Understanding Sustainability in Eye Care in North-West Tanzania

Report from a Sustainability Analysis Workshop

March 2013

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I. Introduction to the sustainability study

CBM has funded researchers from the International Centre for Eye Health (ICEH) at the London School of Hygiene & Tropical Medicine (LSHTM) in the UK to investigate ways in which eye care actors in the Lake Region of north-west Tanzania currently work towards and can improve sustainable provision of eye care services.

Eye care programmes are implemented in complex systems incorporating multiple sectors (government, mission, private) and administrative levels (national, regional, district), where a diversity of actors intervene and interact. While, in principle, the goal of achieving sustainability is shared by most actors in the eye health system of a country, in practice, sustainability often means different things to different people. This can result in fragmented or parallel planning and implementation of eye care activities within a single system.

The aim of this study, therefore, is to assist eye care actors in the Lake Region to plan for sustainability of eye health services by focussing on understanding the eye health system that they are delivered in.

The specific objectives of the study are:

1. To introduce a participatory tool (the Sustainability Analysis Process, SAP) to analyse eye health system sustainability and help actors agree on a common vision of sustainability (Phase 1).

2. To measure performance of the eye health system in the Lake Region before and after introduction of the tool, according to sustainability indicators developed using the Sustainability Analysis Process (Phase 1 & 3).

3. To prospectively evaluate the enabling and constraining factors which influence actors to achieve this vision of sustainability within the local system (Phase 2).

Research will be carried out between August 2012 and November 2013, according to the following phases:

Phase	1		2	3
Month(s)	Aug 2012	Dec 2012	Jan-Oct 2013	Nov 2013
Activity	Preparatory visit	Sustainability workshop 1	Investigation of sustainability practices in case study hospitals	Sustainability workshop 2

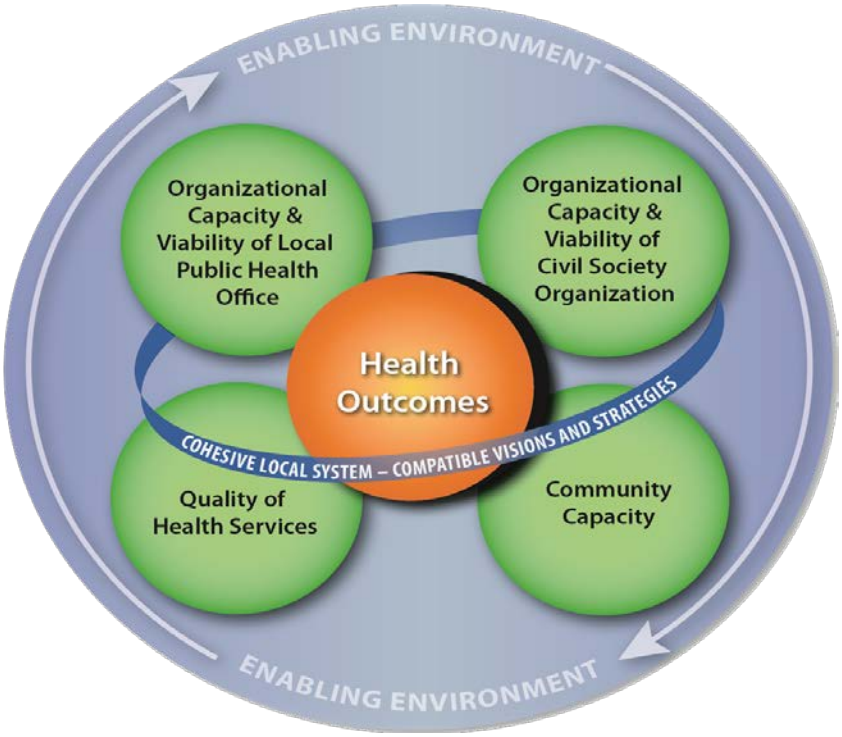
To accomplish the first objective, LSHTM researchers facilitated a Sustainability Analysis Process workshop with eye health system actors from the Lake Region in Mwanza Town on 3-4 December 2012, in collaboration with the practitioners' organisation, Lake Region Eyecare Services (LARES).

This report summarises the Sustainability Analysis Process methodology used in the workshop, the sustainability indicators that were drafted by workshop participants and revised during a measurement exercise immediately afterwards, as well as baseline measurements of eye health system performance using these indicators in two case study hospitals.

II. The Sustainability Analysis Process

The Sustainability Analysis Process (SAP) is an adaptation of two existing methodologies. It combines a five-step approach to sustainable strategic decision-making for the business sector with a conceptual framework for assessing sustainability in international development projects. Using a 'systems thinking' approach, the SAP assumes that sustainability is a multidimensional concept that encompasses six different components: (i) population health outcomes; (ii) quality and access of health services delivery; (iii) organizational capacity & viability of local authorities as health system stewards; (iv) organizational capacity & viability of local organisations and service providers; (v) community capacity; and (vi) the enabling social, economic and policy environment (Figure 1).

Figure 1. The six components of sustainability



In order to analyse the six components of sustainability in a system, an eight-step process is followed (Table 1). More information on the SAP, can be found in the SAP guide developed by LSHTM and Handicap International to study sustainability in the physical rehabilitation sector in fragile states (available at http://www.sustainingability.org/publications/guides/index.html).

Table 1. Overview of eight steps of the Sustainability Analysis Process

	SAP Step	Workshop Activities
1	Overview of the context	Participants summarise available evidence to foster a common understanding of the context of service provision and organisation of the sector.
2	System boundaries	Participants identify spatial and temporal boundaries to guide decisions about what types of information to include and exclude in analyses.
3	Consensus on vision of sustainability	In small groups, participants use discussion and debate to define their vision of *non-sustainability* through a series of statements about each sustainability component. Participants then translate these definitions into visions of sustainability by rephrasing negative statements into positive ones.
4	Selection of sustainability indicators	Still in small groups, participants then use statements on sustainability to generate a set of sustainability indicators which are objective, comprehensive and locally relevant. These indicators allow participants to measure system performance according to the six components of sustainability.
5	Measurement of sustainability indicators	Participants measure every indicator using verifiable data, or estimations when evidence is not available.
6	Identification of sustainability reference standards	Participants define sustainability standards as the level below which they consider the system to be unsustainable, using national or international references or consensually chosen standards that suit participants' experience and the local context.
7	Illustration of indicators on star diagrams	Participants illustrate current measures of sustainability in relation to sustainability standards on star diagrams for each component.
8	Analysis of system sustainability	As a group, participants use the star diagrams to analyse sustainability levels in their own system and discuss recommendations for further action.

III. The Mwanza 2012 SAP workshop

42 people participated in the workshop including:

- 26 eye care service practitioners who were members of LARES (ophthalmologists, cataract surgeons, advanced medical officers in ophthalmology, ophthalmic nurses, optometrists and ophthalmic assistants)
- 17 individuals involved in eye health service planning (Regional Eye Care Coordinators, representatives of Regional Medical Offices, national Ministry of Health and Social Welfare, community and hospital management boards or non-governmental organisations in eye care)
- 5 individuals affected by eye health services (representatives of patient advocacy organisations or visually impaired/disabled peoples' organisations, former eye care patients)

Some participants held multiple roles, so numbers may not sum to 42. Participants came from five regions of Tanzania including four regions of the 'Lake Zone': Kagera, Mwanza, Mara and Shinyanga, as well as Tabora, which participants collectively referred to as the wider 'Lake Region'. Discussions also briefly considered sustainability of service provision in two newly-formed neighbouring regions, Geita and Simiyu, where eye care governance is not yet fully established. See Figure 2 and Table 6 in Appendix A for a full list of participants.

Figure 2. Participants of the 2012 SAP workshop

Photo credit: Zacharia Panga

Table 2. Workshop Agenda

Schedule	Topic	Persons responsible
Day 1		
Morning	Description of concepts: sustainability & health systems	Facilitators
	Description of the methodology	Facilitators
	Presentations on the context of eye care in the Lake Region	MoHSW, CBM, LARES, 5 RECCs
Afternoon	Group work: What do you mean by sustainability?	Participants
Day 2		
Morning	Group work: Translate vision into indicators	Participants
	Group work: Set sustainability standards	Participants
Afternoon	Simulated fieldwork: Measure indicators with data from 2 case studies	Participants
	Ideas for individual action	Participants

The workshop began with an introduction to the six components of sustainability, the SAP, and the research project by the facilitators (Table 2). Before the workshop, several participants who were involved in eye health service planning were asked to gather key information and prepare presentations on the context of eye health services delivery in the Lake Region. These presentations

(available in Appendix B), along with copies of the national eye care strategic plan, were then given to facilitate information-sharing among all participants.

Participants were then divided into three small groups to think analytically about sustainability using this background information and their own experiences in eye care. Each group was assigned two components of sustainability to follow the SAP with. Groups were instructed to think about sustainability primarily at the level of individual hospital eye units which participants were most familiar with, and secondarily at the level of regions, the wider Lake Region or the country. Eventually, the groups identified a draft list of indicators with standards that captured key ideas about local system sustainability in the Lake Region. At the end of the morning of Day 2, facilitators gave each group a list of additional indicators collected from previous SAP workshops (see http://www.sustainingability.org/case-studies/index.html for examples) and international standards that participants could add to their lists, if useful (Table 7). These lists were then presented by small groups to the entire workshop for discussion and revision.

During the second part of Day 2, the small groups had a chance to practice measuring their indicators by forming teams to interview representatives of two hospitals (Musoma Regional Hospital from Mara Region and Sengerema District Hospital from Mwanza Region). These two hospitals were selected because they had prepared enough background information for their 'context of eye care presentations' that they could simulate the experience of indicator measurement without having to refer to hospital records. This simulation also allowed groups to 'pilot test' and further refine their indicators to make sure they were as specific and measurable as possible. Finally, the groups illustrated these baseline indicator measurements in relation to the sustainability standards they had set on star diagrams and posted them for everyone to see.

The workshop ended with a group discussion about some of the emerging sustainability patterns evident from the December 2012 baseline star diagrams, as well as ideas for action that individuals could take to improve sustainability in their own hospitals and regions (available in Section VII).

Immediately after the workshop, the full draft list of indicators was compiled by the facilitators for a final phase of piloting and refinement. This was done on four 1-day visits to the two hospitals used as simulated case studies in the workshop, as well as an additional two hospitals (Kitete Regional Hospital in Tabora Region and Kolondoto Hospital in Shinyanga Region) selected by the research team for close follow-up of sustainability actions needed for Objective 3 of the research study. These case studies were selected in consultation with representatives from the National Eye Care Programme, LARES and CBM. The final list of sustainability indicators that resulted from this process

is presented in the next section (IV), followed by baseline sustainability measurements (Section V) and illustrations (Section VI) from two case study hospitals which can serve as examples to other eye units in the Lake Region who might be interested in measuring their own levels of sustainability. Baseline data is also currently being collected from the other two case study hospitals.

Tables of national eye care programme recommended human resources and equipment/infrastructure for calculating indicators in Sustainability Component 2 are given in Appendix A (Table 8 and Table 9). An example of how total eye unit income was calculated in Musoma Hospital for Sustainability Component 3 is also given here (Table 10).

IV. Sustainability indicators chosen for the Lake Region

Table 3. Eye health system sustainability indicators, definitions and reference standards chosen for the Lake Region

#	Sustainability indicator	Indicator definition	Data source	Level of measurement	Sustainability Reference
Component 1					
1.1	**Number of cataract surgeries performed in the facility**	The number of cataract eye surgeries (number of eyes) that were performed inside the facility, in the last year. Surgeries performed via outreach should be counted by the receiving facility where the surgery was performed.	Individual eye facility surgical records	Facility	1,000
1.2	**Number of cataract surgeries performed at all facilities in the region**	The sum of all cataract eye surgeries (number of eyes) performed at any facility, either via static or outreach services, in the region, in the last year. (The 1,000 surgeries standard is around 10% of the 8,750 surgeries needed in a region per year, estimated from the proportional population need for cataract surgery (0.35%) in a typical region of 2,500,000 population.)	Surgical records from all eye facilities in the region	Region	1,000
1.3	**% of cataract surgeries in region performed via outreach**	Out of the total number of cataract eye surgeries performed in the region, the number that were performed by a surgeon outside of the facility where he or she is normally based, in the last year.	Surgical records from all eye facilities in the region	Region	60%
1.4	**% of districts in region where at least 200 cataract surgeries were performed in a year (via outreach or static clinics)**	Out of the total number of districts in the region, the number of districts where 200 or more cataract eye surgeries were performed, either via outreach or at static clinics, in the last year. (The 200 surgeries standard is around 10% of the 1,750 surgeries needed in a district per year, estimated from the proportional population need for cataract surgery (0.35%) in a typical district of 500,000 people.)	Surgical records from all eye facilities in the region	Region	100%
1.5	**Number of eye patients attended in the facility**	The number of patients who were examined for any eye condition by eye unit staff inside the facility, in the last year. (The 5,000 examinations standard approximates the proportional population burden of blindness (1%) in a typical district of 500,000 people.)	Individual eye facility surgical records	Facility	5,000
1.6	**% of districts in the region where at least 5000 eye patients were attended (considering data from all**	Out of the total number of districts in the region, the number of districts where 5,000 or more eye patients were examined, either via outreach or at static clinics, in the last year. (The 5,000 examinations standard approximates the proportional population burden of blindness (1%) in a	Surgical records from all eye facilities in the region	Region	100%

	facilities)	typical district of 500,000 people.)			
1.7	**% of diabetic patients diagnosed at facility screened for diabetic eye condition**	Out of the total number of patients diagnosed with diabetes at the facility in the last year, the number of patients who have also been screened for diabetic eye condition.	Individual facility diabetes service and eye unit records	Facility	90%
Component 2					
2.1	**% of patients who are satisfied with services that are provided in health facility**	Definition needed	Data source needed (eg survey)	Facility	75%
2.2	**% of eyes operated for cataract with best corrected visual acuity of 6/18 or better after surgery**	Out of the total number of eyes operated on for cataract, the number which achieved a visual acuity of at least 6/18 on discharge after surgery, using best correction by refraction, in the last year.	Individual eye facility surgical follow-up records	Facility	80%
2.3	**% of patients being consulted within 2 hrs of coming to the health facility**	Out of the total number of outpatients who present to the eye unit, the number who have waited 2 hours or less to be examined by a practitioner, using a sample of days in the last year.	Records of patient waiting time from individual eye facility	Facility	75%
2.4	**% of minimum number of eye care staff required by the NECP employed by the facility**	Out of the minimum number of eye care practitioners expected in a facility of its level, the number of eye care practitioners employed at the facility, according to the National Eye Care Programme strategic plan 2011-2016. At regional hospitals: 1 Oph, 1 AMOO cat surg, 1 AMOO gen, 2 ONOs, 1 optom, 1 LV tech. At district hospitals: 1 AMOO cat surg/gen, 2 ONOs, 1 optom, 1 LV tech. At dispensaries/health centres: 1 Integrated eye care worker/ophthalmic assist.	Knowledge of eye unit manager from individual eye facility, NECP strategic plan document App 2	Facility	75%
2.5	**% of appropriate infrastructure and functional equipment required by the NECP in the facility**	Out of the minimum number of pieces of appropriate infrastructure and equipment expected in a facility of its level, the number of pieces available, according to the National Eye Care Programme strategic plan 2011-2016. At regional hospitals: 36 pieces. At district hospitals: 31 pieces. At dispensaries/health centres: 7 pieces.	Knowledge of eye unit manager from individual eye facility, NECP strategic plan document App 3	Facility	80%
Component 3&4					
3.1	**Eye unit income from patient user fees**	The amount of income that was received by the eye unit from eye patient user fees, in the last year. Patient fees may include fees for surgical, inpatient and outpatient services.	Individual facility eye unit and hospital accounting records	Facility	None chosen

3.2	**Total eye unit income**	The amount of income that was received by the eye unit from all sources, in the last year. Sources of income may include cash funds received from the federal government, regional government or donors for eye staff salaries, consumables, equipment, outreach and patient fees.	Individual facility eye unit and hospital accounting records	Facility	None chosen
3.3	**% of eye unit income from user fees**	Out of the total income received by the facility eye unit, the amount that was received from eye patient user fees, in the last year.	Individual facility eye unit and hospital accounting records	Facility	60%
3.4	**Number of quarters when money has been timely disbursed to eye care unit**	Out of all quarters in the last year, the number of quarters where income disbursed to the eye unit was received within one month of expected date. Sources of income include federal government, regional government or donors.	Individual facility eye unit and hospital accounting records	Facility	4
3.5	**% of funds disbursed compared to requested budget**	Considering the main sources of cash funds requested for eye care services in the facility in the last year, the proportion of funds received compared to the amount originally requested.	Proposed and final versions of all budgets concerned with eye care for an individual facility	Facility	100%
3.6	**Budget line for eye care activities exists at the facility level**	At least one budget line dedicated to eye care activities was included in the last annual facility budget.	Individual facility budget	Facility	Yes
3.7	**% of eye care providers who work full time in eye care unit**	Out of all people employed in the facility eye unit, the proportion who spend most of their clinical time with eye care patients.	Individual facility employment records, knowledge of eye unit manager	Facility	100%
3.8	**Number of quarterly meetings held with eye unit staff per year**	Out of all quarters in the last year, the number of quarters where at least one formal meeting was held with eye unit staff to plan and discuss eye care activities in the facility.	Knowledge of eye unit manager, meeting notes if available	Facility	4
3.9	**Number of annual facility planning meetings where eye care staff is involved**	At least one member of eye unit staff was present during the facility's last annual planning and budgeting meeting.	Knowledge of eye unit or facility manager	Facility	1
Component 5					
5.1	**Number of sensitization meetings conducted by facility per year**	The number of community eye health information, education or sensitisation meetings held by the facility eye unit staff in the region, in the last year.	Knowledge of eye unit manager	Facility	4

5.2	**Number of community feedback meetings conducted by facility per year**	The number of community eye health activity or service feedback meetings held by the facility eye unit staff in the region, in the last year.	Knowledge of eye unit manager	Facility	4
5.3	**% of villages in the region which have a trained community eye worker**	Out of the total number of villages in the region, the amount that have at least one trained community eye worker.	Knowledge of Regional Eye Care Coordinator	Region	100%
5.4	**Number of radio messages about eye care covering the Lake Zone aired annually**	The number of different radio advertisements/messages aired about eye health or eye health services in the Lake Zone, in the last year.	Knowledge of Regional Eye Care Coordinators	Zone/ 'Lake Region'	2
Component 6					
6.1	**% of population covered by health insurance**	Out the population of Tanzania, the proportion who have access to any form of health insurance which could reduce costs associated with eye health care-seeking	National reports, eg USAID 2010 Tz Health System Assessment	National	50%
6.2	**% of government budget allocated to health**	Considering the total budget and public expenditures of the Government of Tanzania, the proportion that is allocated to health. (15% target set by Abuja declaration.)	National reports, eg USAID 2010 Tz Health System Assessment	National	15%
6.3	**Number of strikes by government health staff**	The number of general strikes involving health staff in the government sector in the Lake Zone, in the last year.	Knowledge of facility managers or local government authorities	Zone/ 'Lake Region'	3 or less
6.4	**% increase in the national Human Development Index**	The proportional change in human development index (HDI) measurements in Tanzania, since the last assessment. The HDI is a composite index measuring average achievement in three basic dimensions of human development: a long and healthy life, knowledge and education, and a decent standard of living.	UNDP statistics: http://hdrstats.undp.org/en/indicators/103106.html	National	Any increase

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V. Baseline sustainability measurements in two hospitals

Table 4. Baseline sustainability indicator measurements from two case study hospitals in December 2012

Note: n/a = not applicable; ? = Value currently unknown; () = Information in parentheses explains how the measurement was derived or gives the similar measurement from 2011.

#	Sustainability indicator	Sustainability Reference	Mara Region: Musoma Regional Hospital, Dec 2012	Mwanza Region: Sengerema District Hospital, Dec 2012
1.1	**Number of cataract surgeries performed in the facility**	1,000	605 (585 in 2011)	498 (526 in 2011)
1.2	**Number of cataract surgeries performed at all facilities in the region**	1,000	605	1223
1.3	**% of cataract surgeries in region performed via outreach**	60%	0%	60%
1.4	**% of districts in region where at least 200 cataract surgeries were performed in a year (via outreach or static clinics)**	100%	17% (1/6 districts) (2012 surgeries: Tarime 0 , Bunda 0, Musoma 605, Butiama 0, Rorya 0, Serengeti 0)	25% (2/8 old districts) (2012 surgeries: Nyamagana 411, Ilemela 0, Sengerema 498, Ukewere 43, Misungwi 0, Kwimba 97, Magu 110, Geita 64)
1.5	**Number of eye patients attended in the facility**	5,000	?	7180 (6623 in 2011)
1.6	**% of districts in the region where at least 5000 eye patients were attended (considering data from all facilities)**	100%	?	?
1.7	**% of diabetic patients diagnosed at facility screened for diabetic eye condition**	90%	71% (180 screened/252 diagnosed)	?

2.1	**% of patients who are satisfied with services that are provided in health facility**	75%	? (Data not currently collected; estimated at 85%)	? (Data not currently collected; estimated at 80%)
2.2	**% of eyes operated for cataract with best corrected visual acuity of 6/18 or better after surgery**	80%	94% (502/605 (83%) patients operated on were refracted afterwards. 472/502 (94%) patients improved to VA 6/18 or better.) (Post-operative refractions done by optometrist.)	? (Patients not refracted after surgery. Data on improvements in uncorrected visual acuity is recorded in facility registers. Estimated at 70%.)
2.3	**% of patients being consulted within 2 hrs of coming to the health facility**	75%	? (Data not currently collected; estimated at 70%)	? (Data not currently collected; estimated at 85%)
2.4	**% of minimum number of eye care staff required by the NECP employed by the facility**	75%	43% (3/7 staff required + 1 oph assist)	60% (3/5 staff required + 2 oph assists)
2.5	**% of appropriate infrastructure and functional equipment required by the NECP in the facility**	80%	39% (14/36 pieces)	?
3.1	**Eye unit income from patient user fees**	None chosen	18.5M TSh (as of mid-Dec 2012)	14.7M Tsh (2011)
3.2	**Total eye unit income**	None chosen	50.9M Tsh (as of mid-Dec 2012)	49.7M TSh (2011)
3.3	**% of eye unit income from user fees**	60%	36% (18.5M/50.9M as of mid-Dec 2012)	? (14.7M/49.7M = 30% in 2011)
3.4	**Number of quarters when money has been timely disbursed to eye care unit**	4	4 (from 1 donor)	0/4 (from both 1 donor and government)
3.5	**% of funds disbursed compared to requested budget**	100%	47% (1.5M/3.2M from government)	87% (details?)
3.6	**Budget line for eye care activities exists at the facility level**	Yes	Yes	Yes
3.7	**% of eye care providers who work full time in eye care unit**	100%	67% (4/6 staff)	100% (details?)
3.8	**Number of quarterly meetings held with eye unit staff per year**	4	4	3

3.9	**Number of annual facility planning meetings where eye care staff is involved**	1	0	1
5.1	**Number of sensitization meetings conducted by facility per year**	4	45 (before weekly outreach)	2
5.2	**Number of community feedback meetings conducted by facility per year**	4	0	0
5.3	**% of villages in the region which have a trained community eye worker**	100%	9% (Volunteers from 20/235 villages in region trained on referral of childhood cataract)	7% (8/123 villages)
5.4	**Number of radio messages about eye care covering the Lake Zone aired annually**	2	0 (Lake Region)	0 (Lake Region)
6.1	**% of population covered by health insurance**	50%	10% (Tanzania)	10% (Tanzania)
6.2	**% of government budget allocated to health**	15%	11% (Tanzania)	11% (Tanzania)
6.3	**Number of strikes by government health staff**	3 or less	2 (Lake Region)	2 (Lake Region)
6.4	**% increase in the national Human Development Index**	Any increase	Yes (Tanzania: Increase from 0.454 in 2009 to 0.466 in 2011)	Yes (Tanzania: Increase from 0.454 in 2009 to 0.466 in 2011)

VI. Baseline sustainability star diagrams

Figure 3. Component 1: Population outcomes

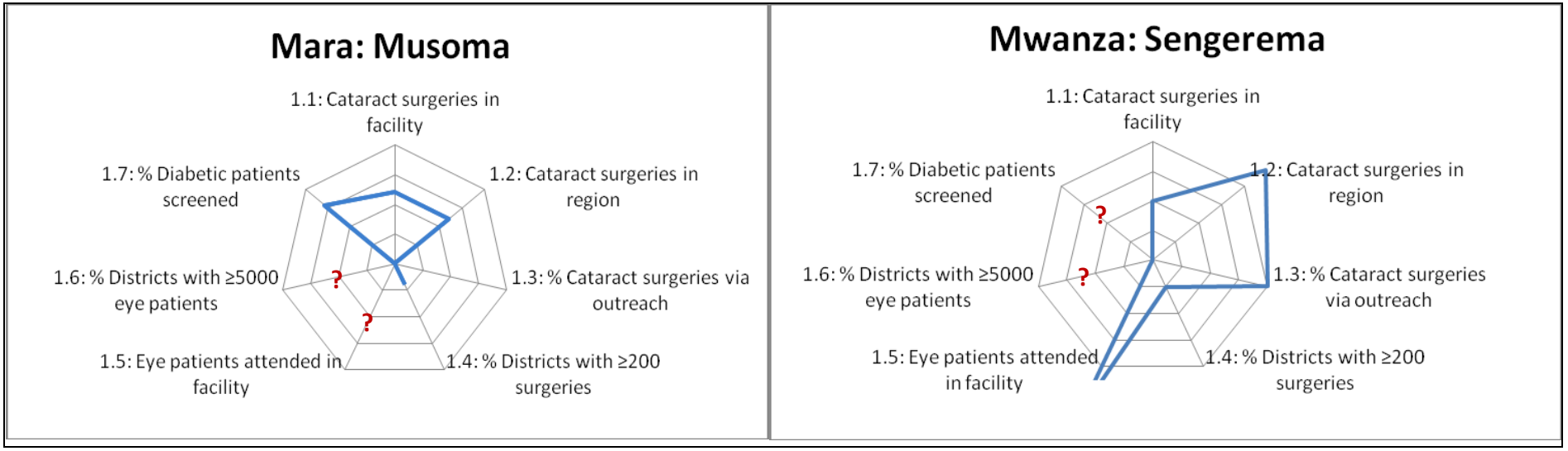


Figure 4. Component 2: Service delivery

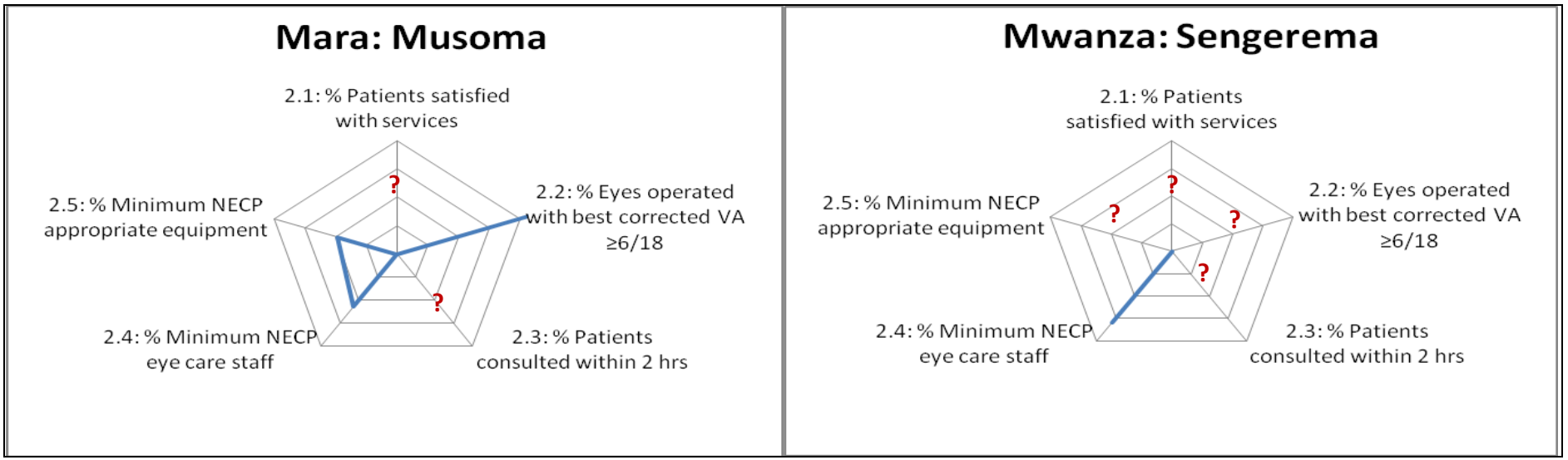


Figure 5. Component 3 & 4: Organisational capacity

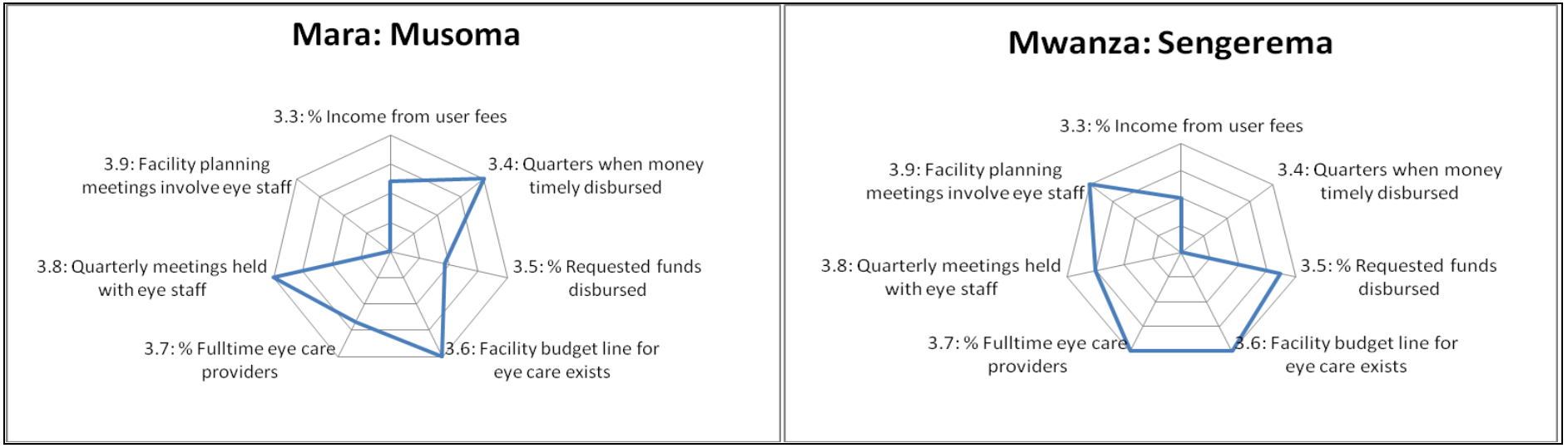


Figure 6. Component 5: Community capacity

Figure 7. Component 6: Enabling environment

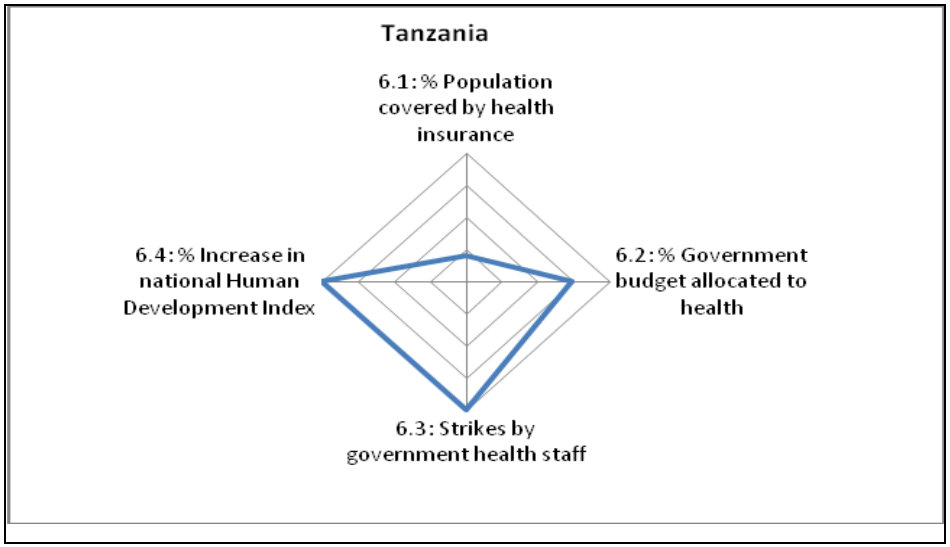


Figure 8. Sustainability diagram of Musoma Hospital, by component

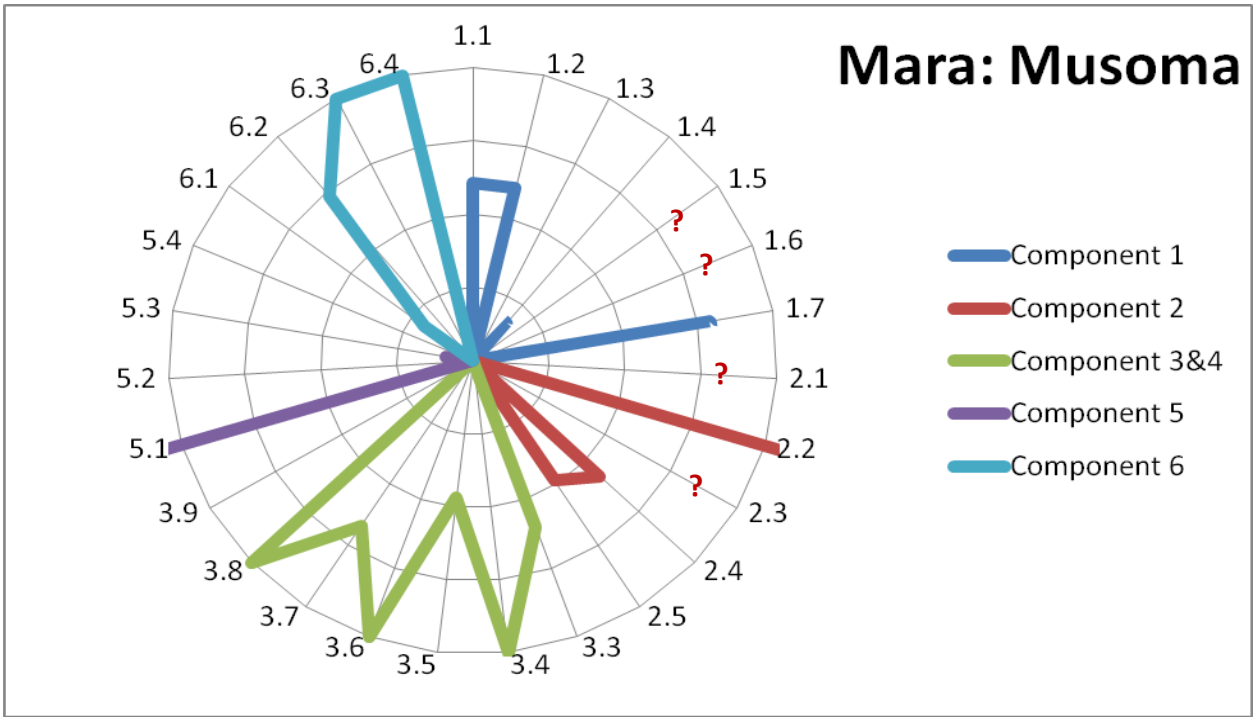
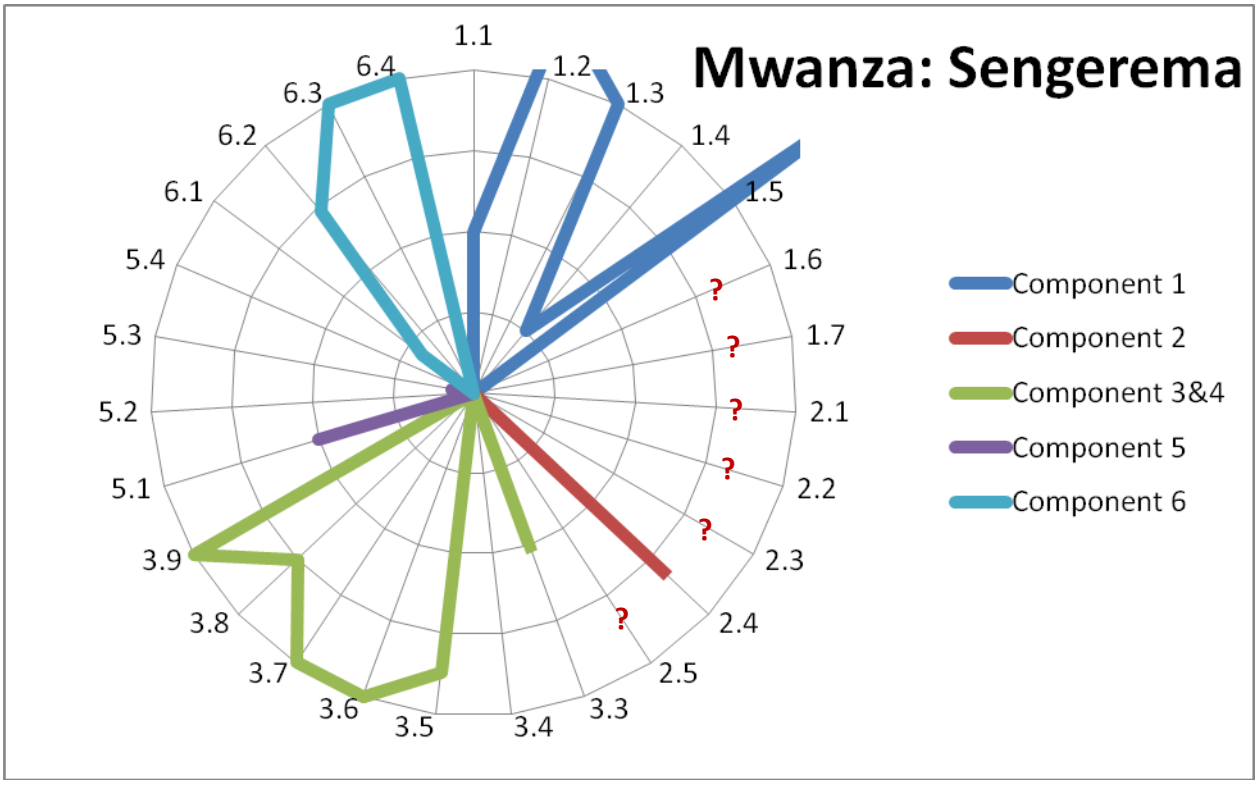


Figure 9. Sustainability diagram of Sengerema hospital, by component



VII. Ideas for individual action

After analysing the case study sustainability star diagrams, participants discussed ideas that they could pursue as individuals that would contribute to overall sustainability of the eye health system in the Lake Region (Table 5). Participants especially focussed on collecting information that is needed to analyse sustainability of eye units but which is not already routinely collected. They also discussed the importance of circulating information on indicators to interest many types of actors to build sustainability of the system. Finally, participants agreed to meet again in November 2013 to revisit indicators and assess sustainability progress.

Table 5. Participant ideas for individual action to improve eye health sustainability

Ideas for action to improve eye health system sustainability in the Lake Region
Share sustainability measurements and information with colleagues
Do a sustainability baseline for eye units
Improve sustainability indicators
Improve collection of eye health data/statistics
Use sustainability star diagrams like a dictionary or reference
Increase the number and frequency of eye health supervision visits by RECCs & DECCs
Sensitise RMO and circulate National Eye Care Strategy
Write to regions to discuss eye health sustainability and to establish an eye section
Advise districts to allocate more funds to eye health
Advise districts to better plan for eye health human resources
Convince other health staff to study eye care
Sensitise pupils, church leaders, mosque leaders and counsellors about eye health sustainability
Sensitise politicians in regions and in Dar es Salaam
Write to local media
Write to other parts of the Ministry of Health about what was discussed today
Encourage patients to make insurance contributions to the Community Health Fund

VIII. Appendix A

Table 6. Mwanza 2012 SAP workshop participant List

Region	Organisation	Role	Participant Name*
Kagera	Biharamulo hospital	ONO	John-Bosco Jeremiah
Kagera	Kagera regional hospital	RECC, cataract surgeon	Dr Zuberi Semkuyah
Kagera			Samwel Ngosha
Kagera	Ndolage hospital	Cataract surgeon	Dr Emmanuel Rwabukambwe
Kagera	Ndolage hospital	Hosp Med Dir	Dr Samwel Byabato
Kagera	Ndolage hospital	ONO	Grencia Rweyemamu
Kagera	Nyakahanga hospital	Cataract surgeon	Dr Joseph Kashashari
Mara	Mara RHMT	Member, Reg Health Secretary	Godbless Beatus
Mara	Musoma hospital	RECC, cataract surgeon	Dr Charles Sagwa Gendo
Mara	Musoma hospital	Optometrist	Happiness Magoma
Mara	Tarime hospital	ONO	Esther Josephat
Mwanza	Bugando referral hospital	ONO	Daphrosa Magere
Mwanza	Catholic Diocese of Geita	Health secretary	Joseph Massawe
Mwanza	Geita hospital	ONO, DECC	Hosea Mbalirwa
Mwanza	Kwimba hospital	Cataract surgeon	Dr Muhoja Jibalo
Mwanza	LARES	Chairperson	Dr Lucas Kaji
Mwanza	Magu hospital	ONO	Constantine Meleka
Mwanza	Mwanza RHMT	Member, RMO	Dr Bahati Msala
Mwanza	Nansio hospital	ONO	Rosalina Rutagarama
Mwanza	Nyamagana hospital	ONO	Edith Buchukundi
Mwanza	Rwagasore Optical Centre (private)	Optometrist	Daniel Charles
Mwanza	Sekou Toure regional hospital	Optometrist	Erenco R Kalisa
Mwanza	Sekou Toure regional hospital		Amos Jeremiah
Mwanza	Sengerema hospital	RECC, cataract surgeon	Dr Elias Seleli
Mwanza	Sengerema hospital	ONO	Mary Mathew
Mwanza		Eye care patient	Anjelina Mathias
Mwanza		Eye care patient	Kija Mathias
Mwanza		Eye care patient	Sebastian Luge
Mwanza		Eye care patient	Stumai Seleman Said
Mwanza	Maperece NGO	Member	Joseph S Mandango
Shinyanga	Kolandoto CHMT	Member, Hospital Secretary	Samson Challow
Shinyanga	Kolandoto hospital	Cataract surgeon, Hosp Med Dir	Dr Elimeliki Katani
Shinyanga	Kolondoto hospital	ONO	Sosthenes Jinasa
Shinyanga	Maswa hospital	Cataract surgeon	Dr Emmanuel Masinga
Shinyanga	Shinyanga regional hospital	RECC, ONO	Levy Bugumba
Shinyanga	Shinyanga regional hospital	Optometrist	Sosspeter Ntoke
Shinyanga	Shinyanga RHMT	Regional Administrative Secretary	Dr Nuru Mpuya
Tabora	Kitete regional hospital	RECC, cataract surgeon	Dr Sosoma Ng'anyanga
Tabora	Nkinga	Optometrist	Dunstan Msingwa
Tabora	Nkinga hospital	ONO	Zacharia Panga

National	Ministry of Health & Social Welfare	National Eye Care Coordinator	Dr Nkundwe Mwakyusa
National	CBM	Country Coordinator	Jane Mselle
UK	LSHTM/ICEH	Facilitator	Karl Blanchet
UK	LSHTM/ICEH	Facilitator	Jennifer Palmer
Mwanza	Translator	Translator	Amani D Mapogo

*Contact details for individual participants can be requested from the authors.

Table 7. List of sustainability indicators adapted by facilitators from other SAP workshops

Sustainability Indicators
1: Health Outcomes
Number of consultations performed
% of consultations for new patients
Number of cataract surgeries performed per million population (CSR)
% of consultations performed during outreach
Number of children screened in schools
% of registered cataract patients on the waiting list after 3 months
% of registered cataract patients who have not been operated after 1 year
% of low vision patients who received spectacles
% of patients who were referred from other services
% of schools screened
2: Service provision
Number of ophthalmologists per hospital or region
Number of optometrists per hospital or region
Number of cataract surgeons per hospital or region
Number of ophthalmic nurses per hospital or region
% of hospitals or regions with the minimum level of eye care staff
% of hospitals or regions with at least one eye care facility
% of eye care facilities delivering cataract surgeries
Availability of quality standards and guidelines
% of eye care facilities delivering services at the right quality level
% of eye care units that have access to an operating theatre
% of PHC facilities that have Vit. A drops in stock
% of patients who return for at least 1 follow up visit after surgery
% of ophthalmologists or cataract surgeons that perform at least 800 cataract surgeries per year
% of patients who are satisfied with the quality of service (waiting time, cleanliness, hygiene, access to information...)
% of eye care facilities with adequate level of equipment (e.g. microscope, slit lamp, cataract surgical set...)
% of patients who received cataract surgery at the right quality standard
% of population in the region that have not been visited by eye care professionals annually
Level of knowledge of eye care staff on treatments and diseases
% of PHC facilities that have at least one staff member who has received basic eye care training
3&4: Organisational and financial capacity
% change in total annual budget received compared to previous year
% of costs covered by patients through user fees
% of costs covered by government
% of costs covered by international agencies
Percentage of eye care staff replaced after departure (transfer or retirement) within 6 months

Annual number of supervision visits received by eye care staff in the region
% of eye care staff in the region who has been supervised during the last 6 months
% of eye care staff with job descriptions
% of eye care staff with individual action plans
% of eye care staff who have been assessed every year
% of hospitals with budgets and action plans which include eye care activities
% of districts or regions with budgets and action plans which include eye care activities
% of eye care facilities that have not experienced shortage of consumables during the last 6 months
Number of regional coordination meetings per year
Number of zonal coordination meetings per year
Average number of hospital team meetings including eye care staff per month
% of government/mission/private facilities that attended last zonal coordination meeting
Number of eye care suppliers (consumables & equipment) available in country
5: Community capacity
% of follow-up of clients done via outreach
% of facilities involving patients in their management committee
Number of satisfaction questionnaires analysed annually by management
Number of local organisations working with eye care providers in a region
% of assessment and planning exercises involving community members
% of community members and parents who know the existence of rehabilitation centres
% of patients who paid the full price
% of patients who can afford the price of a cataract surgery
Number of radio messages about eye care on air annually
Number of community eye care sensitisation sessions organised every year
Ratio of women:men who were screened in district or region
% of each district population screened by any service (static or outreach)
% of patients screened who are <18 yrs and >50 yrs
6: Environment
Existence of a National Eye Care Strategy
Amount of funding allocated by Ministry of Health & Social Work to eye care
% of hospital eye care income covered by users/donors/government
% of national budget invested in health
% of national budget allocated to eye care
UN Security level
Level of political stability
% of population under the national poverty level
% of districts in a region which have funding specifically for eye care
Eye care services covered by national health insurance schemes and/or exemption policies
% of eye care staff (oph, cat surgeons, ONOs, optometrists, oph specialists) trained nationally in relation to national need
% of recent (last 3 yrs) eye care graduates who entered eye health workforce

Table 8. Minimum core eye care team according to the Tanzanian National Eye Care Strategic Plan, 2011-16

Eye care practitioner type	Specialised & Teaching Hospitals	Referral Teaching Hospitals	Regional Hospitals	District Hospitals	Dispensaries/ Health Centres
Ophthalmologists	6	6	1	0	0
Assistant medical officer (cataract surgeon)	0	0	1	1	0
Assistant medical officer (general)	0	0	1		0
Optometrists	5	5	1	1	0
Ophthalmic nursing officers	15	15	2	2	0
Low vision technicians	3	3	1	1	0
Integrated eye care worker/ ophthalmic assist	0	0	0	0	1
Total	29	29	7	5	1

Table 9. Recommended eye care infrastructure & equipment according to the Tanzanian National Eye Care Strategic Plan, 2011-16

Note: Facilities should be equipped with the infrastructure and equipment recommended at the level of their facility type as well as the infrastructure and equipment recommended for levels below. Eg., a District Hospital should possess equipment recommended in dispensaries (4 pieces) and health centres (3 pieces) as well as the equipment recommended in district hospitals (24) for a total of 31 pieces.

Facility level	Equipment/Infrastructure	Number of different types of equipment
Dispensaries	Magnifying Loupe	1
	Diagnostic pen torch	1
	Snellen and E combined visual acuity charts	1
	Surgical set for trichiasis surgery	1
	Sub-total	4
Health Centres	Schiotz Tonometer	1
	Direct Ophthalmoscope	1
	Surgical set for minor lid surgeries	1
	Sub-total	3
District Hospitals	Snellen near chart (reading test type)	1
	Slit lamp with applanation tonometer	1
	Hand held slit lamp	1
	A scan ultrasounds machine with IOL calculation	1
	Keratometer	1
	Automated visual field machine	1
	Retinoscope	1
	Trial lens set with trial frame	1
	Cross cylinder	1
	Grinding machine	1
	Portable operating microscope	1
	Chipping machine	1
	Portable anterior vitrectomy equipment	1
	Surgical sets for extracapsular cataract extraction	1
	Trabeculectomy sets	1
	Glass cutter	1
	Engraver	1
	Lensometer	1
	Ishihara book for colour blindness test	1
	Frame heater	1
	Operating loupe	1
	Portable autoclave	1
	Portable operating lamp	1
	Bipolar cautery with cables and forceps	1

	Sub-total	24
Regional Hospitals	Indirect ophthalmoscope sets	1
	Slit lamp with YAG & argon laser	1
	B scan ultrasound machine	1
	Non-portable operating microscope	1
	Non-portable vitrectomy machine	1
	Sub-total	5
Specialised, Teaching & Referral Hospitals	Autorefractor	1
	Phacoemulsification machine	1
	Fundus camera	1
	Corneal graft sets	1
	Retinal surgery sets	1
	Equipment for provision of all kinds of laser treatment	1
	Any other advanced eye care equipment and instruments	
	Sub-total	6

Table 10. Example of eye unit income calculations from Musoma Hospital, Dec 2012

Source of Income	# patients	TSh/pt	Total TSh income	Notes
Income from federal MoH			4,700,000	For eye unit staff salaries (approximate, for 1 AMO cataract surgeon, 1 ophthalmic nursing officer, 1 optometrist and 1 ophthalmic assistant).
Income from donors			15,200,000	3.8M per quarter from KCCO for surgical consumables per patient operated and outreach activities. No equipment donated in 2012.
Income from hospital	549	20,000	10,980,000	In-kind for other surgical consumables per patient operated.
Income from hospital basket fund			1,500,000	For spectacles.
Income from patient consultation fees (excluding exemptions)	0	2,000	0	TSh 2,000 patient consultation fees paid to the general hospital are not given to the eye unit.
Income from patient surgical fees (excluding exemptions)	462	40,000	18,480,000	549 patients operated - 87 exemptions = 462. Exemptions include those due to: poverty, World Sight Day or patients on BIMA health insurance (BIMA reimbursements not given to eye unit by general hospital).
Total income			50,860,000	