ROYAL GOVERNMENT OF CAMBODIA

SWEDISH INTERNATIONAL DEVELOPMENT COOPERATION AGENCY

INTERNATIONAL LABOUR ORGANISATION

Project Document

Technical Assistance to the Labour-based Rural Infrastructure Works Programme

Prepared on behalf of
the International Labour Organisation

by

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Chief Technical Adviser
Technical Trainer
Associate Expert
UNV Mechanical Engineer
UNV ITC Trainers
National Road Engineers

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LIST OF ABBREVIATIONS

ADB	Asian Development Bank
CARE	Cooperative for American Relief Everywhere
CARERE	Cambodian Resettlement and Rehabilitation Programme
CTA	Chief Technical Adviser
EGP	Employment Generation Programme
ILO	International Labour Organisation
IMF	International Monetary Fund
ITC	Institute of Technology of Cambodia
LBAT	Labour-based Appropriate Technology
LBC	Labour-based Contractor
MPWT	Ministry of Public Works and Transport
MRD	Ministry of Rural Development
NGO	Non-government Organisation
NPRDC	National Programme to Rehabilitate and Develop Cambodia
PDRD	Provincial Department of Rural Development
PRDC	Provincial Rural Development Committee
PWD	Provincial Works Department
RGC	Royal Government of Cambodia
SIDA	Swedish International Development Cooperation Agency
UNDP	United Nations Development Programme
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNCDF	United Nations Capital Development Fund
UNTAC	United Nations Transitional Authority for Cambodia
UNV	United Nations Volunteers
VDC	Village Development Committee
WFP	World Food Programme

Current exchange rate 1 US$ = 2500 Riel

INTRODUCTION

This project is intended to provide assistance to the Royal Government of Cambodia in their formulation of a national policy, strategy and action plan for the widest use of Labour-based Appropriate Technology (LBAT) in the rehabilitation and maintenance of the country's badly deteriorated rural infrastructure.

Experience gained under the highly successful UNDP funded ILO executed Project CMB/92/008 has demonstrated that labour-based approaches are a feasible and cost-effective way of improving rural roads, irrigation works and other essential rural infrastructure, while creating much needed employment and income generation in impoverished rural areas of the country.

Unlike Project CMB/92/008, which concentrated on direct management of LBAT infrastructure works, the present project will focus on institutional capacity building activities, supporting the Government in formulating a national policy, strategy and action programme aimed at integrating LBAT approaches as widely as possible into the country's national development programme.

This strategy is based on a shift of responsibility for implementation activities to the concerned provincial technical departments, with capacity building, training and technical back-stopping as the main focus of the project. The project support will be provided by ILO project experts who will work with the Ministry of Rural Development (MRD) and the Ministry of Public Works and Transport at both central and provincial level.

The ILO technical assistance described in this document is accordingly intended to complement and support other LBAT initiatives. The national policies, strategies, technical manuals and training materials developed by the project will support all current and envisaged projects in this sector (i.e. ADB, UNDP, WB, KfW, CARE, etc). Conversely, the training programmes, capacity building efforts and actual works to be implemented will serve as an efficient testing ground to verify the strategies and materials developed.

The training activities and infrastructure works to be undertaken will be placed in areas where major donors have and envisage large rural infrastructure programmes and thereby ensure a close physical contact between the projects. It is also expected that the activities of this project will provide a solid base for the expansion of similar activities into all provinces of the country, hopefully with the support of other international donors and financial institutions.

A CONTEXT

Cambodia has suffered from a tragic history of war over the past three decades and socio-economic experiments in the 1970s which reduced incomes and standards of living to levels considerably below those attained in the 1960s. It is only during the second half of the 1980s that the economic growth has again accelerated. The economy remains strongly based on agriculture which is currently growing at a rate of 7 to 8 percent. The new government is instituting reforms to increase state revenue, control inflation and tighten liquidity growth. The IMF which lifted restrictions on lending to Cambodia in 1993 sees however the continued fighting in the country as an obstacle to economic recovery and the country makes its transition to a market economy. According to UNICEF the key social indicators for Cambodia include; adult literacy of 35%, the population with access to safe water is 36%, adequate sanitation 14% and health services 53%. The opportunity cost of unskilled labour in rural areas has been found to be around US$ 1.00 per workday.

It is generally recognised that agriculture provides and will continue in the near future to provide the largest number of employment opportunities in Cambodia. However, it is also recognised that there are many unemployed and underemployed members of vulnerable social groups in the country which will not be absorbed by the agricultural sector. These include recently returned refugees, internally displaced persons, female-headed households, demobilised soldiers, disabled and other war affected persons.

A1 Description of the Sub-sector

The sub-sector with which this project is concerned is rural infrastructure including secondary and tertiary roads; minor irrigation; drainage and flood control works; and social infrastructure including water supply and sanitation facilities; village schools and health clinics. While there is a widespread need for rehabilitation and new construction in all these areas, the road and irrigation sectors are of particularly high priority because of their fundamental relationship to rural development in Cambodia and the improvement of agriculture upon which some 80% of the population depends for its likelihood.

The Road Sector

Cambodia is highly dependent on its road system for its internal transport and distribution system as well as its contacts with neighbouring countries. The past twenty years of war and neglect have badly damaged this infrastructure and in some cases have reduced operational capability to a fraction of its original design. In addition to physical damage, implementation capacity has been greatly reduced by decimation in the staff ranks during the war years. budgetary shortfalls are continuing to perpetuate the rundown condition of the transport system. Unless major improvements are undertaken in the short term, the system will deteriorate to a level at which complete reconstruction will be required.

The country's road network includes about 3,200 km of national (primary) roads, approximately 3,100 km of provincial (secondary) roads, and about 28,000 km of local (rural) or tertiary roads. Originally, about 2,400 km of the national road network was paved with asphalt or bituminous material, but over the years, through neglect and the effect of flooding and traffic, much of this pavement has disappeared. Presently, about 600 km of paved road remain with the balance surfaced with gravel or laterite. Except for Route 4 (Phnom Penh to Sihanoukville), which was constructed to higher standards than other roads and remains in fair condition, about 60 percent of the pavements are in poor condition, as is about 80 percent of the laterite surfaced portion. This poor state of about two-thirds of the roadways produces major stress and wear on vehicles (as well as forcing uneconomically low speeds to be the norm). At the same time, the vehicles

cause increased damage to and deterioration to the roads which, even if they were in good condition, were built to lower standards than required for the type, size, and weight of the present traffic. Many of the country's 4,100 bridges were damaged or destroyed and have been repaired temporarily to permit passage but are inadequate or unsafe for present-day traffic. The low embankments generally in use (especially on provincial and local roads) lead to annual flooding, which produces isolation in many cases and extensive damage generally. The difficulty of travel in rural areas is a major obstacle impeding community development work in Cambodian villages by the Provincial Rural Development Departments and NGOs, which is crucial for strengthening the institutional framework for rural development which the Government is currently building up.

The Irrigation Sector

Agriculture contributes about half of Cambodia's GDP and employs about 80% of the country's labour force. Rice is the most important crop, accounting for over 80% of total agricultural production.

At present, approximately 16% of the cultivated area in Cambodia is irrigated in the classical sense of canals conveying water directly to fields from the source. There are presently 3 types of irrigation:

- Wet Season Lowland Rice with Supplementary Irrigation (9%)
- Dry season Lowland Rice with Irrigation (2)
- Flood Recession Rice with Supplementary Irrigation (5%)

These irrigated areas currently account for approximately 30% of the total rice production of Cambodia. The amount of area that is used for multiple cropping is quite low however. This indicates the importance of having supplementary irrigation water for crop security, improved yields and for other uses. The UNDP Irrigation Rehabilitation study carried out in 1994 estimated that the present irrigated area could be doubled.

Some irrigation schemes which were developed in the early 1960s have been largely neglected and are currently in a deteriorated condition. During the late 1970s, under the Khmer Rouge an extensive network of canals, based on fixed one-kilometre gridlines, was implemented throughout the country but often without regard to natural contours and slopes. Many of the canals now function only as partial drainage systems. Weirs and other water control structures were also built to block flood waters in areas where double cropping might be possible. Many of these canals and structures were poorly designed, are in a deteriorated condition, have very limited function and often cause complex environmental problems, particularly those located in highly dispersive soils which are quite unsuited to conventional irrigation design methods.

Social Infrastructure

In rural areas of Cambodia safe drinking water supplies are very limited. UNICEF estimates that only 36% of Cambodia's population have access to safe drinking water and only 14% to adequate sanitation.[1] As a consequence, a large part of the village population continue to resort to polluted sources, including rivers and open rain-catchment pools which easily become contaminated. Rural sanitation facilities are very inadequate where they exist at all and contribute to the water pollution problems. The incidence of water-borne diseases is correspondingly high.

1 See UNICEF's 1994 Report on the State of the World's Children

The education system in Cambodia was virtually destroyed during the Khmer Rouge period 1975 - 79. While progress is being made in the restoration, among many other problems facing the Government in this sector is the fact that many rural schools are in an advanced state of disrepair, and the number of classrooms is inadequate to accommodate the large increase in the school-age population that has taken place over the past 20 years. It is feared that illiteracy rates will increase if the situation is not improved quickly.

In the health sector, UNICEF estimates that only about 53% of Cambodia's people have access to adequate health services, and in many rural areas the percentage is no doubt lower. One of the reasons is the shortage of rural health clinics easily accessible to village people. Below the district level a health care system is virtually non-existent.

The Rural Employment Situation

Although precise statistics on employment in Cambodia are not available (no census having been taken since 1962) it is universally recognised that underemployment and unemployment are major problems in the rural areas.[2]

Cambodia has recently resettled more than 570,000 persons in rural villages, comprising returnees from refugee camps and internally displaced persons (IDPs). The UNTAC operation which during 1992 and 1993 was employing up to 50,000 workers has terminated, leaving a large number of these workers unemployed. The proposed reduction of the civil service from its present estimated level of some 300,000 civilian, police and military personnel is expected to swell the number of people looking for jobs in both urban and rural areas. Many of those who are currently unemployed or under-employed are women heads of households (some 30 - 35% of all households); handicapped persons injured by mines; and other disadvantaged groups. Unemployment is particularly high during the off-seasons in agriculture.

While it is recognised that the agricultural sector will continue to provide the major portion of employment opportunities in rural Cambodia for the foreseeable future, it is also clear that there are large numbers of unemployed persons who will not be absorbed by the sector in the short term, nor in the service and small industry sectors since the growth of these sectors of the rural economy will be slow. As a consequence there is an urgent need for the immediate expansion of employment opportunities throughout the rural areas of the country.

The Role of Labour-Based Appropriate Technology (LBAT)

The dual need for infrastructure rehabilitation and immediate employment creation in Cambodia can be met to a significant extent through rural construction programmes using LBAT technology.

Labour Based Appropriate Technology (LBAT) is defined as that construction technology which, while maintaining cost competitiveness and acceptable engineering quality standards, maximises opportunities for the employment of labour (skilled and unskilled) together with the support of light equipment and with the utilisation of locally available materials and resources.

Labour Based Appropriate Technology contrasts markedly with the conventional practices of using capital and equipment-intensive construction technology which is often mistakenly assumed by some development decision makers to be the most appropriate and the most cost and quality effective, largely because they are the technologies used in industrialised countries.

2 See, for example, CARERE's Income and Employment Generation Concept Paper

In actual fact, numerous studies carried out by ILO and the World Bank in many countries, as well as ILO's field experience in Cambodia and elsewhere, demonstrate that when the right conditions are present in a given area, LBAT is the most cost-effective approach to rural infrastructure development. These conditions include: (a) large numbers of under- or unemployed persons in the areas where the work is required plus local availability of construction materials; (b) a low-wage structure (under US$4.00 per day according to World Bank studies); (c) shortage of conventional construction equipment and high capital costs; (d) small contractors skilled in LBAT technology and capable of supervising the work efficiently; and (e) competence of the public sector agencies responsible for rural construction in the areas of contracting and supervision of contractors' performance. Except for the last two, these conditions prevail in most rural areas of Cambodia, (where incidentally, the opportunity cost of unskilled labour has been found to be about US$1.00 per work day, although there are seasonal variations with labour supply being at a premium during the sowing and harvesting periods of the agricultural cycle.)

The experience gained by ILO under Project CMB/92/008 shows that the LBAT approach to rural infrastructure and maintenance is a feasible and cost effective strategy and acceptable to the rural population. Under this project over a 3-year period approximately 700 - 800 km of secondary rural roads were rehabilitated or newly constructed in 6 provinces, in addition to irrigation and other works, generating an estimated 1.5 million work days, with a work force that was 60% female and also included many handicapped persons for whom special tools had been designed.

A2 Host Country Strategy

The Cambodian Government's development strategy presented at the March 1994 ICORC meeting in Tokyo accorded high priority to agriculture and rural development, for both economic and strategic reasons, and this approach was supported by the international community. The Government's sectoral strategy embraces a number of linked objectives: (i) improved food security for the Cambodian population, with decreasing reliance on external food aid; (ii) reintegration of displaced Cambodians into the rural economy; (iii) more secure conditions for the occupation and improvement of agricultural land and for the marketing of agricultural products; (iv) improved infrastructure and social facilities in rural areas as a necessary input for increased agricultural production and rural income improvement; (v) better technical services, information, tools, and farm inputs to raise farm productivity; (vi) the rehabilitation of rubber plantations as an efficient source of income, employment, and foreign exchange, and (vii) the creation of an institutional capacity and knowledge base needed to prepare and implement long-term development strategies and investment programmes for the sector.

In the rural areas which are home to some 85% of the country's population, the goals are to:

- improve the quality of rural living by promoting rural development as a central feature of the Government's development priorities;
- ensure that the pattern of development is sustainable socially, politically, fiscally and environmentally; and
- rely to the maximum extent possible on private entrepreneurship and the market as engines of growth.

The ultimate goal is to alleviate the widespread poverty that presently prevails throughout the rural areas of the country, which in turn requires progressive economic growth, increased agricultural productivity and steady reduction of un- and under-employment and income generation in rural areas.

The development strategy recognises the important contribution that a labour-based approach to rural infrastructure rehabilitation and maintenance can make towards the above objective, and a seminar held on this subject in march 1995 recommended the establishment of a inter-ministerial Task Force to assist the Government to formulate and implement a national programme based on LBAT concepts.

This Task Force is now well established with members from 15 Ministries including the Ministries of Public Works, Rural Development, Agriculture, Labour and Social Affairs, Finance and Planning, with the mandate of establishing a National Strategy for the use of LBAT. This strategy is to include:

- The setting up of an LBAT unit in the relevant ministries to appraise projects and programmes in relation to the suitability of the LBAT approach;
- The development of a nation wide programme of LBAT rural roads;
- The integration of LBAT into irrigation programmes;
- The possible role of LBAT in the demobilisation process and in the reduction of the civil service;
- The links between the implementation of LBAT programmes and the promotion of micro enterprises in rural areas;
- How to develop training programmes for the supervisory and technical staff required for a large scale application of LBAT;
- The integration of LBAT concepts into educational institutions such as the ITC;
- An evaluation of specific issues related to the use of LBAT such as remuneration, payment systems and procurement.

The present project is intended to assist in and facilitate the implementation of this strategy.

A3 Prior and On-going Assistance to the Sub-sector

(i) ILO Employment Generation Programme

The ILO has since 1992, through its Employment Generation Programme, been executing a labour-based rural infrastructure rehabilitation project financed by UNDP and the Dutch Government. The project is contributing to and facilitating the resettlement of refugees in four northern provinces of Cambodia through the rehabilitation of rural infrastructure worth about US$ 10 million, consisting of rural roads rehabilitation and maintenance, irrigation and reclamation works at Angkor Wat. This project has thoroughly proved the viability of the labour-based appropriate technology in Cambodia. So far, the ILO project has reconstructed more than 400 km of secondary and tertiary gravel roads, maintained about 700 km, constructed and rehabilitated several irrigation schemes and generated 1,5 million workdays. To achieve these outputs the project placed a strong emphasis on capacity building activities so that the EGP would become sustainable in the sense that the lead role for its activities in the future can be taken over by government authorities at central and local levels. This is clearly demonstrated through activities undertaken by the EGP, such as:

- Formal training courses combined with on-the-job training for technicians and engineers covering management and implementation topics related to labour-based infrastructure works;
- Development of training materials and programmes covering labour-based appropriate technology integrated into the curricula of the Institute of Technology of Cambodia;

- Assistance to establishing the inter-ministerial Task Force to coordinate the efforts to enhance the use and effectiveness of labour-based appropriate technology for infrastructure works in the country;
- Initial efforts to involve domestic small-scale contractors in the execution of rural infrastructure works.

(ii) Asian Development Bank

The government has recently negotiated a loan with ADB to finance a rural development programme in six provinces of South-eastern Cambodia, which will comprise a major component in which 600 km of rural roads will be rehabilitated and maintained. Similarly, outputs of this project will be achieved using LBAT involving local small-scale contractors, supervised and managed by local provincial authorities.

The present project will establish close links with this project, in particular in the field of training, for which ADB has already requested the assistance of ILO. Therefore, this project will provide a working model for the ADB in its planned training and road works implementation.

(iii) UNCDF

On the basis of the encouraging success of ILO infrastructure rehabilitation programme, UNCDF is considering to finance a road rehabilitation and maintenance project also utilising local small-scale labour-based contractors, in which UNDP has showed interest in supporting the funding the technical assistance. This proposed project would aim at the rehabilitation of about 150 km and the maintenance of about 500 km over a period of three years (1996-1999) in the provinces of Banteay Meancheay and Pursat.

(iv) CARERE

It was launched in 1992 as UNDP's major programme to facilitate the reintegration and reconstruction process in Cambodia, and it still remains today the backbone of UNDP's future programme to the provinces. It is an instrument to channel donors' funding to priority projects planned by CARERE and implemented by different agencies and projects, including the ILO EGP. UNDP has recently reformulated the CARERE programme, and during the next phase, it will focus on capacity building as a means to achieve its outputs, and calling for the participation of specialised UN agencies for specific technical areas. CARERE is now in the process of establishing participatory planning mechanisms at local level through the formation of development committees at village, commune, district and provincial levels. In order for these institutions to effectively fill its functions, it is important to develop practical planning tools and procedures for the various sectors they will be concerned with.

(v) CARE

With USAID funding, CARE has recently commenced road rehabilitation works in Bantaey Meancheay Province. A major portion of these works is carried out by local NGOs/contractors, which have previously received LBAT training from the ILO project.

(vi) World Bank

The World Bank is currently supporting the government in implementing a Social Fund which provides a considerable source of funding for rural infrastructure developments. According to the statues of this fund, all provinces may apply for financial support, covering all types of rural infrastructure, including rural roads and bridge works.

(vii) World Food Programme

The collaboration with WFP to use WFP's food for work resources for new construction and maintenance will need to be explored once the detailed physical works programme of this project has been identified. In the past this collaboration has provided both food security and cash income to resettled Cambodians who have received employment on the labour-based public works projects. The pooling of resources and targeting them to the most poor areas of the countryside have permitted WFP and the ILO to achieve more than if they worked separately.

(viii) Kredittanstallt für Wiederaufbau

The KfW project is operating in Kompong Thom and Siem Reap provinces. The project will rehabilitate rural roads using LBAT. It is expected that the KfW project also may expand the future market prospects of the small-scale road contractors trained by the present project.

A4 Institutional Framework for the Sub-Sector

The Government agencies chiefly responsible for the provision of rural infrastructure are the Ministry of Public Works and Transport (MPWT) and the Ministry of Rural Development (MRD).

According to the roads classification system recently proposed by the Cambodia Transport Rehabilitation Study, rural roads fall into the "secondary" and "tertiary" classification. The former are roads that link district centres to the national road system and to one another. The latter are intra-district and intra-commune roads.

The MPWT is responsible through its Provincial Departments for the construction and maintenance of secondary roads, while the MRD has recently assumed responsibility through its Provincial Departments, for the provision of tertiary roads. The MRD is currently endeavouring to build up its capacity to carry out this responsibility. At present, however, the existing limited Technical capacity in the country remains largely concentrated in the MPWT, and is almost entirely taken up by the task of rehabilitating and maintaining the country's primary network comprising the main inter-provincial highways which are also badly deteriorated.

With regard to irrigation works, the Hydrology Department of the Ministry of Agriculture is involved in the planning and design of the works, with the MPWT responsible for the actual construction.

The private sector construction industry is dominated by a few large and medium size contractors, whose operations are mainly concentrated on the primary road network. Small private contractors find it difficult to enter the road sector because of the equipment investment required and the lack of a sufficiently large and predictable market.

Experience in other countries has shown that small contractors are the ones most qualified to employ LBAT approaches, and an important objective of the present project is to foster development of the domestic small contractor sector.

A final feature of the institutional framework for rural infrastructure is the LBAT Task Force established by the Government and referred to above.

B PROJECT JUSTIFICATION

B1 Problems to be Addressed: the Present Situation

This project is intended to address two major and closely inter-linked problems that Cambodia presently faces and which are serious obstacles to rural development and the consolidation of peace and stability throughout the country. The first of these problems is the badly deteriorated state of rural infrastructure generally, and the road network, in particular, especially the secondary and tertiary roads. The second problem is the high level of rural unemployment and under-employment which are a major cause of rural poverty. The present situation in both these areas has been described in Section A1 above. Both problems will be dealt with simultaneously by building up capacity in the concerned agencies, principally the MPWT and MRD for infrastructure rehabilitation and maintenance through the application of LBAT Technology within a well-defined national policy and strategy.

Towards the achievement of this objective the project will address the following specific problems.

(a) The present very limited technical and management capacity of the MPWT and MRD for quality rural road works. The rehabilitation and maintenance of high quality rural roads that will last using LBAT approaches is no easy task. The problem is aggravated in Cambodia by the prevalence of poor soils for the construction of embankments, as well as by the scarcity and often poor quality and high plasticity of laterite deposits, plus the scarcity and spatial distribution of stone quarries and limited capacity of crushing plants. Systematic testing of materials and more stringent engineering supervision are needed if roads and other works are to be maintained at acceptable standards. Both the MPWT and MRD face an acute shortage of the trained technical personnel needed.

(b) Their Provincial Departments also lack expertise and experience for efficient planning, organisation and management of LBAT infrastructure projects, and accordingly need advice and training in contracting and bidding procedures, supervision of contractors' work, and evaluation of the projects. A major output of this project will accordingly be technical guidelines, manuals and both formal and non-formal training materials in all aspects of LBAT construction and maintenance, for application in the training programmes to be organised by the project (ref. Annex 3).

(c) A third problem to be addressed is the present shortage of small contractors available in the rural areas to undertake contracts for rural works and implement them to acceptable standards. This problem will be dealt with by systematic promotional efforts to identify potential entrepreneurs and develop a training programme to equip them with both the technical and business skills needed to create a sustainable enterprise.

B2 Expected End of Project Situation

By the end of the project, it is expected that a capacity will have been created within the government to plan, coordinate and implement rural infrastructure rehabilitation and maintenance works, using labour-based appropriate technology, carried out through the involvement of domestic small-scale private contractors.

Technical, financial and administrational procedures will be established within relevant technical line ministries at central and local level as important planning and management tools for national staff involved in rural public works programmes.

At central level, the government will have formulated a national LBAT policy and strategy and

improved its capacity to coordinate external assistance related to rural development programmes and established standards, procedures and guidelines related to work methods, organisation, geometrical design standards, quality and costs.

Furthermore, the government will be in possession of a complete and standardised contracts management system for the effective use of domestic contractors to execute rural infrastructure works using labour-based work methods.

To achieve this goal, a comprehensive training programme will have been developed for staff from both the public and private sector covering several categories of staff from engineers, technicians, supervisors to mechanics, accountants and clerks.

Based on the studies already initiated by project CMB/92/008 on rural road maintenance, this project will continue to support the government in relation to this important issue with the aim of establishing a national policy on maintenance of gravel roads. This policy will be developed on the basis of the experience of CMB/92/008 which has successfully carried out maintenance of 700 km of secondary and tertiary roads. By the end of the project, it is expected that optimal maintenance methods and organisation have been established through a well defined maintenance management system which will act as a national standard, and which is fully operational under the supervision of local authorities, utilising the domestic private sector for implementing the works.

The road maintenance management system, with its inventories and road prioritisation procedures, will be an important tool for the government at both local and central level enabling them to identify the requirement for capital and recurrent investments in this sector. Furthermore, it will be an effective identifier of needs for external assistance in order to sustain previous investments in this sector.

The training package will be designed in such a way that emphasis is given to the use of local in-country training resources and therefore designed in a way that it can easily be repeated or replicated in other sectors or regions of the country.

The training package, consisting of course programmes, training manuals, technical manuals and other teaching aids will be available in Khmer and will be tested out by conducting pilot courses in the Provinces, using national staff as trainers to the extent possible, with the advice and support of experts to be provided by this project.

Labour-based technology will also be firmly established as an integral part of the course programme and curricula offered to technicians and engineering students at the Institute of Technology of Cambodia. During the project period, a complete set of training modules will be fully tested and integrated into the standard course programmes for roads and irrigation engineers. In parallel to these activities, local counterpart trainers will be identified and trained to sustain these inputs and independently carry on the LBAT training after the completion of this project.

The above results should also provide the government the good governance and transparency required for the donor community to entrust the responsibility for future assistance to this type of development project fully into the hands of the government, i.e. facilitating the shift to national execution of other donor-funded projects.

B3 Target Beneficiaries

The direct beneficiaries are identified as:

(i) technical and support staff in the public sector: project managers, engineers, technicians, foreman, gangleaders, storekeepers and accounts clerks,
(ii) technical and supporting staff in private contracting organisations as above,
(iii) lecturing staff and engineering students at technician and engineers courses at the ITC,
(iv) policy makers, planners and administrators at district, provincial, and central government levels.
(v) domestic petty and small size contractors, who will receive a start in business and the skills needed to build successful contracting firms.

All the above will participate in training courses, workshops, seminars and/or on-the-job training for which the project will provide inputs in the form of providing a complete training package.

Finally, the unemployed and under-employed rural workers and their families in the areas where the construction works will be carried out will benefit through the employment opportunities and cash income that will be generated as this and other similar projects are implemented. The completed projects will, in turn, contribute to the process of rural development by contributing to agricultural productivity, through improved irrigation works and expanding access of farm families to markets as well as to health, education and other social services, now severely inhibited by the lack of an adequate well-maintained transport system.

B4 Project Strategy and Implementation Arrangements

B4.1 Project Strategy

The logical point of departure is the government's interest in building up an in-country capacity to plan, coordinate and execute labour-based infrastructure works through the involvement of the private sector.

The ILO has accumulated a considerable experience in assisting governments in such aspirations through similar programmes in other countries. Experience from these programmes show that to achieve a sustainable programme of this type, support is not only required in terms of LBAT, but also in related fields such as contracts management, integrated rural infrastructure planning, business management, vocational training and labour legislation. These are all traditional areas of ILO involvement and cover areas in which Cambodia currently receives technical assistance from the ILO. However, active measures are necessary before the public works sector will access this expertise. A continued presence of ILO technical assistance to Cambodian infrastructure works programmes would also provide strong linkages and testing grounds for the advisory support provided in the related fields.

A basic approach of the ILO to the introduction and development of LBAT in public works programmes is to act at both policy level and implementation level. So far in the case of the Cambodian labour-based programme, the main objective was to demonstrate the feasibility of LBAT at the local level and provide the government with a labour-based infrastructure programme with the objective of rapidly increasing employment opportunities in the rural areas. This project will, however, concentrate on institution building activities which are important in order for a LBAT to survive in the long term in Cambodia. Many of these activities have already been initiated by the ILO, and will be fully developed and tested during this project.

Such activities include policy formulation, design of national standards, designs and procedures for planning and implementation of labour-based rural infrastructure works, contracts management systems, road maintenance system and development of a complete training package for the various actors within the sector.

ILO's experience with LBAT approaches has shown that capacity building in all these areas, and not only in the technical aspects of LBAT construction technology are essential for programmes to succeed. The nature of capacity building in this project can be described as three main features:

(i) First of all, the project will assist the government in further formulation of its policies in relation to LBAT and establishing detailed guidelines for how general government objectives on LBAT and the use of local resources can be secured in its rural infrastructure development programme.

(ii) Such guidelines need to be converted into practical instructions to staff at implementation level. This will be achieved by developing various management tools such as technical designs, standardised work methods and procedures, technical designs, well documented in technical and administration manuals which promotes the use of LBAT. These management tools will be developed through a close cooperation between the counterparts and project staff and close consultations with other ministries through the Task Force. Training programmes to ensure the introduction and correct use of new technology and procedures will be designed and conducted in a way that maximises the use of local resources, i.e. training of local trainers.

(iii) To ensure the viability of the policies, standards and procedures developed by the project, they will be tested at field sites which will also act as full-scale demonstration and training grounds. The envisaged training programme and actual road works carried out on the test sites will provide further feedback, enabling the project to validate policy and standard setting works as well as making final adjustments based on initial trials.

(iv) Finally, the project will assist the government in adopting and institutionalising the outputs from (i) and (ii). This will again require a substantive involvement of the counterpart and Task Force Secretariat. These two parties will provide the crucial linkage between the project and the government establishment.

Through this process, the government will effectively develop its capacity to effectively manage a rural infrastructure programme. Through its active participation in the design and testing phase, it will also be able to adjust its system to future requirements and possible extension of current LBAT rural works programmes as well as introducing the technology to new sectors.

The management tools and training programmes developed at central level will:

- assist local authorities to plan, coordinate and supervise infrastructure works carried out by both the public and private sector, and
- assist local government in organising and conducting local training programmes for local authorities, NGOs and the private sector.

The activities at the training/demonstration sites will also provide important feed-back to central level on requirements for further support in terms of staff, additional training, funding, revision of procedures, etc. This synergy between policy guideline development and practical field experience and how they are inter-linked is visualised in Figure 1.

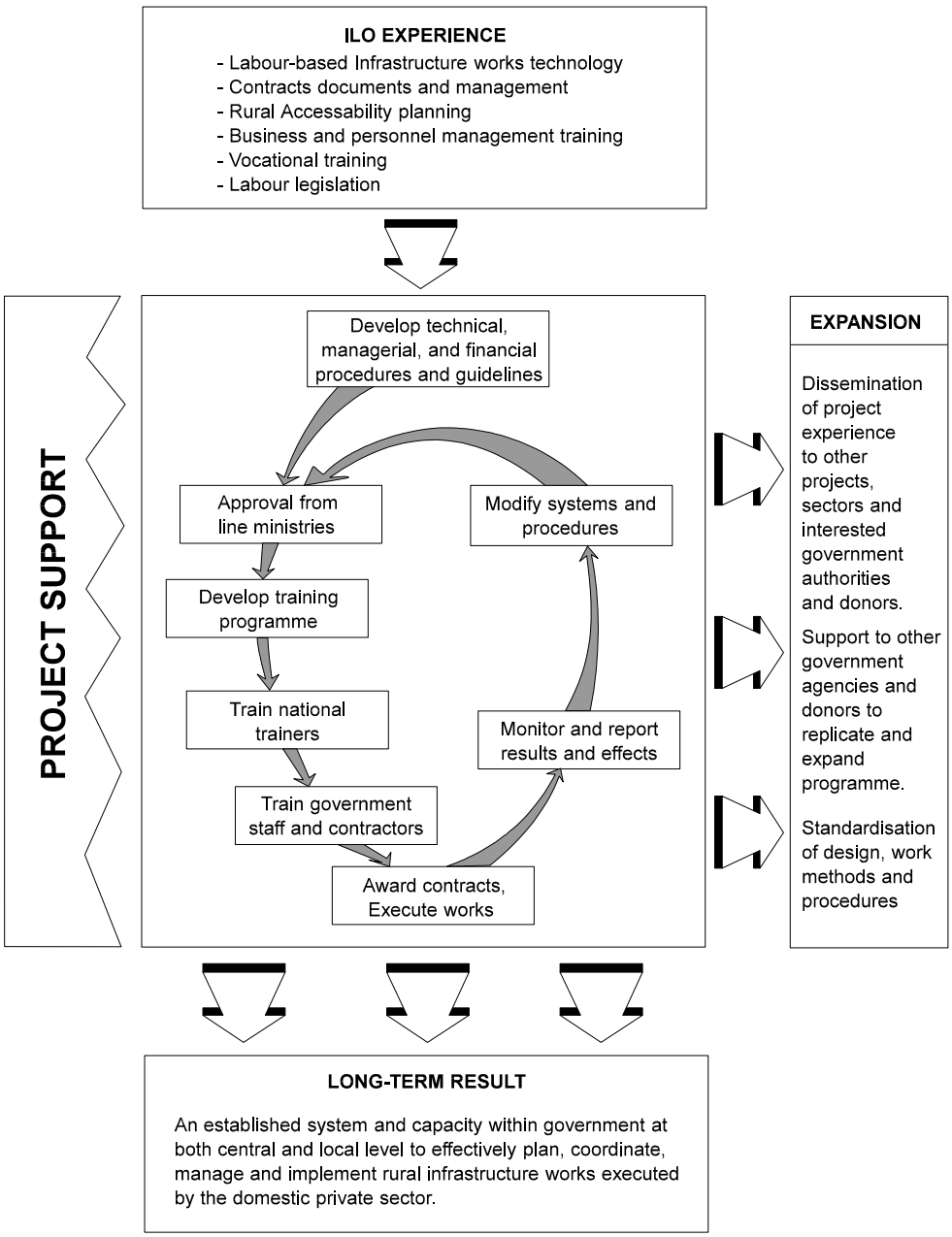


Figure 1 Strategy for ILO Technical Assistance

The main emphasis of the technical assistance of this project will as its predecessor remain within the road sector. If the demand arises, similar assistance projects for irrigation works and other sectors can be formulated with the assistance of this project. However, it should be acknowledged that a great deal of the management tools designed for the road sector will be applicable for other sectors and will be disseminated to neighbouring sectors through the Task Force (i.e. contract management documents and procedures, work methods, employment conditions, etc).

B4.2 Implementation Arrangements

The International Labour Organisation will be the executing agency for the project. The project will be executed in close coordination with the LBAT Task Force and will be conducting its daily work in close collaboration with its counterparts, the Ministry of Rural Development and the Ministry of Works and Transport. Office space and facilities in the field will continue to be provided by the provincial departments of Ministry of Works and Transport.

The activities of the project will be carried out taking into consideration the specific demands primarily of the MRD and MPWT and their provincial departments. In addition, the experience and outputs accumulated by the project will be disseminated to other ministries, donors, NGOs, the ITC, and private sector organisations.

The project will provide support services to the inter-ministerial Task Force and ITC, development of appropriate management tools and systems and consecutive training. In relation to decisions on general policy matters, dissemination of information and issues which require the support and collaboration of several ministries, the Task Force will play a core role as the project's access to high-level decisions makers. However, it is expected that the project will also require a more continuous and regular access to key persons who can represent the interests and concerns of the Task Force on a daily working basis. For this purpose, the Government has created a secretariat within the Ministry of Rural Development which will in effect also act as a government counterpart to the project. This secretariat is the government's main mechanism for the Task Force to carry out its mandate as described in Section A2.

Activities of the Task Force Secretariat include administering the Task Force's work, convoking meetings, liaising with members and agencies, processing, printing, translating documents, studies for Task Force meetings, and collaborating closely with the ILO project who advises the Secretariat on technical matters. To facilitate the effective operation of the Secretariat, the project will provide assistance in the form of office equipment and supplies and cover costs related to local travels, local consultants, printing and communication. Furthermore, the project will continue to support the Secretariat by providing detailed advise on its terms of reference, work programme and institutional linkages to the various members of the Task Force and its role in relation to ongoing labour-based infrastructure programmes and the donor community.

When demands for advisory support from other development projects arise, the project can be expanded to provide the required advisory support to the emerging projects.

Such implementation support activities to additional programmes can be provided through:

(i) an expansion/revision of the project agreement, or
(ii) by preparing separate agreements with other donors, however, maintaining a strong linkage to this project, in which it is acknowledged that the present project will be responsible for the necessary coordination and overall management of the various components of the ILO LBAT technical assistance.

The above arrangements will ensure an effective use and coordination of both long-term experts and external short-term assistance provided by the ILO to the infrastructure development projects in the country.

Furthermore, it will ensure a uniformity in the technical assistance provided to all parties by establishing one centre for labour-based competence outside the national bodies.

Finally, it would provide the government with valuable assistance in terms of coordination of

donor inputs to this sector and standardisation of design and work methods until the government is capable of taking the full responsibility of such tasks.

B5 Reasons for Assistance from SIDA and ILO

The Government of Cambodia is embarking on a massive multi-billion task of rehabilitating nearly the entire public infrastructure of the country. The investment needed to undertake this work will largely be funded through loan arrangements with international lending and development institutions. This undertaking will load Cambodia with a sizeable national debt for many generations to come.

To reduce wherever possible the size of the debt and the need for foreign exchange, Cambodia has decided to use LBAT methods in the rehabilitation of infrastructure, thereby maximising the use of locally available resources and employment generating opportunities. Further, the use of an LBAT approach by nature directly involves the participation of the population in the reconstruction of their country, thus strengthening the social fabric of the country.

Of equal importance to the reconstruction of Cambodia, is the need for comprehensive infrastructure maintenance policies and strategies. The ability of Cambodia to protect its investment in infrastructure will be crucial for its success in reconstructing the country.

The ILO, in close collaboration with the Government, has established an extremely successful labour-based infrastructure rehabilitation project in the four north western provinces of the country. Despite operating in some of the most insecure and remote areas of Cambodia, the project has been able to deliver desperately needed infrastructure and employment. The ILO project has and still serves as a model for other interventions in infrastructure development. The project has been instrumental in assisting the Government in its policy decisions to make use of LBAT as a national strategy. With the present project, it is expected that this assistance to the government can be continued.

The ILO has been identified as an appropriate executing agency due to its long and extensive experience in the field of development of sustainable rural infrastructure works programmes. The extension and integration of LBAT at national level will require additional support from the side of ILO which has already acquired a detailed and intimate knowledge of the specific conditions and arrangements required for the use of LBAT in Cambodia. Experience from past achievements in ILO projects in other countries will be imported to Cambodia and adjusted to the local conditions as identified by the project and the relevant technical government authorities. The assistance of the ILO would also enhance government access to ILO's experience in related fields such as rural transport planning, local capacity building and community participation, business management and administration, vocational training, labour standards, which also may strengthen related on-going initiatives and programmes in the country.

B6 Special Considerations

The employment and income generated through the programme will be particularly beneficial to poor women who constitute 56% of Cambodia's adult population and who head an estimated 1/3 of the country's households.

Rural women made up 60% of the workforce employed under CMB/92/008, demonstrating that this kind of work is both culturally acceptable and a potential source of income for women and their families.

No new roads are envisaged under the project and thus there are no damaging environmental activities foreseen. Current road rehabilitation operations are seen as locally beneficial in terms of the scale of soil excavation activities. To form the embankments soil is excavated locally, at regular intervals, in the form of shallow borrow pits. After construction these naturally fill with water and quickly become local fishponds. The siting of these pits is agreed with local communities beforehand in order to gain the best future advantage for them. Laterite excavation is limited to the number of isolated hillocks and some environmental damage initially results. Borrow-pits can be well shaped and landscaped after excavation operations but many are widely and continuously used and any rehabilitation works would be done at a very much later date. Eventually, natural vegetation will be very quick to reclaim the areas once they have been worked out.

A major consideration in roads development needs to be the requirements of irrigation, and associated ecosystems, since it is of prime importance to retain water rather than, as road engineers may prefer, to allow free drainage regimes.

Finally, the project is in close conformity with ILO's particular mandate within the UN Development System. The promotion and application of International Labour Standards, in particular those related to labour employment, equality, and safety and health, will be pursued in the course of project execution, as the introduction of these standards constitutes one of the goals set by the International Labour Organisation in its development policies.

B7 Project Linkages and Coordination Arrangements

The project will be executed within the framework of ILO technical assistance to Cambodia and draw upon relevant experience from other ILO programmes in the country as well as from other countries where ILO is currently providing technical assistance to rural infrastructure development programmes.

This project will liaise closely with on-going and emerging rural infrastructure rehabilitation and maintenance programmes in Cambodia ensuring that the work programme of this project is in line with the demands and priorities at local level.

There will be a particularly close relationship to the forthcoming ADB financed rural road rehabilitation and maintenance programme where domestic small-scale contractors will be trained to execute road works using labour-based work methods.

Finally, this project will assist the government in coordinating and standardising its efforts and inputs to rural infrastructure by (i) assisting the secretariat for the inter-ministerial Task Force and (ii) providing technical advisory support to government organisations, donors and NGOs when they are planning and implementing new infrastructure development projects.

B.8 Counterpart Support Capacity

The project will draw upon resources from a range of agencies, ministries and the open market, including government engineers and technicians at provincial level, university lecturers, consultants, and in-country training institutions. In order to achieve the highest degree of sustainability of the project inputs, serious efforts will be made to ensure that all activities will be undertaken from within institutions which can carry on the activities after the project support has been terminated. The project will therefore draw upon national personnel resources at both central and provincial level to effectively carry out its activities in order to institutionalise the consecutive results.

At central level, a counterpart national project coordinator will be identified by the government. This person will be a senior official, preferably a member from the Task Force, with an engineering background and with a terms of reference that allows him/her to allocate sufficient time to project activities. Ultimately, it is expected that MPWT and MRD will identify personnel resources which will enable them to gradually take the lead role in policy matters as identified by the Task Force.

A great amount of capacity building has been achieved through the training programme and the involvement of the provincial authorities in the implementation of the infrastructure works under project CMB/92/008. However, it should be acknowledged that previous projects has mainly been designed as direct execution by the donors, NGOs and specialised UN agencies, relieving government authorities from direct managerial and financial/budgetary responsibilities. During the coming phase, local authorities will be further strengthened so they can take full control of not only technical and production related issues (current situation), but also carry the responsibility for providing general administration and finance in a fully transparent system developed with the assistance of the present project.

The experience of CMB/92/008 has proven that local authorities have the capacity to absorb new technology and take on new responsibilities. CMB/92/008 has successfully completed the first step in terms of transferring LBAT to local government staff. The logical step now is to transfer the general management and financial control to local authorities by developing effective management tools and once again providing purpose oriented training packages designed and closely linked to the real demands and the working environment of the trainees.

C DEVELOPMENT OBJECTIVE

The development objective of the project is to contribute to the long term economic and social development of Cambodia through the establishment of a comprehensive, integrated strategy for rural infrastructure development, relying to the extent possible on available in-country resources and thereby reducing the country's dependence on external resources in terms of staff, technology, equipment, materials and funding.

D IMMEDIATE OBJECTIVES, OUTPUTS AND ACTIVITIES

Immediate Objective 1: To strengthen central Government's capacity to develop, coordinate, implement and monitor a national rural infrastructure development programme, maximising the use of LBAT and local resources.

OUTPUTS	*ACTIVITIES*
1.1 Effective working relations between the various actors at central level, i.e. Task Force, its Secretariat, project staff and counterparts.	1.1.1 Support and advise the Government Task Force and its Secretariat, in terms of its composition, terms of reference and work programme. 1.1.2 Advise the Government on the institutional linkages between the Secretariat and the technical line ministries and propose detailed project support arrangements.
1.2 Technical working groups established to participate in developing LBAT guidelines and procedures with the advice and support of the ILO project team.	1.2.1 Select small groups of technically qualified persons from the MPWT, MRD and other relevant agencies to participate in developing technical, administrational, financial and contractual guidelines and procedures. 1.2.2 As the work proceeds, submit draft materials periodically to the LBAT Task Force through the Secretariat for review and comments.
1.3 Recommendations regarding organisation details and lines of command from the MPWT and MRD central offices through Provincial Departments down to site level.	1.3.1 Analyse present organisational and administrative structures in consultation with the LBAT Task Force and the two Ministries. 1.3.2 Prepare recommendations for improving the efficiency of the present structure and procedures. 1.3.3 Establish effective linkages between the present project and other ILO technical assistance components as well as channels to other donors/agencies supporting this sector. 1.3.4 Identify internal actions to be taken by the relevant Ministries at central and provincial levels to implement LBAT policies.
1.4 A Management and Monitoring Information System established to enable the LBAT and other concerned institutes to monitor the progress of the overall LBAT programme and its various sub-components.	1.4.1 Design a practical and cost-effective system that will provide the following information on a continuous basis: (a) Analyses of the performance of LBAT infrastructure construction projects; (b) Overall effectiveness of the national policies; (c) Dissemination of information on new technologies, training materials and methodologies; (d) The effectiveness of the provincial level training programs and their practical impact on construction works.
1.5 Senior Government officials, representatives of donor agencies and NGOs kept informed of the progress of the program.	1.5.1 Organise periodic seminars and workshops to review the progress and discuss technical, management, coordination and financial issues affecting the application of LBAT in the country. 1.5.2 Arrange local study trips and inspection visits for senior government staff and donors to ongoing LBAT projects. 1.5.3 Provide information related to new technology and developments evolving from LBAT programmes in other countries.
1.6 Recommendations for the possible expansion of LBAT rural infrastructures programs employing small-scale contractors to other parts of the country as well as to additional sectors.	1.6.1 Analyse the data generated by the Information and Monitoring System and the conclusions reached through the above workshops and seminars. 1.6.2 Prepare recommendations for consideration of the concerned authorities. 1.6.3 Participate in road sector policy dialogues between government (MPWT, MRD, provincial and district administrations), donors and other implementing agencies, facilitating further external support to the sector. 1.6.4 Assist the government in the preparation of donor conferences with the objective of generating support to rural development projects using LBAT.

Immediate Objective 2: To strengthen the capacity within provincial authorities to plan, design, implement and monitor road improvement and maintenance works using most cost effective construction techniques: labour-based methods, primarily based on the use of locally available resources, and with the participation of the private sector construction industry.

OUTPUTS	***ACTIVITIES***
2.1 A Technical Manual for the construction of rural roads using LBAT to the maximum extent possible.	2.1.1 Prepare Rural Roads Manual covering geometric standards; quality specifications; work methods, organisation and norms; and criteria for appropriate balance of labour and equipment on different types of roads.
2.2 A Maintenance Management System based on a decentralised organisation using small contractors recruited from villages in the vicinity of the roads to be maintained.	2.2.1 Develop the system detailing the full organisational set-up needed for manpower requirements; cost estimates; planning and supervision procedures; contracts procedures; timing of maintenance; and inspection.
2.3 Guidelines and procedures for planning, estimating, budgeting, personnel recruitment and employment conditions.	2.3.1 Review and prepare in close collaboration with responsible authorities administrational procedures important for the planning and implementation of a LBAT infrastructure programme. 2.3.2 Make specific recommendations in terms of labour recruitment and employment conditions for casual labour recruited both by public and private sector institutions including issues such as remuneration, incentive schemes, organisation of unions and employers associations and safety and health.
2.4 A comprehensive Reporting and Monitoring System to ensure feed-back of correct and comparable information from field projects that can be used as an effective management tool.	2.4.1 Establish uniform monitoring and reporting procedures to be applied in different LBAT road projects in the various provinces. 2.4.2 Liaise with provincial authorities and downstream technical assistance personnel on a regular basis on the effectiveness and applicability of outputs produced at central level.
2.5 Comprehensive manuals documenting all the above systems after they have been field-tested and validated.	2.5.1 Arrange for testing of the various materials and systems at the training and demonstration sites 2.5.2 Analyse the experience gained and revise the systems as needed.
2.6 Complete training packages developed and tested, targeted for: (a) Provincial MPWT and MRD staff in the management of LBAT rural infrastructure projects; and (b) small contractors in the technical aspects of LBAT as well as in business management.	2.6.1 Adapt the above manuals and materials as needed to form training modules for use in the training programs to be organised at Provincial level. 2.6.2 Identify national bodies which will be able to carry out the training programmes in the future after the ILO technical assistance has been terminated.

OUTPUTS	*ACTIVITIES*
2.7.1 Provincial road engineers and technicians trained in selection, planning, design, implementation and management of contracts for road rehabilitation and maintenance by local small-scale contractors. 2.7.2 Supervisory staff trained in the efficient planning, implementation, supervision and inspection of labour-based road rehabilitation and maintenance works carried out by the private sector.	2.7.1 Establish a training centre in the project area where the small-scale contractors and government staff will be provided training in the technical and managerial principles related to labour-based road works using LBAT. 2.7.2 Conduct pilot training courses with the full involvement of local trainers, government staff, ILO technical assistance personnel, NGOs, local and international consultants (ref. Annex 3 for further details).
2.8 Routine and periodic maintenance programmes established and under implementation for the roads rehabilitated as well as previously rehabilitated gravel roads in the three provinces.	2.8.1 In order to secure the investments made through rehabilitation works, the project will install a complete road maintenance management system covering all aspects from road maintenance needs assessments, work plans, organisation, work methods, implementation and monitoring. 2.8.2 Based on this system, the project will prepare work plans and award contracts to small-scale and petty contractors for periodic and routine road maintenance.

The above systems will initially be based on works and initiatives already carried out by project CMB/92/008. Once draft versions of technical standards, guidelines and training materials have been prepared, the relevant technical ministries will be consulted before the systems are introduced at local level. Based on the experience from the field test trials, the systems will be finalised and submitted for approval by the respective line ministries.

Immediate Objective 3: To develop a capacity within the domestic private sector construction industry capable of rehabilitating and maintaining secondary and tertiary roads through the efficient use of labour-based appropriate technology.

OUTPUTS	***ACTIVITIES***
3.1 A well documented system for identification and selection of potential contractors developed and established within the Government.	3.1.1 Interested individuals and firms will be encouraged to apply in writing for training. A questionnaire designed to obtain information on the background of each firm, such as educational background of management staff, assets available to the firm and interest in the programme, will be sent to each firm to complete. A technical and financial assessment of each firm will be carried out to rank the information provided. Further screening will be done through interviews to select the final list of firms.
3.2 A Contracts Management System for use by the Provincial Departments of MPWT, MRD and other relevant agencies in the selection and supervision of contractors.	3.2.1 Design the system detailing appropriate pre-qualification procedures; guidelines for drafting contracts to ensure maximum use of LBAT; establishment of specifications and bills of quantities; tendering and bidding procedures; arrangements for supervision, inspection and payment; and arbitration procedures.
3.3 Six small-scale contracting firms and 55 petty contractors developed to effectively operate as private labour-based road construction/maintenance enterprises.	3.3.1 25 supervisory staff from the small-scale contracting firms will receive training in the efficient planning, execution and supervision of labour-based periodic maintenance and rehabilitation works, and 55 petty contractors for maintenance works.
3.4 Two small-scale contractors and 55 petty contractors equipped with a set of hand tools and light equipment required for undertaking periodic and routine road maintenance works, financed through a private bank loan agreement.	3.4.1 Once the contractors have successfully completed their training, they will be equipped with light equipment and hand tools through a loan agreement with a private bank, and awarded contracts for periodic and routine maintenance of feeder roads as conventional private sector firms*.

* The training course for the small-scale contracting firms will be given to six selected firms. Out of the six firms, two contractors will be supplied with equipment sufficient to carry out periodic road maintenance works in the three provinces. For the remaining four firms, it is expected that they will find work in the provinces of the ADB funded project. All six firms will be given training in how to conduct full rehabilitation works, thereby strengthening their position when searching for future works contracts.

Immediate Objective 4: To improve and maintain access to and within the areas of the project determined in relation to the economic and social activities of the respective areas of influence.

OUTPUTS	***ACTIVITIES***
4.1 38 km of selected secondary and tertiary feeder roads rehabilitated and 205 km under regular maintenance in the three Provinces Siem Reap, Takeo and Kandal by contract applying LBAT, providing all weather access throughout the year.	4.1.1 During the first 4 months, the PWD and PDRD staff and small-scale contractors will receive initial training at the training centre and a demonstration site. Once the contractors have successfully completed the initial training, they are awarded contract work under close guidance and supervision by the project. Initially, each firm will be awarded a trial contract consisting of approximately 4 km of road rehabilitation works.
4.2 Road selection and priority ranking criteria introduced based on road condition inventories, traffic counts and collection of socio-economic data.	4.2.1 Assist local government in carrying out road condition inventories and advise on the selection and prioritisation of roads leading to the final road works plans in the two provinces. 4.2.2. Develop locally adapted planning procedures, based on rural accessibility planning. By training planners and engineers, these tools will strengthen provincial authorities' capacity to carry out road transport planning.

Immediate Objective 5: To increase the availability of trained manpower for both the public and private sectors in support of the Government's LBAT policy by introducing training courses in LBAT for technicians and engineers at the Institute of Technology of Cambodia (ITC) in Phnom Penh.[3]

OUTPUTS	*ACTIVITIES*
5.1 Training modules in LBAT developed and incorporated in the training courses for technicians and engineers at the ITC	5.1.1 Continue the development of training modules in the various technical and management aspects of LBAT, started under Project CMB/92/008. 5.1.2 Provide orientation and training for ITC faculties in the use of the modules.
5.2 Approximately 50 technicians and engineers each year provided with training in LBAT as an integral part of their education.	5.2.1 Participation of the ILO expert team in organising and conducting ITC courses in which LBAT constitutes a major component. 5.2.2 Training of ITC trainers for conducting the training on LBAT course modules. 5.2.3 Help arrange and participate in in-country study trips to on-going LBAT road works and other rural infrastructure projects for ITC students and faculty.
5.3 Twinning arrangements between ITC and other institutions in the region with which ILO is currently cooperating in the areas of curricula development and training in LBAT technology, in the spirit of TCDC (Technical Cooperation among Developing Countries)	5.3.1 Assist in the negotiation of cooperative agreements between ITC and other institutions. 5.3.2 Assist in arranging study tours for ITC faculty to cooperating institutions, as well as faculty visits from more advanced institutions to ITC 5.3.3 Arrange for exchange of training materials, as well as joint research into LBAT problems of mutual interest.

3 Note: This work has already been started under the previous project CMB/92/008, and will be continued with close involvement of ITC faculty..

Immediate Objective 6: Increase direct employment opportunities through the rehabilitation and maintenance of selected roads in the provinces as well as to enhance the conditions for sustainable long-term employment creation in agriculture, road rehabilitation and maintenance activities.

OUTPUTS	***ACTIVITIES***
6.1 A total of about 50,000 work days of direct employment created during road rehabilitation and maintenance works undertaken by the private sector contractors.	6.1.1 The works will be carried out using a balanced mix of labour and equipment, with equipment only being used for activities for which labour would not be economic (hauling of gravel, breaking of hard material, compaction). 6.1.2 The road works programme will be closely planned according to local labour availability surveys. Local authorities will be consulted and involved in the recruitment of the labour. Procedures will be introduced to ensure that recruitment and conditions of employment are fair and that equal opportunity is given to both men and women. Through training and close monitoring, the project will ensure that the procedures regulating all labour aspects are strictly adhered to by contractors.
6.2 Adoption of LBAT in other projects financed by other donors, NGOs and development institutions, thereby further increasing employment opportunities in the rural areas.	6.2.1 The experiences of the project, in particular at training and implementation level, will be collated and disseminated to the members of the LBAT Task Force, donors, NGOs, etc. 6.2.2 All training materials, technical, administrative and financial standards and guidelines will be distributed to all parties involved in this specific type of works, once they have been accepted/approved by the Government.

E INPUTS

E1 Cambodian Inputs

E1.1 Personnel

The government will arrange through the concerned authorities, the provision of the following counterpart personnel and meet their salaries and basic allowances:

1 National Project Coordinator (Counterpart to the CTA)
5 Roads Engineers
1 Translator (part-time)

This personnel should preferably consist of staff which has previously been associated with or working on secondment to ILO project CMB/92/008 and which has been trained in LBAT under this project.

Travel allowances for the counterpart staff will be provided at standard UN rates.

E1.2 Office Facilities

Fully serviced office accommodation in for the UNV trainers at the ITC.

Fully serviced meeting rooms in Phnom Penh to accommodate 50 persons made available for training programmes and seminars.

In Siem Reap, it is expected that ILO will retain its office, including all facilities as established during project CMB/92/008. In addition, the Government will identify and make available an appropriate building for training of contractors' and provincial Government staff in Siem Reap.

E1.3 Field Sites

The government will identify appropriate sites for road rehabilitation and maintenance works as and when required for training and demonstration purposes.

E2 SIDA Inputs

SIDA resources will be provided to cover the cost of the technical assistance activities and training and demonstration sites which includes the following:

E2.1 Fixed-term Staff

Chief Technical Adviser - Project Manager
The CTA will provide overall management and coordination of all project inputs and activities, as well as assisting in the provision of project outputs, and in particular those related to the inter-ministerial Task Force, ITC, the role of private sector in LBAT and road maintenance policies. The CTA will build up effective linkages between the project and other labour-based rural infrastructure programmes, and in particular the ADB financed project. (36 work-months)

Technical Trainer
The TT will be responsible for the overall planning and implementation of all training activities, including both class-room and field training, for the contractors and Government personnel.
(24 work-months)

Associate Expert
The assignment of one Associate Expert, Civil Engineer, has been foreseen. The costs of the AE will be born by a donor country and therefore it is not indicated in the project budget. The AE will assist the CTA in the various duties of the project, and in particular in the road maintenance related activities. (36 work-months)

National Roads Engineers
Three NREs will be responsible for keeping direct working contact with the members of the Task Force and ensuring that all technical documents in Khmer are produced to appropriate standard and in correct Khmer language. Furthermore, they will support technical assistance to all road rehabilitation and maintenance activities in connection with the launching of the small contractors training programme. They will also be a resource to draw upon for the implementation of training courses and field related activities such as monitoring and evaluation of new procedures introduced in the field. (3x36 work-months)

United Nations Volunteers
Two UNVs will provide assistance to the ITC in preparation of lecturing notes, training of lecturers and further development of course curricula for engineers and technicians. (2x24 work-months)

One UNV will be recruited to assist the CTA in general management of all road works and in particular the periodic and routine maintenance works, ensuring that new standards, work methods and procedures are effectively carried out on the field test sites. (24 work-months)

Finally, one UNV Mechanical Engineer will be recruited to provide training in operation and mechanical maintenance of light construction equipment and tools, and establish a system for monitoring of equipment operation and costs. (18 work-months)

Complete job descriptions for this staff are included in Annex 2.

Administrative Support Personnel

1 Secretary	36 wm
2 Administrative Assistants	72 wm
4 Drivers	144 wm
Total	252 wm

E2.2 Short-term Experts

Short-term consultants will be used to provide specialist inputs to supplement the training programme in the fields of integrated rural transport planning, labour legislation, business and contracts management, labour issues, etc.

Training Consultants
The TCs will assist in the delivery of a complete and comprehensive training package covering various aspects of rural roads planning, design and works execution. They will also prepare training needs assessments and work closely together with national training capacities in LBAT as well as in related fields, i.e. business management, vocational training, etc. (10 work-months)

Contracts Adviser
The CA will provide assistance in the further development, introduction and effective use of the contracts management system within provincial authorities as well as among the contractors. (4 work-months)

LBAT Curricula Consultant
The CC will continue with provision of technical assistance in completing the LBAT curricula development started under project CMB/92/008. He/she will also guide the two UNV trainers in their work assignments. The CC will carry out the work in two mission of two and one month duration and one month work assignment in his/her home. (4 work-months)

Labour Recruitment and Employment Adviser
The LREA will provide guidance in proper recruitment and employment conditions for labour employed by government and contractors and in particular workers employed on a casual basis and ensure that those are incorporated in the standard contract documents. (1 work-month)

Integrated Rural Infrastructure Planner
To increase the planning and resource management capacity of local government, the project will recruit an short-term expert to design practical tools to enable provincial technical staff and managers to effectively carry out integrated rural infrastructure planning and to train selected government personnel. (3 work-months)

Translators
Documents containing design guidelines, procedures, contract management, training manuals, etc. will be translated into Khmer. This will require the services of experienced translators which will be recruited locally. (6 work-months)

National Consultants and Trainers
Provisions are also made for the recruitment of national engineers, economists and trainers to assist in elaborating studies for the Task Force and for the various training programmes scheduled by the project. (10 work-months)

Review Mission
Review and evaluation missions will be carried out according to relevant procedures of SIDA. Accordingly, three consultants will be assigned, one representing each of the three parties to this agreement (RGC, SIDA and ILO) for the evaluation of the project. (3 work-months)

Monitoring Missions
Finally, provisions have been made in the project budget for appraisal, backstopping and monitoring missions as and when requested by RGC, SIDA and ILO. (6 work-months)

E2.4 Training

The project will arrange training courses, work-shops and seminars for various categories of government staff. Provision have been made for covering travels, catering and boarding for students and lecturers during these training activities. Cost sharing with other donors will be explored in relation to training inputs when requested by an outside project.

Provision has also been made to create permanent classroom facilities for the contractor training programme. The project will, with the collaboration of the Government, identify an appropriate existing building which will be renovated for this purpose.

Fellowships will be offered to key Government staff to participate in the International Courses in Labour-based Road Works Technology in Kisii, Kenya.

Study Tours have been included for local project and counterpart staff to visit other labour-based road contractor development projects in Southern Africa.

E2.5 Road Works

Provisions have been made for a limited amount of road works to be funded by through this project. The main purpose, is to secure a timely identification and start of training and demonstration sites, which also will act as the test grounds for all development of standardised technical designs, work methods and procedures, etc. In total these works amount to:

	km	US$
Rehabilitation Works	38	646,000
Routine Maintenance	205	61,500
Periodic Maintenance	35	105,000
Total Road Works		812,500

E2.6 Equipment

It is expected that equipment currently possessed by CMB/92/008 will be transferred to the Government when it comes to an end in 1996. However, since the present project will act as natural continuation of ILO LBAT technical assistance, it is expected that the facilities available to the ILO in Siem Reap and Phnom Penh will be handed over to the present project. This includes light construction equipment and hand-tools, as well as vehicles, computers and office equipment.

In addition, the present project will purchase the following equipment to support above mentioned project activities:

- 1 2x4 vehicle
- 3 4x4 vehicles
- 3 personal computers with printers
- 2 photocopiers
- 3 packages of construction equipment consisting of

2 pedestrian rollers	22,000
2 water bowsers	20,000
1 pick-up	16,000
1 set of hand tools	4,000
1 Motorcycle	1,500
2 Bicycles	500
	US$ 64,000

- audiovisual equipment such as a video player and television, overhead projector and screen, white boards, etc. for the training activities.

In addition, it is expected that the communication equipment of project CMB/92/008 will be maintained in good running condition and will eventually be transferred to the present project.

E2.7 Office Equipment and Operation

Provision is made for communications and other miscellaneous costs and petty cash requirements and takes into account the limited financial capacity of the counterpart ministries to provide full services in this respect. The provision will also cover costs of preparing, translating, copying, binding and mailing documents in relatively large numbers for the members of the Task Force and distribution among government agencies, NGOs and donors.

E2.8 Staff Travel

The project activities will require extensive travels for the project staff to and from the provinces where labour-based infrastructure works and training are carried out. Sufficient provision is made to cover such in-country travels. In addition, provision is also made for field allowances for counterpart personnel according to current UN procedures.

E3 ILO Inputs

The Development Policies Branch (POL/DEV) of ILO has an ongoing programme on the development of rural and urban infrastructure programmes relying on the cost-effective utilisation of locally available human and material resources. The ILO will contribute to the project from the resources available to this programme. These contributions will be in the form of technical backstopping and specialised training and technical materials in the fields of labour-based construction and maintenance and entrepreneurship and management development. Further on, the ILO will support the LBAT curricula development partly by providing relevant English curricula and lecturing materials elaborated for the ILO by the University of Delft, and by using the resources of the SIDA financed ILO inter-regional project to promote LBAT educational initiatives for translation into Khmer and exchanging information among universities in the region.

F RISKS

The project is highly reliant on a close cooperation with rural infrastructure development projects implemented at local level. In order to successfully achieve the outputs of the project, support from these projects is essential. Specifically, this implies that standards, procedures, work methods and training programmes developed by the project and approved by the Task Force and its participating ministries are adhered to and applied by the rural development programmes implemented by local government, donors, NGO and private sector institutions.

Project activities should in principle be demand driven and based on the requirements at local and central level. In order to meet these demands, it is vital that a close and regular dialogue is established with relevant donors and relevant authorities at both central and local level.

Labour-based Appropriate Technology is a new concept in the country and the members of the Task Force, the lecturers of ITC and the numerous officials and persons who will be involved in the implementation of the LBAT concept are not fully familiar with the different social, technical and economic aspects of LBAT which may slow down implementation. As a remedy, the project will carry out a broad information campaign through lectures, workshops, training courses, publication of courses, demonstration and exchange of information on LBAT works in Cambodia.

There is also the risk of security, in particular for project, government and contractors' personnel, but also to other inputs such as equipment and office facilities. This may cause delays and jeopardise the execution of certain project activities. Should the security in the proposed project area deteriorate, it may be necessary to consider moving to more secure areas of the country. Such a decision would only be taken after a review of the security situation involving all parties to this agreement.

Finally, it should be acknowledged that the civil service in Cambodia is severely underpaid and additional incentives must be sought to maintain the full cooperation and commitment from Government counterpart staff. For this purpose the project will continue current practice, providing involved government staff with travel/field allowances, study tours and other benefits

to maintain the necessary level of professionalism, interest and commitment.

G PRIOR OBLIGATIONS AND PREREQUISITES

The Government will facilitate the full support and cooperation of the concerned agencies at national, provincial and local levels. The Government will provide counterpart inputs on a timely basis, and will maintain its full responsibilities and liabilities of employees who will be engaged or involved in project activities. It will also meet its commitments to the private contracting firms involved in related projects at local level, thereby ensuring that the guidelines and procedures developed by the project can be effectively applied.

In relation to the contractor development outputs and activities, it is expected that the ADB financed project will (i) apply the systems and procedures developed, and (ii) provide the access, cooperation and support necessary to enable important feed-back to this project on the effectiveness and appropriateness of the guidelines, management tools and training programme developed by this project.

H PROJECT REVIEW, REPORTING AND EVALUATION

The project will be subject to a joint review cum appraisal by the Government, SIDA and the ILO after the second year of implementation, i.e beginning of 1999. This timing is chosen because by then the first contractors will have completed their training and will be executing road works using LBAT as independent contracting firms. Secondly, it will then be possible to assess the result of the maintenance management system developed and installed in the pilot areas. Lastly, it will allow sufficient time to explore and prepare for any continued support to the Cambodian rural infrastructure development programme before this programme terminates.

The CTA will provide an inception report with a detailed work plan after two months in the country. Progress reports will follow every six months throughout the project period.

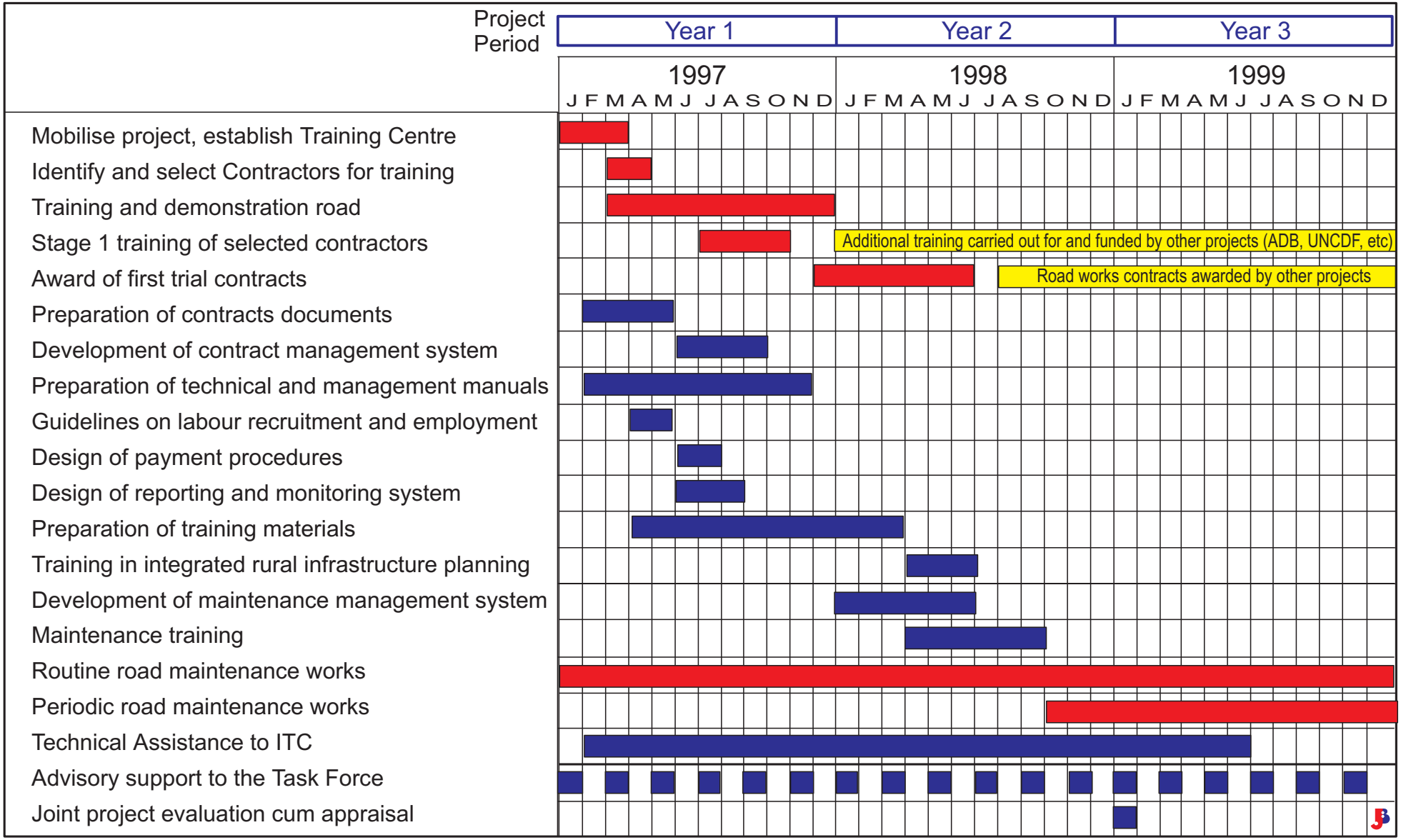
I PROJECT BUDGET

PROJECT BUDGET COVERING CONTRIBUTION FROM SIDA

Country:	Cambodia	Title:	Technical Assistance to the Labour-based Rural Infrastructure Works Programme						
Code	Details	W/M	Total $	W/M	1997 $	W/M	1998 $	W/M	1999 $
10	PROJECT PERSONNEL								
11	Experts								
11.01	Chief Technical Adviser	36	489,000	12	163,000	12	163,000	12	163,000
11.02	Technical Trainer	24	312,000	12	156,000	12	156,000		0
11.51	Short-term Consultants	31	620,000	15	300,000	10	200,000	6	120,000
11.99	Sub-total	91	1,421,000	39	619,000	34	519,000	18	283,000
13.11	Admin. Support Personnel	252	126,000	84	42,000	84	42,000	84	42,000
13.22	Field Allowances		55,000		20,000		20,000		15,000
14	UN Volunteers	66	191,400	30	87,000	30	87,000	6	17,400
15	Duty Travel		33,000		14,000		9,000		10,000
16	Mission Costs		50,000		20,000		15,000		15,000
17.01	National Prof. Staff	124	148,800	44	52,800	44	52,800	36	43,200
19	Component Total		2,025,200		854,800		744,800		425,600
20	Sub-contracts Road Works								
	Routine Maintenance	205	61,500	55	16,500	73	21,900	77	23,100
	Periodic Maintenance	35	105,000	10	30,000	12	36,000	13	39,000
	Rehabilitation	38	646,000	10	170,000	16	272,000	12	204,000
29	Component Total		812,500		216,500		329,900		266,100
31	Fellowships		50,000		20,000		15,000		15,000
32	Study Tours		38,000		14,000		16,000		8,000
33	In-service Training		253,000		133,000		95,000		25,000
39	Component Total		341,000		167,000		126,000		48,000
45.01	Local Procurement		35,000		20,000		10,000		5,000
45.02	Equipment Maintenance and Operation		79,000		42,000		22,000		15,000
47.01	International Procurement		258,000		258,000				
49	Component Total		372,000		320,000		32,000		20,000
50	MISCELLANEOUS								
52	Reporting Costs		31,000		12,000		12,000		7,000
53	Sundries		84,000		36,000		36,000		12,000
59	Component Total		115,000		48,000		48,000		19,000
	SUB-TOTAL		3,665,700		1,606,300		1,280,700		778,700
68	Programme Support 13%		476,541		208,819		166,491		101,231
	TOTAL PROJECT COSTS		4,142,241		1,815,119		1,447,191		879,931
71	Provision for Cost Increases		376,264		90,756		144,719		140,789
	GRAND TOTAL		**4,518,505**		**1,905,875**		**1,591,910**		**1,020,720**

Tentative Plan of Operation

Annex 1



INTERNATIONAL LABOUR OFFICE
Technical Cooperation Programme

Country: Cambodia
Project Code: CMB/96/xxx/SID
PASREC No:
Date Issued: May 1996
Closing date for Applications:

ANNOUNCEMENT OF VACANCY

Applications from both men and women will be equally welcome

Project Title:	Technical Assistance to the Labour-based Rural Infrastructure Works Programme
Title of Post:	Chief Technical Adviser
Duty Station:	Phnom Penh, Cambodia
Duration of Appointment:	12 months with possibility of extension
Scheduled Starting Date:	January 1997
Terms of Appointment:	See overleaf

GENERAL PROJECT INFORMATION

The ILO Labour-based Infrastructure Rehabilitation Project was launched as an emergency programme in 1992, as part of the UNDP/ILO Employment Generation Programme (EGP) to (i) assist the rehabilitation of vital infrastructure in the Northern provinces, in particular rural roads and irrigation schemes, and (ii) to rapidly provide employment and income to rural areas devastated by the civil war. So far, it has reconstructed more than 400 km of secondary and tertiary roads, maintained about 700 km, rehabilitated several irrigation schemes and generated 1.5 million workdays. It has trained over 300 counterpart personnel and a small number of contractors in the use of labour-based work methods.

With the election of a new government in 1993, the EGP was able to address the issue of sustaining previous inputs through the institutionalisation of the EGP concepts by shifting its emphasis more to capacity building within the government structure.

The success of EGP has been acknowledged through the government's commitment to the use of labour-based technology and it's current interest in developing and involving the domestic private sector in public infrastructure works. Furthermore, based on the positive achievements of EGP, several bilateral and multilateral donors have provided financial assistance in the past as well as announcing future financial support and interest in applying EGP approaches in their support to rural development programmes in Cambodia.

The ILO now sees its future role in terms of LBAT technical assistance as (i) maintaining the valuable experience developed during the past years in terms of technology, work methods, organisation and implementation, and (ii) establishing these concepts within the relevant government institutions by building up the capacity in the government and the private sector. This will require support to both policy as well as implementation activities and facilitating an important symbiosis between the two.

The project will provide technical and managerial advisory support and training to the government and the private sector with the objective of creating a capacity within government to plan, design, manage and implement labour-based rural infrastructure works involving domestic small-scale contractors in the execution of the physical works. Among its major activities, this project will, in close consultation with relevant line ministries, develop appropriate standardised designs, work methods and procedures for public works applying labour-based technology. This will also include contract and maintenance management systems, financial, administrative and personnel management procedures for involved ministries and provincial departments, which will be disseminated through a comprehensive training programme. Finally, the project will assist the government in its efforts to coordinate and streamline the design and implementation of donor funded rural development programmes using labour-based work methods.

In order to achieve the above, the project will assist the Government in creating a technical, administrative, financial and legal environment in which the employment generating Labour-based Appropriate Technology can be favourably used in rural infrastructure rehabilitation programmes. Particularly, it will provide technical support and guidance to:

- the already established inter-ministerial Task Force on LBAT to design and implement Government strategy on the broad use of LBAT,
- the promotion of the private sector to build up an implementation capacity through the establishment of an effective contract system and the training of small contractors,
- the Institute of Technology of Cambodia in elaborating a new LBAT curricula which will become part of the academic programme, to teach young engineers and technicians on LBAT,
- the work of developing appropriate standardised designs, work methods and procedures for public works applying labour-based technology, including contract and maintenance management systems, financial, administrative and personnel management procedures.
- testing and demonstration sites where the efficiency of design and work methods are verified,
- training of selected government and private sector staff at central and local level with the objective of creating a national capacity to plan, design, manage and implement labour-based rural infrastructure works,
- the government in its efforts to coordinate and streamline the design and implementation of donor funded rural development programmes using labour-based work methods.

This project will be managed by the Chief Technical Adviser who is responsible for overall planning and implementation of all project activities as outlined in the project document. He/she will coordinate the work of a core team consisting of a Technical Trainer, an Associate Expert, three National Roads Engineers, UNVs, local project support staff, national counterparts and consultants. In addition, he/she will coordinate and manage other ILO labour-based public works projects in the Cambodia. The CTA will liaise closely with the Ministries of Rural Development and Public Works and Transport concerning planning of major activities, progress, and problems arising and before major decisions are taken. He/she is accountable to the Director of the ILO Multidisciplinary Advisory Team in Bangkok.

DESCRIPTION OF DUTIES

General

The Chief Technical Adviser heads the technical cooperation team and has overall responsibility for its activities. He/she coordinates and supervises the work of the team members, and is also responsible for external relations with government institutions, local donor and development agencies and non-governmental organisations.

In close collaboration with his counterparts and in carrying out his duties, will:

- assist and guide the implementation of the action plan of the inter-ministerial Task Force on LBAT,
- assist in the preparation of documents, studies and recommendations to be considered by the Task Force,
- advise on the collaboration with ITC with regard to the LBAT curriculum development work, monitor the work of the two UNV teachers, recommend actions to link the academic works to other project activities,
- facilitate the collaboration and work contacts between the ITC programme and the ILO/SIDA Inter-regional project on the LBAT educational initiatives; elaborate proposals on the use of

SIDA inputs (translations, exchange of information);

- assist in the evaluation of training needs and the elaboration of training programmes required for building up the capacity among government and private sector staff to implement labour-based public works;
- monitor the small-scale contractor training activities, in order to use the experience and feedback to improve training manuals, modify administrative and financial procedures, contracting and tendering methods;
- identify and nurture collaboration with other LBAT public works programmes in the country.

Specific

(a) provide advice and assist on the establishment of a capacity within the MRD and MPWT to plan, implement, and monitor rural infrastructure works executed by contractors

(b) assist other relevant technical ministries in identifying the possibilities for labour-based infrastructure rehabilitation and maintenance;

(c) carry out feasibility studies regarding the implementation of labour-based methods;

(d) assist in defining the organisational and administrative framework in which labour-based projects can be implemented;

(e) provide back-stopping services to ongoing infrastructure projects in the country, specifically related to monitoring progress and performance and advising on technical and managerial issues;

(f) carry out advisory missions related to practical implementation aspects of ongoing and potential projects;

(g) prepare general guidelines and procedures, technical notes and information sheets on managerial, technical and administrative aspects of the application of labour-based methods in the country;

(h) further develop/adapt standard documentation, guidelines and procedures related to the implementation of labour-based works including technical design standards, work methods, organisation, contract documents, bill of quantities, tendering documents, procedures for contract award, etc. based on initial field trials where the newly developed procedures are tested;

(i) define and prepare terms of reference for short-term consultancies in relation to the following aspects related to the implementation labour-based works programmes:

- conditions for labour recruitment and employment
- integrated rural infrastructure planning
- developing a contracts management system for small-scale contractors
- developing monitoring and control systems
- defining maintenance capacity and the means of improving it
- development of training materials
- implementation of training courses;

(j) manage and participate in the development, establishment and presentation of training courses on labour-based road rehabilitation and maintenance;

(k) monitor and adjust as appropriate, in close consultation with the government, of systems, procedures and regulations with a view to optimising the prospects of expanding the medium and long term application of labour-based technology and involvement of domestic small-scale contractors for rural infrastructure works.

(l) advise on the development of an appropriate cost accounting system for project contracts, preferably as a computerised system.

(m) assist in the establishing of appropriate unit rates for the various categories of work activities executed by the contractors.

(n) liaise with other government agencies (i.e. Ministry of Labour, Department of Planning, Finance)

concerned with the project, particularly with respect to the development of appropriate administrative and financial procedures facilitating the integration of the project activities into the administrative system and procedures of the relevant government agencies.

(o) liaise with donor agencies concerned with the project to ensure a smooth and effective implementation of the project;

(p) with particular focus on the use of LBAT technology in project implementation, draft project outlines, project formulation frameworks, feasibility studies, etc. which will be used as an input to project design by the different governmental bodies, donors and NGOs;

(q) assist in formulating and preparing proposals for labour-based projects and discuss these with the government and donors;

(r) provide the daily management of the project team and its various project activities.

In addition, the Chief Technical Adviser will assist, to the extent that his principal responsibilities allow, the ILO in its other activities in the country, in particular those relating to and may benefit the labour-based infrastructure works programmes and the promotion of this type of works in Cambodia.

EXPERIENCE AND QUALIFICATIONS REQUIRED

(a) a degree in civil engineering and not less than 10 years of experience in road construction and maintenance management, with at least 5 years working in a senior capacity with labour-based techniques for rural infrastructure works in developing countries;

(b) an ability to analyse detailed managerial, organisational, administrative and policy issues affecting the use of labour-based techniques and to provide appropriate advice to those responsible for planning and implementation of construction and maintenance programmes;

(c) a proven managerial capability and leadership ability in the context of collaboration with governments of developing countries, with local representatives of donor agencies, and with a heterogeneous team composed of consultants, experts, and local collaborators of different educational and cultural background.

(d) an ability to write clear and concise reports in English.

LANGUAGE

Fluent in both spoken and written English. Knowledge of French or Khmer would be considered as an advantage.

INTERNATIONAL LABOUR OFFICE
Technical Cooperation Programme

Country: Cambodia
Project Code: CMB/96/xxx/SID
PASREC No:
Date Issued: May 1996
Closing date for Applications:

ANNOUNCEMENT OF VACANCY

Applications from both men and women will be equally welcome

Project Title:	Technical Assistance to the Labour-based Rural Infrastructure Works Programme
Title of Post:	Technical Trainer
Duty Station:	Phnom Penh, Cambodia
Duration of Appointment:	12 months with possibility of extension
Scheduled Starting Date:	January 1997
Terms of Appointment:	See overleaf

GENERAL PROJECT INFORMATION

The ILO Labour-based Infrastructure Rehabilitation Project was launched as an emergency programme in 1992, as part of the UNDP/ILO Employment Generation Programme to (i) assist the rehabilitation of vital infrastructure in the Northern provinces, in particular rural roads and irrigation schemes, and (ii) to rapidly provide employment and income to rural areas devastated by the civil war. So far, it has reconstructed more than 400 km of secondary and tertiary roads, maintained about 700 km, rehabilitated several irrigation schemes and generated 1.5 million workdays. It has trained over 300 counterpart personnel and a small number of contractors in the use of labour-based work methods.

The ILO now sees its future role in terms of LBAT technical assistance as (i) maintaining the valuable experience developed during the past years in terms of technology, work methods, organisation and implementation, and (ii) establishing these concepts within the relevant government institutions by building up the capacity in the government and the private sector. This will require support to both policy as well as implementation activities and facilitating an important symbiosis between the two.

The project will provide technical and managerial advisory support and training to the government and the private sector with the objective of creating a capacity within government to plan, design, manage and implement labour-based rural infrastructure works involving domestic small-scale contractors in the execution of the physical works. Among its major activities this project will, in close consultation with relevant line ministries, develop appropriate standardised designs, work methods and procedures for public works applying labour-based technology. This will also include contract and maintenance management systems, financial, administrative and personnel management procedures for involved ministries and provincial departments, which will be disseminated through a comprehensive training programme. Finally, the project will assist the government in its efforts to coordinate and streamline the design and implementation of donor funded rural development programmes using labour-based work methods.

A training centre will be established in the project area where small-scale contractors will be provided training in the technical and managerial principles of how to run a labour-based road construction enterprise. At the same time, appropriate training material will be developed, which will be used to train provincial government staff in contract management. Equally important, required financial and administrative procedures will be developed to ensure that provincial government departments effectively assume their client duties vis-a-vis the contracting firms.

Once the contractors have successfully completed their training, they will be equipped with a set of light equipment and hand tools financed through a loan agreement with a local lending institution and awarded contracts for rehabilitation and maintenance of feeder roads as conventional private sector firms.

DESCRIPTION OF DUTIES

General

The project will be managed by a Chief Technical Adviser who is responsible for overall planning and implementation of all project activities as outlined in the project document. He/she will coordinate the work of a team consisting of *the Training Engineer*, an Associate Expert, three National Roads Engineers, UNVs and local project support staff, national counterparts and consultants.

Under the direction and close collaboration with the Project Manager, the Training Engineer will be responsible for the overall planning, management and coordination of all training activities as outlined in the project document. He/she will coordinate the training inputs from a team consisting of a National Professional Training Engineer, a UNV Mechanical Engineer, national counterparts and consultants. He/she will also closely liaise with the training divisions of MRD and MPWT.

Specific

(a) The development of the Training Centre including the premises, its staff and equipment.

(b) Management of the Training Centre including its field activities.

(c) Carry out detailed training needs assessment of the various cadres of government and contractors' staff.

(d) Supervise and coordinate training components on maintenance of equipment and business management.

(e) Development of training management systems including selection of trainees, performance evaluation, certification, registration, etc.

(f) Prepare a day to day programme for the training courses.

(g) Train counterpart staff. Provide the instructors with guidelines on training methodology for practical oriented courses for adult professionals.

(h) Conduct training at the Training Centre's courses.

(i) Carry out an in-built post-evaluation of the performance of the courses.

(j) Participate in refining the training material after the first courses taking into consideration the experience made during these initial courses.

(k) Facilitate the effective presentation of the training school and sites to visitors in a planned manner which ensures that suitable on-site facilities and relevant data are available at all times.

In addition, the Training Engineer will assist, to the extent that his principal responsibilities allow, the ILO in its other activities in the country, in particular those relating to and which may benefit the labour-based infrastructure works programmes and the promotion of this type of projects in Cambodia.

EXPERIENCE AND QUALIFICATIONS REQUIRED

(a) A degree in civil engineering;

(b) Not less than 10 years of experience in road construction and maintenance management, with at least 5 years working in a senior capacity with labour-based techniques for rural infrastructure works in developing countries;

(c) A thorough knowledge, experience and understanding of the use of local resources for the construction and maintenance of roads;

(d) A solid experience and understanding of the principles and practice of construction

management, management training for small businesses and enterprise development;

(e) A proven ability to impart his/her knowledge to others both in classroom and on-the-job training;

(f) An ability to establish good working relations with local and international staff with a background different from his/her own and be able to communicate effectively with different levels of staff;

(g) A willingness to live and work in the rural area where the project's main activities are located;

(h) An ability to write clear and concise training material.

LANGUAGE

Fluent in both spoken and written English. Knowledge of French or Khmer would be regarded as a considerable advantage.

INTERNATIONAL LABOUR OFFICE
Technical Cooperation Programme

Country: Cambodia
Project Code: CMB/96/xxx/SID
PASREC No:
Date Issued: May 1996
Closing date for Applications:

ANNOUNCEMENT OF VACANCY

Applications from both men and women will be equally welcome

Project Title:	Technical Assistance to the Labour-based Rural Infrastructure Works Programme
Title of Post:	Associate Expert, Appropriate Construction and Maintenance Technology
Duty Station:	Phnom Penh, Cambodia
Duration of Appointment:	12 months with possibility of extension
Scheduled Starting Date:	January 1997
Terms of Appointment:	See overleaf

BACKGROUND

The Development Policies Branch (POL/DEV) of the ILO is concerned with assisting Member States in the development, design and implementation of labour-based public work schemes based on the optimum and effective use of local resources. In particular, the Branch has given priority to the identification and development of investment programmes that can have a long term impact on employment opportunities. This being in the context that long-term benefits can only accrue if labour can be substituted for equipment without any consequent loss in quality or increase in cost.

Many developing countries have a surplus of labour and a shortage of foreign exchange. In principle, it is therefore logical to use to the fullest extent, the labour resource which is locally and readily available.

GENERAL PROJECT INFORMATION

The ILO has been providing technical assistance to Cambodia since 1991, in which the major component has been the Employment Generation Programme. The EGP was originally conceived as an emergency programme to rapidly provide employment and income to rural areas devastated by the civil war. The programme focused on three major activities, labour-based infrastructure works, small enterprise development and vocational training, creating an efficient synergy, successfully generating income and employment in the target areas.

With the election of a new government in 1993, the EGP was able to address the issue of sustaining previous inputs through the institutionalisation of the EGP concepts by shifting its emphasis more to capacity building within the government structure.

The success of EGP has been acknowledged through the government's commitment to the use of labour-based appropriate technology (LBAT) and it's current interest in developing and involving the domestic private sector in public infrastructure works. Furthermore, based on the positive achievements of EGP, several bilateral and multilateral donors have provided financial assistance in the past as well as announcing future financial support and interest in applying EGP approaches in their support to rural development programmes in Cambodia.

The ILO now sees its future role in terms of LBAT technical assistance as (i) maintaining the valuable experience developed during the past years in terms of technology, work methods, organisation and implementation, and (ii) establishing these concepts within the relevant government institutions by building up the capacity in the government and the private sector. This will require support to both policy as well as implementation activities and facilitating an important symbiosis between the two.

The project will provide technical and managerial advisory support and training to the government and private sector with the objective of creating a capacity within government to plan, design, manage and implement labour-based rural infrastructure works involving domestic small-scale contractors in the execution of the physical works. Among its major activities the project will, in close consultation with relevant line ministries, develop appropriate standardised designs, work methods and procedures for public works applying labour-based technology. This will also include contract and maintenance management systems, financial, administrative and personnel management procedures for involved ministries and provincial departments, which will be disseminated through a comprehensive training programme. Finally, the project will assist the government in its efforts to coordinate and streamline the design and implementation of donor funded rural development programmes using labour-based work methods.

DESCRIPTION OF DUTIES

General Duties

The Associate Expert will be assigned to the Chief Technical Adviser with the general purpose of assisting in technical advisory responsibilities. This will mainly consist of advisory support to the Government on LBAT, and technical and managerial support to road works implementation and training activities. The objective of the support is to strengthen the governments' capacity to implement ongoing rural development projects using LBAT and assist with the design and preparation of new ones.

Specific Duties

- Under the guidance and supervision of the Chief Technical Adviser, the Associate Expert will be responsible for drafting project outlines, project formulation frameworks, feasibility studies, etc. which will be used as an input to project design by the different governmental bodies, donors and ILO advisory staff. These documents will in particular focus on the use of alternative technologies in the project implementation;
- assistance to the training and information components of the project in technical aspects of their work as directed by the Chief Technical Adviser;
- assistance to the collaboration with the Institute of Technology of Cambodia in relations to the elaboration and teaching of LBAT curricula in ITC;
- participating in project activities related to small road contractor development and assisting with the preparation of standard documentation and training materials;
- carrying out preparatory activities for project implementation;
- monitoring project activities and propose changes to the project implementation, and if necessary, to project design and agreements;
- appraisals of projects proposed by government and other funding and executing agencies;
- participating in project reviews and evaluations;
- assisting in project implementation as found necessary by the government, the project, the donor or by ILO. This could include substituting during periods of leave for the expatriate or national staff or when for similar reasons the project need staff replacement.

In addition, the Associate Expert will, to the extent that his principal responsibilities allow, assist the programme in its other activities, in particular those relating to the assessment of the feasibility of labour-based construction and maintenance methods and the promotion of such methods.

EXPERIENCE AND QUALIFICATIONS REQUIRED

- a degree in civil engineering and at least 3 years of practical experience in civil engineering;
- a genuine interest in and preferably a knowledge of labour-based road construction and maintenance techniques and the conditions under which such techniques can be efficiently and cost effectively applied;
- an ability to communicate in English and to express oneself clearly in writing;
- an ability to collaborate with governments of developing countries, with local representatives of donor agencies, and with a heterogeneous team composed of consultants, experts, and local collaborators of different educational and cultural background;
- experience from developing countries and previous involvement in appropriate technology civil engineering projects would be considered as an advantage;
- a willingness to travel to and work in remote rural areas where the various projects are operational.

LANGUAGE

Fluent in both spoken and written English. Knowledge of French or Khmer will be considered as an advantage.

Project	:	Technical Assistance to the Labour-based Infrastructure Works Programme
Project No.	:	CMB/96/xxx/SID
Country	:	Cambodia
Duty Station	:	Siem Reap
Duration	:	18 Months
Starting Date	:	January 1997

PROJECT INFORMATION

The ILO Labour-based Infrastructure Rehabilitation Project was launched as an emergency programme in 1992, as part of the UNDP/ILO Employment Generation Programme to (i) assist the rehabilitation of vital infrastructure in the Northern provinces, in particular rural roads and irrigation schemes, and (ii) to rapidly provide employment and income to rural areas devastated by the civil war. So far, it has reconstructed more than 400 km of secondary and tertiary roads, maintained about 700 km, rehabilitated several irrigation schemes and generated 1.5 million workdays. It has trained over 300 counterpart personnel and a small number of contractors in the use of labour-based work methods.

In the new project, a training centre will be established in the project area where small-scale contractors will be provided training in the technical and managerial principles of how to run a labour-based road construction enterprise. At the same time, appropriate training material will be developed, which will be used to train provincial government staff in contract management. Equally important, required financial and administrational procedures will be developed to ensure that provincial government departments effectively assume their client duties vis-□-vis the contracting firms.

A selected number of contractors will be trained in all aspects of operating and managing a small scale construction company. This will include both class-room and on-site training covering subjects such as labour-based road technology, contracts and business management as well as equipment repair and maintenance.

DUTIES AND RESPONSIBILITIES

General

Under the direction and close collaboration with the Chief Technical Adviser and the Technical Trainer, the Mechanical Engineer will organise and supervise the mechanical services to be established at suitable locations within the project area. He/she will work as a member of a technical assistance team which includes the Chief Technical Adviser, the Technical Trainer, an Associate Expert, UNVs, national project staff and consultants.

Specific

(a) Assist in elaborating technical specifications for procurement of equipment.

(b) Carry out inspections of delivered equipment, set up stores and a stores management system for all spare parts.

(c) Set up a system for maintenance of equipment and supervise the implementation of the maintenance and repairs.

(d) Assist in the planning of equipment utilisation.

(e) Keep records of expenditures by equipment item.

(f) Conduct training of plant and auto mechanics, store-keepers and other associate staff from the provincial authorities as well as the contracting firms.

(g) Prepare corresponding training material for the above mentioned training.

EXPERIENCE AND QUALIFICATIONS REQUIRED

(a) A degree in mechanical engineering followed by at least four years professional experience, parts of which should preferably have been in developing countries. Previous teaching experience would also be an advantage.

(b) An ability to establish good working relations with local and international staff with a background different from his/her own and be able to communicate effectively with different levels of staff.

LANGUAGE

Fluent in both spoken and written English. Knowledge of French, Thai and/or Khmer would be regarded as a considerable advantage.

Project	:	Technical Assistance to the Labour-based Infrastructure Works Programme
Title of Post	:	LBAT Training Engineers 2 posts
		Post 1 - Specialising in Civil Engineering
		Post 2 - Specialising in Rural Engineering
Country	:	Cambodia
Duty Station	:	Phnom Penh
Duration	:	24 Months
Starting Date	:	January 1997

PROJECT BACKGROUND

ILO project CMB/92/008 was concerned with the creation on an emergency basis of employment opportunities for returnees, internally displaced persons, demobilised soldiers and local unemployed or under-employed persons, through the development and implementation of labour based and light equipment supported infrastructure rehabilitation works.

The work started in December 1992 in the northwestern provinces of Siem Reap and Battambang focusing on provincial roads rehabilitation, the repair and maintenance of irrigation and water storage systems and the clean-up and maintenance of the Site of Angkor. Work at the Site of Angkor has been done in collaboration with UNESCO and EFEO.

Under the programme, more than 5,000 workers were employed at one time. More than one million work days of employment have already been generated for the rehabilitation of some 400 km of secondary and tertiary roads, restoration work on several irrigation schemes and the clean up work at the Site of Angkor.

The road maintenance and rehabilitation part of the programme has been expanded to six provinces including Banteay Meanchey and Pursat from 1994.

The present project will contribute to the development of a strategy for longer term sustainability of the rehabilitation and maintenance of rural roads and irrigation projects using labour-based appropriate technology (LBAT). A strategy document for this purpose has been completed. The introduction and teaching of LBAT to the Institute of Technology is part of this strategy.

DESCRIPTION OF DUTIES

The UNV Engineers will be based at the Institute of Technology (ITC) after 3 month orientation in the field with the ILO project. During the period of field orientation the UNVs will work directly under the ILO Technical Trainer and familiarise themselves with all existing ILO training materials and the current work and field practices of the existing projects.

With the arrival of the ILO specialist consultant who will be assigned to ITC to finalise the LBAT curricula for rural and civil engineers, the UNV engineers will work together with the consultant and under the direction of the project CTA.

After the initial period of field orientation and support to the ILO specialist consultant the UNVs will be expected to undertake the responsibility for supporting ITC with the training of Khmer teachers to start the 'Development Engineering' course from the Academic Year starting September 1997. Once the Developing Engineering Course is approved by ITC and the Ministry of Education then the UNVs will report in the first instance directly to ITC.

In particular the UNV Training Engineers will:

- Maintain liaison between the ITC Development Engineering Programme and the ILO project.
- Support the LBAT curricula review consultant in the preparation of the Development Engineering Course.
- Train Khmer Teacher at ITC in all aspects of the final curricula for the Development Engineering Course.
- Organise special LBAT Training seminars as required.
- Arrange for student internships on the project.
- Establish and maintain a resource library of ILO reference materials.
- Present lectures to students on specialised topics not able to covered by other ITC teachers.
- Establish liaison with the government ministries, donors and NGOs working on labour-based projects.
- Prepare work plans and monthly reports for the Director of ITC and the project CTA.

QUALIFICATIONS AND EXPERIENCE REQUIRED

- A university level qualification in civil or rural engineering with broad practical experience in labour based works and appropriate technology.
- Minimum five years experience in the implementation of labour based works programmes or training for such programmes.
- Demonstrated teaching, research and computer skills.
- Experience in the management of relief and development projects is an advantage.
- The ability to communicate effectively at all levels and to participate in technical training programmes for supervisors, technicians and engineers both within Government and in the private sector.
- The proven ability to work as a member of a team.
- Fluency in written and spoken Khmer or English is essential and French desirable.

Project:	Technical Assistance to the Labour-based Infrastructure Works Programme
Project No:	CMB/96/xxx/SID
Duty Station:	Phnom Penh and Siem Reap
Duration:	36 Months
Starting Date:	January 1997

GENERAL PROJECT INFORMATION

The project is the follow-up of the ILO Labour-based Infrastructure rehabilitation project which successfully introduced the LBAT methods in Cambodia by rehabilitating numerous roads and other infrastructure. The present project will assist the Government to create a technical, administrative, financial and legal environment in which the employment generating Labour-based Appropriate Technology can be favourably used in rural infrastructure rehabilitation and maintenance works. In order to achieve these activities the project will assist:

- the already established inter-ministerial Task Force on LBAT to design and implement Government strategy on the broad use of LBAT,
- the promotion and training of the private sector to build up an implementation capacity through the establishment of an effective contract system and the training of small contractors,
- the Institute of Technology of Cambodia in elaborating a new LBAT curricula which will become part of the academic programme, to teach young engineers and technicians LBAT,
- testing and demonstration sites where the efficiency of design and work methods are verified,
- in training of selected government and private sector staff at central and local level with the objective of creating a national capacity to plan, design, manage and implement labour-based rural infrastructure works,
- in the work of developing appropriate standardised designs, work methods and procedures for public works applying labour-based technology, including contract and maintenance management systems, financial, administrative and personnel management procedures.
- the government in its efforts to coordinate and streamline the design and implementation of donor funded rural development programmes using labour-based work methods.

DUTIES AND RESPONSIBILITIES

General

Under the direction of the Chief Technical Adviser and in close collaboration with government counterpart staff, the National Road Engineer will:

- work closely with the members and the Secretariat of the Task Force in carrying out the different work assignment of the action plan. As a Khmer speaking technician, he/she will check all documents and information papers going to and approved by the Task Force in order to ensure that these are appropriate and correct from a technical view.
- liaise with the two UNV trainers at ITC and provide guidance in adapting technical materials for lecturing; advice occasionally on specific issues of technical presentation and translation;
- actively participate in the launching of the small-scale contractor development and training programme, in reviewing technical materials and participating in training;
- assist in implementing and monitoring of physical road works carried out by local contractors.

He/she will work as a member of a technical assistance team which includes the Chief Technical Adviser, a Technical Trainer, UNVs, national project staff, counterpart staff, and international and national consultants.

Specific

In close collaboration with national counterparts, the National Roads Engineer will under the guidance of the Chief Technical Adviser, take part in the following activities:

- assistance in providing technical and administrational back-stopping to ongoing projects;
- monitoring performance and costs related to project activities and propose changes to project implementation;
- assist in the preparation of general guidelines, technical notes, training material and information sheets on managerial, technical and administrative aspects of the application of labour-based methods in the country;
- participate in the preparation and implementation of seminars and training courses on labour-based construction and maintenance technology;
- provide on-the-job training to counterparts, consultants and local contractors;
- assist in the provision of briefing and information material to field personnel, consultants, donor representatives, government officials involved or interested in rural infrastructure programmes;
- participating and assisting technical advisers on missions related to the practical implementation, review and evaluation of the project;

EXPERIENCE AND QUALIFICATIONS REQUIRED

- A degree in civil engineering or equivalent qualifications followed by at least three years professional experience from road works programmes. Experience in the use of labour-based methods for road rehabilitation and maintenance works would regarded as a considerable advantage,
- a genuine interest in and experience in labour-based construction and maintenance techniques and the conditions under which such techniques can be efficiently and cost effectively applied,
- an ability to communicate in Khmer and English and to express oneself clearly in writing,
- a willingness to travel to and work in remote rural areas where the various projects are operational,
- an ability to establish good working relations with local and international staff with a background different from his/her own and be able to communicate effectively with different levels of staff.

LANGUAGE

Fluent in both spoken and written English. Knowledge of French would be considered as an advantage.

1 General

The training programme described in this section defines a general model for the training which it is expected will be used for the present project as well as other projects envisaged in the near future (i.e. ADB, UNCDF, CARE)

The training of the contractors will be provided by the Government with assistance from the present project. The contractors will receive the training of his/her staff free of charge. In addition to providing staff salaries and accommodation of their staff during the training period, the contractors will be obliged to pay an enrolment fee (approximately US$ 100). This serves as a guarantee for their full commitment (and attendance) to the training programme.

2 Training Needs

The first training related activity will be to carry out a survey of contractors available in the country and preferably operating in the project area. During interviews with the contractors, their exact size and experience as well as formal training background of its staff can be identified. The detailed content and extent of a training programme should therefore only be finalised once the final screening and selection of the contracting firms have been carried out. However, at this stage it is possible to identify the main topics which needs to be included in a training programme (see Tables 1 and 2).

3 Training Programme

The training will concentrate on skills development specially required for the planning, execution and supervision of the envisaged road rehabilitation and maintenance works carried out by the small-scale contractors. Training will thus include both government staff and personnel from the contracting firms ranging from general management to plant operators, mechanics, store keepers and site supervisory staff.

The objectives of the training programme are to:

- Establish a cadre of domestic small-scale contractors capable of undertaking road rehabilitation and maintenance works using labour-based methods. This implies that the firms are fully conversant with the technology, contract management, business administration and supervision of labour, machines and materials;
- Create a capacity within the government to plan, manage and supervise road works carried out by private contractors using labour-based methods;
- Establish a local capacity for training government and private sector staff in the use of labour-based rural infrastructure rehabilitation and maintenance technology.

4 Strategy

In order to achieve the above objectives training will be provided to:

(a) provincial government staff including Engineers, Planners, Technicians, Supervisors and contracts administrative staff,
(b) MPWT and MRD staff including senior engineers, planners and coordinators,
(c) contractors' staff from managers, supervisors, clerks, mechanics to plant operators, and
(d) representatives of the local communities, policy makers, planners and administrators.

The training for the various categories of staff needs to be carried out with varying durations and through different approaches such as on-site and classroom training, workshops, seminars and study tours.

5 Methodology

On the Job Training

It has been proved over the years in a number of countries that on-the-job training is the most effective tool for training most categories of government and private sector staff. This approach will also be used during this training programme. Training of technical staff will therefore be carried out through demonstration and practice at training sites. This approach can be used for managers, engineers, inspectors, supervisors, foremen and machine operators. The on-site training will be supported by classroom components tailored for the various categories of staff.

A training/demonstration site will be fully equipped with the same type of hand tools and light equipment which the contractors will be provided with once they have successfully completed the training course.

Short Courses

Intensive refresher courses for periods of one to two weeks will be organised to supplement on-the-job training for some of the technical staff. It will also include independent courses for other staff categories such as storekeepers, accountants, pay clerks and administrative staff.

Seminars

Seminars will be organised as a means for dissemination of data and information, in particular to senior government officials at central and provincial level, as well as representatives for other government agencies, donors and the private sector. Thus, seminars will be a useful platform for policy makers, planners and administrators to review the implications of using labour-based methods and enhance the domestic private sector participation in road rehabilitation and maintenance works. Project results may also have implications for other parts of the road network as well as other sectors.

Study Tours

Visits to similar but more advanced programmes in other countries can be very stimulating and inspiring for managers, engineers and trainers. It is therefore proposed to organise study trips to the ongoing feeder roads construction and maintenance programmes in Southern Africa where domestic contractors have been trained in the use of labour-based methods (e.g. Lesotho and Zimbabwe).

International Courses

To strengthen the capacity as well as to motivate the Provincial Engineers and Technicians, it is advised that provincial government staff is sent for further training in the management of labour-based road construction and maintenance at the International Training Centre in Kisii in Kenya. These courses, organised and supported by ILO and the Swiss Development Cooperation in collaboration with the Ministry of Public Works in Kenya, are aimed at improving the efficiency of the management of labour-based road projects introducing the participants to latest information and techniques for the effective use of labour and other local resources drawing upon the experience from ongoing projects worldwide.

6 Curricula

The training package will consist of the following three major elements:

- labour-based road construction and maintenance technology,
- business and contract management, and
- operation and maintenance of mechanical equipment.

The training courses will be based on existing literature already developed by the programme but adjusted to the specific needs related to the private sector involvement. In addition, the training programme will benefit from training materials developed under similar contractor development programmes in other countries (e.g. Lesotho, Tanzania, Ghana and Uganda). The Technical Enquiry Service of ILO/ASIST in Nairobi, Kenya will be able to provide literature developed by these programmes.

(i) Labour-based Road Technology

This topic will constitute the major part of the training programme. Although the contractors may recruit some of its site supervisory staff from government, their managers, technicians and possibly some additional supervisors, which may be required, will through this training receive their first introduction to labour-based road technology. The curricula for contractors which will be engaged in labour-based road rehabilitation works should cover the subjects as outlined in Table 1.

(ii) Business and Contracts Management

One of the objectives of this programme is to further develop the contractors to enable them to manage contracts, which may be of a larger size than the works they have previously carried out. In order to achieve this objective, the contractors will not only require training in road technology, but also in general management issues related to the daily running of a construction company.

It is therefore proposed that the road rehabilitation firms are offered short-courses in essential aspects of management such as pricing and bidding, site operations, book-keeping, accounting, marketing, office work and planning. This training component should be offered to the various cadres of staff as outlined in Table 2.

Subject	Contents	Trainees
Planning	how a labour-based project is planned at different levels, discusses the planning responsibilities of the various levels of staff, work plans, organising site camps, planning of tools and equipment, and the hiring and organisation of casual labour	Contractor Managers, Technicians and Supervisors, Provincial Engineers and Site Inspectors
Reporting and Control	administrative control of a work site, production control and quality control	Contractor Engineers, Technicians and Supervisors, Provincial Engineers and Site Inspectors
Work Organisation	sequence of labour-based work activities, gang balancing, instruction and motivation of labourers	Contractor Engineers, Technicians and Supervisors and Site Inspectors
Tools and Equipment	selecting appropriate tools and equipment, how it is handled, its use and maintenance and the role of the store-keeper	Contractor Engineers, Technicians and Supervisors, Plant Operators, Storekeepers, Provincial Engineers and Inspectors
Survey and Setting Out	setting out horizontal and vertical alignments, cross sections, curves and how to use various setting out equipment such as profile boards, templates, string line levels etc.	Contractor Engineers, Technicians and Supervisors, Provincial Engineers and Inspectors
Clearing	clearing the alignment of vegetation and boulders	Contractor Engineers, Technicians and Supervisors, Provincial Engineers and Inspectors
Drainage	the vital importance of a well functioning drainage, how to construct side and mitre drains, camber, catchwater drains, scour checks, and culverts	Contractor Engineers, Technicians and Supervisors, Provincial Engineers and Inspectors
Earthworks	how to measure and estimate earth works done by labour, the organisation of excavation, levelling, hauling, loading, unloading, filling and spreading, compaction and erosion control	Contractor Engineers, Technicians and Supervisors, Provincial Engineers and Inspectors
Compaction	presents simple soil mechanics, optimum moisture content, indirect compaction, direct compaction and the use of hand rammers, deadweight and vibrating compaction	Contractor Engineers, Technicians and Supervisors, Provincial Engineers and Inspectors
Gravelling	how to organise gravelling operations, and testing of gravel quality	Contractor Engineers, Technicians and Supervisors, Provincial Engineers and Inspectors
Maintenance	the organisation and implementation of the various activities on labour-based routine, periodic and emergency road maintenance, and the required tools and equipment	Contractor Engineers, Technicians and Supervisors, Provincial Engineers and Inspectors
Structures	construction and maintenance of small bridges, drifts, causeways, culverts and box culverts	Contractor Engineers, Technicians and Supervisors, Provincial Engineers and Inspectors

Table 1 Labour-based Road Technology

Subject	Contents	Trainees
Business Management	bookkeeping, profits, budgeting, cost control, cash flow planning, material purchase, personnel management, banking, taxes, labour regulations	Contractor Managers and clerks
Contract Management	bidding and submission, unit rates, estimating, tender preparation, contract documents, contract variations, claims, payments	Contractor Managers, Technicians and clerks
Contract Supervision	contract conditions, submission and tendering, contract variations, claims, payments, work inspection, contract administration	Provincial Engineers and Inspectors

Table 2 Business and Contracts Management

(iii) Operation and Maintenance of Equipment

After the training course, the contractors will be supplied with light construction equipment to a total value of up to US$ 64 000:-. In order to ensure that the equipment is not misused and quickly fall into disrepair, the programme should provide the mechanics and operators with proper training in preventive maintenance and correct use of the equipment.

7 Training Site

The training will be executed through a combination of class-room and on-site training. For this purpose, the project will establish a training school and a demonstration site in close distance to the school. The training centre will require easy access to catering and accommodation facilities for trainees, lecturers, instructors as well as for visitors. The training school combined with the demonstration site will also be an essential asset for promoting the programme and its technology and approach among donors as well as other government institutions. For these reasons, it is proposed that the centre is located in Siem Reap.

The school will need classrooms with sufficient capacity for 50 trainees, and will be fully equipped with training aids such as overhead projectors, slide projectors, video equipment, training manuals, flip charts, black boards, etc. For the development and production of training materials the school will possess a personal computer with good printing facilities, a photocopier and a stenciller.

The demonstration site will be fully equipped with the same type of hand tools and light equipment which the contractors will be provided with once they have successfully completed the training course. Two sets of equipment in good condition should be made available for this purpose through Project CMB/92/008.

8 Instructors

In order to achieve a sustainable programme, it is crucial that the training capacity for this type of programme is fully institutionalised in the country. To achieve this objective, there is a demand for a structured plan for the involvement of local trainers.

From the onset of training, a number of government engineers, technicians and supervisors must be permanently attached to the training site. They should be trained to gradually take over

responsibility for the training from the project training specialists, and cater for a future expansion of the labour-based road technology to other Provinces. This will ensure that, once the training material and the first training course has been conducted, it should be possible for the Government, with the assistance of project resources, to take the lead in conducting further courses.

The demonstration site will require instructors fully conversant with all aspects of site activities, and it is therefore proposed that supervisory staff from the ongoing labour-based programme is recruited for the training.

The business management training should be carried out together with a local capacity within this field (i.e. local consultant, bank, university, ACLEDA, etc.). Possible collaborators in this field should as soon as possible be explored so a programme can be prepared in time before training commences.

9 Training Material

For the training and development of petty and small-scale contractors, there already exists a certain amount of training material produced by ongoing contractor development programmes in Africa. This training material consists of (i) general literature on labour-based road construction and maintenance technology developed by the ILO, and (ii) project specific material developed for contractor development and management.

In addition, the ILO has produced a series of publications on contractor development and management for the construction industry in general under its Improve Your Construction Business Programme (IYCB). This material is relevant for small-scale road contractor development programmes, however, it was originally developed for the building construction industry and therefore needs to be modified before it can be used in a training programme for labour-based road sector programmes.

Table 3 provides a brief overview of some materials currently available to the project.

Required Training Material Yet to be Developed

When commencing on this project, the above mentioned literature needs to be adapted into country specific training material, taking into consideration local conditions, technical standards and type of works to be carried out. It will also be carefully adapted to the level of education among the target group, in relation to the skills of the staff of the contractors, as well as the government implementing agency, i.e., supervisors, inspectors, mechanics, administrative staff, etc. Finally it will be necessary to translate the material to Khmer.

ILO	● Guide to the Training of Supervisors ● International Course for Engineers and Managers of Labour-based Road Construction and Maintenance Programmes
Cambodia	● Introductionary Training Course for Labour-based Road Construction for Engineers and Technicians ● Introductionary Training Course in Labour-based Works Management for Engineers and Technicians ● Introductionary Training Course in Labour-based Works Project Planning for Labour-based Contractors ● Rural Feeder Road Maintenance Using Labour-based Technology, Short Training Course ● Preventive Maintenance for Labour-based Vehicles and Equipment and Safety Guidelines for Operators and Drivers ● Training Videos for Labour-based Road Construction and Maintenance Supervisors (Khmer version)
Lesotho	● LCU training material
Botswana	● Training Course Notes for Gangleaders ● Training Course Notes for Technical Assistants
Uganda	● Labour-based Contract Maintenance Programme, Orientation Course for District Engineers
Kenya	● Course notes for inspectors and overseers ● Maintenance Management Manual
IYCB	● Interactive Contractor Training ● Improve Your Construction Business ● Material currently being developed for Lesotho

Table 3 Available Technical and Managerial Training Material

10 Training Programme

Pre-training Phase

It is vital for the success of the training programme that the participants know what will be required of them and what they can expect to gain. This is particularly important in the case of the contractors who during the training period must make key staff available for up to three months. During this period, it is expected that the contracting firms will provide for their staff in terms of costs for accommodation, training materials and allowances. In addition, these firms may be engaged in other contract work in parallel, therefore, they must be provided with a precise timetable for the training so that they can programme other work accordingly.

This will be arranged by inviting the participating government staff and the contractors to a seminar in advance of starting the training activities. The seminar will explain the strategy and action plan for developing the government's capacity to effectively plan and control gravel road works which will be carried out by small-scale contractors using labour-based/light equipment-supported methods.

The complete training package for the contracting firms can be described as two distinct phases:

Phase 1: Demonstration Phase

The government with technical assistance from the ILO has during the last three years established the efficient use of labour-based methods to rehabilitate and maintain gravel roads. During the initial phase this capacity will be transferred in a structured manner to the contracting firms through a training programme provided to all cadres of staff involved in the programme.

During the demonstration phase the Government will still be in charge of the road works, and a training site will be established for on-the-job teaching purposes where the contractor's staff are seconded to the various operations under close guidance of experienced government provincial staff and project staff acting as instructors.

Phase 2: Trial Contract

After the demonstration phase, each contracting firm will be given an initial trial contract consisting of approximately 4 km of road rehabilitation works which will be executed under close guidance of a project training specialist and local instructors. At this stage, the responsibility for the work sites are transferred to the contractors, however, in a safe environment where the instructors still closely monitor and advice the contractors, thereby avoiding errors and sub-standard works at an early stage.

Ideally, it would be preferable to award trial contracts to all contractors simultaneously, after successful completion of the demonstration phase thereby maintaining the momentum gained during the initial training. However, due to the demand for intense supervision and support during the initial stage of the first trial contract (site organising, establishing proper logistics procedures, etc), it is recommended that the contracting firms are split into two groups, first awarding trial contracts to three firms at the time. Practically, this should be done by first starting of three contracts, and then a month later, initiating the remaining three contracts. This will enable the project staff to concentrate the area of operation during the initial phase of the trial contracts due to less travel distances for site inspectors/instructors.

When the contractors have successfully completed their trial contract, they should be awarded negotiated contracts of 10 - 15 km road rehabilitation or periodic maintenance works. At this stage, the contracting firms will not have access to the close technical support rendered by the project as during the trial contract, and the government will act in the normal manner as the client.

Funding for road works after the trial contract will be arranged through close collaboration with the ADB project and through future co-financing arrangements.

The time schedule for the above described training and development programme will depend on the capacity and performance of each of the contractors. However, it is expected that the trial contract can be completed in five to six months and that the second contract will require a period of one year.

11 Training Methods

Six training methods, described in the following, are recommended for the programme:

Subject Learning

This means learning the substance of a topic and its general applications. Exactly which method is most suitable will vary from topic to topic. Parts of some topics will be best

conveyed by lecturing and illustrating on the blackboard. For others, the optimal method may be for the participants to study and discuss the theory in groups before going on to solving subject-related exercises. This approach makes the maximum use of the participants' previous experience. Exercises and plenary discussions should be used to reinforce the learning. For the keeping of records and reporting, "in-basket" [4] exercises should be considered. Human relations could be learned effectively through role plays.

Project Work

This involves utilising the participants' knowledge acquired in subject learning in developing the management system for the test-site. Project work will be particularly suited to those topics related to the planning and organisation of the work on-site. For example, following subject learning for planning where they learn the application of the planning principles for labour-based road construction, the participants would prepare a plan for a section of their test road - labour allocation, materials scheduling, equipment scheduling and expected expenditure. When doing the project work, they should receive support from the instructors. The outcome of the project work, for example a detailed work programme, will then be implemented on the test-site. In this way, the participants are able to immediately put into practice what they learn and experience the effects of it during implementation.

Action Learning

Action learning is suggested to be used for topics which are best learned by the participants devising a procedure based on their insight and experience rather than on theory learned from training material or from the trainer. This is an effective way of learning when local parameters are predominant and the trainees' own experience and judgement are predominant inputs. The advantage of employing action learning is that the end product will automatically be tailored to their own situation.

The procedure for action learning would be similar to that of project work. The main difference between use of the two methods is that project work is based on having learned the theory of a skill and applying it to the test road, whereas action learning is used to learn a system of management through devising it with the trainees' own capability and experience applied to the local conditions.

Demonstrations

Some topics, or parts of topics are best suited to demonstrations. Appropriate setting out methods, for example, is best learned by demonstration after the theory has been learned. For some demonstration purposes a scale model of the test road can be made in the classroom to reinforce the learning of the theory.

A major part of the demonstrations will take place at the road site. Work there will be coordinated with classroom activities so that after a certain topic has been dealt with, trainees are able to see its practical implementation on the test-site.

On-site Application

Following classroom training, trainees will assume functions on the test-site. When arriving on site, they should have the necessary skills to organise and coordinate the work. On the test site, these skills will be improved by working under the guidance of government engineers/supervisors and technical assistance staff. On the site, the project engineers will be equipped with the means of monitoring the trainees' performance for use at review sessions

4 "In-basket" exercises are simulations of the situation in an office where the trainees respond to incoming documentation by taking action, such as registering data and filing.

back in the classroom. In addition to standard forms for performance evaluation, video equipment will be used to record certain operations for playback in the classroom.

Review Sessions

Having learned a number of skills, and after having applied these on the test-site, the trainees will convene for review. At the review sessions they discuss the experiences they have had. The site instructors give their comments, and video, if recorded, is shown to help with the analysis. To become effective, these sessions will be carefully structured by the training team so that shortcomings are rectified for future site-work and particularly skilful applications are presented in such a way that the other trainees benefit from them.

Several alternatives are at hand, plenary discussions, individual presentations, analysis of particular aspects of application, preparation of action plans and additional learning sessions. These sessions can be run on-site or in the classroom, whichever is most convenient.

Review sessions will serve both as a means of monitoring progress made by trainees and of providing instructions related to project work and on-site application. In particular, physical progress, expenditure and unit costs will be reviewed and compared to what was originally planned. Trainees should make the necessary modifications under the guidance of the trainer and analyse discrepancies.

12 Trainees

It is proposed that a total of six contracting firms are invited to participate in the first training programme. These six firms will, after successful completion of the training programme, be awarded contracts to carry out road rehabilitation and periodic maintenance works.

In addition, the project will develop 55 petty contractors who will receive training mainly through on-the-job training.

In parallel with the training of contractors, full training will also be given to the government staff involved in the preparation, supervision and management of the contract works.

13 Classification of Contractors

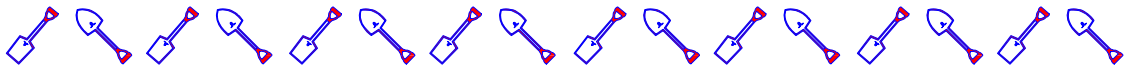
It is important that newly established labour-based road contractors are registered by the Government and certified to carry out a certain type of works. This will enable the government to streamline its activities in this sector and provide a uniformity to all projects wishing to use this approach to rural road rehabilitation and maintenance. Furthermore, it will enhance the contracting firms future market prospects and thereby maintain this capacity in the private sector.

14 Training of Local Consultants

Domestic engineering firms could in the future play an important role related to activities such as preparation of tender documents, bill of quantities, inspection and supervision of works as well as assisting government in identification, design and planning of new projects. This arrangement could also provide a means of assisting local village, commune and district committees in design, planning and implementation of minor infrastructure development projects.

However, since domestic consultancy firms have limited experience with labour-based road works, it will require a considerable expansion of the training programme. As a first step, it is

recommended that the training is limited to establish the technology among the domestic small-scale contractors and provincial government staff. Once this has been achieved, the Government could, with the assistance of the project, initiate a study to establish the interest and capacity of local consultancy firms to plan, supervise and inspect labour-based road works.



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