Employment intensive delivery of infrastructure – Egypt’s experience

Carl E. Berentsen, Norconsult AS

The Danida-funded technical assistance programme to Egypt’s Social Fund for Development (SFD) had two main objectives namely to contribute to employment creation, improved social services and improved infrastructure, particularly benefiting poorer segments of the population in parts of Upper Egypt; and to increase the capacity of SFD to serve as a vehicle for longer-term sustainable poverty alleviation.

Poverty reduction was the main priority of the programme and the employment-intensive approach (EIA), rural accessibility and development of local capacities formed the pillars on which the programme was based. The programme focused on developing local contractor capacity to build and maintain infrastructure, including road, water and irrigation infrastructure, through employment-intensive approaches. In less than three and a half years nearly 600 graduates emerged from the programme, representing various categories of contractors, private and public officials and community representatives.

The selection of trainees was considered crucial to the success of the programme. For the new contractors to succeed, they needed to possess a balance of the sometimes contradictory traits of the more free-spirited, risk-taking entrepreneur and the more conservative, methodical contractor.

The high unemployment rate of college graduates lead to the need to revise the more conventional approach used in selecting and training low-tech field experienced foremen, to meet the demand. Close to 1600 applicants collected the application forms through a nation-wide distribution. The selection and training logistics were designed to meet the project’s capacity of training 160 candidates from the country’s 19 poorest districts (“governorates”), divided into six training groups. The Government required that the programme represented the regional needs related to infrastructure and services contracts in areas where there was regional funding.

A major challenge both during the screening process and the training was to convince the communities that women could be involved and succeed. As the above table shows, all the women who were selected and entered the program graduated with honours and became successful contractors.

Integrating the newly trained contractors into the existing pool of more than 1000 established contractors, regional NGOs and various district associations while avoiding the image of favoritism, and developing a natural sense of teamwork, and “equal opportunities” also presented a challenge.
Taking labour-based technology forward – broadening the overall framework

The Millennium Development Goals do not identify infrastructure directly as being of significance for their achievement. However, several of them are significantly dependent on infrastructure. The achievement of universal primary education, reduction in child mortality, the improvement of maternal health for example, all are dependent on people having access to basic services. The physical aspect of this access is provided by infrastructure. In addition, the eradication of poverty is dependent to a greater or lesser extent on the creation of employment and thereby income. Infrastructure provides a major potential for employment creation.

In dealing with infrastructure sector the ILO has developed an approach which recognises the need to look at the framework in which infrastructure is planned and delivered so as to utilise its potential for participatory planning (and thereby better governance), local skills improvement and local entrepreneurial development and income generation.

Labour-based methods are just one way in which infrastructure can be delivered in a more pro-poor manner. Some would say that labour-based methods have become mainstream. The arguments in favour of labour-based are well known. However, if labour-based methods are so beneficial, why are they not more generally adopted?

Over the years, several ideas have been put forward. Engineers are not trained in the use of labour-based methods and therefore they have difficulty adopting them. There needs to be political commitment so that engineers would feel that they were part of a movement that was assisting their country. Labour-based methods are seen as a second rate, backward technology; that these methods smacked of colonialism or even worse exploitation. All these arguments may of course have validity. However, if the benefits of labour-based methods are as obvious as we believe, surely the obstacles would have been overcome?

Might it not be that we have to concentrate on a broader audience on a more general framework within which labour-based methods are applied? By applying more effort to the overall framework within which rural infrastructure is implemented, it may be that the obstacles to the acceptance of labour-based methods and other initiatives to promote the use of local resources for infrastructure can be overcome.

Decentralisation is a major theme of government policy in many countries. In planning rural infrastructure for which they are responsible, local authorities are keenly aware that is in their interest to use local resources. When programmes are directed from the centre, often the only parties supporting labour-based methods are the donor and the rural people who have no voice at this level. With decentralisation the list of potential proponents not only grows to include local officials but also the major beneficiaries are closer to the decision making bodies.

Over the last twenty five years it has been clearly demonstrated that labour-based methods are technically and economically viable. Labour-based is accepted and acceptable, however, it is still not mainstream. This is not because of any fault with the technology itself. If anything it is because we have concentrated too much on the technology and too little on the environment and the framework within which we attempt to introduce these techniques.

This issue seeks to illustrate the application of labour-based technology (LBT) in a range of infrastructure works. The centerfold presents the Arusha seminar statement drawn up by participants at the 10th Regional Seminar for Labour-based Practitioners held in October 2003. The statement outlines strategies through which LBT can be mainstreamed and promoted.

Geoff Edmonds
Programme Co-ordinator,
ASIST Asia-Pacific
Training modules and training material
The training programme, modules and material were based on previous successful projects and tailor-made to the local conditions, and government and donor requirements. The programme was made up of eight modules and amended as the training progressed over the three years in the various districts.

This material, which is in Arabic, is now being used in efforts to rebuild other countries in the Middle East region.

Programme achievements
Cost effectiveness of the approach
The proper use of labour-based methods brought project costs down in all the works implemented i.e. road, water and irrigation works nation-wide. As a result of the training the unit costs of contracts dropped by 6.3% for road construction and by 16.4% for the irrigation canal improvements. These savings are primarily due to lower overheads, better cost control and planning, and more efficient use of labour on the part of the new contractors.

Increased competition created by the more efficient and highly motivated entrepreneurs also pushed the established contractors to adopt labour-based methods and make their operations more efficient, reducing capital costs across the board.

Local capacity building and outputs
A total of 152 young contractors graduated and were all registered with the Contractors’ Association. Each completed between one and four different construction contracts in their new fields of expertise during the training. These contracts ranged from construction or maintenance of roads, water distribution projects, irrigation projects, plus a smaller number of building maintenance contracts.

In addition, the programme also realized the need of conducting parallel tailor-made courses for active established regional contractors, representatives of the communities through NGOs, participants from intermediary agencies, as well as governmental public works implementation units. A total of 440 participants were trained through short seminars, and involvement in actual contracts either administratively or in implementing the works.

Poverty alleviation
Although it is difficult to ascertain and quantify the impact of the infrastructure projects on the communities, a report commissioned by the Danida team in May 2000 on poverty alleviation\(^1\) indicates that the three kinds of infrastructure projects implemented by the labour-based contractors (road construction, irrigation canal cleaning and covering, and potable water supply systems) can clearly be expected contribute to poverty alleviation. This report identifies eleven priority results for poverty alleviation projects:
1. Increased household revenue for low-income and poor households.
2. Increased household revenue for ultra-poor households, especially those headed by women.
3. Increased employment or household income-generating activities for women in low-income, poor and ultra-poor households.
4. Increased caloric and plant protein consumption in poor and undernourished households, especially households headed by women with young children.

---

\(^1\) LaTowsky R. Poverty Targeting to the Community Level, Poverty Alleviation Appraisal of Proposed Project Types and NGO Seed Funding Projects, TASFD, 2000 (mission report).
5. Improved health status and preventative health practices in households of low-income and poor mothers and young children.
6. Reduced exposure to key vectors of community morbidity, especially for poor and low-income households.
7. Increased prevalence of literacy among women.
8. Increased enrolment and completion of primary education among girls.
9. Enhanced public respect through reduced dependence on charity.
10. Increased access by the poor to information for greater participation in community decision-making.
11. Significantly enhanced access to opportunities and resources to achieve the ten priority results.

As can be seen in the table below, excerpted from this report, all three types of infrastructure projects implemented under the training program can be expected contribute to these results and have, it is believed, made some substantial contributions to achieving some of these results in the governorates in which the program was implemented.

### Expected poverty alleviation results of infrastructure interventions

<table>
<thead>
<tr>
<th>Result Number</th>
<th>Income &amp; Employment</th>
<th>Health Status</th>
<th>Education</th>
<th>Respect, Influence</th>
<th>Access</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road Construction</td>
<td>1 2 3 4 5 6 7</td>
<td>8 9 10</td>
<td>11</td>
<td>Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canal Covering</td>
<td>2 1 1 1 0</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Domestic Water Connections</td>
<td>1 0 0 0 0</td>
<td>2 3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>9</td>
</tr>
</tbody>
</table>

This table presents the likely contribution of each of the project types to each of the priority results for poverty alleviation. The sum of these individual scores is the cumulative index of the project's likely overall contribution to poverty alleviation in Egypt.

The scoring uses a scale of 0-3 for each result. A score of 3 indicates that the likely contribution of that project to a given result is both high in its potential for significant poverty alleviation impacts and high in its potential for effective implementation. A score of 0 on the other hand, indicates that the project will likely have either low potential for impact on poverty alleviation or low potential for effective implementation. Scores of 1-2 are intermediate scores, indicating a range of expected levels of poverty alleviation impact and a range of probability for effective implementation.

### Employment creation

The creation of productive and sustained employment was one of the criteria for the projects implemented. The following table shows how the employment increased drastically as the training progressed and the contractors were awarded contracts after successful tenders.

### Environmental impact

In general, there were significant positive environmental impacts resulting from the three types of public works projects implemented by the contractors trained under this project, though there are potential negative impacts as well.

Road projects: One of the most visible positive impacts of roads projects is the reduction of dust in surrounding areas, which improves crop productivity and reduces dust-related health problems particularly for children. The economic benefits of roads (increased internal trade, better communication and transport facilities, and increased employment opportunities) have an indirect environmental impact in that they may help to decrease migration to urban areas where over-crowding contributes to significant environmental problems.

One of the greatest potential negative environmental impacts of roads is the disruption of water flows. Others include the risk of uncontrolled resettlement along the road, for instance the growth of an informal market or other commercial activities, and increased noise and air pollution. None of these are believed to be significant problems at any of the road works sites associated with this program.

Potable water projects: These projects generally supply water to consumers for domestic use, for example drinking, cooking and washing, and for livestock and sanitary purposes. The key benefit of domestic water supply is improved public health through the reduction of diseases caused by bacteria, viruses, protozoa and helminthes. However, there are potential negative impacts such as those related to wastewater.

continued on page 9
Diversified use of labour-based technology (LBT) in Nicaragua

Raúl Fajardo, Co-ordinator, Project Pro-EMPLÉO, Nicaragua

The Pro-EMPLÉO Project

In November 2001, the Government of Luxemburg funded a project called Pro-EMPLÉO in Nicaragua. Pro-EMPLÉO stands for the Promotion of Local Employment and Income through the use of Labour Intensive Technologies and the Development of Small and Micro Enterprises (SMEs) in Public Works and Local Development Programmes. Pro-EMPLÉO’s development objective is to contribute to the alleviation of poverty in poor rural communities through employment generation in the execution of local infrastructure investment and development projects. This objective is achieved through promoting the involvement of SMEs and the use of local resources, especially human resources.

The project helps participating municipalities to develop competencies to identify, design, contract and supervise labour-based public works and local development projects, and tries to incorporate policies in the Nicaraguan Strategy for Poverty Reduction to promote the implementation of local public works and local development projects through involvement of local communities and contractors using local resources.

As the project does not have funds for investments, it works with public organisations and cooperative agencies that have resources for infrastructure construction in rural towns and cities. Pro-EMPLÉO signs agreements with these organisations and provides the technical assistance for the direction of the works using labour-based technology (LBT). This special situation has created many opportunities for the diversified use of LBT.

Diversified use of LBT

In the two years of operation, one rural road has been constructed, several streets paved and several foot bridges and housing projects have been built. In these projects, different materials like bricks, mud bricks and concrete blocks have been used according to their availability in the area. In one project, a brick and mud roof tile factory was built to provide the required construction materials. The project has also developed two water supply systems, constructed drainage channels, river defences and latrines. A couple of projects to protect areas facing the risk of environmental degradation are underway. Most of the construction works have been done through contracting local small contractors or people from the community. Recently, four community-led projects have been started.

Impact

Several impact studies have been performed on the finalised projects. The findings of the projects show that LBT is a very good alternative in diverse types of construction works and settings. The findings also conclude that in all of the projects, costs were less than projects using equipment-based technology (EBT) and non-local materials. The quality of work of the local contractors was better or equal to similar work done by contractors from Managua (Nicaragua’s capital).

Benefits

The main benefits from the construction projects were:

- employment generation;
- improved local development — technical staff from the municipalities are better able to identify, design, contract and supervise labour-based public works and local development projects;
- greater ownership by the community which results in better maintenance and improved community organisation;
- new skills and abilities acquired by local contractors and workers (most of the projects have been executed in rural areas where people only have working experience in agriculture, hence the new skills gained give them a better chance of finding a job outside the agricultural sector); and

continued on page 7

Drain construction using stone and soil-cement in Ocota 1, Nicaragua

Source: R. Fajardo
Routine road maintenance micro enterprises — an option for employment generation and capacity building

Juan Contreras and Serge Cartier van Dissel, ILO/EIIP, Latin America, Peru

In Ecuador, the first of a series of national studies on the impact of routine road maintenance micro enterprises was undertaken. Three different programmes were compared: the UCV\(^1\) programme for rural road maintenance and rehabilitation, the MOP\(^2\) programme for maintenance of the primary road network, and a CONCOPE-ILO\(^3\) pilot project on rural road maintenance with the provincial government of Azuay. The micro enterprises were all of a cooperative nature, with all workers in the micro enterprise being members and from the communities closest to the roads concerned. The study compared the procedures used as well as the impact on the members, their families and the community as a whole.

**Employment creation**

In terms of **direct employment**, the micro enterprises have an average of ten associates, each receiving an average of US$ 145 per month\(^4\). The average weighted income **ex ante** was US$ 115, based almost exclusively on precarious employment opportunities. For 90% of the members, their current income was found to be some 25% higher than before.

In most cases, part of the payments to the micro enterprises was reserved for a social fund used for so-called ‘productive projects’ in the communities, as well as serving as a contingency fund, for instance, to cover late payments and to act as a type of health insurance fund. The productive projects financed with the social funds, such as chicken and guinea pig breeding, communal shops, and the purchase of livestock, resulted in the generation of additional **indirect employment**, as did the use of personal savings for similar entrepreneurial initiatives. Additional opportunities for employment were generated as the micro enterprise members left their jobs, which were often taken over by family members, and because of growth in local consumption and investment by the members (often hired labour) in the local economy.

**Impact on public transport sector**

The roads under routine maintenance by micro enterprises remained in good condition, resulting in lower running costs in the public transport sector. The reduced running costs, together with the increased demand for transport services, led to higher incomes in the public transport sector. The farmers also benefited from the higher prices for their produce, as a result of increased access to public transport and new markets. However, the impact on local businesses was negative, as local consumption was displaced due to the improved access to other markets.

---

\(^1\) Unidad de Caminos Vecinales - Rural Road Unit
\(^2\) Ministerio de Obras Públicas - Ministry of Public Works
\(^3\) Consorcio de Consejos Provinciales del Ecuador - Consortium of Provincial Councils in Ecuador
\(^4\) The CONCOPE-ILO model has the highest individual remuneration: US$ 200
Female participation

Female participation in the micro enterprises was minimal. Little to no effort was made by the programmes to specifically promote the participation of women. Nevertheless, mixed and all-women micro enterprises do exist, especially under the MOP programme, and have proven to be viable.

Supporting the local communities

These programmes, especially those of CONCOPE-ILO and the UCV, have helped in the institutional and organisational strengthening of provincial and district authorities, parish councils, and communal organisations. The micro enterprises’ support to the community is evidenced in activities such as cleaning works, painting of nurseries and schools, the installation of drinking water networks, all financed by its social fund. The communities, in turn, tend to help and support the micro enterprises in certain road maintenance activities through traditional mingas.\(^5\)

Development of skills

Finally, it is important to stress one of the most important achievements of these programmes, namely the generation of entrepreneurial skills in areas where agricultural labour tends to be the predominant form of employment. The different entrepreneurial initiatives developed, demonstrate that the micro enterprises also function as incubators for new entrepreneurial perspectives.

Supporting the local communities

These programmes, especially those of CONCOPE-ILO and the UCV, have helped in the institutional and organisational strengthening of provincial and district authorities, parish councils, and communal organisations. The micro enterprises’ support to the community is evidenced in activities such as cleaning works, painting of nurseries and schools, the installation of drinking water networks, all financed by its social fund. The communities, in turn, tend to help and support the micro enterprises in certain road maintenance activities through traditional mingas.\(^5\)

Development of skills

Finally, it is important to stress one of the most important achievements of these programmes, namely the generation of entrepreneurial skills in areas where agricultural labour tends to be the predominant form of employment. The different entrepreneurial initiatives developed, demonstrate that the micro enterprises also function as incubators for new entrepreneurial perspectives.

For further information contact: cartier@oit.org.pe

For further information contact: Raúl Fajardo  Email: oitinat@tmx.com.ni
Labour-based maintenance of federal roads in Ethiopia

By James Agingu, ERA/DFID DMO Capacity Building Project1, Ethiopia

The road sector

Ethiopia is a vast country covering over 1.1 million km². Its population of 67 million is widely dispersed, with 85% living in rural areas and deriving their livelihood from settled peasant agriculture. Due to various adverse factors, Ethiopia remains one of the poorest countries in the world, with GDP per capita of US$ 100 (2000 estimate).

Although road transport is the dominant mode of transport, Ethiopia has a much less developed land transport infrastructure than most African countries, with an estimated 30 km of road per 1,000 km² and 0.49 km per 1,000 population. The country has only 140,000 registered vehicles, of which about 100,000 are operational. About 70% of the rural households are more than a half-day’s walk from all-weather roads. The network consists of 33,297 km of classified roads divided into 8,180 km trunk (3,875 paved and 4,305 gravel), 8,437 km major link and 16,680 km rural roads.

The Road Sector Development Programme (RSDP) is a ten-year programme started to rehabilitate and upgrade the classified road network, with a budget of US$ 2.8 billion. It is divided into two phases of five years each, with the second phase currently in progress. The programme is expected to create a conducive environment for the development of the road sector by introducing a series of policy and institutional reforms as well as improving transport links and reducing constraints to increasing agricultural production and land utilisation. The World Bank and European Union are major donors of the programme.

The Road Fund funds routine and periodic maintenance in Ethiopia, with finance collected from fuel levy, axle load charges and overload fines. The Ethiopian Roads Authority (ERA) through its ten maintenance districts carries out maintenance of the federal (trunk and major link) road network. Like most developing countries, Ethiopia suffers from scarce financial resources while labour is abundant. Therefore, there is a need to identify, develop and apply cost effective alternative approaches to road maintenance.

Labour-based road maintenance

In order to reduce unemployment, there has been a move towards the use of labour in the maintenance of the federal roads in Ethiopia. The labour-based approach recognises the limitations of available financial and physical resources and at the same time fits well with local and international poverty alleviation and sustainable livelihood strategies. The length-person system has been favoured because of the advantages it offers. A local person is appointed on contract basis and allocated a stretch of road near his home. He is supplied with the required hand tools and materials and paid according to quantity of work

1 DMO Capacity Building Project is a five-year Ethiopian Road Authority project funded by the British Government through the Department For International Development (DFID) as part of RSDP.
satisfactorily completed. Currently, the focus is on off-carriageway activities like drainage cleaning and clearing of road reserve, with limited carriageway works (pothole repair) on low volume gravel roads. In the future, this will be extended to asphalt patching. The length-person system was formally introduced about two years ago. The first year involved preparatory activities including development of a manual, supervisor training, provision of hand tools, procurement of some supervision transport and separation of length-person work as an independent code in the maintenance budget. In the second year, implementation started in all the districts with a total coverage of almost 2,000 km, creating direct employment to over 1,000 people. The amount paid out by the Road Fund for the works during this period is about US$ 250,000. An increase in coverage by 2,000 km per year is planned with a target final figure of 8,000 km nationwide after four years.

**Constraints**

Problems encountered during the first year of implementation included:

- poor distribution of the maintenance manual to site supervisors;
- inadequate transport leading to poor supervision and monitoring resulting in poor work quality;
- late payment of wages in some districts interrupting implementation; and
- poor quality of hand tools because of the purely cost-based procurement system.

It was also noted that length-persons preferred working together with relatives and friends or as groups as opposed to the initial arrangement of working alone on their sections. This was not found to be a major problem as long as the actual labour input and the corresponding quantity of work done were closely monitored.

These problems were discussed with ERA and remedial actions agreed upon. These included improved distribution of the manual and use of reporting forms for monitoring; purchase of more motorcycles for supervisors; use of templates for quality control; advance payments to the districts at the beginning of the fiscal year and quick processing of monthly certificates to alleviate cash flow problems; and inclusion of quality control measures in tools procurement. It is expected that if fully implemented, these measures will greatly enhance the efficiency of labour-based maintenance in the country.

**Future developments**

RSDP will create a significant increase in the road network length with the new construction, leading to a higher maintenance workload. Currently, the amount of maintenance required is beyond the capacity of ERA’s resources. A further increase in workload would have to be met by an increase in the efficiency of ERA through its districts and the introduction of external contractors. Initially, the contracts for work beyond the capacity of the ERA will be awarded to external contractors. However, over time the amount of work guaranteed to ERA will be reduced and the ERA will have to compete with external contractors for additional work to fulfil its own increased capacity. In the longer term, competition between both of these entities for maintenance contracts will grow, which should eventually result in reduced maintenance costs. This expansion in the road maintenance sector will also help develop the local construction industry, which will result in positive social impacts by creating paid employment in rural areas throughout the country and reduce poverty.

With the establishment of the length-person system within the districts, ERA is now inviting emerging locally-based contractors to express interest in labour-based road maintenance works. Those selected will be trained on road maintenance contracting. Thereafter, the contractors will bid for significant lengths of road to maintain. For the physical works the contractors will be free to use length-persons, crews or any other system they prefer as long as they employ local labour and use hand tools and light equipment, as appropriate.

To develop the capacity of consultants, ERA intends to engage a local consultant to prepare training material and conduct courses for the contractors (classroom and trial contracts). In the future, the consultants may take over some of the contract administration functions in an expanding programme.

For further information contact:
E-mail: DMOProj@telecom.net.et or joagingui@yahoo.co.uk

---

Wastewater treatment and disposal. Inadequate or improper disposal of solid and liquid wastes can result in the pollution of rivers, canals and groundwater and the accumulation of polluted surface water, all of which increase the risk of disease. In addition, if the quality of the water being supplied is not carefully monitored and maintained the water system itself can become a conduit for polluted water. None of these potential negative impacts were believed to be a significant problem in any of the potable water projects associated with this programme, and the SFD addressed wastewater treatment and disposal issues with other projects throughout the country and through the development of a labour-based training module for wastewater projects.

For further information contact: Carl Berensten Email: carl_berensten@hotmail.com
Application of cationic bitumen emulsions in spot improvement works

By Mukesh C Gupta, Chief Technical Adviser, ILO, Solomon Islands

Community Infrastructure Rehabilitation Project, Solomon Islands

Introduction

The road infrastructure in the Solomon Islands has suffered extensive damage over the past decade, mainly due to neglect and funding constraints. Most of the main roads with bituminous surfacing, including the Honiara Town roads, have been riddled with potholes and the authorities have been confronted with the challenge of finding an appropriate solution.

Solomon Islands has an annual rainfall of about 4,000 mm per year and it rains throughout the year. However, September and October are relatively dry and are termed as the dry months. Due to this high rainfall, the Department of Infrastructure has been unable to use standard penetration grade bitumen for patching or road construction, as this requires the surface and aggregates to be completely dry.

The Community Infrastructure Rehabilitation Project (CIRP) successfully used cationic bituminous emulsion to carry out spot improvement works, including for the patching of potholes under rainy conditions.

What is bituminous emulsion?

Emulsified bitumen comprises of minute particles of bitumen suspended in water. When applied the water evaporates leaving a film of bitumen binder with its original viscosity. It is applied in cold condition. Emulsified bitumen is chocolate brown in appearance and turns black when it “breaks” i.e. when it gives up its water content. There are two types of emulsions, anionic and cationic. Cationic emulsions unlike anionic do not break due to loss of water and carry positive electrical charge. Since the aggregates carry negative charge this creates a strong binding and flexible coating.

Advantages of bituminous emulsion

• It can be used throughout the year even under the moist conditions of the rainy season.
• It is applied cold and its application is very simple and does not require a special bitumen boiler or special plant.
• The cost of field operations is considerably reduced as only simple hand tools are needed such as garden spray buckets, shovels, rakes and hand tampers.
• It can be used with wet stone aggregates.
• It is more ‘friendly’ to labour-based application.
• It is easy to transport and handle as it is non-flammable.
• As it is applied cold, there is no risk of over-heating and thus loss of inherent properties unlike normal bitumen.

Cationic bitumen emulsion

Standards

The projects used cationic bitumen emulsion type K1-60. The emulsion conforms to the requirements of BS 434: Part 1. In accordance with the above standards, “K” signifies cationic emulsion and “1” signifies a rapid breaking type emulsion, while “60” indicates the percentage bitumen content.

Application

The K1-60 emulsion was applied on road repair works in accordance with the BS 434: Part 2: Code of Practice for Use of Bitumen Road Emulsions. The application requirements are as follows:

• All surfaces must be free from oil, grease, fuel spillage or any organic materials.
• In hot weather, it may be advisable to dampen the surface with water in order to retard the loss of water from the emulsion as it cures.
• It is essential that the surface is free from any standing water prior to and during the application.
• Temperature of application should vary between 5 – 35 ºC.
• Before application, the drums should be well rolled to agitate contents before use.
Is improving roads beneficial to bicycle users?

By Marcus Wattam and Ron Dennis, IT Transport, UK

Bicycles are the most commonly used form of Intermediate Means of Transport in Sub-Saharan Africa, greatly increasing personal mobility and load-carrying capacity for rural people. Studies have shown that repair and maintenance costs for bicycles are high due to carrying heavy loads on poor roads and tracks. Improving infrastructure should reduce both operating costs and also trip times. However, economic benefits to bicycle users are rarely included in the appraisal of rural transport projects.

The aim of this study was to therefore to evaluate the impact of infrastructure quality on bicycle operating costs in order to develop improved tools for including these costs in appraisal of transport projects. Influencing planners to include bicycles in project appraisal should improve the viability of projects focussed on district and village level access.

The study worked with bicycle taxi operators in Kenya and Uganda over one year to gather quantitative data on the use and repair of their bicycles. This was also backed up by qualitative studies to clarify data.

The results obtained were surprising and generally opposite to conventional thinking on the impact of improving roads. The surface that was considered the easiest for cycling, bitumen, had the lowest speed and the highest repair costs. Whereas the surface considered the most difficult, earth, had the highest speed and the lowest repair costs.

Models such as HDM-4 predict that upgrading roads from earth to gravel and gravel to bitumen should increase speeds and reduce repair costs. However, results from this study were opposite to this, finding repair and maintenance costs (RMC) on bitumen and gravel roads to be four to five times those predicted by HDM-4 and over twice as high as the costs on earth roads. This has a number of implications at the policy and project level.

The main implication of the findings for transport planners and designers is that with regard to the impact on bicycle operations four factors need to be considered in the improvement/upgrading of roads – surface texture, surface roughness, potential increase in motorised traffic and estimation of benefits.

Surface texture – An earth road that is rough and bumpy for motorised vehicles may provide reasonably smooth tracks for bicycles that use the edges and can steer round potholes, ruts, etc. Regravelling the road will benefit motor vehicles but will dis-benefit cyclists because the gravel surface will be less easy to cycle on and will increase repair costs. The best treatment for cyclists would be to repair the road with earth fill or to leave smooth, firm earth shoulders.

Surface roughness – If the road surface is very stony or rocky and/or has substantial ruts along the edges, then regrading and resurfacing are likely to benefit cyclists, but again an earth surface or earth shoulders will be better than a gravel surface.

Traffic level – If improving or upgrading a road is likely to increase levels of motorised traffic then it will disadvantage bicycle users with regard to safety, operating speeds and repair costs. If the impact is likely to be significant then serious consideration should be given to providing bicycle paths along the shoulders of the road.

Estimation of benefits – The benefits from road “improvements” result from increased speeds and reduced RMC. Depending on the “value of time” assumed, the impact of speed may unrealistically dominate benefits. For example, using the recommended value from HDM-4, USS 0.36/hr, would give a benefit of USS 0.015/km for the difference in speed found on earth (8 km/hr) and gravel (6 km/hr) roads in the study, compared to a benefit of USS 0.007/km in RMC. However, owners are likely to find the saving in RMC of greater consequence as it is a tangible cost that they have to pay to keep their bicycles operational.

A technical brief and report are available from our website www.ittransport.co.uk or please contact Ron Dennis or Marcus Wattam on itt@ittransport.co.uk for more information.
Four countries invest in a local resource-based approach to infrastructure development

By Geoff Edmonds, ILO ASIST – Asia, Pacific (AP), Thailand

It is recognised that development programmes only become sustainable when the stakeholders take on the ownership of the programmes and commit their own resources to them. Over the past few years, the ILO ASIST – AP Programme has been involved with four programmes in different countries where loan funds have been used by the governments to apply local resource-based approaches to infrastructure development.

World Bank loan funds in Indonesia and Asia Development Bank (ADB) loan funds in the Philippines, Lao PDR and Cambodia are being used by the respective governments to implement local resource-based approaches to infrastructure development. These investment funds are being used in investments in infrastructure to maximise employment creation, develop local skills, support the local contracting sector and promote local level participation in decision making, illustrating these government’s commitment. In all four cases, the ILO has been asked by the concerned governments to assist in the implementation of projects and programmes using these loan funds.

ASIST – AP has followed a strategy in the Asia and Pacific region that is based on adding value to government programmes. The ILO on its own does not have the resources to make major changes in the way in which infrastructure programmes are implemented. However, by working with the relevant government institutions and demonstrating the validity of a pro-poor, local resource-based approach, ILO can help make significant changes in the way these programmes are implemented.

Clearly, no government is going to make these changes unless it is convinced that the changes are technically and economically viable. The ILO can play a major role in providing a solid and acceptable framework for these changes to take place. The result will not be measured by the number of ILO stand-alone projects, but by the increased credibility of the ILO in providing objective analysis, support and assistance in the development and implementation of government programmes.

Philippines

The ILO has signed an agreement with the Department of Agriculture to provide the services the ASIST – AP Programme to the Infrastructure for Rural Productivity Enhancement Sector (IRPES) Project. IRPES is funded by an ADB loan with government counterpart funds. The total value of the project is US$ 150 million and will cover 40 of the 74 provinces in the country. Although IRPES is administered and managed by the Department of Agriculture, the Local Government Units (LGUs) of the country’s decentralised system are responsible for implementing the project.

IRPES will not only develop the capacity of the LGUs to deliver rural infrastructure services but also provide funding for rural water supply, small-scale irrigation and farm-to-market roads.

ASIST – AP has been asked by the Department of Agriculture to provide advice and support to the LGUs in project planning and implementation. The sub-projects proposed by the LGUs need to be developed through the Integrated Rural Accessibility Planning (IRAP) process. The ILO has been working over the last ten years with the
LGUs to integrate the IRAP process into their planning procedures. ASIST – AP will provide support to the LGUs to build upon this work and utilise the experience to prepare sub-project proposals that respond to the actual needs of the people. Furthermore, IRAP data will be used to monitor and evaluate the project’s implementation. The project approach is to maximise the use of local resources in the implementation. It is intended to use labour-based methods of construction where appropriate. ASIST – AP will provide the necessary support to the LGUs in raising awareness of the benefits and challenges of using labour-based methods and in the planning and implementation of these projects.

Indonesia

Indonesia is going through a process of decentralisation. The decentralised agencies have been given significant levels of authority and responsibility and intense effort is being placed on developing their capacity. This is happening at a time when the government and the financing and donor agencies are providing considerable financial support to the development of local-level infrastructure.

Funds from a World Bank loan have been allocated by the government to the Sustainable Rural Infrastructure Demonstration Project (SRIDP) that aims to demonstrate the effective use of local resources in the provision of infrastructure. SRIDP will also support the coordinating role and the development of the Central Team for Rural Infrastructure Development (CTRID). CTRID brings together several central agencies that are involved in infrastructure and has been supported by ASIST – AP.

The SRIDP will implement activities in one province. The activities will include:

- The application of IRAP, used for the identification and selection of local infrastructure projects based on a participatory process that allows local people to express their actual requirements.
- The assessment of the capacity of the local contracting sector to tender for and to execute works and the capacity that exists at the Kabupaten level to effectively manage contracts through the private sector.
- An evaluation of the infrastructure maintenance needs, and support and advice on how maintenance can be made more effective. The project is funded primarily by the loan funds. In addition, however, the local authority is contributing funds as well as the centralised agencies. ASIST – AP is providing some funds and technical assistance.

Lao People’s Democratic Republic (PDR)

Over the years, the government has carried out several labour-based road projects. These projects have been small scale in nature and have been funded by bilateral donors. Under an ADB loan-funded project however, the government of the province of Houphans has signed an agreement with the ILO to implement a labour-based roads rehabilitation programme using local contractors.

The project is concerned with improving the livelihoods of small holders in the province. The roads component is intended to provide the opportunity to increase yields and production and to ensure timely arrival to the market of these increased yields. The provincial government has recognised that the roads provide both an opportunity to utilise local entrepreneurs and to create short-term employment during construction.

ASIST – AP has been asked to provide training for the contractors and provincial staff through the National Training Centre. ASIST – AP will also help develop appropriate bidding documents and provide supervision in the actual implementation of the works.

Thanks in part to the successful implementation of this project, the government has sole-sourced the ILO for another larger, but similar ADB loan-funded project in two provinces in the centre of the country.

Cambodia

The ILO has been involved in Cambodia’s infrastructure sector for many years through support from Swedish International Development Cooperation Agency (SIDA) and the United Nations Development Programme (UNDP). Part of this work has been concerned with the use of IRAP as a participatory tool for identification and selection of rural infrastructure works.

Under an ADB loan to the Ministry of Rural Development, funds have been provided for rural development in four provinces in the north east of the country. As part of the loan funds, technical assistance is being provided to assist with implementation. Some of these funds have been allocated to the ILO to apply the IRAP process in the selection of infrastructure in the four provinces and also to strengthen the Ministry of Rural Development’s capacity to apply the IRAP process nationwide.

Conclusion

In recent years, there has been concern that local resource-based programmes, in particular labour-based programmes, have been successful in isolation. That these programmes have neither been integrated into the mainstream nor been sustained once external funding is withdrawn.

The examples from the four countries suggest otherwise. The funds being used for the implementation of these local resource-based programmes come from loans. These are government funds. Although this integration may take time, it is clear that in some countries, at least the institutionalisation of local resource-based approaches is starting to happen.

For further information contact: Geoff Edmonds Email: edmonds@iloasist.org
The Tenth Regional Seminar for Labour-based Practitioners: The Tanzania experience and lessons learnt

By Eng. U. L. Msengesi and Eng. L. M. Kyombo, MoW, ATU, Tanzania

Background

In February 1990, the International Labour Organisation’s (ILO) ASIST Programme drew together a handful of practitioners from different regions for a meeting in Tanzania. The participants shared experiences and exchanged ideas on how to facilitate the wider advocacy and technical development of labour-based technology (LBT). This meeting realised the importance of involving practitioners from other countries in discussion and debate on the wide scope of issues related to LBT. The meeting became the foundation of Regional Seminars for LBT. Since then, every 18 months or so, labour-based practitioners from Africa and other regions convene in a different African country to share views and experiences and review developments in LBT. Participants of these seminars include policy and decision makers from governments, managers and practitioners from public and private implementing agencies/institutions, academics and researchers and representatives of donors and financial institutions supporting the application of LBT. The 10th Regional Seminar was held in Arusha Tanzania from 13 - 17th October 2003 and was attended by 210 participants. The theme was ‘Labour-Based Technology for Poverty Reduction’. At the end of the seminar, a comprehensive statement, the Arusha Statement, covering conclusions and recommendations for future action with respect to mainstreaming LBT and linking it with poverty eradication strategies was produced (see the centrefold of this bulletin).

LBT in Tanzania

Tanzania has been applying LBT in road works since the mid-eighties, with strong support from various donors and in collaboration with ILO. This has lead to:

• LBT being accepted as an option for sustainable road construction and maintenance;
• LBT being used in almost every district in the country;
• development of training materials on the application of LBT by technical training institutions and the introduction of LBT into their syllabi;
• training of road-works contractors and consultants to impart technical knowledge; and
• the registration of contractors with knowledge and capability to implement LB works by the Contractors Registration Board.

The Ministry of Works (MoW) in collaboration with ILO, supporting donors, and other stakeholders have realised that LBT requires mainstreaming. To achieve mainstreaming, joint efforts are required to bridge various bottlenecks and gaps. In April 2002, a team comprising of various stakeholders in the road sector prepared a document to guide the establishment of a National Framework on LBT, which was launched in 2004.

The Tenth Regional Seminar

In recognition of the link between LBT and poverty eradication strategies, the MoW on behalf of the government agreed to host the 10th Regional Seminar and honour the choice made by participants of the 9th Regional Seminar in Maputo to hold the seminar in Tanzania.
A seminar organisation team comprising nine members, six from members from the MoW and three from ILO/ASIST-Africa coordinated all the preparation and logistics including:

- preparation of the Memorandum of Understanding (MOU) between the MoW and ILO/ASIST;
- selection of the theme and fixing the dates for the seminar;
- preparation of the budget and setting of the seminar fee to be paid by participants;
- establishment of the list of those to be invited as participants, sending invitations and compiling a database of participants;
- procurement of the services of an administrator, paper reviewers, moderator, rapporteur and other support contractors as they were deemed necessary; and
- editing, compiling and publishing of the papers and proceedings in print and electronic media (Internet).

The preparations started 13 months before seminar, in August 2002. Advisory and decision-making support from ASIST was achieved through information and communication technologies (ICTs), primarily e-mail. This facilitated the flow of information and minimised the cost of travel during the preparation phase.

The fees paid by seminar participants covered 70% of the cost of organising the seminar. Additional financial support was provided by the MoW, United Nations Development Programme (UNDP)/United Nations Capital Development Fund (UNCDF), Swiss Agency for Development Cooperation (SDC), Tanzania Roads Agency (TANROADS), Crown Tech Consult, the Tanzania Contractors Registration Board (CRB) and Tanzania Social Action Fund (TASAF) and ASIST. A bank account was opened for the seminar and to meet the early expenses incurred. The MoW deposited its contribution into the account nine months before the seminar. ASIST entered into contracts with an administrator, paper reviewers, a moderator and rapporteur, and these costs were reimbursed from the seminar fees.

**Success**

The seminar was a success due to the commitment and coordination of all actors. For the first time in the history of these seminars, all actors apart from the advisory team from ASIST were Tanzanians (local capacity). In addition, the seminar attracted attendance from high level of decision makers including the Tanzanian Permanent Secretary MoW and directors responsible for road works from the MoW and the President’s Office, Regional Administration and Local Government (PORALG) who attended the entire seminar. Other high-level decision makers included the Chief Engineer Roads, Ministry of Roads and Public Works, Kenya; Director General for Local Infrastructure Development and Agricultural Roads, Nepal and other senior government officials from a range of countries. This shows the recognition of these seminars as an excellent opportunity to develop the agenda of mainstreaming the application of LBT.

A site visit organised to expose the participants to the realities of poverty and to provide the opportunity to design solutions where LBT may be applied was carried out on one day of the seminar. In reaction, (again for the first time in the history of these seminars), participants contributed about US$ 920 to support people involved in the production of crushed stone aggregates at one of the sites visited. This gesture raised the interest of other donors who have expressed interest in providing further support. Actions and progress resulting from this initiative will be monitored and reported on in the next seminar.

**Problems**

However, as with most success stories, some problems were encountered.

- Late submission of papers: This delayed the process of reviewing and selection of papers for presentation as well as the compilation of the booklet of papers for distribution. As a result the full papers selected for presentation could not be distributed to the participants before the seminar, although the abstracts were posted on the ASIST website a few weeks before the event.
- Many requests for sponsorship to attend the seminar could not be met due to funding constraints.

**Poor access - a major problem in the Alinyanya/Sanare unplanned settlement in Arusha**
Lessons learnt

- The capacity of the Tanzanian seminar organising team was enhanced as a result of international exposure and dealing with the needs of a multi-cultural group of participants.
- The selected host country should commence seminar preparation immediately after the preceding seminar as the preparations require as much time as possible.
- Success of the seminar is dependent on concerted joint effort, commitment and a sense of common purpose from all stakeholders.
- Building and utilising local capacity and resources should be encouraged and adopted to the maximum level possible to enhance the capacity of host country.
- Cost sharing through collaborative or joint hosting arrangements and sponsorship from public and/or private organisation should be explored to reduce the participation fees.

Conclusion

Based on the participants’ evaluation, the following was concluded.

- The majority of participants expressed satisfaction with the Seminar. They stated that it was a successful, well-organised and well-conducted event. The efforts, support and commitment demonstrated by all involved parties was well appreciated.
- The Arusha seminar statement drawn up by the participants, as a framework to promote LBT should be disseminated at the local, national, regional and international level. Follow-up to intensify promotion, advocacy, monitoring and documentation of best practices of LBT is required. This will ensure the development and further expansion and replication of LBT in fields other than road works.
- LBT has a role to play in poverty eradication, one of the Millennium Development Goals. The actual link between LBT and poverty eradication is yet to be recorded and quantified— and is a challenge worth taking on in order to register another level of achievements.

MoW’s strategy in implementing the Arusha statement

The Government of Tanzania has recognised the role of LBT for poverty reduction in infrastructure development. The MoW has decided to engineer the process of up-scaling the use of LBT by taking forward the establishment of the National Framework that will provide guidance and create an enabling environment for the use of this technology in infrastructure development. This is in line with the strategies outlined in the Arusha Statement.

The establishment of the National Framework will be through implementation of a four-year programme, planned to start in July 2004. The programme activities include:

i) Formulation, adoption and publication of an appropriate and adequate national policy to guide the use of LBT in Tanzania.

ii) Expansion of knowledge and capacity building in the public and private sectors for the proper planning, designing and implementation of infrastructure works using LBT.

iii) Creation of an enabling environment for the provision and maintenance of infrastructure using LBT, principally by the private sector.

The programme implementation will involve all stakeholders in the public and private sector. A unit to spearhead and coordinate the programme and link all involved stakeholders will be established and housed within the MoW. It is expected that the outcomes of the programme will be institutionalised within the routine operations of planning, designing, budgeting and implementation of infrastructure works within the country.

For further information contact: Eng. Msengesi Email: atu@mow.go.tz

Road maintenance activities in Arusha by TANROADS
The Arusha Statement

The 10th Regional Seminar for Labour-based Practitioners
13th – 17th October 2003
Arusha International Conference Centre, Arusha, Tanzania

Preamble

The 10th Regional Seminar for Labour-based Practitioners was held in Arusha, from 13th – 17th October 2003 under the theme “Labour-based Technology for Poverty Reduction.” The objectives were to:

- Investigate the true impact of labour-based technology on poverty
- Collate an evidence base
- Identify key ways in which the impact of labour-based technology on poverty can be maximised.

210 participants attended the seminar from 24 countries. Fourteen papers were presented and discussed in six sessions under the following sub-themes:

- Infrastructure provision through LBT
- Involvement of community and private sector
- Contracting and labour standards
- Policy and up-scaling of LBT

The paper presentations and discussions were complemented with field visits to labour-based (LB) activities, namely Sombetini Quarry, Unplanned settlements of Alinyanya/Sanare, Kijenge and Majengo areas, Tanzania National Roads Agency (TANROADS) sites – spot improvement of Tanganyika/Packers-Losinyai road and routine maintenance on Moshi-Arusha highway.

HAVING deliberated on pertinent issues on LBT for five days focusing on the following key issues:

- Impact
- Challenges and opportunities
- Sustainability
- Key strategic issues

RECOGNISING the potential of LBT in poverty reduction through provision of infrastructure and services, employment creation and income generation, with opportunities for involvement of community and private sector;

COGNISANT of the link between poverty, the high rate of unemployment and the poor access to infrastructure and services;

TAKING NOTE of the accumulated experiences and success stories of pilot LBT projects and programmes that have been reported in this and previous regional seminars and realising the need for furtherance of LBT vs. poverty reduction impact analysis understanding;
ENCOURAGED by the appreciation of the seminar participants of the contribution of these regional seminars in experience sharing, networking and sharing issues of common interest for further development and hence the desire to continue holding of these seminars, and the need for review, evaluation and diversification of LBT practices for enhanced impact;

APPRECIATING the technical and financial interventions of our development partners in promoting LBT, and their willingness to continue supporting these initiatives;

REALISING the little commitments by governments slow up scaling and mainstreaming of LBT in development interventions;

CONSCIOUS of the constraints, in terms of technical, financial, institutional framework, equipment and cultural issues that have been affecting the replication of LBT;

NOTING the resolve of governments to improve the livelihoods of their citizens as evidenced by the formulation of poverty reduction strategies and subsequent targeting at achievement of Millennium Development Goals;

The 10th Regional Seminar participants HEREBY RESOLVE to promote, maximise and mainstream the use of LBT in the provision of infrastructure and services to contribute to poverty reduction, through implementation of the following strategies:
Creation of Enabling Environment

**Policy:** Impress upon Governments to put in place/implement relevant policies that will guide the mainstreaming, diversifying and maximising the use of LBT and ensure sustainability of the same. The policies should clearly guide the deployment of local contractors and communities in LBT projects.

**Institutional framework:** Impress upon Governments the need to create institutions charged and resourced for policy operationalisation and monitoring. The institutions should facilitate speedier implementation of decentralisation of decision-making and resources management, and reduce bureaucracy as regard to LBT practices.

**Legislations:** Impress upon Governments to put in place appropriate, amend existing and enforce legislations that will guide procurement procedures that enhance the engagement of LBT, contracting of communities and labour/work standards.

**Contracts:** Advise the Governments to develop appropriate contract forms/framework suitable for contracting LBT works taking into consideration special circumstances of the LBT stakeholders.

**Incentives:** Advise the Governments to remove disincentives or put in place incentive schemes that will promote/maximise the use of LBT. Disincentives to be removed may be in the form of taxfavours that favour import of equipment over local manufacturing. Where the local capacity to manufacture is not in place, incentives schemes could include import tax exemption on LBT equipment, tax holidays, tax reductions.

Capacity Building

**Education and Training:** Impress upon relevant Government Ministries/Institutions of higher learning and other training institutions to introduce, use, integrate and mainstream LBT topics in their relevant programmes. This shall entail development/review of relevant curricula for LBT inclusion and developing tailor made courses for LBT practitioners at all levels.

**Research and Development:** Encourage and fund labour-based practitioners, research institutions and institutions of higher learning to embark on LBT research and development, and dissemination of research findings and proven technology promulgation of best practices.

**Awareness Raising/Advocacy:** Undertake to promote the benefits of LBT through lobbying, information dissemination, awareness campaigns on LBT practices to mobilise public opinion and civil society to demand for the same. The awareness and advocacy should also include analysis of barriers against LBT maximisation and mainstreaming.
**Resource Allocation**

**Financial:** Governments should put in place financing systems and encourage the participation of local financing institutions that will ensure sustainable access of funds by LBT practitioners. The system should embrace favourable credits/loans schemes, special funds for micro-enterprises, setting aside some percentage of major projects for LBT, etc.

**Equipment:** Governments through relevant departments should put in place a system of enabling local contractors to access equipment, such as establishing equipment hire schemes, including encouraging establishment of private equipment hire companies.

**Linkages:** Governments should be advised to put in place a mechanism of linking various projects and programmes related to poverty reduction to maximise their positive impacts thereby optimising resource utilisation. Linkages should also focus on enhancing networking, management and sharing of information.

**Cross Cutting Issues**

**HIV/AIDs, Gender, Environment and Poverty:** We call upon the Governments through their relevant departments and all stakeholders including civil society, to mainstream HIV/AIDs, gender, environmental and poverty issues in all LBT interventions.

**THEREFORE,** we call upon Governments, the donor community and other stakeholders to take steps to formulate a PLAN OF ACTION. We recommend the 11th Regional Seminar review the progress.
ASIST-Africa news

By the ASIST – Africa Team, Zimbabwe and Kenya

Since our last issue of the Bulletin the team has been involved in various on-going and new activities, the highlight being the Tenth Regional Seminar held in October 2003 in Arusha. Details of this and other initiatives and activities follow:

10th Regional seminar for labour-based practitioners

The Tenth Regional Seminar for Labour-based Practitioners was held between 13 -17th October 2003 in Arusha, Tanzania. It was organized and hosted by the Ministry of Works (MoW) of the United Republic of Tanzania, in collaboration with the ASIST. The theme of the seminar was Labour-based Technology for Poverty Reduction and its objectives were to investigate the true impact of labour-based technologies on poverty reduction, collate an evidence base and identify key way in which the impact on poverty can be maximised. Over 200 representatives from governments, their development partners and other stakeholders from 22 countries attended the seminar. Fourteen papers were presented in plenary sessions and discussed in working groups. Sites visits to various sites around the Arusha Municipality were organised to demonstrate existing labour-based works and development problems where labour-based technologies could provide solutions.

The outcomes of the plenary and working group discussion sessions were synthesised and summarized in the form of findings and recommendations which were discussed and agreed upon by the participants on the final day of the seminar and formulated into the “Arusha Statement”. The participants resolved to adopt the Arusha Statement and pursue follow up actions in their respective countries. The progress and actions taken would be reviewed during the next regional seminar to be held in 2005 in Kenya.

The Arusha Statement is featured in the centrefold of this Bulletin. The regional seminar hosts, MoW Tanzania, have also authored an article in this issue on their experiences in hosting the seminar.

The Kenyan Ministry of Roads, Public Works and Housing won the bid to host the next seminar due to be held in 2005 and have started preparations for the event. Watch this space!

Kenya

Roads 2000 strategy

The Ministry of Roads, Public Works and Housing and the Kenya Roads Board have commenced a process of revamping the Roads 2000 Strategy. The Roads 2000 Strategy was developed in the early 1990s with the principal objective of maintenance of the classified road network, to an economic level of serviceability using local resources and labour-based methods wherever these are cost effective. The strategy has only been implemented in Central and Coast Provinces with Sida1 and Danida2 funding respectively. ASIST is part of the team charged with this responsibility aimed at reviewing and re-defining the strategy, and developing a national framework and systems, which should rejuvenate programme.

Decentralised waste management workshop

The First East African Workshop on Solid Waste Management (SWM) was held in Nairobi from 25th-27th February 2004. The workshop brought together mayors and chief officers responsible for environment from 15 cities and municipalities in East Africa, representatives of line ministries responsible for local authorities, regulatory authorities responsible for environment, experts in SWM, development partners, and other stakeholders. The Intermediate Technology Development Group (ITDG) and WasteNet, a network of partners involved the urban waste management, organized the workshop, with financial support from ILO, International Development Research Centre (IDRC) and United Nations Environment Programme (UNEP).

The objective of the workshop was to share experiences and identify challenges and opportunities for waste management in East African urban centers.

The workshop recognized that successful and sustainable municipal solid waste management was dependent on a sound policy framework, appropriate integrated interventions, more stakeholder involvement and information dissemination.

The resolutions and recommendations of the workshop were formulated in an eight-point communiqué highlighting the need for appropriate policy and regulatory frameworks, awareness raising, education and training, stakeholder participation, information sharing and networking, promotion of appropriate technology, and mobilization of finance and other resources.

The workshop agreed to take the agenda forward at the local authority level, and lobby for coordinated efforts at East African Community level.

South Africa

Expanded public works programme

Towards the end of 2003, the President of South Africa officially launched the Expanded Public Works Programme (EPWP). EPWP is the government’s flagship programme with the objective

---

1 Swedish International Development Cooperation Agency
2 Danish International Development Agency
of poverty reduction through employment creation in the delivery of essential infrastructure. The government has allocated about South African Rand (SAR) 15 billion (US$2.2 billion) as a grant for the programme for the next five years. The grant will be released to implementing municipalities and districts that meet the EPWP objectives and targets. Over the next five years the programme will create about 1.1 million work opportunities through an appropriate choice of technology in the delivery of infrastructure. ASIST has been involved in the programme formulation and will continue to provide support.

**Gundo Lashu project**
The Gundo Lashu Project in the Limpopo Province initiated in 2001 has completed the training of twenty-four contractors (52% female), thirty supervisors (60% female) and nine consulting firms. The first group of trained contractors have commenced the execution of actual contracts awarded based on competitive bidding, while the second group of trainee contractors are carrying out their trial contracts. The value of each contract varies from about SAR 3 – 7 million (USD 450,000 – 1,000,000) depending on the number of large structures in the contract.

**Tanzania**

**Employment creation in Municipal Service Delivery**
The Employment Creation in Municipal Service Delivery in Eastern Africa Programme was launched in Dar es Salaam in January 2004 by the Deputy Minister, Presidents Office, Regional Administration and Local Government, Hon. Mizengo Pinda. The programme aims to build more local capacity to deal with the challenges of employment creation and service delivery for the urban poor. It seeks to illustrate that public-private partnerships between municipal governments and locally based, representative organizations, can result in the creation of jobs that are free of child labour, have adequate working conditions and especially benefit poor women and men. ASIST has and will continue to provide technical advice to the Programme.

Representatives of the Ministry of Labour, Trade Unions, waste collection franchisees and training institutions as well as representatives from seven different cities and municipalities including mayors and town clerks attended the launch.

**Research on the increased application of labour-based technology (LBT) through appropriate engineering standards**
Lesotho and Mozambique have recently joined in a research programme aimed at increasing the application labour-based technology in road construction and maintenance, bringing the total number of countries involved to five. The Transport Research Laboratory (TRL) is carrying out the research with support from ASIST. Fieldwork in Ghana, Uganda and Zimbabwe is nearing completion and data analysis will commence soon with the first draft report of the country components expected before the end of the year. At the moment there is a gap in the regional research matrix, *i.e.* loose sandy soil in dry climate for which a suitable country is being sought.

---

**News from the Zimbabwe Technology Transfer Centre**

**Collaboration with ASIST**
The Zimbabwe Transportation Technology Transfer Centre signed a memorandum of understanding (MOU) with ILO/ASIST in October 2003 for the dissemination and sharing of information and knowledge on and related to the use of employment-intensive investment approaches in infrastructure and service provision. ILO/ASIST provided the Centre books and journals for it’s library, which will be exhibited for the first time at the annual Zimbabwe International Trade Fair (ZITF) to be held from 27th April - 1st May 2004, promoting employment-intensive approaches and the centre as a focal point for dissemination of this information.

**Contractor training on labour-based road works**
The Government of Zimbabwe through the Department of Roads (DoR) is engaged in rehabilitation and maintenance of rural roads using labour-based method of construction. To enhance the provision of access to rural communities the DoR embarked on a training programme for small scale contractors and consultants in the early 90s. Over 30 small scale contractors have been trained since the start of the programme; and eight more contractors will be graduating in April 2004. For further information contact: John Hwindingwi Email: doresech@africaonline.co.zw

---

**Rapid assessment of poverty impact methodology – field test in Ethiopia**
As a way to address the concern for lack of a methodology for the assessment of poverty impact, ILO’s Employment-Intensive Investment Branch (EMPINVEST) has engaged itself in a research effort to develop procedures and methods to provide information on the evolution of the poverty situation on employment-intensive rural infrastructure development programmes/projects. The effort led to the development of the Rapid Assessment of Poverty Impacts (RAPI) methodology. The ILO Area Office and Eastern Africa Multidisciplinary Advisory Team (EAMAT) Addis Ababa recently finalised a field test of the RAPI methodology in Tigray, Ethiopia as part of the rural road project under the Emergency Recovery Programme. The final report is will be available shortly.
ASIST—Asia Pacific news

By the ASIST—Asia Pacific (AP) Team, Thailand

The ASIST—AP Team has been actively involved in several new and on-going initiatives over the past months.

Cambodia

Work on Integrated Rural Accessibility Planning (IRAP) under the Asian Development Bank (ADB) funded Northwest Rural Development Project is progressing smoothly. Capacity has been established in most of the project’s target districts. The host, the Ministry of Rural Development, is currently developing a strategy for institutionalising and mainstreaming IRAP in the country.

A second project, the World Bank funded Provincial Rural Infrastructure Project, has an integrated IRAP component, which will be contracted to ILO.

India

India has emerged as the priority country for ASIST—AP. A team of international and local consultants is carrying out a detailed study of rural road maintenance in connection with the nationwide Prime Mister’s Rural Road Programme (PMGSY) coordinated by the Ministry of Rural Development. Following Madhya Pradesh, a second state, Himachal Pradesh has requested similar work to be carried out there.

The work on rural road maintenance has resulted in a request from the World Bank for inputs in the formulation of a rural infrastructure project for the state of Assam.

ASIST—AP was invited to attend a major national seminar on rural roads organised by the Indian Roads Congress in November 2003.

The IRAP work is making good progress in Orissa State. A first guideline has been produced and a second round of application and capacity building is fine-tuning the procedures for use in India. The project team has successfully tested the new ‘rural infrastructure for local economic development’ procedures. These procedures will now be integrated into the standard IRAP capacity-building package. Discussions with the Department for International Development (DFID) for a state-wide capacity-building programme are ongoing. A second neighbouring state has asked for similar assistance.

ASIST—AP now has a local representative in India, Mr. DP Gupta, based in the ILO Delhi office.

Indonesia

ASIST—AP continued to support the Coordinating Team for Rural Infrastructure Development (CTRID). CTRID is an inter-ministerial committee on rural infrastructure development that plays a leading role in the development of national and local policies, strategies and capacities for sustainable rural infrastructure development and financing. ASIST—AP’s main objective in this work is to integrate local resource-based strategies for sustainable rural infrastructure provision into the mainstream capital investment programmes. This should maximise the impact of public investments on income generation, employment creation and poverty reduction.

The implementation the Sustainable Rural Infrastructure Demonstration Project (SRIDP) project, financed by the government, the World Bank and ASIST—AP, is going well. At the local level, this project demonstrates procedures for local-level infrastructure planning, implementation and maintenance, using local-based resources. At the national level, SRIDP will work with CTRID to develop policies, strategies and programmes based on the experience gained. SRIDP is developing country-specific guidelines and building capacity for using these guidelines in the province of East Nusa Tenggara. A national team of five consultants implements activities and ASIST—AP provides technical backstopping to this initiative.

ASIST—AP has participated in a number of national workshops promoting the sustainable rural infrastructure approach. Both, the ADB and World Bank are interested in the approach.

Guidelines on IRAP were finalised and published by the Gadja Madah University.
Laos
ASIST–AP has been selected to provide inputs on labour-based technology (LBT) to the ADB funded Smallholder Development Project. This is the result of earlier support to the rural road component of the ADB funded Shifting Cultivation Stabilisation Project which is to be completed soon.

ASIST–AP has also been involved in discussions with the government on rural road maintenance. As a result, ASIST–AP has agreed to support a review of current practices on road maintenance in Laos.

ASIST–AP has recently been asked to support the government develop a National Transport Strategy.

ASIST–AP is currently preparing a training needs assessment (TNA) exercise to identify capacity gaps at the district level and develop an appropriate training programme. This programme would not only benefit the RAIP programme but all future investments going into the selected areas.

Philippines
ASIST–AP continued its support to the ADB supported Infrastructure for Rural Productivity Enhancement Sector project (INFRES). This project covers 40 of the country’s 74 provinces. It will provide farm-to-market roads, water supply and small-scale irrigation through the decentralised Local Government Units (LGUs). ASIST–AP advises the LGUs on the effective application of IRAP in the infrastructure selection and monitoring process and the effective application of LBT methods of construction and maintenance. In recent months, ASIST–AP has trained LGUs in LBT methods and development of specific IRAP procedures for the water and road sector.

Thailand
Work on integrating rural infrastructure planning procedures into a draft proposed manual for local level planners at the Tambon level was completed and a manual in the Thai language is now available. Further discussion with the Ministry of Interior is required to obtain approval and endorsement of the planning manual.

Nepal
The World Bank in Nepal and ASIST–AP are collaborating in developing the World Bank funded Rural Access Improvement Programme (RAIP). This project will build capacity in a number of districts to develop rural access infrastructure and provide capital investments for construction, rehabilitation and maintenance of rural access infrastructure. ASIST–AP will provide capacity-building inputs to the districts, primarily on LBT. Furthermore, RAIP intends to use IRAP procedures for the identification of tertiary rural access improvements.

ASIST–AP is currently preparing a training needs assessment (TNA) exercise to identify capacity gaps at the district level and develop an appropriate training programme. This programme would not only benefit the RAIP programme but all future investments going into the selected areas.

IRAP tools are increasingly accepted and will now be applied in a mountainous district to prepare a district transport master plan and fine-tune the process for wider application.

Unfortunately, a United Nations (UN) Peace-Building Project, which had an important LBT component, was cancelled when peace talks collapsed.

Vietnam
ASIST–AP has been working with the World Bank on small contractor development. The objective was to define the most effective contractual mechanisms whereby local contractors would be able to effectively implement periodic and routine maintenance works.

Work on IRAP has stopped, since the local counterpart was unable to come to an agreement with the proposed districts to demonstrate the procedures. Alternative avenues will now be explored.
Employment Intensive Investment Programme (EIIP)—Latin America News

By Serge Cartier van Dissel and Raúl Fajardo, ILO/EIIP, Latin America

In Latin America, Employment Intensive Investment Programme (EIIP) activities continue to be carried out by two Danida-funded projects in the Andean countries and the Pro-EMPLEO project in Nicaragua, funded by Luxemburg. The two Danida funded projects are currently ending, whereas the Pro-EMPLEO project has been extended to the end of 2005.

Andean countries
There has been a strong focus on the publication of material developed or translated in the past, resulting in a long list of new Spanish publications (see page 26 for details).

In September 2003, a regional seminar was held in Quito with the Social Investment Funds of Ecuador, Peru and Bolivia. The objective of this seminar was the exchange of experiences between the Social Funds, with a particular focus on employment generation, planning and sustainability. The seminar was very successful and resulted in various demands for technical assistance and the continued exchange of experiences.

In November 2003, a second regional seminar was held in Lima, focussing on the legal and institutional barriers for small and micro enterprises (SMEs) in accessing public contracts. Based on studies carried out by the ILO, participants from Peru, Ecuador, Bolivia and Nicaragua presented their experiences, determined the most important barriers for SMEs, and identified steps to be taken in their respective countries. The exchange of experiences between the countries was greatly appreciated by the participants.

Bolivia
Technical assistance was given to the Co-ordinator of Rural Economic Organisations (CIOEC) with respect to the creation of a new legal associative enterprise modality suitable to this sector, as well as in the design of favourable public contracting policies.

Ecuador
A study on the impact of involving micro enterprises in routine road maintenance was carried out with national counterparts. The study examined aspects of income, employment and sustainability (see article on page 6 for more details).

Honduras
A consultancy was carried out at the request of the Ministry of Public Works on the incorporation employment intensive investment approach in the World Bank Rural Infrastructure Project. The consultancy also developed a proposal for the impact evaluation of the programme on road maintenance with micro enterprises, as well as a proposal for the participation of these micro enterprises in the new urban road improvement programme.

Nicaragua
On-the-job workshops were developed to train workers in technical construction skills. Start and Improve Your Construction Business (SIYCB) courses were offered to small contractors and enterprises, and courses on the administration of labour intensive construction projects were provided to technical municipal personnel.

Technical assistance and advisory support was provided to the technical departments of several municipalities, in the design and implementation of construction projects, i.e. housing, small rural roads, schools and sanitary posts, drainage, water supply systems, and similar works using labour-based technology (LBT).

The Pro-EMPLEO project contracted engineers for the technical supervision of several construction projects in rural communities, where local labour and resources were used. Pro-EMPLEO also started working with FISE, the Nicaraguan Social Fund, on implementing community led projects. This represents a major change for FISE, which tends to execute all works through medium and large contracting companies. The pilot projects have been very successful, and FISE has decided to increase the number of these types of projects in 2004.

Peru
A study similar to that carried out in Ecuador on the impact of involving micro enterprises in routine road maintenance was initiated. This forms part of the same series as the study executed in Ecuador.

A workshop on stone paving of roads was carried out in the December 2003, together with PROVIAS Departmental. The workshop focused on the experiences with stone paving of rural roads in Ecuador, and of a section of the primary road network in Bolivia suffering from constant earth movement.

Two SIYCB courses were held in cooperation with International Finance Corporation (IFC) and SWISSCONTACT.

---

1 Danish International Development Agency.
2 Promotion of local employment and income through the use of labour intensive technologies and the development of small and micro enterprises (SMEs).
3 Programme for secondary roads.
EIIP NEWS

Employment Intensive Investment Programme (EIIP) News

By Jan de Veen, EIIP*, Switzerland

In Geneva current attention focuses on three inter-related key issues concerning the long term planning in an environment where integration within the ILO (internal and external) is of prime importance: the future of ASIST-Africa, the future staffing and place of the Employment and Investment Branch (EMP/INVEST), and the Employment and Labour Practices in Construction (ELPC) initiative. In the case of ASIST-Africa, whose current phase comes to an end this year, a “Strategy Paper” has been developed which defines how the Programme’s services will be further integrated into the ILO’s regular structure and core programming areas. Based on this, a Programme Document for funding is being prepared for discussion with a number of donor agencies.

New Spanish Publications
Published by the ILO Subregional office for Andean countries, Lima, Peru.

ILO. Condiciones de trabajo decente en programas basados en mano de obra - Una estrategia de desarrollo al alcance de la mano. 2003. ISBN 92 2 315203 8
ILO. Buenas políticas y prácticas laborales en programas intensivos en empleo - Breves referencias de la guía. 2003. ISBN 92 2 315206 2
José Yeng and Serge Cartier van Dissel. Políticas de contratación pública y modalidades de organización legal en Perú, Bolivia y Ecuador - Acceso de las micro y pequeñas empresas a los contratos públicos para obras y servicios. 2003. ISBN 92 2 315201 1
Philippe Garnier and Marc van Imschoot. La administración de obras intensivas en mano de obra hechas por contrato. 2004. ISBN 92 2 315506 1
David Stiedl, Ulf Brudefors and Mike Shone. Tasas de productividad. 2004. ISBN 92 2 315500 2

This year EMP/INVEST will be affected by the loss of both Eric de Vries (April) and Jean Majeres (November) to retirement and possibly by the potential reorganization within the organization in line with the need for better internal integration. Our prime concern will be to safeguard the EIIP identity in this changing environment. The resource situation of EMP/INVEST will be discussed in relation to the fact that in the 2002-03 biennium the EIIP was the second biggest technical cooperation programme of the ILO after IPEC (ILO’s Programme dealing with Child Labour). During the ILO Governing Body (GB) session in March 2004, the Committee on Employment and Social Policy discussed ILO’s work on productive employment for poverty reduction. The encouraging support from the Governing Body to the Programme and its work on poverty reduction received at this meeting clearly shows that we are doing the right thing! We hope this materialises into increased resource allocations from the ILO!

Finally, a second phase for the ELPC initiative has been developed. In the 2002-03 biennium the ELPC has proved to be a good vehicle to practically collaborate both with external stakeholders and internal ILO services concerned with poverty reduction, labour standards and construction industry development. ILO Regular Budget Technical Cooperation (RBTC) funding has been requested to start new ELPC initiatives in the 2004-05 biennium. Following a decision on this, we intend to approach the European Union for substantial new inputs in this field.

1 The Employment-intensive Investment Programme (EIIP) is under the Employment-intensive Investment Branch (EMP/ INVEST) of the ILO.
The Crisis response operations of the ILO EIIP

By Mike Shone, ILO IFP/CRISIS¹, Switzerland

C

Currently, the ILO EIIP² has eight crisis response operations either under preparation or implementation. While the EIIP works are only part of the overall work of the ILO Crisis Response Programme activities, they are significant. The Crisis EIIP work is being developed in association with the Employment-Intensive Investment Branch (EMP/INVEST), the EIIP field operations of ASIST and the EIIP experts in certain ILO Sub-Regional Offices. These include: Afghanistan, where the ILO has recently entered into a US$ 4 million programme with the World Bank for the management and technical advisory support to the National Emergency Employment Programme Rural Access (NEEPRRA) component. The programme is anchored within the National Development Plan for livelihoods and social protection. NEEPRA is the government’s main instrument to link the establishment of a viable and effective safety net for the vulnerable and deprived to the development and protection of the country’s rural public and productive infrastructure. Through NEEPRA, increased and improved access to local markets, schools, clinics and productive agricultural land will be provided and natural resources will be protected and developed. This will have a significant positive effect and impact on the social and economic well being of the population. The ILO has in effect agreed to ‘subcontract’ the logistics component of this work, amounting to US$ 2.3 million to United Nations Office for Project Services (UNOPS) by having this work omitted from their agreement with the World Bank. The ILO Chief Technical Advisor (CTA) in Kabul for NEEPRA is Bas Athmer.

Iraq, where a National Employment Creation Initiative (NECI) proposal has been developed for possible funding by the Government of Japan. The long-term development objective of the programme is poverty reduction through optimal employment generation in the infrastructure sector. The objective will be realised through the implementation of policies and programmes that facilitate cost-effective, well-engineered and well-managed labour-based re-construction programmes within the mainstream and regular recurrent works budgets of central and local governments and within the private sector. The immediate objective is to create ten million workdays in the construction sector through labour-based technology (LBT) works. LBT efficiently increases the labour content in comparison with equipment-based technology (EBT). The NECI programme will develop LBT in Iraq based on the Danida funded Social Fund Programme in Egypt described in the lead article of this Bulletin.

Also in Iraq, a programme formulation mission was carried out in January 2004 with the support of ASIST – Asia Pacific (AP). The priority of the proposed rehabilitation programme will be a partnership with United National Development Programme (UNDP) and Food and Agriculture Organisation (FAO) in the rehabilitation of the irrigation and infrastructure sectors using LBT methods in and near Bam.

Solomon Islands, where the ILO Crisis Response Programme has handed over the management of this US$ 1 million infrastructure rehabilitation project to the ASIST – AP programme. The work is funded by the Japan Human Security Trust Fund and is being implemented in partnership with UNDP. The ILO CTA is Mukesh Gupta.

Somalia, where a US$ 3 million labour-based infrastructure rehabilitation and maintenance works programme funded by the Government of Italy and the European Union is being carried out in several difficult locations, including recent work in Mogadishu. ILO CTA Joe Connolly is carefully managing this work. He has subcontracted the administration, finance and logistics component to UNOPS.

Southern Africa, where during 2004 the ILO Crisis Response Programme will continue working closely with the ASIST-Africa team in seven countries of Southern Africa. The programme will add job value to the major existing infrastructure and social fund programmes of major donors. This will be the Programme’s contribution to poverty reduction and employment creation in the drought-affected countries of the sub-region. Important links have been established with the UN-FIVIMS³ inter-agency network in Johannesburg. This agency deals with early-warning systems and the general monitoring of the crisis in the countries of the sub-region.

Southern Sudan, where a programme formulation mission is currently underway. The ILO has the possibility of a close partnership with FAO, UNDP, UN-Habitat and UNOPS.

Sri Lanka, where the ILO Area Office Director in Colombo has initiated a programme for the wider and improved use of labour-based appropriate technology (LBAT) in the Sri Lanka’s infrastructure sectors. The ILO Crisis Response Programme is working closely with ASIST – AP in the development of this work. Interested partners include the World Bank and the Asian Development Bank (ADB).

¹ In Focus Programme on Crisis Response and Reconstruction
² Employment-intensive Investment Programme
³ Food Insecurity and Vulnerability Information and Mapping Systems
New Publications

The economic value of incremental employment in the South African construction sector

A report commission by the International Labour Organisation for the support of the efficient application of labour-based methods in the construction sector

Barry Standish


The macro-economic case for using labour-based, as opposed to equipment-intensive technology in the infrastructure and construction sectors, has been made in many developing countries on the grounds of lower unit costs, increased employment generation, higher contribution to GDP, higher multiplier effects, higher levels of household income and consumption, reduced foreign exchange requirements and hence, reduced import dependency. These conclusions apply to countries characterized by surplus labour, low wages and a weak local industrial capacity to produce tools and equipment. The ILO commissioned a study to investigate whether the macro-economic outcomes of labour-based versus equipment-based construction would still favour the labour-based option in South Africa, where higher wages and an established domestic industry producing equipment create a different situation. The study makes an important contribution to the debate on the macro-economic potential of labour-based investment technology not only in South Africa, but also more generally in the context of global efforts to foster employment—intensive growth where economically cost effective and technically feasible, with a view to combating poverty and reducing inequalities.

Available from ILO EIIP or ASIST

Technical handbook: How to build a short span trail suspended bridge

Volume I: Guideline for survey, design and construction

Volume II: Forms

Volume III: Standardised drawings and examples of bridge designs


This handbook comprises three volumes and provides the step-by-step process of constructing a trail suspended bridge. It provides technical guidelines for the construction of unstiffened pedestrian type cable bridges (catwalk) but does not apply for suspension bridges. The three volumes are structured as follows:

Volume I: A guidebook for site survey, bridge design, cost estimation and construction. It serves as a help and reference for using drawings provided in Volume II and the pre-designed formats in Volume III.

Volume II: Provides all the necessary formats for survey, design and cost estimation.

Volume III: Contains all the standardised steel and construction drawings and examples of bridge design.

Available from: SKAT, Swiss Centre for Development Cooperation in Technology and Management, Vadianstrasse 42, 9000, St Gallen, Switzerland

Labour-based technology - A review of current practice

Proceedings and papers of the tenth regional seminar for labour-based practitioners

Compiled by Prof. J. H. Y. Katima and Dr. K. N. Njau. Edited by Angela Kabiru-Kang’ethe and Kelley Toole
# Forthcoming events

## Courses

**Kisii Training Centre (KTC), Kisii, Kenya**

**Small scale labour-based roadworks contractor training**

- **Date:** 3rd May – 11th June 2004
- **Venue:** KTC, Kisii, Kenya
- **Fees:** Kshs. 126,000. Fees covers tuition, fieldwork, course materials, transport during the course, safe travel insurance, accommodation and meals.
- **Details:** Targeted at local (Kenyan) contractors and their employees. O – level pass (D+/3rd Division) minimum requirement, experience in road construction is an advantage. Covers labour-based roadworks construction and maintenance technology; contract management and administration; contract supervision, construction business management.

**International course in labour-based road construction and maintenance**

- **Date:** 4th October – 13th November 2004
- **Venue:** KTC, Kisii, Kenya
- **Fees:** USD 5900. Fees covers tuition, fieldwork, course materials, transport during the course, safe travel insurance, accommodation and meals.
- **Details:** For engineers and managers of labour-based roadworks. University degree is a requirement. Covers choice of technology, all aspects of planning, implementation and management of labour-based construction and maintenance roadworks including the use of contractors.
- **Contact:** The Resident Instructor
  Kisii Training Centre (KTC)
  PO Box 2254
  Kisii, Kenya
  Tel: +254 381 30699
  Tel/Fax: +254 381 21634
  E-mail: courses@kihbt-ktc.com

## Conferences

**8th Conference on Asphalt Pavements for Southern Africa – CAPSA 04**

- **Theme:** Roads – The arteries of Africa
- **Date:** 12th – 16th September 2004
- **Venue:** Sun City, North West Province, South Africa
- **Fees:** Early bird registration before 30th June 2004 SAR 5,200; After 30th June 2004 SAR 6,200; Companion registration: SAR 1,900
- **Details:** Provides all professionals in the roads industry the opportunity to share knowledge and up-date themselves with the latest developments and innovations impacting on the provision of road infrastructure leading to improved mobility and access for all within the southern Africa region and beyond.
- **Website:** [http://asac.csir.co.za/capsa](http://asac.csir.co.za/capsa)
- **Contact:** Pat Loots
  Email: patloots@iafrica.com
Training Developments at the Kisii Training Centre

By James Manyara and Peter Kega, Kisii Training Centre, Kenya

Training for small-scale labour-based roadwork contracts

The Kenya Institute of Highways and Building Technology (KIHBHT) Kisii Training Centre (KTC) has developed a training course for labour-only small-scale contractors for routine road maintenance. The course is designed for the Kenya Minor Roads Programme (MRP) headpersons, preparing them for the transition from being employed as direct labour by the government to being contractors and employers of a small labour force.

The participants spend two weeks in the classroom and one month on site carrying out a training contract. The main content of the course is labour-based road construction and maintenance, business management, contract management and labour issues. A major aspect of the course is explaining what the contract document means for the contractor. The course also advises on business aspects like money management, wage planning and investments in tools before taking a profit. Participants are taught about the importance of maintenance activities and how to perform them.

The first of these courses took place in Kisii in May 1998. There were three trial contracts that lasted one month each from June 1998. Further trial contracts continued after September. Since then, several courses have taken place.

Trial contracts

During the training, contracts are awarded to the participants as part of the practical exercises. These initial contracts are small (up to 20 km in length), last one month and are detailed in terms of quantities. During the training contract, the trainees are assisted with both technical and business advice. Those who perform well are awarded a second one-month contract on another section of the road. These contracts are based on rates fixed by the client, KTC. The rate takes into account fair wage rates, purchase and repair of tools and a reasonable profit margin.

The first training contracts automatically contain a heavy workload of maintenance operations on the first section of the road, to bring that section back to reasonable condition. After the one-month contract, the initial section of the road is left without further work. The section’s condition is monitored in order to determine the scheduling of further work.

The next one-month contract is awarded on a different section of the road, near the trainee’s home. This process continues until it is deemed necessary to return to the initial section of the road for further maintenance work. This period ranges from between three to six months. The process of leaving one section of the road untouched for short periods during the year and then returning to it routinely is designed to save costs while keeping the road in a constantly reasonable condition.

For the second round of contract awards, the length of the road sections and the duration of the contract can be extended. Contractors make competitive bids for the rates to be used. Contracts are awarded through the normal procedures applicable at the time in the districts.

Monitoring of the road condition on the completed sections is very thorough. Consideration is being given to contracting out this exercise to a small consultant team of former Ministry of Roads, Public Works and Housing (MoRPWH) roads inspectors.

This method of contract award, should eventually result in contractors dominating specific zones. Competition will develop at the borders of these zones. Successful contractors will expand their zones and perhaps purchase motor cycles for better supervision.
A lost opportunity to use labour-based technology (LBT)

The Greater Soweto Upgrading Project (GSUP) was introduced to eliminate the enormous backlog in the civil engineering services that prevailed in the Greater Soweto area in 1980 using labour-intensive methods of construction. The project represents a lost opportunity to use labour-based technology (LBT). The construction that was to be completed under phase I comprised of roads, streets, storm water drains, water supply reticulation and sewerage at a total value of US$ 150 million.

It is unfortunate that labour-based construction did not even attract a passing thought, as it was ideal for the project. Not only would unemployment figures in the area have dropped, but also entrepreneurial skills would have been developed leaving locals in a position to market themselves and secure employment. What was a labour-intensive project became a capital-intensive one. The contractors that were employed to construct the infrastructure employed more people from outside the project area. About 10% of the total budget was used on labour as compared to labour-intensive projects where the money spent on labour can range between 30 – 40% of the total budget. It seems that the construction industry in South Africa generally still believes in the three lies about employment-intensive construction. The three misconceptions regarding employment-intensive construction are that it is:

- Too slow (time);
- Too expensive (cost); and
- The quality is not acceptable.

These constitute the main constraints preventing the industry’s acceptance of the use employment-intensive techniques. However, given proper control, the cost of employment-intensive methods has been shown to be no more expensive than using conventional methods. The public works programme in South Africa should change as the policy environment changes, from a relief, emergency and ‘special’ public works programme to a long-term structured employment-generation programme. The approach should link economic growth, employment and investment policies. The public works programme must aim to ensure that infrastructure is planned around local needs rather than vice-versa.

The GSUP was a total failure as a development initiative. The community was not involved in any decision-making, communities were not encouraged to become sufficiently organised to have input into the project and the community was not left with any new skills after the project’s completion. The GSUP was a learning experience, engineers and planners must learn from the mistakes that were made. The researcher has no doubts that similar projects can be successful in future.

By Didibhuku Wellington Thwala, South Africa

The author is a Development Specialist at the Independent Development Trust (IDT), Pretoria and is also attached to the Research Centre for Employment Creation, University of the Witwatersrand, Johannesburg. He writes this article in his own capacity and the views expressed do not represent those of the IDT. Email: didibhukut@idt.org.za

When the contractors grow to a level where they are able to invest in appropriate machinery, they can be retrained as gravelling and spot improvement labour and machine contractors. This leaves room for new emerging small labour-based contractors or the expansion of the smaller contractors. This should ensure the development of the labour-based contracting capacity.

Roads 2000 labour-based roadwork contractor training

In the years 1999 – 2002, KTC carried out labour-based roadwork contractor training for the Roads 2000 Danida1 funded project in the Coast Province. Inputs came from Danida, Ministry of Roads, Public Works and Housing (MoRPWH) and KIHBT. Training was an important process in the implementation of Roads 2000 in the province. KTC trained over 100 routine maintenance contractors for the four districts in the province—Kwale, Taita-Taveta, Kilifi and Malindi. The contractors are currently undertaking road maintenance works in these four districts.

For further information contact: Sam Orwa. Email: courses@kihbt-ktc.com

---

1 Danish International Development Agency
Light equipment for bituminous seals on rural roads

By Sturla Elvsveen and A. Engdahl, DANIDA Rural Development Project, Bangladesh

The Rural Development Project 23 (RDP 23) is a Danida-funded rural roads project in Bangladesh executed by the Local Government Engineering Department (LGED). The project works include widening, realignment to some extent, improved sub-grade, sub-base, base-course and a Double Bituminous Seal Treatment (DBST), all on the existing road network. The works are labour intensive, though smaller machines are used where appropriate to maintain progress and quality. Excavation, short hauling of materials, processing, mixing, and on/off loading and spreading of materials is done by hand, while long haul and compaction is equipment based. Laying of DBST is a mix of labour and equipment.

Description of work

Given the conditions in rural Bangladesh, alignment of most rural roads is dictated by the numerous waterways, irrigation channels, paddy fields and villages. Hence the roads have a number of rather sharp curves and are quite narrow. The paved width is only 3.66 m. The traffic is a jolly mix of pedestrians, animals, bicycles, rickshaws, baby taxis, and small and large vehicles (including trucks and buses).

Diversion of traffic during construction work is often not possible, which in the case of DBST work means half of the road is pavered at a time, i.e. 1.83 m width only. This has a significant bearing on the type of equipment that should be used for the laying of the DBST. The equipment should have sufficient capacity, be small, compact and easy to transport. Further it should be simple, easy to operate, maintain and repair.

The project has, in close cooperation with Maxim Ercon Ltd. in Dhaka, developed, tested and modified mobile bitumen boilers and bitumen and chip spreaders. The equipment is based on existing technology, but further developed and modified to suit the project requirements mentioned above.

The sequence of laying the DBST is as follows:

- Clean the road surface of any loose materials, including droppings from animals such as cattle.
- Prime the surface with a cut back bitumen 80/100 grade, kerosene/bitumen ratio 40/60 by volume, spraying temperature 120°C - 140°C, 1.25 kg/m².
- After curing of the prime, apply bitumen 80/100 grade at 1.0 kg/m² at 140°C - 155°C.
- Lay the first layer of chippings 10 – 16 mm at 10 l/m².
- Roll the first layer of chippings.
- Apply bitumen 80/100 grade at 0.97 kg/m² at 140°C - 155°C on top of the first layer of chippings.
- Lay the second layer of chippings 6 – 10 mm at 6 l/m².
- Roll the second layer of chippings.
- Open up the road for traffic.

Originally, the bitumen spreader was supplied with a single hand-operated lance for spreading bitumen. One person was operating the lance, directing it from the shoulder to the centre line and back in repeated movements as the spreader was pulled down the road. The amount of bitumen applied and temperature was controlled during the work. This method of applying bitumen was not without problems, as it was difficult to maintain a uniform distribution of the bitumen, especially along the shoulder and the centre line, where the lance operator had to move backwards and direct the lance back towards the uncovered surface again. Quite often, there would be an excess of bitumen where the lance was turned in the opposite direction, for instance, along the shoulder and the centre line.

The chippings were spread by hand by one group of workers. The workers carried the chippings in metal head pans, and threw the chippings on to the road with a rotating movement of the pan. Spots not covered sufficiently, received another round of material.
Excess chippings were brushed off to the sides, and used again. The successful spraying of bitumen and applying of chippings, as described above, is highly dependent on the skill level of the workers. Even with experienced workers, it is difficult to apply the specified amount of bitumen and chippings per square metre in a uniform way. Furthermore, this method is slow. Only a single layer on an area of 300 m x 1.83 m can be applied per day. It takes four days to complete a length of 300 m full width and 13 to 14 days to complete 1 km. Experience indicates even lower production rates.

**Improving productivity**

In an attempt to increase production and quality of the DBST works, the project decided to modify the bitumen spreader and to make a simple chip spreader attached to the platform of a small truck. This was done in close collaboration with the manufacturer of the original bitumen boiler and spreader, Maxim Ercon Ltd.

The modified bitumen spreader is equipped with a fixed spray-bar that has 12 nozzles. The length of the bar is 1.83 m, covering half the width of the road. New piping and pump is also fixed to match the increase in bitumen flow. To allow the spreader to be used for spreading bitumen in confined places and potholes, a hand-held lance is also provided. The spreader is towed by a power tiller, which at a certain speed gives the specified amount of bitumen per square metre. The modified bitumen spreader has a capacity to cover 240 m x 1.83 m without refilling. The bitumen spreader cost approximately US $ 3,200.

The chipping spreader, which is 1.83 m wide, is attached to the rear of the platform of a small truck. One sprocket wheel is attached to the spreader and one to the centre of the truck’s rear tyre. A chain drive connecting the two sprockets steers the opening/feeding of the spreader. This allows a uniform spreading of the chippings at a specified amount per square metre. Three workers stand on the truck, shuffling chippings with shovels onto the full width of the spreader. When the truck is fully loaded, it can spread chippings over 160 m x 1.83 m area per load. The chipping spreader (hopper) cost approximately US $ 1,800.

An alternative to the chipping spreader is to continue spreading chippings by head pan and hand as earlier described. However, to match the speed of the bitumen spreader and to cover the bitumen before the temperature has dropped it is necessary to have a number of small groups of workers, each group covering a small area with chippings. This has only been tried once on a short section of a road once, hence it is premature to conclude whether this approach is feasible or not.

**Conclusion**

The new and modified equipment has been tested and adjusted during a period of two months, where approximately 11 km of DBST was laid. The quality of the DBST work is good and within project specifications. It is expected that with one unit of the modified bitumen distributor and one new chipping spreader mounted on a small truck, we should be able to produce 8-10 km of DBST per month, against a maximum of 2 km per month earlier, and with a higher quality.

*For further information contact: Maxim Ercon Ltd., Mr. Moyeed Roomi, Tel/Fax: (880) 2 9668401, Email: maxim@bangla.net; Mr. A. Engdahl, Email: engdahl@agni.com; Mr. S. Elvsveen, Email: deal@agni.com*
Labour-based technology (LBT) is gaining ground in order to create employment in poor rural areas in Tanzania. The focus has been so far on earth moving works. However, there is also scope for increased use of LBT for permanent structures such as culverts and bridges.

Stone arches are a centuries’ old tradition. The Romans built stone arch bridges with lime mortar more than twenty centuries ago. Today, many are still used by heavy traffic. In industrialized countries, arch technology was replaced by reinforced concrete because of changing labour costs. However, in rural areas of developing countries, low labour costs and high cost of industrial building materials favour stone arches for the construction of culverts.

District councils in Tanzania have benefited from road fund subsidies over the last four years. However, at village and district council level, funds are usually a constraint in improving the village road network especially when traffic density is low. These rural roads are characterised by the following problems:

- The roads are usually designed with an insufficient number of culverts due to the high cost of concrete culverts, leading to the premature erosion of roads and high maintenance costs.
- Many culvert pipes are not reinforced, are of poor quality or are laid too shallow (especially in valleys). These often break after one to two years and require replacement.
- Casting of concrete is difficult.
- The cost of concrete culverts and bridges is prohibitive for villagers to develop their own road network further.
- The traditional pole bridges do not allow for the crossing of heavy vehicles and need continuous replacement.

Stone arch culverts and bridges provide a solution to the problems related to the use of conventional concrete culverts. When compared to concrete culverts, stone arch culverts have the following benefits and advantages:

- The cost of labour required in the construction of stone arch culverts is lower than the cost of concrete used in concrete culverts.
- Stones are often available in the vicinity (10-15 km) of the construction site.
- There is no need for expensive iron bars, gravel, concrete or galvanised pipes.
- The weight of the stone arch culverts reduces the risk of floods washing them away.
- Unlike with galvanised culverts, stone culverts cannot be stolen and resold.
- A larger proportion of local resources are mobilised and used.
- Construction is simple and low-skilled village craftsmen and labour from the local villages can be used to implement the work.
- Employment is created due to the higher labour input required.

This technology enables greater involvement of the rural communities and district councils during the planning and execution of road works and results in a greater sense of ownership. The execution of the works can be delegated to village road committees and villages.
can access donor and government funding for road works through the matching of local resources. The typical costs of a stone arch culvert are outlined in the table below.

As a rule, the stone arch culverts cost 42% less than conventional reinforced concrete culverts in the conditions of rural Tanzania.

Due to the success of stone arches, the Ngara District Council now applies the technology for full contracts that are tendered through the district tender board.

Other applications of arches include the use of multiple arches joined to construct bridges with spans of upto 15m and building construction (ceiling cellars, lintels, market tables, biogas domes).

For further information contact: The District Engineer, Ngara District Council, PO Box 30, Ngara, Tanzania. Email: ngara@africaonline.co.tz

<table>
<thead>
<tr>
<th>Industrial materials</th>
<th>Unit</th>
<th>Cost/unit</th>
<th>Amount</th>
<th>Total</th>
<th>Village</th>
<th>External</th>
<th>30%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement bag 50kg</td>
<td>bag 50kg</td>
<td>10</td>
<td>14</td>
<td>140</td>
<td>140</td>
<td></td>
<td>30%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Local materials</th>
<th>unit</th>
<th>Cost/unit</th>
<th>Amount</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Stones</td>
<td>trip 7T</td>
<td>7</td>
<td>4</td>
<td>28</td>
<td>28</td>
<td></td>
<td>11%</td>
</tr>
<tr>
<td>Sand</td>
<td>trip 7T</td>
<td>7</td>
<td>0.75</td>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laterite soil (covering road)</td>
<td>trip 7T</td>
<td>7</td>
<td>3</td>
<td>21</td>
<td>21</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Labour</th>
<th>unit</th>
<th>cost/unit</th>
<th>Man days</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Skilled mason</td>
<td>lump sum</td>
<td>80</td>
<td>1</td>
<td>80</td>
<td>80</td>
<td></td>
<td>23%</td>
</tr>
<tr>
<td>Village labour digging trench</td>
<td>daily rate</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Village labour assistance mason</td>
<td>daily rate</td>
<td>1</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Village labour regravelling surface</td>
<td>daily rate</td>
<td>1</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transport @ 1 US$/km 7 tonne tipper</th>
<th>unit</th>
<th>trips</th>
<th>km</th>
<th>total</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrival/departure site</td>
<td>km</td>
<td>1</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td></td>
<td>36%</td>
</tr>
<tr>
<td>Stones</td>
<td>km</td>
<td>4</td>
<td>15</td>
<td>60</td>
<td>60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>km</td>
<td>1</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laterite soil (covering road)</td>
<td>km</td>
<td>3</td>
<td>4</td>
<td>12</td>
<td>12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Total                               |       |       | 474 | 162  | 312   | 34%     | 66%  |

Note: Costs in US$. Prices relevant for rural Tanzania. Final cost will vary as a function of the transport distance.

---

**Now Available**

**Capacity building for contracting in employment intensive infrastructure programmes — Quick overviews from the guide**

*ILO/EIIP. 2004*

This is a set of ten easy-to-read brochures providing an essential and succinct overview of the pertinent issues around capacity development for contracting in employment-intensive infrastructure programmes. They are based on the comprehensive guide of the same title published earlier. Each brochure discusses a different issue, *i.e.* creating an enabling environment; developing small-scale contracting capacity; models for contracting development projects; scaling up contracting programmes; contractor selection; tendering, bidding and awarding of contracts; contract documentation; productivity and labour standards; access to resources; funding and payment issues; contractor and contracting agency training; and community contracting. This is a valuable resource for all those interested or involved in the development of local contracting capacity.

*Available from ILO EIIP or ASIST*
Advisory Support Information Services and Training (ASIST)

ASIST is a programme providing advisory support, information services and training on employment-intensive strategies and local resource utilisation in the provision of sustainable infrastructure. It is a programme of the Employment-Intensive Investment Branch (EMP/INVEST) of the International Labour Organisation (ILO).

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

ASIST currently comprises two regional support programmes in Africa and Asia working within the framework of the EIIP. Their objective is to increase the use of cost-effective employment-intensive local resource based strategies in the provision of sustainable infrastructure, and in so doing create employment with fair working conditions for men and women.

Advisory Support

ASIST provides comprehensive policy, planning, and technical advice. ASIST advises on project and programme design, co-ordination, monitoring, and review of urban and rural employment-intensive infrastructure programmes and local resource utilisation.

Information Services

ASIST actively gathers, synthesises and disseminates relevant published and unpublished information on and related to employment-intensive approaches for infrastructure development and local resource utilisation. ASIST provides a Technical Enquiry Service to respond to specific requests for information. ASIST maintains a database of persons and institutions working towards the reduction of poverty through employment creation in the provision of sustainable infrastructure and services.

Training

ASIST supports capacity building essential for the mainstreaming of employment-intensive strategies in infrastructure provision through a wide spectrum of training activities including: training needs assessments, curricula and training programme development, training material and technique development, as well as the evaluation of training activities. ASIST also supports and facilitates workshops, seminars and conferences to stimulate information sharing and networking.

ASIST – Africa

Harare Office
Graham Johnson-Jones:
Programme Director
Depene Sable: Senior Technical Adviser
Camilla Lema: Senior Technical Adviser
Gamelihele Sibanda: Technical Adviser
Tomas Stenstrom: Technical Adviser
Kelley Toole: Technical Adviser
Ida Tsitsi Chimedza: Information Officer
Philipa Tsiga: Administrative Assistant
Luna Katiza: Senior Secretary
Mercy Nyamahendi: Secretary
Michael Murapa: Driver
PO Box 210, Harare, Zimbabwe
Tel: +263 4 369824/8
Fax: +263 4 369829
E-mail: asist@ilo.org; or
asist@ilosamat.org.zw; or
asist@africaonline.co.zw

Nairobi Office
Stephen Muthua: Technical Adviser
Angela Kabiru-Kang’ethe: Information Co-ordinator
PO Box 39493, Nairobi, Kenya
Tel: +254 2 2713028/2719413 /
2719313/2715293
Fax: +254 2 2710083
E-mail: asist@itdg.or.ke

ASIST – Asia Pacific

Geoff Edmonds:
Programme Co-ordinator
Chris Donnges:
Senior Development Planner
Bjorn Johannessen:
Senior Rural Infrastructure Engineer
John van Rijn: Technical Adviser (Nepal)
Supaporn Runtasvee:
Programme Assistant
Thanida Vora-urai: Registry Clerk
Chayanin Veerapong: Typist Clerk
PO Box 2-349, Rajdamnern Nok Avenue,
Bangkok 10200, Thailand
Tel: +66 2 288 2303
Fax: +66 2 288 1062
E-mail: asist-ap@ilo.org

ASIST website:
http://www.ilo.org/asist
EIIP website:
http://www.ilo.org/eiip

Next issue

September 2004 – Issue No. 18
Theme areas:
• Policy, institutional and legislative issues
• Financing and resource allocation

March 2005 - Issue No. 19
Theme: Integrated/multi-sectoral application of employment-intensive approaches

Contributions on best practice and experience related to these theme areas, project news and letters are welcome. Write for more details on specifications and deadlines. We look forward to hearing from you!