

# Situation Analysis of VISION 2020 in the WHO South-East Asia Region



**World Health  
Organization**

Regional Office for South-East Asia

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# Contents

	<b>Page</b>
Acknowledgement.....	v
Executive summary.....	vii
1. Introduction.....	1
2. Background Information on Vision 2020 in the South-East Asia Region .....	1
3. Overview of the situation analysis.....	2
3.1 Goals and objectives.....	2
3.2 Methodology.....	3
4. Situation analysis.....	3
4.1. Epidemiology of visual impairment and blindness in the WHO SEA Region.....	3
4.2 National policies, programmes and plans for prevention of blindness .....	6
4.3 Monitoring and reporting in eye-care.....	8
4.4 Human resources for eye-care .....	9
4.5 Eye-care services.....	11
4.6 Disease control and infrastructure at the primary-level.....	11
4.7 Disease control and infrastructure at the secondary-level .....	12
4.8 Disease control and infrastructure at the tertiary-level.....	14
4.9 Country profiles .....	16
5. Strengths and challenges.....	28
6. Conclusions and recommendations .....	30
6.1 Conclusions.....	30
6.2 Recommendations .....	31

**Annexes**

1. Abbreviations .....	33
2. Questionnaires developed and used for the situation analysis.....	34
3. List of respondents to the questionnaire .....	43

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## Executive summary

**Rationale:** The latest WHO estimates (2010) are that 39 million people are living with blindness and more than 285 million are visually impaired in the world. In the WHO South-East Asia Region, without India, 4 82 000 per 1 million population are living with visual impairment. 53 000 per 1 million population in India are suffering from visual impairment. The year 2010 also marked 10 years of Vision 2020, the partnership between WHO and the International Agency for the Prevention of Blindness (IAPB) that aimed to eliminate avoidable blindness by the year 2020.

**Objectives:** To provide an update on the current eye-care and rehabilitation services in countries of the South-East Asia Region.

**Methodology:** Two data collection tools were used to assess programmes being implemented for eye health in Member Countries. Data were collected through the WHO representatives in each country office, and from National Programme Officers and Focal Points in the respective ministries of health. Follow-up was also done to obtain as much country data as possible. The results were analysed and recommendations made at an Expert Group Meeting in 2007. These recommendations were revised in 2011 considering the new global estimates and revised country data.

**Results:** Of the 11 Member States of the WHO South-East Asia Region 10 responded to the first questionnaire and seven countries provided updated information in 2010.

In this report, disaggregated data is reported from Member States, rather than pooled estimates, since prevalence studies were conducted in various sample populations using different methodologies. Use of different definitions for blindness and visual impairment, including the use of presenting and best corrected visual acuity is adding to the difficulties in comparison of data from various countries in the Region.

Rapid assessments of cataract surgical services or of avoidable blindness conducted among people aged 50 years and older reported 3% to 4% prevalence of blindness. One study in people aged 40 years and older reported a prevalence of 4.1%, and those surveys that included people of all ages report that 0.3% to 0.5% of people are blind.

The magnitude of visual impairment among adults aged 40 years or older is reported as high as 40.4% in Meiktila the district in Myanmar and less than 4% in Bhaktapur The district in Nepal. The prevalence of visual impairment in the general population was 21.6% in DPR Korea. The major cause of blindness is cataract; uncorrected refractive errors are the commonest cause

of visual impairment; Glaucoma, diabetic retinopathy, and age-related macular degeneration are other causes that contribute to the magnitude of blindness.

Vision 2020 plans are being implemented in all Member States of the Region. Sub-optimal monitoring mechanisms, programme management and coordination at Regional and national level are reported as major areas of weakness. Areas of strength in Member States of the Region included the availability of low-cost equipment and consumables for improving eyesight and preventing blinding conditions; evolving strong research infrastructure; ensuring strong political and grooming financial commitment to national programmes; good integration of primary eye-care within the existing national primary health-care service systems; coordination with and strong support from other sectors in expanding primary eye-care; and the availability of facilities for training of trainers and a primary eye-care workforce.

**Recommendations:** The Expert Group, based on the situation analysis at the meeting conducted in December 2007 the fellow provided recommendations of which is still relevant to the present situation:-

- (1) In the context of planning for optimal service utilization:
  - (a) assess the impact of interventions on visual status and the quality of life (QoL) of beneficiaries;
  - (b) improve the referral and feedback system.
- (2) In the context of primary eye-care:
  - (a) to focus on primary eye-care along with secondary or tertiary-level care as is the current practice;
  - (b) to foster community ownership in the delivery of primary eye-care, as opposed to the current top-down approach, to ensure programme sustainability;
  - (c) to integrate primary eye-care with primary health-care and others working in the areas of community development;
  - (d) to increase the involvement of village-level volunteers (e.g. Accredited Social Health Activist) in the identification and referral of patients who need eye-care services.
- (3) In the context of disease control:

It was recommended that interventions and strategies for disease control should be periodically reviewed for relevance and effectiveness based on current evidence.
- (4) Rapid assessments of avoidable blindness (RAAB), preferably of people over 39 years of age, may be conducted in countries where no recent survey of visual impairment or blindness has been conducted. Near-vision assessment can also be included as a part of the examination protocol as recent studies have revealed a huge

unmet need for presbyopia. These assessments can be undertaken at the district level and then repeated periodically in all Member States in the Region where data are not available. This will provide scientifically rigorous and representative epidemiological data on visual impairment and/or blindness for the Region. Using standard definitions and protocols (including age groups) will help in obtaining comparable data.

- (5) A valid inventory of products, centres and personnel with relevant technical expertise should be maintained by the MoH Focal Person/unit. It may be revised annually.
- (6) To enhance the comparability of human resource training for eye-care across Member countries, accreditation of training and clear career paths for all levels of professionals may be developed.
- (7) A broader consideration of health-care financing is required in view of the inequity, access problems for poorer populations, and the reliance on out-of-pocket payments.
- (8) To enhance the regular reporting and monitoring system in all the countries along with surveillance for all the major causes of visual impairment.



## 1. Introduction

Globally, it is estimated that there are over 285 million people living with visual impairment and over 39 million people with blindness.<sup>1</sup> Of this, over 48 thousands per million population with visual impairment live in the South-East Asia Region without India according to the most recent estimates released by WHO in 2010.<sup>2</sup> In India alone 53 thousands per million population are living with visual impairment. Earlier estimates in 2001 were of 12.1 million people with blindness living in the Region<sup>1,3</sup>

**Table 1: Global distribution of blindness and visual impairment (Year 2010)**

WHO Regions	Visual impairment (in 1000 per million population)
Regional Office for Africa	32.7
Regional Office for the Americas	29.1
Eastern Mediterranean Regional Office	40.5
Regional Office for Europe	31.7
<b>Regional Office for South-East Asia - India excluded</b>	<b>48.2</b>
India	53
Regional Office for the Western Pacific, China excluded	33.3
China	55.4
	<b>285.389</b>

## 2. Background Information on Vision 2020 in the South-East Asia Region

A Strategic Plan for “Vision 2020: The Right to Sight” was framed in July 2000, with the aim to eliminate avoidable blindness in the South-East Asia Region.<sup>4</sup> The mission of the WHO Regional Office for South-East Asia (SEARO) for regional eye health is “to assist the countries of the Region to develop sustainable models of eye-care delivery systems that are able to provide promotive, preventive, curative and rehabilitative services to all

<sup>1</sup> SEA-Ophthal-119, WHO Project: ICP OSD 002.

<sup>2</sup> New estimates of visual impairment and blindness 2010: <http://www.who.int/blindness/en/>

<sup>3</sup> Global data on visual impairment in the year 2002. Resnikoff S, Pascolini D, Etya'ale D, Kocur I, Pararajasegaram R, Pokharel GP, Mariotti SP. *Bulletin of the World Health Organization* 2004;82: 844-851.

<sup>4</sup> SEA-Ophthal-117, WHO Project: ICP OSD 002.

citizens, particularly the marginalized and vulnerable, to ensure that no one will go blind needlessly, or having gone blind, will not remain so if his or her sight can be restored by utilizing the knowledge, technology and the means available to the countries”.

This is consistent with the resolutions of the World Health Assembly<sup>5</sup> and in compliance with the primary health-care approach.<sup>6</sup> The objective is to assist Member countries in building national capacity for the prevention and control of blindness, and specifically, to assist them to eliminate avoidable blindness from the major causes (cataract, childhood blindness, refractive errors and corneal blindness) by the year 2020.

Activities in the Region towards fulfilling this mission include: (1) developing an integrated approach for disease control, (2) human resource development and (3) infrastructure and technology development across health systems, alongside strengthening the information base and using it for advocacy to facilitate the formulation of policies and strategies in support of Vision 2020.

A planning meeting<sup>7</sup> and two studies to assess the human resource status in the Region<sup>8,9</sup> have been conducted since 2001. As a continuation of this process, the situation analysis reported here includes an update of the extent to which these activities are being implemented in Member States, and it also identifies the strengths and weaknesses of the existing country programmes. The situation is analysed to guide Regional policy and inform the process of drafting a strategic framework for future action.

### **3. Overview of the situation analysis**

#### **3.1 Goals and objectives**

The goal of conducting a situation analysis was to provide an update on the current scenario of visual disability and rehabilitation including Vision 2020 programmes, across Member States of the SEA Region.

The specific objectives were to:

- (1) ascertain the prevalence and pattern of morbidity related to blindness and visual impairment in Member countries;

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<sup>5</sup> World Health Assembly resolutions 56.26 and 59.25.

<sup>6</sup> [http://whqlibdoc.who.int/hq/pre-wholis/WHO\\_PBL\\_83.8\\_\(Strategies\).pdf](http://whqlibdoc.who.int/hq/pre-wholis/WHO_PBL_83.8_(Strategies).pdf)

<sup>7</sup> SEA-Ophthal-120, WHO Project: ICP OSD 002.

<sup>8</sup> SEA-Ophthal-121, WHO Project: ICP OSD 002.

<sup>9</sup> SEA-Ophthal-124, WHO Project: ICP OSD 002.

- (2) document the infrastructure and human resources available for the control of blindness;
- (3) record the strategies employed for the control of priority eye diseases identified by WHO and Vision 2020;
- (4) confirm the status of the programme with regard to the development and implementation of a Vision 2020 National Plan;
- (5) assess the strengths and weaknesses of the current programme; and
- (6) obtain viable suggestions and recommendations for the successful implementation of sustainable programmes in each country.

## **3.2 Methodology**

This situation analysis was conducted through questionnaire surveys sent to the WHO representatives in each country office, and the National Programme Officers (NPO) and Focal Points in the respective ministries of health in the Member States.

### ***Data Collection***

Information and evidence on magnitude of disability, causes, policy and legislation, disease control strategies, human resources, infrastructure, community participation, and programme management was collected through questionnaires (*See Annex 1*). Analytical information on strengths and weaknesses and recommendations, particularly for programme sustainability, were obtained both through questionnaires (*See Annex 2*), and telephonic interviews. A draft report was presented to an Expert Group for technical review, and an Expert Group meeting was held in New Delhi in December, 2007. Subsequently, the information was updated by a questionnaire (*See Annex 3*) in 2010 and the report modified and peer reviewed and the final report prepared.

## **4. Situation analysis**

### **4.1. Epidemiology of visual impairment and blindness in the WHO SEA Region**

The overall burden of disease in the Region is taken from the revised estimates published by the World Health Organization in 2010, which is based on presenting visual acuity (including uncorrected refractive error).

The definitions used in this survey for visual impairment, low vision and blindness are those of the International Statistical Classification of Diseases

and related health problems, 10th Revision (ICD-10): H54 (9), wherein visual impairment includes low vision as well as blindness;

- Low Vision (ICD-10 visual impairment categories 1 and 2):
  - Visual acuity of less than 6/18, but equal to or better than 3/60, or
  - A corresponding visual field loss to less than 20 degrees in the better eye with best possible correction.
- Blindness (ICD-10 visual impairment categories 3, 4 and 5)
  - Visual acuity of less than 3/60, or
  - A corresponding visual field loss to less than 10 degrees in the better eye with best possible correction.

Further, the following terms are clarified as below:

**PVA (Presenting Visual Acuity):** The visual acuity as tested with whatever spectacle correction (or other refractive correction) the person is wearing.

**BCVA (Best Corrected Visual Acuity):** The visual acuity as tested with appropriate refractive correction in place.

Due to the use of different definitions for blindness and visual impairment, including use of presenting and best corrected visual acuity it is difficult for comparison of data from various countries in the Region. Rapid assessment surveys and national surveys were conducted in several countries and in more than one location in Nepal. Typically people aged 50 years and older are included in these Rapid Assessment Surveys. The prevalence of blindness was reported to be between 3% and 4%. A very high prevalence of blindness of 17.4% was reported from Rautahat the district in Nepal using the best corrected visual acuity of <6/60 definition for blindness. Despite certain differences, the three studies from Nepal show a large Regional variation in blindness within the country.

One study from rural Myanmar, the Meiktila Eye Study that included people aged 40 years and older, reported a high prevalence of blindness (8.1%). In the similar age group the prevalence of blindness in Timor-Leste was 4.1%. The blindness in a nationwide Rapid Assessment Survey in India was reported to be 3.6%. The Kandy Eye Study reported a low blindness prevalence of 1.1%. National surveys in Bhutan and Thailand that included people of all ages reported a prevalence of 0.3% and 0.5% respectively.

The magnitude of low vision among adults aged 40 years or older is reported to be as high as 40.4% in rural Meiktila district in Myanmar and less than 4% in Bhaktapur district in Nepal. In the similar age group, the Kandy Eye Study reported a prevalence of visual impairment of 5.9%.

The prevalence of visual impairment in the general population was 21.6% in DPR Korea (Table 2).

Across the countries, cataract was the leading cause of blindness. Uncorrected refractive errors were the major cause of moderate and severe visual impairment. Glaucoma, diabetic retinopathy, and age-related macular degeneration are other causes that contribute to the burden of blindness in the Region. Use of different examination protocols makes the cross-comparison of data from various studies difficult.

**Table 2: Recent studies on visual impairment in the SEA Region**

Country	Place	Year	Sample size (Examined)	Age group (yrs)	Definition	Blindness (%)	Low vision (%)
BAN	Satkhira district <sup>10</sup>	2006	4 868	≥50	<3/60NA	2.9	SVI (3/60 to <6/60) : 1.6 MVI (6/60 to <6/18) : 8.4
	National Blindness and Low Vision Survey of Bangladesh <sup>11</sup>	2003	11 624	≥30	<3/60NA	1.53	Low vision (<6/12) :13.8
BHU*	National survey	2010	NA	All ages	NA	0.33	NA
DPRK*	Nationwide survey	2005-06	200 000	All ages	NA	NA	21.6
IND	Andhra Pradesh <sup>12 13</sup>	2001 / 2002	10 293	All ages	<6/60NA	1.84	8.0
	Tirunelveli, Tamil Nadu <sup>14</sup>	2002	5 411	≥50	<6/60NA	11.0	
	Tamil Nadu (Rural) <sup>15</sup>	2006	3 924	≥40	<3/60NA	3.4	
	Nationwide survey <sup>16</sup>	2008	40 447	≥50	<3/60NA	3.6	SVI -4.4 Low vision (<6/18 to 6/60): 16.8
	Navsari district, Gujarat <sup>17</sup>	2010	4 738	≥50	<6/60NA	6.9	

<sup>10</sup> Rapid assessment of avoidable blindness and needs assessment of cataract surgical services in Satkhira The district, Bangladesh. Br J Ophthalmol. 2006 Oct; 90(10):1225-9.

<sup>11</sup> Prevalence and causes of blindness and visual impairment in Bangladeshi adults: Results of the National Blindness and Low Vision Survey of Bangladesh. Br J Ophthalmol. 2003 Jul; 87(7):820-8.

<sup>12</sup> Dandona L, Dandona R, Srinivas M, Giridhar P, Vilas K, Prasad MN, John RK, McCarty CA, Rao GN. Blindness in the Indian state of Andhra Pradesh. Invest Ophthalmol Vis Sci. 2001 Apr;42(5):908-16.

<sup>13</sup> Dandona R, Dandona L, Srinivas M, Giridhar P, Prasad MN, Vilas K, McCarty CA, Rao GN. Moderate visual impairment in India: the Andhra Pradesh Eye Disease Study. Br J Ophthalmol. 2002 Apr;86(4):373-7.

<sup>14</sup> Nirmalan PK, Thulasiraj RD, Maneksha V, Rahmathullah R, Ramakrishnan R, Padmavathi A, Munoz SR, Ellwein LB. A population based eye survey of older adults in Tirunelveli the district of south India: blindness, cataract surgery, and visual outcomes. Br J Ophthalmol. 2002 May;86(5):505-12.

<sup>15</sup> Vijaya L, George R, Arvind H, Baskaran M, Raju P, Ramesh SV, Paul PG, Kumaramanickavel G, McCarty C. Prevalence and causes of blindness in the rural population of the Chennai Glaucoma Study. Br J Ophthalmol. 2006 Apr;90(4):407-10.

<sup>16</sup> Rapid Assessment of Avoidable Blindness in India. PLoS One. 2008 Aug 6; 3(8):e2867.

<sup>17</sup> Prevalence and causes of visual impairment and blindness in older adults in an area of India with a high cataract surgical rate. Ophthalmic Epidemiol. 2010 Aug;17(4):185-95.

Country	Place	Year	Sample size (Examined)	Age group (yrs)	Definition	Blindness (%)	Low vision (%)
INO	Sumatra, Indonesia <sup>18</sup>	2003	989	≥21	<3/60	2.2	5.8
MMR	Meiktila The district <sup>19</sup>	2007	2 073	≥40	<3/60NA	8.1	40.4
	Meikhtila district <sup>20</sup>	2011	2 777	≥50	<3/60NA	1.62	SVI (<3/60 to 6/60) :4.5 MVI (6/60 to <6/18) :36.6
NEP	Bhaktapur district <sup>21</sup>	2010	11 499	≥40	<3/60	0.43	3.97
	Lumbini zone, Rautahat district <sup>22</sup>	2010	4 720	≥50	<6/60	17.4	NA
	Lumbini zone, Chitwan district <sup>23</sup>	2010	5 138	≥50	<6/60NA	4.6	18.9
	Gandaki Zone <sup>24</sup>	2006	5 001	≥45	<6/60NA	2.6	NA
SRL	Kandy <sup>25</sup>	2009	1 375	≥40	WHO	1.1	5.9
THA*	National survey	2007	21 171	All ages	<3/60	0.53	NA
TL	Timor-Leste <sup>26</sup>	2007	1 414	≥40	<3/60NA	4.1	MVI (6/60 to <6/18): 17.7

NA presenting visual acuity is used; \* Unpublished data; No data available from MAV; SVI – Severe Visual Impairment, MVI – Moderate Visual Impairment.

## 4.2 National policies, programmes and plans for prevention of blindness

The Strategic Framework 2002 recommended strengthening of national prevention of blindness programmes.

The specific activities were:

- (1) National coordination committees/task forces for the prevention of blindness and Vision 2020 to be constituted in the countries or existing ones strengthened.
- (2) National Plans with new goals and targets to be drawn up through a process of consultation and consensus.
- (3) National launching of Vision 2020.

<sup>18</sup> Causes of low vision and blindness in rural Indonesia. Br J Ophthalmol. 2003 Sep; 87(9):1075-8

<sup>19</sup> Prevalence and causes of visual impairment in rural Myanmar: the Meiktila Eye Study. Ophthalmology. 2007 Dec; 114(12):2302-8.

<sup>20</sup> RAAB Study (unpublished data)

<sup>21</sup> Prevalence of visual impairment, cataract surgery and awareness of cataract and Glaucoma in Bhaktapur the district of Nepal: the Bhaktapur Glaucoma Study. BMC Ophthalmol. 2011 Jan 21;11:2

<sup>22</sup> The prevalence of blindness and cataract surgery in Rautahat the district, Nepal. Ophthalmic Epidemiol. 2010 Mar; 17(2):82-9.

<sup>23</sup> Cataract surgical outcome and predictors of outcome in Lumbini Zone and Chitwan The district of Nepal. Ophthalmic Epidemiol. 2010 Oct; 17(5):276-81.

<sup>24</sup> Prevalence of blindness and cataract surgery in Gandaki Zone, Nepal. Br J Ophthalmol. 2006 Apr; 90(4):411-6.

<sup>25</sup> Cataract in central Sri Lanka: cataract surgical coverage and self-reported barriers to cataract surgery. Clin Experiment Ophthalmol. 2009 Nov; 37(8):780-4.

<sup>26</sup> Prevalence and causes of blindness and low vision in Timor-Leste. Br J Ophthalmol. 2007 Sep; 91(9):1117-21

- (4) National focal points in place in the countries.
- (5) Information systems for planning, monitoring and evaluation to be improved.

National-level Focal Persons have been appointed in the ministries of health in most countries. However, coordination committees or units/task forces do not function optimally either at the Regional or national levels.

National Plans that roughly follow the template and conform to the objectives of Vision 2020 have been developed, and implementation has commenced in all countries.

**Table 3: Vision 2020 programme status**

	Vision 2020 Plan developed	Date of commencement of implementation	National Committee established	Focal point
<b>BAN</b>	Yes	18 June 2005	Yes	National Institute of Ophthalmology, Ministry of Health and Family Welfare
<b>BHU</b>	Yes	27 July 1999	Yes	Department of Ophthalmology, Thimphu
<b>DPRK</b>	Yes	August 2005	Yes	Dept of Prevention and Treatment, Ministry of Public Health
<b>IND</b>	Yes	2004*	Yes	National Programme for Control of Blindness, Ministry of Health and Family Welfare
<b>INO</b>	Yes	14 October 2005	Yes	Directorate of Basic Health Efforts, Ministry of Health
<b>MAV</b>	Yes	2009	Yes	Ministry of Health and Family Welfare
<b>MMR</b>	Yes	October 2000	Yes	Trachoma Control and Prevention of Blindness, Ministry of Health
<b>NEP</b>	Yes	September 2001	Yes	Chief Policy Planning and International Cooperation Division, Ministry of Health and Population
<b>SRL</b>	Yes	October 2007	Yes	Ministry of Health
<b>THA</b>	Yes	10 May 2000	Yes	Ministry of Public Health, Sirindhorn National Medical Rehabilitation Center
<b>TL</b>	Yes	2010	Yes	Ministry of Health

\*The National Body (*VISION 2020: The Right to Sight – INDIA*) was formed in 2004

**Table 4: Budgetary allocation for blindness prevention**

Country	Population	Budgetary allocation for eye-care in US\$ (2010)
BAN	162 221 000	557 142
BHU	697 000	200 000
DPRK	23 906 000	data not available
IND	1 198 003 000	58 million
INO	229 965 000	5 000 000
MAV	309 000	Data not available
MMR	50 020 000	538.58 million Myanmar Kyats (approx. 8 408 737 USD)
NEP	29 331 000	1 000 000
SRL	25 553 000	1.1 billion Sri Lankan Rupee (approx. 9 132 000 USD)
THA	63 396 000	data not available
TL	1 134 000	data not available

(Source of Information: Responses to WHA Action plan)

### 4.3 Monitoring and reporting in eye-care

The monitoring and reporting structure is not very well established in the Region except for a few countries. Even though the information is collected at regular intervals, it mainly focused on visual acuity and cataract. The cataract surgical rate is not routinely reported. Data for monitoring visual outcomes after cataract surgery are not routinely collected in all countries in the Region. As since there was no health information system in any of the Member States that could provide information needed for this evaluation, so the questionnaire methodology was deployed.

**Table 5: Data collection and reporting in eye-care**

Country	Reporting frequency	Data collected	Indicators collected	
			Cataract surgical rate (CSR)	Visual outcome after cataract surgery
BAN	NA	NA	NA	NA
BHU	Monthly reports from health centres	Demographic data of visually impaired subjects, presenting and best corrected visual acuity , refraction, diagnosis, treatment and visual outcome after cataract surgery after 4-6 weeks in those who are operated	Yes	Yes

Country	Reporting frequency	Data collected	Indicators collected	
			Cataract surgical rate (CSR)	Visual outcome after cataract surgery
<b>DPRK</b>	Reports eight times per year/quarterly	Demographic data of visually impaired subjects along with presenting visual acuity (8 times per year). Best corrected visual acuity, refraction, diagnosis, treatment and visual outcome after cataract surgery after 4-6 weeks in those who are operated is reported once in quarter	NA	YES
<b>IND</b>	Quarterly reporting from 20 medical college departments of ophthalmology (Sentinel Surveillance Units). Routine reporting of CSR is done in district hospitals	Demographic data, presenting and best corrected visual acuity, treatment administered and visual outcome at 4-6 weeks. Spectacles given to school children	YES	YES
<b>INO</b>	NA	NA	NA	NA
<b>MAV</b>	NA	NA	NA	NA
<b>MMR</b>	NA	NA	YES	NA
<b>NEP</b>	NA	NA	YES	NA
<b>SRL</b>	Biannual reports submitted eye units	Clinical diagnosis, treatment administered and visual outcome after cataract surgery in those operated	YES	YES
<b>THA</b>	Included in screening/intervention programmes	Demographic data of visually impaired subjects, presenting and best corrected visual acuity, refraction, diagnosis, treatment and visual outcome after cataract surgery after 4-6 weeks in those who are operated	YES	YES
<b>TL</b>	NA	NA	NA	NA

NA Information not available; Yes—Data collection is done, details not available

#### 4.4 Human resources for eye-care

The review of human resources in the SEA Region shows inequitable personnel for population. The target of the ophthalmologist-population ratio year 2010 was set at 1:100 000.<sup>27</sup> Only DPR Korea, Maldives, Thailand are on target. Bhutan is close to the target and Timor-Leste has one ophthalmologist for over a million people. The availability of mid-level ophthalmic personnel (MLOP) does not seem to be an issue in most countries in terms of numbers, except in Myanmar, Thailand and Timor-Leste.

Uneven distribution of personnel has been reported as an important issue by most countries in the Region. Retention of trained human resources at the

27 SEA-Ophthal-117, WHO Project: ICP OSD 002

secondary-level and lack of motivation among eye-care professionals has been reported from Bangladesh. Other personnel including community eye health managers, rehabilitation personnel and biomedical personnel have not been reported. Six of the eleven countries that provided information have an adequate number of primary health-care personnel (health workers) trained in eye-care.

**Table 6: Availability of human resources for eye-care**

	Population (mid-2009 estimate) <sup>28,29</sup>	Ophthalmologists		MLOP (optometrists, ophthalmic assistants and technicians, refractionists, ophthalmic nurses, orthoptists)		Others
		Total number	Ratio	Total number	Ratio	Total
<b>BAN<sup>NA</sup></b>	162 221 000	900	1:180 246	Yes	Yes	1 CEH manager, negligible number of MLOPs
<b>BHU<sup>NA</sup></b>	697 000	6	1:116 167	56	1:12 446	
<b>DPRK<sup>NA</sup></b>	23 906 000	913	1:26 184	645	1:37 004	
<b>IND<sup>NA</sup></b>	1 198 003 000	20 000	1:59 900	62 000	1:19 323	30 000 medical officers, 35 state programme officers, 631 the district programme managers, approximately 30 000 community health workers
<b>INO<sup>NA*</sup></b>	229 965 000	1641	1:140 137	12300	1:18 696	
<b>MAV<sup>†</sup></b>	309 000	19	1:16 263	26	1:11 885	174 primary health-care workers trained in eye-care
<b>MMR<sup>NA*</sup></b>	50 020 000	250	1:200 080	405	1:123 506	6 400 primary health-care workers trained in eye-care
<b>NEP<sup>NA</sup></b>	29 331 000	130	1:225 623	412	1:71 192	3 500 female community health volunteers
<b>SRL<sup>†</sup></b>	25 553 000	65	1:393 123	550	1:46 460	3000 primary health-care workers trained in eye-care
<b>THA<sup>†</sup></b>	63 396 000	808	1:78 460	121	1:523 934	278 primary health-care workers trained in eye-care
<b>TL<sup>†</sup></b>	1 134 000	3	1:1 134 000	9	1:126 000	

NA Source of information – Responses to WHA Action plan questionnaire 2010

\* Source of information – Responses to Vision 2020 Situation update 2010

Yes – Personnel available, but exact number not known

<sup>28</sup> United Nations, World Population Prospectus: The 2008 revision

<sup>29</sup> Estimates provided by the Institute of Population and social research, Mahldol University, Thailand 26 Jan 2009

## 4.5 Eye-care services

A vision centre or primary centre was proposed for every 50 000 population, a secondary-level centre for every 0.5 to 1.0 million population and a tertiary centre/training centre for every five million population.<sup>30</sup> Bhutan, Maldives, Sri Lanka and Thailand have very good primary eye-care service coverage. Coverage is least in Nepal, Indonesia, Bangladesh and Indonesia. Primary eye-care centres are not reported from Myanmar. Secondary centre coverage is adequate except in Bangladesh, DPR Korea, India, and Nepal. Tertiary-level coverage is inadequate in Indonesia, Myanmar, and Sri Lanka. Primary and secondary-level services are being streamlined in Timor-Leste. Apart from the services in the government sector, private service providers and nongovernment organizations contribute to the eye-care services in the Region. Especially in the case of India, the number and extent of such eye-care providers is difficult to quantify. This could possibly explain the high cataract surgical rate in India.

*Table 7: Levels of service delivery and coverage*

	Mid-2009 population estimates <sup>31, 32</sup>	Primary centres (coverage per centre)	Secondary centres (coverage per centre)	Tertiary centre (coverage per centre)
BAN	162 221 000	600 (270 368)	100 (1 622 210)	40 (4 055 525)
BHU	697 000	34 (20 500)	2 (348 500)	1 (697 000)
DPRK	23 906 000	433 (55 210)	15 (1 593 733)	5 (4 781 200)
IND	1 198 003 000	6 500 (184 308)	641 (1 868 956)	236 (5 076 284)
INO	229 965 000	512 (449 150)	317 (725 442)	6 (38 327 500)
MAV	309 000	22 (14 045)	10 (30 900)	2 (154 500)
MMR	50 020 000	NA	57 (877 544)	3 (16 673 333)
NEP	29 331 000	46 (637 630)	10 (2 933 100)	10 (2 933 100)
SRL	25 553 000	4 000 (6 388)	44 (580 750)	2 (12 776 500)
THA	63 396 000	8 000 (7 925)	112 (566 036)	12 (5 283 000)
TL	1 134 000	9 Eye nurses	Has 3 Ophthalmologists	NA

## 4.6 Disease control and infrastructure at the primary-level

In all Member countries, primary centres are equipped with visual acuity chart and refraction equipment. The visual acuity assessment and refraction are the most commonly performed procedures in all the countries in the Region. Direct ophthalmoscope is available in a few countries at the primary-level. The cataract case-finding is the most important activity in all the countries. The

<sup>30</sup> SEA-Ophthal-117, WHO Project: ICP OSD 002

<sup>31</sup> United Nations, World Population Prospectus: The 2008 revision

<sup>32</sup> Estimates provided by the Institute of Population and social research, Mahldol University, Thailand 26 Jan 2009

services for trachoma are available in Bhutan, Indonesia, Nepal and Thailand. Direct Ophthalmoscopes are available at primary-level in Bhutan, India, Nepal and Timor-Leste. Immunization programmes and vitamin A supplementation are the regular activities at the primary-level in all countries.

**Table 8: Infrastructure and disease control at the primary-level**

		BAN	BHU	DPRK	IND	INO	MAV	NEP	MMR	SRL	THA	TL	Comments
Infrastructure	Visual acuity charts	80	34	1236	Yes	Yes	22	46	NA	Yes	1000	50+	
	Direct Ophthalmoscope	NA	34	NA	Yes	NA	NA	36	NA	NA	NA	10	
Services	Visual acuity assessment and refraction, Immunization programmes, Vitamin A supplementation	80	34	443	Yes	Yes	Yes	46	NA	Yes	1000	10	1) Services for glaucoma (443), ARMD (443), and trachoma (443) are available at primary-level in Bhutan.
	Cataract case finding	400	34	443	Yes	8114	NA	46	NA	Yes	7000	Yes	
	Trachoma services	NA	NA	NA	NA	8114	NA	46	NA	NA	7000	NA	

Yes – Services /Infrastructure is available, but coverage and exact number is not known  
 NA Information not available/not received

#### 4.7 Disease control and infrastructure at the secondary-level

Most countries are equipped to provide comprehensive eye examination including slit lamp examination, indirect ophthalmoscopy and fundus examination using +78/+90D lenses, with few exceptions at the secondary-level. The fundus photography and fluorescein angiography are performed at the secondary-level in Nepal and Thailand. The cataract case finding and surgery are the main activities at this level in all countries in the Region. The glaucoma detection and therapy services and management of corneal infections are available at the secondary-level in most countries. Equipment for detection of diabetic retinopathy and ARMD is available at this level in all countries. Thailand is the only country equipped with retinal lasers and corneal surgery at this level. Low vision assessment, prescription of devices and rehabilitation is available in all countries. In Myanmar, 57 secondary-level facilities are available where comprehensive eye examination and cataract surgeries are performed.

Table 9: **Infrastructure and disease control at the secondary-level**

		BAN	BHU	DPRK	IND	INO	MAV	MMR	NEP	SRL	THA	TL	COMMENTS
<b>Infrastructure</b>	Equipment for performing comprehensive eye examination, including slit lamp biomicroscope, indirect ophthalmoscope and diagnostic lenses (+78 /+90 lenses, gonioscope)	164	2	15	Yes	317	4	57	10	44	112	3	1) Indirect ophthalmoscope is not available at this level in Bangladesh 2) Diagnostic lenses are not available in DPR Korea at this level 3) 4 Slit lamps are available in Maldives
	Operating microscopes and sets for cataract surgery with IOL	100	2	3	Yes	NA	1	57	10	44	112	1	1) Automated vitrectomy machine is available at secondary-level in India, however the number is not known 2) It is available in Nepal (2), Sri Lanka (10), Thailand (22)
	Diagnostic visual field analyser		2		Yes			NA	5		50		
	Other Equipment : 1) Equipment for fundus photography and fluorescein angiography are available in Nepal (3), Thailand (22) 2) Thailand is the only country with retinal lasers and infrastructure for corneal surgery at secondary-level												
<b>Services</b>	Visual acuity assessment and refraction, low vision assessment	2	34	15	Yes	220	2	57	10	44	112	NA	1) Prescribing of low vision devices, rehabilitation was available in Bhutan (2), DPR Korea (15), Indonesia (220), Nepal (10), Sri Lanka (45) and Thailand(12)
	Immunization programmes, vitamin A supplementations	100	YES	15	Yes	430	NA	NA	NA	Yes	3000	1	1) Paediatric cataract surgery and squint surgery was available DPR Korea (15), India, Indonesia, Nepal (5), Sri Lanka (45), Thailand (75) and performed by visiting teams in Timor-Leste
	Cataract case-finding, investigations for corneal infections, cataract surgery, Glaucoma detection and therapy	100	2	15	Yes	317	NA	57	10	44	112	1	
	Diabetic retinopathy detection, ARMD, trachoma	100	2	15	Yes	317	4	57	10	44	112	1	

Yes – Services /Infrastructure is available, but coverage and exact number is not known  
NA Information not available /not received

The cataract surgery with intra ocular lens (IOL) implantation is the most performed surgical procedure at the secondary-level in all countries. All the countries except Indonesia, Maldives, Nepal and Thailand exceeded the target set for year 2010 with significant increase in surgeries with IOL implantation. Nearly 100% IOL implantation is reported from Sri Lanka, 98% from Thailand, 97% from Indonesia and 90% from Myanmar.

Table 10: **Cataract surgical rate for the years 2002 and 2009**

	CSR (2002)	CSR (Target for 2010) <sup>33</sup>	CSR (2009)*
<b>BAN</b>	500	<b>1000</b>	1164
<b>BHU</b>	1019	<b>1400</b>	1450
<b>DPRK</b>	NA	NA	200
<b>IND</b>	3400	<b>4000</b>	4425
<b>INO</b>	350	<b>2800</b>	500
<b>MAV</b>	700	<b>1000</b>	700
<b>MMR</b>	500	<b>1000</b>	1372
<b>NEP<sup>34</sup></b>	900	<b>3500</b>	3092
<b>SRL</b>	1337	<b>1600</b>	3300
<b>THA</b>	1667	<b>2500</b>	2090
<b>TL</b>	NA	NA	379

\* PBL spreadsheets; NA Data not available

#### 4.8 Disease control and infrastructure at the tertiary-level

Bangladesh, Nepal and Thailand have good tertiary eye-care equipped to manage all complex conditions, but the number of such facilities are limited. For example, Bangladesh has only 10 centres with focal laser facility. Timor-Leste has no tertiary eye care facility. Although equipment and services are available for cataract surgery with IOL implantation and pediatric cataract surgery and glaucoma management is available in all countries, the number of such facilities is limited. Optical keratoplasty is not available in DPR Korea; vitreo-retinal surgery is not available in Bhutan.

<sup>33</sup> SEA-Ophthal-117, WHO Project: ICP OSD 002

<sup>34</sup> Vision 2020 Mid-term review, Nepal; Presented by Dr Y D Sapkota

Table 11: **Infrastructure and disease control at tertiary-level**

		BAN	BHU	DPRK	IND	INO	MAV	NEP	MMR	SRL	THA	COMMENTS
<b>Infrastructure</b>	Low vision evaluation equipment	7	NO	5	Yes	NA	NA	10	NA	2	12	
	Operating microscopes and sets for cataract surgery with IOL	150	1	5	Yes	6	2	YES	3	2	12	
	Vitreoretinal surgery, fundus photography, fluorescein angiography	7	NO	2	Yes	6	NA	NA	3	2	12	
	Glaucoma surgery	40	1	1	Yes	6	2	10	3	2	12	
	Retinal laser	7	1	2	Yes	6	NA	NA	3	2	12	
	Corneal surgery	40	NO	NO	Yes	6	2	10	3	2	12	
	Pediatric surgery	14	1	NO	Yes	6	NA	NA	1	1	12	
<b>Services</b>	Visual acuity assessment and refraction	40	1	5	Yes	6	1	YES	3	2	12	
	Prescribing and dispensing low vision devices	7	NO	5	Yes	6	NO	YES	3	3	4	
	Vitamin A supplementation programmes	40	Yes	5	Yes	6	NA	Yes		NA	12	1) Nationwide programme in all the districts in Nepal
	Treatment for corneal diseases, orthoptic assessment and squint surgery, cataract surgery with IOL, glaucoma management, focal laser for diabetic retinopathy	40	1	5	Yes	6	1	10	3	2	12	1) Focal laser is available only in 10 centres in Bangladesh 2) Only 5 centres for orthoptic assessment and squint surgery in Nepal
	Pediatric cataract surgery	7	Yes	5	Yes	6	1	10	1	2	12	
	Optical keratoplasty	7	Yes	NO	Yes	6	NA	3	NA	2	12	
	Screening for retinopathy of prematurity (ROP)	NA	NA	NA	Yes	Yes	NA	NA	NA	44	75	

\*TL has no tertiary eye-care facility

Yes – Services /Infrastructure is available, but coverage and exact number is not known

NA Information not available/ not received

## **4.9 Country profiles**

### ***Bangladesh***

#### **1. Planning and financial commitment**

A National Vision 2020 Plan has been implemented since 18 June 2005. The financial outlay for eye health in 2008-2009 was US\$ 437 142 and US\$ 557 142 in 2010.

#### **2. Prevalence of blindness**

The most recently published epidemiological report is from a single the district in Bangladesh, where the prevalence of bilateral blindness was 2.9%, that of severe visual impairment 1.6%, and that of visual impairment 8.4% and 79% of bilateral blindness was due to cataract.

#### **3. Eye health services**

The cataract surgical rate (CSR) in 2009 was 1164 per million population against the set target of 1000 for the year 2010. About 600 primary-level centres provide service delivery. The centres are equipped only to test visual acuity. There is no formal referral and feedback system between the various levels of service delivery. There are 100 secondary-level centres and 40 centres are designated as tertiary-level centres, but only seven tertiary centres have the necessary infrastructure for diagnosis and management of posterior segment pathology. Pediatric surgery is available in 14 centres.

#### **4. Human resources for eye-care**

The number of personnel working in eye health was inadequate in comparison with the target personnel: population ratio for 2010. The negligible number of MLOPs is a concern.

#### **5. Recommendations for strengthening eye-care**

Disease control strategies for low vision care and rehabilitation of visually disabled persons are relatively neglected at all levels of service delivery. The focus on community-based rehabilitation, including early intervention, needs to be intensified at the primary-level. At the primary-level, prophylactic management of trivial corneal injuries and eye health promotion regarding specific disease conditions can be improved.

At the secondary and tertiary service delivery centres, the areas that need strengthening include eye banking, posterior segment diagnosis and management, and low vision rehabilitation. Management of diseases of emerging importance such as glaucoma, diabetic retinopathy and age-related macular degeneration necessitating cross-speciality care must also be

considered at these two levels of service delivery. Development of a mechanism for screening for retinopathy of prematurity will become essential as neonatal care improves, especially in the urban settings.

## ***Bhutan***

### **1. Planning and financial commitment**

A National Vision 2020 Plan has been implemented since 27 July 1999. All eye-care services in the country are delivered through the government or the public sector.<sup>35</sup> The financial outlay for eye health for both 2009 and 2010 was US\$ 200 000. A nongovernmental organization supports primary eye-care with an annual budget of US\$ 100 000.

### **2. Prevalence of blindness**

A recently conducted RAAB (rapid assessment of avoidable blindness) survey estimated the prevalence of blindness to be at 0.33%. Avoidable causes of blindness (operated and unoperated cataract, uncorrected refractive errors and corneal scars) accounted for 77.9% of all cases of blindness, 85.2% of all cases of severe visual impairment and 94.1% of all cases of moderate visual impairment.<sup>36</sup>

### **3. Eye health services**

The cataract surgical rate (CSR) reported in 2009 was 1450. There are 34 primary-level centres and these have adequate infrastructure. Eye-care is integrated with primary health-care. There are two secondary-level centres where cataract surgery takes place. There is one tertiary-level eye-care centre for the management of diseases of emerging importance such as glaucoma, diabetic retinopathy and age-related macular degeneration. There is a functional referral and feedback system between levels of service delivery. Operative mobile eye camps are conducted regularly to reach the remote populations.

### **4. Human resources for eye-care**

Human resources for eye health were inadequate in comparison with the targeted personnel: population ratio for 2010. There are six ophthalmologists and 56 MLOPs are in service. There is no centre for training human resources for eye-care in the country.

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<sup>35</sup> 11 Health Questions about the 11 SEAR Countries, WHO, July 2007. ISBN 978-92-9022-247-7

<sup>36</sup> Rapid Assessment of Avoidable Blindness Survey, Unpublished data

## 5. Recommendations for strengthening eye-care

The disease control strategies for low vision care and rehabilitation of visually disabled persons is relatively neglected at all levels of service delivery. Focus on community-based rehabilitation, including early intervention, needs to be strengthened at the primary level. Eye health promotion regarding specific disease conditions can be improved. Training of human resources for primary and secondary eye-care, including MLOPs, can be considered.

### ***Democratic People's Republic of Korea***

#### 1. Planning and political commitment

All eye-care services in the country are delivered through the public sector. A National Plan for the Prevention of Blindness is in place for the period 2010-21015. The Vision 2020 Plan has been implemented since August 2005.

#### 2. Prevalence of blindness

Data from 2005-2006<sup>37</sup> indicates that 21.63% of people of all ages have visual impairment. This proportion is high (64.6%) in the population aged over 50 years and 11.12% of people from zero to 16 years of age are visually impaired.

#### 3. Eye health services

There are 433 primary-level centres, 15 secondary-level centres and 5 tertiary-level centres. Visual acuity assessment and cataract case detection are the main activities at the primary-level. Cataract surgery, glaucoma detection and therapy, detection of diabetic retinopathy, and ARMD are available at the 15 secondary-level centres. Pediatric surgeries and squint surgeries are also performed at this level. Low vision services are provided only at tertiary centres.

#### 4. Human resources for eye-care

This country has the one of the highest ratios of trained health personnel to population in the SEA Region, and there is one ophthalmologist for every 26 184 people. The human resource structure appears top-heavy; no cadre of primary eye-care workers has been reported.

#### 5. Recommendations for strengthening eye-care

Strategies for low vision care and rehabilitation of visually disabled persons are relatively neglected at all levels of service delivery. The focus on

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<sup>37</sup> Survey on 200 000 people across all Regions (visual assessment, slit-lamp biomicroscopy, refraction), 2005-2006.

community-based rehabilitation, including early intervention, needs to be intensified at the primary-level. Diseases of emerging importance such as glaucoma, diabetic retinopathy and age-related macular degeneration, necessitating cross-speciality care, should be managed at these two levels of service delivery, especially since the country has a large proportion of older citizens. The development of a mechanism for the screening of retinopathy of prematurity will become essential if low-birth-weight babies survive due to better neonatal care.

## ***India***

### **1. Policy, planning and financial commitment**

The National Programme for Control of Blindness (NPCB) was started in 1976; and a Vision 2020 Plan was developed in 2006 through which a partnership structure was established. The funds allocated for the prevention of blindness activities was US\$ 55 million in 2009 and US\$ 58 million in 2010. About 50% of eye-care service delivery in the country is executed through NGOs, 30% is through private clinics and hospitals and the government or public sector provides the remaining 20% of eye health services.

### **2. Prevalence of blindness**

The nationwide rapid assessment of avoidable blindness (RAAB)<sup>38</sup> based on presenting vision, conducted among people over 50 years of age in 2006-2007, found that 4.4% were severely visually impaired and 3.6% were blind.

### **3. Eye health services**

The CSR in 2006-2007 was 4550. There is no formal referral and feedback system between the various levels of service delivery across sectors, but selected medical colleges serve as hubs for the blindness surveillance system. The public sector has 6500 primary-level centres providing eye health services. There are 641 secondary-level centres in the public sector and 236 tertiary-level centres have been reported. Several nongovernmental organizations provide eye-care at all levels.

### **4. Human resources for eye-care**

The ophthalmologist: population ratio is adequate for targets set for 2010, but their inequitable distribution results in poor service delivery in many parts of the country. The backbone of the system is the MLOPs, and steps to create career paths and accreditation of their training is a long-felt need.

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<sup>38</sup> Neena J, Rachel J, Praveen V, Murthy GV. Rapid Assessment of Avoidable Blindness in India. PLoS ONE. 2008 Aug 6;3(8):e2867.

## 5. Recommendations for strengthening eye-care

Improved mechanisms for mobilizing eye donations and retrieval of donor tissue, and community-based rehabilitation, including early intervention, are necessary at the primary-level. The disease control strategies for low vision care and rehabilitation of visually disabled persons is relatively neglected at all levels of service delivery. Given the high incidence of corneal ulcers, prophylactic management of trivial corneal injuries and eye health promotion regarding specific disease conditions should be improved.

Areas that need infrastructure strengthening are comprehensive eye examination, eye banking, posterior segment diagnosis and management, and low vision evaluation with rehabilitation, including providing appropriate low vision aids at the secondary and tertiary service delivery centres. The existing programme is cataract-centric, so automated vitrectomy, angiography and retinal laser services should be provided at this level as part of the management of diseases of emerging importance such as glaucoma, diabetic retinopathy and age-related macular degeneration that show an increasing trend. Well trained pediatric eye-care teams exist, especially in urban areas. Systematic monitoring of the impact of services on reducing avoidable blindness is lacking. Data from surveillance and monitoring will provide scientifically rigorous evidence on the effectiveness and utility of existing eye-care service delivery models and thereby offer useful information to health system planners.

### ***Indonesia***

#### 1. Policy, planning and financial commitment

The National Vision 2020 Plan has been implemented since 14 October 2005 and the funds allocated for blindness prevention programme was US\$ 5000 000 each for the year 2009 and 2010.

#### 2. Prevalence of blindness

Data from surveys<sup>39,40</sup> conducted in 2005 indicate that among people aged over 40 years, 3.6% are blind, 7% have vision between 6/18 and 6/60 and 7.8% have severe visual impairment. The prevalence of blindness in the population aged over 50 years is 4.03%. A more recent survey<sup>41</sup> conducted in a rural population (Sawah Kulon) found 1.67% blindness and 6.05% low vision in this sample; cataract was the principal cause of low vision (70.7% of people) and blindness (62.5% of people). Refractive error was responsible for

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<sup>39</sup> RACSS conducted in 2005, in West Nusa Tenggara, a Province in Indonesia.

<sup>40</sup> Eye Health and Blindness Survey in West Java, conducted in five selected districts in 2005 (Suseda).

<sup>41</sup> Nina Ratnaningsh Prevalence of blindness and low vision in Sawah Kulon village, Purwakarta the district, West Java, Indonesia. *Community Eye Health*. 2007 March; 20(61): 9.

20.7% of all blindness and for 25.0% of cases of low vision. Another survey reported a blindness prevalence of 0.9% and low vision prevalence of 4.8%.<sup>42</sup>

### 3. Eye health services

The cataract surgical rate is low at 500<sup>43</sup> against the set target of 2800 for the year 2010. There are 512 primary-level centres, 317 secondary-level centres and 6 tertiary centres.<sup>44</sup> Cataract case finding and trachoma control are the main activities at the primary-level. Secondary-level facilities are equipped to provide cataract surgery, management of glaucoma and detection of diabetic retinopathy. The six tertiary care facilities are well equipped to manage all complex eye conditions. Screening for ROP is available at the tertiary level. Data on the availability of A scan and keratometry for calculation of appropriate IOL power at all centres where cataract surgery is not available, however, reported that 97% of the surgeries are done with IOL implantation.

### 4. Human resources for eye-care

Complete information on human resources is not available; 1641 ophthalmologists are in service for a population scattered across many islands. Over 12 000 MLOPs are available at various levels.

### 5. Recommendations for strengthening eye-care

Infrastructure for low vision care and rehabilitation, and that required for mobilizing eye donors, needs enhancement at all levels. The low cataract surgical coverage suggests that resource utilization is suboptimal. Efforts are needed to increase the cataract surgical coverage. At secondary and tertiary-level service delivery centres, facilities for comprehensive eye examination, eye banking, posterior segment disorders and management of glaucoma, diabetic retinopathy, and age-related macular degeneration need strengthening.

Infrastructure should be upgraded to at least the level suggested for the secondary centres (above), and facilities for providing training in eye-care may be included. Providing equipment and infrastructure for automated vitrectomy, angiography and retinal laser will become necessary as the need to manage diseases of emerging importance such as glaucoma, diabetic retinopathy, and age-related macular degeneration intensifies.

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<sup>42</sup> Basic Health Research 2007 as reported in WHA Action plan

<sup>43</sup> As reported in Vision 2020 Update 2010

<sup>44</sup> As provided by 2008 questionnaire and Vision 2020 update 2010

## **Maldives**

### 1. Policy, planning and financial commitment

A National Vision 2020 Plan was developed in 2009. Information on monitoring the existing eye-care work and on the referral and feedback system between the various levels of service delivery was not provided.

### 2. Prevalence of blindness

Not reported.

### 3. Eye health services

The cataract surgical rate was reported at 1372, against the set target of 1000 for the year 2010. There is currently no primary-level eye-care service delivery infrastructure and secondary-level care is provided in some centres, but there is one specialized tertiary eye-care centre in the capital city, with plans to start another one on the northern islands.

### 4. Human resources for eye-care

The country has 19 ophthalmologists and 26 MLOPs working at different levels. There are no training centres at present. Staff retention is reported to be an important issue.

### 5. Recommendations for strengthening eye care

As there are no prevalence data available from this country, undertaking a Rapid Assessment Survey is recommended. Strategies addressing posterior segment pathology need to be considered. This includes automated vitrectomy, angiography and retinal laser at least at the tertiary centre, which can be deployed for the management of diabetic retinopathy and other posterior segment pathology.

Other areas that need enhancement are the field of low vision evaluation and rehabilitative care, corneal services including keratoplasty, as well as improved health promotion and cross-specialty care of persons with diseases of emerging importance. Cataract case-finding strategies do not appear necessary as no cataract blind individuals are reported in the country.

## **Myanmar**

### **1. Policy, planning and financial commitment**

A national Vision 2020 plan has been implemented since October 2000. The annual budget for the national eye-care plan for 2010 was 538.58 million Myanmar Kyats (approximately US\$ 8 408 737).<sup>45</sup>

### **2. Prevalence of blindness**

The prevalence of blindness (all ages) from the 2004-2006 surveys<sup>46</sup> was 0.6%. The Meiktila Eye Study<sup>47</sup> reported a high prevalence of visual impairment of 40.4% and blindness of 8.1% among a sample of the rural population who were 40 years and older. The prevalence of blindness in all age groups was 0.52%.<sup>48</sup>

### **3. Eye health services**

Three-fourths of the eye-care services delivery in the country is through the government or public sector, 10% through NGOs and 15% through private clinics and hospitals. The cataract surgical rate in 2006 was 1372 against the set target of 1000 for the year 2010. IOL implantation rate was 90.5% in 2010 and monitoring of visual outcomes is done using manual tally sheets. Information on the number of primary-level service delivery centres was not available, but the presence of 6400 primary health workers trained in eye-care suggest an adequate primary eye-care workforce. There are 57 secondary-level centres and three tertiary-level centres providing eye-care, but they lack basic equipment required for neuro-ophthalmic disorders.

### **4. Human resources for eye-care**

Personnel working in eye health were inadequate when compared with the targeted personnel:population ratio for 2010, with regard to mid-level personnel who can screen for visual impairment and provide refractive services. Mid-level personnel who can screen for visual impairment and provide refractive services are especially few.

### **5. Recommendations for strengthening eye care**

The areas that need strengthening are comprehensive eye examination, retrieval of donor corneas, posterior segment diagnosis and management, and low vision rehabilitation, including the provision of appropriate low vision

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<sup>45</sup> As reported in VISION 2020 Update 2010

<sup>46</sup> Trachoma Rapid Assessments of 7 944 390 people in Magway and Mandalay Divisions from 2004 to 2006.

<sup>47</sup> Casson RJ, Newland HS, Muecke J, McGovern S, Durkin S, Sullivan T, Oo TZ, Aung TH, Shein WK, Selva D, Aung T. Prevalence and causes of visual impairment in rural Myanmar: the Meiktila Eye Study. *Ophthalmology*. 2007 Dec;114(12):2302-8. Epub 2007 Apr 19.

<sup>48</sup> As reported in Vision 2020 Update 2010

aids after a thorough low vision evaluation. As the economy changes, planning will be required to manage diseases of emerging importance. Health promotion needs enhancement at all levels, and the low CSR suggests that the existing infrastructure may not be optimally utilized.

## ***Nepal***

### **1. Policy, planning and financial commitment**

A national Vision 2020 plan has been implemented since September 2001 and a partnership structure has been established, but there is no Focal Person for eye health within the Ministry of Health. The funds allocated for blindness prevention activities in 2009 were US\$ 811 000 and this was increased to USD \$ 1 000 000 in 2010.<sup>49</sup>

### **2. Prevalence of blindness**

The rapid surveys of blindness conducted across various parts of the country from 2005-2007<sup>50</sup> have found the prevalence to be between 0.5% to 0.8% in the general population. The recently reported survey from Gandaki zone<sup>51</sup> found presenting visual acuity of less than 6/60 in both eyes to be 2.6%. The recently concluded nationwide rapid assessment of avoidable blindness (RAAB) survey revealed a blindness prevalence of 0.4% using WHO definition and 0.82 by using <6/60 definition. The same survey revealed cataract surgical coverage of 86% for less than 3/60 visual acuity cut-off.<sup>52</sup>

### **3. Eye-care services**

The cataract surgical rate was 3092.<sup>53</sup> The government or public sector provides 15% of the eye-care service delivery in the country; 80% is through NGOs, and 5% is through private clinics and hospitals.<sup>54</sup> 46 centres provide primary-level service delivery. The infrastructure available is adequate except for the mobilization and retrieval of donor eyes at the primary-level. This is especially relevant given the good eye-banking system and cornea services at the secondary and tertiary-level. There are 10 secondary-level centres 10 tertiary-level centres.

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<sup>49</sup> As reported in WHA Action Plan 2010

<sup>50</sup> RACSS surveys: Gandaki (2005), Narayani (2007), Lumbini (2007), 37 TRA and 21 Population based trachoma surveys between 1999 and 2007.

<sup>51</sup> Sapkota YD, Pokharel GP, Nirmalan PK, Dulal S, Maharjan IM, Prakash K. Prevalence of blindness and cataract surgery in Gandaki Zone, Nepal. *Br J Ophthalmol*. 2006 Apr;90(4):411-6.

<sup>52</sup> RAAB Survey 2010 (Unpublished data, Y. D. Sapkota, Programme Co-coordinator, Nepal)

<sup>53</sup> Vision 2020 Mid-term Review , Nepal, presented by Dr Y. D. Sapkota

<sup>54</sup> 11 Health Questions About the 11 SEAR countries, WHO, July 2007. ISBN 978-92-9022-247-7

#### 4. Human resources for eye-care

This country comes closest to having adequate personnel working in eye health when compared with the targeted personnel:population ratio for 2010, but distribution is inequitable as most health personnel prefer to work in the Terai zone. The relatively inaccessible areas in the mountains, therefore, remain poorly serviced.

#### 5. Recommendations for strengthening eye-care

The disease control strategies for the prevention of ophthalmia neonatorum, prophylactic management of trivial corneal injuries and eye health promotion regarding specific disease conditions could be improved. The areas that need strengthening are cross-speciality care of chronic diseases which are likely to increase with the demographic shift.

### ***Sri Lanka***

#### 1. Policy, planning and financial commitment

The Vision 2020 Plan has been implemented since October 2007 through a partnership, and a system for monitoring with defined indicators is functional. The annual budget for the prevention of blindness was 1.1 billion Sri Lankan Rupees (approximately US\$ 9 132 000).<sup>55</sup>

#### 2. Prevalence of blindness

The Kandy Eye Study<sup>56</sup> on a sample from the rural population over 40 years of age reported a 1.1% prevalence of blindness, and the prevalence of visual impairment was 5.9%. Cataract, diabetic retinopathy and glaucoma are the major causes of avoidable blindness.

#### 3. Eye health services

The CSR in 2009 was 3300 while the target for 2010 was 1600<sup>57</sup> Health-care services are predominantly provided by the government (95%), with the private sector providing most of the remaining services. Less than 2% service delivery is provided by NGOs. There are 4000 centres providing primary-level eye-care, 44 are at the secondary-level, and two centres provide tertiary care.

At the primary-level, immunization against potential causes of childhood blindness is provided and visual acuity assessments with screening for cataracts are carried out. Secondary and tertiary centres have adequate

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<sup>55</sup> As reported in Vision 2020 Update 2010

<sup>56</sup> Edussuriya K, Sennanayake S, Senaratne T, Marshall D, Sullivan T, Selva D, Casson RJ. The prevalence and causes of visual impairment in central Sri Lanka the Kandy Eye study. *Ophthalmology*. 2009 Jan;116(1):52-6.

<sup>57</sup> As reported in Vision 2020 Update 2010

equipment, but primary eye-care centres are under-equipped, a visual acuity chart being the only piece of equipment reported at this level of care. Comprehensive eye-care is provided at secondary and tertiary-levels; low vision evaluations, retinal angiography and retinal laser treatment being the only modalities that are available at the tertiary, but not at secondary-level. A total of 44 centres are equipped to provide services for diabetic retinopathy and one centre is equipped to provide pediatric eye-care at the tertiary-level. Systems are in place for ROP screening at the secondary-level.

#### 4. Human resources

With 65 Ophthalmologists, Sri Lanka has one ophthalmologist for every 393 123 people. There are also 550 mid-level ophthalmic personnel in the country. There are about 2000 primary health workers trained in eye-care.

#### 5. Recommendations

Though the reported infrastructure is adequate at the primary and secondary-levels, there is need to improve tertiary care services in the country, especially pediatric surgeries.

### ***Thailand***

#### 1. Policy, planning and financial commitment

A national Vision 2020 Plan has been implemented since 10 May 2000. The data on budgetary allocation of prevention of blindness is not reported.

#### 2. Prevalence of blindness

In a recently concluded national survey,<sup>58</sup> initial analyses suggested that 0.59% of the general population was blind. The 1994-1995 survey of visual impairment in the general population<sup>59</sup> provides a prevalence of 1.11%.

#### 3. Eye health services

While 50% of the eye-care service delivery in the country is through the government or public sector, 25% each is provided through NGOs and private clinics or hospitals. Eye health is integrated into the general health system at the primary-level; there is a formal referral and feedback system between the various levels of service delivery. The CSR in 2006 was 2388. There are 8000 primary eye-care centres and 112 centres at the secondary-level of service delivery and 12 centres at the tertiary-level have the necessary infrastructure

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<sup>58</sup> A national population-based survey of blindness among all age groups, covering 21 171 people from May 2006 to March 2007.

<sup>59</sup> Cross-sectional study of visual impairment among people 40 years and older in 52 the districts from 18 provinces.

and disease control strategies in place to manage avoidable blindness.<sup>60</sup> Thailand is the only country with retinal lasers and infrastructure for corneal surgeries at the secondary-level. ROP screening is provided from 75 centres.

#### 4. Human resources

The tertiary centres train all cadres of eye health workers. With one ophthalmologist for every 78 460 people, this country has adequate Ophthalmologists and population ratio in the Region. However there are only 121 MLOPs working at various levels. Very few Primary Health-care workers are trained in eye-care. There are five eye health professionals for each ophthalmologist.

#### 5. Recommendations

The reported infrastructure available is adequate at all three levels of service delivery, except for mobilization and retrieval of donor eyes at the primary-level. Low vision care and rehabilitation of visually disabled persons focusing on community-based rehabilitation, including early intervention, could be strengthened at the primary-level. At the secondary-level, the areas that need strengthening are health promotion and cross-speciality care with a focus on diseases of emerging importance that are chronic or sight threatening. More MLOPs are required to provide eye-care especially related to refractive errors.

### ***Timor-Leste***

#### 1. Policy, Planning and Financial Commitment

A national VISION 2020 committee was formed in 2010.

#### 2. Prevalence of Blindness

In a survey<sup>61</sup> of people aged 40 years and above, prevalence of blindness was 4.1% and prevalence of low vision (better eye presenting vision of 6/60 or better, but worse than 6/18) was 17.7%.

#### 3. Eye health services

Though 75% of the eye-care service delivery in the country is through the government or the public sector, this is executed mostly through visiting teams. The other 25% through NGOs also involves expatriates or visiting teams, and 5% is through private clinics or hospitals. The cataract surgical rate is not known, but it was reported that about 15 000 surgeries have been

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<sup>60</sup> As reported in Vision 2020 Update 2010

<sup>61</sup> Ramke J, Palagyi A, Naduvilath T, du Toit R, Brian G. Prevalence and causes of blindness and low vision in Timor-Leste. *Br J Ophthalmol.* 2007 Sep;91(9):1117-21.

done in the country since 2000; about 500 of these were conducted in 2010 by a single visiting team.

#### 4. Human Resources

The main impediment for the eye-care programme in Timor-Leste is limited resources, with only three ophthalmologists (three International and one national) and nine eye-care nurses.

#### 5. Recommendations for strengthening eye-care

Primary health-care workers and volunteers could be trained and provided vision screening kits to serve their local communities. The focus on community-based rehabilitation including early intervention needs strengthening, and prophylactic management of trivial corneal injuries alongside eye health promotion regarding specific disease conditions can comprise the initial disease control strategies.

Infrastructure development for comprehensive eye examination and cataract surgeries are the immediate measures recommended for this country. Training of local personnel is required so as to gradually reduce dependence on visiting teams. One centre for tertiary care with facilities for training could be developed with the help of the visiting teams so as to reduce dependence on mobile equipment and infrastructure brought in by such teams.

## 5. Strengths and challenges

The information that emerged on the strengths and weaknesses of the programmes from each country, as presented below may be applicable only for the country that reported it and, therefore cannot be generalized for all countries of the Region.

The strengths reported (in alphabetical order) include:

- Collaborative programme (Ministry of Health and College of Ophthalmologists).
- Establishment of a secretariat and the district eye-care committees.
- Evolving a strong research infrastructure.
- Good political commitment, with financial commitment.
- Good primary health-care service.
- Dependable health-care system.
- Intersectoral involvement in eye-care.
- Training facilities available for the training of trainers.

The challenges that need to be resolved in some countries so as to ensure successful implementation of Vision 2020 include:

- Affordability of eye-care services.
- Competing priorities for health-care resources across the country.
- Financial constraints.
- Inadequate coordination of the programme at both Regional and national levels in some countries.
- Inadequate and inequitable ratio of trained human resources to the population being served.
- Inadequate information base for planning the allocation of resources.
- Inequitable distribution of infrastructure and resources.
- Lack of administrators for eye-care programmes.
- Lack of awareness in the general population regarding eye health.
- Low levels of efficiency and delay in implementing new projects.
- Poor access to medicines, equipment and consumables.
- Poor access to health facilities due to transport and communication difficulties, especially for remote locations.
- Unplanned or difficult-to-achieve programme sustainability and suboptimal intersectoral and interdisciplinary collaboration.
- Suboptimal utilization of subsidized eye-care services.
- Unrecognized need for setting up basic minimum/optimal standards of care and education within countries of the Region.
- Standard monitoring and reporting of the eye-care services at all levels, including visual outcomes after cataract surgery.

The limitations of this situation analysis were observed to be:

- (1) The available monitoring and evaluation tools are not being used at the national level, so systematic rapid collation at the Regional Office was not possible.
- (2) Data had to be collected from a variety of sources since a national database was not available, nor did the national coordinator have data at hand in any of the countries.
- (3) Community participation forms the basis of Vision 2020's programme sustainability and is difficult to quantify. Basic qualitative research is required to get a clear picture of the situation from this perspective, as none of the counties responded to questions

regarding the methodology adopted for documenting community participation.

- (4) Documentation was incomplete (missing data on account of incomplete response to the questionnaires) and data provided was not representative of all service providers in the field of eye-care in each Member State.
- (5) Evidence to support deployment of resources and coverage/utilization of services is lacking. These may be addressed either through establishing competent monitoring systems and conducting regular evaluations or through commissioned health systems research.

## **6. Conclusions and recommendations**

### **6.1 Conclusions**

All Member States of the Region have commenced the implementation of the programme, or plan to do so shortly, and demonstrate progress towards achieving Vision 2020 objectives. The planning and ratification phase appears to be on track; most countries have a national coordinating body for the implementation of the Vision 2020 programme, but implementation of the plans has not been scheduled.

This survey considered the three pillars of the Vision 2020 Programme: deploying appropriate strategies for disease control, providing the infrastructure, and ensuring human resources to implement these strategies. Sustainability was assessed by proxy through collecting information on political commitment and community participation.

Data on the burden of blindness and visual impairment from representative samples in all Member States are available from recent surveys. However, heterogeneity in the methodology adopted precludes pooling of all available data.

Trained human resources and relevant infrastructure are available, though equity of their distribution was not assessed in this situation analysis. The chain of referral and feedback system appears to be a weak link and may impact optimal service utilization.

Political commitment was evident from the finances allocated for the blindness control programme, and a coordinating committee functions through public-private partnership in most Member States. However, community participation is either not documented and measured or is not a focus of the programme as little information on this aspect was forthcoming from the Member States.

## **6.2 Recommendations**

A framework for monitoring or a standardized, simple reporting mechanism may be implemented across the Region so as to provide a readily accessible database of information relevant to the Vision 2020 Programme. A management information system that permits inputs at the source of data, and generates reports at the Regional level based on the indicators selected for monitoring national Vision 2020 plans could be developed.

In order to gather comparable data on visual impairment or blindness, rapid assessments of avoidable blindness (RAAB) may be conducted in all Member States in the Region every 5 to 10 years. Since most countries of the Region report a high prevalence of blinding cataracts in the population aged 40-50 years, including people in their fourth decade as opposed to the norm of including only people 50 years or over may be considered. Inclusion of near vision assessment should also be considered in these surveys.

Priority technical assistance should be provided to Maldives for implementation of a National Vision 2020 Plan; and to Indonesia for planning to take measures that reduce its burden of avoidable blindness in an effective manner. Coordination with NGOs working in Timor-Leste should be the first step towards developing local infrastructure and training human resources in the country.

Training of human resources for eye-care should be comparable across Member countries, with documented curricula and objectives, assimilation learning experiences and competency assessment methods as a first step to accreditation of training and facilitating clear career paths for all levels of professionals.

Interventions and strategies for disease control should be periodically reviewed for relevance and effectiveness based on current evidence. Clinical and operations research may be commissioned to provide necessary information if such reviews find evidence to be lacking. The focus should not change from cataract-centric to comprehensive eye-care as glaucoma, diabetic retinopathy and ARMD begin to emerge as major causes of visual impairment.

In the context of multisectoral involvement and integrated service delivery, methods of placing ownership with the beneficiaries may be validated and implemented. Further, though Vision 2020 programmes are intended to be built upon community participation, most services are delivered with the top-down approach. Community participation is difficult to quantify and assess, and there are no recommendations on how to document and monitor community participation in programme planning and implementation. Therefore, research in this area is required, so that the suitable guidelines may be developed.

A valid inventory of centres and persons with relevant technical expertise and of products should be developed similar to that maintained by Essential Drugs and Medicines (EDM) (sample accessible at [http://www.who.int/prequal/lists/hiv\\_suppliers.pdf](http://www.who.int/prequal/lists/hiv_suppliers.pdf)), and on the basis of predetermined parameters in each country. It could be revised every year by the MoH Focal Person or unit concerned.

A broader consideration of health-care financing is required in view of the inequity and access problems for poorer populations arising out of their reliance on out-of-pocket payments. Paying for care in this manner has been found to serve as a temporary solution, but changing to a system of prepaid financing is the sustainable way forward.<sup>62</sup> Planning towards assessing the the impact of interventions on the visual status and quality of life of beneficiaries may be initiated to provide evidence on the utility of the programme.

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<sup>62</sup> <http://www.euro.who.int/document/OBS/Informalpayments.pdf>

## **Annex 1**

### **Abbreviations**

BAN	Bangladesh
BHU	Bhutan
CSR	cataract surgical rate
DPR Korea	Democratic People's Republic of Korea
GDP	gross domestic product
IAPB	International Agency for Prevention of Blindness
IND	India
INO	Indonesia
LV care	low vision care
MAV	Maldives
MMR	Myanmar
MoH	ministry/ministries of health
NEP	Nepal
NGO	nongovernmental organization
OA	ophthalmic assistant
ON	ophthalmic nurse
PHC	primary health-care
PEC	primary eye-care
RAAB	rapid assessment of avoidable blindness
RoP	retinopathy of prematurity
SEA Region	WHO South-East Asia Region
SRL	Sri Lanka
THA	Thailand
TL	Timor-Leste
VISION 2020	VISION 2020: The Right to Sight
WHO	World Health Organization
DNR	data not received

## Annex 2

# Questionnaires developed and used for the situation analysis

### Phase 1 Questionnaire

#### **Definitions used for this survey**

The definitions for visual impairment, low vision and blindness follow those given in the international statistical classification of diseases, and related health problems, 10th revision (ICD-10): H54 (9)<sup>1</sup> where **Visual Impairment** includes low vision as well as blindness;

1. **Low Vision** (ICD-10 visual impairment categories 1 and 2):
  - visual acuity of less than 6/18, but equal to or better than 3/60, or
  - a corresponding visual field loss to less than 20 degrees in the better eye with best possible correction.
2. **Blindness** (ICD-10 visual impairment categories 3, 4 and 5)
  - visual acuity of less than 3/60, or
  - a corresponding visual field loss to less than 10 degrees in the better eye with best possible correction.
3. **PVA**: Presenting Visual Acuity: the Visual Acuity as tested with whatever spectacle correction (or other refractive correction) the person is wearing.
4. **BCVA**: Best Corrected Visual Acuity: the Visual Acuity as tested with appropriate refractive correction in place.

### **VISION 2020 PROGRAMMES: EVALUATION QUESTIONNAIRE**

#### **IMPORTANT General Instructions:**

- Please provide **consolidated national data**, including services run by all sectors (government, nongovernmental organization and private) so as to put forward a complete representation.
- Please ensure that **current data** are provided (**no older than** that of 2004-2007).
- **Please do not leave any response cell blank.** Kindly enter 'NA' if not applicable; i.e. where the question does not apply.

<b>SECTION 1:</b>	<b>MAGNITUDE</b>
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1.4	Has there been a recent, rigorous, representative survey <sup>63</sup> of <b>Blindness</b> in the country? (Circle the appropriate response)	YES / NO
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1.4.1	If ' <b>yes</b> ', then provide the following information for each such survey: (use separate tables for entering information on each survey)		
a	Brief description of the <b>study population</b> (text only):		
b	The sample size (numeral only)	..... people.	
c	Description of the methodology: (include specifically the definitions, standards, and cut-offs used)		
Please provide indexed references of any publications based on the data from this survey. * The soft copy can be returned as attachments with this completed questionnaire. ** A hard copy can be POUCHED through the WHO Country Office to Dr. Chamaiparn (DPR/SEARO)			
d	Data collection period	Start date:	(DD/MM/YYYY)
		End date:	(DD/MM/YYYY)
e	Prevalence of <b>blindness (all ages)</b>	..... % (per hundred population)	
f	(If available) Prevalence of blindness (≥0<16 years)	..... % (per hundred population)	
g	(If available) Prevalence of blindness (≥50 years)	..... % (per hundred population)	

1.5	Has there been a recent, rigorous, representative survey <sup>64</sup> of <b>Visual Impairment</b> in the country? (Circle the appropriate response)	YES / NO
1.5.1	If ' <b>yes</b> ', then provide the following information for each such survey: (use separate tables for entering information on each survey)	
a	Brief description of the <b>study population</b> (text only):	
b	The sample size (numeral only)	..... people.
c	Description of the methodology: (include specifically the definitions, standards, and cut-offs used)	
Please provide indexed references of any publications based on the data from this survey. * The soft copy can be returned as attachments with this completed questionnaire. ** A hard copy can be POUCHED through the WHO Country Office to Dr. Chamaiparn (DPR/SEARO)		
d	Data collection period	Start date:
		End date:
		(DD/MM/YYYY)
		(DD/MM/YYYY)

<sup>63</sup> Rapid Assessment of Avoidable Blindness (RAAB) / Rapid Assessments of Cataract Surgical Services (RACSS) / Trachoma Rapid Assessments / Other National Survey of Blindness or Visual Impairment.

<sup>64</sup> Rapid Assessment of Avoidable Blindness (RAAB) / Rapid Assessments of Cataract Surgical Services (RACSS) / Trachoma Rapid Assessments / Other National Survey of Blindness or Visual Impairment.

e	Prevalence of <b>Visual Impairment (VI) (all ages)</b>	..... % (per hundred population)
f	(If available) Prevalence of VI ( $\geq 0 < 16$ years)	..... % (per hundred population)
g	(If available) Prevalence of VI ( $\geq 50$ years)	..... % (per hundred population)

**SECTION 2: POLICY AND LEGISLATION**

2.1	Does the country have a VISION 2020 compliant <b>National Plan for Control of Blindness?</b> (Circle the appropriate response)	YES / NO
2.1.1	Please provide the date (or month and year) when this plan commenced <b>implementation?</b>	
2.1.2	If "NO" to 2.1 above, then <i>provide as an attached document</i> the <b>current National Policy on Control of Blindness</b> , and <i>provide here</i> the date (or month and year) when its implementation commenced.	
2.2	On a separate sheet, list any <b>Bills / Laws concerning visual disability</b> that have been passed / enacted in your country. (Provide the bill / law <i>verbatim</i> , with the source as a reference)	
2.3.1	What is the <b>annual health budget</b> in the country for 2007-2008? (in USD)	
2.3.2	What is the <b>budget allocated to Blindness Control Programmes</b> in the country for 2007-2008? (in USD)	

**SECTION 3: CAUSES OF VISUAL IMPAIRMENT**

Kindly rank the conditions listed below in order of **magnitude of contribution to visual loss** in the country: (e.g. *senile cataract = 1 for blindness and 2 for visual impairment*)

Mark 'NA' if the disease does not occur in your country.

(please provide references of publications to support the ranking, including percentages contributed)

<b>Disease Condition</b>		<b>RANK Visual Impairment</b>	<b>RANK Blindness</b>
A	Age-related Macular Degeneration		
B	Cataract (senile)		
C	Congenital anomalies of the globe		
D	Congenital Cataract		
E	Corneal disease (injuries/infections)		
F	Corneal disease (Vitamin A related)		
G	Diabetic retinopathy		
H	Glaucoma		
I	HIV related eye disease (CMV retinitis / other sight threatening opportunistic infections)		
J	Inadequately / Uncorrected Refractive error		
K	Onchocerciasis		
L	Retinopathy of Prematurity (ROP)		
M	Trachoma		

SECTION 4:

DISEASE CONTROL

Enter the **number of centres that incorporate each of these capacities** across the country.

Where no numbers are available, enter "YES" if the capacity is available and "NO" if it is not available.

Capacity		Number of Primary Eye-care Centres	Number of Secondary Eye-care Centres	Number of Tertiary Eye-care Centres
<b>Refractive errors and Low Vision Care/Rehabilitation</b>				
4.1	Assessing visual acuity (Snellen / ETDRS)			
4.2	Refraction (objective and subjective)			
4.3	Assessing functional vision			
4.4	Calculating magnification needs			
4.5	Prescribing and dispensing LV devices			
4.6	Advice on rehabilitation methods			
<b>Childhood blindness</b>				
4.7	Immunization against measles and rubella			
4.7.1	Prevention of Ophthalmia Neonatorum			
4.8	Vitamin A supplementation programmes			
4.9	Pediatric Cataract Surgery performed			
4.10	Orthoptic squint assessment and surgery performed			
4.11	Timely screening for Retinopathy of Prematurity			
<b>Corneal diseases</b>				
4.12	Clinical examination (injury / infection)			
4.13	Severity documentation & antibiotic drops			
4.14	Microbiological investigation (scraping and microscopic examination)			
4.15	Microbiological investigation (culture)			
4.16	Emergency surgery (tissue adhesive / suturing)			
4.17	Rehabilitative surgery (optical keratoplasty)			
<b>Trachoma</b>				
4.18	Inter-sectoral coordination to ensure environmental hygiene			
4.19	Promoting face washing			
4.20	Distribution of antibiotics when appropriate			
4.21	Eyelid surgery for Trichiasis.			
<b>Cataract</b>				
4.22	Case-finding			
4.23	Cataract surgery and IOL insertion (extra capsular, with operating microscope)			
4.24	Follow-up examinations at 6 weeks post-op			

Capacity		Number of Primary Eye-care Centres	Number of Secondary Eye-care Centres	Number of Tertiary Eye-care Centres
<b>Glaucoma</b>				
4.25	Case Detection (comprehensive eye examination)			
4.26	Medical therapy			
<b>Diabetic retinopathy</b>				
4.27	Detecting high risk cases			
4.28	Angiography (and other retinal investigations)			
4.29	Laser (focal and scatter)			
4.30	Automated Vitrectomy			
<b>HIV-related eye disease</b>				
4.31	Linkage with Anti-retroviral treatment centers (to refer patients at risk of opportunistic eye infections)			
4.32	In-patient treatment for CMV retinitis			
<b>Age-related macular degeneration</b>				
4.33	Screening among high risk population			
4.34	Promotion of nutritional supplementation and lifestyle modifications			
<b>Onchocerciasis<sup>65</sup></b>				

SECTION 5: HUMAN RESOURCES

In column 1, mark 'YES' if the cadre exists and there is **formal training provided in this cadre**. Mark 'NO' if such eye-care personnel are NOT formally trained in the country.

**Independent of formal training** enter the number functioning in each cadre in column 2.

Cadre		Training YES / NO	Number functioning in the country
<b>Medical personnel</b>			
5.1A	Ophthalmologist (2 year diploma or 3-year degree after graduating from medical college), who perform cataract surgery routinely.		
5.1B	Ophthalmologist (2 year diploma or 3-year degree after graduating from medical college), who <b>do not</b> perform cataract surgery routinely.		
5.1C	Pediatric ophthalmologist (ophthalmologist, specialized in pediatric ophthalmology), not included in <b>A</b> or <b>B</b> above.		
5.2	Cataract Surgeon (other medical personnel trained to perform cataract surgery with IOL insertion)		
5.3	Ophthalmic nurse (Bachelors degree in nursing)		

<sup>65</sup> Where Onchocerciasis is present, please provide information on the VECTOR CONTROL and CHEMOTHERAPY DISTRIBUTION measures.

Cadre		Training YES / NO	Number functioning in the country
<b>Managerial staff</b>			
5.4	Ophthalmic programme manager (degree in management/administration, with training in managing ophthalmic programs)		
<b>Mid-level or paramedical personnel</b>			
5.5	Optometrist + Orthoptist (3-4 years degree in optometry)		
5.6	Ophthalmic technician/assistant (1-2 year diploma/ certificate in refraction, out-patient, operation theatre and ward nursing care)		
5.7	Refractionist (1-2 year diploma/certificate in refraction)		
5.8	Low vision technicians		
5.9	<b>Primary health-care workers within the general health system trained to perform eye-care functions.</b>		
5.10	Workers without formal training or qualification		

SECTION 6:

INFRASTRUCTURE

Enter the **number of centres that have infrastructure for this service** across the country.

Where **no data** are available, enter "YES" if the infrastructure is available and "NO" if it is not available.

Infrastructure	Number at Primary-level	Number at Secondary-level	Number at Tertiary-level
6.1	Visual Acuity Charts (near and distance: Snellen / ETDRS)		
6.2	Tonometer (Schiotz / Applanation)		
6.3	Retrieval system for donated eyes		
6.4	Direct ophthalmoscope		
6.5	Indirect ophthalmoscope		
6.6	Low Vision Evaluation Equipment		
6.7	Slit lamp bio-microscope		
6.8	Diagnostic lenses (gonioscope, 78/60/90D lens)		
6.9	Eye bank		
6.10	A scan and Keratometer		
6.11	Operating microscope and sets for cataract surgery with IOL insertion		
6.12	Automated Vitrectomy machine		
6.13	Laser for Iridotomy and Capsulotomy		
6.14	Diagnostic visual field analyzer (HFA)		
6.15	Fundus photography		
6.16	Flourescein angiography		

Infrastructure		Number at Primary-level	Number at Secondary-level	Number at Tertiary-level
6.17	Retinal Laser			
6.18	Surgical facility for filtering procedures			
6.19	Surgical facility for optical keratoplasty			
6.20	Surgical facility for pediatric and complicated cases			

**SECTION 7: COMMUNITY PARTICIPATION**

Describe briefly the following in a separate sheet.

- Health promotion activities
- Volunteerism (youth clubs / philanthropic organizations such as Lions etc)
- Donations from the community

Indicate clearly how community participation is documented in the current system.

**SECTION 8: PROGRAMME MANAGEMENT**

8.1	Is there a formally structured <b>coordinating body</b> for the National Blindness Control Programme? If "YES", then please provide in a separate sheet the partnership structure <sup>66</sup> of this body.	YES / NO
8.2	Is there a formally structured system for <b>data collection, analysis and reporting</b> ?	YES / NO

If '**YES**' to **8.2** above, then please provide the following information:

	Source of data	Level at which report is submitted	Frequency of report submission
Demographic data (of visually impaired persons)			
Presenting visual acuity			
Best corrected visual acuity			
Refractive correction			
Clinical diagnosis (cause/s of visual impairment)			
Treatment administered			
Visual outcome 4-6 weeks after treatment			

<sup>66</sup> [http://www.who.int/ncd/vision2020\\_actionplan/contents/frame.htm](http://www.who.int/ncd/vision2020_actionplan/contents/frame.htm) (search "figure 3")

8.3 Please provide **indicators being routinely monitored** in the National Blindness Control Programme:  
(Use a separate table for each indicator)

<b>Name of Indicator</b>	
Purpose of Indicator	
Brief definition	
Unit of measurement	
Level of collection	
Level to which reported	
Frequency of reporting	

8.4	What is the National Cataract Surgical Rate (CSR)? (Please quote <b>YEAR</b> )	.....(200 _ )
8.4.1	Data from how many the districts contributed to the CSR in 8.4 above?	
8.4.2	How many the districts had CSR below the national average? (CALCULATE: national average = national CSR / number of the districts in the country)	
8.5	Is there a formal referral and feedback system as a part of eye-care service delivery?	YES / NO
8.6	Overall, what proportion of eye-care services are provided <ul style="list-style-type: none"> <li>• through the government sector? __%</li> <li>• through nongovernmental organization sector? __%</li> <li>• through the private sector? __%</li> </ul>	

8.7 How many service providers exist at each level of service delivery, and how many have received guidelines regarding the standards/benchmarks/best practices in eye-care?

Level of Service Delivery	Number of Centres	Number that have received guidelines
PRIMARY		
SECONDARY		
TERTIARY		

**Phase 2 Questionnaire**

DATE: \_\_\_\_\_ (dd /mm /yyyy)

Name of the COUNTRY: \_\_\_\_\_

Keeping in mind the available information regarding Control of Blindness and VISION 2020,

9.1 List the **strengths** of the Blindness Control Programme in your country.

9.2 How can these be **sustained or enhanced**?

**9.1 STRENGTHS**

**9.2 SUSTAINED / ENHANCED BY**

- 1.
- 2.
3. ...till 10.

- 
- 
- 

9.3 List the **weaknesses** of the Blindness Control Programme in your country.

9.4 How can these be **diminished or overcome**?

**9.3 WEAKNESSES**

**9.4 DIMINISHED / OVERCOME BY**

- 1.
- 2.
3. ...till 10.

- 
- 
- 

9.5 What recommendations would you make to ensure successful implementation of a sustainable programme for blindness control in your country?

**9.5 RECOMMENDATIONS for a SUSTAINABLE PROGRAMME**

- 1.
- 2.
3. ...till 10.

**Thank you for your cooperation in providing the information requested of you.**

Please provide the complete Name, Address (and Department) of the person who completed this questionnaire.

Name: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Department: \_\_\_\_\_

### Annex 3

## List of respondents to the questionnaire

Prof. Syed Maruf Ali Bangladesh	Line Director, National Eye-care & Director-cum-Professor, National Institute of Ophthalmology and Hospital, Sher-e-Bangla Nagar, Dhaka Bangladesh
Dr Kuenzang Getshen Bhutan	Department of Ophthalmology Jigme Dorji Wangchuk National Referral Hospital, Thimpu Bhutan
Dr Choe Tong Chol DPR Korea	Vice-Director of Preventive and Curative Department, Ministry of Public Health. Sochang dong, Central The district Pyongyang DPR Korea
Dr R. Jose India	Deputy Director General (Ophthalmology), Director General of Health Services National Program for Control of Blindness Room No. 342-A, Nirman Bhawan New Delhi India
Dr Sulastini and Dr Tjahjono Gondowiarjo Indonesia	Subdivision of Eye, Ear and Ageing Health, Directorate of Community Health, Ministry of Health HR. Rasuna Said, Kav X5 N. 49, South Jakarta Indonesia
Dr Abdulla Junaid, through Dr Rajesh Pandav Maldives	Coordinator, Department of Ophthalmology Indira Gandhi National Hospital Male Maldives
Dr Khin Nyein Lin Myanmar	Programme Manager, Prevention of Blindness Programme Department of Health, Ministry of Health. Naypyitaw Myanmar
Prof. Madan Upadhyay and Mr Y. D. Sapkota Nepal	Director, B.P. Koirala Foundation Maharajganj, Kathmandu, Nepal and Programme Coordinator, Netra Jyoti Sangh, Tripureswar Kathmandu Nepal

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Ms Jaqueline Ramke  
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Technical Adviser  
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Foundation, New England  
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WHO published revised estimates of blindness and visual impairment in 2010, and 2010 also marked 10 years of 'Vision 2020'. This publication provides an update on the current eye-care and rehabilitation services in Member States of the WHO South-East Asia Region.

The focus has been on the prevalence and causes of visual impairment and blindness; the eye-care infrastructure and human resources; the implementation of WHO strategies for control of 'Vision 2020' priority eye diseases; the status of the 'Vision 2020' national plan implementation; and the strengths and weaknesses of the current prevention of blindness approaches. Appropriate suggestions and recommendations have been provided to strengthen measures for improving eye health.



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SEA-Blindness-2