9º Seminário Regional para Praticantes de Uso Intensivo de Mão de Obra

9th Regional Seminar for Labour-Based Practitioners

Atas do Seminário
Seminar Proceedings

De 20 a 24 de Maio, 2002 / From 20 to 24, May 2002
Maputo
Moçambique
Labour-based Technology
A Review of Current Practice

VOLUME 1: PROCEEDINGS OF THE NINTH REGIONAL SEMINAR
Labour-based Technology
A Review of Current Practice

VOLUME 1: PROCEEDINGS OF THE NINTH REGIONAL SEMINAR

Theme of the seminar:
Towards Appropriate Engineering Practices
and an Enabling Environment

Edited and Compiled by

David J Mason
## Abbreviations and acronyms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>A</td>
<td>Answer</td>
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<tr>
<td>AIDS</td>
<td>Acquired Immune-Deficiency Syndrome</td>
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<tr>
<td>ANE</td>
<td>Administração Nacional de Estradas e Pontes (National Road Administration), Mozambique</td>
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<tr>
<td>AP</td>
<td>Access Planning</td>
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<tr>
<td>ASIST</td>
<td>Advisory Support, Information Services, and Training, ILO</td>
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<tr>
<td>ASISTDOC</td>
<td>The public version of ASIST’s bibliographic database</td>
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<tr>
<td>ATU</td>
<td>Appropriate Technology Unit, Tanzania</td>
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<tr>
<td>BoQ</td>
<td>Bills of Quantity</td>
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<tr>
<td>CBR</td>
<td>California Bearing Ratio. A measure of soil strength, determined from the load required to penetrate the surface of the compacted soil, expressed as a percentage of a standard value</td>
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<td>CG</td>
<td>Central Government</td>
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<td>CRB</td>
<td>Contractors Registration Board, Tanzania</td>
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<tr>
<td>Danida</td>
<td>Danish International Development Agency</td>
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<tr>
<td>DCP</td>
<td>Dynamic Cone Penetrometer. Apparatus for estimating the <em>in situ</em> shear strength of a material by dynamically driving a standard cone through the material</td>
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<tr>
<td>DFID</td>
<td>Department for International Development, UK</td>
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<td>DER</td>
<td>Direcção de Estradas Regionais (Directorate of Regional Roads), Mozambique</td>
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<tr>
<td>DFR</td>
<td>Department of Feeder Roads, Ghana</td>
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<tr>
<td>DNEP</td>
<td>Direcção Nacional das Estradas e Pontes (National Directorate of Roads and Bridges), Mozambique</td>
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<tr>
<td>ECMEP</td>
<td>Empresa para a Construção e Manutenção das Estradas e Pontes (Company for the Construction and Maintenance of Roads and Bridges), Mozambique</td>
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<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
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<td>ETB</td>
<td>Emulsion Treated Base</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<tr>
<td>HE</td>
<td>His Excellency</td>
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<tr>
<td>HIV</td>
<td>Human Immuno-deficiency Virus</td>
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<td>ILO</td>
<td>International Labour Organisation</td>
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<tr>
<td>IRAP</td>
<td>Integrated Rural Accessibility Planning</td>
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<tr>
<td>KaR</td>
<td>Knowledge and Research</td>
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<td>LAPP COM</td>
<td>Labour-Based Policy Promotion Committee</td>
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<td>LB</td>
<td>Labour-Based</td>
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<td>LBM</td>
<td>Labour-Based Methods</td>
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<td>LBT</td>
<td>Labour-Based Technology</td>
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<td>LBW</td>
<td>Labour-Based Works</td>
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<tr>
<td>LC</td>
<td>Local Council</td>
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<td>LCS</td>
<td>Low Cost Surfacing</td>
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<td>LG</td>
<td>Local Government</td>
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Abbreviations and acronyms (continued)

LGA  Local Government Act
MoPWH  Ministry of Public Works and Housing, Mozambique
NCR  Non-Classified Roads
NEPAD  New Partnership for Africa’s Development
NGO  Non-Governmental Organisation
NMT  Non-Motorised Transport
NORAD  Norwegian Agency for International Development
NRB  National Roads Board, Zambia
NRM  National Resistance Movement, Uganda
PIARC  Permanent International Association of Road Congresses (World Road Association)
PORALG  President’s Office – Regional Administration & Local Government, Tanzania
PPI  Public–Private Initiative
PRSP  Poverty Reduction Strategy Plan or Programme
PWP  Public Works Programme, Egypt
Q  Question
RARP  Rural Access Roads Programme, Kenya
RMI  Road Maintenance Initiative, World Bank
ROADSIP  Road Sector Investment Programme, Zambia
RTTP  Rural Travel and Transport Programme, World Bank
SABS  South African Bureau of Standards
SADC  Southern Africa Development Committee
SFD  Social Fund for Development, Egypt
Sida  Swedish International Development Cooperation Agency
SME  Small and Medium-scale Enterprises
SSE  Small-Scale Enterprise
SSTP  Sustainable Structured Training Programme, Tanzania
SW  Solid Waste
SWM  Solid Waste Management
TRL  Transport Research Laboratory, UK
Tsh  Tanzanian Shilling
UK  United Kingdom
UN  United Nations
UNCITRAL  United Nations Commission for the International Trade Law
US  United States
vpd  Vehicles Per Day. That is, a count of the number of vehicles passing along a road in one day
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1 Background to the Seminar

The Ninth Regional Seminar for Labour-based Practitioners was conducted over a five-day period, from 20 – 24 May 2002, in Maputo, Mozambique. It was organised and hosted by the National Road Administration (Administração Nacional de Estradas —ANE), in collaboration with the ILO’s Advisory Support, Information Services, and Training Programme in Africa (ASIST–Africa). The theme of the seminar was *Towards appropriate engineering practices and an enabling environment*.

1.1 Previous seminars

ILO/ASIST has previously initiated and promoted eight successful regional seminars, where labour-based practitioners—mainly from Sub-Saharan Africa, but also from Asia and Europe—have met to review developments in the application of labour-based technology, and associated issues.

Previous seminars have been held in the following countries:

1st Mbeya, Tanzania, 26 – 28 February 1990
Topics covered: Low cost structures, haulage, training, road maintenance, and labour management

2nd Mohales Hoek, Lesotho, 2 – 6 March 1992
Topics covered: Road maintenance, contracting, compacting, and labour standards

3rd Harare, Zimbabwe, 27 September – 1 October 1993
Topics covered: Tools and equipment, small-scale contractor development, involvement of women in labour-based roadworks, ASIST Technical Enquiry Service

4th Johannesburg, South Africa, 16 – 20 January 1995
Themes: Urban infrastructure development, education and training

5th Accra, Ghana, 22 – 26 April 1996
Theme: Labour-based contracting

6th Jinja, Uganda, 29 September – 3 October 1997
Theme: The right tool for the job – a review of tools and equipment for labour-based infrastructure works

7th Lusaka, Zambia, 3 – 7 May 1999
Theme: Contracting in employment-intensive works

8th Cairo, Egypt, 15 – 19 October 2000
Theme: The New Millennium—Challenges for Employment Intensive Investments.
1.2 Outcomes from the Eighth Regional Seminar in Cairo

The theme of the Eighth Regional Seminar in Cairo was The New Millennium—Challenges for Employment Intensive Investments. The findings and recommendations from four days of discussion covered issues relating to this theme; the recommendations were encapsulated in a ‘Cairo Statement’.

It was agreed that the overall objective of the conference was to identify how best to mainstream labour-based methods. Recommendations fell into eight categories:

- perceptions
- policy support
- education and training
- procurement
- technical standards
- ensuring participation
- planning
- implementation and monitoring capacities.

**Perceptions**

The Seminar wishes to raise the awareness of the contribution that labour-based approaches can make to infrastructure provision taking account of economic and social development.

The Seminar wishes governments to promote the potential for labour-based methods across a wide spectrum of infrastructure and ministries.

**Policy support**

The Seminar believes that political support from the highest level is essential to the mainstreaming of labour-based programmes.

Such support should be manifested in the formulation of policy, implementation strategies, and the allocation of resources in respect of infrastructure provision.

The Seminar believes that the private sector has an indispensable role to play in the dialogue for development of policy for labour-based works.

**Education and training**

The Seminar believes that all engineering education must include an awareness of the responsibilities of the engineer in society and of technology choice for long-term change.

For more immediate effect the Seminar believes that labour-based methods should be promoted during the training of engineers.
For more immediate effect, the Seminar believes that labour-based methods should be promoted in the education and training of all professionals involved in labour-based works.

**Procurement**

The Seminar believes that systems of procurement should be revised to provide a more favourable environment for the promotion of labour-based works.

The Seminar emphasises the need for amendments to international frameworks such that procurement documentation becomes suitable for labour-based works.

**Technical standards**

The Seminar calls for the development of international best practices as a framework for the appropriate level of service in infrastructure provision.

This would allow the documentation to build on regional and national standards where these already exist.

The Seminar believes that the quality of output will be determined by need and not by the method of construction.

**Ensuring participation**

The Seminar believes that keys to the success of the use of labour-based methods are that:

- the people most directly affected should be actively involved in all aspects of the planning, decision making, and implementation process, and
- use is made of local contractors, local NGOs, and civil society organisations, with appropriate support and training, *i.e.* the distribution of opportunity at the lowest level.

The Seminar believes that for the successful use of labour-based methods, sound labour policies and practices are necessary.

**Planning**

The Seminar believes that integrated rural access planning is an important tool in the formulation of sustainable projects; that its key feature is its multi-disciplinary nature, which must be preserved in its use; that problems of cross sectoral decision making should not prevent its use.

**Implementation and monitoring capacities**

The Seminar believes that governments should establish at the highest level a body, including the private sector, to facilitate implementation, and to monitor investment strategies in support of established policies, and to provide a mechanism to give guidance and direction to future budgets.
In addition, the participants felt that the next regional seminar should:
- Review progress on the recommendations of the Cairo Seminar
- Allow more time for discussion in groups
- Define a clear and focused theme.

### 1.3 Context of the present seminar

As has been noted before, although much progress has been made over the last eight seminars in developing labour-based technology and its applications, many of the same issues continue to be raised at each meeting. While there is clearly a wider application for labour-based technology than in the roads sector—including irrigation, soil conservation, urban infrastructure, waste management, and water supply and sanitation—the majority of papers offered for presentation at this seminar dealt with aspects of the roads sector. There are also experiences from Asia to be considered; but in contrast to the Cairo seminar, representatives from Asia at this seminar were few.

Each seminar offers the chance for participants to consolidate the lessons learned over the last 30 years into a corpus of ‘best practice’, and to identify areas for future work. It may be for the reader to judge to what extent this chance was taken up during the current seminar.

### 1.4 Structure of these proceedings

The proceedings of this seminar are documented in two separate volumes:


This volume contains an account of the proceedings over the five days of the seminar, including the findings and recommendations from the groupwork and plenary sessions. The volume is structured in five Sections:

**Section 1** gives the background to the seminar, and sets the scene for the current one.

**Section 2** explains the proceedings of the current seminar, and describes the organisation, objectives, structure, and gives a summary of the evaluation.

**Section 3** gives an account of the opening ceremony.

**Sections 4, 5, 6, and 7** present a summary of the presentations, and ensuing discussions, under the four subthemes of Technical, Contracting, Institutional, and Social.

**Section 8** gives an account of the closing ceremony.
Section 9 presents an overview of the field visits.

Section 10 presents the findings and recommendations, as agreed by the participants on Day 5.

The seminar programme, opening speeches, detailed results of groupwork discussions, evaluation, and a list of participants, are provided in the annexes.

A CD-ROM containing the PowerPoint slides that accompanied each of the paper presentations is included at the back of this Volume.

Volume 1 is provided free of charge to all registered seminar participants.

Volume 2: Papers of the Ninth Regional Seminar.

Volume 2 provides the full text of all sixteen papers that were presented at the seminar, arranged under the four sub-themes of Technical, Contracting, Institutional, and Social. Volume 2 was provided free of charge to all registered participants in their Welcome Pack. Extra copies can be obtained from ILO/ASIST, or from the Employment Intensive Investment Branch of the ILO in Geneva (refer to the Copyright Page for full details).
2 Seminar proceedings

2.1 Seminar organisation

2.1.1 BACKGROUND

The seminar was the ninth in a series of regional meetings initiated and promoted by ILO/ASIST over the last twelve years. Each seminar has been held in a different country. The early seminars were organised and managed by the ASIST team, and financed by ASIST’s donors. From the third seminar onwards, ASIST sought to identify and collaborate with a local organisation to act as host for the seminar. Due to the need to institutionalise the Regional Seminar within the participant community, an attendance fee was introduced for the sixth seminar. For the seventh seminar, the moderation and rapporteuring functions were contracted out to a commercial firm, while the administrative function was shared between the host and a local ILO project. From the eighth seminar onwards, all three organisational functions (administration, moderation, and rapporteuring) have been contracted out, and paid for from attendance fees.

The seminar was hosted and organised by ANE, collaborating with the ILO/ASIST programme in Africa. An organising group comprising Atanásio Mugunhe, James Markland, and Dave Jennings from ANE, and Gamelihle Sibanda and Elias Madondo from ILO/ASIST, coordinated the seminar programme, the invitation of keynote speakers and paper presenters, and the appointment and briefing of the seminar administrators, moderators, and rapporteur.

2.1.2 THE HOST

The National Road Administration of Mozambique (ANE) played hosted this ninth seminar. ANE was set up in 1999, replacing the National Directorate of Roads and Bridges. ANE is an institution with administrative and financial autonomy, with tasks of management, institutional coordination and consultation in the sphere of public roads. A board of directors, including representatives of the public and the private sectors, manages ANE.

The new system of road administration in Mozambique has decentralised the management of tertiary roads down to the provincial governments. In order to guarantee its institutional coordination role, ANE has established a directorate of regional roads. The main role of this body is coordination with the provincial bodies in managing tertiary and unclassified roads.
DFID and Sida supported ANE’s role as host for this seminar.

2.1.3 Administration

Administration services for the seminar were subcontracted to Sociedade Independente de Comunicação, Lda (SOICO). This company was started in September 2000 to offer products and services in the areas of Media Communication, Training and Consulting, Public Relations, and Multimedia.

University Students from different courses (Economics, Law, Psychology, and Civil Engineering) were contracted by SOICO to provide these services for the seminar.

2.1.4 Moderation

Moderation of the seminar was contracted out to Compete, Consultoria e Formação, Ltd, which was given the responsibility for managing the programme of events, moderating the plenary sessions, and facilitating the groupwork.

Compete Consultoria e Formação, Ltd fielded two experienced moderators:

Kristjan Suurna, Moderator: University educated in the United States with a Social Science degree and post graduate work in Education, with more than thirteen years of experience in organizing, moderating and reporting more than twenty seminars, workshops and conferences for different international organisations in the Southern Africa region.

Jeremy Gottwals, Assistant Moderator: Mr Gottwals has extensive experience in moderating national and international conferences in both Portuguese and English, focusing on strategic and action planning, team building and consensus building.

2.1.5 Rapporteur

Rapporteur of the seminar was contracted out to David Mason, an independent consultant who was formerly the Senior Technical Adviser in charge of the Nairobi office of ILO/ASIST. In 1993 he was responsible for establishing the Regional Seminar as a regular international event, and has been closely involved in the organisation and publishing of subsequent seminars.

2.1.6 The Collaborator

ASIST is a programme of the ILO’s Employment-Intensive Investment Branch, which started in 1991, providing Advisory Support Information Services and Training on employment-intensive strategies and local resource utilisation in the provision of sustainable infrastructure to various countries in Eastern and
Southern Africa. The programme has expanded over the years, and there is now an Asia-Pacific Programme, and a Latin America Programme has been initiated.

The ASIST–Africa Regional Programme is centred in Harare, Zimbabwe, with a liaison office in Nairobi.

The goal of the programme is to contribute towards poverty reduction by mainstreaming employment-intensive strategies in the provision of infrastructure and services for improved and sustainable livelihoods, and local economic development.

The objectives are to:
- create employment with fair working conditions for men and women
- develop local capacity, and build knowledge and skills in government, the private sector, and communities
- create and maintain appropriate and sustainable public infrastructure in a cost effective and efficient manner.

2.1.7 Participants

The seminar was attended by 189 participants from the public and private sectors, representing a range of organisations such as government ministries, parastatals, non-governmental organisations, donors, research organisations, universities, consultants, and international organisations.

A total of 22 countries were represented: Botswana (1), Cambodia (1), Egypt (1), Ethiopia (9), Ghana (5), Ireland (1), Kenya (4), Lesotho (8), Malawi (7), Mozambique (67), Namibia (2), Portugal (2), South Africa (9), Sweden (1), Switzerland (3), Tanzania (28), Thailand (1), Uganda (9), United Kingdom (5), United States of America (1), Zambia (10), and Zimbabwe (13).

Although the Eighth Regional Seminar attracted eight participants from six countries in Asia, their representation at this ninth seminar was down to only two from two countries.

2.1.8 The Venue

The seminar was held at the Rovuma Carlton hotel in the centre of Maputo. Participants stayed at this venue and at other hotels nearby (Holiday Inn, Hotel Escola Andalucia, Hotel Santa Cruz). Buses were laid on to transport participants from their hotels to the venue.

Although the seminar was conducted in English, a local firm provided simultaneous translation from English to Portuguese, and from Portuguese to English during the plenary sessions.

Plenary sessions were held in the Mabula Room, while group discussions were conducted in this room (divided into two), and in two adjacent rooms (the Milando and Timaka).
A Welcome Dinner was held at the Hotel Polana on the Monday evening, with traditional dancers providing the entertainment, and a Farewell Dinner took place at the Hotel Rovuma Carlton on the evening of Thursday.

2.2 Seminar objectives

The objectives of the seminar were:

- To provide a forum for practitioners in labour-based and local resource based methods to exchange experiences
- To update participants on employment intensive activities
- To discuss key issues identified by seminar participants.

The first two objectives were common to all previous regional seminars.

2.3 Seminar structure

As in previous seminars, the programme was structured to provide three days for presentation and discussion, a one-day set of site visits, and a half-day devoted to opening and closing ceremonies. The final half-day was set aside for sightseeing and shopping.

In response to feedback from the Cairo seminar, all sixteen paper presentations were made in plenary, in tranches of four, relating to the sub-themes of Technical, Contracting, Institutional, and Social. Discussions of the issues raised by the papers were conducted in parallel working groups; four groups met at a time, and each group discussed a particular paper.

The outcomes of the plenary and working group discussion sessions were summarised in the form of findings and recommendations for agreement by participants on the final day of the seminar.

The ILO/ASIST Information Service operated a bookstand, where participants were able to browse, order, and purchase a wide range of publications dealing with LBT and its application.

The full programme for the seminar can be found in Annex 1.

2.3.1 PAPERS

Papers to be presented at the seminar were solicited from key practitioners. All the recipients of the letter of invitation to attend the seminar were also invited to send proposals and outlines of papers they would like to present. Thirty-one outlines were received, from these 16 were selected. These 16 papers were published before the seminar as Volume 2, and were presented by their respective authors during plenary sessions.
The task of reviewing, editing, and laying out the papers in Volume 2 was sub-contracted to an independent consultant.

2.3.2 **Plenary Sessions**

Plenary sessions, conducted by the Moderators, were held on all days of the seminar, except Day 3 when there was a site visit.

Plenary sessions were used:

- For the opening and closing ceremonies. The keynote speech was delivered during the opening ceremony.
- For authors to present their papers. Since the full text of the papers had already been distributed to participants in Volume 2, authors were each given just 20 minutes to highlight their main points. All elected to talk to projected PowerPoint presentations, except one, who illustrated his presentation with slide transparencies.
- For questions of clarification to paper presenters. Only about 10 minutes were allowed for this.
- For reporting back on the findings from the parallel discussion groups.
- For reporting back on the site visits.
- For expressions of interest from prospective hosts of the next seminar.
- For a review of the Cairo Statement, and to agree upon the Findings and Recommendations of the current seminar.

2.3.3 **Groupwork**

Following the presentation of each set of four papers on each sub-theme, participants made their own choice to join one of four discussion groups, each group addressing the issues raised by a particular paper.

Each group had a Moderator, whose job it was to guide the discussions; and a Recorder, who was responsible for recording the results of these discussions onto MetaCards.

Each group addressed their task by considering the issues raised, from four perspectives:

- areas of agreement with the author
- areas of disagreement
- key recommendations that are important in defining best practice
- additional key points that contribute to the theme.
These perspectives were recorded on MetaCards\textsuperscript{1}—a different colour of card being used for each perspective—and pinned up on display boards for presentation to plenary.

Two different modes of operation were used for conducting the groupwork:

- Participants divided into four groups and spent the whole allotted time with their group. Each group then presented their findings to plenary, where the rest of the participants had an opportunity to comment on and, if appropriate, add to them. This was done by writing extra cards and pinning them to the display boards.

- Participants divided into groups as before. However, after listing their perspectives on the display boards, each group then rotated to review the findings of another group. The Moderators remained with their display boards, and explained the recorded perspectives to the new group members. These new members then had an opportunity to add their own views where appropriate (a fifth colour of card was used to distinguish these comments from the original ones). Each group rotated three times in order to review the findings from all four groups. During the subsequent presentation to plenary, only the extra cards were highlighted by the group Moderators.

Although the second mode was more time-consuming, and burdened the Moderators with having to explain the cards three times over, participants generally preferred it.

The full results of these groupwork discussions can be found in Annexes 3 to 6.

2.3.4 SITE VISITS

Site visits were organised for Day 3 of the seminar. Participants divided themselves into four groups, and each group was bussed in rotation to the various sites, all of which were within half an hour’s travel from Maputo.

Sites visited were:

- The Michafutene–Momemo village access road
- Bitumen stabilisation trials
- The Agro-Alfa factory
- Erosion at Bairro Polana Caniço.

Further details relating to the site visits are given in Section 9.

\textsuperscript{1} MetaCards are standard-sized cards, of different shapes and colours, used in the patented MetaPlan system of visualisation.
2.4 Evaluation

On the final day of the seminar the participants were asked to evaluate the seminar by means of a written questionnaire (see Annex 7). The questionnaire was completed by 116 participants. The following is a summary of the results—for the full analysis of the questionnaire see Annex 7.

All aspects of the seminar generally received a positive evaluation. The accommodation, meals, and seminar facilities all received high ratings. The handling of bookings was rated as being done well to very well. The majority of the participants indicated a preference to receive the papers before the seminar, and some suggested having the papers available on the Internet prior to the seminar, to facilitate access. The management of the seminar was rated highly, though some participants felt that the programme was congested, which may have had an adverse effect on deliberations. There were suggestions that the duration of the seminar should be shortened to a total four days. The majority rated the number of delegates as being about right, but many stressed the wish to see a better gender balance—more female participants—in the future.

The papers and standard of presentations were rated for the most part as being good; though there were some recommendations that the reviewing process should be more rigorous to ensure that the papers adequately address the themes. Both the plenary sessions and discussions, and the facilitated group discussions, were rated highly. A number of participants indicated that more local expertise should be involved in the facilitation process to ensure technology transfer and to build local capacity.

The field trip was generally rated highly, with some reservations regarding the village access road. It was suggested to use loudspeakers or microphones for future events to facilitate communication.

On the theme for the next seminar the top five most popular suggestions proposed were:

- Labour-based technology in poverty reduction and PRSPs (poverty reduction strategy papers)
- Best practices in labour-based technology and new innovations
- Construction techniques, materials, and standards (i.e. appropriate construction materials, alternative surfacing, spot improvements, design and construction of small bridges)
- Diversification and integration of labour-based technology in non-road sectors
- Mainstreaming labour-based technology (into government policy, education, training); the role of research in mainstreaming.

And finally, Tanzania received the most votes for the next venue!
2.5 Acknowledgements

Special thanks are extended to the Government of Mozambique, and specifically to the National Road Administration, for its role in organising and coordinating the Seminar. Thanks are also extended to the staff of ILO/ASIST for their support and help during the organisation of this Seminar.

We are indebted to the organising committee comprising Atanásio Mugunhe (ANE), Jeorge Mwonima (ANE), Irene Langa (ANE), James Markland (ANE), David Jennings (ANE), Gamelihle Sibanda (ILO/ASIST), and Elias Madondo (ILO/ASIST).

We would also like to thank the moderators, Kristjan Suurna and Jeremy Gottwals, for their hard work during the Seminar in facilitating discussions between so many delegates. The logistics were quite a challenge, but were well handled, thanks to Carmen Bilale and her colleagues from SOICO.

Special thanks are given to Atanásio Mugunhe of DER for initiating Mozambique’s offer to be the host, and for organising things behind the scenes.

We also extend our thanks to Peter Roberts for giving the keynote address.

Last but not least, thanks are given to all paper presenters, group facilitators, and participants for their contributions and attendance.
3 Towards Appropriate Engineering Practices and an Enabling Environment

3.1 Opening ceremony

3.1.1 SETTING THE SCENE
Atanásio Mugunhe, the Director of Regional Roads for ANE, acting as the Master of Ceremonies, welcomed the participants and expressed the hope that they would find this the best Regional Seminar ever. He introduced the dignitaries sitting on the top table: His Excellency the Minister of Public Works and Housing (Roberto Colin Costley-White), the Chairman of the ANE Roads Board (Carlos Fragoso), the Director General of ANE (João David Mabombo), the Deputy Chief Engineering Adviser (Infrastructure and Urban Development Division) of DFID (Peter Roberts), and the Director of ASIST – Africa (Graham Johnson-Jones).

3.1.2 WELCOME BY THE HOST
The Chairman of the ANE Roads Board, Carlos Fragoso, representing the Host, welcomed the participants, and hoped that they would find time to experience some of the pleasures of Maputo: shrimps, beaches, and cashew nuts. He said that there was a long history of the intensive use of labour in Mozambique, especially on roads. LBW started in 1978 in Mocuba with a pilot project executed by the ILO, and financed by NORAD. One of the main objectives was to maximise the quality and efficiency of LBW. DNEP, set up in 1987, expanded the pilot project, but the programme was interrupted by civil war.

In 1992, with the coming of peace, rehabilitation of feeder roads was undertaken in all ten provinces of the country; and this formed an important contribution to the regeneration of the country. Women’s involvement was at a level of twenty five per cent.

In 1999, ANE was formed as an autonomous body, with representation from both the public and private sectors, to look after the road network. This network comprises 26,000 km of roads, with a further 14,000 km of unclassified roads. This year, a new ten-year programme to rehabilitate about 12,000 km of roads will take off. The aim is to prioritise the use of local resources, especially labour. In this programme, ANE’s mandate will also include some unclassified roads.

In conclusion, he wished all participants a successful seminar.
3.1.3 Welcome by ASIST

Graham Johnson-Jones, the Director of the ASIST–Africa Programme, made a few opening remarks. After expressing appreciation for the presence of so many participants, many of whom are ‘regulars’, he focused upon the excellent arrangements and venue provided for the seminar by the organisers, especially the hosts, ANE. He further stressed the linkages of labour-based technology with the ILO decent work agenda, and anticipated that there would be much discussion in the wider applications of employment-intensive infrastructure, and on the issue of mainstreaming the approaches in both policy and practice. He concluded by wishing everyone every success in rising to the challenges of the seminar, culminating in a ‘Maputo Statement’.

3.1.4 Welcome by DFID

Peter Roberts, representing DFID, said that he appreciated the past and current supporters of LBT in Mozambique, and the support of ASIST. DFID had only recently become one of the supporters of ASIST, but has funded a number of LB programmes in different countries. He was glad to see so many countries represented at the seminar. It is for people like the participants to push forward the application of LBT. DFID was especially glad to have a formal agreement with the ILO (worth £15 m) in the pursuit of Decent Work. Many practitioners have demonstrated the technical excellence of LBM; what is needed now is to ensure that the employment generated is decent employment.

3.1.5 Official Opening by Minister

His Excellency the Minister of Public Works and Housing, Roberto Colin Costley-White, explained that Mozambique suffered widespread poverty; the Government had developed a number of policies to alleviate this, including the intensive use of labour, for example in feeder roads. This was started at the beginning of the 1990s, with buildings, floodworks, and roads.

The seminar theme contains challenges; these need political vision. The lack of infrastructure and training of human resources is the biggest block to development, especially in the development and maintenance of rural roads. However, the Government’s programme will contribute to economic development, especially against the background of the marginalisation of Africa in world trade.

There is high awareness among engineers of social problems, especially HIV/AIDS. He emphasised that the country’s youth need education, and expressed the hope that the participants could contribute to this.
There is the gender issue; but this is not just about women, but also about the balance between men and women.

He gave thanks to the country’s partners, and other persons and institutions, especially ILO/ASIST and DFID in making this seminar possible. He looked forward to the findings and recommendations, based upon the wisdom of the participants. Mozambique wants to prosper. He then formally declared the seminar open.

### 3.1.6 PHOTO CALL

During the refreshment break—at which coffee, tea, fruit juice, and cakes were on offer—the participants assembled on the steps of the municipal government building to have a group photograph taken.

Following the break, the moderation team of Kristjan Suurna and Jeremy Gottwals introduced themselves.

### 3.2 Opening speeches

#### 3.2.1 OPENING ADDRESS BY THE DIRECTOR OF ILO/ASIST–AFRICA

Graham Johnson-Jones gave a short (12 minute) formal address, supported by PowerPoint slides. The full text can be found in Annex 2.

He opened by expressing his appreciation to the hosts, for the efforts they have put into arranging the seminar.

For the benefit of those participants who might be unaware of the work of the ILO and of ASIST, he gave a brief overview. He stressed the importance of providing decent work as a core ILO objective; this was mirrored by the stated wishes of the poor. The **decent work development goal** is to obtain productive work in conditions of freedom, equity, security and human dignity. The ILO’s Employment-Intensive Investment Programme and the associated ASIST Programmes contribute to this goal by helping member states of the ILO to optimise the employment and local development opportunities through investments in infrastructure.

He went on to explain the three ‘pillars’ of ASIST, whose new three-year phase in Africa started in July 2001, supported by Denmark, Great Britain, Norway and Sweden.

- ASIST offers **Advisory Support** on policy issues; rural and urban local resource based initiatives; and in developing tools and techniques including Integrated Rural Accessibility Planning (IRAP) and guidelines for community contracting.
- In the area of **Information Services**, ASIST builds and operates a knowledge base on employment-intensive strategies
for infrastructure provision. This takes the form of a comprehensive collection of over 10,000 documents at the resource centres; and the ASISTDOC Bibliographic Database available from our website or by diskette or CD-ROM. This is strengthened by active networking, including support to the biannual Regional Seminar; the Contacts database, the Technical Enquiry Service and through publishing and disseminating technical information. This also links into the role of ASIST in Research and Development in existing and new sectors.

- The T in ASIST relates to Training and here ASIST has provided continued support to national training institutions and universities, including international courses run by the Kisii Training Centre in Kenya.

ASIST is now active in both Africa and Asia Pacific Regions, and the budding prospect of an ASIST in Latin America seems closer. The emphasis in the current phase is to build and mainstream the experiences that have been encompassed in the previous activities of the ASIST Programme.

As a good place to start, he gave a quick overview of the conclusions of the last seminar in Cairo (see Section 10); the progress on these would be reviewed in the current seminar.

Finally, he said that he expected a strong sharing of experiences by all participants, making full use of the additional discussion time. After the seminar, hopefully linkages will have been established and strengthened that would help them all to achieve the objectives of the theme based upon a 'Maputo Statement' on the way forward.

He concluded by thanking all the participants for their patience and attention, wishing them every success in addressing the serious issues in front of them.

**3.2.2 Keynote Address by the Deputy Chief Engineering Adviser (Infrastructure and Urban Development Division) of DFID**

This was given by Peter Roberts, supported by PowerPoint slides; he spoke for 35 minutes.

He noted that the participants were the converted talking to the converted. ASIST is a very successful programme. But there is still work to be done.

His first contact was with the Kenyan RARP; he did not work on it, but he was able to observe it. It comprised the successful approach of utilising labour, supported by light equipment. From those early days, despite the common sense approach, there was slow progress in getting it accepted as the norm. Agencies are not always the best advocates. It is mainly up to people like the participants. The process is still evolving: the main aim first was
to generate employment; but it should not be forgotten that the
processes themselves were also effective in offering a ‘technology of
choice’. Employment-intensive technology can contribute to
promoting growth and alleviating poverty—although most of the
jobs created are short term—but it does not automatically follow
that real growth is being achieved.

To develop contractors, there has to be the right environment;
there are opportunities for the private sector here, but its
involvement is set back by uncertain flow of work.

The ASIST programme also engages in wider issues, such at IRAP,
and in strengthening local government.

Then there are social considerations: most people here are
engineers, and they may regard sociologists as thorns in the flesh.
However, history shows that in most cases it has been engineers
who have led changes in society. Engineers should be aware of
their social responsibilities: the social impact of infrastructure,
employment conditions, the growth of SSEs, collaboration with
communities, and workforce management. The main point is that,
while quality of works should be maintained, so should health,
safety, and labour standards.

DFID are core supporters of ASIST–Africa, and of ASIST–Asia. It
also funds the road programme in Zambezia. Lessons have been
learned from this programme and have been applied. Access is not
just for motor vehicles, but also for NMTs. The priority is to
address the transport needs of rural people; 75% of these are on
foot or by NMTs.

So a LB approach can address access needs, e.g. to markets. Even
NMTs need available and sustainable maintenance facilities (e.g.
ready availability of bicycle tyres and tubes).

DFID is supporting research, together with other donor agencies
(in particular Danida), in SADC, undertaken by TRL. It is
collaborating with other regional programmes, and the role of
SADC could be important in promoting this. Research details are
published in the DFID Transport newsletter. This information can
also be found on the Worldwide Web (www.transport-links.org,
password: connect).

DFID promotes the dissemination of information; it does not do
this itself, but through ASIST. Access to information is the
burning issue for the KaR programme (which Peter Roberts has
managed for the past four years); it is for practitioners to modify
and apply this information as necessary. PIARC is also
contributing to technology transfer.

There was last year a Social Aspects of Construction conference. A
key point arising there was that approaches should be entirely
practical, and in the long term sustainable. There are a number of
challenges:
• Social: is incorporating social aspects worth the extra cost? He believed that it is essential to incorporate these aspects as part and parcel of LBM.

• Institutional: what incentives need to be generated to ensure that individuals behave in a social way? Clear incentives for industry can be set. It is for the participants to show us how.

• Contractors: awareness to be raised; guidance on how to include decent work aspects; healthy workers work better.

• Technical: are safe and responsible working practices being adopted? Is the right enabling environment being set up?

• HIV/AIDS in construction: this is an issue, especially where workers work away from home, and includes out-of-work-hours time. Addressing this issue benefits both employers and employees.

• The way forward: DFID will continue to support regional programmes, and to work with other agencies, to mainstream quality of work, and to widen support for and strengthen the impact of LBT.
4 Technical issues

4.1 Zambézia Feeder Roads Project: A new approach to road maintenance by Rob Geddes and David Geilinger

4.1.1 PRESENTATION

David Geilinger supported his presentation with 26 PowerPoint slides, a copy of which can be found on the CD-ROM inside the back cover of this volume.

He called his presentation A Change of Thinking on Road Maintenance. This new approach to road maintenance was pioneered in the Zambézia Feeder Roads Project, where the objective was to develop more effective ways of maintaining very low volume roads in rural Mozambique.

The project ran from 1996 to 2001, at a cost of about US$15 m, and upgraded about 1000 km of tertiary roads. Eight emergent local contractors were trained. He showed photographs of the kinds of maintenance challenges that the project faced: poorly formed and rutted roads with little or no drainage; waterlogged sections that impeded or prevented vehicular traffic from passing.
In some sections, runoff had almost totally washed away the road; log bridges falling apart.

The roads in the project were to conform to the national Type C cross-section, which comprised 100 mm compacted gravel surfacing on a 3.5 m carriageway, with trapezoidal side drains 0.35 m deep, with a 0.5 m wide invert. Mitre drains and scour checks were incorporated at the appropriate intervals, as were cross-drainage structures. Shoulders were grassed. This standard was designed for traffic of up to 40 vehicles per day.

Each of the trained contractors employed an average labour force of 200 workers, and achieved an average rehabilitation output of 2.5 km per month. The roads were completed to a good standard, and he showed a picture of drains running full in the rainy season. The average cost of a fully gravelled road was US$ 12,000.

He explained that the impetus to change the approach to road maintenance from the conventional method was triggered by a) the prevalence of weak sandy soils in the province, b) the high cost of gravel, and c) the very low traffic volumes. The aim of the new approach was to provide a solution appropriate to each individual situation.

For example, he showed a photograph of a very low trafficked road where only the two wheel strips of the running surface were maintained; grass was allowed to grow on the shoulders and down the centre of the road. In some cases, roads were so sandy as to be almost unmaintainable over their length. However, by concentrating on a spot improvement approach, the project found that they could significantly reduce the cost of construction, while opening up more of the road. Long multiple culverts were installed at wide river crossings.

The standard maintenance regime comprised annual contracts that included a lump sum to bring the road into a maintainable condition; then subsequent monthly payments based on the level of service specified. A standard contract was used for all roads, the cost ranging from US$ 500 to US$ 800 per kilometre per year. This cost was supposed to be financed from fuel levies; however, the money raised from fuel levies was nowhere near sufficient to meet the actual costs, as was shown by the example from the Bive to Maganja-da-Costa road.

David then contrasted the benefits and drawbacks of this Continuous Presence Maintenance Approach. The benefits were:

- A permanent maintenance presence
- Local employment

while the drawbacks were:

- It was expensive
- It needed a higher level of supervision
- It was inflexible
Consideration of the above led to the development of the ‘One Hit’ maintenance contract approach. This type of contract was ideally completed in a two-month period, but actually had no fixed duration. A 25% advance payment was made, with the balance paid on completion of the work. The contract comprised routine and periodic maintenance \textit{(i.e.} spot improvements). The approach followed an annual cycle consisting of:

- Condition monitoring of core network and identification of spots for improvement (Feb – Mar)
- Prioritisation of spots to be improved (Apr)
- Preparation of one hit maintenance contracts (Apr – May)
- Operation of maintenance contracts (May – Dec)

The benefits of this approach were that:

- It was cost-effective
- It was flexible in terms of the type of work that could be included, and the type of contractor employed
- It needed low supervision
- It allowed for tendering of the work
- It avoided the costs involved in issuing an interim certificate

The drawbacks included:

- Technical input had to be made ‘up front’
- There was no emergency capability
- It required prompt payment of the contractor
- The workers have to wait over two months for payment.

Summing up, he highlighted that:
• Existing contract arrangements are inflexible and expensive
• Traffic volumes are very low
• There is little deterioration during the dry season
• There is a perennial need for localised improvements
• One should pay only for what is needed.

4.1.2 Plenary Discussion

There were just two questions to David from the floor:

Q: How does one budget for one-hit maintenance?
A: Allocate a specific proportion of the budget to low-volume roads.

Q: What is the cost of one-hit spot improvements?
A: It varies from US$ 100 upwards. The contract documents and BoQs are computerised, so it is possible to have a contractor on site within three weeks of printing the documents from the computer.

4.1.3 Groupwork

Eng Nkululeko Letha, who reported back the group’s findings to plenary, facilitated group discussions on the issues raised by this paper. Full details of the group’s MetaCard display can be found in Annex 3.

The main points raised were:
• Most of the paper was agreed to as a sustainable low-cost solution.
• More attention to quality of work clauses in contracts.
• Network needed to be looked at since rehabilitating one section may increase traffic elsewhere.
• Having workers wait for two months to be paid was deemed unacceptable.
• Tanzania claimed to have used multiple hit contracts.

Plenary comments

A participant from Ghana commented that he was disappointed that normal performance-based contracts were not working; repeating the same work with same contract documents every year, over and over. David said that there was not enough money to let traditional contract. Also, one hit steadily improves the road over the years.

A participant from Mozambique noted that contractors prefer long contracts, especially where paying off equipment loans is concerned. Better to pay less for longer work.
A participant asked what the effect of this regime was on the livelihood of workers. David answered that there was not enough time to find this out. A card was added for ‘stability of employment generation’.

A person from Tanzania asked what the appropriate wage rate is, especially where a road passes through high wage earning areas, e.g. fishing, mining. James Markland replied that the project paid the national Mozambican minimum wage. Contractors can put in a realistic wage, but in Zambézia, the minimum wage was a good wage.
4.2 Employment opportunities in solid waste management in low-income countries by Manus Coffey

4.2.1 Presentation

Manus projected a set of 45 slides to illustrate his presentation.

He began by reminding participants that worldwide population trends and urbanisation are rising inexorably. More people means more waste generated.

In many regions of the developing world, people are crowded into urban slums, with dwellings constructed so close together that vehicular access is impossible. He illustrated this with pictures from Kwa Zulu in Natal, South Africa; Port of Spain, Trinidad; and Kibera in Nairobi, Kenya.

Solid waste comes in different densities. For example, in Yemen, it is mostly low density, and there is no scavenging or processing. In Colombia by contrast, the waste is generally of higher density, with a higher organic content. He showed a picture of scavenging, with cattle and pigs feeding on the waste, and vultures waiting to take their pickings. In Bhutan, too, waste tends to be of high density.

The health problems associated with unmanaged waste were illustrated by a slide of a landfill in the Upper Nile, near a village. Over 90% of the villagers have respiratory problems.

Various methods are used to collect and transport solid waste. In many cases, the equipment used is poorly designed, or is inappropriate, being imported from the West where the nature of waste is different. Manus showed slides of:

- a handbin on wheels
- a donkey cart in Faisalabad—this was difficult to empty; a better and redesigned one was shown
- a tractor-towed trailer. Tractors do not attract customs duty, so they are cheaper than a truck. The trailer has a removable container
- a special design of trailer based upon old European ones, used in the Upper Nile. The trailer tips to unload
- tipper trucks in Dar es Salaam. These are slow to load because of their high sides
- a high-sided truck in Mzuzu, Malawi. It takes two men to load the passed-up waste, which is inefficient
- waste in oil drums in Mexico City. These are loaded into a compactor truck by hand; this is inefficient
• sophisticated Italian trucks in Dar es Salaam. These are under-utilised; they are always breaking down, and there are no spare parts
• a European-type wheeled bin, designed for a smooth surface, on a rough unmade sidewalk
• round metal bins in China. These last only one year; they cost a lot, but waste residues corrode the metal through anaerobic crevasse corrosion.

Labour is often used without regard to their health and safety. He illustrated this with slides of:
• a man straining with a head basket
• a badly designed steel handcart; the woman pushing it has a deformed back.

Labour is also mostly used inefficiently, as in:
• four men loading very high-sided trucks; they achieve only two loads per day
• loading waste from a bin into a truck via a canvass sheet in Nairobi; there is a lot of unnecessary spillage
• six men trying to empty a concrete bin in Bhutan; only one man can get into the bin at a time
• a handcart in India that is difficult to empty, so waste has to be pulled out by hand, piece by piece.

The design of the tools that waste workers use affects their productivity, for example:
• handtools in the Philippines: a witch broom and hand scoop
• a witch broom with short brush in Egypt; this needs an arm muscle action, which is inefficient
• a witch broom with long brush in Pakistan; this needs shoulder muscle action, and is more efficient.

Manus has been involved in many projects around the world, and has been instrumental in designing improved waste management systems and equipment. He showed slides of:
• a pickup container on a trailer. This is located on the outskirts of the city, then loaded onto a modified small Fiat truck
• a simple modified dumper truck to handle containers
• a similar truck on the Maldives.

In China, he has been involved in the development of an improved urban waste collection system. Waste is collected by tricycle carts and taken to a small transfer station where the contents of the carts are tipped into containers sitting in pits sunk in the floor. These containers are then lifted by electric hoist onto trucks, which take the waste to the dumpsite.

Often, low-technology methods are more appropriate, as is shown by landfill accumulation in India being manually sieved for
compost, while, nearby, a waste processing plant stands idle, with machinery turning to rust.

4.2.2 **PLENARY DISCUSSION**

After his presentation, Manus fielded a couple of questions from the floor:

Q: How do wheeled systems work in slums with no roads?
A: Primary collection has to be by hand; the municipality has then to provide collection containers nearby.

Q: What about institutional arrangements to connect the householder to the dumpsite?
A: This depends upon the willingness to pay by the householder. You have to start with the most basic system, run by the municipality providing containers, to a small entrepreneurs-selling system. Typically, 80% of the cost is in collection, and 20% in disposal. An awareness campaign is essential in introducing a SWM system.

4.2.3 **GROUPWORK**

**Discussions**

Group discussions on the issues raised by this paper were facilitated by Hany Attalla; and recorded by Ezekiel Rametse, who reported back the group’s findings to plenary. Full details of the group’s MetaCard display can be found in Annex 3.

The group members regretted that the presentation was not completed due to the time limitation. A request was made that the presentation could be repeated in full outside of the programmed events (this was later achieved). There was a very strong interest in the opportunities for employment in waste issues, and this led to considerable discussion.

It was recognised that solid waste is one of the major urban challenges with potential for opportunities for employment and environmental improvement.

The consensus recognised the inappropriateness of much of the currently used solid waste collection equipment, taking into account the variations in waste types, and difficulties of access often found in informal settlements. The need for the development of appropriate equipment, tools, and methods was recognised, coupled with the need to integrate collection and disposal methods with effective use of labour. Indecent and hazardous working conditions were recognised as key areas to be addressed.

The discussion group pointed out that the presentation was limited to municipal waste, whereas hazardous, industrial, and medical wastes were also of particular concern.
In terms of recommendations for best practice, the group concluded that public awareness needed to be raised, leading to full stakeholder participation in addressing solid waste problems. It followed that this must result in effective land use planning, environmental policies, and enforcement of legislation. On the technical and managerial side, the group stressed the need for adopting the ‘four Rs’ of solid waste (Reduce, Re-use, Recycle, and Recover); the need to ensure that knowledge and methodologies are shared between the developing countries; and the need for public-private partnerships, with opportunities for developing small to medium sized enterprises.

Additional key points raised included concern that solid waste collection, as carried out in some countries, could be seen as exploitation of the poorest. In addition, it was stressed that balanced environmental solutions were essential, and that acceptable disposal methods appear to be a major problem addressed inadequately in most developing countries. Finally, it was strongly felt that the principle of penalty and reward should be applied in terms of ‘The polluter pays’, and ‘Manufacturers who produce products which take into account subsequent disposal should be rewarded with forms of concession’.

**Plenary comments**

One participant noted that it was best to recover as much as possible to reduce waste initially; south-south solutions better than north-south. He asked if private contractors could deal with SWM. Manus replied that it is difficult to get contractors because they want to be sure of being paid. In Dar es Salaam, only one contractor quoted, but despite a special piece of legislation to allow him to charge fees from customers, the system collapsed. Afterwards, petty contractors were engaged for small zones in Dar es Salaam. People who work for contractors tend to be exploited.

Another participant said that a strong regulatory framework was needed; freeloaders interfere with the use of legitimate SSEs. Manus said it might be possible to zone tariffs to enable rich areas to subsidise poorer areas.

A person from Uganda asked what the factors were in the choice of final dumping ground. Manus answered that it is expensive to run a proper site; there is usually one large one, because small ones are uneconomic.
4.3 Low Cost Surfacing (LCS) Project: Guidelines for the development of questionnaires for monitoring of environmental and socio-economic impact by Ruth Schaffner, Rob Petts, and Alebachew Kassie

4.3.1 PRESENTATION

Ruth Schaffner, who talked to a 49-slide PowerPoint show, presented this paper.

Ruth began by noting that, in recent years, a more holistic approach to project planning has been adopted than previously used: decisions are made by reference to overall strategies such as 'poverty reduction', 'poverty alleviation through employment generation', 'sustainable livelihood'. People have become the priority concern and, to a lesser extent, the environment.

Rural access projects are based upon 'Integrated Rural Accessibility Planning (IRAP)'. 'Poverty alleviation through employment' is met by labour-based construction and maintenance. Environmental impact assessments (EIAs) are required, based upon the policy and environmental guidelines of a country. Environmentally-friendly road construction methods are promoted.

In planning rural access projects, Ruth pointed out that decisions on standards, methods, and types of construction are based mainly on technical requirements and financial constraints. Decisions are less influenced by environmental and sociological considerations.

The LCS Project investigates different surfacing options:

- Gravel or laterite surface
- Dressed stone surface
- Clay brick surface
- Bamboo reinforced concrete surface
- Hand packed stone surface.

The purpose of LCS Project is to assess the following issues:

- How is the money utilised (during construction and maintenance)?
- Are the investments sustainable?
- What is the impact on the environment?
- What are the socio-economic/gender-based requirements?

Since there is little documented experience on different surfacing options, and in order to formulate indicators and define the criteria for sociological and environmental issues, a series of
questionnaires was developed. Then it was a question of testing the questionnaires, and generating the data for monitoring.

Indicators are tools to be used for a more holistic project design and to monitor the progress and impact of a project. Indicators will be used in LCS Project to compare the impacts and constraints of surface options, and the benefits for stakeholders. With indicators we can assess the quality of project results, assess the impact on certain issues, monitor specific activities, determine results, and record changes from a known situation (usually the baseline position).

Criteria have been developed to value indicators of the LCS impact on the environment, on the socio-economic situation, and on gender balance. Three questionnaires have been prepared. For each LCS option, the set of questionnaires is to be filled in.

The technical requirements of road surfacings are characterised by ‘hard’ criteria easy to measure, such as size, number, percentage, length, etc. Socio-economic, gender sensitive, and environmental issues provide ‘soft’ criteria, which often cannot be measured exactly. They have to be valued by means of scaling or rating, e.g. 1 – 5, where 1 means a very small impact and 5 a very high impact.

The questionnaire on environment, dealing with materials, contains questions such as:

- What type of construction materials are required, which size?
- What is the ratio of the different materials used?
- How is the availability of materials? Scarce or abundant? How is the regeneration potential?
- What are the sources of materials: forest, private land, river, lake, etc.?
- Does the material have to be extracted?
- Does the material need processing? What is the energy consumption?
- Is reinstatement at source needed?

The questionnaire on environment, dealing with impact, contains questions such as:

- What is the impact on fauna during excavation, construction and use?
- What is the impact on flora?
- What is the impact on the landscape?
- What are the means of transport, tools and equipment needs?
- What is the impact of hauling distance?
- What is the pollution by extracting materials and during construction at site?
- What is the impact of preparation for use?
- What are the health problems?
• What is the flood and erosion situation?
As regards pollution and labour intensity, the question is: How high is the generation of noise, dust, exhaust, and soil and water pollution with regard to:
• labour intensive construction
• intermediate equipment based construction
• heavy equipment based construction.

With regard to environment and maintenance frequency, the questions are:
• How often is routine maintenance required?
• How often is periodic maintenance required?
• How high are the expected emergency/ recurrent maintenance needs?

The questionnaire on socio-economic impacts contains questions on employment and enterprise, such as:
• What is the percentage of short-term and long-term employment for unskilled labour?
• What is the percentage of short-term and long-term employment for skilled labour?
• What is the origin of labour: local, provincial, national, international?
• What is the origin of contractors?
• What is the percentage of industry with regard to origin?

The questionnaire on socio-economic impacts contains questions on material and equipment, such as:
• Is the material locally available?
• Is processing involved: locally, provincial, national and international?
• Are the hand tools, intermediate machinery and heavy equipment of local, provincial, national and international origin?

The questionnaire on gender issues includes questions such as:
• How are the employment opportunities:
  o Short and long term?
  o Skilled and unskilled?
  o Percentage of voluntary labour?
• Access to and control over resources
  o Who owns the land and natural resources?
  o How is access to labour in relation to gender?
  o Are the wages equal?
  o Do women, men and children have equal access to training, technology and skill as well as information?
  o Do they have equal access to health services?
With respect to needs and benefits, the questionnaire on gender issues includes questions such as:

- What is the involvement of women, children and men in the decision making process?
- What are the safety measures for labours with regard to gender?
- How safe is a certain surface during use?
- What is the impact on health during construction and use?
- How are the specific user needs met?

The first drafts of these questionnaires were discussed in a workshop in Phnom Penh, asking:

- Are all relevant indicators covered?
- How can these indicators be valued and rated?
- How do we weigh these ratings in order to achieve an overall rating and a sound final rating per surface option?

### 4.3.2 Plenary Discussion

After her presentation, Ruth fielded a few questions from the floor:

**Q:** Was all the labour voluntary? What was the role of children, and the impact on child labour?
**A:** We looked into the labour of men, women, and children. If children were employed, it comes out as a bad rating. Children in pictures may be playing. When does playing stop and work begin?

**Q:** What are the boundaries to the questionnaires? People may answer in the abstract, and not in relation to reality, or to cost. People may not know the answers, because some are outside their purviews. People vote for Government to take these decisions.
**A:** There was a huge discussion about how to value the cost to the environment. Have to start somewhere.

**Q:** Rating values: how much value is given to solutions that exist to problems, versus those that don’t?
**A:** We have to get experience by testing and improving the questionnaires.

### 4.3.3 Groupwork

**Discussions**

Group discussions on the issues raised by this paper were facilitated by James Manyara; and recorded by Henry Danso, who reported back the group’s findings to plenary. Full details of the group’s MetaCard display can be found in Annex 3.

The group discussed Ruth’s presentation on a research methodology for how to measure the impact of social and environmental aspects for various alternatives of low-cost road
surfacing, complementing a low-cost road surfacing research project funded by DFID.

There was a long discussion on whether the research was comprehensive enough. Many of the group members felt that, although it is important to include social and environmental issues, the economic aspects must be considered as well. It was argued that rural road projects generally are assessed for their financial and economic characteristics, but that there is a need to assess and compare the whole life-cycle cost, including social and environmental impact. This particular survey therefore focused on social and environmental aspects to complement assessments based on financial and economic cost, but should not be regarded in isolation. It was further argued that ‘soft’ indicators often play a secondary role when it comes to decision-making. It was therefore suggested that it would be more useful if soft indicators such as environmental impact and gender aspects could be attributed monetary values, rather than given a weighting as suggested with this methodology. It was agreed that this may be difficult, and that values attributed will vary from place to place.

Some thought other methods than the proposed questionnaire would be better, and referred to various participatory approaches. There was also a concern whether responses to questionnaires would actually measure the impact the survey is looking for. The group in the end agreed that a combination of questionnaire survey and consultations would be the preferred method, even though this would mean a longer process.

It was not entirely clear whom the questionnaires were aimed at, neither who should be asking the questions. Group members stated that it is important in the end that the survey benefits the community, and that it will therefore be necessary to include the views of beneficiaries in the survey. In fact, decision makers could benefit from these views, since the survey may obtain information that could mitigate negative impacts, and some group members suggested that such information should come out as a result of this research.

Reporting back

The main points were:

- The group agreed that the inclusion of gender and environment should be done.
- The presentation was criticised for not including all issues.
- The group felt that questionnaires are not sufficient for addressing issues. This means they have to include economic impacts, and HIV/AIDS: the group preferred the participatory approach. The level of application of the questionnaires was not clearly defined, so it was not possible to get the proper views of beneficiaries.
Plenary comments

A participant from South Africa said that it was necessary to integrate the whole picture, not a snapshot of one area. Another commented that the questionnaire should include possible solutions, mitigating measures; one should ask people how to solve problems. Ruth replied that it was first necessary to define the effects of various LCS options.

The DFID representative said that, ultimately, to get holistic view, it was necessary to get the views of elected representatives of the people; in other words, more effective local government should be the objective.

Another participant asked about the literacy levels of those answering questionnaires. He noted that many respondents are biased towards the educated. Perhaps it is best to have professional environmentalists providing the answers, like a doctor prescribing medicine to unwilling children.
4.4 Effective use of sands as a road base under labour-based construction: experiences in Mozambique by Pedro Carvalho

4.4.1 PRESENTATION

Pedro illustrated his presentation with 23 PowerPoint slides.

He began by showing the TRH (20) chart of Grading Coefficient vs. Shrinkage Product and explaining that materials that fall into the centre zone were found to perform in a satisfactory manner as suitable for the wearing course on a road, according to the Standard Specifications. Unfortunately, a map of the distribution of soils in Mozambique, in relation to TRH (20) requirements, shows that about 40% of the country does not have suitable wearing course material.
The road network in Mozambique comprises a total of 27,000 km, of which 5000 are surfaced roads, and 22,000 km are unsurfaced. Two-fifths of these roads are in areas where there is a lack of suitable wearing course material. This led to the search for an alternative way of constructing roads in sandy areas of the country.

The most promising alternative was emulsion treated base (ETB). This comprised a pavement structure with:

- A subbase of *in situ* fine sand 500mm CBR >15%
- A base of *in situ* fine sand 150mm CBR. > 35% (higher compaction)
- Selected fine sand Emulsion Treated (5.6%) 150 mm.

Trial sections were constructed with:

- 1/3 no surfacing
- 1/3 fine sand/emulsion seal hand applied
- 1/3 fine sand hand mixed/applied slurry seal.

Pedro showed pictures of the construction process:

- The preparation of the fine sand base
- Spraying emulsion into the base
- Mixing the emulsion into the base
- Mixing completed on half a lane (with the other half allowing traffic to pass)
- Cutting the final levels with a motorgrader
- An overall view of the completed base
- DCP testing three days after compaction
- The hand mixing and application of the slurry seal
- The finishing, by hand, of the hand applied slurry

The results have been most satisfactory. The DCP analysis shows that the overall pavement is generally well balanced without any specific portion contributing the most to the overall structural strength. DCP tests were also performed at regular time intervals, after the construction, to record the increase in strength of the ETB layer versus time.

This section has been opened to traffic for over three years. During those three years, this area recorded two consecutive rainy seasons, which were the highest for the last 70 years. However the two ‘surfaced’ sub-sections show no potholes whatsoever, and the un-surfaced section maintains a true cross-fall, with no rutting or potholes, with a base loss of some 12 mm or 8%.

Pedro showed a table where the costs over a five-year period are taken into account. On a five-year cycle, the ETB option becomes cheaper than the natural sand option. However, this only takes
into account the initial construction and five-year maintenance/replacement costs, with most of it for the base.

Such roads will be cheaper over a five-year period, will be possible to be maintained by labour-intensive brigades, and will carry a much higher residual value as a platform for future upgrading, if and when future traffic volume increments call for it.

Following the success of these trials, the DER decided to construct a very small trial section, using exclusively labour-based methods and the ETB solution. This section was constructed almost a year ago and, although the construction was quite poor, owing to the lack of any compaction equipment, its performance was so encouraging that further trials are being constructed.

Participants would have a chance to see this mode of construction in operation during the site visit.

4.4.2 Plenary Discussion

There was only one question from the floor on Pedro’s presentation:

Q: Why were heavy machines used in mixing the emulsion?
A: This was just for trials; the site visit will show it being done by labour.

4.4.3 Groupwork

Discussion

Group discussions on the issues raised by this paper were facilitated by Gameliile Sibanda; and recorded by Dave Jennings, who reported back the group’s findings to plenary. Full details of the group’s MetaCard display can be found in Annex 3.

The group concurred with the author that stabilisation of in situ material can be cost effective where there is a shortage of good road building materials. This is more so for spot improvement, where the mobilisation costs tend to be high relative to the cost of work to be done. However, it was pointed out that in situ stabilisation might not be the ideal solution in some countries.

The participants agreed that investment in road infrastructure should be based on life cycle costs. Unfortunately, currently this is not always the case since some viable projects tend to be ‘killed’ if they have relatively high initial costs. The group lamented the lack of a standard method for calculating lifecycle costs of labour-based roads.

The group called for more research on other forms of soil stabilisation. However, there is need to guard against pollution from leaching of materials. The author pointed out that in Mozambique they had also tried cement stabilisation, and the
major finding was that it is cheap but difficult to maintain due to its porosity and its proneness to be dusty.

The group also shared experience from various countries. For example, research in Ghana has shown that 2% (instead of the conventional 5%) bitumen emulsion reduces erosion and acts as a dust palliative.

In some cases roads have been upgraded using imported materials that deteriorate faster than in situ materials. The group thus noted the need to use existing tracks if they are passable before upgrading. For low volume roads, environmental deterioration can be more than that due to traffic.

**Plenary comments**

Some participants had further questions for Pedro:

Q: Is cement stabilisation any good?  
A: No. It is comparatively cheap, but dusty and porous.

Q: (from Cambodia) It is difficult to find emulsion in Cambodia, also very expensive.  
A: It is cheaper to mix the emulsion on site, can store it longer; this is the best option.

Q: When will trials be published?  
A: Soon, but am not good at writing papers!
5 Contracting issues

5.1 The use of labour-intensive work in the development of local contractors by Luís Fernandes

5.1.1 Presentation

Luís used overhead projector slides of tables from his paper to illustrate his presentation, which was delivered in Portuguese.

He began by saying that he was sceptical about LBT when he first saw it; he was looking forward to a career in heavy civil engineering when he started. Now, after 20 years in the business, his opinion has changed; it is better to work with people. He was for three years managing a contractor development programme. This was challenging, especially with respect to management development.

The government is engaged in developing the local industry; this means that profits can be kept in Mozambique, that there will be security of work, with plenty of challenges.

A lot of investment is going into the road network in Mozambique.

He showed a slide of the numbers of contractors and the kilometres of roads. They also had a problem of contractors
disappearing after training, and of contractor staff changing employers.

The ‘one-hit’ maintenance system in Zambezia caused some confusion.

Major problems for contractors had to do with payments. When the client does not pay on time, the workers are left without pay for a long time. Financial discipline is a problem - not to blow all the money when paid. Some contractors used the money on other projects.

Table 1: Development of local contractors

<table>
<thead>
<tr>
<th>Year</th>
<th>1996</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractors admitted</td>
<td>11</td>
<td>11</td>
<td>26</td>
<td>15</td>
<td>18</td>
</tr>
<tr>
<td>Contractors passed</td>
<td>10</td>
<td>21</td>
<td>42</td>
<td>53</td>
<td>53</td>
</tr>
</tbody>
</table>

a) Estimated

Table 2: Routine maintenance let to local contractors (in km)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>400</td>
<td>1050</td>
<td>2450</td>
<td>3030</td>
<td>3300</td>
</tr>
</tbody>
</table>

Looking at the performance tables, no contractors were classified as good in all areas; this is not a case for optimism.

As regards equipment, leasing/hiring companies were expected to evolve, but they did not. The problem of access to equipment is still to be solved; for example, donors could provide loans, with could be reimbursed through the work done.

He had doubts about the effectiveness of the proposed Contractors Association.

5.1.2 Plenary Discussion

Luís fielded a number of questions from the floor:

Q: You said there was no public body that pays on time, but in Zimbabwe we do it within a week; this is essential.
A: I agree.

Q: What percentage of contractors will eventually be rated as good?
A: Less than 10% - there has never been a contractor rated as good in all the three areas.

Q: What is causing the delay in payment?
A: The state organisation, the Ministry of Finance, is just slow; there is usually a four to five-month delay. Although budgeting has been decentralised, the provinces claim not to have received
the funds from central government. Some contractors working for other ministries were not paid at all.

Q: The regularity of payment is linked to work assurance; the Department of Transport should guarantee jobs.
A: You are right. People have other work to do, such as agriculture; roadwork is seasonal.

5.1.3 GROUPWORK

Group discussions on the issues raised by this paper were facilitated by Marcus Wattam; and recorded by Ezekiel Rametse, who reported back the group’s findings to plenary. Full details of the group’s MetaCard display can be found in Annex 4.

There was a fundamental disagreement amongst the participants about who should be responsible for developing contractors: governments, or market forces. The issue was put to the vote in plenary, but the result was a fairly even split of opinion.
5.2 Equipment finance for small contractors in public works programmes by Linda Deelen and Kwaku Osei-Bonsu

5.2.1 Presentation

This paper was presented by Linda Deelen, who illustrated it with 17 PowerPoint slides. Access to finance is a major constraint for the market entry and growth of small construction companies tendering for contracts in public works in developing countries. The presentation gave an overview of various options and zoomed in on the leasing options as the most appropriate.

Linda began by explaining that contractors have difficulty accessing finance for equipment, because of lack of collateral, informality, risk, and high transaction costs. Options to facilitate access to equipment include: 1) pre-payment of equipment by the programme, 2) equipment pools, 3) bridge financing, 4) credit guarantees, and 5) leasing or hire purchase.

The criteria for choosing between these options are that:

- Contractors should be faced with a ‘real-life situation’
- The arrangement should be tailored to a contractors’ reimbursement capacity
- The arrangement should be simple
- Maintenance-issues should be taken into account.

Taking these options one by one:

Option 1 (pre-payment of equipment by the programme) has the following characteristics:

- It is a simple solution
- Maintenance of the equipment is done by the contractors
- It is not a ‘real-life situation’
- Provided that the reimbursement capacity of the contractors is taken into account, pre-payment of equipment is a valid option.

Considering Option 2 (equipment pools):

- It is not a ‘real-life situation’
- Maintenance of equipment is a problem
- Contractors do not have the opportunity to build up their asset-base.

Considering Option 3 (bridge financing):

- It is a simple arrangement
- It is a ‘real-life’ situation
- Maintenance of the equipment is done by the contractors
- However, this option is usually not available.
Considering Option 4 (credit guarantees):
- They help contractors to establish a relationship with a bank
- It entails a moral hazard
- It is complicated.

Considering Option 5 (leasing):
- It is a 'real-life' situation
- There is flexibility regarding repayment capacity
- It is simple
- Maintenance of the equipment is done by the contractors
- However, it needs a financial institution that offers leasing!

Linda explained that leasing is a contractual arrangement in which the owner of an asset (the lessor) allows someone else (the lessee) to use it, in exchange for a specified periodic payment. The advantages of leasing include:
- It is a simple collateral arrangement
- The evaluation process is simple
- Down-payments are low
- It has tax incentives.

The steps in the leasing process are:
- The contractor selects the equipment
- The lessor purchases the equipment
- The contractor uses the equipment and makes periodic payments
- The contractor owns the equipment at the end of the lease term.

The ILO has set up a programme to explore the potential of leasing in employment intensive investment programmes. The programme aims to develop training materials, assess the local landscape, help with the selection of financial partners, and advise both contractors and financial partners.

If participants would like to know more about this programme, please contact:
- osei-bonsu@ilo.org
- winsvold@ilo.org
- deelen@ilo.org

5.2.2 PLENARY DISCUSSION

Participants raised a number of questions on Linda’s presentation:

Q: What are the disadvantages of choosing the leasing option?
A: Finding an entity to operate the scheme; and a company that will give fair terms to the contractors.
Q: There must be a commitment by the clients to provide work; otherwise the contractors cannot repay the lease.
A: I agree fully.

Q: The hit-and-run attitude of some contractors makes it difficult for clients.
A: A contractor may have a lax attitude towards repayments if a donor is backing the programme; banks also may not rigorously pursue defaulting contractors if they know they can get there money back from the donor.

Q: Is something wrong with the market in Africa? Why would anyone want to be a small-scale contractor in Africa? In Asia they flourish.
A: (by Osei-Bonsu) There are profits to be made; for example, the vice-president of Ghana is an ex-labour-based contractor. There have been 93 trained in Ghana, and some of them are multi-millionaires.

Q: How does a leasing company deal with a contractor who withdraws early?
A: The equipment package is chosen a) to have a high second-hand value, and b) to be easily hired to others.

5.2.3 GROUPWORK

Discussions

Group discussions on the issues raised by this paper were facilitated by Gamelihle Sibanda; and recorded by James Manyara, who reported back the group’s findings to plenary. Full details of the group’s MetaCard display can be found in Annex 4.

The group agreed with the assessment the authors made of various options for contractors to obtain equipment, and agreed that leasing is an attractive alternative worth investigating further. However, it was noted that contractors are normally not allowed to hire out leased equipment, and that leasing does not necessarily guarantee good maintenance of the equipment. It was suggested that the risk of the lessor would be lower if contractors were properly registered. It was also suggested that including equipment maintenance contracts in the leasing option could be considered, and possibly training for operators. Another suggestion to lower the risk was to link the leasing period to the potential future workload for the contractor.

The presentation had not considered direct hire as an alternative, which is common in certain areas. There was also experience where equipment suppliers would be a good source for accessing equipment, and this option would also guarantee availability and access to know-how and spare parts. In some projects, contractors are given an increased advance on the contract for procurement of equipment. This option is obviously only viable when the contract sum is quite large.
In the broader aspects of equipping small-scale contractors, some group members said that contractors should have a say in the choice of equipment. However, it was argued that in projects this is often not possible for logistical reasons, since the project must be implemented within a certain timeframe, and it is therefore not possible to let the procurement process drag out too long into the project. However, to minimise the risk and to ensure a timely start to a project, it was agreed that only the minimum required equipment should be provided. Successful contractors may then expand their equipment fleet over time. The group considered it important to look at local solutions, and to empower the end users where possible.

At one stage, the discussion became somewhat philosophical, and the question of why equipment was being discussed when talking about labour-based projects was asked; and a debate on the definition of a labour-based project emerged. However, this debate had to be deferred, since the group was losing focus of the theme for the discussion group. However, everyone agreed that equipment in labour-based projects is a critical component. There was also the issue of whether projects and governments should assist contractors at all, or whether market forces would sort this out by themselves. It was agreed that establishing the enabling framework is a government responsibility. However, the issue of to what extent access to finance for small contractors would be left with the market was deferred to the plenary.
5.3 Development of small-scale contractors in the commercialisation process of the Namibian road sector by Malte Engelien

5.3.1 Presentation

Since the commencement of labour-based initiatives in Namibia, there has not been any force account operations. The development of small contractors was started in 1995 by the Department of Transport. Two training programmes have since been carried out. The experience in Namibia has shown that a mentorship programme is required.

Five of the original six trainees of the initial programme concluded the training successfully. But of those only two are still involved in LBW and have been awarded contracts as main contractors, though they are both likely to survive only as subcontractors in the future, owing to a lack of planning and administrative skills.

The second programme came as a result of the restructuring and commercialisation process of the Namibian Ministry of Works, Transport and Communication. This small-scale contractor development programme targeted only government employees. The objective was to prepare the Department of Transport employees to carry out LBW and enable them to become independent SSCs in a commercialised environment, subsequently reducing the staff component of the department. About 60 candidates were selected and trained. Forty-one completed the theoretical training and of these thirty-five were selected for the practical training, which included tendering phases, dummy contract phases and trial contract phases. A long delay between the theoretical and practical training and other internal problems, such as lack of discipline, resulted in only 20 trainees participating in the practical training. Nineteen trainees completed the practical training. Only four of these qualified for further development in a mentorship programme to become SSCs, the rest only qualified for site agent, road foreman, and supervisor positions.

The four candidates who qualified for the mentorship programme then tendered under regular tender process and two succeeded. Both involved former fellow trainees as site agents and road builders in their staff structure. An agreement for consultancy services was signed with an experienced Engineer to act as Mentor. Whilst the roadworks skills of the SSCs did not require much input from the Mentor, the knowledge of planning, administration, and budgeting required development and strengthening. The two new SSCs have since agreed to become subcontractors on a future LBW projects, scheduled to start in April 2002.
Outlook

The main difference between Namibia and other countries in the region is the demographic distribution, which is characterized by high population densities in the centre and northern parts of the country. LBM are only viable in the northern region. Furthermore, with a population of only 1.7 million, there is limited competition for contracts.

Experience from Namibia shows that it is difficult to develop a ‘contractor spirit’, particularly where the trainees are ex-government staff.

A general lack in skills in budgeting, planning, organising, communicating, and administrating are deemed a key problem in the development of SSCs in Namibia.

A detailed mentorship programme needs to be developed, which should entail a needs assessment as the first step. A mentorship programme would enable the development of contractors better equipped to provide labour-based construction and maintenance work in Namibia.

5.3.2 Plenary Discussion

Malte answered a number of questions from the floor:

Q: Are there opportunities in other fields for these contractors?
A: Yes, but these people just decided to leave the market.

Q: How do you know the need is there?
A: A lot of building construction is evident.

Q: What were the incidences of indiscipline?
A: They like the bottle more than the work.

Q: Can you give us more details of the mentorship programme?
A: Sida will support it; it has not started yet, but the TA will be put out to tender.

5.3.3 Groupwork

Dave Jennings facilitated group discussions on the issues raised by this paper; who reported back the group’s findings to plenary. Full details of the group’s MetaCard display can be found in Annex 4.

The group started with a few minutes for everybody to remind himself or herself of the content of the paper by looking over it.

Discussion started with clarifications being sought from the author about the project that was being described. The contractor development project was being carried out in North Eastern Namibia on classified ‘District roads’. The trained contractors had so far completed some 150 km of such road under the project.
It was estimated by the author that the unit cost of the work was some $40,000 per km including consultant’s supervision costs. It was clear that heavy machinery was being used to achieve the high standards of road required by the Namibian users, and the long distances involved in hauling material. The labour content of the work was also estimated at about 5% of the cost. The group questioned whether such a project could be considered ‘labour based’. Some discussion took place on the difference between ‘labour-intensive’ and ‘labour-based’. Many participants remained sceptical about the classification of the Namibian project.

Discussions then focused on the method and criteria for selecting the contractors. Confusion reigned between the selection process for choosing the companies to be trained, and choosing the contractors to eventually carry out the work after training. Bearing in mind the very high costs of road construction, and the relatively low labour content, some group members felt that even larger international companies should be allowed to tender for the work, with requirements to sub-contract local firms for the labour content, since this would cut down the training and development time and effort.

It was seen that a key question from the author in the paper was whether or not the ‘contracting spirit’ could be trained. This was briefly discussed, and the group concluded that it could not be trained, but should instead be somehow part of the selection criteria for people to enter the development programme. This criterion was seen as a vital element in the eventual success or failure of the contractors.
5.4 Recognition of the labour-based contractor: the case of Tanzania by Albert Uriyo

5.4.1 PRESENTATION

He talked to a 31-slide PowerPoint show.

Albert began by reminding participants that Labour-based Technology traces its roots back to ancient times; but the formal recognition of LB Contractor is still an issue for debate. There are different approaches to taking LBT to scale; LBT remains being seen as a project-oriented, externally influenced, non-sustainable initiative. In the face of all this, the CRB has initiated the recognition and classification of LB Contractors.

What was it like before this CRB initiative? In Tanzania, the structured application of LBT was promoted in the 1970s. LB Contracting was introduced in 1990s, and by the year 2000, more than 70 LB contracting firms had been trained. There were other achievements: the ATU was established; LB promotion statements were made; a capacity for training was created; a LB curriculum was adopted; and a national LB Roadworks Technical Manual was produced.

Despite all this, LBT has still not been applied to scale. During 15 years of application, only 6000 km, or 7% of the national road network, has been maintained or constructed by LBM (out of 10,300 km trunk, 24,700 km regional, 20,000 km district and 27,550 km feeder roads). The operating environment is not conducive to LBM, with the result that the majority of contractors are frustrated; some have closed their business, or moved into other lines of business. Why is this? The reasons include an absence of formally documented policy, fragmentation of the market, duplication of efforts, lack of effective national co-ordination, and lack of recognition of the LB Contractor.

Recognition of the LB Contractor

The CRB's functions are the registration, regulation and development of the contracting industry. The CRB introduced a category for LB Contractors as Specialist Contractors in July 2000, based upon potential and importance, and in consideration of the large road network, low wage levels, high unemployment, and a limited capacity to sustain equipment-based options.

Why should recognition be given to LB Contractors? The Act requires all contractors operating in Tanzania to be registered with the Board. The reason is to safeguard potential clients and the general public. The benefits include operating in regulated environment, and access to CRB's promotional activities (training, dissemination of information, research, and promotion of a co-
operative approach in addressing issues of policy, credit, and equipment).

The CRB’s Contractor Regulatory & Development Model is illustrated in the following diagram.

**Registration of the LB Contractor**

The principal requirements for registration are:

- The Contractor should have received appropriate training, have necessary staff, a set of handtools/equipment, control/measurement aids
- The Contractor should have a permanent office and a registered Business Name or Limited Liability Company, certified by the Registrar of Companies

There are three classes for LB Contractors (the Class Limits indicate capability), and requirements are lenient. These requirements are clearly listed in a table (see Volume 2, pp 134 – 136).
Current status of the LB Contractor

There are:

- 21 registered LB Specialist Contractors (these rank second in number amongst Specialist Contractors)
- 21 registered Civil Works Contractors executing LB Works

Civil Contractors do not feel obliged to register as LB Contractors, since the category allows greater opportunities.

The following map shows the distribution of contractors, and the application of LBT in Tanzania.

The value of LBW undertaken by LB Contractors has risen steadily over the years from Tsh 105,146,079 in 1998 to Tsh 1,823,045,750 in 2001. The reasons for this include:

- Increased allocation of works
- Increased participation of regional & district authorities in LB programmes
- Increased registration of contractors has given contractors a legal status
The performance trends in work opportunities for labour-based contractors for the Year 2000 compared favourably with the industry work opportunity indicators for small civil works contractors. Contractors are operating in Kilimanjaro, Rufiji, Mtwara and Lindi, and in Mwanza (however, only one of the 24 contractors trained in Kilimanjaro is registered).

The policy Issue

There has been a positive Presidential Statement. TANROADS has been established (whose policy includes 30 contractors trained in LBT, and 20% of regional contracts to be done using LBT). PORALG’s policy is that 50% of District and Feeder roads should be done by using LBT. However, the situation on the ground is different, since the Agreements are not enforced.

Other CRB activities

The CRB is involved in Regulation (ensuring compliance in issues of safety, observance of By-laws, Rules of Conduct). Compliance by LB Contractors is high. The CRB also engages in promotional activities, including a sustainable approach, which is not donor dependent, depends on its own resources and aimed at addressing contractors’ problems. Its promotional strategies include:

- Training (11 LB Contractors trained in various modules of CRB SSTP)
- Dissemination of information & networking (e.g. ‘The Contractor’ Newsletter)
- Research on construction business
- Promotion of advocacy, co-operative approach in addressing issues of policy, credit and equipment (promotion of National Association and Chapters, participation in Forums)
- Access to credit facilities (establishment of Contractors Assistance Facility, support for Construction Industry Development Fund)
- Access to equipment (exploring sustainable approaches, promoting contractors to pool resources).

Lessons learnt

A number of lessons have been learnt, including:

- Registration has given contractors legal status to participate effectively in the market
- Recognition has resulted in promotion; classification and recognition play a role in mainstreaming
- CRB recognition is sustainable as self-initiated; it does not depend upon donor-support
- Contractors have access to development initiatives such as training, access to credit, advocacy promoted sustainably by CRB
• Contractors are exposed to the real market environment
• However, not many client organisations have taken advantage of this window
• Compliance and participation in Board’s activities by trained LB Contractors is high
• LB Contractors are benefiting from the Board’s activities including classification, regulation, training, and information sharing
• LB Contractors have created partnerships with the CRB
• The general public is ensured of competent services
• Comments on performance range from good to very good
• Response for registration is encouraging
• Registration criteria are well accepted
• However, LB Contractors are not being invited to participate in bidding for maintenance on the pretext that they are only for civil contractors, while LBT is just a mode of execution.

The way forward
In conclusion, Albert gave his views on the way forward:
• LB Contracting should be institutionalised and mainstreamed
• LB Contractors should be empowered through recognition and training in real life environments to advocate for their causes. Advocacy should be demand driven and not supply driven
• Registered LB Contractors should be allowed to participate in the procurement process for maintenance works in the mainstream environment
• More intervention is required by advocates of LBT in embracing the registration of LB Contractors
• The Board needs to explore how to promote LB Contracting in other fields such as irrigation, water supply, agriculture, forestry, and soil and water conservation
• The promotion of LB registration criteria by a National LBT coordinating body that transcends all sectors would significantly promote the adoption of LBT
• The Board needs to sensitise potential clients, especially local government authorities, on the benefit of using LB Contractors
• There is need to take into consideration the particular requirements and capabilities of labour-based specialist contractors, in classification and recognition, and it should have a sustainable structure.

5.4.2 Plenary Discussion
One participant commented that LB contractors do not have to be roads contractors; they can do other LB works.
Albert then fielded questions from the floor:

Q: What about the enforcement of health and safety issues? Whose responsibility is this?
A: Several agencies, including the Occupational Health and Safety Agency. The Roads Board also has an enforcement unit, to ensure that contractors do not default.

Q: How much emphasis is there on cost-effectiveness?
A: The Board promotes the LB contractor because LBM are seen as a cost-effective solution.

Q: How do you get the turnover figures?
A: Each contractor sends in annual returns.

Q: Should the process be demand-driven; do you restrict registration?
A: No, registration is open to all; the process is self-filtering.

5.4.3 GROUPWORK

Discussions

Group discussions on the issues raised by this paper were facilitated by Atanásio Mugunhe; and recorded by Clare Barrington, who reported back the group’s findings to plenary. Full details of the group’s MetaCard display can be found in Annex 4.

Group members agreed that labour based contractors needed encouragement and that policies to help them needed to be fully practised. However, contractors in this new category need to lobby for work, not only in the roads sector, but also in other sectors, to ensure the greatest opportunities for employment, whilst maintaining standards. To achieve this, LB technical knowledge was recognised as essential in the company ownership.

Labour-based registration was recognised as an ‘extra’ benchmark of registration, restricting LB contracts to those that are registered, irrespective of the size of the contracting firm. The development of indigenous LB contractors was considered of key importance, leading to social benefits. It was noted that the classification of contractors, in terms of size or types of works, should be assessed based upon the availability of essential equipment for those works, and not just their financial capacity.

Key areas of concern included the difficulties for small contractors in leasing equipment, and that specific criteria may restrict LB contractors from bidding for other work. One opinion was expressed that the emphasis should be on promotion of small-scale contractors generally, and that LBT should be prescribed as the methodology for specific works, or as a percentage of the budget, as a policy issue. This was endorsed by the viewpoint that there should be a weighting in favour of LB in evaluating bids, a form of positive discrimination or margin of preference. Another
contrary viewpoint was that LB should win as the most cost-effective means of addressing the infrastructure need, and therefore LB does not need to be defined as the preferred methodology.

In terms of recommendations for best practice, the group concluded that contract size, and the knowledge base of contractors, were key aspects in defining contract size and ensuring that standards were maintained using LBT to a uniform product quality. On the subject of equipment, the requirements should be defined in the documentation, and the contractors needed to demonstrate access to it, possibly by leasing arrangements, rather than ownership. Registration needed to include monitoring performance on site, and should be broadened beyond the roads sector. Training needed to be flexible to suit local conditions and needs (e.g. the availability of materials), consistent in content and quality nationwide, and therefore a system of accreditation of training was essential. Financial management was a perceived weakness in contractors, and this should be addressed in training programmes. Training strategies need to include consultants and supervisors. Governments need to define the need for implementation by LBT, and their strategies and institutional arrangements for mainstreaming, to ensure that all organisations use registered contractors.

Additional key points raised included the need for systems of monitoring contractor performance, leading to possible deregistration. Consideration was also given to the scenario under which a successful LB contractor could grow to the point where he or she could bid for both LB and equipment-based types of works. Discussion also focused upon social issues, and ensuring standards of decent work. It was agreed that greater emphasis should be given to encouraging female contractors and supervisors. Consideration should be given to including social issues in the BoQ, preferably as prime cost items, and it was suggested that social compliance should be included in registration and pre-qualification considerations, with a demonstrated track record. There was a consensus that HIV/AIDS prevention and awareness measures should be included in contracts, bearing in mind the high risk associated with mobile work forces as a means of spreading the pandemic.
6 Institutional issues

6.1 Decentralised form of governance as an enabling environment for labour-based technologies in Uganda by Constantine Bitwayiki

6.1.1 Presentation

Constantine opened his presentation, which he illustrated with 14 detailed PowerPoint slides, with the observation that Uganda had once been described as the ‘Pearl of Africa’ by one time British Prime Minister Winston Churchill. He reminded participants of a few salient facts about the country:

- It is found in East Africa
- It got independence on 9th October 1962
- It was a British colony, and was at one time ruled by General Field Marshal Idi Amin Dada
- Agriculture is the main economic activity
- It is currently headed by H.E. President Yoweri K. Museveni, assisted by a Lady Vice-President
- It is currently implementing decentralisation governance policy reforms.

Constantine then went on to explain the hierarchy of Local Government in Uganda, where power is devolved from Central Government down through the Districts (LC V), Sub-Counties (LC III), Parishes (LC II), and Villages (LC I).

Introduction regarding LBT application in Uganda

Uganda had been involved in these technologies since before its independence in 1962. A better focused LBT application started three years after the National Resistance Movement (NRM) Government took over power by establishing a Road Maintenance Initiative (RMI) drive in 1989. Under the RMI, routine maintenance of rural and urban roads is supposed to be carried using LBT. Innovations to improve access to basic socio-economic goods and services are being adopted, e.g. the introduction of the IRAP tool into the local level planning framework into which LBT practices are to be encouraged during rural access project design and implementation processes. However, the question still is “how far reaching is the LBT being utilised in Uganda?”
An overview of the types of decentralisation form of Governance

Definition: decentralisation is a democratic reform aimed at devolving responsibility for planning, management, resource allocation and utilisation, political and administration from the Central Government to Local Governments Councils (Regional, District, Lower Local Councils). Note that the amount of power/responsibility transferred to the Local Government councils' accounts for the type of decentralisation in place. There are mainly four types:

- **Deconcentration (Administrative)** The administrative workloads are shifted from CG headquarters to staff in regions, districts, and other lower levels. Staff remain employees of the CG. The CG Ministries and Agencies set out all guidelines and controls.

- **Delegation CG** transfers responsibility for decision making and administration of public functions to semi-independent organisations not wholly controlled by it, but accountable to it, e.g. marketing boards, regional planning authorities, Non-Governmental Organisations, etc.

- **Devolution CG** transfers authority for decision-making, financial and human resource management to independent units of Local Governments with corporate status (Districts, City, Municipal, Sub-County, Town Councils, Divisions, etc.)

- **Privatisation Delivery** of certain key public services is left to the private sector. Specifically, for the implementation of LBT in Uganda, an NGO called LAPPOM, mainly funded by Danida, was allowed an opportunity to implement LBT pilot projects in some districts. Considerable progress has been made in getting some kilometres of roads built using LBT, although there are still some prejudices that LBT is slow, compromises quality, and lack of transparency in tender awards, let alone resistance to change by some personalities!

LBT awareness creation, training, and transparency mechanisms are being carried out to foster its implementation.

Opportunities arising from the decentralisation form of governance favouring the use of LBT in Uganda

Note that Uganda is implementing both devolution and privatisation decentralisation forms of governance. (The Constitution of the Republic of Uganda, 1995, Page 117, section 2(a-e), Page 120 section 1 and the Local Governments Act, 1997 gives authority to the lower Local Councils, i.e. sub-county and divisions, to raise revenues and initiate development projects, and many other powers).

Specifically the opportunities include:

- Increased local level participation in development planning and management, decision-making, implementation, monitoring and
evaluation of projects and programmes. Participatory bottom-up planning is a must for the success of decentralisation policy reforms (provided for in the Constitution of the Republic of Uganda, 1995 and the Local Governments Act, 1997). The Constitution Article 176 (1) – 2a-e and the LGA, 1997 Sections 36-38 and 78, give the planning and budgeting powers to the LGs. This planning approach and the powers given have provided opportunities for LBT implementation.

There is an obligation on the Central Government Ministries and Agencies to inspect, monitor, and where necessary offer technical advice, support, supervision and training within their respective sectors in the Local Governments. LBT application compliance under the routine maintenance of roads in the LGs is being achieved through policy advocacy and coordination, support supervision, and training by the CG Ministries and Agencies like Ministry of Works, Housing and Communications, Local Government, Finance, Planning and Economic Development, etc.

Note also that the Constitution, 1995 and the LGA, 1997 provides for two or more LGs to co-operate in areas of culture and development, e.g. construction of feeder roads using LBT, sharing equipment, human resources, etc.

The District Local Council is the Planning Authority with the following functions and powers:

- Preparation of comprehensive and integrated development plans (where LBT and other tools are adopted during implementation)
- Monitoring and evaluation of implementation of the plans
- Approval of the district budgets
- Approval of the mid-term, annual, and quarterly workplans

With these functions and powers, some districts in Uganda, like Kibaale, Masindi, Kabarole, Kyenjojo, and Rakai have considerably implemented LBT to some appreciable levels. The success in these districts is coupled with the existence of donor-funded programmes, support from the top District Administrators and Engineers, and availability of the human resources. LBT has created a significant impact in terms of improved rural accessibility and economic empowerment of the local communities.

Institutions of management and control have been established in the Local Governments for purposes of public accountability and transparency:

- The Local Governments Tender Boards
- The Local Governments Public Accounts Committees
- Public Information Systems

There has been financial (fiscal) decentralisation as well. In addition to local raised revenues, Local Governments access funds from the CG in form of grants to implement projects and
programs, *i.e.* unconditional, conditional, and equalisation. Funds are also obtained from other sources, *e.g.* donors, NGOs, *etc.*

**General benefits, disadvantages and challenges of decentralisation form of governance**

The benefits include:

- Transfer of powers, functions, and services
- Encourages local level participatory bottom-up planning
- Promotes financial accountability and transparency
- Community ownership of projects and programmes
- Public-private sector partnerships
- Takes services nearer to the people

On the other hand, there are disadvantages and challenges, such as:

- Local people are compelled to pay fees for basic services
- There are limited financial, human, and material resources to run the decentralised services
- There is resistance to change

**Conclusion**

If decentralisation implies dumping of responsibilities onto Local Governments, *i.e.* ‘load-shedding’, by the Central Government, it can be done fairly quickly! But if it implies strengthening democracy, *i.e.* ‘empowering decentralisation’, it takes some time, considering the amount of human, material, and financial resources required. This explains why the use of LBT has achieved some minimal success in Uganda, although it is steadily being adopted as the decentralisation reforms get fully entrenched in the Government. There is a need for a real rather than rhetorical commitment of Governments and Donors if LBT is to realise its potential in poverty reduction.

### 6.1.2 Plenary Discussion

Following his lively presentation, Constantine fielded questions from the floor:

Q: Is LBT in the Ugandan constitution?
A: No, but the government has organised for it to be streamlined.

Q: Is there complete devolution of financial authority?
A: No, some grants are conditional upon a specific purpose.

Q: If resources are limited, why were districts increased to 56?
A: To take the services nearer to the people. It does cost more.

Q: Is there a demand for LBT at the district level in sectors other than roads?
A: There could be, since there are very strong planning units in place at district level.

Q: How do the donors handle requests from so many individual districts?
A: There is a donor coordination unit, which avoids duplication.

### 6.1.3 GROUPWORK

#### Discussions

Group discussions on the issues raised by this paper were facilitated by Kwaku Osei-Bonsu, and recorded by Gamelihle Sibanda. Kwaku Osei-Bonsu reported back the group’s findings to plenary. Full details of the group’s MetaCard display can be found in Annex 5.

The group agreed that the decentralisation system in Uganda was operating well, due to the legislative and policy support it gets. It was noted that in some countries, policy exists, but it is not implemented. The group also agreed with the presenter that having a donor coordination unit at central government level is a good idea for the decentralisation system that they use. Uganda was also commended for having a multi-sectoral approach towards labour-based works.

It was recommended that similarly, a labour-based advisory unit be set up at central government level to coordinate all the labour-based activities across sectors. There was also a need to balance political and technical interests, and to sensitise decision-makers at all levels on labour-based technology. Because the districts operate independently, it was noted by the group that there is a need for inter-district co-ordination. There is also a need to establish clear criteria for distributing resources to all parts of the road network, *i.e.* urban, rural, classified, and unclassified.

Though the presenter illustrated how decentralisation is working in Uganda, there were reservations from some group members who felt that not having a regional or provincial authority was not an efficient way of decentralising. For example, who would coordinate the planning of a road construction programme that cuts across districts? Group members from other countries such as Tanzania and Zimbabwe, where there is a provincial government to which the district authorities report, explained how their systems operate. In the end, the group agreed that different levels of decentralisation work for different countries.

The group also discussed the information gap that exists in many countries, in the support of labour-based technology practitioners and policy-makers. It was then recommended that information collection and dissemination centres be set up. Examples of the Technology Transfer Centres already set up in countries such as Tanzania, Zambia, and Zimbabwe were cited. ILO/ASIST is also in the process of institutionalising its Information Service in national
institutions, as a means of bringing the knowledge base closer to
the people. It was also noted that governments and opposition
parties do not argue unnecessarily if there is evidence of
development in the community. Likewise, communities who are
empowered through labour-based programmes, for example, will
resist political manipulation.

The group also highlighted the need for clarification of the role of
the private sector in decentralisation. It was also encouraged that
governments should explore alternatives to donor funding and
remove the dependency syndrome. It was noted that some
countries have made efforts in raising their own funds, for
example in Zimbabwe where donors have withdrawn their support
due to the political situation in the country.

**Plenary comments**

One participant suggested that there should be no intermediate
stages in decentralisation; it should go straight from top to
bottom.

Another observed that decentralisation in Uganda has worked
because Government is very supportive of it.

A participant from Uganda noted that the proposed White Paper
would legitimise the use of LBT in all public works in that country.
6.2 Ghana feeder road prioritisation by John Hine, Simon Ellis, Simon Done, and David Korboe

6.2.1 PRESENTATION

This paper was presented by Simon Done, who illustrated his talk with 24 PowerPoint slides.

Simon presented a feeder roads prioritisation procedure recently developed in Ghana. The objective of the procedure is to prioritise investment in feeder road improvements in order to maximise the economic and social benefits. Prioritisation of feeder roads was carried out in the context of consulting stakeholders, addressing poverty, applying appropriate standards, providing accessibility, and maintaining existing roads.

Background

DFID were investing in the rehabilitation of feeder road network, in areas of ethnic conflict. Since there was not enough money to rehabilitate all roads to a high standard, there was a need to prioritise the roads, and to select an affordable standard.

Earlier prioritisation procedures had relied on measures of consumer surplus (road user savings), and producer surplus (when agricultural output was up). Problems with this approach included: no stakeholder involvement, questionable predictions, and no social benefits.

DFR and DFID had their own requirements. The process should:

- focus on road users (their needs; and be led by road users)
- address poverty and gender issues
- provide equity across communities
- be transparent
- be simple and repeatable
- be economically rational
- be technically justifiable

Furthermore, decision-making should be decentralised.

Road users needs should also be taken into account, such as:

- Removal of isolation
- Year round accessibility
- Needs of women
- Widespread benefits
- Non-motorised transport
- Access to market and clinics (but not to schools)
- Opportunities for income.
Prioritisation procedures

In the first round of improvements, 50% of the funds are allocated equally to all Districts. In each District, consultations and meetings are held to produce a public ranking. This is followed by a technical analysis, which includes a prioritisation index and technical ranking, and a coherence check. A final consultation is then held where the results of the technical analysis are compared with the initial ranking, and a final decision is made.

In the second round, the remaining 50% of the funds are spread across all Districts, in the most appropriate way, regardless of location.

Technical analysis

The technical analysis makes use of a Prioritisation Index, which is the benefits from improvement divided by the costs of improvements. This is applied to both spot improvements and rehabilitation. Surveys employ a multi-modal traffic count, and take into account catchment population, isolation from key facilities (such as markets and clinics), and road condition.

The costs of improvements are calculated by considering the Access Category and necessary treatment for each section of road. Access categories are:

- A Access lost or dangerous
- B Access unreliable or at risk
- C Access reliable and stable

Note that roads were divided into sections of uniform access categories.

Treatments are spot improvements (= A + B), and rehabilitation (= A + B + C).

Benefits

The benefits from improvement are:

- For motorised traffic (changes in roughness, traffickability, passability)
- For non-motorised transport (the impact of improved condition)
- Social benefits (measured by applying weighting factors to population, poverty, and isolation)
- Spot improvements provide benefits from access
- Rehabilitation provides benefits from access and roughness reduction.
### Percentage increase in farm gate price of maize with improved access

<table>
<thead>
<tr>
<th>Length of access to be upgraded</th>
<th>5 km</th>
<th>20 km</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upgrade from earth to gravel road</td>
<td>0.08</td>
<td>0.29</td>
</tr>
<tr>
<td>Upgrade from path to earth road</td>
<td>11.4</td>
<td>70.6</td>
</tr>
</tbody>
</table>

The key points in favour of this approach are that it results in a gradual network improvement; it addresses poverty and gender issues; there is a clear definition of road condition, and of the improvements; and there is full consultation, both before and during the process.

Access provisions included the removal of stumps to reduce bicycle punctures.

### Trial

A trial of the approach was carried out. Some US$ 900,000 was available for rehabilitation. In the District ranking, 55 km of roads were selected, serving 8,383 people. The Prioritisation Index resulted in 95 km of roads, serving 17,650 people. Application of the technical analysis avoided expensive roads, focused on areas of high population, and selected only spot improvements. Roads in reasonable condition were not selected. The outcome of the trial was that this selection procedure was widely accepted; it was even used for the prioritisation of rural electricity. It could also be used for urban roads.

### Conclusions

The overall conclusions of this exercise were that:

- It meets most requirements
- It follows economic findings
- It is specific to the local situation
- Only nominated roads are treated
- It fits the current context

However, politicians, and some others do not generally accept spot improvements.

Simon added that a computer spreadsheet is available for those who would like to delve into the subject more deeply.

### 6.2.2 Plenary Discussion

There were three questions from the floor:

Q: Why was prioritisation done by scoring?

A: This was chosen as an alternative, and is thought to be the first use of this technique. It was done to include the costs involved.
Q: Where does prioritisation start?
A: It starts from the lowest level (Ghana has 100 districts, divided into 10 units each; each unit is further sub-divided into 10)

Q: Was the procedure protected from political interference because donor money was involved?
A: Community views were canvassed at the district level. There was one instance where an MP tried to push his viewpoint, but was shouted down.

6.2.3 GROUPWORK

Discussions

James Markland, who reported back the group's findings to plenary, facilitated group discussions on the issues raised by this paper. Full details of the group's MetaCard display can be found in Annex 5.

The group found the basic principles of the model to be appropriate, leading to the most appropriate level of improvement, and involving the local population at several stages of the prioritisation, ensuring that what is important to the beneficiaries is taken into account in the prioritisation. However, some thought the model was unnecessarily complicated, and thought that there were simpler ways of reaching similar priorities. A concern from a few group members was that the process described could be costly, although the majority did not think this would be a problem, since the process is not necessarily taking place every year. However, planning procedures should match the institutional capacity at the district level, and it should therefore be ensured that the districts can manage the process in the future.

In this particular project, 50% of the investment funds are distributed equally over the districts, and can be used at the discretion of each district, whilst the remaining 50% of the funds would be distributed according to the model presented. There were a couple of observations made regarding this arrangement. Since 50% of the funds were distributed regardless of the size of the network in each district, this did not seem fair in the view of the group. Secondly, it seemed the distribution of available funds was not necessarily based upon needs, and hence not a demand-driven process, but rather upon how the project wanted to distribute funds.

The model considers only (feeder) roads, and it was suggested that the prioritisation tool be expanded to a multi-sector planning approach, where districts look at their needs through a mapping process, or using the IRAP methodology, and include inputs from other sectors such as agriculture and health.

There was a concern that the model did not specify LBT as the implementation methodology. The presenter clarified that the
prioritisation model did not specifically set out to do this. Some group members therefore suggested that some of the funds should be earmarked specifically for LBT, and the issue of LB advisory units was discussed. Another concern that emerged was that the model did not cover future maintenance needs of the improved roads, and that there was a need to include this into the model.

Findings
The MetaCard display was shown in plenary, and participants emphasised the following points:

- Planning should be demand-driven rather than money being spent for the sake of it.
- What type of road is actually included in the prioritisation of ‘feeder roads’?
- Some of the funding should be ring-fenced for LB.
- There is need for a LB coordination unit
- Road maintenance: how to prioritise within this procedure?
- Prioritisation should include inputs from other ministries, such as Agriculture and Health.
- Planning systems should match the institutional environment it is going to be installed in.
- A LB advisory unit should include intra-district functions, and be bottom-up.
- Other ministries should community-up contributions.
- LBT as a sectoral approach; each country to establish its own coordination approach.
6.3 Community-initiated cost-sharing road programme in Zambia by Raphael Mabenga

6.3.1 PRESENTATION

Raphael illustrated his presentation with 39 PowerPoint slides.

Introduction

Raphael began by explaining that the Community Initiated Cost Sharing concept is a 50/50 Smart Partnership between a community and the National Roads Board. Its objective is to address poverty and the backlog of maintenance.

He then explained the background to the Road Sector Investment Programme (ROADSIP). ROADSIP is a 2-phased 10-year programme; Phase I 1998 – 2002, Phase II 2002 – 2007. The goal is “…To facilitate economic growth and diversification (particularly in the agriculture sector) through a sustainable system for the financing and management of the road network”.

The programme is set in the context of widespread poverty. The population of Zambia is about 10.5 million and 50% live in rural areas. In 1998 about 83% of the rural population was classified as poor. Women comprise more of the poor; 29% had no education as compared to 24% for men; 12% are in employment as compared to 88% men. HIV/AIDS has also aggravated the situation as some ‘bread winners’ have died.

The Government aims to reduce poverty to 50% by 2015 through various interventions outlined in the 2002 Poverty Reduction Strategy Paper. ROADSIP is to create wealth through 30,000 new jobs; to-date, 14,500 jobs have been created. The Community Initiated Cost Sharing Projects are also bridging the poverty gap in a small way. In addition, an HIV/AIDS awareness campaign is on course.

The importance of the road network is shown by considering the following:

- Roads improve accessibility
- Roads improve mobility
- Roads reduce transport costs
- Roads link people to opportunities, resources, and markets for self development
- No sector can deliver without roads
- Roads create the enabling environment for economic growth to eradicate poverty.
The road network

The national road network comprises 67,000 km, of which 32,000 km are the core. This asset is worth US$ 3 billion. In 1995, 20% of roads were in good condition, 29% in fair, and 51% poor. In 2001, this changed to 45% good, 25% fair, and 30% poor. The programme is to have 50% good, 40% fair, and 10% poor by 2007. In addition, there is a backlog of maintenance.

Objectives of the 50/50 Smart Partnership

The objectives of this venture are to:
- Address the backlog of maintenance, and limited funds
- Create employment
- Alleviate poverty
- Create awareness of HIV/AIDS
- Promote mobility and access to markets
- Enhance ownership awareness
- Promote community participation and togetherness for self development

Communities eligible to take part include churches, schools, groups of farmers, groups of residents, groups of commercial entities, and cooperatives. The first step is to form a committee.

Procedure

Roads considered to be of high importance by the community include trunk, main, district, urban, feeder, rural, and community roads.

A Member of Parliament must initiate and oversee the project. The community must elect a Chairperson, Secretary, and Treasurer. They must then fill out an application form, including BoQ and unit rates worked out by the Road Agency owning the road. The form must be submitted to the NRB by a Road Agency.

The role of the Implementing Agencies (Provincial Engineers & Councils) is to:
- Assist communities in project preparation
- Submit the project proposal to NRB
- Enter into contracts with communities
- Supervise the works
- Certify the works
- Be a signatory to the bank account
- Oversee, monitor, and evaluate.

The interventions eligible include:
- Road rehabilitation
- Drainage clearance
• Culverts construction
• Timber bridges: construction and maintenance
• Deepening of canals
• Spot improvements
• Pothole patching
• Road surfacing
• A combination of the above

Due to a gigantic number of applications, screening became inevitable. Network considerations were applied, such as the road must link with another all-weather road; it should form a ‘loop’; and there should be no duplication or conflict with other road projects. Social factors were also considered, such as the presence and intensity of social infrastructure; the traffic volume; the employment creation potential; and the capacity of the community to handle the project. In addition, there were economic factors, such as the current/historical agricultural surplus; the potential agricultural production; and other planned development activities.

If the project is selected, the community is required to open a Bank Account in the name of the community.

The 50% community input can be met in a number of ways:
• Supervision by a Road Agency, with the community providing labour
• A Road Agency providing some labour and the machinery, with the community providing labour
• The community providing labour, machinery, and materials
• The community meeting 50% of the cost in cash
• The community engaging a contractor at a reduced price
• The Government or other agencies providing 50% of the cost in cash.

Working culture and rewards

A subgroup or lengthperson is given a task to complete per day and get a ‘salary’ at the end of the month. The ‘salary’ (on average US$ 20) is enough to buy 50 kg of mealie meal, or a bag of fertiliser, or three bags of 50 kg cement. Sometimes the community is paid a lump sum after completing their project. The minimum daily wage is US$ 1.25, but each person is only paid 50% of this wage. The other 50% is their contribution. The 50% wage prevents migration of people to work in other areas.

Disbursement of funds

Funds are disbursed to a community on an imprest basis, in tranches. Payments are made to a community for work certified either by the Provincial Engineer or by the Council. NRB’s contribution cannot exceed 50% of the total cost. A progress
report and Bank statements must accompany the retirement
vouchers. As regards banking accounting procedures, there must
be a dedicated project account in name of the Community, with
signatories from two panels (Community leaders—Panel A; and an
Agency representative—Panel B). There must be a satisfactory
retirement of the imprest to NRB.

HIV/AIDS Awareness

Communities are encouraged to discuss HIV/AIDS issues in
relation to their projects. The infection rate is greatest in the 15 –
49 years age range. It is higher among females than males. The
aim is to reduce the rate from the current 19.5% to 18% by 2010.

Gender Issues

Inequality exists between men and women. Women constitute 65%
of the illiterate population, but only 8% of wage earners. A
Women’s Unit was established in the National Commission for
Development Planning in 1984 to coordinate gender
mainstreaming in National Development. The NRB programme
encourages the employment of at least 50% of the workforce to be
women.

Typical examples

Examples of projects undertaken so far include:
- Chingola Community Project, on the Copperbelt, where the
  community contributed materials, equipment, cash, labour,
  and supervision. The Mayor was also involved.
- Ngwerere Community Project, in Lusaka, where the community
  contributed materials, equipment, cash, labour, and
  supervision.
- Shiwang’andu Community Project, in Northern Province, where
  the community contributed reduced labour rates; the Council
  carried out supervision.

Unit Costs

A comparison of unit costs for rehabilitation of feeder roads and
pothole patching was made, which showed that the cost sharing
method was more cost effective than traditional ones because:
- Overheads are not costed
- Gravel or laterite is free in most cases
- ‘Consultancy’ is free
- Wear and tear, and profit are not taken into account

Sustainability

The programme is regarded as sustainable because it is in
ROADSIP budget; all the rehabilitated roads will be put on an
annual maintenance programme to preserve the asset;
communities are lustful for work; and political will is very high. The impact on the communities concerned has been that:

- 200 mm of roadworks have been done
- Poverty alleviation is being addressed
- Over 1,500 villagers have been employed
- Many areas have been opened up to market opportunities
- There has been improved accessibility to clinics, schools, churches, and markets
- Farming areas have been opened up, so that it is easy to get fertilizer in, and produce out
- Roads have been put on annual maintenance programme
- Multiplier effects like communications have been enhanced
- Some people bought bicycles and other means of Intermediate Means of Transport
- Some people bought oxen and ploughs
- People paid school fees and bought uniforms for their children
- Demand for projects is very high and people want to maintain the roads regularly.

Altogether, the NRB has so far been involved in cost-sharing projects in six provinces; 198.0 km of roads have been rehabilitated at a cost of US$ 451,887.

**Problems encountered**

Some problems have been encountered, such as cost estimates either over or under estimated; insufficient information and receipts when retiring the imprest; monitoring of projects in rural areas is difficult; and demand has exceeded supply.

**Way forward**

NRB’s intention is to continue with the programme, but with modifications in financing and implementation strategies. In future, on-the job training will be provided, in order to ease pressure on the Road Agencies. The effect of road improvements will be monitored by measuring traffic, purpose of trips, type and volume of products transported. A poverty audit is to be carried out.

**Conclusion**

From the above, it is evident that:

- The backlog of maintenance is being addressed
- Wealth creation is being addressed
- Employment opportunities are being generated
- Local inhabitants have taken on the ownership of rehabilitated roads
- More applications countrywide have come
• Politicians are in the forefront
• Women are in the forefront to improve accessibility to link people to opportunities, resources, and markets
• Roads are the lifeline of economic growth to eliminate poverty for the realisation of the NEW DEAL in Zambia.

6.3.2 Plenary Discussion

Raphael fielded a number of questions, the answer to the first of which created a new catch phrase for participants:

Q: How have you handled political interference?
A: We call it political input!

Q: How did you ensure that the poorest of the poor were not exploited by providing their labour, whereas those who had money did not contribute their labour?
A: People worked voluntarily, and were paid; we ensured that they appeared on the paysheets of the 50% contribution.

Q: There was a slide about certification; who takes responsibility for this?
A: The communities have road agents for this, e.g. a council engineer.

Q: People on your board would seem to have a vested interest in motorised transport; do they not favour their own interests?
A: No, our approach is bottom-up.

6.3.3 Groupwork

Group discussions on the issues raised by this paper were facilitated by Prof Wilbard J Kombe; and recorded by Ezekiel Rametse, who reported back the group’s findings to plenary. Full details of the group’s MetaCard display can be found in Annex 5.

Additional comments

The participants added the following points:

• The group thought the 50/50 cost sharing mechanism was very innovative.
• Poor communities are likely to be excluded from this mechanism since it is only the well off who can afford the 50% contribution.
• The daily wage rate is low (US$1.1 per day); are the poor getting poorer?
• It seems that it is mainly the vested interest of vehicle owners who are taking advantage of this mechanism.
• Gender balance may be difficult to maintain.
6.4 The management and financing of non-classified roads by Marcus Wattam and Gary Taylor

6.4.1 Presentation

Presented by Marcus Wattam, and illustrated with 17 PowerPoint slides.

Introduction

Non-classified roads (NCR) are non-gazetted roads, village roads, tracks, and paths—all at the lower end of network. They provide access to essential social and economic services. They have high levels of non-motorised traffic, and low levels of motorised traffic. They are often in poor condition, but they have a significant impact on people’s lives.

We are at a junction between the highly signposted poverty reducing decentralised model of management, the well-worn path of access planning, and the dusty signpost that reads ‘More opportunities for corrupt local officials’.

Policy

Institutional decentralisation involves responsibility, authority in physical decision-making power, and authority in financial
decision-making. Policy goals and objectives are now more poverty focused and joined up. We have PRSPs and in particular RTTP. Economic objectives for growth give taxable returns for maintenance. There is low taxation on non-motorised transport, while the majority of traffic is on NCR. More social issues are being addressed, such as employment conditions, AIDS, etc. There are practical issues too, such as contractor registration, and targets for labour based works.

As regards sources of finance, there are Central government and donor funds (with some development budgets going to a road fund); local government funds (with Central government allocations to local road funds); and community contributions. There is a case for NCR to be classified and put into an inventory, since high standards = high costs. The focus should be on access-based standards rather than on speed based standards.

**Planning**

Conventional approaches to planning emphasise the cost benefit analysis. However, most NCR have less than 50 vpd, with no significant benefits. Innovative approaches in benefit estimation put emphasis on the value of time, and on the impact of road condition on bicycle use.

There is a need for simple and usable planning methods, such as screening, cost effectiveness, multi-criteria analysis, AP or IRAP, or a mixture of these.

**Execution of works**

Small contractors, community contractors, or community groups can carry out improvements. Contract supervision and monitoring can be done by the local authority, by contracted supervisors, or by local users groups.

**Conclusions and points for discussion**

There needs to be more realistic decentralisation, and a re-orientation of central government as enablers in the development of NCR. Fiscal policy for NCR financing needs to be rethought. Simple objective based planning methods need to be used, and there should be more locally managed, resourced, and supervised construction.

**6.4.2 Plenary Discussion**

There were a few questions from the floor:

Q: What level do we come down to, tracks, footpaths?
A: Whatever route has significant traffic.

Q: What is the value of a person’s time?
A: If somebody makes a choice between different modes of transport, they should estimate which one saves time and value. Research has been done on this in Bangladesh.

Q: How should governments prioritise work and financing on non-classified roads?
A: In Rufiji, they gave priority to inter-village, rather than intra-village roads.

Finally, Marcus gave notice that I T Transport is developing a manual on footbridges; he has a questionnaire for those who are interested in this subject.

6.4.3 GROUPWORK

Group discussions on the issues raised by this paper were facilitated by Hany Attalla, who reported back the group’s findings to plenary. Full details of the group’s MetaCard display can be found in Annex 5.

Additional comments

Participants added the following points:

- Performance standards to be related to local conditions.
- Government should earmark funds to non-classified roads.
- Some non-classified roads should be classified; but this will be a never-ending process.
- What should a road fund cover? Should it cover some non-classified roads?
- Non-classified roads should be funded from a combination of community and government contributions.
- De-mining is a major problem on Mozambican non-classified roads.
- Bridges are very expensive; who should pay?
- The private sector that benefits from non-classified roads should contribute to their funding.
- How to allocate funds? There is need for a mechanism and funding for a holistic local level planning system.
- In Uganda, funds are clearly allocated.
- For bridges, consider ‘spot-exclusion’; for example, where a drift is inundated for six hours, should we consider upgrading to a bridge? We should not; people can afford to wait six hours.
7 Social issues

7.1 The use of procurement to attain labour-based and poverty alleviation objectives by Ron Watermeyer

7.1.1 Presentation

Ron used 37 PowerPoint slides to illustrate his presentation. As usual, he gave his talk at a great rate of knots, with a massive amount of information included on the slides. He reviewed internationally accepted procurement objectives and discussed different methods for using public procurement to promote socio-economic objectives.

Public sector procurement in South Africa represents 24% of GDP. The public sector has a demand for supplies, services, and engineering and construction works. Procurement is the process that creates, manages, and fulfils contracts. International best practice objectives are that procurement is fair, equitable, transparent, competitive, and cost-effective.

The use of procurement as an instrument of policy

- To stimulate economic activity
- To protect national industry against foreign competition
- To improve the competitiveness of certain industrial sectors
- To remedy regional disparities
- To achieve certain more directly social policy functions, e.g. creation of jobs; promotion of fair labour conditions, use of local labour, and increased utilisation of the disabled in employment; prohibition of discrimination against minority groups; improvement of environmental quality; and encouragement of equality of opportunity between men and women.

Objectives associated with the reduction of poverty

- provision of work opportunities to vulnerable groups
- increasing the quantum of employment generated per unit of expenditure through the promotion of small scale enterprises and usage of labour-based technologies and methods
- the provision of business and / or work opportunities to groups of people who are socially and economically marginalised in order to address inequities in a society.
Labour-based and poverty reduction programme considerations

Focus on the targeting of enterprises and labour with defined characteristics.

Policy instrument: a preferential procurement policy

A preferential procurement policy promotes objectives additional to those associated with the immediate objective of the procurement itself.

Methods of policy implementation
(from the Public Procurement Research Group)

Model 1: Product/service specification
Model 2: Set asides
Model 3: Qualification criteria
Model 4: Preferences at the short-listing stage
Model 5: Award criteria
Model 6: Offering back
Model 7: Contractual conditions
Model 8: Design of specifications, contract conditions and procurement processes for the benefit of particular suppliers
Model 9: General assistance

Good governance concerns

- Loss of economy and inefficiency in procurement
- The exclusion of certain eligible bidders from competing for tenders
- Lack of competition
- Unfair and inequitable treatment of contractors
- Lack of integrity, fairness and public confidence
- Lack of transparency in procurement procedures
- Failure to achieve socio-economic objectives through procurement

Targeted procurement procedures

Developed in South Africa to implement preferential procurement policies using a combination of methods, \textit{viz}:

- Method 5 (award criteria)
- Method 7 (contractual conditions)
- Method 8 (design of procurement for the benefit of particular contractors)

in a procurement regime that required procurement to be fair, equitable, transparent, competitive, and cost effective.

Targeted procurement procedures can be used to implement most of the methods, including Method 2 (set asides). It facilitates the setting of targets or goals in a definable, measurable, quantifiable,
verifiable, and auditable way. It facilitates the measuring, monitoring, and evaluation of policy outcomes. In other words, targeted procurement is the vehicle for attaining socio-economic objectives.

**Draft SABS 0396: Code of practice for implementing preferential procurement policies using targeted procurement procedures**

This draft includes:

- Defining target enterprises and targeted labour
- Goals associated with targeted procurement procedures
- Resource specifications
- Incentives for contractors to embrace goals
- Third party management support
- Electronic rotating data bases (rosters)
- Equity in tendering entities
- Financial penalties

It provides guidance on the formulation of preferential procurement policies and the development and use of implementation mechanisms. It describes techniques for the monitoring and evaluation of the outcomes of a preferential procurement policy.

**Draft SABS 1914 targeted procurement procedures (parts 1 to 6)**

This comprises:

- Part 1: Participation of targeted enterprises
- Part 2: Participation of targeted partners in joint ventures
- Part 3: Participation of targeted enterprises and targeted partners in joint ventures
- Part 4: Participation of targeted enterprises and targeted labour (local resources)
- Part 5: Participation of targeted labour
- Part 6: Participation of targeted enterprises in concession contracts.

**Example: applying targeted procurement procedures in employment intensive works**

There are two alternative procurement approaches:

- Method A: Specify the use of specific employment-intensive technologies and methods of construction/manufacture to be used (Method #1 - product / service specification); or specify the minimum amount of wages which are to be paid in respect of a particular contract (Method #7- contractual conditions)
• Method B: Allow tenderers the opportunity to choose the
technology/construction method/method of materials
manufacture that they wish to use in order to maximise the
participation of labour in construction works and in so doing
win bids. (Method #5 – award criteria and Method #7 –
contractual conditions)

Resource specifications (SABS 1914-5) can be used in both
methods to ensure that the deliverables are attained. The
economic viability of Method A is dependent upon the ability of the
designer/specifier to forecast cost. Any potential price premium in
Method B can be readily assessed during the evaluation of bids.

**Targeted procurement procedures / preferential procurement
policies**

Create the demand (access to markets) for targeted labour and the
demand for services and products of targeted enterprises. Supply
side interventions are required to ensure that the demand is
balanced by the supply.

**Small scale enterprises**

Interventions should address:

- skills development
- access to information
- legislative and regulatory impediments
- availability of appropriate and labour-based technologies
- access to finance difficulties in hiring / purchasing plant and
  small equipment.

**Choices in technology**

Specifications, codes of practice and standards establish a
framework of acceptable and recognised engineering practice
within which engineers can arrive at solutions. The use of
procurement to attain labour-based and employment objectives
presupposes that appropriate labour-based methods and
technologies are readily available to those engaged in construction
works as designers and constructors. Absence leads to use of
those technologies for which there is adequate design information
or to use labour based technologies circumspectly and
conservatively.

**Quality**

Quality may be regarded as conformance to stated requirements
(specification) rather than fitness for purpose. Small-scale
entrepreneurs have particular problems in achieving quality,
depending upon how quality is measured and defined. Failure by a
small-scale manufacturer to comply with one of the requirements
of these specifications means that compliance cannot be claimed.
Many of the current specifications present a barrier to entry to indigenous small-scale entrepreneurs and exclude their participation in particular markets.

**Performance specifications codes of practice**

Performance specifications and building codes / regulations can permit technological choices which impact on both cost and socio-economic deliverables to be made, e.g. the use of local resources, the increase in employment opportunities per unit of expenditure, or the provision of business opportunities to targeted enterprises. In order to facilitate the greater use of indigenous materials in buildings it will be necessary to quantify performance levels for different user requirements.

**The challenge facing engineers**

The challenge facing engineers is:

- to understand the potential which construction projects have for delivering socio-economic deliverables
- to use their skill, knowledge and creativity to realise these deliverables.

**What is needed**

- dissemination of technical information to enable informed design decisions to be made
- development of suitable on-site/point of manufacture acceptance tests
- the development of fitness for purpose criteria for innovative labour-based technologies and the methods and instruments by which such criteria can be met for given performance levels
- research and development to enable innovative labour-based technologies to become accepted as conventional technologies.

**Best practice guide for labour based methods and technologies for employment intensive construction works**

This is a new compilation, which is on display at this seminar, and which is freely available to participants. It covers such areas as:

- labour based construction methods for earthworks
- precast concrete products, brick and block making
- labour-based open channel flow technology
- rubble masonry concrete dam construction technology
- rubble masonry concrete arch bridge construction technology
- foamed bitumen gravel, cast in-situ block pavements, emulsion treated gravel, waterbound macadam, and slurrybound and composite macadam construction.
What needs to be done

Governments need to establish:

- the institutional arrangements to develop technical standards
- a technical assessment organisation to assess innovative labour-based technologies (e.g. an Agrément Board)

Learned societies and professional associations have a role to play in establishing:

- appropriate best practice guides, codes of practice, specifications and test methods, and technical manuals
- a procurement regime which facilitates the participation of indigenous and / or local contractors in the provision of engineering and construction works
- performance standards and user performance levels for human settlements which facilitate the use of indigenous technologies and materials
- point of manufacture tests for the acceptance of construction materials
- ways in which information can be shared and disseminated.

For example, the Institution of Structural Engineers of South Africa has adopted a policy that it will ensure, as a social responsibility, that appropriate technologies are disseminated in areas where it is most needed, and indigenous construction technologies which constitute best practices in the locality in which they are utilised are given due recognition and are promoted.

Conclusions

It is possible to attain labour-based and poverty alleviation objectives using procurement as a policy instrument without compromising internationally accepted objectives associated with the procurement itself. Appropriate supply side measures are essential to the success of any programme. Learned societies and professional associations have a role to play in the development and dissemination of appropriate technologies and standards. A disciplined approach to the formulation of policy, the selection of implementation mechanisms, enforcing contract compliance and the gathering of data to evaluate programmes is necessary. There is a case for amending the UNCITRAL Model law on Procurement of Goods, Construction and Services to make provision for the use of procurement for attaining secondary objectives.

7.1.2 Plenary Discussion

Participants seemed to be so overwhelmed, that there were no questions on Ron’s presentation.
7.1.3 Groupwork

Discussions

Group discussions on the issues raised by this paper were facilitated by Joan Bijl; and reported by Tomas Stenstrom, who reported back the group’s findings to plenary. Full details of the group’s MetaCard display can be found in Annex 6.

Before the group discussions started, Ron was asked to clarify some of the points raised in the presentation, and, in particular, to expand on the different international methods for using public procurement to promote secondary objectives, and where this has been done.

The group agreed that targeted procurement could be a powerful and effective tool in most countries. However, the objectives for targeting must be made very clear, and at the same time ensure that the sector as a whole remains viable. Furthermore, resources to monitor and enforce social objectives must be made available. A comment was that, as vulnerable groups may change over time, so must the procedures.

Targeting in procurement may result in a conflict between national and regional interests, e.g. SADC policies on cross-border trade; and, obviously, favouring one group in society will discriminate against another. There is hence a need to have a comprehensive national procurement policy, regulating how the targeting is done, and eliminating the risk of abuse. Whilst donors and funding agencies may have their own procurement procedures that do not necessarily match those social objectives set up by a country, any agency is free to short-list eligible candidates.

Although the author explained that experience has shown that the cost premium for inclusion of secondary (social) objectives is minimal, the group felt there was a need to actually carry out a study into the ‘cost’ for inclusion of social objectives.

Findings

The MetaCard display was presented to plenary; participants highlighted the following comments:

- The cost premium for social objectives is minimal
- This is a powerful and effective strategy
- The only red card was whether it was compatible with donor guidelines.

One participant asked why do we need to change the engineer’s mindset; after all, it is part of an engineer’s normal work to be aware of the social implications of his or her work.
7.2 Gender issues and HIV/AIDS prevention within Mozambique’s road sector by Angelica Aguilera and Angelina Balate

7.2.1 PRESENTATION

Angelica Aguilera and Angelina Balate jointly presented this paper. Angelina spoke first, then Angelica. The presentation was in Portuguese, and was illustrated by 25 PowerPoint slides.

The total population of Mozambique is 17 million, over half of whom are women. Roads facilitate other infrastructure, access, and employment. Government policy is to reduce gender imbalance and poverty. Women were supposed to be involved up to 20% in LBW; they were also to be trained as supervisors; sensitise communities to women’s involvement; to include social clauses in all programmes. There are gender units in all provinces; seminars have been held, with the result that women’s participation at various levels has increased from 11% to 19%.

As regards HIV/AIDS, UN data shows that, out of a total of 40 m HIV/AIDS sufferers worldwide, 28.1 m are in Sub-Saharan Africa. She showed slides of Mozambican data. ANE aims to educate people on HIV/AIDS. They run training programmes and distribute condoms. This is a task for all of us.

7.2.2 PLENARY DISCUSSION

Participants had a number of questions:

Q: Did you consider cross-border traffic?
A: Feeder roads first, but central region includes main import/export corridor.

Q: There is a similar situation in Uganda; it needs political commitment at the highest levels.
A: Mozambique is the only country in Africa to reduce the level of infection. There is a national committee to fight HIV/AIDS that includes all ministries.

Q: Was awareness done with task-rate workers; if so, how?
A: In several ways: we prepared community workers who go amongst the people in their spare time. Contractors have two hours per month of HIV/AIDS training written into their contracts.

Q: What about sick leave, and funeral leave?
A: We are working only with prevention, not with the effects or cures.

Q: Some workers are HIV positive; how do they behave; how are they treated?
A: We do not know; we do not have any mobile test facilities; usually people do no want to know if they are infected.
7.2.3 GROUPWORK

Group discussions on the issues raised by this paper were facilitated by Dr Kofi Ampadu, who reported back the group’s findings to plenary. Full details of the group’s MetaCard display can be found in Annex 6.

Plenary additions

Participants offered some further comments during the plenary report back session.

A member of ASIST-Asia said they have a contractual mechanism available if people want it.

A participant from Uganda noted that, in parliament, the representation is almost 50/50 men/women.

A participant from South Africa said that the aim is 60/40 women/men; some women will get pregnant and fall out; they also suffer from their monthly period; they may need different clothes. These factors could cripple a contractor. A female participant replied that, since LB work is done on a task-rate basis that takes care of the pregnancy issue.

Another female participant, from Uganda, commented that men’s attitudes are static. Women do most of the LB work in their normal clothes anyway. Pregnancy is not an issue; see what women are achieving in Uganda!

Someone asked what about the disabled; and children head of households? Someone else asked about the gender balance issue: is there social breakdown resulting from over-pushed women? Atanásio replied that it strengthens the gender balance; money given to women is likely to reach the household; only a little of the money given to men reaches the household. Men can do all that women can do, so we do not need to change the times of work.
7.3 **Zambézia Feeder Roads Project: Community monitoring of social aspects of construction**

*by Diana Pereira, Momade César, and Rob Geddes*

7.3.1 **Presentation**

Diana Pereira and Momade César jointly presented this paper. Diana spoke first, then Momade. The presentation was in Portuguese, illustrated by eight PowerPoint slides.

Pereira gave an overview, then Momade described the process. The process involves a chart of levels, and what we explain at each level. It takes one to two weeks for information about the recruitment process to reach everyone. On the day of recruitment, we start with the women.

A month later, we visited communities to set up monitoring groups of equal numbers of men and women. It is voluntary work; they are not paid. Meetings are held fortnightly out of working hours, to discuss work conditions. Then the voluntary groups meet with the contractor, through his foremen.

The chart of worker involvement fluctuates due to other seasonal commitments such as agriculture.

7.3.2 **Plenary Discussion**

This presentation generated a number of questions from the floor:

Q: On the rate of recruitment of women, the MoPWH planned for 25%; this figure was not set by ANE. If there were more women than 25%, what then?
A: It has never happened!

Q: On policy: do you suffer political interference?
A: We are not going to discuss politics; we just talked to the most influential people within a community, whether they were Frelimo or Renamo. In mapping the roads, both political parties were involved, despite their war history.

Q: It is generally difficult to recruit men, let alone women, along the coast. How did you get workers?
A: In the districts where we worked, there was no shortage of men, but it was difficult to find women, especially in Mlanje; but more women came when they were sensitised. They realised it was a chance to get school fees for their children.

Q: When was awareness done?
A: We first went through the registration process; if the turnout was low, then we went into the churches to announce the need for more women.

Q: If the monitoring team was not paid, how effective were they?
A: The monitoring unit had to judge cases. For example, if a shovel was stolen, money to pay for it might be deducted from the whole gang, at a rate more than the replacement cost of the shovel. When it was found that the supervisor pocketed all the money, he was suspended through the intervention of the monitoring group.

7.3.3 GROUPWORK

Group discussions on the issues raised by this paper were facilitated by Marcus Wattam; and recorded by Seboka A Thomae, who reported back the group’s findings to plenary. Full details of the group’s MetaCard display can be found in Annex 6.

Plenary additions

A participant from Malawi noted that there are more workers than there is work available. Monitoring groups could be used to track this.
7.4 A comparative study of the labour content of different infrastructure types by Hany Attalla and Khaled Fatehy

7.4.1 PRESENTATION

Hany Attalla presented this paper, with 19 PowerPoint slides.

The aim was to look at the different types of infrastructure projects implemented by the Social Fund for Development (SFD) in Egypt, and to compare them, including their respective sub-sectors. The intention was to arrive at the average cost of the wage component, in each project type, compared to the capital investment of that type in the form of a rate. This may allow SFD to gauge its performance in job creation, against standards deduced from this study.

Projects were selected from governorates in Egypt, covering all regions, and tabulated by governorate, and by infrastructure type. This allows for a thorough comparative study among all infrastructure types, and for comparison by governorate.

The SFD and PWP were given over US$ 300 million to fund 6,500 subprojects, covering all 27 provinces, over a period of ten years. The types of infrastructure constructed included potable water supplies, sanitation sewers, irrigation, public buildings, and roads.

Potable water supplies
Some 337 wells were dug; 5,400 lm of pipe networks were laid; 270 elevated and ground level tanks were constructed.

Sanitation
Eleven treatment plants, and ten pump stations were constructed; and 152 km of pipe networks installed.

Canal pitching and covering
Some 330 km of canal pitching was carried out; and 160 km of canal covering.

Public buildings
Some 473 schools, 368 clinics, and 474 social centres were constructed.

Rural roads
Altogether, 1,800 km of roads were constructed.
Conclusion

In 18 governorates, US$ 85 million worth of projects were carried out. A good ratio of labour to plant utilisation was achieved. Typical daily wages ranged from US$ 3.30 per day for well digging to US$ 4.70 per day on roadworks.

It is evident that wages and the cost of a job opportunity in Upper Egypt is lower than in Lower Egypt, which indicates that material for the infrastructure types implemented by PWP is more readily available in Upper Egypt than in Lower Egypt. In addition, more jobs are created in Upper Egypt than in Lower Egypt. This all proves that funding infrastructure in Upper Egypt is more effective and beneficial, with respect to job creation, than in Lower Egypt.

The job opportunity cost ranged from US$ 12 for sewer lines and wells, to US$ 17 for roads. Although it was proved that rural roads created the highest number of job opportunities, there is LIFE BEYOND ROADS!

7.4.2 Plenary Discussion

A number of questions from the floor were put to Hany:

Q: The Soweto experience was that roads are more labour-intensive than other sectors. Have you looked at materials production as a target for labour-intensive work; and housing?
A: We are not allowed by our donors to build houses.

Q: The cost per job on roads seems to be high; should not this limit the focus on LB roads?
A: Both wages and materials costs for roads are high; this is why roads are expensive.

Q: What about women’s involvement?
A: Women’s contribution is very low, because our culture does not favour their involvement.

Q: In promoting gender equality, culture is a constraint; but in the Sudan they participate, so you are not trying hard enough! Use education as in the Sudan.
A: You are right. We have trained 150 contractors, of whom 8 are women, who were brought in almost by force. However, they are very successful.

7.4.3 Groupwork

Group discussions on the issues raised by this paper were facilitated by Ezekiel Rametse, who reported back the group’s findings to plenary. Full details of the group’s MetaCard display can be found in Annex 6.

The group agreed with the author that many sectors other than roads offered opportunities for using labour-based approaches.
These included solid waste collection, in addition to those mentioned in the presentation.

The value of comparing different infrastructure approaches based on employment intensity was discussed. It was agreed that the data was useful, but should not be used alone to prioritise infrastructure investment, since community needs and priorities should be the driving factor. There is a danger of projects becoming ‘make work’ schemes, rather than creating appropriate sustainable infrastructure. In addition, if donors set a labour target, figures may be fixed, and the labour not used efficiently.

The importance of considering indirect employment creation in support industries—e.g. manufacturing tools for construction, or small enterprises made viable by the training and infrastructure developed—was agreed. The difficulty of measuring these indirect impacts was noted.

There was heated discussion on improving the participation of women in schemes that focused on local cultural issues.
8 Closure of the 9th seminar

8.1 Expressions of interest for hosting the next seminar

Day 5 began with the floor being given to those countries wishing to express an interest in hosting the next seminar. Representatives from Tanzania, Malawi, South Africa, Uganda, and Cambodia made pitches. Participants then voted on their preferences:

- Tanzania: 46
- Malawi: 20
- South Africa: 16
- Cambodia: 11
- Uganda: 2

Tanzania was declared the winner.

Comments on the conduct of the next seminar

Moderators then elicited views on what the structure of the tenth seminar should look like. Participants agreed that the papers presented should be reduced to 12 to allow for more discussion time, but that other papers could be published and circulated in Volume 2.

8.2 Closing ceremony

The Moderators handed round sheets for Bullshit Bingo, before formally handing over the conduct of proceedings to Atanásio.

The Director General of ANE (João David Mabombo), and the Director of ASIST (Graham Johnson-Jones) took their places at the high table.

Introduction

Atanásio thanked all the participants for their cooperation. ANE wanted everyone to feel at home. He apologised for those things that were outside his control. There were 189 participants registered from 23 countries. He introduced the two Directors seated at the high table. He then asked for rounds of applause for the participants, and for the moderators.

Bullshit bingo game

Gamelihibe Sibanda from ASIST facilitated a game of Bullshit Bingo, whereby he read out a special speech and the participants were required to call out ‘Bullshit’ when he mentioned particular
words (those in bold below) at which point he would stop speaking. His speech was as follows:

“This regional seminar, besides allowing us to network, offered an opportunity to discuss strategies and best practices that are a culmination of our pro-active and innovative plans of action and strategic objectives. As we participate in the Global village, quality control and additional value for our partners will be the cornerstone of our effectiveness.

When we go back to our respective countries we will implement the holistic approaches that we benchmarked in this seminar. Furthermore, by leveraging the added value to our knowledge base, we should be able to develop conceptual frameworks that will ensure institutional development in an equitable and gender sensitive manner that guarantees a sense of ownership.

Such tailor-made client-oriented synergies will ensure a win-win integrated partnership.”

Vote of thanks on behalf of the female participants

Nekessa Connie Ouma, from Ireland Aid in Uganda, then spoke on behalf of the women participants:

“Please accept me, on behalf of all participants, and especially on behalf of the women participants, despite the fact that I may not be a good speaker. We extend our gratitude to the organisers, to ASIST, and to DFID. Thanks also to the GoM for their support to this Regional Seminar. Thanks to the facilitators of groups, and well as the main ones. We shall be happy to see the Moderators in Tanzania. Thanks to paper presenters, and for their courage to accept criticism, although we believe this criticism was constructive. Thanks to Atanásio, and to the participants for committing themselves to lengthy travel. From a slight difference of opinion comes discussion, and thereafter a common solution. This is a family, representing LBT. The review of the Cairo Statement shows that people have not come here just for tourism, but for substantial issues. I am particularly thankful to Eng Kagyina for being so gender sensitive. I call upon you all to reflect on the HIV/AIDS issue, and to set a personal example, and to include it in all your development planning. I wish the Tanzanian team all the best for the tenth seminar.”

Vote of thanks on behalf of the male participants

Eng Nelson Kudenga, the Director of Roads in Zimbabwe, then spoke on behalf of the male participants:

“On behalf of the male participants, I give thanks to ASIST, ANE, DFID, the moderators, to Carmen in particular as a friendly face from the moment we met her at the airport—she was presented with a bunch of flowers—, to the hotel for good food, to the presenters of papers (especially the ‘rubbish’ man Manus Coffey), and to the participants—for their good discussions. I see that
there are 30 delegates from Tanzania; I hope they did not rig the elections! Our aim is to develop Africa; it is for us Africans to implement what we have learned in this seminar."

Atanásio then quoted Samora Machel who said that “victory has to be prepared”, and went on to thank David Mason for his rapporteuring and for his patience in producing the Volume of Papers.

**Closing remarks**

Graham Johnson-Jones, the Director of ASIST, firstly expressed his agreement with the previous speakers in terms of appreciation for all those involved in the organisation: the organisers of the seminar and the site visits, James Markland and Dave Jennings, the moderators, the rapporteur David Mason, and the support services provided by Carmen and her colleagues. He then thanked the participants for their efforts, and particularly commended the strong and pro-active participation of the lady participants, as very ably demonstrated by Ms Nekessa Connie Ouma from Uganda in her preceding words. He thanked all participants for a successful conclusion in terms of the ‘Maputo Statement’, and looked forward to seeing them all at the next Seminar, hopefully in Arusha, Tanzania. Finally, he said he was looking forward with anticipation to progress in the mainstreaming of LBT across a broader sectoral spectrum.

The Director of ANE then gave his closing remarks:

“I wonder how it was that Mozambique came to be chosen for this seminar. I have asked Atanásio, but he never mentioned a certain lobby in Cairo! Now we are at an end. We have learned a great deal from colleagues working in LBT. We now have increased responsibility in our daily tasks. We shall leave better equipped to face those daily tasks. I am glad. We have discussed many issues; all these issues have LBT in common. What is the future, the way forward? We did not solve all the problems, but we shed some light on them. Thanks to the participants for finding time to come here; it is not easy to leave the office for a whole week. Thanks to the donors, organisers, and moderators. See you in Tanzania. I hereby declare this seminar closed.”

The seminar closed at 13:00, and the participants went for lunch.
9 Site visits

9.1 Introduction

Participants were divided into four groups, and were transported by small buses to each of the sites in turn, spending about an hour at each site. They left at 08:00 and returned at 14:45. The Rovuma hotel provided a packed lunch. Site visit notes were prepared by ANE.

Labour-based methods are used extensively throughout Mozambique, in particular in the rural road sector. The Directorate of Regional Roads is the organ of the National Road Administration (ANE) in Mozambique that is responsible for the coordination and advising of the Provincial Road Departments and Municipal councils on their networks of tertiary, urban and district roads. Four sites will be visited:

- Upgrading of Michafutene – Momemo Village Access Road
- Bitumen Stabilisation Trials
- Agro-Alfa Factory
- Polana Caniço Erosion

9.2 Site 1: The Michafutene–Momemo village access road

9.2.1 Site visit notes

Background

The village of Momemo had a large influx of internal refugees as a result of the floods between February and April 2000. These people were expected to return to their original homes when the floods abated. This proved to be difficult since most of them were afraid to return as they had had such a shock when the homes were inundated or collapsed.

The refugees in Momemo were eventually offered alternative accommodation by the Government of Mozambique but refused to move for a second time. The government held many meetings with representatives of the displaced people and finally agreed to help them establish permanent homes in the new village of Momemo. The Government of Mozambique began to provide basic services to the new village in collaboration with various donor agencies and NGO’s and with the cooperation of the displaced people themselves.
The people built permanent houses with concrete blocks provided by the Government. An NGO helped with funds to build a school and the World Food Programme built their emergency relief food store at the village. Plans for the construction of a health centre and electricity and water supplies are under way.

The Road

At the height of the floods when the people first found refuge on the high ground at Momemo the Maputo Province ECMEP (Government owned contractor) opened a temporary access track for the relief food vehicles. The advantage of having such a contractor became apparent in the emergency period when work could be started quickly with a minimum of contractual formalities. The work was done by labour-based methods using the displaced people as cash paid labour.

Now that the decision has been taken to make the settlement a permanent home for the displaced people the track is being upgraded to a motorable condition.

The Directorate of Regional Roads, with the Provincial Department of Public Works and Housing as the client, has elaborated the contract. The contract was awarded to the ECMEP. De-mining was already done at the initial resettlement stage. The details of the roadwork are as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road Length:</td>
<td>2 km</td>
</tr>
<tr>
<td>Motorable width:</td>
<td>6 m</td>
</tr>
<tr>
<td>Camber:</td>
<td>5 %</td>
</tr>
<tr>
<td>Surface type:</td>
<td>Lateritic gravel (sand)</td>
</tr>
<tr>
<td>Distance to Gravel Source:</td>
<td>5 km</td>
</tr>
<tr>
<td>Date Work Commenced:</td>
<td>14/5/2002</td>
</tr>
<tr>
<td>Contract Value:</td>
<td>US$ 30,625</td>
</tr>
<tr>
<td>Payment so far:</td>
<td>20 % advance</td>
</tr>
<tr>
<td>Number of labour employed:</td>
<td>21 women, 59 men – 80</td>
</tr>
<tr>
<td>total</td>
<td></td>
</tr>
<tr>
<td>Wage rate:</td>
<td>~ US$ 1.65 per day</td>
</tr>
</tbody>
</table>

9.2.2 SITE VISIT REPORT BACK

There was some inappropriate selection of equipment, notably the roller; a smooth roller is not effective in these circumstances. There was poor use of the towed grader. The road alignment follows the existing route; an alternative alignment could have reduced the need to cut down so many trees. Safety measures should be improved. In these soil conditions, the side drains need to be lined. Very few labourers were seen on site. The side drain material was thrown too close to the ditch; it was likely to slide back. The mitre drains were poorly designed. A 6 m carriageway width is too wide for the low traffic; 3.5 m was suggested as more appropriate. At a cost of US$ 15,000 per kilometre for the 'gravel'
road, it would be more economical to use ETB, which would cost the same or less.

Comments by David Jennings
As regards health and safety, there are specific clauses in the contract to ensure that there are compensation arrangements in the case of accidents such as mines exploding, falling trees, etc.

Other comments
- Grasses should be left in place to aid stabilisation.
- Culverts seem to be preferable to drifts in Mozambique.
- What will the annual maintenance costs be? There was no answer given to this.

9.3 Site 2: Bitumen stabilisation trials

9.3.1 Site visit notes
The ER 401 serves the strip of coast between the city of Maputo and the town of Marracuene. Urban expansion of the city of is resulting in rapid growth in the area. You will note the problems due to the poor quality of the soils on the Momemo site – they are widespread throughout the eastern part of Mozambique.

As with many of the roads in the southern and eastern parts of Mozambique, materials of a quality suitable to use as road surfacing are in short supply. Soils are generally sandy, and even the better quality sands normally used for surfacing material do not contain sufficient fine material to bind into a durable running surface.

The result of this is that roads have high maintenance costs. The importation of better quality material would be prohibitively expensive. As an alternative, materials engineers at ANE have been working for some time on developing methods for strengthening the naturally available materials. Although more expensive, being approximately double the cost of normal rehabilitation, the initial investment may well be recouped by savings in maintenance costs.

Initial trials used epoxy type chemicals, but bitumen emulsions have proved to be more stable and suitable. The emulsion is mixed with the sandy material and shaped and compacted to form a surface layer. A 60% anionic stable bitumen emulsion is used, mixed 4% by weight with the in-situ sand. After the successful completion of a short trial section using equipment-based techniques, a trial section funded by Sida under the Feeder Road Programme was constructed on the ER 564 Michafulene – Vundiça road. Materials were mixed by hand in 2.5 m square areas. You will be given the chance to assess the performance of
this trial section after two rainy seasons. Slurry seal and sand seal options for surfacing the stabilised sand will be tried. On the initial trial section, wear of 8mm has been measured over the past 18 months.

Further details can be obtained in Pedro Carvalho's paper.

9.3.2 Site visit report back

The group judged these very impressive. However, the side drains should be flatter and wider to reduce the water table rising to weaken the subbase. Mitre drains should be installed. The uniformity of the mix was questionable.

9.4 Site 3: The Agro-Alfa factory

9.4.1 Site visit notes

Agro-Alfa SARL

Agro-Alfa SARL is a limited company created by the privatisation of the Agro-Alfa state company 6 years ago. The state company had been composed of 3 workshop units – a foundry, a forge and a plough factory, the last of which is the Agro-Alfa site that will be visited. There is a workforce of 50 in 6 sections producing steel structures, water pumps, machinery, hospital furniture and trailers.

- Wedges and cutter
- Machinery and tools
- Cutting and bending
- Welding
- Quality control and product development

Afridev Hand-pump US$ 400 each

This pump is designed for drawing water from deep boreholes.

The pump body has two main components:

- The head, made from 4 mm steel plate
- The pedestal, made from 48 mm diameter steel tube, 4 mm thick

Inside the pump, between the head and the pedestal, there is a flange with a rubber diaphragm. The pump shaft, made from interconnected stainless steel rods linked to the pump handle, runs in a 63 mm plastic tube. The bottom rod has a non-return valve at its end. The pump fabrication process starts with marking-out, cutting and bending of the steel sheet. Drilling and pressing follow to create the desired shape, and finally welding. Agro-Alfa sub-contract out the galvanising. After quality control the pumps are ready for sale.
The pumps are usually produced in lots to order. Main markets are NGO’s with community support programmes; ADRA, Rural Water, and the South African market.

**BUMI Hand-pump (Indian Origin) US$ 279 each**

This is a pump for use in shallow wells or rivers. It is best suited for irrigation works.

The aluminium body is cast by a sub-contractor using moulds made by Agro-Alfa. The rubber diaphragm is outsourced from Facobol, the rest of the pump being made by Agro-Alfa.

**Cassava Processing Machines**

Three types of machine are made by Agro-Alfa to process cassava, a staple food in Mozambique.

**Grater US$ 790 each**

An electrically powered machine capable of producing 100 kg of grated cassava an hour. It consists of an electric motor driving a drum grater, and a container supported on a framework of steel angles. A wooden board supports the raw material and protects against fragments being flung out of the container. Two wheels are fitted for ease of transport.

**Chipping Stand US$ 165 each**

The cassava chipper consists of a cutting disc mounted on a shaft turned by a handle. The machine can also be used for processing other types of root. Agro-Alfa makes all of the components except for the bearings.

**Juice Press US$ 495 each**

The juice press extracts the liquid from the grated cassava to speed up the drying process. It is fabricated from 100x50 mm U-sections, threaded shafts and a wooden board. A sack of grated cassava is placed on the board and it is compressed to squeeze out the liquid.

**Sack Frame**

A frame made from 12 mm rod supports the sacks as they are filled.

**Manual Oil Press US$ 175 each**

It is fabricated from steel plate, 100 x 50 mm U-sections, 100 x 12 mm bar and bronze bearings. Average capacity is 20 litres of oil per day using sunflower seeds. A lever drives a piston that crushes the seeds repeatedly in the filter. The oil is bottled after passing through a cloth filter.

Agro-Alfa also produces:
• 24-hammer grinding mills
• Trailers
• Ox-carts
• 6 m3 rubbish containers

9.4.2 SITE VISIT REPORT BACK

The group met the directors of the factory. They manufacture for both the domestic and the export market. They employ 80 workers, six of whom are women. The group was interested in the water pump, especially the Malawians, who are currently importing pumps from India.

[Editor’s note: An ILO trailer was being manufactured, using the drawings from Technical Brief No. 1. A couple of participants were very critical of this design.]

9.5 Site 4: Erosion at Bairro Polana Caniço

9.5.1 SITE VISIT NOTES

Heavy rains first cut Avenida Julius Nyerere, one of the main commuter routes into the city, in 1999 where it passes through Bairro Polana Caniço. The road runs along the top of a sandy cliff. Problems with the drainage system that has to cope with the run-off from a large part of the city resulted in major erosion. The extent of the ravines increased greatly during the intense rains in February 2000, and urgent remedial works were required to prevent further damage.

The pamphlet in the welcome pack gives further details of the problem and their solutions.

9.5.2 SITE VISIT REPORT BACK

The gabion work was well done (9000 cubic metres of stone were used); and that it was done using a LB approach meant that the local community gained some cash income. It shows the potential of LBM in times of crisis. The group was concerned about the steep slopes with houses at the top; this is unsafe; the town council should relocate these people. Some of the exposed slopes are not protected by grass, but they should be. The road will probably have to be rebuilt to a new alignment.

At the crater site, one side of which is planted to Vetiver grass, the group suggested grassing the other side, and turning the site into a park or football stadium. Nearby unplanned (and undrained) settlements probably contributed to the disaster.
Other comments

Gabion boxes, which were imported from South Africa, could have been made locally.
10 Findings and recommendations

10.1 Review of the Cairo Statement

The statements from the Cairo seminar were displayed on the screen, and the moderators took the participants through them one by one, asking for what progress, if any, had been made in the last one and a half years.

Participants contributed the following:

1 Perceptions
- The Philippine Government is mainstreaming the IRAP process.
- In Uganda, there is a consultative process of employment and labour law revision.
- Execution of policy is paramount.

2 Policy Support
- PRSPs provide a broad policy framework for the integration of LBT.
- There are some private–public partnerships in Uganda.
- In Lesotho, highlands water resource management provides a continued funding framework for community-initiated development projects.
- The current focus is on management/administration/execution—policies are favourable towards this.
- LBT is integrated at a wide variety of levels in Botswana.

3 Education and training
- The University of Dar es Salaam has an engineering curriculum that incorporates LBT. It exists, but needs to be strengthened with practical components.
- Some professional institutions have included training as part of their role.
- The Cambodia Institute of Technology is introducing LBT-focused courses into its curriculum in Cambodia.
- Some University of Zimbabwe students are attached to projects.
- The availability of high quality literature on technical aspects is important. This should be packaged and presented in a wider context, via professional societies and educational institutions.
4 Procurement
- In Uganda, procurement procedures have been revised to meet the challenge of decentralisation.
- In South Africa, procurement procedures have been changed to include social goals and development objectives.

5 Technical standards
- Technical manuals have been developed around LBT. However, they need to be tailored for application outside roads.
- I T Transport have produced a field manual for the construction and improvement of footpaths and tracks; and is currently developing a manual on footbridges.
- ILO and TRL are carrying out research into appropriate standards for low-volume unpaved roads.

6 Ensuring participation
- More projects are working with local consultants, and training them to ensure participation in contract supervision and management.
- In Uganda, mass media has been used to raise awareness of the opportunities for LBT options.

7 Planning
- IRAP is being used in the Philippines
- In Cambodia, IRAP is being applied in 24 provinces. Its use is being extended with ADB funding.

8 Implementation and monitoring capacity
- Funds need to be earmarked for communities to deal with monitoring of LB works.
- In Namibia, a move has been made to broaden the LBT focus by tasking an employment body to oversee developments in employment in all sectors.

10.2 Formulation of the Maputo Statement

The Findings synthesised from the results of group discussions were displayed on the screen for participants to review and edit. Then the Recommendations, put together by the ASIST team, were displayed, reviewed, and edited in plenary.

The result was as follows:
10.2.1 **Findings**

**Papers with a technical theme**
- Solid waste management has two key stages: collection and disposal. SMEs are likely to be more viable in waste collection than in disposal.
- There are more appropriate equipment and tools available for solid waste management than those commonly used, which are often hazardous, non-ergonomic and inefficient.
- Appraisal of infrastructure options should not just be governed by initial costs. Life-cycle costs can justify use of an option that has a relatively higher initial cost.
- Good road building materials are diminishing in many countries. Emulsion Treated Base (ETB) has proved to be a viable solution in Mozambique. ETB is used to treat the in situ sandy material to obtain a more durable wearing course.

**Papers with a contracting theme**
- Contractor development programmes have assisted governments in increasing their delivery capacity and employment creation through the introduction of small contractors.
- The establishment of contractors’ association helps contractors to raise their concern and negotiate with the client in one voice.
- Timely payment and continuity of work are essential to ensure the success and growth of small contractors.
- Small contractors have difficulty in accessing essential resources, especially equipment.
- Registration of small contractors is the first step in recognizing their role in the construction sector. At the same time, the public will be protected from unqualified and under performing contractors by including strict quality control mechanism in the registration process.

**Papers with a social theme**
- Social issues including gender, health and safety, HIV/AIDS, and vulnerable groups are important aspects that must be considered at all stages.
- Financial resources, appropriate skills and personnel, awareness raising and political will are needed to achieve social goals.
- Procurement and contracts can be powerful tools for achieving social goals.
- Monitoring, evaluation, and enforcement of social aspects are needed.
opportunities for employment creation and effective infrastructure provision through using labour-based approaches extend far beyond the roads sector to areas such as water supply, sanitation, buildings, and solid waste collection.

Papers with an institutional theme

- Technical, planning and financial capacity (not limited to roads) at district level is vital.
- It is important that there is central level support and co-ordination of LBT for the district level.
- Accessible national information collection and dissemination centres are needed, also focusing on sensitising decision-makers.
- Funding co-ordination is required at central level, to ensure policy is developed and put into practice, and to ensure equity in access to funds.
- Decentralised mechanisms work well and are responsive, but sometimes Regional or Provincial Institutions can be a bottleneck.
- Political, technical, and socio-economic interests need to be balanced in the planning process.
- The role of public private partnerships needs clarification and strengthening.
- Important non-classified roads should be classified, and this is a continual process.
- In some countries de-mining for unclassified roads and rural infrastructure is a pre-requisite to be addressed.
- Community contributions may enable more resources to be mobilised innovatively.
- Community contributions may not optimally address poverty, may serve vested interests or political gain, and may marginalize the poorest members of the community.
- The funding of bridges on NCR's needs to be addressed.

10.2.2 Recommendations

Papers with a technical theme

- Those involved in solid waste collection and disposal should use ergonomically designed equipment and tools, which optimise the employment creation potential. For unplanned settlements it may be necessary to use custom designed plant (e.g. narrow equipment to overcome accessibility challenges) instead of the conventional equipment.
• When appraising different options for the provision of road infrastructure, life cycle costing (including social and environmental aspects) should be used.
• Institutions such as the ILO/ASIST should take the lead in the development of a standard methodology for the life cycle costing of low-volume unpaved roads.
• Practitioners should carry out more trials of various in situ material stabilisation options. Special care should be taken with leaching chemicals.
• Research into appropriate technology for use by labour-based contractors should be undertaken.
• Organisations such as professional associations and ILO/ASIST should continue to document and disseminate best practices and emerging labour-based solutions.
• Performance-based standards should be tailored to local conditions.

Papers with a contracting theme
• The increased use of LBT through small contractors is one of the tools to address poverty. However, this could be demand rather than supply driven.
• Quality control mechanisms should reward good performing contractors and penalise those performing poorly.
• Access to finance and equipment should be tailored to local conditions, to ensure sustainability.
• Programmes should consider options that improve contractors’ access to equipment, including leasing through a local financial institution or a leasing company.
• Include equipment maintenance and training of operators when developing and considering leasing options.
• Previous compliance with social objectives should be one of the requirements for registration and pre-qualification for works.
• LBT training materials should be tailored to local conditions, and meet accredited standards.
• Encourage small contractors to diversify beyond roadworks.

Papers with an institutional theme
• Districts need to be aware of other multi-sectoral applications of LBT, in response to defined community priorities.
• National Labour Based Advisory Units (LBAUs) and National information and dissemination centres should be established to enable districts and central authorities to share and disseminate experiences and skills, and establish and reinforce links for inter-district works.
• Alternative mechanisms to donor dependency need to be developed.
• Appropriate decentralisation strategies should be adopted.
• Communities should be empowered to resist any abuse of political power.
• Simpler and cheaper ways of prioritisation planning, driven by community need leading to funds leading to work, need to be developed.
• Funding roles and responsibilities need to be defined for maintenance planning and prioritisation.
• Training needs to focus on building up the capacity of local consulting companies, as well as contractors.

Papers with a social theme
• Donor and national procurement procedures should be designed to achieve social and economic objectives (i.e. targeted procurement).
• Actions to prevent HIV/AIDS should be obligatory in contracts, and should be based upon standard UNAIDS guidelines.
• Progress in achieving social and environmental goals should be monitored, using a variety of methods, such as questionnaires, participative approaches, etc.
• Gender issues are fundamental to achieving social objectives.
11 Annexes

11.1 Annex 1: Ninth Regional Seminar Programme

Rovuma Carlton Hotel, Maputo, Mozambique.

**Saturday 18 May 2002**

16:00 – 18:00 Early registration in the Timaka Room, Second Floor, Rovuma Carlton Hotel

**Sunday 19 May 2002**

16:00 – 18:00 Early registration in the Timaka Room, Second Floor, Rovuma Carlton Hotel

**Day 1: Monday 20 May 2002**

08:00-09:00 Registration in the Timaka Room, Second Floor, Rovuma Carlton Hotel

**Opening Session, Mabula Room**

09:25 – 10:00 Welcome by the Host, National Roads Administration

Welcome by ILO/ASIST

Welcome by DFID

Official opening by the Minister of Public Works and Housing

10:00 – 10:50 Refreshment Break and Group Photograph

**Plenary Session, Mabula Room**

10:50 – 11:45 Introduction to the Moderators

Opening Address by Graham Johnson-Jones of ILO/ASIST

Keynote Address by Peter Roberts of DFID

**Plenary Session, Presentation of Technical Papers, Mabula Room**

11:45 – 12:50 1 Zambézia Feeder Roads Project: A new approach to road maintenance *by Rob Geddes and David Geilinger*

2 Employment opportunities in solid waste management in low-income countries *by Manus Coffey*

12:50 – 14:10 Lunch Break, Monomotapa Restaurant
Plenary Session, Presentation of Technical Papers, Mabula Room

14:10 – 14:55  3 Low Cost Surfacing (LCS) Project: Guidelines for the development of questionnaires for monitoring of environmental and socio-economic impact by Ruth Schaffner, Rob Petts, and Alebachew Kassie

4 Effective use of sands as a road base under labour-based construction: experiences in Mozambique by Pedro Carvalho

14:55 – 16:50  Groupwork, Mabula Room, Milando Room, Timaka Room

Geddes & Geilinger  Coffey  Schaffner  Carvalho

Refreshment Break taken during Groupwork

Plenary Session, Reporting Back, Mabula Room

16:50 – 18:00  Group 2; Group 1; Group 3; Group 4

Welcome Dinner

19:30 – 22:00  Polana Hotel

Day 2  Tuesday 21 May 2002

Plenary Session, Presentation of Contracting Papers, Mabula Room

08:30 – 10:10  5 The use of labour-intensive work in the development of local contractors by Luís Fernandes

6 Equipment finance for small contractors in public works programmes by Linda Deelen and Kwaku Osei-Bonsu

7 Development of small-scale contractors in the commercialisation process of the Namibian road sector by Malte Engelien

8 Recognition of the labour-based contractor: the case of Tanzania by Albert Uriyo

10:10 – 11:00  Refreshment Break

11:00 – 12:35  Groupwork, Mabula Room, Milando Room, Timaka Room

Engelien  Fernandes  Deelen & Bonsu  Uriyo

12:35 – 13:45  Lunch Break, Monomotapa Restaurant

13:45 – 15:05  Groupwork, Mabula Room, Milando Room, Timaka Room

Engelien  Fernandes  Deelen & Bonsu  Uriyo

Plenary Session, Reporting Back, Mabula Room

15:05 – 15:30  Group 1; Group 2; Group 3; Group 4

Plenary Session, Presentation of Institutional Papers, Mabula
Room

15:30 – 16:10  9 Decentralised form of governance as an enabling environment for labour-based technologies in Uganda by Constantine Bitwayiki

16:10 – 16:40  Refreshment Break

Plenary Session, Presentation of Institutional Papers, Mabula Room

16:40 – 17:55  10 Ghana feeder road prioritisation by John Hine, Simon Ellis, Simon Done, and David Korboe

11 Community-initiated cost-sharing road programme in Zambia by Raphael Mabenga

12 The management and financing of non-classified roads by Marcus Wattam and Gary Taylor

Day 3  Wednesday 22 May 2002

Site Visits

08:00 – 14:30  1 The Michafutene–Momemo village access road

2 Bitumen stabilisation trials

3 The Agro-Alfa factory

4 Erosion at Bairro Polana Caniço

Day 4  Thursday 23 May 2002

Plenary Session, Reporting Back on Site Visits, Mabula Room

08:15 – 08:40  Group 1; Group 2; Group 3; Group 4

08:40 – 10:05  Groupwork, Mabula Room, Milando Room, Timaka Room

Bitwayiki  Done  Wattam  Mabenga

10:05 – 10:35  Refreshment Break

10:35 – 11:55  Groupwork, Mabula Room, Milando Room, Timaka Room

Bitwayiki  Done  Wattam  Mabenga

Plenary Session, Reporting Back, Mabula Room

11:55 – 12:20  Group 1; Group 3; Group 2; Group 4

Plenary Session, Presentation of Social Papers, Mabula Room

12:20 – 12:40  13 The use of procurement to attain labour-based and poverty alleviation objectives by Ron Watermeyer

12:40 – 14:00  Lunch Break, Monomotapa Restaurant

Plenary Session, Presentation of Social Papers, Mabula Room
14:00 – 15:15  
14 Gender issues and HIV/AIDS prevention within Mozambique’s road sector by Angelica Aguilera and Angelina Balate

15 Zambézia Feeder Roads Project: Community monitoring of social aspects of construction by Diana Pereira, Momade César, and Rob Geddes

16 A comparative study of the labour content of different infrastructure types by Hany Attalla and Khaled Fatehy

15:15 – 16:10  
**Groupwork, Mabula Room, Milando Room, Timaka Room**

Watermeyer Aguilera & Balate Pereira & Cesar Attalla

16:10 – 16:40  
**Refreshment Break**

16:40 – 17:20  
**Plenary Session, Reporting Back, Mabula Room**

16:40 – 17:20  
Group 1; Group 2; Group 4; Group 3

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**Day 5  
Friday 24 May 2002**

08:35 – 09:55  
Expressions of interest to host the next seminar

Review of the Cairo Statement

09:55 – 10:45  
**Refreshment Break**

**Final Plenary Session, Mabula Room**

10:45 – 12:00  
Finalisation of the Maputo Statement

12:00 – 12:20  
**Refreshment Break**

12:20 – 13:00  
**Seminar Close, Mabula Room**

12:20 – 13:00  
Closing remarks
11.2 Annex 2: Opening speeches

11.2.1 WELCOME ADDRESS BY MR. CARLOS FRAGASO, CHAIRMAN OF THE ANE ROADS BOARD

Your Excellency the Minister of Public Works and Housing, Director for Africa of ILO/ASIST, Deputy Chief Engineering Adviser of the Infrastructure Division of DFID, Director General of ANE, dear participants, ladies and gentlemen.

In the first place I would like, in the name of the National Roads Administration, to welcome all participants to this seminar. I would also like to welcome to Maputo all participants who live outside this city, and particularly those who live outside Mozambique. I hope that you feel at home in Maputo. I hope that during your stay in Maputo, you may use any free time during the seminar to enjoy this beautiful city and what it has to offer. So as not to influence anyone, I shall give a few examples of the good things of Maputo: beaches, prawns, cashew nuts, etc.

It is an honour for the National Roads Administration to organise this seminar, in coordination with the International Labour Organisation. There is a long history in Mozambique of the intensive use of labour, particularly on roads. Improving this, which is one of the objectives of this seminar, will have an impact on the quality and cost of roadworks carried out with the intensive use of labour, as well as in making the most of the human energy spent on these activities.

Many of the dirt roads built in Mozambique since the colonial period were built with the intensive or exclusive use of labour, by local people, as payment of taxes, or as prison labour.

In 1978 a new era began in the intensive use of labour in Mozambique, with the introduction of a pilot road rehabilitation project with the intensive use of labour, undertaken by the International Labour Organisation, with funding from NORAD. This pilot project began in Mocuba district, Zambézia province. In this new era, one of the main objectives was to improve the quality of the work undertaken, and make maximum use of human efforts, through the appropriate techniques, methodologies, and tools.

The National Directorate of Roads and Bridges set up in 1987 when the pilot project I mentioned was already under way, attributed special importance to this project. It made efforts to expand this type of project, but these efforts were affected by the war situation the country was living through.

The intensive use of labour in Mozambique took off on a large scale after the general peace agreement in 1992. Thus during the first and second roads programmes, called ROCS 1 and 2, about
5,880 km of tertiary roads were rehabilitated with the intensive use of labour, through the ‘Feeder Roads Project’. This project is taking place today in all of the country’s ten provinces, and benefits from major support from the international community.

It is important to mention that this project has played a significant role in Mozambique’s post-war reconstruction, by contributing to the social and economic development of the rural areas. This project has created thousands of jobs, has improved access, and has injected money into the rural areas. This helped people to settle and to reorganise their lives. It is important to mention that about a quarter of the jobs created were taken by women, who have an important role in the rural areas.

In 1999 the roads sector in Mozambique underwent profound reform, with the creation of a new road administration system. The National Roads Administration was set up, replacing the National Directorate of Roads and Bridges. The National Roads Administration is an institution with administrative and financial autonomy, with tasks of management, institutional coordination, and consultation in the sphere of public roads. A board of directors, including representatives of the public and the private sectors, manages the National Roads Administration.

The new system of road administration has decentralised the management of tertiary roads down to the provincial governments. In order to guarantee its institutional coordination role, the National Roads Administration has established a directorate of regional roads. The main role of this body is coordination with the provincial bodies in managing tertiary and unclassified roads.

Mozambique possesses about 26,000 kilometres of classified roads and half of these are tertiary roads. In addition to this network, there are about 14,000 kilometres of unclassified roads.

This year the third roads programme will take off, with a life span of ten years, divided into three phases. This programme will continue to prioritise the use of local resources, paying special attention to labour. It envisages the rehabilitation and repair of about 12,000 km of roads over the ten years.

During this programme, an unclassified roads project will begin: the policy behind this is in the final stages of design, and pilot projects are expected shortly. For this type of road, the intensive use of labour is also advocated.

With the reconstruction of a significant part of the Mozambican road network, which was severely affected by the war that plagued the country for decades, road maintenance is now a problem that deserves special attention and priorities. In the routine and regular maintenance of tertiary roads, the intensive use of labour has played and will continue to play a key role.

In conclusion, I wish all participants a successful seminar, which will thus contribute to improving the intensive use of labour in road activities. Thank you very much.
11.2.2 OPENING ADDRESS BY ROBERTO COLIN COSTLEY-WHITE, MINISTER OF PUBLIC WORKS AND HOUSING

Mr Johnson-Jones, Director for Africa of ILO/ASIST; Mr Peter Roberts, Deputy Chief Engineering Adviser of the DFID Infrastructure Division; Mr Carlos Fragoso, Chairman of the ANE Roads Board; Mr João Mabombo, Director General of ANE; esteemed participants; ladies and gentlemen.

First of all, in my own name and in that of the government of Mozambique, I would like to welcome all participants.

I would like to offer a special welcome to our guests who have decided to travel to our country, and discuss here a theme that is dear to our hearts—that of appropriate engineering practices in a favourable environment. It is with the greatest of pleasure that we receive you and wish you a good stay.

As you know, Mozambique is an extremely poor country, in fact one of the poorest in the world. It has a population of over 16 million inhabitants; of whom about 70 per cent live in the rural areas, where absolute poverty is predominant. Of the other 30 per cent, who live in the urban areas, more than half are on the poverty line. More than 50 per cent of the entire Mozambican population is illiterate.

This is a heavy legacy from the past, which we are fully aware of, and which we are determined to overcome. We believe that we will only do this with clear and determined policies and with hard work.

Thus the Mozambican government has designed and adopted its Action Plan for the Reduction of Absolute Poverty (PARPA), a plan with short and medium term actions, and precise indicators to be achieved in key sectors such as education, health, and infrastructure. The various sector policies adopted encourage the use of labour-intensive methods. By way of example, the roads policy expressly recommends the adoption of labour-intensive techniques in restoring the tertiary road network.

Mozambique embarked on the method of the intensive use of labour in the area of rural roads at the start of the 1990s. The experience is being extended to other areas, such as the construction of buildings, erosion control, etc.

Some of the results we have obtained are encouraging: More than 5,000 km of roads were rehabilitated with labour-intensive methods, representing more than 1.4 million persondays of work per year. All routine maintenance of over 15,000 kilometres of road is carried out through the intensive use of labour.

The theme chosen for the seminar—towards appropriate engineering practices in a favourable environment—in itself contains several challenges. Since I am an engineer by profession, I think I am in a privileged position of sharing with you the
political vision we should have, so that the practices are indeed the most appropriate ones.

NEPAD is an African initiative of great scope for our theme: it is the duty of every African to contribute his or her wisdom so that NEPAD is successful. As you know, infrastructures and the training of human capital are among the main blocks of NEPAD in our countries. Rural roads are the main infrastructures to be developed if we want the agricultural and industrial potential of Africa to flourish, to eliminate the image of hunger the world associates with us, and to compete on the world market.

Engineering practices that stimulate and develop local resources, and which can mostly be appropriated by local economies, can play a key role in developing and maintaining rural roads. It may be that NEPAD tends to fix its gaze on the major regional projects, which is legitimate, but it is up to you to bring contributions to the politicians, so that they remember that the complementarity of the road network is fundamental, and that the tertiary roads cannot be forgotten.

The creation of an environment favourable to economic development is fundamental for Africans. The most appropriate engineering practices have to be based on the understanding that Africa is tending to become increasingly marginal in trade and in the world economy. What we have not done properly so that this has happened, and what we ought to do henceforth to reverse this scenario, are also challenges that are posed to engineers and to scientists. This also has to do with our insertion into reality; with the knowledge and experience we have of it, and the relation between reality and our training and research.

Finally, some remarks on social problems—for, despite a common belief otherwise, my experience has shown a high sensitivity among engineers to social problems.

I note with great concern that HIV/AIDS is spreading and is taking on extremely alarming dimensions on our continent. Indeed, we are all victims of this pandemic. It affects us in all ways and at all moments. The victims most struck down are our young people, in whom we invested all that we could in their education, health, and other areas. They are the thinkers and the workers. I see that many of you are these young people, and so I urge you to make a personal contribution to preventing HIV/AIDS and reducing its spread.

Another important matter is the gender perspective that we must have. Gender does not just mean women—it refers to the whole range of relations between men and women in society. Engineers can influence these relations in the direction of equality and sharing of responsibilities, if this component can be linked to the mathematical equations that show us the most appropriate technical, economic, and financial solutions. Let us test the sensitivity of solutions to gender problems.
Before concluding, I would like to thank the contribution that our cooperation partners have made towards labour intensive practices.

I wish to thank all those persons and institutions who have made it possible to hold this ninth regional seminar on the intensive use of labour in Mozambique, particularly the National Roads Administration and ILO/ASIST.

Your participation in the debates will contribute to disseminating the results in a more wide-ranging form. We are anxious to know your contribution and recommendations. In the struggle against poverty in which we are engaged, your wisdom and experience is something that we cannot do without.

Despite its difficulties, Mozambique is a beautiful country. So, during your free time, do not miss the chance to get to know it better. I think you will then understand why we are so determined to make it more prosperous and developed.

I declare the ninth seminar on the intensive use of labour open.

11.2.3 OPENING ADDRESS BY GRAHAM JOHNSON-JONES, DIRECTOR OF ILO/ASIST—AFRICA

Welcoming Slide 1

Muito Obrigado,

Your Excellencies, our hosts the National Roads Administration, friends and colleagues, ladies and gentlemen.

The Regional Seminars for Labour Based Practitioners have been running for many years now, this being the ninth. So firstly I should like to express our appreciation to our hosts, for the efforts they have put into arranging this seminar.

Being by now an established and well-known forum, there will be many old hands, colleagues and friends, who know the ASIST Programme well. Nevertheless, for the benefit of those to whom we are a relatively new experience, and to highlight the key issues, I will give a quick overview. Firstly, to use that well known phrase, “Where are we coming from?’

Slide 2 of Quotation from Mombasa

When Being Asked About Infrastructure Priorities, a Resident of a Mombasa Slum Replied (not verbatim):

“You’re asking me what I need most, and what I can afford for it! What I really need is a Decent Job. Then I won’t be as concerned about these things, because then I could afford to ensure that I can get them all”
From this quotation, it is clear that the stated priority of the poor for decent work and income can often be overlooked in the prioritisation of infrastructure and services for basic needs.

**Slide 3 of the Importance of Decent Work**

The ILO DECENT WORK agenda is underscored by four key points, to reduce the deficit in:
1. employment: unemployment and underemployment
2. rights: denial of rights
3. social protections: unsafe working conditions and income insecurity
4. social dialogue: inadequate representation and institutions to permit the voice to be heard.

The decent work development goal is to obtain productive work in conditions of freedom, equity, security and human dignity

One in four people on Earth live in extreme poverty, with poor access to basic infrastructure, services and employment opportunities. Governments and their development partners face serious challenges in meeting the needs of the poor.

The ILO’s Employment-Intensive Investment Programme and the associated ASIST Programmes over the years have helped member states of the ILO to maximise the employment and local development opportunities through investments in infrastructure. The benefits of these approaches are clear.

**Slide 4 of Benefits of Employment Intensive Approaches**

In addition to the direct employment benefits, reduction in foreign exchange requirements and cost savings there are major influences on sustainability and economic growth since sound and appropriate infrastructure results, which leads to greater community empowerment through economic growth and development. Additional local jobs are created in operations and maintenance and in associated support and related industries; and skills are developed within the communities, which can be applied well beyond the confines of the initiatives.

**Slide 5 of the Three Pillars of ASIST**

ASIST offers Advisory Support on policy issues; rural and urban local resource based initiatives; and in developing tools and techniques including Integrated Rural Accessibility Planning (IRAP) and guidelines for community contracting.

In the area of Information Services, ASIST builds and operates a knowledge base on employment intensive strategies for infrastructure provision. This takes the form of a comprehensive collection of over 10,000 documents at our resource centres; and the ASISTDOC database is available from our website or by diskette or CD-ROM. This is strengthened by active networking, including support to the biannual Regional Seminar; the Contacts
database, the Technical Enquiry Service and through publishing and disseminating technical information. This also links into the role of ASIST in Research and Development in existing and new sectors.

The T in ASIST relates to **Training** and here we have provided continued support to national training institutions and universities, including international courses run by the Kisii Training Centre in Kenya.

ASIST is now active in both Africa and Asia Pacific Regions, and the budding prospect of an ASIST in Latin America seems closer.

The new three-year phase of ASIST Africa started in July 2001 and we gratefully acknowledge the support to this phase by Denmark, Great Britain, Norway and Sweden.

The emphasis in this phase is clearly to build and mainstream the experiences that have been encompassed in the previous activities of the ASIST Programme. Clearly the objective is not so much “more of the same” but more one of building onto a solid foundation. This aspect of mainstreaming our work is perhaps the greatest challenge, and we together we need to ensure that institutional memory is retained. Secondly, whilst not spreading ourselves too thin, the lessons learnt need to be applied more broadly.

I would now like to briefly request my colleagues from ASIST in Africa and Asia Pacific and all ILO colleagues who work with employment-intensive infrastructure and planning issues to please stand up so we can see you all. Please feel free to approach any of us during the breaks for any further information on the ILO work in these areas. We also have a display, which will provide you with more information. Thank you, please sit down.

**Slide 6 of conclusions of the 8th Seminar**

To address what we hope for from this Seminar, a good place to start is the conclusions of the 8th Seminar in Cairo held in October 2000. This was the “Cairo Statement”, and the recommendations addressed eight categories.

Let’s look at these and consider what has been achieved:

- **Perceptions and policy support** It is clear that there is now greater awareness in governments of the benefits of employment-intensive and local resource based approaches to infrastructure. In some cases this has been translated into clear policies and institutional changes. Let me give you a recent example. ASIST has worked with the Government of Namibia on the development of the green and white papers on multi-sectoral labour-based works and the white paper has been adopted as a policy document. However, driven by the increased perception of the benefits across a broader spectrum, this is leading to the establishment of a statutory stakeholder-driven national employment creation body, and
ASIST is supporting this exciting development. The new body will be the hub of multi-sectoral employment creation initiatives representing a private-public partnership. This will provide a model for others and already there has been clear interest in developing similar approaches elsewhere.

- **Education and Training** ASIST continues to support the network of African Universities in curricula developments, including introducing Integrated Rural Accessibility Planning. We also continue to backstop the efforts of national training centres. Recent developments include the piloting of the urban site supervisor’s course at the Kisii Training Centre in Kenya. In addition, we are targeting increased collaboration with professional institutions as a key route for both awareness raising and networking.

- **Procurement** A targeted procurement project is underway in South Africa and we are in the process of developing further the pro-poor contracting and procurement systems for the use of small-scale contractors and communities in infrastructure construction, operations and maintenance. This includes the recently completed guidelines on community contracting and other key guides.

- **Technical Standards** The emphasis here was on the development of international best practices as a framework for appropriate levels of service. A recent initiative is the regional research project into appropriate engineering standards for unpaved low volume roads, being undertaken in collaboration with the Transport Research Laboratory (TRL). This research undertaken currently in Zimbabwe, Ghana, and Uganda with strong possibilities of inclusion of Mozambique and Lesotho, will determine the effects of different construction standards, materials and climates on the life cycle costs for these roads. The complete project will hopefully include the participation of 6 to 8 African Countries.

- **Ensuring Participation** Considerable progress has been made to ensure that the people most directly affected are involved in all aspects of the development process. In addition, consideration is being given to building in incentives to ensure gender equity. ASIST works within the decent work agenda of the ILO and in Botswana recently undertook a study of labour regulations in relation to the emerging labour based contractors. The ILO also participated in the Social Aspects of Construction Workshop in Cape Town earlier this year, funded by DFID, where gender and HIV/AIDS were amongst the key issues.

- **Planning** The application of the Integrated Rural Accessibility Planning tool has been well received and impact studies are currently being undertaken in Zimbabwe. As a result of the application of IRAP, there has been the development of the guidelines for the design and construction of suspension footbridges, tested in Zimbabwe. A more recent development, hot off the press, is the early stages of development, in partnership with HABITAT, of tools to facilitate bringing
employment considerations into the forefront of urban planning. This resulted from a greater focus on employment issues at the World Urban Forum in Nairobi, a few weeks ago.

- **Implementation and Monitoring Capacities** The Seminar recommended that governments should establish at the highest level a body, including the private sector, to facilitate implementation, to monitor investment strategies, and to give guidance and direction to future budgets. I would refer you back to the Namibia experience where this is precisely the role envisaged for the emerging employment creation body.

**Slide 7 of Recommendations for 9th Seminar from eighth Seminar**

In addition, the participants felt that this seminar should review progress on the recommendations of the 8th seminar; allow more time for discussion in groups and define a clear and focused theme. Hopefully my comments have contributed to addressing the first of these, the seminar Programme itself addresses the second very well and now we should just address our theme for the 9th Seminar:

**Last Slide 8 “Towards appropriate engineering practices and an enabling environment”**

This theme naturally follows the feedback from the previous seminar, as it encapsulates the concerns expressed by the participants. So what should we expect from this seminar?

In line with the recommendations from the Cairo Statement, mostly we expect a strong sharing of experiences by all participants, making full use of the additional discussion time. After the seminar, hopefully linkages will have been established and strengthened that will help us all to achieve the objectives of the theme based upon a “Maputo Statement” on the way forward. The outcome will be the product of all your contributions here over the next few days.

Let me conclude by thanking you all for your patience and attention, wishing all of you every success in addressing the serious issues in front of us. We are delighted to be here in Maputo, and finally, I thank you again for giving the ASIST team this opportunity to address the seminar.

Muito Obrigado
11.3 Annex 3: Group findings on Technical Issues

11.3.1 REPORTING BACK: GROUP 1 ON GEDDES AND GEILINGER’S PAPER

White cards: areas of agreement with the author
- One-hit maintenance contracts maximise use of scarce resources
- Accessible for small contractors
- Only pay for actual work done
- Reduce risk of non-maintenance
- Sustainable solution for sandy soils
- Reduced cost
- No ditches for sandy sections
- Level of service agreement of 60 kph inadequate by itself

Red cards: areas of disagreement
- Exploitation of the poor
- Consider the earning potential of the network not road section
- Need more definition of contracts—quality of work to be done

Yellow cards: key recommendations that are important in defining best practice
- Check that contractor pays labour on time
- Role of the community in maintenance supervision—more transparency
- Tell workers if payments delayed
- Strengthen community involvement
- Consider what level is affordable
- Advance payment necessary for small contractor development
- Guarantee of advanced payment
- Multiple hit contracts (one year)
- Consider use of consultant supervisors
- Supervision necessary during work in progress

Blue cards: additional key points that contribute to the theme
- Actual employment generation stability?
- Intersectoral job competition?
- Consider cost effectiveness
- Will it work elsewhere?
- Payment system may exclude ultra poor
- Training of local community
11.3.2 REPORTING BACK: GROUP 2 ON COFFEY’S PAPER

White cards: areas of agreement with the author
- Opportunities for labour employment
- Inappropriate equipment
- Accessibility problems
- Solid waste a big problem
- Integrate appropriate collection and disposal
- Ineffective use of labour
- Indecent and hazardous work conditions
- Tailored specific solutions

Red cards: areas of disagreement
- Occupational health
- Only municipal waste

Yellow cards: key recommendations that are important in defining best practice
- Create opportunities for SMEs
- Awareness campaign
- Legislation enforcement
- South-south technology transfer
- Reduce: Re-use; Recycle; Recover
- Land use planning
- Environment policy
- Public-private partnership
- Stakeholders participation

Blue cards: additional key points that contribute to the theme
- Balanced environment solution
- Finish the presentation
- Penalty and reward
- Other types of waste
- Private sector contracting (difficult!)
- Disposal problem! Solution??
- Exploitation of poorest
- Solutions???

11.3.3 REPORTING BACK: GROUP 3 ON SCHAFFNER’S PAPER

White cards: areas of agreement with the author
- All stages of project
- A need for environmental and social impact assessment tool
- Inclusion of environmental and social issues
- Gender consideration

Red cards: areas of disagreement
- Other method instead of questionnaire
• Participative methods preferred
• Responses to questionnaires may not be the right measures to impacts

Yellow cards: key recommendations that are important in defining best practice
• At what level is the information?
• The information from the questionnaire ‘must’ benefit the community
• Need to take views of beneficiaries on board
• Policy required
• Appropriate standards with local resources
• Integration of economic and social impact
• Who is the information for?
• One questionnaire is not enough
• HIV/AIDS is a social issue
• Compliance with other laws
• Combination of methods including questionnaire is preferred

Blue cards: additional key points that contribute to the theme
• Participatory methods preferred
• Weakness of the ‘soft indicators’ cost
• Actual construction and maintenance cost shall be incorporated with the monetary values of impact
• Women employment does not equal cultural impact
• Question of social issue: who to whom?
• Care needed in voluntary work
• Environmental impact for whom?
• The study should focus more on guidelines
• Impact on historical background
• Disability versus accessibility
• How to solve environmental impacts?

11.3.4 Reporting back: Group 4 on Carvalho’s paper

White cards: areas of agreement with the author
• Useful for spot improvement
• Consideration of life-cycle costs
• Need to provide reliable access
• Improve in situ material—stabilisation
• Need for stabilisation

Red cards: general comments

NB. For this paper, participants felt they had no basis for disagreement with Pedro’s research, hence they preferred just to comment.
• Not appropriate in other countries
• May not be cost-effective elsewhere (haulage distance; relative costs of other agent)
• Failure without traffic possible if not protected with grass

Yellow cards: key recommendations that are important in defining best practice
• Cement stabilisation cheap but difficult to maintain
• Applicable for erosion protection on other sections
• Different technical problems need different technical solutions
• Procedure for calculating life cycle cost needed
• Use existing track if passable before upgrading
• Consider other forms of stabilisation
• Guard against pollution from leaching of materials
• Need for method applicable by small contractors

Blue cards: additional key points that contribute to the theme
• More environmental deterioration than traffic
• 2% bit emulsion reduces erosion and has potential for unpaved roads
• Technology can be applied by all types of contractors
• Emulsion stabilisation also applicable with gravels
• Dust reduction provides visibility and environment enhancement
11.4 Annex 4: Group findings on Contracting Issues

11.4.1 REPORTING BACK: GROUP 1 ON ENGELIEN’S PAPER

White cards: areas of agreement with the author
- Entrepreneurial motivation is key selection criterion
- Prompt payment vital
- Should be enough work available for trained contractors
- Contractor spirit cannot be trained
- Mentorship and monitoring process should be part of training process

Red cards: areas of disagreement (or concern, ‘but’)
- Is this labour-based?
- Tendering by non-trained companies may compromise quality

Visiting group points:
- Label does not matter max labour employed
- Contractor development programmes used to solve/absolve government problems
- Why are we re-inventing the wheel

Yellow cards: key recommendations that are important in defining best practice
- Need to raise awareness of opportunities among local communities
- Registration of contractors is very important
- Consider expansion of existing contractors instead of creating more
- Bonding process on individuals to undergo training programme

Visiting group points:
- Reduces selection criteria for local people
- Train for local people to start company from scratch
- Open up to non-indigenous contractors
- Import trained LB contractors to mentor local ones
- Train LB contractor for routine maintenance
- No bonding

Blue cards: additional key points that contribute to the theme
- Petty contractor = 1 contractor and 10 labourers
- Develop petty contractors for routine maintenance
- Research into appropriate technology for use by labour-based contractors
11.4.2 REPORTING BACK: GROUP 2 ON FERNANDES’ PAPER

White cards: areas of agreement with the author
- Money not available for contractors
- Money not timely
- Administrative setbacks in companies
- Contractors associations a good move

Red cards: areas of disagreement
- Two years sufficient for comprehensive contractor training

Yellow cards: key recommendations that are important in defining best practice
- Timely payments
- Include late payment clauses
- Govt policy > poverty alleviation > LBT; but move to demand rather than supply
- Work guarantee for trained contractors
- Foreign-citizen contractor partnership
- Associations be separate from registration bodies
- Government to be involved in training

Visiting group points:
- Possible dissolution of LB principles
- Joint venture between small and large contractors

Blue cards: additional key points that contribute to the theme
- Penalties and bonuses
- Application of LBT in other sectors
- Scoring on health and safety issues
- Training of consultants in design and supervision of LBT

Visiting group points:
- Diversification of training to cover other sectors
- Advance payments to paying authority to reduce delays
- Decentralise streaming of pay procedures per annum to contractor
- Governments move to enabling role
- Need for mentoring of LB contractors after training
- Define type of training

11.4.3 REPORTING BACK: GROUP 3 ON DEELEN AND BONSU’S PAPER

White cards: areas of agreement with the author
- Agreed with the presented options
- N.B. Leased equipment cannot be hired out
Red cards: areas of disagreement
- Writers down-played role of supplier in risk assessment
- Leasing does not necessarily guarantee good maintenance

Yellow cards: key recommendations that are important in defining best practice
- Increase mobilisation advance for large contracts
- Consider maintenance contracts in leasing option
- Lower risk of leasing, e.g. by registering contractors
- Contractors should have a say in choice of equipment
- Equipment choice should be governed by minimum requirement
- Leasing can be used in combination with other options
- Link leasing period to potential future work load

Visiting group points:
- Contractors associations can help negotiating
- Timing of procurement
- Leasing companies not competitive due to uncertainty of business opportunities
- Examples for Govt funded projects

Blue cards: additional key points that contribute to the theme
- Consider direct hire option
- Government intervention versus market forces in contractor development
- Consider local solutions, e.g. concrete roller
- Viability of contractors’ association plant pool questionable
- Empower end users where possible

Visiting group points:
- Training of operators
- Option of sub-contracting

11.4.4 REPORTING BACK: GROUP 4 ON URIYO’S PAPER

White cards: areas of agreement with the author
- Need to encourage LB contractors
- Policy is not practice: need a deliberate policy to help LB contractors
- New category for LB contractors
- Need to carefully determine classes re equipment
- Encourage diversification beyond road sector
- Maximise employment; maintain standards
- Contractors need to lobby for work
- The owner (at least) of the company needs technical knowledge

Visiting group points:
- Contractors are not old-fashioned cheats!!
- Only registered LB contractors can tender for LB contracts
- Need policy for indigenous LB contractors, leading to social benefits (Kenya)
- LB registration is an extra ‘benchmark’ for contractor; i.e. big civil contractor with LB capability, not just small contractors

**Red cards: areas of disagreement**
- Specific criteria will restrict LB contractors
- What opportunities for contractor to lease equipment?

*Visiting group points:*
- Tackle from policy perspective, not registration but LB contracts; i.e. specify work to be done by LB methods
  - What is the objective?
  - Category ‘protects’ contractor unfairly
  - Create opportunities for LB contractors

*Visiting group points:*
- Promote small-scale contractors, not just LB?
- Need to protect LB work, e.g. define roads to be maintained by LB or % of budget
  - Limit contracts to LB works?

*Visiting group points:*
- Why define LB methods? LB should win as most cost-effective. Why doesn’t it? Small contractors need support
- Use a weighting in evaluation system (margin of preference)?

**Yellow cards: key recommendations that are important in defining best practice**
- Contract size for LB contractors
- What level of knowledge base to ensure standards?
- Need to be flexible on equipment needs
- Win work then lease equipment
- Need to check contractor on site (not just good at registration)
- Include equipment required for job in Conditions of Contract
- Need to define institutional arrangements to mainstream LB
- Govt should define need for implementation of LB works
- Contractor needs training, especially financial
- Need county-wide uniform training, plus tailored to local situation—flexible
- Need to train supervisors
- Want a uniform ‘product quality’

*Visiting group points:*
- All organisations should use registered contractors
- LB contractors not just for roads—register again?
**Blue cards: additional key points that contribute to the theme**

- Measures to ensure all contractors have equal and fair opportunities to tender
- Need to encourage female contractors, supervisors, etc
- HIV/AIDS prevention and awareness
- Growth of LB contractors to equipment based, but still appreciate LB issues
- Measures to encourage social compliance included in registration or pre-qualification (track record) or Conditions of Contract
- De-register for poor performance
- Need social issues in BoQ (Politically Correct items?)

**Visiting group points:**

- System for feedback on contractors required
11.5 Annex 5: Group findings on Institutional Issues

11.5.1 Reporting back: Group 1 on Bitwayiki’s paper

White cards: areas of agreement with the author
- Technical and financial capacity prerequisite at local level
- Donor coordination at central level
- Multi-sectoral approach
- Policy implementation

Visiting group points:
- Decentralise Government does work because they are responsive (Uganda)

Red cards: areas of disagreement
- Downplayed recommendation of White Paper
- Regions/provinces may be desirable in other countries

Visiting group points:
- Decentralisation: straight down!!

Yellow cards: key recommendations that are important in defining best practice
- Consider establishing a national labour-based advisory unit
- Need to balance political and technical interests
- Sensitise decision makers at all levels
- Need for inter-district coordination
- Establish clear criteria for distributing resources to all types of road network, e.g. urban, rural, and unclassified

Blue cards: additional key points that contribute to the theme
- Establish national information collection and dissemination centres
- Facts on impact of LBT should be disseminated
- Governments and opposition do not argue if there is development
- Empowered communities can resist political manipulation
- Clarify role of private sector in decentralisation
- Explore alternatives to donor funding

Visiting group points:
- LBT is not new to us (repackaged)
11.5.2 **REPORTING BACK: GROUP 2 ON DONE’S PAPER**

**White cards: areas of agreement with the author**
- Basic principles of the model are appropriate
- Provision of most appropriate level of improvement
- Involvement of local population important
- Using social factors for road prioritisation

**Red cards: areas of disagreement**
- Methodology a bit complicated
- Roughness appropriate condition assessment criteria?
- Comment: same initial funds for each district: Big or Small

**Visiting group points:**
- Need leads to money leads to work is all right
- Money leads to need leads to work is not all right
- Specify road standard to which applied

**Yellow cards: key recommendations that are important in defining best practice**
- Mapping should be included in the system
- Costs of the prioritisation should be reduced
- Which community? Political or other?
- Social benefits: lead to IRAP
- Connection to the network should be considered
- Simpler parameters issued to the communities can do the job more cheaply

**Visiting group points:**
- Funds should be provided specifically for LBT

**Blue cards: additional key points that contribute to the theme**
- Consider expanding to multi-sector planning
- Institutionalisation issues should be considered
- Prioritisation should include maintenance: who does it? Who pays for it?
- Process to be managed by districts in future
- Result of study could be used to work out a simple formula
- Considerations on mines and demining problems

**Visiting group points:**
- What best way to prioritise maintenance
- Need for coordinated application from central to district level for multi-sector application of LBT using IRAP
- Need for LBM coordination unit
- Planning system should match institutional environment
11.5.3 REPORTING BACK: GROUP 3 ON MABENGA’S PAPER

White cards: areas of agreement with the author
- Community involvement
- Private sector involvement
- Community and private sector ownership

Visiting group points:
- Very innovative way of mobilising more resources from the public for roads

Red cards: areas of disagreement
- Does not address poverty exclusively
- May be used for political gain

Visiting group points:
- Poor communities are likely to be excluded
- Possible contradiction between decent work agenda and labour contribution

Yellow cards: key recommendations that are important in defining best practice
- Institutional framework for control
- Build local capacity for maintenance costing and supervision
- Enforce axle load control

Visiting group points:
- Vested interests

Blue cards: additional key points that contribute to the theme
- Explore equity options

Visiting group points:
- Do roads reduce poverty?
- Including gender

11.5.4 REPORTING BACK: GROUP 4 ON WATTAM’S PAPER

White cards: areas of agreement with the author
- NCR do not lend themselves to traditional cost/benefit
- Localised improvement
- Appropriate planning

Red cards: areas of disagreement
- Difficult to manage taxation

Yellow cards: key recommendations that are important in defining best practice
- Strong organisation
- Community motivation
- Community participation in maintenance
- Accountability
- Appropriate funds according to prioritisation

*Visiting group points:*
- Govt should earmark funds for NCRs
- NCR should be classified

*Visiting group points:*
- Classification of NCRs is a non-ending process
- Performance contract is a solution

*Visiting group points:*
- Performance standards to be tailored to conditions

**Blue cards: additional key points that contribute to the theme**
- Project should be an asset rather than a liability
- Abandoned NCR can cause erosion
- Appropriate planning
- What should Road Fund cover?

*Visiting group points:*
- NCR to be funded through cost-sharing
- Demining is a major problem inherent to NCR
- Public-private partnerships for road financing
- Govt should be a regulatory body
- Cost of bridges on NCR? Who pays?
- Need for mechanisms and finance for local level planning, including prioritising NCRs within their needs (holistic planning)
11.6 Annex 6: Group findings on Social Issues

11.6.1 Reporting Back: Group 1 on Watermeyer’s Paper

White cards: areas of agreement with the author
- Cost premium for inclusion of secondary objectives (social) is minimal
- Targeted procurement is a powerful and effective tool
- Targeted procurement could be an effective tool in most countries

Red cards: areas of disagreement
- Donors have their own procurement procedures

Yellow cards: key recommendations that are important in defining best practice
- Objectives for targeted must be made very clear
- Targeted procurement should ensure the whole sector remains viable
- Research into ‘cost’ for inclusion of social objectives needed
- Targeting should be flexible and could change over time; monitor the effects
- Resources to monitor social objectives must be made available
- Need to change the mindset of the engineer, to promote and understand social objectives (in procurement)

Blue cards: additional key points that contribute to the theme
- Need for national procurement policy
- Conflict in targeting between national and regional interests
- Enforcement of social objectives?
- Risk for abuse in targeted procurement
- Targeting one group discriminates against another
- What is the role of the engineer in the procurement process?

11.6.2 Reporting Back: Group 2 on Aguilera and Balate’s Paper

White cards: areas of agreement with the author
- AIDS awareness programmes well received
- Allocation of funds to AIDS awareness
- Subcontracting the social issues to ‘Experts’
- Uganda: high political support; large capacity; funding; mainstreaming
Red cards: areas of disagreement
- Incentives for achieving targets on number of women

Yellow cards: key recommendations that are important in defining best practice
- Inclusion of social issues into contracts
- EIA to include AIDS risk assessment and mitigations
- Increased skills to mainstream HIV/AIDS
- Integration of roads and transport
- Consideration of work allocation in line with other chores, especially for women
- Concern for those already infected and those taking care

Blue cards: additional key points that contribute to the theme
- Political will and commitment

11.6.3 Reporting back: Group 3 on Pereira and Momade’s paper

White cards: areas of agreement with the author
- Endorse the establishment of monitoring groups
- Consultative process and the established institutional framework

Red cards: areas of disagreement
- Cost opportunity for using monitoring committee to oversee safety and health
- Demining required?? In other areas

Yellow cards: key recommendations that are important in defining best practice
- Consideration for family based recruitment rather than individual based
- Develop monitoring capacity within government and the community

Blue cards: additional key points that contribute to the theme
- Consider the impact of female LBT on crop production
- Ensure project sustainability through maintenance programme and Govt funding
- Better use unemployed or un-engaged (farmers) labour
- Continuous public awareness campaigns on the process

11.6.4 Reporting back: Group 4 on Attalla’s paper

White cards: areas of agreement with the author
- Labour-based contracting can be used in many sectors
- Cost per job opportunity is an important statistic
- Infrastructure not prioritised by employment creation alone
- When percentage of labour is set by donors, figures will be fixed

**Red cards: areas of disagreement**
- When labour requirements are fixed, contractors may not use labour efficiently
- Solid waste can also be included

**Yellow cards: key recommendations that are important in defining best practice**
- Solid waste collection can be labour-based when a disposal system is defined
- Indirect employment creation should be considered
- Need for training local consultants

**Blue cards: additional key points that contribute to the theme**
- Labour-based roads beyond demonstration
11.7 Annex 7: Seminar evaluation

At the end of Days 1, 2, and 4, participants were invited to express their overall satisfaction or otherwise with how the day had gone, by means of affixing stickers to a choice of three sheets; one with a smiling face, one with a blank expression, and one with a turned-down mouth. The results were as follows:

**End of day one assessment**
- Good: 97
- Satisfactory: 36
- Unsatisfactory: 3

**End of day two assessment**
- Good: 76
- Satisfactory: 43
- Unsatisfactory: 1

**End of day four assessment**
- Good: 75
- Satisfactory: 25
- Unsatisfactory: 3
11.7.1 Questionnaire

Personal
Which country are you from? ________________________________________________________________
For how many days did you participate in the Seminar? ______________________________________
Where did you stay (circle your choice)? Rovuma Holiday Inn Other

How did you rate the seminar facilities (circle your choice)?
Accommodation: Excellent Good Fair Poor
Rovuma venue: Too grand About right
Conference rooms: Excellent Good Fair Poor
Welcome dinner: Excellent Good Fair Poor
Conference lunches: Excellent Good Fair Poor
Movement between rooms: Fine Too slow
Translation facility: Excellent Good Fair Poor
Equipment: Excellent Good Fair Poor

How did you rate the management of the seminar (circle your choice)?
The Seminar as a whole: Excellent Good Fair Poor
Papers presented: Excellent Good Fair Poor
Plenary sessions and discussions: Excellent Good Fair Poor
Facilitated group discussions: Excellent Good Fair Poor
Field trips: Excellent Good Fair Poor
Number of delegates: Too many About right

Seminar Planning (circle your choice)
How did you learn about the Seminar?
By invitation Through personal contacts Through the ASIST Bulletin Other
How did you rate Seminar publicity? Excellent Good Fair Poor
How was your booking handled? Very well Well Poorly
When would you prefer to receive the papers? In advance On arrival
Was the number of papers? Too many About right Too few
How did you rate the standard of the papers? Excellent Good Fair Poor
How did you rate the standard of the presentations? Excellent Good Fair Poor
How did you rate the level of discussion? Excellent Good Fair Poor

Future Seminars
What theme would you like to focus on for the next Seminar? ________________________________
What would be your preferred length for each discussion group period? _______________________
How many papers do you think should be presented? _________________________________
What format should be used for the presentations? _________________________________
In which country should the next Seminar be held? _________________________________

Any other comments or suggestions?
_____________________________________________________________________________________________
11.7.2 RESULTS

Questionnaires were completed by 116 participants.

**Personal**

Respondents came from:

<table>
<thead>
<tr>
<th>Country</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botswana</td>
<td>1</td>
</tr>
<tr>
<td>Cambodia</td>
<td>1</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>3</td>
</tr>
<tr>
<td>Ghana</td>
<td>4</td>
</tr>
<tr>
<td>Kenya</td>
<td>4</td>
</tr>
<tr>
<td>Lesotho</td>
<td>7</td>
</tr>
<tr>
<td>Malawi</td>
<td>7</td>
</tr>
<tr>
<td>Mozambique</td>
<td>25</td>
</tr>
<tr>
<td>Namibia</td>
<td>2</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>1</td>
</tr>
<tr>
<td>South Africa</td>
<td>7</td>
</tr>
<tr>
<td>Sweden</td>
<td>1</td>
</tr>
<tr>
<td>Switzerland</td>
<td>2</td>
</tr>
<tr>
<td>Tanzania</td>
<td>23</td>
</tr>
<tr>
<td>Thailand</td>
<td>1</td>
</tr>
<tr>
<td>Uganda</td>
<td>6</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>2</td>
</tr>
<tr>
<td>Zambia</td>
<td>7</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>10</td>
</tr>
</tbody>
</table>

Two respondents did not indicate their country.

Number of days the respondents participated:

<table>
<thead>
<tr>
<th>No. of days attended</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>84</td>
</tr>
<tr>
<td>4</td>
<td>18</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
</tr>
<tr>
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<td>1</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Ten respondents did not indicate the number of days they participated.

Hotel accommodation:

<table>
<thead>
<tr>
<th>Hotel</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rovuma Hotel</td>
<td>32</td>
</tr>
<tr>
<td>Holiday Inn</td>
<td>18</td>
</tr>
<tr>
<td>Other</td>
<td>54</td>
</tr>
</tbody>
</table>

Two respondents did not indicate their hotel.
How did you rate the seminar facilities?

**Accommodation**

<table>
<thead>
<tr>
<th>Rating</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>29</td>
</tr>
<tr>
<td>Good</td>
<td>52</td>
</tr>
<tr>
<td>Fair</td>
<td>19</td>
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<tr>
<td>Poor</td>
<td>3</td>
</tr>
<tr>
<td>No comment</td>
<td>13</td>
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</tbody>
</table>

**Rovuma Venue**

<table>
<thead>
<tr>
<th>Rating</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too grand</td>
<td>5</td>
</tr>
<tr>
<td>About right</td>
<td>81</td>
</tr>
<tr>
<td>No comment</td>
<td>50</td>
</tr>
</tbody>
</table>

**Conference Rooms**

<table>
<thead>
<tr>
<th>Rating</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>Good</td>
<td>64</td>
</tr>
<tr>
<td>Fair</td>
<td>6</td>
</tr>
<tr>
<td>Poor</td>
<td>0</td>
</tr>
<tr>
<td>No comment</td>
<td>4</td>
</tr>
</tbody>
</table>

**Welcome reception**

<table>
<thead>
<tr>
<th>Rating</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>Good</td>
<td>48</td>
</tr>
<tr>
<td>Fair</td>
<td>2</td>
</tr>
<tr>
<td>Poor</td>
<td>30</td>
</tr>
<tr>
<td>No comment</td>
<td>30</td>
</tr>
</tbody>
</table>

**Conference lunches**

<table>
<thead>
<tr>
<th>Rating</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>30</td>
</tr>
<tr>
<td>Good</td>
<td>70</td>
</tr>
<tr>
<td>Fair</td>
<td>13</td>
</tr>
<tr>
<td>Poor</td>
<td>1</td>
</tr>
<tr>
<td>No comment</td>
<td>2</td>
</tr>
</tbody>
</table>

**Movement between rooms**

<table>
<thead>
<tr>
<th>Rating</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fine</td>
<td>93</td>
</tr>
<tr>
<td>Too slow</td>
<td>11</td>
</tr>
<tr>
<td>No comment</td>
<td>12</td>
</tr>
</tbody>
</table>

**Translation facilities**

<table>
<thead>
<tr>
<th>Rating</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>28</td>
</tr>
<tr>
<td>Good</td>
<td>69</td>
</tr>
<tr>
<td>Fair</td>
<td>12</td>
</tr>
<tr>
<td>Poor</td>
<td>0</td>
</tr>
<tr>
<td>No comment</td>
<td>7</td>
</tr>
</tbody>
</table>

**Equipment**

<table>
<thead>
<tr>
<th>Rating</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>30</td>
</tr>
<tr>
<td>Good</td>
<td>71</td>
</tr>
<tr>
<td>Fair</td>
<td>8</td>
</tr>
<tr>
<td>Poor</td>
<td>0</td>
</tr>
<tr>
<td>No comment</td>
<td>7</td>
</tr>
</tbody>
</table>
How did you rate the management of the seminar?

**Seminar as a whole**

- **Excellent**: 35
- **Good**: 73
- **Fair**: 3
- **Poor**: 0
- **No comment**: 5

**Comments**
- The programme was congested, which left participants tired, and may have affected deliberations. The programme and length of the seminar should be reviewed.
- The seminar should be four days long in total including one day for site visits.
- Better time management needed.

**Papers**

- **Excellent**: 15
- **Good**: 81
- **Fair**: 19
- **Poor**: 0
- **No comment**: 1

**Comments**
- The rotation of the groups during discussion resulted in very little time to discuss the papers effectively.
- Facilitators should allow participants to fully express their views without cutting them off prematurely.
- Local experts and practitioners should be more involved in the facilitation and moderation for technology transfer and capacity building.
- Professional facilitators should be used in group sessions.
- Discussion groups should be in separate rooms.
- Groups should be defined at the beginning of the seminar and remain for the entire length of the seminar.
- Discussion groups should be smaller.

**Plenary sessions and discussions**

- **Excellent**: 17
- **Good**: 77
- **Fair**: 20
- **Poor**: 0
- **No comment**: 2

**Comments**
- Facilitators should allow participants to fully express their views without cutting them off prematurely.
- Local experts and practitioners should be more involved in the facilitation and moderation for technology transfer and capacity building.
- Professional facilitators should be used in group sessions.
- Discussion groups should be in separate rooms.
- Groups should be defined at the beginning of the seminar and remain for the entire length of the seminar.
- Discussion groups should be smaller.
**Comments**

- Loud speakers/microphones should be used during the field visits to facilitate communication.

---

**Comments**

- Participation from African countries should be encouraged.
- African experts need to be encouraged to attend, as opposed to Western experts.
- More women should attend the seminar.
Seminar planning

How you learned about the seminar

<table>
<thead>
<tr>
<th>Method</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invitation</td>
<td>61</td>
</tr>
<tr>
<td>Contacts</td>
<td>17</td>
</tr>
<tr>
<td>ASIST bulletin</td>
<td>8</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
</tr>
<tr>
<td>No comment</td>
<td>20</td>
</tr>
</tbody>
</table>

Comment
- Better marketing needed. Important institutions should be targeted.

Seminar publicity

<table>
<thead>
<tr>
<th>Rating</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invitation</td>
<td>61</td>
</tr>
<tr>
<td>Contacts</td>
<td>41</td>
</tr>
<tr>
<td>ASIST bulletin</td>
<td>6</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
</tr>
<tr>
<td>No comment</td>
<td>10</td>
</tr>
</tbody>
</table>

Comment
- Advance payment of fees should be made compulsory.

Handling of booking

<table>
<thead>
<tr>
<th>Rating</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very well</td>
<td>61</td>
</tr>
<tr>
<td>Well</td>
<td>41</td>
</tr>
<tr>
<td>Poorly</td>
<td>10</td>
</tr>
<tr>
<td>No comment</td>
<td>4</td>
</tr>
</tbody>
</table>

Comment
- The papers should be distributed in advance to those participants who confirm attendance. Or made available on the Internet in advance for downloading.

Receipt of papers

<table>
<thead>
<tr>
<th>Time</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>In advance</td>
<td>66</td>
</tr>
<tr>
<td>On arrival</td>
<td>39</td>
</tr>
<tr>
<td>No comment</td>
<td>11</td>
</tr>
</tbody>
</table>
### Seminar planning (continued)

#### Number of papers

<table>
<thead>
<tr>
<th>Rating</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too many</td>
<td>34</td>
</tr>
<tr>
<td>About right</td>
<td>73</td>
</tr>
<tr>
<td>Too few</td>
<td>2</td>
</tr>
<tr>
<td>No comment</td>
<td>7</td>
</tr>
</tbody>
</table>

#### Standard of papers

<table>
<thead>
<tr>
<th>Rating</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>11</td>
</tr>
<tr>
<td>Good</td>
<td>54</td>
</tr>
<tr>
<td>Fair</td>
<td>15</td>
</tr>
<tr>
<td>Poor</td>
<td>0</td>
</tr>
<tr>
<td>No comment</td>
<td>5</td>
</tr>
</tbody>
</table>

**Comments**
- The papers should be carefully reviewed to ensure that the target subject/theme is addressed properly.
- Improve quality of papers.

#### Standard of presentations

<table>
<thead>
<tr>
<th>Rating</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>17</td>
</tr>
<tr>
<td>Good</td>
<td>78</td>
</tr>
<tr>
<td>Fair</td>
<td>18</td>
</tr>
<tr>
<td>Poor</td>
<td>0</td>
</tr>
<tr>
<td>No comment</td>
<td>3</td>
</tr>
</tbody>
</table>

**Comments**
- Local project counterparts should be encouraged to do the presentations, as opposed to expatriate counterparts.
- The presenters should be given more time.
- The presentations should cover only the key points.

#### Level of discussion

<table>
<thead>
<tr>
<th>Rating</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>81</td>
</tr>
<tr>
<td>Good</td>
<td>16</td>
</tr>
<tr>
<td>Fair</td>
<td>14</td>
</tr>
<tr>
<td>Poor</td>
<td>0</td>
</tr>
<tr>
<td>No comment</td>
<td>3</td>
</tr>
</tbody>
</table>
**Future seminars**

**Theme for the next seminar**

Some 76 respondents proposed themes grouped broadly as follows:

<table>
<thead>
<tr>
<th>Main themes and related sub-themes</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labour-based technology in poverty reduction and PRSPs (poverty reduction strategy papers)</td>
<td>11</td>
</tr>
<tr>
<td>Best practices in labour-based technology and new innovations</td>
<td>9</td>
</tr>
<tr>
<td>Construction techniques, materials and standards (<em>i.e.</em> appropriate construction materials, alternative surfacing, spot improvements, design and construction of small bridges)</td>
<td>9</td>
</tr>
<tr>
<td>Diversification and integration of labour-based technology in non-road sectors</td>
<td>8</td>
</tr>
<tr>
<td>Mainstreaming labour-based technology (into government policy, education, training); the role of research in mainstreaming</td>
<td>8</td>
</tr>
<tr>
<td>Social issues (<em>i.e.</em> mainstreaming social issues into labour-based roadworks, employment, gender)</td>
<td>7</td>
</tr>
<tr>
<td>Contracting (<em>i.e.</em> gender issues, targeted procurement, private sector involvement)</td>
<td>5</td>
</tr>
<tr>
<td>Promotion and dissemination of labour-based technology (<em>i.e.</em> raising political awareness)</td>
<td>4</td>
</tr>
<tr>
<td>Implementation and labour management issues</td>
<td>3</td>
</tr>
<tr>
<td>Labour-based technology in sustainable development</td>
<td>3</td>
</tr>
<tr>
<td>Waste management</td>
<td>2</td>
</tr>
<tr>
<td>Labour-based technology in emergency situations</td>
<td>2</td>
</tr>
<tr>
<td>Research</td>
<td>1</td>
</tr>
<tr>
<td>Financial issues</td>
<td>1</td>
</tr>
<tr>
<td>Improving accessibility through infrastructure provision</td>
<td>1</td>
</tr>
<tr>
<td>Follow-up on issues raised in this seminar</td>
<td>1</td>
</tr>
</tbody>
</table>
Preferred length of time for group discussions
(94 responded)

<table>
<thead>
<tr>
<th>Length of time in hours</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
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<td>4</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
</tr>
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<td>1½</td>
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<td>¾</td>
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<td>⅓</td>
<td>5</td>
</tr>
<tr>
<td>¼</td>
<td>3</td>
</tr>
</tbody>
</table>

Comment/suggestion
- The sessions should end at between 15:00 and 16:00 hours to allow the participants time to digest the information gathered and/or to read through the next papers to be presented, to ensure effective contribution and participation.

Total number of papers that should be presented
(94 responded)

<table>
<thead>
<tr>
<th>No. of papers</th>
<th>No. of respondents</th>
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Format for presentations
The majority of those that responded indicated the same format used in this seminar should be used for future seminars.
Other comments included:

- Parallel sessions should be used.
- A mix of plenary presentations and discussions (say two) and multiple parallel session and discussion should be used.
- PowerPoint presentations should be used to highlight key points only.

**Choice of venue for the next seminar**

(89 responded)

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**Comments/suggestions:**

- What is the strategic direction of the seminar? This should dictate the theme and hence the host country to demonstrate the issues.
- The next seminar should be held in a country where it has not been previously held.
- The conference should be kept regional or at most African.
Other comments and suggestions

- Key publications displayed, *e.g.* the manuals from the Public Works Department of South Africa, should be distributed together with the proceedings to participants on CD-ROM.
- Past regional seminar proceedings should be distributed to the participants.
- Recommendations from the past seminar should be sent in advance to allow participants to prepare contributions and feedback.
- The review of the previous seminar statement achievements should be over more than one year, since it is difficult to assess progress after just a year.
- Circulate the list of participants at the beginning of the seminar, with a brief statement on what each person is involved in, to facilitate networking.
- Poster sessions should be used to expand on issues such as research initiatives, and new technology. The available time during breaks could be put to better use.
- The seminar statements/recommendations should be concluded at the end of each group of papers, when ideas/issues/recommendations are fresh in the minds of the participants.
- The host country should have some audiovisual, *e.g.* video or slide show, focusing on its country activities.
- There should be more active involvement from the host country; for example, the country team should present country policy, activities, issues, *etc.* and add on actions to be undertaken as a result of seminar deliberations.
- The seminar logo depicts an incorrect use of the pickaxe! The person should be using two hands to hold it, and not one.
- Leather seminar bags are preferred.
11.8   Annex 5: List of participants

In alphabetical order of last name.

The data contained in these tables has been extracted from the Registration Forms that the participants completed for the Secretariat.

The thirteen participants who have asterisks after their names facilitated the group sessions.
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Annex 6: Photographs

Opening Session

Plenary Session

Group Discussion