL NUMBER OF NURSES (MOST RECENT YEAR)	INCREMENT RATE
Botswana	14	342	12179	3%
Eswatini	7	298	4706	6%
Kenya	21	7216	99957	7%
Lesotho	8	304	6866	4%
Malawi	14	1886	7957	24%
Namibia	n/a	684	4784	14%
Rwanda	11	947	13345	7%
Seychelles	1	14	899	2%
South Africa	203	10192	146789	7%
Uganda	17	10353	67916	15%
Zambia		2558	34142	7%
Zimbabwe		796	27934	3%
Total	**296**	**35,590**	**427,474**	**8%**

Source: Joint data collection from National Health Workforce Accounts indicators and process, World Bank and World Health Organization, September 2019.

38. The average rate of growth in nursing educational output is approximately 8% each year in the region. Based on twelve countries reporting graduation data from 2013-2018, the average 5-year growth rate in nursing graduate output in the region is 51%, with high variation between countries. Namibia and Uganda have exponential rates of growth during this period (157% and 133%, respectively), while Rwanda and Seychelles saw declines in nursing output. From 2017-2018, however, the rate of nursing graduation output is a strong 19% across eight countries reporting data for both years. Part of this growth can be explained by the significant increase in donor investment in nursing education in the ECSA region over the last decade. In particular, the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) supported the scale up of nursing education from 2008-2013 as part of a Congressional mandate to produce 140,000 new health workers, through investments in competency-based curricula, faculty development, infrastructure, tuition and subsidies, and clinical training and simulation laboratories.[41] One challenge reported in the qualitative data analysis was that, in select cases, donor investment was "disruptive" in nursing education, by introducing programs that did not align with the objectives or approach of other schools in the country.

39. Expansion of nursing graduate output is significantly associated with country GDP, with a few exceptions. Seychelles has the region's highest GDP but produces a nursing graduate output per capita that is lower than Eswatini and Botswana. Lesotho has one of the region's lowest GDP but produces a nursing graduate outtput per capita that is nearly as high as Seychelles. Rwanda does not have the region's lowest GDP but produces the lowest nursing graduates per capita among the countries we have data in the region.

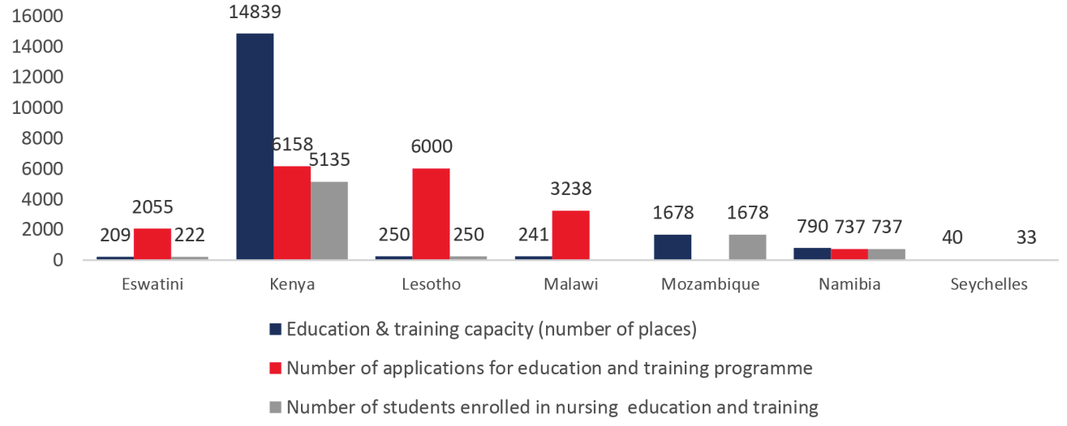
Figure 9: Nursing Graduates Density and GDP per capita by country, 2018



Source: Joint data collection from National Health Workforce Accounts indicators and process, World Bank and World Health Organization, September 2019.

40. Nursing schools in most of ECSA countries are operating beyond capacity. As illustrated in Figure 10 below, the number of applicants for nursing educational programs is either equal to, or larger than, the capacity of nursing schools (in terms of available training slots). Malawi reports 13:1 applicant to available training places, followed by Eswatini (with a ratio of almost 10:1). On the other end of the spectrum, higher earning Kenya appears to have excess capacity for nursing education, while Namibia has close alignment between applications, enrolled students, and capacity. There is also increasing demand for specialization and higher-level training in the region, driven by student preferences and improved supply of educational opportunities. Higher private returns on investment produced by specialized training – as are seen with nurse and medical specialties worldwide --is driving the increase in preference by health workers seeking specialized careers over family or primary practice[18,42]

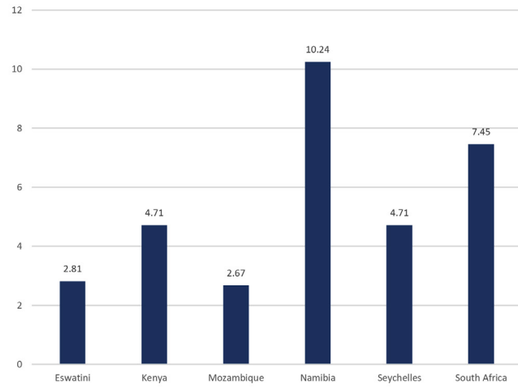
Figure 10: Applications, enrolled students, and educational capacity (Number of places), by country



Source: Joint data collection from National Health Workforce Accounts indicators and process, World Bank and World Health Organization, September 2019.

41. A key constraint to expand nursing education is the shortage of faculty in the region. The average student to faculty ratio reported from six countries was 5.4 students to each faculty. However, this ratio has declined over the last five years by 22%-46% in all four countries where data are available - apart from Namibia, which witnessed a growth in the student to faculty ratio of 132% during the 2013-2018 period. The worsening rate reflects the inability of schools to keep pace with increasing enrollment. Studies report the faculty shortage in the region to be a chronic issue, due to the lack of graduate level preparation of nurses.[43] Data collected for this analysis supports this: seven ECSA countries reported having no graduate-level nursing educational programs. Additionally, the literature reports that, in particular, the lack of clinical preceptors and skills-based opportunities are major constraints to quality of nursing education in the region.[44–46] Without the capacity to properly support students, attrition is high "resulting in wastage of time and money in training them".[47] In South Africa, the attrition rate of undergraduate nursing students between 2007 and 2009 was between 39.3% and 58.7%.[48] Evidence from Kenya found attrition rates were only 6% for nursing educational programs.[38]

Figure 11: Student to faculty ratio, selected ECSA Countries - most recent year reported



Source: Joint data collection from National Health Workforce Accounts indicators and process, World Bank and World Health Organization, September 2019.

42. Online and distance learning modalities and other innovative uses of technology are emerging as important infrastructure for advancing supply of nursing education. A recent systematic review found that technology is an increasingly important component of the infrastructure at nursing schools in the Africa region, exposing students to clinical scenarios they may not encounter otherwise, and enabling distance learning to become a cost-effective option of expanding nursing education.[43] Early uses of text messaging and the social media application have demonstrated positive impact on student learning in primary and specialty care [1] [2], and online continuing professional development (CPD) appears to have high acceptability by health works in Sub-Saharan Africa and have the potential for expansion.[49,50] Inequities in internet and technological access will remain a challenge to be overcome,[47] and to date, hybrid models where e-learning components complement in-person training are considered optimal (as opposed to stand-alone internet-based training).

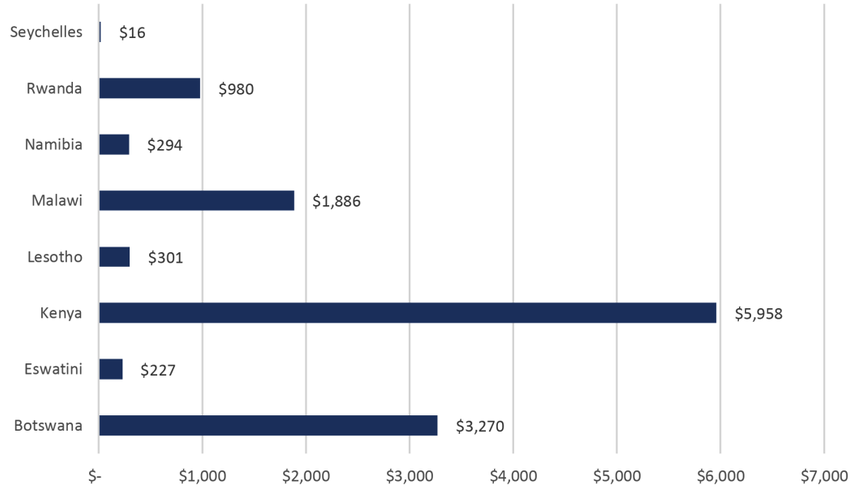
43. Nursing education in ECSA region has responded to global calls for a paradigm shift towards competency-based learning. Nursing schools across the region are transitioning to a competency-based curriculum, in which outcomes are defined and the curriculum is designed around a specific set of competencies aligned with societal needs.[51] Schools supported through the U.S. Nursing Education Partnership Initiative (NEPI) in Lesotho, Malawi and Zambia have already adapted competency-based curricula and aligned content with their countries' priority health needs.[41] From 1996-2002, ECSACON embarked on an important process from 1996-2002 to review educational programs in member countries to identify opportunities for harmonization and standardization across countries. ECSACON then developed a common set of standards for practice and core competencies, a core curriculum, and common educational standards.

44. There is a diverse mix of payers, planners, and regulators in nursing education in the ECSA region. Schools can be funded by health departments, private hospital groups, non-profit or for-profit agencies, which one study suggests creates a "complex and fragmented nursing education system.[47] The planning and funding for public educational schools in the ECSA region is often divided up between Ministries of Health and Ministries of Education, based on the level of nursing program, with higher level programs usually regulated by Ministries of Education alongside other bachelor and graduate programs. The number of private professional training programs have proliferated in the ECSA region in recent years. A recent review of the evidence of private sector nursing education in four countries in Africa and Asia found that in South Africa, the proportion of nurses graduating from private institutions increased from 45 percent in 2001 to 66 percent in 2004, while in Kenya, 35 out of 68 nursing institutions were privately run in 2009.[52] A recent labor market survey of the health workforce in Uganda finds that 53% of nursing educational institutions in 2019 were private sector.[33]

45. Average expenditures per graduate across the region remain low at $1,616 USD, with wide variations across countries. The lowest value spent per graduate was observed in Seychelles ($16 USD) while the highest was in Kenya ($5,958 USD). Only one country reported the difference in costs of education between public and private sector (Rwanda), and it was observed that the private sector costs are 24% higher than in the public sector. Qualitative data from key informant point for an underinvestment in public sector nursing education in the region. Other challenges emerge from the difficulty schools face to receive funds in timely and accessible manner. Public underfunding of health education acts as a barrier to access; and erodes the quality of education and graduates due to underpayment of faculty and underinvestment in maintaining educational infrastructure and teaching resources; and limits opportunity for structural expansion and growth.[17] Public-private partnerships were often pointed by respondents as the way forwards to overcome fund limitations, either by public sector investing in private institutions or private companies investing in public sector schools (Qualitative data).

46. Concerns exist that the rapid growth in student enrollment in nursing schools can result in lower quality of training, and therefore, practice. Our qualitative interviews reported that government schools are under pressure to take more students than private schools, which can have negative effects on student experience and educational quality, due to low resources and lack of available faculty. Evidence from Kenya found that with the doubling of nursing student enrollment between 1999 (1,493) and 2010 (3,030), training institutions struggled with congestion at clinical placement sites, limited clinical mentorship by qualified nurses, poor faculty recruitment and retention, and inadequate student housing, transportation and classroom space.[38]

Figure 12: Mean public sector expenditures by nursing graduate by country, in most recent year reported



Source: Primary data collection, World Bank. September, 2019.

47. The quality concerns are particularly acute related to the lack of availability and quality of clinical and practice-based training opportunities. An integrative review focusing on Sub-Saharan Africa found that in response to the nursing shortage, increased student enrollment has led to a strained clinical environment and competition among students.[43] This student reports that the number of quality clinical environments has remained the same despite increased student enrollment in most countries in Africa, and there is need to invest in infrastructure at both at training institutions and practice environments. Even in more resourced countries like South Africa, there is an insufficient number of quality clinical training facilities, coordination of practical placements and insufficient resources.[47] The result is that many nurses are graduating in the region with "inadequate social skills, lack of initiative, inability to apply theoretical knowledge to patient care, lack of basic nursing skills, and lack of understanding of professional practice".[47] Our study respondents reported a lack of standardization among clinical preceptorships. In some settings, there is not structured placement education, and students are treated as registered nurses, overloaded with work, shifted between units, and prevented from completing their learning objectives (Qualitative data).

48. Concerns also exist about the lack of enough regulation and oversight of nursing education. Our qualitative interviews documented that nursing faculty generally perceived private schools as more expensive for students, producing variable quality of nurses, and as often not benefiting from strong linkages to the government-run health system. Experience with private nursing education from outside the region have documented challenges such as high student to faculty ratios and higher rates of failure on licensure examinations.[52] However, very little documented evidence exists to demonstrate private sector training institutions that have poor quality outcomes than public sector training in the ECSACON region. Moreover, our qualitative interviews suggested that, while public sector educational institutions are under pressure by their governments to admit more students, private sector institutions do not face this pressure, which may in fact lead them to provide higher quality student teacher interactions and better learning experiences.

49. Despite many advances, countries still lack robust quality assurance frameworks to ensure adequate academic preparation, regulation of practice, and continuing professional development. A survey of nurse task-shifting in 15 ECSA countries found that the practice is not yet fully integrated in to pre-service education, authorized in national policy, or regulated, such as through credentialing, scopes of practice or continuing professional development.[53] Qualitative data suggest that nurses are often asked to deliver services well beyond their authorized scope of practice, which introduces legal liability for nurses and compromises quality. Commonly, respondents report, enrolled and diploma nurses are assigned the same duties as bachelor's degree nurses, irrespective of their scopes of practice. At times, nurses are diverted to fill the role of non-nurses, such as radiologists. Confusion also exists among employers about how to utilize advanced practice nurses (APN), and our respondents report that many are finding it difficult to find employment after graduation.

50. Another important challenge is that nursing curricula in their countries is not well matched to population needs. It has been reported that a specific county requires schools to update their curricula every 5 years, but due to "lack of resources and commitment, this process doesn't happen for 10 years or more, leaving the curricula to become outdated." In a recent study in South Africa, nursing educators reported that nursing curricula are outdated and unresponsive to changes in disease burden. They noted a disconnect between the government's emphasis on primary health care and how nurses are trained.[38] Calls have been made for the region to update curriculum for changing needs, such as to addressing the growing non-communicable disease burden.[43]

5.3- Governance and Regulatory Capacity

51. The Quad concept, unique to the region, is not yet leveraged to its full potential. As mentioned, the study attempted to work with all Quad members as a unit that would work together to report on the data needed for analysis. This unity worked with varying levels of success depending on the country. Some countries reported that their Quads already have strong relationships, while others cited difficulties in meeting or identifying who all the Quad members were. The degree to which the Quads are consulted for important policy decisions also varies and remains unclear.

52. Most countries experience challenges in maintaining accurate data on their current nursing workforce. Few countries were able to accurately track the flow of the nursing workforce. This includes data on migration, nursing density, accurate numbers of nurses leaving or entering the workforce. An additional common challenge in the ECSA region is the tracking of nurses working in the private sector. Lack of systematic data collection has led to challenges in financial and policy planning in the region to address the imbalance in the supply and demand for the growing nursing workforce.

53. Compliance and accountability mechanisms, have also been identified as a challenge, affecting patient outcomes. Poor governance capacity has led to imbalances in the distribution of nurses in the region, with rural areas experiencing nursing shortages. As previously mentioned, nurses work in facilities lacking basic necessities to provide high quality care and are often forced to work outside their scope of practice.

54. The lack of systematic data collection and data analysis on pre-service education leads to poor planning. Few countries reported in our study the number of applicants, students enrolled, and graduation, which enable a country to understand educational demand and attrition. Few countries track alumni and or have robust human resource information systems that enable a country to track their stock or flows.[54] One respondent from our qualitative interviews reports a mismatch between "what we have trained and passed" and the jobs produced over the last five years, because data is inadequate. There is common recognition that many ECSACON country government lack the institutional capacity to implement, assess, and improve health workforce planning, education, regulation, and management.

55. The region does have a robust regulatory capacity, but enforcement could be stronger. Table 8 displays that all the countries reporting have national or sub/national mechanisms in place to: establish standards for the duration and content of nursing education, ensuring interprofessional education, accrediting nursing educational programs and providing for continuous professio-

nal development programs. This is consistent with a 2018 survey of national capacity to regulate nursing education in the ECSACON Region found that all 15 countries in the region mandated nursing educational accreditation, however there was "wide variation is who is responsible" and the proportion of programs that were accredited decreased by program level (i.e. 80% for doctorate programs to 35% for diploma nursing programs).[20]

56. Analysis of our data shows that the mechanisms to ensure compliance with accreditation are weak or do not exist in every country. Average nursing school compliance range widely between 25-100%, or in many cases, is not reported at all (an indication that this data may not be routinely collected). Our qualitative interviews reported that the mechanisms for regulating education vary between countries; for example, curricula and assessments are standardized between schools to varying degrees – sometimes the schools are provided only with guidance of the competencies required to fulfill a degree, and sometimes they are provided with a standardized syllabus from the country's Nursing Council which must be followed. McCarthy et al.'s assessment identified the lack of resources (both financial and technical) as major barriers to strengthening regulation.[20]

Table 8: Mechanisms at national and/or subnational levels to regulate nursing education, 2019

	Standards or other national and/or subnational mechanisms exists that regulate:						
COUNTRY	DURATION AND CONTENT OF TRAINING (I.E. CURRICULA GUIDELINES)	ACCREDITATION OF NURSING EDUCATION AND TRAINING	INTER-PROFESSIONAL EDUCATION	CONTINUING PROFESSIONAL DEVELOPMENT	MASTER LIST OF ACCREDITATION	ACCREDITATION COMPLIANCE	PROPORTION OF ACCREDITED SCHOOLS CURRENTLY IN FULL COMPLIANCE
Botswana	Yes	Yes	Yes	Yes	N/A	No	N/A
Eswatini	Yes	Yes	Yes	Yes	N/A	Yes	100%
Kenya	Yes	Yes	Yes	Yes	Yes	Yes	N/A
Lesotho	Yes	yes	Yes	N/A	Yes	N/A	N/A
Malawi	Yes	Yes	Yes	Yes	Yes	Yes	N/A
Mauritius	No	N/A	N/A	N/A	N/A	N/A	100%
Mozambique	Yes	Yes	Yes	No	Yes	No	N/A
Namibia	Yes	Yes	Yes	Yes	Yes	N/A	N/A
Rwanda	Yes	Yes	Yes	Yes	Yes	Yes	80%
Seychelles	Yes	Yes	Yes	Yes	Yes	N/A	N/A
South Africa	Yes	Yes	Yes	Yes	N/A	Yes	100%
South Sudan	No	N/A	N/A	N/A	Yes	No	100%
Tanzania	N/A	N/A	N/A	N/A	Yes	Yes	25%
Uganda	Yes	Yes	Yes	Yes	Yes	Yes	85%
Zambia	Yes	Yes	Yes	Yes	Yes	Yes	68%
Zimbabwe	Yes	Yes	Yes	Yes	Yes	Yes	100%

Source: Joint data collection from National Health Workforce Accounts indicators and process, World Bank and World Health Organization, September 2019.

57. Other regulatory challenges identified by key informants were slow process of accreditation, lack of capacity from the regulatory bodies and conflict of interests between regulators and schools (public and private). The "mushrooming growth" of "illegal schools" in the private sector was cited as a hurdle for regulators by our survey respondents. Part of this is due to slow policy and regulatory approval processes, which can delay accreditation by two years or more.11,45 Another hurdle was the lack of capacity of regulatory bodies to register and ensure licensure renewal of practicing nurses and midwives. Several respondents also echoed concern about the conflicts of interest by regulatory bodies that are fully managed by the government, such that public educational institutions are not inspected as closely or rigorously as private sector institutions. Several recent global reports have called for regulatory bodies to be independent from Ministries of Education and Ministries of Health. In the event countries could not support an independent regulatory authority, one report proposed the idea of countries linking with regional or international accreditation bodies.[17]

6. INVESTING IN NURSING EDUCATION IN THE ECSA REGION

58. This section explores explore different scenarios for investing in the expansion of nursing education in the ECSA region. It first discusses scenarios of the nursing labor market in the region, to do so it presents simulations of future nursing demand, needs and supply for the ECSA countries. The analysis aims to identify the main labor markets tendencies to identify possible or labor market mismatches (surplus or shortages). The section then discusses the returns of investing in nursing education in the region, by doing so the report aims to inform governments, private sector investors and donor community what are the potential returns (private, public and social) of investing in nursing education in the region.

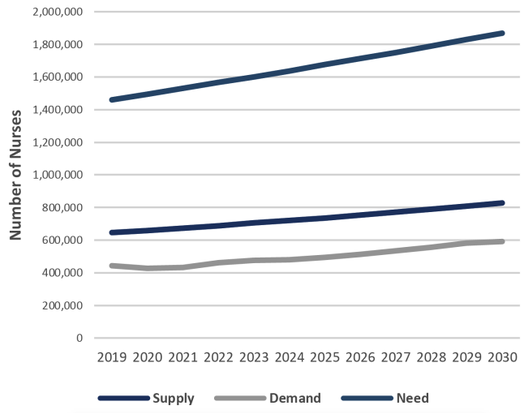
6.1 – Nursing Workforce Projections

59. Simulations focused on estimating supply, demand and needs for nurses. Supply is estimated by considering the most recent stock of nurses available and estimating the flow, considering entry and attrition. Entry is estimated using time series forecast on the rate of newly active domestic trained nursing, using constant growth data from Mozambique sample. Attrition is estimated using voluntary exit and demographic attrition, using mortality estimates by age group from the World Population Prospects. Demand is estimated following Liu et al. (2017), using forecasts for GDP per capita, out-of-pocket expenditures per capita and the population over 65 years. The idea is to first identify the historical correlation between nurse density and the economic and demographic variables using a model that included country fixed effects and apply these estimates in a dynamic forecast. Need is estimated following authors such as Liu et al. (2017) and Scheffler et al. (2008). The needs-based forecast reflects the number of nurses that would be required to reach a desired benchmark of service utilization. In our case we use the same benchmark as Liu et al. (2017), with a density of 44.5 nurses per 10000 people, based on the WHO Sustainable Development Goals threshold density.

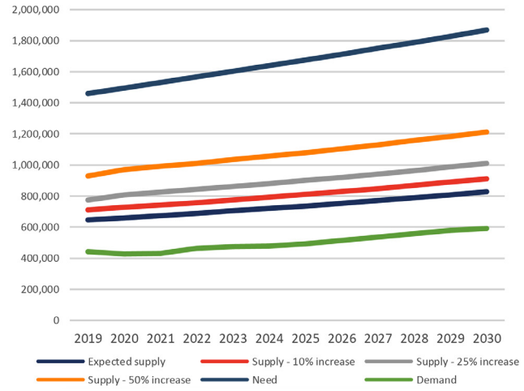
60. Overall, simulations points to a needs-based shortage of 979 thousand nurses by 2030, almost a 30% increase in the shortage estimated in 2019. Tanzania, Mozambique, Kenya, Uganda and Malawi are the countries with the largest deficit in nurses when we compare the supply and need in 2019. In Mozambique and Malawi, the number of nurses needed is 9.4 and 9.9 times larger than the current supply, respectively. Countries with highest needs-based shortage forecast for 2030 are Tanzania (-284,276), Uganda (-179,748) and Mozambique (-165,253). For the region, both the growth in population and nursing supply are expected to grow by 28%. The difference between supplied and needed nurses is expected to be increased in 6 countries, but to lower in 9 countries between 2019 and 2030. A 10% increase in the supply of Malawi would eliminate the deficit between supply and need for nurses. For the remaining countries with deficit in this relation, even a 50% increase would not be enough to eliminate the deficit.

Figure 13: Nursing Workforce Simulations, ECSA countries

a) Supply, demand and need for nurses



b) Supply increase scenarios



Source: Joint data collection from National Health Workforce Accounts indicators and process, World Bank and World Health Organization, September 2019.

61. Surplus between supply and demand is estimated to be of over 236 thousand nurses by 2030 in ECSA countries. the supply of nurses is estimated to grow by approximately 28% between 2019 and 2030 an increase from 646,306 nurses to 827,653. The demand for nurses, which is the number of nurses the public and private sector are willing to employ, is estimated at 442,407 in 2019 and at 591,371 for 2030, a 33% increase. This difference between supply and demand is due to the labor market asymmetries discussed earlier in this report, whereby newly graduated nurses are not all absorbed into the labor market. This 'surplus' can be considered an inactive supply of nurses, as the nurses are not participating in health services delivery.

Table 9: Nursing supply, demand and need estimates for 2019

	SUPPLY (S)	DEMAND (D)	NEED (N)	(S) - (D)	(S) - (N)
Botswana	12,408	9,494	10,251	2,913	2,156
Eswatini	4,764	3,993	5,109	771	-345
Kenya	102,976	65,251	233,954	37,725	-130,978
Lesotho	6,995	3,553	9,457	3,442	-2,463
Malawi	8,389	11,641	82,898	-3,252	-74,509
Mauritius	5,349	6,678	5,650	-1,330	-301
Mozambique	14,440	22,878	135,129	-8,438	-120,689
Namibia	4,874	9,274	11,101	-4,400	-6,227
Rwanda	13,596	13,057	56,190	538	-42,594
Seychelles	1,167	805	435	362	732
South Africa	285,701	143,663	260,584	142,038	25,117
South Sudan			49,226		
Tanzania	54,491	58,391	258,124	-3,900	-203,633
Uganda	67,916	43,279	197,000	24,637	-129,084
Zambia	34,783	29,005	79,482	5,778	-44,699
Zimbabwe	28,458	21,444	65,172	7,014	-36,714
Total	646,306	442,407	1,459,763	203,898	-764,231

Table 10: Nursing supply, demand and need estimates for 2030

	SUPPLY (S)	DEMAND (D)	NEED (N)	(S) - (D)	(S) - (N)
Botswana	15,483	12,047	12,346	3,436	3,137
Eswatini	5,546	4,913	5,775	633	-229
Kenya	145,252	111,324	295,701	33,929	-150,449
Lesotho	8,729	4,269	10,347	4,460	-1,618
Malawi	15,259	17,002	110,580	-1,744	-95,321
Mauritius	6,674	7,974	5,669	-1,300	1,005
Mozambique	18,019	30,884	183,273	-12,865	-165,253
Namibia	6,082	12,272	13,398	-6,190	-7,316
Rwanda	16,966	19,679	72,243	-2,713	-55,277
Seychelles	1,456	953	456	503	1,000
South Africa	356,520	162,564	293,505	193,956	63,015
South Sudan			61,585		
Tanzania	67,998	89,458	352,274	-21,460	-284,276
Uganda	84,751	66,444	264,499	18,307	-179,748
Zambia	43,405	31,152	108,248	12,253	-64,844
Zimbabwe	35,513	20,435	78,304	15,077	-42,792
Total	827,653	591,371	1,868,204	236,281	-978,966

62. By 2030, 4.7 billion dollars would be required to train additional nurses to achieve the number needed in ECSA countries. Training costs are estimated using Kenyan average overall cost of nursing schools in the private sector, estimated to be USD 4,445 per student per year. An increase in the nurse supply capacity of 50% in relation to the expected increase would cost 1.3 billion dollars and increase the number of nurses from 823 thousand nurses to 1,2 million nurses by 2030. The expected cost of the baseline scenario in which the number of nurses increases from 646 thousand in 2019 to 827 thousand in 2030 is 861 million dollars.

6.2 – Rate of returns to invest in nursing education in the ECSA region

63. The literature on health professional education variously investigates the private and social costs of health professional education. The concept of the rate of return on investment in education is very similar to that for any other investment. It is a summary of the costs and benefits of the investment incurred at different points in time, and it is expressed in an annual (percentage) yield, like that quoted for savings accounts or government bonds. The private benefits amount to the lifetime earnings of an individual to the net present value of costs of education. The public return to education consists of the public benefits associated with a more educated population (these include the value to the whole of society of the services delivered by educated people, for example skilled health care professionals). The social rate of return includes the society's spending on education compared to social impacts of education, including non-monetary and external benefits. In principle, the private and public returns to education combined constitute the social return to education.

64. Private and public returns for investing in nursing education was estimated using parameters from Kenya (country with more complete data). For private returns the analysis considers the private costs and benefits to the individuals undertaking nursing education. The costs include direct costs such as tuition fees and indirect costs such as foregone salary while in school. Benefits included lifelong earnings after graduating from a nursing school (considering a 35-year career as a nurse). The costs and benefits to the public sector included government expenditures per student and foregone tax revenue during the period of schooling (as costs), and lifetime tax revenue on the employed nurse salary (benefits). A discount rate of 12% was used following the literature and the commercial lending rate at the Kenya Reserve Board.[55]

65. The estimated return on investment in net present value terms represents almost three times GDP per capita of Kenya. Comparatively, the average net present value for investing in a tertiary educational program in the OECD Region is $60,832, which is just 2 times GDP per capita PPP.[56]). The private returns on investments were estimated at $15,105 and public returns is $11,396. The internal rate of returns of investing in nursing education is 11%.

66. The estimated return on investment in net present value terms of for a single nurse graduate represents two times the GDP per capita of Kenya. Comparatively, the average net present value for investing in a tertiary educational program in the OECD Region is $60,832, which also double the GDP per capita PPP.[56] The private returns on investments were estimated at $6,656 and public return is -$3,913. The internal rate of return of investing in nursing education is 8.1%. Extrapolating this figure across other countries in the region, the estimated net present value of the return on investment in nursing education for each graduate is illustrated in Table 19.

Table 11: Private and Public Returns on Investment in Nursing Education, Kenya

	VARIABLES (DEFINITION)	VALUE (KENYA)	RESULTS
Private returns			**$6,656**
Costs	Average tuition + foregone salary while in school and foregone career in low-skilled occupation	Opportunity cost salary is set $1,834 USD; Tuition is mean from 11 schools ($5,463 over 4 years)	$24,348
Benefits	Lifelong earnings after graduating from nursing school (assuming 35 year career as nurse)	Salary is assumed to be $5328 USD	$31,004
Public Returns			**-$3,913**
Costs	Average public expenditure per student and foregone tax revenue for career in low-skilled occupation	Tax rate is 18.1% and applied to opportunity cost of alternative career; $4,750 is mean subsidy for program (over 4 years)	$9,525
Benefits	Tax revenue from lifelong earnings after graduating from nursing school	Tax rate of 18.1% is applied to lifetime nursing salary	$5,612
Total NPV			**$2,743**

Source: Average tuition is from Nursing Council of Kenya. Median salary for nurses, average public expenditure on nursing education, duration of nursing program are from World Bank data collection tool for Kenya. The interest rate is assumed to be 12%, which equals the commercial lending rate for Kenya according to the Kenyan Central Bank. Averages wages for workers with less than a secondary education but more than primary education was used to estimate the opportunity cost and converted into dollars using the 2018 Kenyan official exchange rate. Tax rate as a share of GDP is from the OECD

Table 12: Estimated NPV for each ECSACON Country, based on Kenya example

COUNTRY	GDP PER CAPITA 2018	ESTIMATED NPV OF NURSING DEGREE IN USD
Lesotho	$1,610	$3,220
Kenya	$1,381	$2,761
Mauritius	$12,150	$24,299
South Sudan	$794	$1,589
Eswatini	$5,536	$11,072
Tanzania	$1,067	$2,134
Uganda	$815	$1,630
Zambia	$1,921	$3,841
Zimbabwe	$1,519	$3,037
Rwanda	$949	$1,898
Botswana	$9,224	$18,447
Seychelles	$16,522	$33,043
South Africa	$8,545	$17,090
Malawi	$593	$1,187
Mozambique	$619	$1,239

67. This return on investment can be considered in the context of the policy scenarios presented above to scale-up nursing education, provided that each nurse graduate finds employment in the health system. As an example, in the scenario of a 10% scale-up of the current nursing supply, the combined private and public ROI in NPV terms would total $176,453,621 USD. While the total ROI to double the nursing supply would surpass $1.7 trillion USD.

68. The social benefits of investing in nursing education, such as improved health care access and health care outcomes, are much larger than the private and public ROIs. These social returns are difficult to quantify, and few models exist in the literature. For instance, one attempt was done by the WHO which estimates a life saved per additional 0.25 health worker. Using the global standard value of a life saved of $50,000, one nurse produced in the ESCA region could be result in a social benefit, per life saved, of about $10,000- $12,500.

Table 13: Cumulative Public and Private Return on Investment in Nursing Education in the ECSACON Region by Investment Scenarios

INVESTMENT SCENARIO	CURRENT SUPPLY	%	CUMULATIVE NET PRESENT VALUE OF PRIVATE AND PUBLIC RETURN FOR ADDITIONAL NURSES
Increase supply by 10%	643287	64328.7	$176,453,624
Increase supply by 25%	643287	160821.8	$441,134,060
Increase supply by 50%	643287	321643.5	$882,268,121
Increase supply by 100%	643287	643287	$1,764,536,241

7. SUMMARY OF FINDINGS

69. There has been a major expansion in the ECSA Region in quality and volume of nurse education over recent years, due to increased commitments by national governments and ambitious donor engagement. Countries are increasing their nursing workforce by 10% each year through new graduate output, which is consistent with the CARICOM region. Countries have increasingly adopted competency-based educational models, and ECSACON has established a Regional Regulatory Framework that enshrined competency-based education. Expansion of education is highest in countries with higher GDP per capita. Educational demand is high in the region, and in several countries is far surpassing educational capacity and enrollment. Rapid expansion in educational output has also worsened the faculty: student ratio in many countries and raised general concerns about diminished educational quality, including the misalignment of curricula to population health needs. Public expenditure on nursing education is relatively low at $1,616 per nursing graduate.

70. Likewise, nurses are shifting in to more expansive and autonomous roles, such as through upgrading nursing degree programs, establishing advanced practice positions, and regulating and formalizing the work nurses are doing outside their regular scope of work. These added professional responsibilities greatly increase availability of services to achieve SDGs, but updated regulatory policies, job descriptions, and frameworks that support and enable nurses and are needed to maximize their knowledge, experience, and professional practice. Because the majority of countries within the ECSACON Region share common academic and professional preparation (e.g., pre-service educational requirements, registration and licensure requirements, etc.), introducing and assisting with the required regulatory changes are realizable goals. Furthermore, it requires significant changes at the employment source both including compensation and working conditions

71. The region has a strong regulatory framework for nursing, with mechanisms at national and subnational level for accreditation of nursing education. However, accreditation processes can face lengthy delays and compliance is often not enforced or is enforced inconsistently between the public and private sectors. Concerns over nursing regulators' ability to enforce standards among the growing private sector for nursing education is timely as the role of that sector continues to grow in importance. Expanding nursing education without a concomitant investment in regulation for quality assurance and oversight will only worsen these regulatory challenges. New models of regulation are needed to create more flexible and rapid procedures for accreditation and compliance monitoring and to enable timely updating of curricula to meet population need.

72. As a result of successful nursing educational investments, the total nursing supply in the region- estimated at 450,000 – has grown faster than population growth at approximately 10% per annum. The resultant improvements in nursing density have helped six countries to surpass the WHO 2006 recommended ratio of 2.3 health workers per 1,000 populations. The workforce is mostly composed of women (79%) and under 45 years of age and earns on average salary 2.6 times more than GDP per capita. Wages are highest in countries where the effective demand-based shortages of nurses are highest, such as in Kenya.

73. Outmigration of ECSA nurses outside and within the region reduces the available supply of nurses in sending countries, and poses direct and indirect costs to sending governments, including tuition as well as foregone wages and tax revenue. In contrast, there is a positive return on investment in nursing education in the region for an individual nurse that can be valued in net present value terms as $6,656, or approximately double GDP per capita. The average licensure and labor market participation rates are robust (77%) and (80%), but leave room for improvement, and data was not available for most countries.

74. Critically important is the misalignment of demand to this supply of nurses in the region. While effective demand has increased, vacancy rates are still high in many countries and flow analysis reveals an overproduction of new nurse graduates in relation to newly available positions for nurses in the labor market in some countries. This results in an "inactive" nursing supply, for which the return on investment for nursing education is zero. Countries in the region are unable to effectively examine the alignment of supply and demand in nursing education or in their nursing labor market, because key data systems are weak or non-existent. Simulations project these surpluses will continue to occur as effective demand and nursing supply grow by similar rates from 2019-2030; our projections estimate the surplus of nurses by 2030 to be over 220,000 nurses.

75. Concomitantly, countries in this region still face needs-based shortages of nurses to achieve Sustainable Development Goals. Our simulations project the needs-based shortage of nurses to achieve the 4.45 per 1,000 population ratio for SDG attainment will grow to 841,000 nurses by 2030. That's is a 30% increase from the needs-based shortage we document in 2019. These shortages vary by country and will increase in 6 countries and decline in 9 countries. The greatest needs-based shortages are projected for Tanzania, Uganda, and Mozambique. Increased investment in the education and employment of nurses in the region is therefore critical to advancing the SDGs.

76. For nurses that are active in the labor market, poor working conditions, low morale, and inadequate training restrain performance and productivity considerably and driving attrition and absenteeism. The solutions to improve nursing performance and productivity need to be health worker driven; a recent study found that wages were not the greater factor in health worker retention in Uganda, but rather working conditions, accommodations, and supportive supervision. Strengthening systems for continuing professional development also can both improve performance and assist in providing tracking data helpful for governments to plan and manage their workforce.

77. A critical lack of data on the health workforce strains rational workforce planning of the scarce resource of nurses and prohibits countries from understanding their stock and flows. Data is insufficient in documenting nursing educational demand (application, enrollment, and graduation, and attrition), registration and licensure, outmigration and continuing professional development, and geographic and sectoral deployment, retention, and performance. Private sector data is not collected systematically, despite the growing role of this sector to the health systems of ECSACON countries. As a result, countries do not have the needed information to understand their national or local health labor markets, and investments in nursing education or nursing labor could lead to unintentional negative impacts in the labor market.

8. THE WAY FORWARD

78. Countries in the ECSA Region must invest in nursing education and labor markets. Increasing the supply of nurses to respond to achieve UHC and deliver the SDGs in ECSACON Countries will depend on increasing the production and quality of pre-service nursing education and on ensuring that nurses entering the workforce are employed, allowed to work to their full scope of practice, and are retained. This requires complementary investments in nursing governance, regulation and the production of data and analytical capability to empower countries to plan and manage their labor markets of nurses and guide ongoing investments accordingly.

79. Recommendations regarding governance and the labor market include:

• **Strengthen health workforce information systems and data use for policy translation.** Strengthening a country's nursing workforce requires firm investments in information systems to allow countries to make real-time and evidence-based policy decisions. Using existing models, including the Kenya r-HRIS, will ensure uniformity of minimum data sets. Countries should accelerate the implementation of National Health Workforce Accounts, which serve as a good leverage point to guide the continuous and systematic collection of data. Countries should accurately track the flow of the nursing workforce including migration, nursing density, and numbers of nurses leaving or entering the workforce.

• **Monitor and effectively manage migration.** Nursing associations in country can collaborate with decision-making bodies and other stakeholders to achieve informed human resource planning that is based on systematic and comprehensive data on workforce flows. A regional approach is required to address critical gaps resulting from out-migration.

• **Strengthen the leadership role of the Quad in the country.** Include the selected representatives from each of the nursing pillars in each country in all policy discussions and decision making;

• **Improve accountability mechanisms for quality improvement.** There is a need to evaluate both patient and provider satisfaction and patient outcomes. Countries should work with the health workforce from the national to the community level to find ways to improve quality of care and provider performance.

• **Create policy frameworks that encourage the entrepreneurship of nurses** to lead their own private sector clinics, which can provide income generating opportunities and expand access to services. As the majority of nurses are women, this will also support the economic empowerment of women. Other options for economic empowerment of women include: formalizing moonlighting/dual -practice. Making small business loans available with tools/programmes could help nurses to run their own business.

• **Build on existing regional models for planning and cooperation.** Regional regulatory standards and frameworks, supported by affiliated existing regional organizations, can guide and inform country level regulatory practices. Examples include ECSACON Regulatory framework, training, AFREHEALTH (PI's council, curricula development), ARC- quad learning collaborative, EAC shared labor rules/ regulatory framework, Regional Professional Regulatory Framework (RPRF).

• **Ensure decent working conditions and occupational health and safety.** Nurses cannot be expected to deliver, improve and sustain quality health care when working without the basic infrastructure and materials/equipment to do so. Furthermore, enabling working environments will support attraction to the profession and the retention of nurses, reducing absenteeism and attrition. The development and application of occupational health and safety policies is essential. This includes safe staffing levels, protection from harassment and violence, adequate remuneration and gender-sensitive working environments. Nationally regulated provisions should be in place to ensure fair and equal pay and treatment for all genders.

• **Develop, strengthen and invest in the Advanced Practice Nurse (APN) role.** APNs are an important resource to address current health system challenges. Evidence shows that APNs improve population health outcomes and contribute to innovation and quality improvement leading to increased access to quality health services, particularly in underserved and low-resourced settings. Many nurses have already unofficially stepped into these roles to fill workforce gaps, but there is a need to regulate this and to ensure those nurses are properly trained. Promoting the APN role is premised on having strong nursing regulatory mechanisms in place. APNs should have protected role titles with clear credentialing requirements which includes an identifiable scope of practice.

80. Investments to expand nursing education should be targeted to institutions producing nurses most critical for UHC and SDG attainment in each country. This means targeting institutions in locations with greatest needs, including opening new schools in underserved areas, as students are more likely to work in the same region as they train. Use data to drive decisions on expansion versus new institutions. Efforts to support upgrading academic entry preparation to Bachelor of Science in Nursing programs should be supported and complemented with planning discussions regarding the career pathways and distinct scopes of practice, ensuring that this is endorsed by employers at all levels. Support a balance of educational programs for advanced practice nursing, and ensure pre-service education prepares nurses for various models of nursing care in the country.

• **Emphasize primary health care.** The growing nursing labor market will need to ensure that nurses are appropriately educated and prepared to provide primary care services to adequately meet population health needs, including the needs of particularly disadvantaged populations. PHC is the cornerstone of UHC and supports service delivery that not only addresses access issues in rural and remote locations, but also maximizes health outcomes through service delivery redesign. Nurses must be well trained to deliver urban and rural healthcare that is aligned with evolving needs of the population including sexual and reproductive

health, immunization, chronic illness management and mental health care. Evidence indicates that private sector investment in health worker education and employment tends to cluster around the most remunerative professions and those marketable at the global level, rather than the primary health care workforce, which is most needed and effective in improving equity in access to essential health care services (28).

• **Ensure high quality, transformative educational models.** Invest in competency-based, practice-oriented, and transdisciplinary learning, and utilize technology and e-learning to improve accessibility. Create clinical opportunities in rural and underserved areas with a special attention to developing clinical tutors through expanded training programs. Leverage e-learning and technology where feasible to extend access to education and to improve computer literature and use of technology. Improve availability and quality of clinical and practice-based training opportunities with expanded opportunities in primary and community care. Reconceptualize alternative clinical experiences. The shifts to online learning required to deliver education during the COVID-19 pandemic has highlighted opportunities and challenges that can be leveraged.

• **Strengthen regulation of nursing education.** Innovative and robust models. Develop mechanisms for enforcing quality assurance including curriculum and accreditation standards for both private and public sectors. Examine and strengthen authorities for regulating the private sector. Pilot autonomous bodies or private sector partnership models (McPake et al, 2013). Harmonize nursing education and credentialing standards.

• **Address faculty shortages through academic innovation and investments in nurse faculty programs.** Efforts to retain and grow the nursing faculty workforce; collaborative models for public-private partnerships; adequate wages for faculty; leverage online and distance learning for access to a larger nursing faculty workforce and to complement faculty in rural and remote education facilities – this requires the availability of reliable, broadband internet access.

• **Develop regional curriculum frameworks for APN education** to support successful expansion and sustainability of the APN role. Ensure articulation between Registered Nurse and APN curriculums to ensure appropriate integration of this role into the health system. Countries progressing towards developing master's degree requirement for APNs can develop transition or bridging courses for clinical nurse specialist or nurse practitioner roles.

Establish a framework for public-private collaboration in advancing nursing education, which brings together stakeholders from both sectors with donors, investors (e.g. banks) to create a rational plan for expansion of education in each country, in line with effective and need-based demand. This can be the basis of development ventures seeking outside funding. Strengthen public policy stewardship to optimize and align private sector investments, educational capacity and nurses' roles in health service provision to public policy goals.

• **Establish a meaningful student loan program** that enables students willing to pay the opportunity to capitalize on the positive return on investment for nursing education in the public and private sectors;

ANNEX 1

THE COVID-19 IMPACT ON THE NURSING WORKFORCE

The COVID-19 Pandemic was not anticipated at the time that the ECSA Education & Labor Market Analysis was conducted or released. The pandemic has had a profound impact on nursing education and practice and likely impact on patterns of deployment and retention. Recently, the International Council of Nurses (ICN), the International Confederation of Midwives (ICM) have both released a call to action in support of the COVID-19 related needs of nurses and midwives. A joint statement following the June 2020 TRIAD meeting released by the World Health Organization, ICN and ICM representing over 600 Government Chief Nursing Officers and national nursing leaders called for urgent and continued action to support the nursing & midwifery workforce. This annex is intended to align the findings and recommendations from the ECSA Education & Labor Market Analysis with known and likely pandemic related impacts.

ECSA EDUCATION & LABOR MARKET ANALYSIS SUMMARY OF FINDINGS	COVID-19 RELATED IMPACT
There has been a major expansion in the ECSA Region in quality and volume of nurse education over recent years, due to increased commitments by national governments and ambitious donor engagement.	The COVID-19 Pandemic has effectively closed many education programs in the region. Schools and universities that do remain open have been forced to move to virtual learning platforms. This may cause an obstacle to both quality and volume in a region with lower levels of digital literacy and access to technology. Student access to high quality clinical education is also impacted by the pandemic. Clinical education may be suspended in hospitals and health facilities struggling to manage high levels of acuity. Students that do have access to clinical study may not have a full set of competencies or the personal protective equipment needed to protect themselves from transmission. In some settings, faculty may be redirected to clinical practice, increasing the student-teacher gap. Interest in the nursing profession as a career choice for youth may increase or decrease depending on the perception of the roles that nurses play on the frontline and the risk they take in doing so.
Nurses are shifting in to more expansive and autonomous roles, such as through upgrading nursing degree programs, establishing advanced practice positions, and regulating and formalizing the work nurses are doing outside their regular scope of work.	The Pandemic may call attention to the need for nurses to expand their scope of practice in order to maximize access to high quality care. The regulated scope of practice of nurses may be formally relaxed in order to allow nurses to serve the urgent needs in facilities and communities. Efforts to upgrade to nursing degree programs may be delayed or seen as a lower priority than ensuring the continued flow of nurses with basic clinical competencies needed to manage urgent care needs.

The region has a strong regulatory framework for nursing, with mechanisms at national and subnational level for accreditation of nursing education.	Efforts to effectively manage and ensure compliance with accreditation guidelines has been challenged across the region, particularly in the private sector. Ensuring that schools and universities maintain quality standards in the midst of resource shifts and social distancing requirements will be difficult.
As a result of successful nursing educational investments, the total nursing supply in the region- estimated at 450,000 – has grown faster than population growth at approximately 10% per annum.	Effective demand for nurses will likely increase, particularly those with critical and pulmonary care competencies. Nurses in a 79% female workforce largely under 45 years of age may struggle to meet stressful and dangerous job demands while caring for families and children no longer in school. This may lead to higher rates of attrition in the nursing workforce
Outmigration of ECSA nurses outside and within the region reduces the available supply of nurses in sending countries, and poses direct and indirect costs to sending governments, including tuition as well as foregone wages and tax revenue.	Border protections and restrictions on international travel may reduce outmigration in the short term.
Critically important is the misalignment of demand to this supply of nurses in the region.	A pandemic induced increased effective demand could provide employment opportunities for many existing unemployed nurses. Quality of care will depend on sufficient orientation for nurses who have not been part of the workforce. The high needs-based demand for nurses could result in misutilization of nursing students unprepared to manage the acuity of clients suffering from COVID-19. Nursing students entering clinical facilities must be sufficiently supervised and equipped.
Concomitantly, countries in this region still face needs-based shortages of nurses to achieve Sustainable Development Goals.	The pandemic may augment projected needs-based shortages, particularly in the six countries that have projected increases in their shortages. The perception of the nursing profession and a nursing career will impact projected needs-based shortages
For nurses that are active in the labor market, poor working conditions, low morale, and inadequate training restrain performance and productivity considerably and driving attrition and absenteeism.	Long working hours, dangerous working conditions, lack of access to personal protective equipment and psychological first aid will likely drive increases in attrition and absenteeism. Nurse leadership engagement in communities, health facilities and intersectoral decision making tables will be critical to mitigating attrition.
A critical lack of data on the health workforce strains rational workforce planning of the scarce resource of nurses and prohibits countries from understanding their stock and flows.	A robust understanding of the stock of nurses, their practice locations, skillset and formal preparation to manage clients suffering from COVID-19 will be critical in an effective pandemic response.

ANNEX 2

DETAILED RESEARCH METHODS

Literature Review

We conducted two literature reviews to provide a grounding in the grey and peer-reviewed literature on the topic. The first literature review examined the quantity and quality of nursing education in the ECSACON region following six factors: students, curriculum, teachers/tutors/preceptors, infrastructure and management, clinical practice sites, and influencing factors. The second literature review examined the trends, issues, and opportunities facing nursing education and the labor market in the ECSACON region, probing additional factors in nursing education such as e-learning, advanced practice, upgrading of nursing, and private sector education. Nursing regulation was also studied, including licensing, continuing professional development, and accreditation. On the labor market side, we reviewed literature related to the demand for nurses by both the public and private sectors, such as employment trends, migration, compensation, absenteeism, and performance and productivity. Both reviews highlighted significant gaps in data and areas for further exploration.

Qualitative Data Analysis

As part of the qualitative analysis, we first undertook a stock-taking exercise in each country where we documented the existence of educational and labor market data sets in countries, and where we scoped the number and level of educational programs for nursing and the existence of key regulations and accreditation mechanisms. We administered this stock-taking survey instrument to each of the 16 ECSCON country focal points. We next conducted focus group discussions and key informant interviews to explore trends in nursing education and the nursing labor market in the ECSA region. The table below describes the category of interviewees and the number.

Table A: **Focus group discussions and Key Informant Interviews:**

*PERSPECTIVE	NUMBER (PERCENTAGE)
Regulator	12 (22%)
Government	8 (15%)
Association	11 (20%)
Educator	11 (21%)
Clinician	7 (13%)
Other	5 (9%)
Total	54

Participants with expertise in education were asked about nursing curricula, student preferences, the current constraints and future needs of nursing institutions, and financial and regulatory challenges. Similarly, participants with expertise in the labor market were asked about the policy and regulatory environment in their countries and the region more broadly, the relationship between labor and health care-specific laws and regulations, employment trends, migration, and compensation.

Quantitative Data Analysis

Finally, for the quantitative analysis we gathered and reviewed data on the current state of nursing education in the ECSA region, including on the number and capacity of training institutions since 2012, average duration of degree programs, and cost for both the

public and private sectors. On the labor market side, we collected detailed data on the composition of the nursing workforce from 2012 to 2018, including demographics, distribution, sectoral participation, average earnings, and effective demand and vacancies.

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This work was conducted in partnership with ICN, ECSACON and Jhpiego. To avoid duplication of processes and to harmonize information, data collection on NHWA indicators was done jointly with the World Health Organization during the elaboration of the State of the World Nursing report. The ICN provided their support and knowledge on nursing education and training and helped facilitate the conversation with other key stakeholders. ECSACON was a key partner in making the link with the QUADs in the countries of focus and supported in follow-ups with countries for the data reporting process. In addition to providing their guidance and knowledge from vast experience working on nursing in the region, Jhpiego helped in the study design, development and adaptation of existing reporting tool and provided significant support in data reporting efforts. As a contractor for the State of the World Nursing data reporting efforts, they were uniquely positioned to help maintain communication with the countries and benefited from the ongoing data collection through the National Health Workforce Account process of WHO. Their team helped maintain contact with country QUADs and helped ensure that both the WBG and WHO were receiving the required data sheets.

Regional Consultations

In parallel to the drafting of instruments and data collection (quantitative and qualitative), the activity has supported policy discussion with key stakeholders in the region. These engagements aimed at disseminating the objectives of the work, assuring buy-in at early stages from key stakeholders (nurses association, associations of nursing schools, and national governments), and engage nursing leaders in the development of the research instruments and in facilitating data collection process. The main events supported through these activities were:

- The overall purposes of the meeting were to determine a collective approach with which to assess the nursing labor and education markets in ECSA countries; to engage with nurse leaders representing government, regulatory bodies and associations from the region; and to identify synergies with other regional initiatives and develop partnerships to implement and disseminate the results.

- 6th Quadrennial Conference of The East, Central and Southern Africa College of Nursing (ECSACON 2018): A side event and a plenary session were organized to disseminate initial findings from the work and to conduct the first round of qualitative data collection.

- ICN Congress 2019 Singapore: The World Bank, Jhpiego and ICN attended this congress in Singapore June 27th- July 1st, 2019. The team was invited to present the study objectives and preliminary findings. The team met with the WHO team working on establishing NHWA accounts to establish collaborative agreements to facilitate the data reporting process. In addition, the team met with nursing leadership from various ECSA countries. These meetings clarified any doubts on the purpose of the study and served to revive enthusiasm from the countries. Countries committed to the data reporting efforts, agreements on regular meetings with QUADs and deadlines were established.

ANNEX 3
SIMULATIONS METHODS

The idea of this note is to discuss the methodology to be used in order to create a forecast model for nursing supply and demand in ECSA countries. There are three main elements to be discussed: supply, demand and the investment cost of increasing supply. Some studies also present estimates on shortage due of nursing that is not due to differences between supply and demand, but between supply and need.

Most studies that try to achieve a demand forecast use one of two approaches. The first is the idea of stock and flow. For example, they start with some measurement of the nurse service utilization and extrapolate it to future years. The second approach is not based on the present level but estimate directly using variables such as economic growth and demographic variables.

World Bank report The Nurse Labor and Education Markets in the English-Speaking CARICOM (2009) estimates the nursing supply using current stock, education output, and current attrition rate for the base scenario. For alternative scenarios, changes in the completion rate and the intake of students are considered and the feasibility is tested based on constraints such as the number of tutors. Demand was estimated based on demographic changes and projected utilization patterns. The starting point of the stack is the Canadian nurse service utilization patterns and for the forecast the flow is estimated by incorporating demographic changes.

Milicevic et al. (2013) uses an ARIMA model to estimate the supply of nurses. The forecast is determined by population, GDP, inpatient care discharges; outpatient care visits; students enrolled in the first year of medical studies; graduated physicians. There is no demand estimate, the analysis of the authors is limited to the supply side.

Murphy et al. (2016) simulate the future supply of each profession in each OECD country using data on population projections by age and sex; the distribution of self-assessed health status by age and sex; volumes of hospital days and physician consultations; current supplies of midwives, nurses, and physicians; annual numbers of graduates of each of these professions; annual numbers of international migrant nurses and physicians; the distribution of physicians by age; and the proportion of licensed members of each profession who are actively practicing were obtained for most of the included countries through the OECD indicator database. There is no estimate for demand, but they estimate the need for each country, including statistics on self-assessment of health status of individuals to estimate the need.

Cameron (2009) describes the models to estimate nursing in each of the Canadian province and by the Federal Government. The models are different, and the variables used depend on the what is available in each province. For the federal government the variables include stocks and flows of GP, Medical & surgical, specialists by age/sex FTEs. For the demand, the author indicates that components used in demand modelling are most often based on historical data broken down by age and gender.

The AAMC Center for Workforce Studies (2007) estimates the demand of oncologists by using the projection of cancer cases, the growth of population and the expectation of visits to the oncologist.

Supply of oncologists is estimated as the Current Supply + New Entrants – Retirements/Deaths. Expectations of retirements/deaths by gender/age groups, plus entrants estimated using the current trend.

Liu et al. (2016) and Scheffler et al. (2008) use a different approach which is to estimate the number of demanded nurses using economic growth; income level; demographic variables. Liu et al. (2013) also estimate the out-of-pocket expenditure per capita using household sample and use it as an input to the demand model. Scheffler et al. (2008), estimates both the demand and the need of nurses. Need is determined by calculating the number of physicians that would be required to reach the world health report 2006 goal of having 80% of live births attended by a skilled health worker. Demand includes country fixed effects, income level is considered using GNI per capita, lagged 5 years to account for time required for economic growth to affect health-care spending.

For the supply, both Liu et al. (2016) and Scheffler et al. (2008) estimate nurses/midwives density for each country from time t using the following equation:

Nurses/midwives per 1000 population = $\beta 0 + \beta 1 * yeart + \varepsilon t$
The density can be applied to the population forecast to estimate the number of nurses.

Supply methodology proposed:
For the supply, there are two possible methodologies that we could follow. The first is to use a methodology like Liu et al. (2017) and Scheffler et al. (2008).

The second would be closer to the World Bank Caricon report (2009) and the AAMC Center for Workforce Studies (2007). In this approach we would need a measurement of the new nurses and the attrition of the current nurses in order to determinate the flow of nurses. This could be achieved using Kenyan data of Number of students enrolled in nursing education and training. The attrition can be estimated using the time-series of the nursing distribution by age group. Both methods could be applied, and forecast be compared.

Demand methodology proposed:
Not having a measurement of current nurse service utilization patterns limits the methodology we can use for demand. In that sense, I suggest we use an approach similar to Liu et al. (2017) and Scheffler et al. (2008), which use demographic and economic variables to project demand. In addition, we can also model shortage due to need, instead of demand. As I see, demand would be more economic focused, while need would depend more on demographic changes.

Another possibility would be to use data such as the current vacant nursing positions as the starting shortage point and extrapolate the flow. The problem is that is that we don't have this variable for all countries and assuming that the shortage in one country would be the same as another is too strong of an assumption, in my opinion.

Once we have an estimate for supply and demand/need we can project the shortage of nurses for each country. The cost of training of additional nurses can be estimated using Kenyan data. We have information on both public and private expenditure on nursing education; number of graduates and number of qualified educators that can be used to estimate the cost.

Need methodology proposed:
Some authors such as Liu et al. (2017) and Scheffler et al. (2013) also estimate need for nursing, the needs-based forecast reflects the number of nurses that would be required to reach a desired benchmark of service utilization. In our case we use as benchmark a density of 44.5 nurses per 10000 people, based on the WHO Sustainable Development Goals threshold density.

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