MINISTRY OF HEALTH
ETHIOPIA

NATIONAL STRATEGIC ACTION PLAN FOR EYE HEALTH 2016 - 2020

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Acronyms

AAU-CHS	Addis Ababa University-College of Health Sciences
AMD	Age-Related Macular Degeneration
CS/NDCS	Non Doctor Cataract Surgeons
CBM	Christoffer Blinden Mission
CSC	Cataract Surgical Coverage
CSR	Cataract Surgical Rate
CHBLV	Childhood Blindness Low Vision
DR	Diabetic Retinopathy
FMOH	Federal Ministry of Health
FMOE	Federal Ministry of Education
FMHCACA	Food Medicine Health Care Administration, Control Authority
FHF	Fred Hollows Foundation
HEW	Health Extension Workers
HDI	Human development Index
HAD	Health Development Army
HReH	Human Resource for Eye Health
HSTP	Health Sector Transformation plan
HCP	Himalayan Cataract Project
ITI	International Trachoma Initiative
IAPB	International Agency for Prevention of Blindness
IECW	Integrated Eye Care Worker
INGDO	International Non -Government Development organizations
LFTW	Light For The World
MDA	Mass Drug Administration
NCD	Non communicable Disease
NCPB	National committee for Prevention of Blindness
NTD	Neglected Tropical Diseases
NTTC	National Taskforce for Trachoma Control
NOP	Neuro-Ophthalmology
PECU	Primary Eye care Units
PFSA	Pharmaceutical Fund Supplier Agency
PPV	Pars Plana Vitrectomy
RD	Retina Detachment
RE/URE	Refractive Error/Un corrected Refractive Error
SAFE	Surgery, Antibiotics, Face and Environmental sanitation
SECU	Secondary Eye Care Unit
SLM	Slit lamp Microscope
TECU	Tertiary Eye care Units
TT	Trachomatous Trichiasis
TCC	The Carter Center
VEGF	Vascular Endothelial Growth Factor
VAO	Vision Aid Overseas
WHA	World Health Assembly

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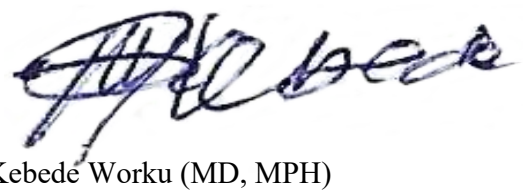
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FOREWORD

The Federal Ministry of Health (FMOH) officially launched the VISION 2020, the Right to Sight Global Initiative, in Ethiopia on 18 September 2002 after developing a National Five-Year Comprehensive Strategic Plan for Eye Care. This document is the 4th Ethiopian strategic plan for eye health and blindness prevention. The plan will extend from 2015 to 2020 in line with the HSTP which in turn feeds into the country's greater GTP. The strategy is developed in cognizance of the WHA 62.1 recommendations and the WHO action plan for vision 2020. The strategy underlines the future economic and development gains to the nation as a whole in tackling the gruesome causes of visual impairment and blindness in all age and gender groups. It is noted that economic development and health are strongly intertwined with both.

The prevalence of blindness and visual impairment in Ethiopia is among the highest in the Sub-Saharan Africa. The current plan aims to change the status quo through high level of engagement and commitment across all decision makers and the Ethiopian community in general. Specifically, the plan includes Human Resource for eye health management as one of the strategic objectives that will realize equitable, rational development and distribution of eye care workers in line with VISION 2020.

The plan also addresses the issue of infrastructure improvement as a key tool in providing and improving quality service delivery. Furthermore, the FMoH will finance eye care as part of wider comprehensive health care system and will work towards availing eye health specific supplies, drugs, instruments and equipment. The eye care health information system will be harmonized across all stake holders and made as robust as possible to capture all relevant information that feeds into the National HMIS. In this strategy, research is given due emphasis as basis to make informed decisions. The most important aspect of the realization of this strategy is the leadership that will enhance harmonization, coordination and service quality assurance. The National committee for the Prevention of blindness (NCPB) will play this crucial role of technical guidance and leadership. The government will continue to provide overall leadership, governance and support especially in facilitating the development of policies and strategies for implementation. Partnership across all stakeholders will be embraced in order to have a participatory, realistic, comprehensive and sustainable eye health care program in Ethiopia.



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Acknowledgement

We are indebted to the many individuals who contributed their ideas, time, energy, and/or expertise during the five-year eye health strategic plan development processes. The Ethiopia Federal Minority Health, Disease Prevention and Control Directorate and the NCD team members and other directorates for their contributions and support during the development process and for ensuring the voices of the communities to be heard. We are grateful for the ongoing contribution of the national committee for the prevention of blindness, development eye NGO partners and eye health societies of Ethiopia.

Executive Summary

Eye health care in Ethiopia has been coordinated for the past several decades under different umbrellas; and at the moment, eye care in the Federal Ministry of Health is being overseen under the Disease Prevention and Control Directorate within two teams, namely Non-Communicable Diseases and Neglected Tropical Disease. In the past years, the overall eye health agenda did not receive the desired attention from the government to address the multifaceted challenges. Especially around human resource development, according to the latest reports in 2015, there are over 130 general ophthalmologists including 20 sub-specialists level practicing in the country. Of those practicing ophthalmologists, around 60% reside in Addis Ababa and about 49% work either in the private or NGO sector. In addition, there are 210 optometrists, 58 cataract surgeons, 43 ophthalmic officers over 150 ophthalmic nurses and 560 integrated eye care workers (IECWs). The avail-able number of professionals in Ethiopia is way below the internationally recommended levels of one ophthalmologist to 250,000, one optometrist to 50,000 people and one cataract surgeon to 250,000 people. The productivity is unacceptably low and geographic distribution of services is unfair, leaving the large majority of the rural Ethiopian population underserved. There are only 47 public secondary eye care units and 4 tertiary centers in the country. The ratio of ophthalmologists to population in Ethiopia is currently at 1:1.5 which is below the standard 1:0.25 million.

The 2006 national survey reported a prevalence rate of 1.6% and 3.7% for blindness and low vision, respec-tively. The high prevalence of visual impairment makes the country one of those countries with very high prevalence of blindness and visual impairment in the world. Cataract, trachoma, and refractive error were reported as the leading causes of blindness and low vision in the country accounting for 70% of all causes. Cataract as a cause of blindness contributes 49.9 %, followed by corneal opacities of all causes 19.3% and Refractive Error 7.8%. To address the predominant causes of blindness and visual impairment problem in Ethiopia, multiple inter-linked activities and interventions need to be undertaken by the Ethiopian government, community and other stakeholders. Some of the key activities will focus on governance and leadership, community participation and empowerment, human resource for eye health development, infrastructure (equipping and supplying and to some extent by constructing PECU/SECU in needy regions and places), partnership (with FMoH at all levels, ministry of education and Social Affairs offices, Academic institutions, WASH organizations, local/international INGDO's and Civic societies), and monitoring and evaluation.

Chapter One: Background

1. Introduction

Ethiopia, located in the Horn of Africa, is a sub-Saharan African country with an estimated population of 94.1 million in 2015[1] . About 85% of the population resides in rural areas. The population is predominately young with 47% under the age of 15 years. Population over 65 years accounts for only 3% of the total. While the sex ratio between male and female is almost equal, women in the reproductive age group constitute 24% of the population.[2] Ethiopia is a Federal Democratic Republic with nine national regional states and two city administrations. The regions are divided into administrative units: Zones, Woredas (districts), and villages known as Kebeles (the smallest administrative units consisting of 200 to 500 households each).

Ethiopia has shown an impressive double digit economic growth over the past ten years; however, according to 2014 UNDP report, Ethiopia's Human development Index (HDI) value for 2013 is 0.435 (which is in the low human development category) positioning the country at 173 out of 187 countries and territories. Between 2000 and 2013, Ethiopia's HDI value increased from 0.284 to 0.435, an increase of 53.2 percent . The literacy status of the population remains very low with adult literacy rate of 42.7% (50.3% for male and 35.1% for female)[3]

The country's health service delivery has adopted a three level system consisting of a primary hospital, health centers and satellite health posts to form the basis for primary health care unit (PHCU) in each Woreda. General and specialized hospitals form the secondary and tertiary levels respectively.

2. Epidemiology

According to WHO reports in 2014 GC, 285 million people are estimated to be visually impaired worldwide: 39 million are blind and 246 million have low vision. About 90% of the world's visually impaired live in low-income settings. Eighty-two percent of people living with blindness are aged 50 and above. Globally, uncorrected refractive errors are the main cause of moderate and severe visual impairment, and cataracts remain the leading cause of blindness in middle- and low-income countries. The number of people visually impaired from infectious diseases has reduced in the last 20 years according to global estimates. Eighty percent of all visual impairment can be prevented or cured.

1CSA projections, www.csa.gov.et/pop
2Demographic Health Survey (DHS), 2011
3 http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/ETH.pdf

About 65 % of all people who are visually impaired are aged 50 and older, while this age group comprises about 20 % of the world's population. With an increasing elderly population in many countries, more people will be at risk of visual impairment due to chronic eye diseases and ageing processes. An estimated 19 million children are visually impaired. Of these, 12 million children are visually impaired due to refractive errors, a condition that could be easily diagnosed and corrected. One million four hundred thousand are irreversibly blind and need visual rehabilitation interventions for a full psychological and personal development.[4]

Eye health problems, including blindness and visual impairment, are one of the major public health problems in Ethiopia, affecting over 15 million people. According to the 2006 National Survey on Blindness, Visual Impairment and Trachoma report, the national prevalence of blindness and visual impairment were estimated at 1.6% and 3.7% respectively. Which, in terms of people, translate into 1.3 million blind and additional 3.1 million people with visual impairment. Additionally, the survey revealed that over nine million children 1-9 years of age had active trachoma, and 1.5 million people aged 15 years and above had trachomatous trichiasis (TT) and are at risk for blindness unless operated on immediately. Cataract constitutes more than 49% of the total causes of blindness in the country. The 2005/6 national survey reported Cataract, Trachoma, and Refractive error as the leading causes of blindness and Visual impairment in the country. Cataract as cause of blindness contribute 49.9 %, followed by corneal opacities of all causes 19.3% and Refractive Error 7.8% . [5] Table 1 summarizes the level of various causes of blindness and visual impairment and estimated number of people affected in 2012.

Furthermore, the Global Trachoma Mapping Project carried out in 2013 has shown that Ethiopia has the highest burden of blinding trachoma in the world with more than 76 million people living in trachoma endemic areas and around 800,000 individuals at risk of blindness due to TT[6].

6 T 20

Table 1. Causes of Blindness and Visual impairment in Ethiopia (Estimates based on the National Survey of 2006 and projected population of Ethiopia in 2014)

Disease /condition	Prevalence	Estimated number of people affected 2014
BLINDNESS	1.6%	1,440,000
Major Causes of blindness		
Cataract	49.9%	718,560
Trachoma	11.5%	165,600
Other corneal opacities	7.8%	112,320
Refractive Errors	7.8%	112,320
Glaucoma	5.2%	74,880
Other causes	17.8%	256,320
VISUAL IMPAIRMENT	3.7%	3,330,000
Major Causes of low vision		
Cataract	42.3%	1,408,590
Refractive Errors	33.4%	1,112,220
Trachoma	7.7%	256,410
Other causes	16.6%	552,780
Active trachoma (among children aged 1-9 years)	40.10%	9,589,057

. Eye care in Ethiopia

.1.Historical background

Eye care services have been provided for more than five decades in Ethiopia; however, an organized national program was only established within the FMOH in 1976. This program was known as "The Ethio-Italian Trachoma Project", since the major support came from the Italian Government Development Cooperation. Ten years later in 1986, the Trachoma Project was elevated to the National Program for the Prevention of Blindness, which included all causes of blindness in the country. The Program functioned comprehensively for some years but was interrupted at a later time with unclear reasons. The National Committee for the Prevention of Blindness (NCPB) was then established in 1996 and it was restructured in 2000 in line with the global initiative VISION 2020: The Right to Sight.

The FMOH officially launched the VISION 2020: The Right to Sight Global Initiative in Ethiopia on 2002 after developing a National Five-Year Comprehensive Strategic Plan for Eye Care. The initiative has given momentum to the prevention of blindness worldwide in general and developing countries, like Ethiopia in particular. The World Health Assembly (WHA) has also passed a number of resolutions to eliminate avoidable (preventable and/or treatable) blindness by the year 2020, globally.

The National program for prevention of blindness (NPPB) was a centralized program up to 1993. Following restructuring of the health system in the country, the NPPB was reorganized as a Prevention of Blindness Team in 1994, under the Epidemiology and AIDs Department of the FMOH. In 2013, further restructuring was carried out within the FMOH and eye care is now being managed under the Non Communicable Diseases (NCDs) and Neglected Tropical Diseases (NTDs) programs within the Disease Prevention and Control Directorate of the FMoH. The National Committee for the Prevention of Blindness (NCPB) and the National Trachoma Task Force (NTTF) serve as national forums for the Ministry to engage all stakeholders for on-going collaboration, alignment, coordination, advocacy and resource mobilization for the prevention of blindness in Ethiopia.

The National Five-Year Strategic Plan for Eye Care in Ethiopia has been used as the main tool for the implementation of the Global Initiative VISION 2020: The Right to Sight. Prevention of blindness has been included in the Health Sector Development Programs (HSDP-II to HSDP IV) and well articulated on the latest health sector plan - Health Sector Transformation Plan (HSTP 2016-2020). Relative to the previous eye health strategic plans, the current revised eye health strategic plan is developed to better align with the Health Sector Transformation Plan (HSTP). Hence, this eye health strategic plan, as a subset of the national health plan, focuses mainly on highlighting eye health problems and what needs to be done to address issues of service expansion, integration into the general health care system, and quality of eye care services in the country.

.2. Eye care service delivery status

The mid-term evaluation of the second National Five-Year Strategic Plan for Eye Care was conducted in 2010. The results showed that there were modest achievements in the development of essential human resources for eye care, infrastructure development, and in mass drug administration (MDA) for trachoma control. Compared to the planned targets, low performance was observed in the areas of cataract surgery, prevention and control of childhood blindness, and refractive error corrections. From 2001-2009, before the mid-term evaluation, 442,863 people were operated for Trachomatous Trichiasis, which was 55% of the target. The number of Woredas/Districts implementing the SAFE strategy for trachoma control increased from 3 in 2003 to 195 in 2010. The table below (table 2) outlines the number of eye care activities performed in 2012 by type of treatment and sex of patient.

During the same period, a National Survey on Blindness, Visual impairment and Trachoma, the first ever national survey, was conducted to obtain baseline data for planning, evaluation and advocacy for eye health. Guidelines, manuals and information, education and communication (IEC) materials were developed and distributed to regions and the wider stakeholder group. Partnership and eye care coordination activities were strengthened through the National Committee for the Prevention of Blindness and National Taskforce for Trachoma Control meetings, consultative workshops and review meetings.

Table 2. Eye Care Activities performed in 2012 by Type of Treatment and by Sex of Patients

REGION	Cataract Surgery		Other major surgery		TT surgery	Other Minor Surgery			Issued Prescription or eyeglasses	
	M	F	M	F	M	F	M	F	M	F
TIGRAY	7,339	7,197	29	11	11,918	18,032	...	...	796	319
AFAR	317	344	...	...	...	...	...	...	...	...
AMHARA	2,802	2,534	833	599	23,474	44,410	320	338	...	...
OROMIA	5,047	4,274	1,496	1,035	3,425	3,335	2,748	813	688	595
SOMALI	378	468	20	18	723	950	207	245	...	...
BEN-GUMUZ	...	...	...	...	...	...	...	...	...	...
SNNPR	4,428	3,591	290	283	7,819	15,151	884	846	1,210	1,180
GAMBELLA	...	...	...	...	152	209	311	198	...	...
HARARI	226	304	...	...	30	50	23	22	...	...
ADDIS ABABA	4,464	4,247	3,874	4,525	692	1,281	236	221	...	...
Dire Dawa	252	186	73	54	...	...	...	...	...	...
Country Total	**25,253**	**23,145**	**6,615**	**6,525**	**48,233**	**83,418**	**4,729**	**2,683**	**2,694**	**2,094**
M&F Total	**48,398**		**13,140**		**131,651**	**7,412**			**4,788**	

3.2. Human resource for Eye Health (HReH)

The VISION 2020 targets for human resources for eye health (HReH) cadres per million populations are set as: four ophthalmologists, four cataract surgeons, ten ophthalmic officers, ten ophthalmic nurses and twenty optometrists. Furthermore, it targets the cataract surgical rate (CSR) to be 2,000 per million population and 500 per surgeon per year .

According to 2015 reports, there are **132** general ophthalmologists including 20 subspecialists practicing in the country. Of those practicing ophthalmologists, around 60% reside in Addis Ababa and about 49% work

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either in the private or NGO sector. In addition, there are 210 optometrists, 58 cataract surgeons, 43 ophthalmic officers over 150 ophthalmic nurses and 560 integrated eye care workers (IECWs). Additional information on the HReH can be found in the table 3 below. The number of practicing professionals in Ethiopia is far below the internationally recommended levels of one ophthalmologist to 250,000 people, one optometrist to 50,000 people and one cataract surgeon to 250,000 people. The productivity is low and geographic distribution is unfair, leaving the large majority of the rural Ethiopian population living in underserved areas.

Across Ethiopia, there are only 47 public secondary eye care units and four tertiary centers. Five Universities conduct training for eye health workers, including, Ophthalmologists, Optometrists and Cataract surgeons. In addition, four Hospitals conduct ophthalmic nurse training (ALERT, Yirgalem, Jigjiga and Quiha).

Table 3. Eye Health Human Resources in Ethiopia Updated June 2015

Profession	VISION 2020 target per population	Actual Available Number	Needs	Gap	Remarks
Ophthalmologists (including Sub-specialists)	1/250,000	132	377	245	57% in Addis; 51% in Government institutions; 86% surgically active; 26 females
Non-Doctor Cataract Surgeons		58			4 in Addis; 90% surgically active; 25 females The need for 377 surgeons is for ophthalmic surgeons which includes both ophthalmologist and cataract surgeons. Hence, the gap for ophthalmologist may be filled by cataract surgeons.
Optometrists (Diploma, BSC. MSc)	1/250,000	200	377	177	13% in Addis; 50 graduates annually
Ophthalmic Nurses (Diploma and BSc)	1/100,000	150*	943	793	Both Diploma level and Degree level
Eye Health Managers		20*			MD,/MPH/Msc or Vision 2020 Certified
Integrated Eye Care Workers (IECW)	1/10,000	887	9433	8743	Nurses trained for one month on Primary Eye Care and TT surgeries. Proportion of time allocated for eye care.
Others (Optical workshop Tech)		20*			Professionals trained at least in certificate level and involved either production and/or dispensing of eye glasses

*Approximate figures

Ophthalmologists:

There are three Ophthalmologist training Universities with annual output of 2-6 each (Addis Ababa, Gondar and Jimma universities). There is no sub-specialty level training in the country. Currently some centers are staffed with full (at least 9-12 months) fellowship trained sub-specialists, these are mainly academic Hospitals. Table 5, below, shows the current status of ophthalmologists in the country with sub-specialties. Considering the recommendation of International Agency for the Prevention of Blindness (IAPB) Africa HR need in Sub-Sahara strategic document, the ratio of ophthalmologists to population needs to be 1:250,000 and Ethiopia is currently at 1.5:1,000,000; compared to our neighbors we are lagging behind, if we see Kenya and Sudan are at 2:1,000,000 and 8:1,000,000 respectively[11].

Hence, the program needs to train and employ three times more than the current number of ophthalmologists to reach the Africa target of 377. It will be very challenging to reach to this figure in the foreseeable future. With the intention to ameliorate the challenge with shortage of ophthalmologists in Ethiopia, the task shifting to mid level cataract surgeons was started in 2007 for a couple of years. However, the continuation of this task shifting training has been paused for thorough discussions in terms of programmatic effectiveness.

Table 4. Current status of ophthalmologists with sub-specialties (at least 9-12 months fellowships)

Type of sub-specialty	Number	Current status	Remark
Pediatric Ophthalmology	7	2/7 practice pediatric surgery	4 work in the private centers
Anterior segment	9	All practice fully	1 in private center
Retina	5	All practice fully	All in government
Glaucoma	4	All practice fully	All in government
Oculoplastics	2	Practice fully	Works in the government
Neuro-Oph and Uveitis	0	NA	One trained but lives abroad

Optometrists:

There are two schools of optometry, Gondar and Hawassa Universities, with annual output of 40-50. Gondar University has started Master level training in clinical optometry and has graduated four, so far. Additionally, two optometrists were trained as Pediatric Optometrists abroad. Currently, optometrists graduating from the two schools face lack of equipment in their assigned centers, creating significant frustrations from the optometrists' side and hence decreasing their output.

Cataract Surgeons (CS):

The training of cataract surgeons was started in four Universities (Jimma, Gondar, Hawassa, and Mekele) and currently only Jimma University is training the last batch. The training was post basic and not fully integrated within the Universities. Hence, the number of CS has increased very slowly in the last five years. Many centers are suffering from lack of CS or ophthalmologists to fill existing SECU positions, especially in rural clinics. Though there are reservations on continuing the training program, the FMOH plans to continue producing CS as intermediate level plan. However, it is recommended the training be restructured to enroll a wide pool of health professionals, such as, Health officers and general nurses with BSC; additionally, it is encouraged to enroll younger individuals from rural areas so as to avoid resistance to placement in rural areas. Making the training a master's degree level, like the emergency obstetrics and others, may encourage and motivate the CSs to continue to practice.

Ophthalmic Nurses/officers:

There were five training Hospitals (Gondar, Yirgalem, ALERT, Jijiga and Quiha), of which four are currently conducting training. The training is at advanced diploma level, except at Gondar (which was called ophthalmic officers at degree level), and there are issues related to carrier structure, payment and recognition. Standardizing the training and increasing acceptability of the training is essential.

Eye Health Mangers and Optical Workshop Technicians:

As of August 2015, there are no training centers in the country that formally train these cadres, hence, some individuals were sent abroad for this training with support from development partners. Currently, Gondar University is in preparation to launch these types of training. As advocated by VISION2020, each eye health program manager at FMoH, Regions and Zones needs to attend an eye health mangers' training.

3. 4. Infrastructure for Eye Health

Infrastructure development is one of the key pillars of Vision2020. This includes the physical structure of the building and all ophthalmic items (supplies, instruments and equipment). In Ethiopia, the infrastructure for eye health services is scarce and mal-distributed throughout the country (see Table 5, below). According to the latest FMoH report for 2015, there are only 47 SECU, 4 TECU and 579 PECU in the country, including those run by IECWs. At least 200 SECU and TECU centers need to be established; this can be done by integrating eye care facilities in General (Zonal or District) Hospitals and/or constructing new eye units.

In the next five years, the approach will be to establish SECUs by integrating Eye Health in the General Hospitals. This will be accomplished by assigning appropriate HR and availing essential equipment to existing facilities. Three regions currently do not have any SECU and priority will be given to these regions. The plan for developing SECUs will take in to consideration the current and planned HR outputs from the training centers, location of existing SECUs, and the population in the proposed catchment areas.

Table 5. Distribution of primary, secondary and tertiary eye care units in Ethiopia

Region	Tertiary Eye Care Units (TECU)	Secondary Eye Care Units (SECU)	Primary Eye Care units (PECU)
Tigray	0	4	19
Afar	0	1	0
Amhara	1	8	392 (IECWs)
Oromia	1	12	213 (IECWs)
Somali	0	2	7
Benishangul	0	0	0
SNNPRS	1	12	231 (IECWs)
Gambella	0	0	0
Harari	0	1	0
Addis Ababa	1	6	0
Dire Dawa	0	1	0
National	**4**	**47**	**579**

The importation of ophthalmic supplies is currently regulated by the Food, Medicine and Health Administration and Control Authority which sets health standards including registration of products and requirements for importation of health products. The national program needs to enhance coordination with the agency in identifying products needed for the program so that required materials can be availed.

The Pharmaceuticals Funding and Supplies Agency (PFSA), a government institution, is mandated to coordinate procurement of health products. The national program coordinates with the Agency to ensure appropriate quantification of medical supplies, based on performance and program targets, is availed so that uninterrupted supply is availed at facility level. Eye health facilities are advised to avail eye health medications need to PFSA in order for procurement to be initiated. Private suppliers also have room for availing products on a cost-competitive and need basis for both government and private facilities.

1.2.Disease Control

Cataract:

Cataract is the major cause of blindness, up to 51% both in developing and developed nation as reported in 2010. With a backlog of nearly two million visually impaired by cataract in Ethiopia, interventions addressing cataract services will have a large impact on prevalence of blindness. However, the number of cataract surgeries conducted in Ethiopia in 2012 did not exceed 50,000 and the Cataract Surgery Rate and the Cataract Surgical Coverage (CSC) were only 570/million/year and 3% respectively.

Despite significant improvement in HR development as reported by the FMoH evaluation of the second eye care plan[8], the program does not meet the recommended ratio for ophthalmologist/Cataract Surgeons; 1:250,000 populations. Two times the current number of ophthalmologists/cataract surgeons, 377, are required for Ethiopia. Additionally, the current productivity of CS (ophthalmologists/non-doctor CS) in each center is very low (average <300 per/year/surgeon). According to a research conducted on non-doctor CS, several factors contribute to the low productivity. These include, but not limited to, the lack of surgical supplies, limited availability/functionality of surgical instruments and equipment, lack of support from health managers, low patient flow, and lack of motivation of eye care workers[9]. Additionally the numbers of SECU/TECU are too few (47) and not evenly distributed across the country. Moreover, the quality of cataract surgeries performed has not been well analyzed, with only few attempts by implementing partners.

Refractive Error:

Refractive error is among the top three causes for blindness and visual impairment in both developed and developing countries, including Ethiopia.

[8]CS increased from to 1 in 201

[9]Mid Level eye care workers' productivity and tracer study, 2011, Zelalem et al (rbis un published)

According to a survey conducted in Ethiopia in 2006, uncorrected refractive error (URE) causes blindness in 7.8% of the population and causes visual impairments in 33.3% of the population. In Ethiopia, over one million people are suffering from URE, excluding presbyopia which occurs in people over the age of 40 years. Presbyopia affects an additional three million individuals and has a large impact on the economic productivity of adults and learning capabilities of young children. Globally, tackling cataract and URE alone addresses 75% of visual impairment and in Ethiopia it addresses nearly 60% of visual impairment.

A 2013 FMOH report with data from two regions showed that 4,788 prescriptions were issued and of these, 2,390 were from SNNPRS. Orbis also supported the distribution of 4,827 spectacles to underserved populations in 2013.

Trachoma:

Ethiopia is part of the WHA51 declaration to eliminate blindness due to trachoma by 2020. In the 2006 national survey, trachoma was estimated to be responsible for 11.5 % of total blindness in Ethiopia, which is second only to cataract. The prevalence of active trachoma (TF) in children aged 1-9 years was found to be 40.1% and TT in adults above 15 years was 3.1% according to the 2006 national survey. The Global Trachoma Mapping Project (GTMP) conducted from 2012-2015 mapped almost all (540 woredas) previously unmapped rural Woredas with the exception of 20 districts in Ethiopia. The prevalence of blindness due to trachoma was not evaluated but the prevalence of TF and TT was projected to be 27% and 1.2% respectively[6]. However this projection did not include highly endemic Amhara region because it had previously been mapped. The GTMP finding shows the burden of trachoma in Ethiopia is one of the highest in the world (estimated up to TF 50% in endemic areas)[10]. The National blindness survey estimated 1.3 million people suffer from the blinding stage of trachoma, TT, in 2006. The GTMP survey finding also showed the number of people suffering from TT was also very high after 8 years of program intervention, at the end of 2014 there were an estimated 691,037 people requiring surgery to achieve the Ultimate Intervention Goal.

The government and partners have been implementing the WHO endorsed SAFE strategy (S=Surgery, A=Antibiotics, F=Facial Cleanliness, E=Environmental Sanitation Improvements) in Ethiopia over the last decade. From the inception of the program in 3 districts during 2003 to the end of 2016, 521 woredas has

[10]Ethiopia Journal of ealth Development, Eye disease Burden 2005 to 2015, Yemane B

been benefited from the national scale up of SAFE intervention, in these periods more than 1,000,000 TT surgeries have been conducted leaving an estimated 391,758 TT cases at the end of 2016 requiring surgery to correct the eye lid, 236,316,886 treatments of Zithromax have been distributed during annual mass drug administration campaigns in woredas where SAFE interventions have been started. The coverage of access improved water sources reached 65%[11] in 2016 a marked improvement from 13% in 1990 and also the coverage of access improved latrine reached 15% from 3% in 1990 and pit latrine in 2016. Unavailability of latrine has also decreased from 45% to 32%[12] since EDHS 2011. Full (100% geographic coverage with more than 76 million treatments are planned to be distributed annually in all endemic districts in 2017 and the years to come until eliminating blinding trachoma as a public health program by the year 2020. The country's effort to eliminate blinding trachoma is not only limited by the usual SAFE implementation, rather SAFE is intensified by new flagship initiative, Fast track Initiative to provide TT surgeries for 693,037 individuals in 2 years time during February 2015. Progress of the Fast track TT initiative is indicated in section 3.7 of the document. Moreover tremendous efforts to improve the WASH coverage are huge government lead initiative that boosts the momentum created in eliminating blinding trachoma.

The launch of this ambitious Fast Track Initiative to address the Surgery component and massive scale up of AFE intervention has showed the country's progress and commitment in eliminating blinding trachoma by the year 2020[14]. A total of 44 million Birr was committed from the ministry of health for the training of sufficient number of TT surgeons. Similarly, donors and development partners pledged to match the challenge grant to avail TT kits, consumables and cover operational cost for undertaking TT surgeries.

Over the last 10 years, the S and A components have performed well and are proportionally increasing each year. The commitment of states and local government to prioritize trachoma control as part of health agenda is encouraging, as witnessed at the GET 2020 workshop in Ethiopia held in 2014. However, the still low WASH coverage and limited attention to the behaviour change communication section of F and E components, the expected incident and recurrent TT cases, and program implementation in marginalized regions should be given attention in order to reach elimination goals by 2020. Additionally, a shortage of surgical instruments and supplies in the local market and high attrition of trained health professionals (TT surgeons/IECW) are

[11] Ethiopia ealth and Demographic Survey 2016 key indicator report
[12] Ethiopia ealth and Demographic Survey 2016 key indicator report
[13] Ethiopia ealth and Demographic Survey 2016 key indicator report
[14] FM , TD team report 2013, FM

Glaucoma:

Glaucoma is one of the leading causes of irreversible blindness both in developed and developing countries. The prevalence of blindness in Ethiopia attributed to glaucoma as per the 2006 survey is 5.2% and the type of the disease in Ethiopia is typically painless open angle and not noticed until it causes total blindness. There are no data available on service provision in Ethiopia.

Diabetic Retinopathy and other retinal diseases:

Diabetic blindness is one of the major causes of blindness in the developed world and accounts for 3-7% of all causes. It is one of the emerging diseases causing increasing percentages of blindness in developing countries in recent years as result of increasing life expectancy and change in life style. The prevalence of Diabetes in Ethiopia from proxy data is also increasing and estimated to be 4.6 % in age group 15-69 years. There are no community based studies which estimate prevalence of Diabetic Retinopathy (DR) and Diabetic related blindness. Hospital based studies conducted in Menelik Hospital and Jimma University estimate prevalence of DR to be between 30-40% (all stages) among Diabetic patients coming for eye exams compared to 17-50% globally. Retinal detachments and age related macular degeneration are the other retinal diseases contributing to blindness.

Currently there are no Diabetic Eye disease specific programs in Ethiopia except a very small project by Ethiopian Diabetic Association (EDA) in collaboration with world diabetes foundation to screen diabetic retinopathy in five hospitals using fundus cameras and perform Laser treatment in Black Lion hospital with only one ophthalmologist. In 2013, these hospitals screened 2,500 diabetic patients and 1,250 (50%) had Diabetic Retinopathy and referred to ophthalmologists. The number of LASER and Pars Plana Vitrectomy (PPV) conducted were not documented. Additionally 3 private institutions conduct diabetic retinopathy examination and treatment. The advanced form of DR related disease need a treatment called Pars Plana Vitrectomy which is currently available in to three centers for the whole country by two Retina specialists.

Childhood Blindness:

The prevalence of childhood blindness is very low in both developed and developing countries. In Ethiopia childhood blindness is estimated at 0.1% as per 2006 survey. However, the number of blind years for these individuals is very high and its impact is comparable to cataract blindness in adults with 50% prevalence. The causes for childhood blindness vary; however, it is mainly preventable in developing countries through routine immunization and improved nutrition. To date, only Orbis International focuses on this problem in Ethiopia. There are only three TECU that deliver quality pediatric eye health services in Ethiopia. A 2013 report on service provision in the three centers (AAU, Gondar and Hawassa) shows 19,287 children received screening and examination services, including screening at schools.

In total, 7,961 children were treated with either medicine or spectacles and 1,577 were surgically operated. The majority of the outputs were from AAU/Menelik Hospital but service provision in Gondar was relatively advanced since the center is equipped well and has essential staff members. The pediatric eye care team includes a pediatric ophthalmologist, pediatric oriented optometrist, nurse, counselor and biomed technicians who were trained through fellowship.

Cornea Blindness:

Conditions affecting the cornea are the third largest cause of blindness and low vision in Ethiopia, causing 11.3% of blindness. The epidemiology of corneal blindness is complicated and encompasses a wide variety of causes including infectious and inflammatory diseases, trauma, dystrophies, degenerations and complications of cataract surgery that cause corneal scarring, which ultimately lead to functional blindness. Blindness is mainly the result of corneal scarring and vascularization. In addition, ocular trauma and corneal ulceration are significant causes of corneal blindness but are often underreported. Causes of childhood blindness include xerophthalmia, measles infection, ophthalmia neonatorum, and less frequently seen ocular diseases such as herpes simplex virus infections. Traditional eye medicines have also been implicated as a major risk factor for corneal ulceration. Because of the difficulty of treating corneal blindness once it has occurred, public health prevention programs are the most cost-effective means of decreasing the burden of corneal blindness. Establishment of the eye bank of Ethiopia has been a tremendous support for treatment of corneal blindness using corneal transplantation.

4. SWOT Analysis

STRENGTHS	WEAKNESSES/LIMITATIONS
• Favourable health policy with emphasis on decentralized and democratized approach. • FMOH Minister's initiative: Clearing the backlog of blinding cataract, the Fast Track Initiative for TT backlog • Roll out of Health Extension Program and inclusion of hygiene and sanitation/health education in the HEP package. • Implementation of HDA approach to empower communities for their own health • Training and deployment of mid-level eye health professions such as cataract surgeons, optometrists and ophthalmic nurses • HRD strategic plan in place. • Fast expansion of training of optometrists • Rapid expansion of public health facilities • Existence of National Committee for the Prevention of Blindness (NCPB) and National Taskforce for Trachoma Control (NTTC) • Inclusion of Eye Health within the HSTP • Existence of Standardized National Guidelines, Manuals and IEC materials for prevention of blindness • Inclusion of main drugs for eye care in the National Essential Drugs List • Health care financing in place (improved revenue collection and utilization at facility level) • Strong partnership and good working relationship among stakeholders in the	• Shortage of budget for instruments/supplies for eye care • Lack of units to coordinate Prevention of Blindness in most Regions • Shortage of trained eye care workers and lack of career path • Inadequate advocacy for PBL • Delay in scale up of SAFE implementation in highly affected Regions of SNNPR, and Ethiopian Somali • Inadequate supportive supervision to eye care workers at all levels • Weak program monitoring and evaluation system at all levels • Incomplete & poor quality of data on eye care and insufficient inclusion in the HMIS • Inadequate drugs and spectacles for eye care • Shortage & high turnover of qualified staff at program management and patient care levels • Lack of refresher training/continued medical education courses for eye care workers • Lack of school eye health programs • Inefficient Quality Assurance (QA) practice at all levels (implementation of available guidelines, manuals, reports, feedbacks) • Inadequate information communication technologies (computers, internet, fax, telephone...) at eye care units and program management levels • Inadequate operational research and lack of utilization of research findings for better care • Inadequate involvement of the private sector in prevention of blindness • Inadequate rehabilitation of people with blindness • High staff turnover & shortage of skilled eye care workers

prevention and control of blindness and visual impairment • Reorganization of the FMOH and establishment of the NCD unit and inclusion of eye health within it	• Poor coordination among different stakeholders both governmental and non-governmental
OPPORTUNITES	**THREATS**
• Health sector reform • Expansion of health and health related training institutions • Global Initiative VISION 2020: The Right to Sight and GET2020, promoting Global PBL Network and Partnership • Increasing number of partners involved in eye care • Rapid expansion of private health sector • Availability of new improved technologies for the diagnosis and treatment of eye disorders • Increasing number of media for mass information (Radio, TV, printed materials, etc.)	• Global economic instability • Resource limitation • Poverty • High population growth • High level of illiteracy • Inadequate coordination in utilization of means of transportation for integrated supportive supervision. • Poor environmental health and sanitation • Lack of integration between eye health care and general health system • lack of prioritization of eye care services in the health system • Parallel reporting system for eye health care activities

5. Rationale of this Strategic Plan

n Ethiopia eye care programs have not received the level of attention they deserve at all levels of the health system mean hile the prevalence of blindness and visual impairment in Ethiopia is among the highest in the Sub Saharan Rfrica. Visual impairment has serious socioeconomic conse uences particularly in a developing and resource poor country such as Ethiopia. Blind and visually impaired people endure e treme poverty and e perience great hardships and are often reliant on their families and communities to complete simple daily tas s. hen blindness occurs at an early age the number of blind years is much longer resulting in a hardship that lasts for longer span of life. e patients ith eye problems can afford to travel to urban centers because of both direct and indirect costs of transportation food and lodging. Since blindness has direct lin ith poverty progress in the economy ould contribute directly and indirectly to ards achieving significant reduction in the burden of blindness. ost importantly reducing the level of blindness ould contribute to the alleviation of poverty at household community and country level.

□is estimated that loss of productivity due to blindness and visual impairment globally is over US$70.9 billion annually in 2010 and ould rise to US$109.5 annually in 2020 if Vision 2020 initiative is not implemented. Ethiopia ith its high level of blindness and visual impairment □ignificantly contributes to this negative economic picture. Hence it is essential that blindness and visual impairment issues in Ethiopia be □gently and vigorously addressed in order to realize the country's SDG objective of reducing poverty. Unsatisfactory implementation of previous eye health strategic plans insufficient human resource and inade uate infrastructure and e uipment for eye health are among the limiting factors for eliminating avoidable blindness in the country. The Government of Ethiopia has recognized blindness as one of the major health problems of the country and has done its best in the past fe years. To address this situation the Ethiopian government launched the V S ON 2020 initiative in September 2002 and a declaration of support for V S ON 2020 as signed by the President of Ethiopia. ith support from this commitment the OH has developed four National ive Year Eye Strategic Plans in line ith V2020 activities. These tas □are coordinated through the national committee for the prevention of blindness (NCPB) chaired by OH and membership of the committee includes all relevant sta eholders. Currently the majority of Eye health diseases e cept Trachoma are line managed under NCD team ith focal person; hile Trachoma is coordinated under the NTD unit both ithin the Disease Prevention and Control Directorate.

The OH has prioritized eye health in the NCD section of the HSTP. Hence cataract refractive errors glaucoma childhood blindness corneal opacities and diabetic retinopathy (including other retinal diseases) are identified as focus areas for support. Childhood blindness is considered in each of the five diseases (Cataract Refractive Error Glaucoma Corneal Diseases and Retinal Diseases) by giving due emphasis as part of comprehensive eye health service delivery. This Strategic Plan is the Strategic Operational Plan (SOP) to e ecute the eye health component of HSTP. The overarching goal of this is to significantly contribute to the reduction of blindness visual impairment and trachoma to levels belo public health significance by 2020. n order to realize this goal the Strategic Plan ill focus on:

a) Reduction of Backlog of Cataract Blindness: R□cataract accounts for 50% of blindness in Ethiopia significant reduction of the bac log can be met by improving access to cataract □ □gical services. This can happen by establishing ne eye care units (SECUs) ithin strategically selected hospitals and health centres increasing the uality of e isting secondary and tertiary eye care units and increasing the productivity of professionals.

b) Implementation of full SAFE strategy: The full SR E strateg□ ill be significantly e panded in trachoma endemic areas of the country ith due attention given to the uality as ell as uantity of the services.

c) Addressing Refractive Errors: The e pansion of refractive error services including access for lo cost eyeglasses to students as part of school eye health and the public at large.

d) Addressing other important eye diseases: ncrease case detection referral and treatment of glaucoma corneal opacities childhood eye problems and diabetic retinopathy through targeted coordination bet een general medical clinics specialty clinics and eye care centres. This ill be done by creating a areness and sensitization opportunities for health professionals and the general public. R viable system for lin age ill also be established.

e) Enhancing knowledge and practices on eye diseases prevention and eye care services utilization: n the Ethiopian conte access to services does not guarantee utilization. Therefore a ell designed EC/BCC campaign ill be implemented to inform and motivate the general public to utilize the eye care services. Rppropriate community mobilization ill be used to develop positive health behaviours for the prevention and control of eye diseases through the principle of Health E tension Program enhanced by the Health Development Rrmy.

f) Research, Monitoring and evaluation: The progress and success of the planned eye care services ill be verified through regular trac ing and measurement of changes. R focus ill also be placed on provision of supportive supervision. Outcome/service indicators from the H S ill be analysed as appropriate.

In this Strategic Plan, the priority focus areas of interventions to support services delivery and diseases control of eye health are: Eye Health Human Resources Development, Infrastructure development (Physical facilities and Equipment) and supply chain management.

Cha ter T o Vision, Mission, Goal and objectives of the Strategic Plan

Vision: To see healthy and productive Ethiopians free from avoidable blindness and visual impairment.

Mission: To reduce the prevalence of blindness and visual impairment throu**g**h implementation of promotive preventive curative and rehabilitative eye health services.

Goal: To provide accessible e uitable inclusive affordable comprehensive inte**g**rated and sustainable uality eye health care services and empo er the Ethiopian community to boost service utilization and adopt healthy eye care practices to reduce visual impairment by 2020

Strategic Objective 1 Emp e in and en a in the c mmunity t c eate sense f ne ship inc ease se vice utili ati n and ad pt healthy eye ca e p actices C eatin c mmunity ne ship in eye health

Co w r o r r r z o

Co g g r r ro

Co o r

Strategic Objective 2 vidin inte ated uality eye health se vice at all levels

2.1 Health facilities have sufficient functi nal medical e uipment and supplies

2.2 Health facilities have en u h space and t ained eye ca e pe s nnel

2.3 Systems in place f p eventive maintenance f medical e uipment

2.4 Quality assu ance f cata act su ical utc me in place

2.5 Imp ved accessibility f eye health ca e se vices

Strategic Objective 3 St en thenin Human Res u ces f eye health

3.1 Inc ease pe s nnel t p pulati n ati n f eye ca e and allied phthalmic pe s nnel

3.2 Inclusi n f eye health in HEW packa e and t ain HEWs

3.3 Inclusi n f eye health in teache s' EC manual and t ain teache s

3.4 Review and update cu iculum f phthalmic nu se, cata act su e n, ptical technicians and eye health mana e s

3.5 evelop ophthalmolo y sub specialty curriculum and initiate trainin in country

Strategic .Objective 4 **I**mprovin infrastructure and lo istics for eye health

4.1 **I**ncrease number of eye care units

4.2 Sustainable medical supplies for eye health

4.3 lacement of functional medical e uipment at all eye health facilities.

4.4 Establish national optical maintenance or shop and trainin center

Strategic bjective 5 eneratin evidence and improvin monitorin and evaluation for informed decision ma in

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Strategic Objective 6

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6 C **T**

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Strategic Objective 7 **I**

.1 **A** a eness aisin f leade s and decisi n ma e s ab ut eye health

.2 **I**nte ati n f eye health a enda inte ated in ene al health

. ducti n f p licy di ectives and uidelines n eye health

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1. Cataract

Cata act is the ma cause f blindness in Ethi pia s inte venti ns add essin cata acts will have a la e impact n p evalence f blindness. The e is a cu ent backl f nea ly tw milli n visually impai ed f m cata act h weve , the numbe f cata act su e ies c nducted in Ethi pia in 2012 al ne did n t e ceed 50,000. As a esult, the Cata act Su ical Rate CSR and the Cata act Su ical C ve a e CSC we e nly 5 milli n yea and 3 espectively.

In de t meet the WHO ec mmended ati f 1 phthalm l ist pe 250,000 p pulati ns and the CSR f 2000 milli n yea by the yea 2020, the numbe f phthalm l ists cata act su e ns t ained t c nduct cata act su e y sh uld inc ease by app imately 3 Additi nally, the cu ent p ductivity f each CS phthalm l ists n n d ct CS , which is n w 300 pe yea su e n, will need t inc ease t 1000 yea su e n by the yea 2020.

Several factors contributin for the lo number of cataract sur eries include:

- lo human resource
- lac of sur ical supplies
- limited availability/functionality of sur ical instruments and e uipment
- lac of ade uate support from health system
- lo patient flo
- inade uate commitment of eye health professionals
- lac of effective and efficient use of available resources

Additionally the number of SECU/TECU are very fe (7) and not evenly distributed across the country otivation of the eye care or ers as also found to be lo due to remuneration

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Table 6. Eye health service modalities: Static, Outreach and Campaign

Points	Static	Outreach	Campaign
Ease of programmatic monitoring	+++	+	-
Proper Patient follow up	+++	+	-
Patient reachability	+	++	++
Program Sustainability	+++	+	-
Data quality and availability	+++	+	-

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Strategic intervention actions:

The b ective f the Ethi pian eye health nati nal st ate y is t p vide cata act su e ies at a level that uld clea the bac l f cata act in the c unt y. cc din ly cata act su e ies f 120 000 m e pe yea a e e pected t be c nducted t achieve a minimum f 600 000 su e ies in the ne t five yea s. cc din ly the f ll in inte venti ns ill be implemented.

evitali e and p m te cata act su e ies at eye health units. E pand and inc ease numbe f SEC and EC facilities.

mplement ut each and bile Cata act su ical se vices

C nduct nati n ide Cata act su ical campai ns

En a e and m tivate the p ivate sect

nc ease cata act su ical p ductivity f su e ns

C eate cata act su ical se vices demand ithin the c mmunity

ent in and Supp tive supe visi n f m TEC t SEC and EC

Table 7. Summary of Cataract strategic implementation actions and activities

Strategic Implementation Action for Cataract	Activities	Measurement	Ultimate goals
Revitalize and promote cataract surgeries at eye health units	Eye care units shall be revitalized and promoted to deliver quality cataract services. Facilities shall have sustainable supply of eye care supplies and equipment. Center will be staffed adequately.	Number of eye units fully functional and delivering cataract surgeries	**740,000 Cataract backlog cleared** **CSR reached 2000 Surgeons productivity increased to 1,000 Per year per surgeon**
Expand and increase number of SECU and PECU	Establish SECUs and PECU in all regions with proportional distribution and number. PECU will serve as an outreach and campaign satellite centers, as well as to serve for screening and referral network.	Number of new SECU and PECU established and fully functional	
Implement Outreach and Mobile Cataract surgical services	Outreach and mobile cataract surgery services shall be organized and conducted in regular bases from that of the base/centers.	Number of outreach and Mobile services	
Conduct nationwide cataract surgical campaigns	Conduct nationwide cataract campaigns both in urban and rural settings until the backlog of cataract in the nation cleared.	Number of Cataract Campaigns carried out	
Engage and motivate the private sector	Cooperation, coordination and empowerment of the private sectors. Reporting of services provided by the private sector must be coordinated and harmonized with the MOH	Number of Private centers reporting CS to the MOH	
Increase cataract surgical productivity of the surgeons	Provide supplies and support staff. FMOH in collaboration with partners will work to ensure all essential inputs available in the country and the health facilities	Number of surgeons who increased productivity	
Create cataract surgical services demand among the community	Communities should be informed and aware regarding service for cataract and its benefits.	Number of public awareness activities	
Mentoring and supportive supervision from TECU to SECU to PECU	TECUs shall provide periodic and sustainable mentoring and supportive supervisions to SECUs and PECUs	Number of supportive supervision and mentoring activities	

2. Refractive errors

Refractive error is second leading cause of blindness and visual impairment in Ethiopia. According to the 2006 survey, uncorrected refractive error (URE) prevalence of blindness is 7.8% and for low vision 33.3% in Ethiopia. Based on this, over one million people are suffering with URE, excluding presbyopia which occurs in people over the age of 40 years. If presbyopia is included the number of people affected by URE reached three to four million, having a huge impact on economic productivity of adults and learning capabilities of young children. Tackling cataract and URE alone addresses 60% of visual impairment Ethiopia.

As per the 2013 FMOH report URE data was only available from two regions: 4,788 prescriptions were issued and of these 2,390 were from SNNPR. In 2013 data from ORBIS, 4,827 spectacles were distributed to underserved populations. Data on types of refractive errors and services availability is not available using the current reporting structure. The HMIS does allow the user to list refractive errors as a separately. In order to aid in planning, it is essential the list of refractive errors is included in the HMIS currently being developed.

Focus on the improvement of infrastructure and consumables required for refractive errors are essential. Optical workshop strengthening, in terms of well-equipped/trained man power, is the most important. There should be a quality control method for regulation of consumables like eye glasses. Affordability of glasses can be increased using methods like 'One dollar glass' where the glasses are imported and frames are made with cheap materials in the country though aesthetic value is an issue. Roadside and over the counter selling of glasses without prescription should be strictly avoided. Additionally, behavioral and cultural barriers surrounding the uptake of spectacles need to be addressed.

Despite the fact that the number of optometrists is increasing significantly, most of these individuals are not practicing because of inadequate number of infrastructure. The FMOH, in collaboration with partners, needs to work on the establishment and equipment of primary eye care units in existing health institutions. Screening of children at primary school level using

Strategic Intervention actions for URE

C

Table 8. Summary of refractive error strategic action and activities

Strategic implementations actions for URE	Activities	Measurement	Ultimate goals
Establish or strengthen refractive services within existing health facilities	All TECU, SECUs and PECUs strengthened to provide comprehensive refractive services. The Ministry, in collaboration with implementing partners, will ensure optometrists are working and equipment and inputs are available in adequate quantity and quality.	Number of eye units providing refractive services	All eye units deliver refractive services Percentage of schools delivering eye health services All outreach for Cataract and Trachoma incorporate refractive services 500,000 people screened for URE 275,000 people received eye glasses
Implement school eye health and refractive services	School teachers trained to deliver eye health activities including screening for URE, improving awareness and referring children with to eye units.	Number of schools delivering eye health including URE	
Promote Outreach/Campaign to include refractive services	Integrate refractive services in all outreach and campaign activities of cataract and trachoma interventions	Number of outreaches incorporating refractive services	
Demand creation for refractive services	Public awareness through intensive and sustainable awareness creation using print and electronic media, HEW and the HDA and subsequently seconded by quality refractive services will build up communities' confidence in overall eye care services	Numbers of public awareness activities	

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f stu ents eceive eye lasses

f a ults eceive eye lasses

3. Glaucoma

Glauc ma is ne f t e lea in causes f i eve sible blin ness in evalence f blin ness in ibute t lauc ma as vey is f t e le an n t n tice until it causes t tal blin ness. T e e a e n n t e level f se vice visi n in

T e ma c allen e f eventi n blin ness f m lauc ma is late esentati n. S me f t e measu es t at s ul be ta en a e m ti n n lauc ma inte ati n f lauc ma in ainin cu iculum t ainin f mi level eye e fessi nals n t e ea ly n an n sis f lauc ma an utine sc eenin f atients ab ve at eye ca e cente s.

The treatment modalities for glaucoma are medical laser and surgery. Ho ever the treatment modalities are not idely available as a result of shortage e uipment and e pertise.

Strategic Intervention actions:

Screening for glaucoma by mid level eye professionals and general ophthalmologists

Glaucoma treatment at SECU and TECU

Perform period public a areness activities

Table 9. Summary of Glaucoma strategic interventional actions

Strategic interventional actions for Glaucoma	Activities	Measurements	Ultimate goals
Screening for glaucoma by mid-level and general ophthalmologists	Eye health professionals will be trained and updated on glaucoma detection	Number of people screened for glaucoma	**150,000 diagnosed and medically treated 15,000 people with glaucoma surgically treated Number of SECU delivering glaucoma services Increased % of glaucoma awareness**
Glaucoma treatment in all SECU and TECU	All SECU equipped and supplied for glaucoma	Number of SECU equipped with glaucoma diagnostic equipment and medicines	
Perform period public awareness activities	FMOH and professional association conduct period awareness activities with all media outlets	Number of public awareness activities	

In icators for glaucoma inventions are:

Total numbe r of glaucoma on follow u an me ical treatment

r of newly gnose cases

Total numbe r of surgeries

r of laser treatment services

4. iabetic Retinopathy and other retinal diseases

Diabetic Blindness an emer in disease in Ethiopia because of increased life e pectancy and life style chan e accounts for 7% of blindness in the orld The prevalence of diabetes in Ethiopia from pro y data is increasin and estimated to be **4** % in 20 79 year olds Only a limited number of community based studies estimatin prevalence of diabetic retinopathy (DR) and diabetic related blindness Hospital based studies in eneli Hospital and imma University estimates prevalence of DR to be bet een 0 0% (all sta es) amon diabetic patients reportin for eye e ams compared to 17 50% lobally Retina detachments and a e related macular de eneration are the other retinal diseases contributin to blindness

Strategic Intervention actions:

- areness creation on DR and e related acular De eneration (D)
- Deliver treatment for DR D and retinal detachment

Table 10. Summary of strategic interventional action for Retinal diseases

Strategic interventional actions for Retina Diseases	Activities	Measurements	Ultimate goals
Create awareness on DR and AMD	Conduct awareness activities for community and health professionals for caring for diabetic patients through all media outlets	Number of awareness activities	**Awareness increased among community and health professionals**
Deliver retinal services both at SECU and TECU	Deliver retinal screening in all SECU and task shift Laser services for general ophthalmologists	Number of SECU having retinal services and number of ophthalmologists performing Laser	**21,350 people benefited from Retinal services**

ndicators for measurin activities/interventions on diabetic retinopathy and other retinal diseases are

- Number of Health facilities screenin DR
- Number of People screened for DR
- Number of People aser treatment for DR
- Number of people sur ically treated for DR
- Number of people treated ith anti Vascular Endothelial Gro th actor (VEG) and steroid
- Number of people dia nosed ith RD
- Number of people sur ically treated for RD
- Number of people dia nosed ith D
- Number of people treated for D

5. Childhood Blindness:

he p evalence f childh d blindness as a cause f blindness is estimated at .1 as pe 2 su vey. H weve the numbe f blind yea s is ve y hi h and its impact is c mpa able t cata act blindness in adult with 5 p evalence. nf tunately, few ani ati ns a e w kin in this a ea. S me f the c mm n causes f childh d blindness a e c n enital cata act, C n enital lauc ma, Ref active e s, St abismus, mbly pia, Retin blast ma and itamin deficiency.

he e a e nly th ee EC delive in childh d blindness and l w visi n CH se vices in the wh le c unt y with elatively fai uality. he se vice p visi n in the th ee cente s , nda and Hawassa in 2 13 sh ws 1 ,2 child en eceived sc eenin e aminati n se vices includin sch ls sc eenin .

Results sh w that , 1child en we e t eated eithe with medicine spectacles and 1,5 child en we e su ically pe ated. he ma ity f the utputs we e f m enelik but se vices p visi n in nda was elatively advanced since the cente is e uipped well and essential staffs pediat ic eye ca e team which includes the pediat ic phthalm l ist, pediat ic iented pt met ist, nu se, c unsel and pediat ic anesthetist a e t ained th u h fell wship.

Emphasis sh uld be iven n inc easin the numbe f pediat ic anesthetists. dditi nally, the att iti n ate f pediat ic phthalm l ists is hi h and few a e p acticin . he ef e, it is ec mmended t ive in se vice t ainin t phthalm l ists t add ess child eye health.

E uippin and t ainin pediat icians and the healthca e p fessi nals n child eye ca e will eatly c nt ibute in dec easin the ma nitude f the issue. w visi n cente s sh uld be pened t p m te child eye heath.

I v d d b d

- Establish st en then CH se vices at EC
- elive s me c mp nent f CH se vices at SEC
- Establish efe al netw k f m ima y t e tia y level
- Inc ease awa eness in the c mmunity and p fessi nals

Table 11: Summery of childhood blindness strategic actions

Strategic actions for CHBLV services	Activities	Measurement	Ultimate goals
Establish or strengthen CHBLV services at TECU	Establish/s`trengthen comprehensive CHBLV services in all TECU with appropriate equipment, supplies and a full team trained on CHBLV	Number of TECU delivering comprehensive CHBLV services	**All TECU deliver CHBLV services 12,500 children surgically treated All ophthalmologists at SECU deliver some component of CHBLV services** **Referral network established** **Awareness on CHBLV increased**
Deliver some component of CHBL services at SECU	All SECU with ophthalmologists deliver CHBLV screening services and treat some of the cases which are in line with their skills	Number of SECU delivering component of child eye health services	
Establish referral network from primary to tertiary level	Train health professionals, teachers and parents on child eye health and establish systems and network for referral from primary to tertiary	Number of people trained and children referred	
Increase awareness in the community and professionals	Conduct awareness activities on CHBLV through all media outlets	Number of awareness activities	

. Corneal opacities

Diseases affectin the c nea a e ne f the maj cause f blindness and l visi n in Ethi pia and thi d nly t cata act and ef active e . The epidemi l y f c neal blindness is c mplicated and enc mpasses a ide va iety f causes includin infecti us and inflammat y diseases t auma dyst phies de ene ati ns and c mplicati ns f cata act su e y that cause c neal sca in hich ultimately lead t functi nal blindness. While cata act is esp nsible f nea ly 50% f the t tal blind pe ple in Ethi pia the next maj cause is t ach ma hich blinds 11.3% mainly as a esult f c neal sca in and vascula i ati n. Ocula t auma and c neal ulce ati n a e si nificant causes f c neal blindness that a e ften unde ep ted. Causes f childh d blindness include xe phthalmia measles infecti n; phthalmia ne nat um and less f equently seen cula diseases such as he pes simplex vi us infecti ns. T aditi nal eye medicines have als been implicated as a maj isk fact f c neal ulce ati n. Because f the difficulty f t eatin c neal blindness nce it has ccu ed public health p eventi n p ams a e the m st c st effective means f dec easin the bu den f c neal blindness.

Establishment f the eye bank f Ethi pia has been a t emend us supp t the t eatment f c neal blindness usin c neal t ansplantati n.

Strategic Intervention actions for corneal blindness

Supp t and st en then Eye Bank f Ethi pia se vices

St en then TECU t delive c nea t ansplantati n se vices

Inc ease a a eness f c mmunity n c neal blindness p eventi n and p m ti n

Table 12. Summary o strategic interventional actions or Cornea blindness

Strategic actions for Cornea blindness	Activities	Measurement	Ultimate goals
Support and strengthen Eye Bank of Ethiopia services	Eye Bank of Ethiopia will be supported through legislation and financial support by FMOH and all stakeholders	Transplantation Legislation in place and amount of money EBE generated and supported	**Transplantation services available in all centers with trained cornea specialist Cornea transplantation coverage increased 2,000 cornea transplantation and 3,000 other cornea surgeries performed**
Strengthen TECU and to deliver Cornea transplantation services	All TECU and some SECU equipped and staffed with transplantation services	Number of SECU/TECU delivering cornea transplantation services	
Increase awareness of community on corneal blindness prevention and promotion	Community awareness increased through all media outlets on promotion of vaccination and Vitamin A supplement	Number of awareness activities conducted	

Indicators for corneal opacities' activities/interventions

Number of corneal surgeons

Number of centers performing corneal transplantation

Number of corneal tissue harvested

Number of corneal tissues transplanted

7. T m

Trachoma is the leading cause of preventable blindness worldwide and is targeted for elimination by the WHO by the year 2020. Trachoma is not only a blinding scourge but an infectious disease causing serious human suffering and indignation. This, in turn, affects the productivity and quality of life of the entire family. Trachoma is a disease of poverty and underdevelopment.

Over the past couple of years, one major step forward for the trachoma control program in Ethiopia is the implementation of the Global Trachoma Mapping Project (GTMP), which was funded by the UK government through its bilateral agency, DFID. This initiative enabled the MOH to carry out trachoma surveys in all unmapped woredas in the country and has provided baseline data for all woredas. This has allowed the program to conduct evidence-based comprehensive planning and progress monitoring. Based on this survey, 657 rural districts are known to be endemic and populations of more than 75 million are at risk of acquiring trachoma in 2015.

The prevalence of active trachoma ranged from 0.2% to73.4% and that of trachomatous trichiasis ranged from 0.2% to 12% with an average prevalence of 4%. The burden of the disease is far from the elimination target of prevalence of active trachoma in children 1-9 years old below 5% and prevalence of trachomatous trichiasis below 2/ 1,000 in people above 15 years old. This puts Ethiopia as top in the list of highly affected countries followed by Nigeria and Malawi by the number of people at risk of trachoma and by India and Nigeria by the number of estimated number of people affected by trichiasis[15].

Following the mapping of trachoma, the FMOH in collaboration with partners has re-examined the Ultimate Intervention Goal (UIG) to eliminate trachoma and developed national and regional Trachoma Action Plan to scale up SAFE intervention.

The UIG for AFE intervention in 657 woredas with a TF prevalence ≥5% among children 1-9 years of age, an estimated population of more than 75 million require one or more years of annual mass drug administration (A), facial cleanliness (F) and environmental improvement (E) interventions.

The UIG for surgery in the 665 woredas with a TT prevalence of ≥2 per 1000 among people above 15 years old is estimated to be 691,037 people who require surgery (S) to correct eyelid alleviate pain, suffering and ultimately prevent blindness.

FMOH in collaboration with partners has scaled up SAFE intervention to reach the national as well global target of elimination of blinding trachoma by the year 2020. So far this huge SAFE intervention scale up program has reached 82% (541 districts) geographic coverage and more than 51 million people received MDA during 2016. F and E interventions are also implemented as part of the national WASH intervention in all districts and specifically trachoma targeted F and E behavior change communications in the 541 districts. Encouraging achievement has been witnessed by implementing SAFE intervention through impact assessment surveys conducted in districts completing the recommended rounds of annual MDA. From an impact assessment surveys conducted in 159 districts during 2015 and 2016, 40 districts were able to discontinue annual MDA after achieving the minimum threshold of TF prevalence of <5%. Moreover TF prevalence has been reduced from the baseline in 82 districts. However in 27 districts TF prevalence has increased from the baseline. The FMOH has strengthened the commitment and mobilize the necessary resources to reach 100% geographic coverage in the coming years, to cover 110 districts has not been started SAFE intervention in 2016.

Regarding the Surgery component of the SAFE intervention; Trichiasis surgery is the corner stone for the population already affected with scaring of the conjunctiva and in turned eyelashes. Cognizant of the pressing need the Ministry of Health renewed commitment to reach the Ultimate Intervention Goal for surgery by launching Fast Track initiative to clear the TT backlog in the country by June 2017. FMOH in collaboration with international and local development partners has developed a plan to boost the current efforts. A total of 44 million Birr was committed from the ministry of health for the training of sufficient number of TT surgeons. Similarly, donors and development partners pledged to match the challenge grant to avail TT kits, consumables and cover operational cost for undertaking TT surgeries.

This is an encouraging undertaking that will address the challenge of blinding trachoma by eliminating the huge national TT backlog in the coming few years.

The TT service in the country operated more than 1,000,000 individuals' with TT from 2003-2016. More than a third of the national output of surgery was done in two years, 2015 & 2016, after the launch of the Fast Track Initiative, whereas two third of the surgery took 11 years from 2003-2014.

Fast Track TT initiative has been instrumental to boost the momentum obtained by the national scale up of SAFE intervention. Moreover the fast track TT initiative has shown marked improvement in commitment and ownership of the program by the health system and hence TT surgery intervention is now considered as a routine activity in the health system rather than an activity of a partner.

Since the launch of Fast Track TT initiative in February 2015 until 2016, a total of 887 IECWS were trained and deployed, 656 Health centers provide TT surgery in static and outreach service and a total of 301,279 TT cases had received TT surgery, which accounts 43% of the total Ultimate Intervention Goal for surgery. The fast track initiative has been short of achieving the target as a result still an estimated 391,758 TT cases needs urgent surgery services to reach the Ultimate Intervention Goal (UIG) for surgery. The achievement is remarkable even at the Global level. WHO GET 2020 in its 2017 meeting reported close to 71% of the 2016 global output of trichiasis surgery was performed in Ethiopia[16].

Blindness from diabetic retinopathy is an emerging factor for loss of productivity and rising health costs. Reportedly, almost 50% of diagnosed diabetics in Nairobi and almost 20% in rural Central Kenya, had diabetic retinopathy, with the majority never having undergone any eye examinations before.

The main contributing factor for the still huge backlog is the marked difference in leadership and commitment of health managers and decision makers across regions, zones and woredas.

The figure below showed national and regional level TT surgical output in 2015 and 2016.

Table 13. National and Regional TT surgical output 2015 & 2016

Region	UIG at the end of	2015 Surgery	2016 Surgery	Total surgery	Remaining UIG	% remaining
Afar	1,707				1,707	100%
Amhara	336,314	76,953	111,687	188,640	147,674	44%
BG	2,586				2,586	100%
Gambella	4,834				4,834	100%
Oromia	171,094	12,838	34,176	47,014	124,080	73%
SNNP	124,454	21,001	26,864	47,865	76,589	62%
Somali	15,447				15,447	100%
Tigray	36,601	6,295	11,465	17,760	18,841	51%
Total	**693,037**	**117,087**	**184,192**	**301,279**	**391,758**	**57%**

A ro o , g r r or o r ro r g o r o r g r or o o r ro zo w ro wor o x w r g o T o r o o g k og r o r H r or o k o ro g r or g r g o , zo wor o rg T jor o r g or o x o goo r o o k r ro r , r g r r or r w o or g, r o o HEWS

[16] LY DEM L C5L C D, 26, 30 J 201

TT o o w r r g org z g o r r , goo
or TT o z o r g o r r

C rr Tr o r o N g Tro D (NTD) r NTD T A o
NTD M r N o Tr o o o o g Tr o o ro
rogr o r

P r r Tr o A o P o or r or o D o
r o rogr NTD or, S rg (S) A o r (A) o o o SAFE
r g w rr o o o or o w o ro o
H , r o o N o S r g A o P T r o
r g w o N o Tr o A o P NTD M r P

Chapter Four: Strategic focus 2: Human Resources for Eye

C urrent situation an ive-year Eye Health Human Resources Development plan

C rr r r r (AAU, Go r, J , H w S P ' M Co g) o g work r r g r T r g : o o og , o o r , r rg o o r work r A o , o o o r r g (ALERT, Y rg , J j g , D , N k , Go r Q) I 20 5 (2007 E), r r rox 0 o o og , 2 0 o o r , 58 r rg o 50 o r (o D o B S) T o g r g r o o r , 690 IECW , 20 g r 20 o / r r o T r o o ow HEW/HDA r r r ro r

T o r o z o o r g o o w r g o or o r g g: o - r g r (AAU), wo o -gr o o og r (H w r M Co g) gr g o - o r r g r o BS g r w o r r g r (Oro /A r /AA r g o) Go r U r rr r r g o o w E M g r O o r T / r r g P o No -Do or C r S rg o (NDCS) r g rogr r rg r rogr w r w o or o r ow ow r r

A r r g o HEW/HDA r w ro o r w or or o o w r g o HEW r g

able 1 . Eye Health raining centers 2 1 -2 2 G.C .

Eye Health Profession	Current	New	Total
Ophthalmologist training universities	3	3	6 (Hawass and SPMMC already started)
Subspecialty level ophthalmologist training	0	1	1(AAU-CHS school of medicine at Menelik II
Optometry B.Sc, M.Sc and Phd. training centers	2	0	Hospital)
Ophthalmic nurse(Bsc) level	0	8	8 (Gondar, Nekemet, Dessie already started)
Health manager	0	1	1 (+2 abroad)
Optical technician	0	1	1

The numbe type and les and esp nsibilities f diffe ent eye health eye p fessi nals and allied eye health ke s f the c min st ate ic pe ati nal pe i d a e utlined in the next secti n.

. Cpmmunity level eye health ca e p ke s (HEW HDA and Teache s)

Health extensi n ke s health devel pment a mies and p ima y sch l teache s ill play a pa am unt le in inc easin access and utili ati n f eye health se vices. Acc din ly they ill have the f ll in les:

Health p m ti n and a a eness c eati n

Sc eenin

C mmunity m bili ati n

F ll up and efe als

The HEWs ill als be esp nsible f t ainin HDAs in thei catchment a eas. The pe i d f HEW and teache s t ainin n eye health ill be 3 days. Additi nally eye health t ainin ill be inc p ated in the HEW t ainin cu iculum.

Table 15. Staffs for community level workers number and detailed plan in 5 years

Type of professionals	Current	2016	2017	2018	2019	2020	Total
Urban HEW			3,000			3,000	**3000**
Rural HEW				33,000			**33,000**
Teachers		5,000	5,000	10,000	20,000	20,000	**60,000**
Total		**20,000**	**20,000**	**34,000**	**50,000**	**56,000**	**180,000**

NB: Cu ent pf HEW 3*6* and p jected tp each 4
Cu ent P ima y sch ls a e nea ly 3 and t ainin *2* teache s f m each

. Human es u ma y Facility evel (PECU)

P ima y Eye Ca e facility Units (PECU) a e cu ently un by IECWs h have c mpleted a 4 6 eek t ainin . H eve it is imp tant t n te the c ntent and du ati n f t ainin e e n t standa d n e e they c mp ehensive en u h t add ess m st eye health p blems. Hence the t ainin ill be standa di ed in this st ate ic pe i d. Additi nally Ophthalmic Nu ses can be assi ned as f ntline eye health ke s. The les f IECW PECU facility level se vices include: eye health p m ti n and a a eness c eati n; sc eenin f maj eye health includin Cata act RE Glauc ma and T ach ma; medical t eatment f simple eye infecti ns includin T ach ma; TT su e ies and the min lid su e ies f ll up and efe als; and

T aining st ategies include

nc p ati n f eye health in the gene al nu sing t aining f C

h t te m standa di ed 4 week t aining f C s

tanda di ati n f the u . c phthalmic nu sing t aining.

Table 16. Staffs for PECU number and need for next year SOP

Type of Professional	Current	2016 G.C	2017	2018	2019	2020	Total
IECW	690	500	500	500	500	410	**3,600**
Ophthalmic Nurses	150	10	10	130	250	250	**800**
Total	**840**	**510**	**510**	**580**	**700**	**610**	**4,400**

NB: Ophthalmic Nurses is for all levels: PEC , SEC and TEC

3. Human es u da y and Te tia y eye facilities (SECU and TECU)

ec nda y level eye health p fessi nals include phthalm l gists, pt met ists, cata act su ge ns and the allied eye health p fessi nals. n this st ategic plan, an inc ease in cata act su ge n t ainings is p i iti ed due t a substantial gap f phthalm l gists b th in numbe and ge g aphic dist ibuti ns. The cata act su ge n t aining cu iculum will be evised and placement f cata act su ge ns needs t be p i iti ed at the p ima y and gene al h spitals, n t at te tia y level facilities.

t ategies f eye health devel pment f C and T C include

Cu iculum devel pment f new t aining

ell wship f sub specialty t aining

nf ast uctu e devel pment f AA C ch l f Medicine

a tne ship and supp t

AA C sch l f Medicine will initiate t aining at sub specialty level f phthalm l gists

nda pt met y depa tment initiate sub specialty t aining f pt met ists

nda unive sity will be supp ted f t aining ptical technicians and eye ealth manage s

Cente s f Cata act su ge ns t aining will be identified and supp ted

b e . m , b- ec e eye e w ke f ECU ECU

Type of Professionals	Current	2016 G.C	2017	2018	2019	2020	Total
Ophthalmologists	132	10	13	24	30	65	274
Cataract Surgeons	56	0	0	20	30	30	138
Eye Health Mangers	20	0	0	0	15	15	50
Optical Tech/Disp	40	0	20	20	20	20	120
Sub-Specialist							
A-Segment	9	0	1	2	4	4	20
Pediatric Ophth.	9	0	2	2	2	2	17
Glaucoma	4	0	0	2	3	3	12
Retina	7	1	2	2	2	2	16
Oculo-Plastics	2	0	1	1	2	2	8
NOP	0	0	0	1	2	2	5
Optometry Sub-specialists							
Low vision	0	0	1	1	1	2	5
Pediatric optometry	2	0	1	1	2	2	8
Orthoptist	0	0	0	1	2	2	5
Contact lens	0	0	0	1	2	2	5

I

. P ima y Eye Ca e Unit (PUCU)

Definition I

Place/Rooms -)

Product/E uipment/instrument (essential) for PE U

Professional I

Practice

. Secpnda y Eye Ca e Unit (SECU)

Definition:- Secondary eye care services refer to providin a mi of preventive curative and rehabilitative eye care interventions ith a reater focus on curative services as to brin about a si nificant reduction in blindness and ocular morbidity in the service area

Practice: Providing dia nostic and curative services for conditions such as: refractive errors cataract laucoma trachoma trauma lacrimal sur ery strabismus; dia nose and refer the follo in conditions to a tertiary eye hospital: complicated strabismus disorders of the retina vitreous and conditions in children re uirin advanced mana ement

Place/Rooms:- 1 e amination room 1 Refraction room 1 minor sur ery room 1 major sur ical room 1 store

Product

I

Professionals -

I

3. Te tia y Eye Ca e Unit (TECU)

Definition:- A g ;
w ; g g ; g .

Place/ Rooms:- va y dependin n the an e f se vices but at least as pe F HC C standa d f Specialty cente .

Professionals:- at least tw sub specialists and as pe F H C standa d f Specialty cente re ui ement

Product: E uipment, inst ument and supplies t be m dified usin the WHO and I

Practice: all cu ative and ehabilitative se vices as pe the available sub specialists and depa tments.

ll EC t have ne ptical w ksh p and 5 f SEC will have als ptical w ksh ps. ll EC s and SEC s have t ained bi med technicians en inee s and EC s may have a sepa ate phthalmic maintenance sh p.

F m the f u cu ent EC F, nda , Hawassa and Jimma , F is selected and supp ted t be cente f e cellence. he facility will delive sub specialty t ainin and se ves as the nati nal institutes f advanced efe als and eye health es u ce facility. h ee new EC will be established and St. aul's, Quhia and Ha a h spitals supp ted t be up aded f m thei cu ent SEC level t EC .

Table 18. Eye Health Infrastructure Development plan Ethiopia 2 1 -2 2 G.C

Physical Facilities	Current	2016	2017	2018	2019	2020	Total
Tertiary Eye Unit (TECU)	4	0	1	1	1	0	7
Secondary Eye Unit (SECU)	47	3	10	12	13	15	100
Primary Eye Unit (PECU)	579	21	500	500	1000	1000	3,600
Optical Workshop	10	5	5	10	15	15	60
Postgraduate training facilities	3	0	2	0	1		7
Mid-level Eye Health training facilities	5	1	1	1	1	1	10
Sub-Specialty training Center	0	0	0	0	1	0	1
Ophthalmic and related equipment maintenance and training center in the center of excellence	0	0	0	1	0	0	1

Chapter Si : Partnership

Blindness is a major health problem in Ethiopia and it requires coordinated action and partnership. Therefore, establishment of effective partnerships is essential to the success of the prevention of blindness program objectives.

In order for partnerships to function and be sustainable, they must be institutionalized and recognized by political and administrative bodies at various levels. Coordination of partnership is of paramount importance within various departments of Ministry of Health at all levels, as well as sectors outside of health including private sectors. The FMOH and the National Eye Health TWG (NCPB) will oversee partnership and collaboration to ensure effective, equitable, and quality services delivery to the community at large. The following are major partners involved in the implementation of blindness prevention and control activities:

With-in the FMoH:

NCD team

NTD team

PFSA

FMHACA

Human Resources Directorate

Clinical Services Directorate

ut-si the FMoH:

Government Sectors:

Ministry of Finance and Economic Development (MoFED):

Ministry of Education (MoE):

Communication media agencies

Academic and research institutions:

Science and Technology Ministry

Custom Authority

Private Sectors:

Private Eye Health and General Health care firms

Private Medical and Pharmaceutical importers and pharmacies

Private Biomedical workshops

Private Optical Business firms

G s:

National

Gerarbet Tehadeso Maekel (GTM)

Religious organizations Eye health facilities

Eye Bank of Ethiopia

Professional Associations (OSE, EOA, ECSA, EMA)

Ethiopian Diabetic Associations

Ethiopian Glaucoma Associations

Lions Club

Rotarians

International

Cheristian Blind Mission (CBM), The Fred Hollows Foundation (FHF), Help Age Int., Light for the World, Orbis Int, Vison Aid Overseas (VAO), Himalayan Cataract Project (HCP), International Trachoma Initiative (iTi), TCC, Menschen for Menschen, Vision Care, etc

Strategies for partnerships:

St en thenin adv cacy and l bby up

m tin public p ivate pa tne ship

Enc u a in pa tne ship f ums

C dinati n and supe visi n th u h F OH and the esp nsible b dies

St en thenin the Nati nal Eye Health W NC

m te inte ani ati nal elati nships c dinati n, c pe ati n & c llab ati n am n act s en a ed in eye health sect .

Chapte Seven: Resea ch Mpnitp in and Evaluatipn

A robust monitoring and evaluation (M&E) system that tracks and evaluates progress towards strategic objectives and informs strategic decision-making, is key to the goal of 'quality eye health services for all Ethiopians and rehabilitative services for those who are visually impaired.' The M&E system will routinely monitor and periodically evaluate results and implementation processes, with appropriate methods of data collection, data quality assessment, data management, data reporting as explained in the M&E section of the Health Sector Transformation Plan (HSTP), 2015/16 - 2019/20.

Performance monitoring and coordination activities for eye health service delivery will be carried out regularly in all the government structures of the health system. Eye health will be part and parcel of the Annual Review Meeting (ARM) of the health sector. In addition, RHBs will undertake an annual performance review meeting with Woredas, zones and regional and local stakeholders. During these meetings the strengths and challenges will be reviewed and future plans will be agreed upon. Furthermore, FMOH will conduct inspections to verify activities undertaken at grass roots level, and, based on the inspection results, measures will be taken to strengthen the system for eye health. Regular inspections will be a mechanism to verify routine reports as well as to promote accountability, ensuring compliance with agreed performance standards and targets and improvement of quality in the eye health care delivery.

Eye health research has been conducted over the past several years by Ethiopian and overseas professionals. The research was often focused on the interest and geographic area of the organization and was carried out to generate evidence on prevalence of diseases, pattern of diseases as well as mini estimation of blindness and low vision burden in the country. Additionally, post graduate students and scholars have conducted research for the fulfillment of the academic career. The national survey on blindness and low vision in Ethiopia conducted in 2005/2006 was the first ever national survey on eye health. The finding of this survey helped the eye health community to advocate for prioritization of eye health as general public health problem. Trachoma baseline surveys and post intervention impact surveys throughout all of Ethiopia have also been carried out by the government and implementing partners.

In this strategic plan period, a national survey on blindness and visual impairment, as well as specific disease prevalence surveys, is one of the major objectives scheduled by the FMOH and its stakeholders. Additionally, support for small scale research is planned if resources are available.

Mid-Term Review (MTR) and Final Evaluation of the strategic plan will be conducted in 2018 and 2021 respectively. It will be used to assess the level of achievement of the strategic objectives, identify challenges, document best practices, and forward recommendations to improve future governance, management and implementation of activities in order to meet the strategic goal.

T 20 og r work o r g or E o (20 5/ 6 - 20 9/20) I o o r g o j , r r g o o o j , k o o

Table 19. Indicators for eye health

Indicators	Base line in	2016	2017	2018	2019	Target in 2020	Total	Source	Periodicity	Level of data collection	Responsible bodies
Cataract Surgeries per year	50.000	100,000	120,000	150,000	200,000	250,000	820,000	HMIS	Annually	Health facilities and partners	At all level
Cataract surgical rate per million people per year	576	1032	1238	1508	1960	2388		HMIS	Annually	Health facilities and partners	At all level
Prevalence of TT percent	1.2% (GTMP)					<1%		Survey	3-5 years	population	FMOH, RHB, woreda
TF prevalence in 1-9 years old	27% (GTMP)					<5%		Survey	3-5 years	Population	FMOH, RHB, woreda
Total number of glaucoma cases on treatment		12,050	23,100	34,200	45,300	60,500	175,150	HMIS	Annually	Health facilities	FMOH,RHB, Health facilities
Total Number of people screened for		20,000	40,000	80,000	160,000	200,000	500,000	Admin report	Annually	Schools and Health facilities	At all level

Refractive Errors											
Total # students screened at schools for Refractive Errors		10,000	20,000	40,000	80,000	100,000	250,000	schools	Annually	Schools	FMOH, RHB, Woreda health office
Total # students received eye glasses		1000	2000	4000	8000	10,000	25,000	schools	Annually	Schools and Health facilities	FMOH, RHB, Woreda health office
Number of People screened for DR		10,000	20,000	40,000	50,000	80,000	200,000	Admin report		Health Facilities	RHB, Health Facilities
Number of People received service for DR		3600	6000	8750	10,600	16400	45,350	Admin report	Annually	Health Facilities	RHB, Health Facilities
Number people surgically treated for corneal problem		250	500	1000	1500	1750	5,000	Admin report	Annually	Health facilities	RHB, Health Facilities

Indicators	Base line in	2016	2017	2018	2019	Target in 2020	Total	Source	Periodicity	Level of data collection	Responsible bodies
Cataract Surgeries per year	50.000	100,000	120,000	150,000	200,000	250,000	820,000	HMIS	Annually	Health facilities and partners	At all level
Cataract surgical rate per million people per year	576	1032	1238	1508	1960	2388		HMIS	Annually	Health facilities and partners	At all level
Prevalence of TT percent	1.2% (GTMP)					<1%		Survey	3-5 years	population	FMOH, RHB, woreda
TF prevalence in 1-9 years old	27% (GTMP)					<5%		Survey	3-5 years	Population	FMOH, RHB, woreda
Total number of glaucoma cases on treatment		12,050	23,100	34,200	45,300	60,500	175,150	HMIS	Annually	Health facilities	FMOH,RHB, Health facilities
Total Number of people screened for Refractive Errors		20,000	40,000	80,000	160,000	200,000	500,000	Admin report	Annually	Schools and Health facilities	At all level

Total # students screened at schools for Refractive Errors		10,000	20,000	40,000	80,000	100,000	250,000	schools	Annually	Schools	FMOH, RHB, Woreda health office
Total Number of students received eye glasses		1000	2000	4000	8000	10,000	25,000	schools	Annually	Schools and Health facilities	FMOH, RHB, Woreda health office
Number of People screened for DR		10,000	20,000	40,000	50,000	80,000	200,000	Admin report		Health Facilities	RHB, Health Facilities
Number of People received service for DR		3600	6000	8750	10,600	16400	45,350	Admin report	Annually	Health Facilities	RHB, Health Facilities
Number people surgically treated for corneal problem		250	500	1000	1500	1750	5,000	Admin report	Annually	Health facilities	RHB, Health Facilities

Objectives	Intermediate results (IR)	Key Activities
1. To empower and engage the community in eye health care so as to create sense of ownership, increase service utilization and adopt good eye health care practices	1.1 Improved community awareness and knowledge of available eye health services and their importance	• Produce national guideline on eye health education to the public • Health facilities conduct regular eye health education sessions to patients with eye health problems and care givers • Develop key messages on eye health • Design standard IEC/BCC materials • Provide public information through local radio and television spots, and print media • Conduct advocacy events at national and regional levels (e.g. world sight day) • Conduct training to influential groups like teachers, HEWs/ HDAs, religious/ community leaders on primary eye health care, case identification and referrals • Trained teachers provide health education and screening to primary school students • Trained HEWs/HDAs provide eye health education and screening during house to house visits and small group discussions • Organize sensitization workshop on eye health to women and youth associations, non-ophthalmic officials in health facilities, religious leaders, elders… • Organize community awareness programs on eye banking and corneal grafting • Conduct a study on barriers for cataract surgery and design public awareness programs based on the findings
	1.2Community involvement in case identification and referrals strengthened	• Conduct training to religious/community leaders on primary eye care, case identification and referrals • Community members assist HEW/Teachers in case identifications • Community members engaged during campaigns and outreach eye health services
	1.3Community engaged in process of planning, execution and evaluation in eye health activities	• Conduct community forum on eye health • Incorporate the eye health agenda in the existing community structures • Best practice expanding
	1.4Increased number of primary schools that conduct school screenings by trained teachers	• Conduct training to teachers on screening of children for eye health problems • Establish and support school eye health clubs

Objectives	Intermediate results (IR)	Key Activities
2. To provide quality eye health care[£] and rehabilitative service	2.1Health facilities have sufficient functional optical medical equipment and supplies to provide quality eye health services	• Procure and distribute essential optical medical equipment and supplies to eye care units • Conduct training to biomedical technicians/ engineers in ophthalmic equipment maintenance • Establish a system of preventive maintenance for optical medical equipment in health facilities
	2.2Health facilities had enough space and trained eye care personnel to provide high quality eye health care services	• Advocate for the placement of required eye care personnel • Negotiate to have a separate in-patient and out-patient wards • Conduct basic/ refresher training to eye care personnel (ophthalmologists, non-doctor cataract surgeons, optometrists, ophthalmic nurses, ophthalmic officers, IECWs…) on relevant eye health topics (e.g. non doctor cataract surgeons in MSICS, ophthalmic nurses on management of Operation Theater and TT surgery, optometrists on RE management…) • Conduct IECWs training (on primary eye care, refractions, and TT surgery)
	2.3Increased client satisfaction	• Conduct survey to assess client satisfaction of eye health services • Prepare standard operating procedure for eye health services • Devise an incentive mechanism to motivate eye care personnel • Supportive supervision and quality assurance mentoring • Conduct continuous cataract surgical outcome monitoring [using WHO recommended cataract audit system]
	2.4Increased uptake of eye health care services	• Ensure the necessary trained eye care personnel, optical medical equipment and supplies for provision of quality eye health care services are available in health facilities delivering eye health care services • All awareness raising activities and trainings listed under objective 2 • All trainings to improve capacity of eye health care personnel listed under objective 4 • Conduct outreach for eye health care services • Conduct school screening by trained teachers • Enforce eye screening for drivers' license [national policy on eyesight and driving] • Strengthen early detection of eye health problems by eye health care providers at primary eye care units (e.g. screening of all new borns, opportunistic screening e.g OPD visitors)

Objectives	Intermediate results (IR)	Key Activities
		• Introduce new technology (smart phone, digital camera) in eye health care service delivery • Conduct training to ophthalmologists on DR surgery • Conduct training to ophthalmologists on corneal surgery • Integration of pediatricians in the eye care of children • Conduct baseline survey to assess current eye health care service use • Advocate for screening of all children entering primary schools
	2.5 Improved diagnostic and therapeutic facilities for eye health	• All trainings to improve capacity of eye health care personnel listed under objective 4 • All activities to improve infrastructure and logistics under objective 5
	2.6Improved accessibility of eye health care services	• Establish new eye care units • Conduct outreach for eye health care services • Establish mobile eye clinics for pastoralist communities
	2.7 Strengthened referral system (community to PECU to SECUs to TECUs)	• Develop SOP for referrals • Develop bidirectional referrals system with timely feedback • Proper documentation of referrals with standardized formats • Conduct training to HEWs/ HDAs, teachers, religious/ community leaders on primary eye care, case identification and referrals
	2.8 Increased number of rehabilitative services for visually impaired	• establish school programs for the blind in existing schools • Establish low vision centers and optical workshops • Integration of visually impaired students with others • Equip schools with materials for students with special needs materials • Conduct training of teachers on special needs
3. To strengthen human resource capacity at all levels for effective delivery of eye health care services	3.1 Increased number of eye care personnel and allied ophthalmic personnel to population ratio	• Review IECWs' training manual • Conduct ICEW training (4-6 weeks) • Review HEWs package to include eye health • Conduct training of HEW (3-5 days) on eye health • Review teachers' PEC manual • Conduct training of teachers (3-5 days) • Review B.Sc. curriculum of ophthalmic nurses and advocate to be endorsed nationally • Advocate for integration of ophthalmic nurses training in the existing curriculum of training institutes • Expand fellowship/M.SC of optometry

Objectives	Intermediate results (IR)	Key Activities
		• Advocate for increase in enrollment of ophthalmologists, ophthalmic nurses, optometrists in the existing training institutes • Advocate for opening of new ophthalmology training centers • Develop ophthalmology sub-specialty curriculum • Advocate for commencement of ophthalmology sub-specialty training • Develop eye health manger training curriculum • Advocate for opening of eye health managers training • Develop optical technicians curriculum • Advocate for opening of optical technicians training
	3.2 Decreased attrition rate of eye health care professionals	• Advocate for motivational incentives packages for eye health care personnel • Design a career structure
	3.3 Standardized (number and mix of) eye care personnel required for health facilities	• Ensure a standardized number and mix of eye care personnel in the national HRH plan
4. To improve and maintain appropriate infrastructure and logistics for provision of sustainable eye health care services in the national, regional, districts and community levels	4.1 Increased number of eye care units	• Renovation and expansion of rooms • Identify potential health centers and hospitals for expansion of eye health services
	4.2 Sustainable medical supplies for eye health	• PFSA quantification and discussion • Procure and distribute essential optical medical equipment and supplies • Promote private importers • Discussion with FMHCACA for donated supplies • Ensure availability of essential drugs
	4.3 Have functional medical equipment at all health facilities providing eye health services	• Provide training to biomedical technicians/ engineers in ophthalmic equipment maintenance • Establish a system of preventive equipment maintenance • Conduct training for end users • Establish national optical workshop

Objectives	Intermediate results (IR)	Key Activities
5. To enhance partnership across all stakeholders for harmonization and alignment of eye health activities	5.1 Integrated eye health services with various stakeholders (governmental, NGOs, private institutions…)	• Conduct regular annual review and TWG meeting • Encourage various forum • Provide technical support to private eye sectors • Work towards public private partnership • Ensure eye health reports for the private sectors are incorporated in the national reports
6. Generating evidence and enhance systems of monitoring and evaluation of eye health care services at all levels for informed decision making	6.1 Research conducted to inform eye health care stakeholders	• Conduct national survey on blindness and low vision • Support and promote research by professionals • Encourage sharing of research findings in conferences • Identify priority eye health focus areas for a research
	6.2 Improved capacity for eye care research	• Establish a national eye care resource and research center • Organize short term training on research methodology
	6.3Additional eye health indicators included in the national HMIS	• Advocate for review of HMIS indicators
	6.4 Improved data collection and reporting system	• Develop/ revise registers for eye health services • Ensure inclusion of eye health indicators in the current HMIS reporting from health centers and hospitals
	6.5 Eye health included in government's semiannual Integrated Supportive Supervision (ISS)	• Ensure (Integrated Supportive Supervision) ISS checklist includes eye health • Participate in semiannual ISS
	6.6Improved data quality on eye health service use reports	• Conduct data quality checks during ISS and follow-up visits to sites • Conduct DQA on annual basis
	6.7 Strategic plan evaluated at midterm and end term	• Conduct midterm/ end term evaluation plan by an external consultant

Objectives	Intermediate results (IR)	Key Activities
7. To Improve eye health governance and ownership at all levels in the government structures	7.1 Eye health plan aligned/ harmonized with the general health plan	• Develop/ update national policies and operation plan and cascade across all levels • Ensure eye health plan is incorporated in the general health plan at all government levels (FMOH, regional, zonal, woreda, health facilities)
	7.2 Improved budget allocation for eye health services	• Mobilize and allocate budget for eye health • Periodic review of annual budget plan
	7.3 Key eye health indicators captured in the national HMIS	• List out key eye health indicators to be included in the HMIS • Develop and/or revise HMIS registers and reporting formats to capture key eye health indicators • Eye health indicators incorporated within the national disease burden indicators for health services
	7.4 Eye health service delivery data used by decision makers for improving the service	• Prepare and submit quarterly progress reports • Supportive supervision visits to health facilities providing eye health services • Conduct quarterly/ annual review meetings • Provide regular feedback to concerned bodies
	7.5 Eye care case team/ focal person be in place in the government structure at all levels	• Develop working guideline of case team/ focal person • Liaise with regional and local government to assign appropriate personal • Assign/establish focal person/case team

^ Each strategic objective has intermediate results leading to the achievement of the objective.

£ Activities and indicators relevant to **trachoma** are detailed in the national master plan for neglected tropical diseases (NTDs).

Table . FMOH Eye Health State ic Plan 0 6- 0 0 G.C

	Current	2016	2017	2018	2019	2020	Total
All Cataract Surgeries	50,000	100,000	120,000	150,000	200,000	250,000	820,000
Cataract surgical Rate (CSR)	500					>2000	
All Glaucoma Services							190,150
Total patients on follow up Medical RX		10,000	20,000	30,000	40,000	50,000	150,000
Newly Diagnosed Cases		2,000	3,000	4,000	5,000	10,000	24,000
Total Adult surgeries		1,000	2,000	3,000	4,000	5,000	15,000
Laser services		50	100	200	300	500	1,150
All Refractive Error services							
Total # of adults screened for Refractive Errors		10,000	20,000	40,000	80,000	100,000	250,000
Total # adults received eye glasses		10,000	20,000	40,000	80,000	100,000	250,000
All corneal services	PKP	250	300	350	500	600	2,000
(total 5,000)	Cornea trauma	750	700	650	500	400	3,000
All Retina services							
# Health facilities screening DR	5	10	20	25	30	50	140
# of People screened for DR		10,000	20,000	40,000	50,000	80,000	200,000
# of People Laser RX for DR		1,000	2,000	4,000	5,000	8,000	20,000
# of people surgically treated for DR		100	200	250	300	500	1,350
# of people medically injected for DR		1,000	2,000	2,500	3,000	5,000	13,500
# of people diagnosed with RD		1,000	1,200	1,300	1,500	2,000	7,000
# of people surgically treated for RD		500	600	700	800	900	3,500
# of people diagnosed with AMD		500	600	700	800	900	3,500
# of people treated for AMD		500	600	700	800	900	3,500

Table 22: Childhood blindness/child eye health

Disease	Current	2016	2017	2018	2019	2020	Total
Pediatric cataracts surgeries		500	1000	1500	2000	2500	7,500
Other pediatric Surgeries		500	600	900	1000	2000	5000
Total # schools performing screening		50	100	200	400	1000	1,750
Total # students screened at schools		10,000	20,000	40,000	80,000	100,000	250,000
Total # students received eye glasses		1,000	2,000	4,000	8,000	10,000	25,000
# of children screened for ROP		10	20	40	50	100	220
# of children treated for ROP		5	10	20	30	80	145

nne 2: Equipment need for 5 years

Annex 2.1: Equipment need for 5 years existing and new SECU/TECU

Major equipment	Price/pc USD	2016	2017	2018	2019	2020	Total
Slit lamp microscope (SLM)	7,000(Scanoptic,Hagg,	6	20	24	26	30	106
Operating Microscopes	8,000 Leica	6	20	24	26	30	106
Yag Lasers	16,000 Appsamy	0	5	6	6	8	25
Retina Diod lasers	17,000 App	2	2	2	2	2	10
Phaco machines	16,000 Appsamy	1	1	2	2	2	8
Posterior Vitrectomy Machines	27,000 Appasamy	0	1	1	2	2	6
Anterior Vitrectomy Machines	2,000 Appsamy	6	20	24	26	30	106
Autorefractometers	5,000	3	10	12	13	15	53
Visual field Analyzers	8,000	3	10	12	13	15	53
Anesthesia machines	15,000	1	1	2	2	2	8
Retinoscopes	850	50	60	60	60	70	300
Trail sets	1,500	100	200	400	400	400	1,500
Ophthalmoscopes	850	100	200	400	400	400	1,500
As scan	3,500 Appasamy	6	20	20	26	30	106
Keratometer	10,000 Appasamy	6	20	20	26	30	106
90 D lenses	400	6	20	20	26	30	106
Cataract sets	1,500	60	80	96	260	300	1060
Glaucoma sets	1,200	12	40	48	52	60	212
RD and vitrectomy sets	2,000	0	0	10	20	26	56

Major equipment	Price/pc USD	2016	2017	2018	2019	2020	Total
Strabotomy sets	1,000	6	20	24	26	30	106
Orbitotomy sets	2,000	12	40	48	52	60	212
Minor/TT sets	300	1000	1000	1000	1000	1000	5,000
Schiots Tonometer	100	300	300	300	300	300	1,500
Goldman Tonometer	200	20	20	20	20	20	100
Tonopen	2,500	4	5	5	5	5	24
B-scan	10,000 Sonomed	10	10	10	10	10	50
PKP Sets	2,000	10	10	10	10	10	50
Cryomachines	10,000 Keeler	0	0	10	20	26	56
Indirect Ophthalmoscopes	1,600 Keeler, Henin	0	0	30	30	46	106
Fundus Camera	6,000 Topcon, Henin	0	0	30	30	46	106
OCT	27,000 Appasamy	0	0	2	2	2	6
Lensometer		0	0	30	36	40	106
Operating Table		0	3	30	33	40	106

Some secondary and all TECU

Tertiary centers only

Annex 2.2: Equipment and supplies need for 5 years existing and new PECU

Major equipment	Price/pc USD	2008	2009	2010	2011	2012	Total
Acrilight Package (Ophthalmoscope, Loup, Otoscope etc)	10 USD	0	0	1,000	1,600	2,000	3,600
Trail sets	1,500	0	0	1,000	1,600	2,000	3,600
Minor/TT sets	300	0	0	3,000	4,800	6,000	10,800
Schiots Tonometer	100	0	0	1,000	1,600	2,000	3,600
VA Charts Near+ D	10	0	0	3,000	4,800	6,000	10,800
Autoclaves	500	0	0	1,000	1,600	2,00	3,600
Major Supplies							
TTC ointment	0.5	0	0	1,000,000	1,600,000	2,000,000	3,600,000
Lidocaien	2	0	0	50,000	70,000	100,000	220,000
CAF ointments	1	0	0	50,000	70,000	100,00	220,00
4.0 Silk Sutures	2	0	0	100,000	120,000	130,00	250,000
PECU Equipment=							
supplies =							

nne 2.3 : Equipment need for Center of e cellence for 5 years

Major equipment	Price/pc USD	2008	2009	2010	2011	2012	Total	Total Price
SLM	7,000(Scanoptic, Hagg,	0	0	5	7	8	20	140,000
Operating Microscopes	Tagiegaki 25,000	0	0	2	4	6	10	250,000
Yag Lasers multimodal	48,000 lightmed	0	0	0	1	1	2	96,000
Retina Green lasers	39 ,000 Lightmed	0	0	0	1	1	2	78,000
Phaco machines	25,000	0	0	0	1	1	2	50,000
Posterior Vitrectomy Machines	40,000	0	0	0	1	1	2	80,000
Anterior Vitrectomy Machines	2,000 Appsamy	0	0	2	4	4	6	12,000
Autorefractometers	5,000	0	0	2	3	1	6	30,000
Visual field Analyzers	8,000	0	0	0	1	1	2	16,000
Anesthesia machines	15,000	0	0	1	1	1	3	45,000
Retinoscopes	850	0	0	5	10	10	25	21,250
Trail sets	1,500	0	0	5	5	5	15	22,500
Ophthalmoscopes	850	0	0	5	10	10	25	21,250
As scan	5700 Sonomed	0	0	0	1	1	2	11,400
Keratometer	10,000 Tomy	0	0	0	1	1	2	20,000
90 D lenses	400	0	0	10	10	10	30	12,000
Cataract sets	1,500	0	0	10	10	10	30	45,000
Glaucoma sets	1,200	0	0	5	5	5	15	18,000
RD and vitrectomy sets	2,000	0	0	0	5	5	10	20,000
Strabotomy sets	1,000	0	0	4	6	5	15	15,000
Orbitotomy sets	2,000	0	0	4	5	6	15	30,000
Minor/TT sets	300	0	0	10	10	10	30	9,000
Goldman Tonometer	200	0	0	5	5	5	15	3,000
Tonopen/Icare	2,500	0	0	5	5	5	15	37,500
B-scan	10,000 Sonomed	0	0	0	1	1	2	20,000
PKP Sets	2,000	0	0	0	5	5	10	20,000
Cryomachines	10,000 Keeler	0	0	1	1	1	3	30,000
Indirect Ophthalmoscopes	1,600 Keeler, Henin	0	0	3	3	4	10	16,000
Fundus Camera	25,000 Topcon, Henin	0	0	1	0	1	2	50,000
OCT	60,000 Optuvue	0	0	0	1	0	1	60,000
Lensometer	1,000	0	0	3	3	4	10	10,000

Operating Table	5,000	0	0	3	3	4	10	50,000
Cross linking Machine	20,000	0	0	0	1	0	1	20,000
Total Equipment USD								**1,358,900**

Optical Workshop = 30,000 USD, Equipment maintenance workshop= 20,000 and Resource center= 30,000 = Total center of e cellence =1,438,900 UcSD= 33,094,700 ETB

Annex 3 :costing

Major activities		Year I	Year II	Year III	Year IV	Year IV	Total cost	From partners	From Government
1. Disease Control									
1.1 **Cataract**	5Yrs target	**2016**	**2017**	**2018**	**2019**	**2020**			
- Physical Plan in number	Increase CSR greater than 2000	100,000	120,000	150,000	200,000	250,000			
- Financial Plan in Million ETB		631.915	737.234	842.552	947.871	1.053.190	**3,159.572**	30%	70%
1.2 **Glaucoma**									
- Increase awareness and case detection from the base year	Case detection reaches 70% over the base line	10%	15%	20%	25%	30%			
- Financial plan in Millions ETB	5.7million Birr	0.85	0.95	1.15	1.25	1.5	**5.7**	50%	50%
1.3. **Diabetic retinopathy**									
- Increase awareness and case detection to 70%over the base line	Physical plan increase in %	10%	15%	20%	25%	30%			
	Financial plan in Millions ETB	0.75	0.85	0.95	1.0	1.25	**4.8**	20%	80%
1.4 **Childhood blindness**									
- Train 25,000 teachers for school screening	Physical plan	4,000	4,500	5,000	5,500	6,000			
	Financial plan in millions ETB	2.5	3.0	3.5	4.0	4.5	**17.5**	50%	50%

1.5 Screen 250,000 school children 7-15 years old for refractive errors and Spectacles provision for 25,000 children from those screened children	Physical plan for screening	10,000	20,000	40,000	80,000	100,000			
	Physical plan for spectacle provision	1000	2000	4000	8000	10,000			
	Financial plan	2.5	3.25	3.5	3.75	4.0	**17**	20%	80%
1.6 **Supportive supervision to 9 regions by the FMOH**	Physical plan		2	3		4			
	Financial pan in Millions ETB		0.4	0.6		0.8	**1.8**	50%	50%
1.7 **NCPB meeting**	Financial plan in Millions ETB	0.2	0.25	0.3	0.325	0.35	**1.075**	10%	90%
1.8 **Midterm and final evaluation of the strategic plan**	Physical plan			1		1			
	Financial plan in Millions			1.25		1.45	**2.7**	50%	50%
1.9 **National survey on blindness and low vision**	Physical plan			1					
	Financial plan in million		8.5	-	-	-	**8.5**	80%	20%
2. Human resource Development	Financial plan in Millions	12.5	15.5	20.5	25.5	30.5	**104.25**	20%	80%
3. Infrastructure development , instrument and equipment	Financial plan in millions	15.25	20.5	22.5	20.5	15.5	**94.25**	20%	80%
Grand Total in Millions							**257.575 +3,159,829.572 =3,160,087.147**		

