

ANNEX B

Final Report

Date

26th November 2001

Title Of Project & Project Ref. No.

Research into the Economic Impact of Uncorrected Vision (Contract No 4)

Organisation

ADAPTIVE EYECARE LTD (AEL)

Reporting Period

From January 2001

To August 2001

Anticipated Completion Date

November 2001

1 Goal Purpose and Outputs :

1.1 Uncorrected vision is believed to be responsible for widespread loss of productivity and employment, reading and literacy problems, and accidents. There is however an almost total lack of data on the prevalence (beyond the WHO global figure of 1 Billion+ people needing but unable to access vision correction) and the effects of uncorrected vision. Developing world governments and international funding bodies have not prioritised this issue, since until recently no technology existed to address it.

1.2 This acute lack of access to vision correction across the developing world is primarily due to inadequate numbers of eyecare professionals, facilities and the high cost of providing traditional spectacles. "Wearer adjustable" Adaptive Spectacles, developed by AEL, are the only technology which can overcome these barriers and significantly increase poor people's access to vision correction in the developing world.

1.3 This research was designed to generate data on the extent and impact of uncorrected vision amongst a) adult literacy learners in Ghana and b) textile workers in India.

1.4 The Ghana literacy programme study sight tested all participants and measured the prevalence of uncorrected vision amongst both learners and drop-outs.

1.5 The Indian textile factory workers were also sight tested and the productivity of those needing correction analysed before and after being given glasses.

2 Summary of work carried out in this period :

1.1 The project was sub-contracted by AEL in the UK to the Economists Advisory Group Ltd (EAG), specialist health economists who designed the research methodology and analysed the data inputs in conjunction with AEL, and through EAG to GIC Ltd who project managed the work in Ghana and India.

1.2 The Ghana literacy work was done in partnership with the UNESCO award-winning literacy NGO GILLBT (Ghana Institute for Linguistics, Literacy and Bible Translation) in Tamale, Northern Ghana. GILLBT is an affiliate of the Summer Institute of Linguistics (SIL), the world's biggest literacy NGO. SIL works in over 40 developing countries and estimates that up to 50% of the estimated 35 million people on their literacy programmes require vision correction.

1.3 AEL's Indian partners were The Lions Aravind Institute for Community Ophthalmology (LAICO) and the Madura Coates textile factory in Tamil Nadu, South India. LAICO is part of the Aravind Eye Hospital Group, one of the developing world's top eye health establishments and a WHO Collaboration Centre.

2.1 In Ghana 190 adult learners including 53 who had “dropped out” were sight tested and those needing vision correction – 140 (ie 74%) were provided with conventional spectacles. It is noted that 128 (ie 67%) of the entire sample were presbyopic and simply needed glasses for reading (ie near vision correction).

2.2 In India the research was conducted among a group of 238 employees engaged in the processes of spinning (113) and winding (125). The factory and processes were chosen on advice from LAICO and Madura Coates Ltd in the belief that it provided a large enough sample size requiring a high degree of manual dexterity and visual acuity from the workers. 187 (ie 79%) of all 238 employees covered by the study needed vision correction of whom 169 (ie 75.2%) were presbyopic and needed glasses for close work (ie near vision correction).

3 Overall Results of findings obtained by the project

- Ghana – as noted in 2.1, 74% of the learners tested were found to need vision correction, 67% for reading. Amongst the learners who had given up and “dropped out”, 93% were found to need vision correction. Whilst the need for vision correction was not the only cause of learners “dropping out” – 28% referred to time constraints and other commitments - difficulty in being able to see the text in books has to be a very significant disincentive to learning.
- India – the productivity of the Spinners and Winders was measured before and after the provision of spectacles to those that needed vision correction. As noted in 2.1 a total of 79% - 92 Spinners and 108 Winders - were given correction. After the provision of spectacles the Spinners showed an average improvement of 9.5% (with a standard error in the mean of 1.6); 44% improved their productivity by more 10% on previous output levels whilst 23% exceeded them by 20%. The Winders showed less change after the provision of spectacles with 23% increasing their productivity by 10% of the factory standard, demonstrating that this task made less demand on workers visual acuity.

4 Implications of the results or findings for achieving the outputs and purpose of the project

The impact of both uncorrected and corrected vision cannot be viewed in isolation and in both studies wider environmental factors were significant.

- In Ghana, literacy class attendance and performance (as elsewhere) is affected by a range of factors including economic and social commitments which can vary on a seasonal basis ie harvesting. But having 74% of learners handicapped by uncorrected vision has to be a major hindrance to learning.
- In India, the starting hypothesis was that uncorrected vision would have a seriously negative impact on productivity. In reality the research was strongly influenced by other factors: a) a very hot, humid and dusty working environment that b) led many* workers not to wear the spectacles they had been provided with; c) equally significantly, the work processes identified as requiring good vision (spinning and winding) turned out to be less sensitive and demanding to small refractive errors than had been expected and d) in addition workers had minimal incentives for improved productivity. Despite these other factors having 79% of a work force unable to see clearly cannot aid productivity. (*unquantified)

5 Priority Activities tasks for follow-up in order to pursue the Goal

1. What action is necessary to promote the findings of the work to achieve their developmental benefit? This should include a list of publications, plans for further publications, and recommendations for further dissemination, as appropriate.

AEL intends to promote the findings of these studies along with other ongoing and future research. Every opportunity will be taken to coordinate this work with DFID.

Specifically addressing the developmental significance of this work – which AEL hopes to be a pilot phase leading to longer term research (see below) – AEL intends to publicise their findings as follows:

- Press conferences and seminars addressing decision makers and opinion formers from developing world governments, international and national funding agencies, international NGOs and international specialists from the sectors most directly effected - ie eye and public health care and education. AEL plans to coordinate these events closely with DFID and other institutions such as the Commonwealth Secretariat’s (whose Health and Education Departments which have already shown a close interest in the Adaptive Spectacles) and the World Bank where AEL has an open invitation to present its

technology: this latter opportunity would be linked to other North American presentations. Others who have expressed interest include UK based health procurement bodies such as the Crown Agents and ECHO International Health Services.

- The research findings will be publicised in both specialist and selected general interest media on a global basis with particular emphasis on international publications and those read in the developing world.
- Internet – the research will be publicised through Adaptive Eyecare’s own web site and its global links and supported by an on-line technical discussion hosted by Professor Silver and guests from around the world.

2. For projects aimed at developing a device, material or process, specify:

a) What further studies need to be done ?

Further studies of the same kind plus qualitative follow-ups to this 1st stage pilot research in which the methodology and environments will need to be very closely defined. “Quality of life” studies of people given vision correction could be very enlightening. Keen interest in further work has been expressed by Aravind in India and by the Institute of Development Studies (IDS), Sussex (amongst others).

b) How many products will be made available to intended users:

AEL’s mission is to produce Adaptive Spectacles that are affordable to developing world people. They will be made available through all appropriate channels – through governments, NGOs and the private sector.

c) What further stages will be needed to develop, test and manufacture ?

AEL envisages the phased introduction of Adaptive Spectacles into selected developing world markets. Part of the process will involve the development of instructional materials and the training of distributors.

d) How and by whom will further stages be carried out and paid for ?

(i) The manufacturing and delivery of Adaptive Spectacles will be managed by AEL in partnership with development agencies, developing world governments and business partners.

(ii) AEL will seek funding for additional research into the extent and impact of uncorrected vision in the developing world from donor agencies (ie DFID), foundations (ie Rockefeller) and international institutions (ie World Bank and WHO).

6 Summary of Financial Expenditure :

	£	
	<u>Actual</u>	<u>Budget</u>
1 AEL Project Management	7,800	7,800
<i>Professional Fees</i>		
2 EAG	28,200	27,000
3 LAICO	10,000	10,000
4 GILLBT	7,950	10,000
<i>Other charges</i>		
AEL observers	6,196	6,000
EAG/GIC travel	4,827	6,000
Indian spectacles	5,000	4,500
Ghanaian spectacles	2,427	3,750
Local travel – Ghana & India	nil	1,500
Report preparation	780	1,300
Telecommunication	950	500
VAT	6,823	6,405
Totals	80,953	84,775

7 Name and signature of author of this final report

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Acknowledgments

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From Ghana

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From India

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Mr Pennie Raj, Industrial Engineering Department, Madura Coats

Others

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Dr Anthony Carlson, Department of Optometry, Rand Afrikaans University, Johannesburg

Postscript

From “The Wealth and Poverty of Nations” (publ 1998) by David Landes, Professor of History and Economics at Harvard University:

“Europe was also inventing. Among the most valuable novelties were eyeglasses. Everyone needs visual correction about the age of 40, and spectacles (early 13th century) doubled the effective life of scribes and craftsmen”.