Intech Associates
CONSULTING ENGINEERS

TRL

DFID Department for International Development

MINISTRY OF PUBLIC WORKS AND TRANSPORT

Department for International Development in cooperation with World Bank and Asian Development Bank

SEACAP PROGRAMME

Managed by
Crown Agents & Halcrow Group

SEACAP 2
CAMBODIA TRANSPORT MAINSTREAMING PARTNERSHIP

WORKING PAPER 1
Human Resources Development (Component 8)

May 2005

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Our Ref: 0421/VA5
Your Ref: RRST – SEACAP 2

20 May 2005

Attention Excellency Suos Kong
Secretary of State
Ministry of Rural Development
Acting Chairman SEACAP Steering Committee

Dear Excellency Suos Kong,

RE: SEACAP 2 - Human Resources Development Report

Please find attached the final copy of the Human Resources Development (Component 8) Working Paper of the SEACAP 2 project for distribution to the members of the Steering Committee.

The report has been prepared by Andreas Beusch, the Consultant's Human Resources Development Expert, and the Intech-TRL team in Cambodia.

Proposals are presented for a comprehensive road sector initiative to develop the Cambodian human resources capacity to meet the substantial needs and challenges of the sector.

The Working Paper also includes proposals for a Poverty Impact Audit System (PIAS) to ensure that Government policies and strategies on local resource utilisation in pursuit of poverty reduction are integrated and accommodated in all road sector programmes.

Yours sincerely

Robert Petts
Project Manager

cc H.E. Lim Sidenine, MPWT, Vice Chairman SEACAP Interim Steering Committee
Dr. Om Romny, ITC, Member SEACAP Interim Steering Committee
Dr Simon Lucas, DFID, Hanoi
Le Minh Nguyet, Crown Agents, Vietnam
Pham Hai Bang, Halcrow, Vietnam
Dr Colin Jones, TRL, UK.

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This document is an output from a project funded by the UK Department for International Development (DFID) for the benefit of developing countries. The views expressed are not necessarily those of the DFID.

ABBREVIATIONS & ACRONYMS

ADB	Asian Development Bank
AFEO	Asian Federation of Engineering Organisations
ASEAN	Association of Southeast Asian Nations
AusAID	Australian Agency for International Aid
CFRTD	Cambodia Forum for Rural Transport Development
CNCTP	Cambodia National Community of Transport Practitioners
DFID	Department for International Development
ESP	Education Strategic Plan, MEYS
EU	European Union
FAO	Food and Agriculture Organisation
FFW	Food For Work
GMSARN	Greater Mekong Sub-region Academic & Research Network
GTZ	German Agency for Technical Co-operation
HQ	Head Quarters
HRD	Human Resource Development
HRM	Human Resource Management
IFG	International Focus Group (for Rural Road Engineering)
IFRTD	International Forum for Rural Transport Development
ILO	International Labour Organisation
IRAP	Integrated Rural Accessibility Planning
JICA	Japanese International Co-operation Agency
KaR	Knowledge and Research
km	kilometre
LB	Labour Based
LBAT	Labour-Based Appropriate Technology
LBRIRMP	Labour-Based Rural Infrastructure Rehabilitation and Maintenance Project
LCS	Low Cost Surfacing
MEF	Ministry of Economic and Finance
MoEYS	Ministry of Education, Youth and Sport
MPW&T	Ministry of Public Works and Transport (Cambodia)
MRD	Ministry of Rural Development (Cambodia)
NCP	National Community of Practitioners
NFG	National Focus Group (for Rural Road Engineering)
NGOs	Non-Governmental Organisations
NRDP	North-Western Rural Development Project
PDRD	Provincial Department of Rural Development
PIARC	World Road Association
PIP	Public Investment Programme
PLG	Partnership for Local Governance
PRDC	Provincial Rural Development Committee
PRIP	Provincial and Rural Infrastructure Project
RD&RP	Rural Development and Resettlement Project
RGC	Royal Government of Cambodia
RRGAP	The Rural Road Gravel Assessment Programme
RRSR	The Rural Road Surfacing Research

RRST	Rural Road Surfacing Trials
SEACAP	South East Asia Community Access Programme
SEILA	Multilateral donors - Government Rural Infrastructure Development Programme
SIDA	Swedish International Development Agency
SWOT	Strengths, Weaknesses, Opportunities & Threats (Analysis)
TDSI	Transport Development Strategy Institute
TKP	Transport Knowledge Partnership
TMP	Transport Mainstreaming Partnership
ToR	Terms of Reference
TRL	Transport Research Laboratory (UK)
UK	United Kingdom
UN	United Nations
UNCDF	United Nations Capital Development Fund
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
VDC	Village Development Committee
WB	World Bank
WFP	World Food Programme

EXECUTIVE SUMMARY

The Cambodia Transport Mainstreaming Partnership (CTMP) is a research, knowledge generation, dissemination and mainstreaming initiative for the rural transport sector. It is being carried out for, and with the involvement of, the Royal Government of Cambodia (RGC) in pursuit of their development and poverty reduction strategies. The Cambodia TMP is being launched under the South East Asia Community Access Programme (SEACAP), as the SEACAP 2 initiative. The SEACAP 2 initiative has been designed to include the following components:-

Output 1 – Operational Transport Mainstreaming Partnership
Output 2 – Knowledge Products
Output 3 – Practical Demonstration
Output 4 – Website
Output 5 – Policy, Standards and Procedures
Output 6 – Improved Road Maintenance
Output 7 – Training Courses
Output 8 – Training Needs Assessment and Delivery (Human Resources Development Strategy)
Output 9 – Improvement of Road Safety

This Working paper deals with component 8 above and provides a background for component 7.

The following are the major issues identified to be related to Human Resources Development (HRD) for the Cambodia transport infrastructure sector:

1. HRD in the context of the CTMP as a national programme is to be based on four main strategic elements; i) basic education, ii) demand for knowledge and skills, iii) provision of higher education and proficiency training, and iv) innovation, research and development. The HRD strategy links these four elements. Capacity building efforts are intended for both the concerned organisations and individuals.
2. Capacity Building and Human Resource Development are top priority issues for the reform process, as outlined in the current “Rectangular Strategy” for Growth, Employment, Equity and Efficiency of the RGC.
3. A number of crucial issues affect HRD in the rural infrastructure sector:
   - Insufficient supply of high quality and trainable graduates in technical fields,
   - Limited capacity to offer further education and training opportunities,
   - Rebuilding the human capacity in Cambodia will take at least a decade,
   - Only few registered professionals work in the rural infrastructure sector,
   - New RGC Strategic Framework for Decentralisation and De-concentration Reforms,
   - MPWT and MRD are the main actors in the rural road sector but lack adequate coordination in terms of operations and capacity development,
   - Donor driven project approach has led to uncoordinated capacity building,
   - Monetary incentives to government staff in donor funded projects has resulted in a capacity drain of the respective departments,
   - The Council of Ministers has recently initiated (proposals for) increased remuneration for a core staff group within Ministries,

- The scarce resources available for rural infrastructure requires explicit knowledge and skills that are currently only practised through individual projects,
- Bilateral and multilateral development and funding agencies provide most of the funds for road infrastructure development projects, which include significant HRD components, representing 5% to 15% of the total project costs, but these are poorly coordinated,
- ITC as the only officially recognised technical university is the main supplier of graduates for the road sector,
- The EIC is a young association that still lacks the capacity to provide a wide-range of services to members,
- The private construction sector in Cambodia is in its infancy and therefore poorly structured, developed and controlled,
- The necessary wide-ranging structured relationships between the stakeholders in the construction industry of client, consultant and contractor, and their institutional and support frameworks have still to be developed to meet the demands of the industry,
- There are only a limited number of contractors who have been specifically trained for local resource-based rural road works,
- Cambodian consultants usually operate on a freelance basis or as sub-consultants hired by international firms. Some are government employees.

4. A network of partners at different levels (international, national, local) and different sectors (government, private, non-governmental) need to be connected and their activities coordinated and harmonised to achieve the desired mainstreaming impact of CTMP,
5. The CTMP programme intents to mainstream appropriate rural road topics that contribute to knowledge, skills and attitude enhancement of all personnel involved on all management levels. 22 mainstreaming topic packages for HRD in the rural road sector have been identified. Most of the topics are also useful for other rural engineering sectors.
6. In order to create a sustainable and effective training capacity and to achieve the objective of effective mainstreaming, a number of crucial requirements must be achieved, e.g. enhanced training delivery capacity, specialised trainers, effective coordination for training planning and implementation, curricula review of basic and higher education, training standards and accreditation, reliable funding, long-term development support, etc.
7. To reach the desired training impact a range of decisive preconditions must be in place, e.g. policies, defined roles for all partners, established organisations with adequate capacity, management systems, technical standards and specifications, quality assurance system, costing norms, appropriate contracting system and documentation, assured and regular fund flow, monitoring and evaluation system, accountability. Many of these prerequisites are not yet in place.
8. For mainstreaming impact a large number of people require awareness creation and training inputs. Estimates for a first round of training suggest training for 100 policy and decision makers, 250 MPWT and MRD managers and engineers, 300 private sector consultants, 1200 contractors (mainly small scale), and 7000 community representatives.
9. Other training related capacity building requirements include support to training providers, training of trainers, support to EIC, review/introduction of national accreditation system, development and introduction of a poverty audit system.
10. For the purpose of mainstreaming training interventions, a strong institutionalised and permanent training management capacity is essential. It is recommended to

establish/appoint a Training Management Coordination Unit or Institution. Most of the training should be outsourced but managed and controlled by the TMC. Training development support may be provided through a temporary TA arrangement for which support is sought from development partners.

11. Besides the direct training interventions a number of additional essential support initiatives (Support Packages) should be considered:
    i) management and development support,
    ii) integration of relevant topics to basic education curricula,
    iii) integration of relevant topics to higher technical education curricula,
    iv) development and dissemination of generic training and education material,
    v) development and introduction of a media support programme, and
    vi) development and institutionalisation of a Poverty Impact Audit System (PIAS) for the road sector.
12. The input for the 6 recommended support packages (over a 10-year period) amounts to approximately US$ 7.8 Million and represents **less than 1%** of the funds Cambodia expects to spend for the improvement and maintenance of the national and rural road network over the same period of time. Substantial savings could be achieved if the support packages would be delivered in an integrated approach. It is recommended to deliver support services in well-planned packages on the basis of intermediate targets to be achieved before the next service package would be delivered. It is anticipated that the implementation of the proposals in this working paper would lead to sector efficiency improvements of many times the cost of implementation. The socio-economic benefits of national implementation of poverty reduction focussed, local resource based approaches would be a substantial added gain.
13. Sustainable funding for training implementation in the rural road sector could be achieved through either a dedicated training levy on all infrastructure contracts (percentage set aside) or by a commonly agreed training contribution from all donor projects.
14. The document includes preliminary proposals for the development and institutionalisation of a **Poverty Impact Audit System** (PIAS) for the road sector; Practical and effective instruments must be put in place to create an interface between enabling and supportive policies and operations on the ground, to ensure that the Governments goals and strategies for appropriate development and poverty reduction are accommodated and incorporated in all road sector initiatives.

Some of these issues were raised through participation, presentations and discussion at the GMSARN – AIT Extension – ITC workshop on “Institutional Capacity Building Needs for Better Rural Infrastructure Development” held at ITC on 7 and 8 April 2005, and supported by the ASEAN Foundation and SEACAP 2.

1. INTRODUCTION

1.1 South East Asia Community Access Programme (SEACAP)

A substantial programme of DFID, World Bank and ADB co-funded transport knowledge generation and dissemination projects is now underway in Cambodia, Laos and Vietnam under the South East Asia Community Access Programme (SEACAP). These research and dissemination initiatives follow on from the previous DFID Infrastructure and Urban Development (IUD) Engineering Knowledge and Research (EngKaR) programme. The SEACAP programme is currently expanding from 17 to 21 projects. SEACAP builds upon the successful collaborative research projects already completed in Cambodia and Vietnam on identifying ways to improve sustainable access to rural communities to facilitate benefits from health, education, trade, social facilities and services, thereby creating opportunity for pro-poor growth and escape from poverty.

The objectives of the Programme are:-

'Livelihoods of poor and vulnerable people in SE Asia improved sustainably'

and include empowering local ownership of their access. This includes initiatives that allow rural roads to be constructed and maintained in a sustainable way by local people using local materials, local labour and skills, local enterprises, and simple, low cost equipment. More affordable in capital and recurrent costs, these rural road solutions are becoming the spine of local governments' policies and this programme is designed to expand the successes of the initial research work.

The SEACAP initiatives will contribute to poverty reduction by scaling-up and using knowledge from various transport sector initiatives in support of the aims and policies of the Governments of Cambodia, Laos and Vietnam which will improve access for the rural poor, lower transport costs and create local employment and enterprise opportunities.

The adoption and use of appropriate, sustainable local resource based techniques and involvement of the communes to rehabilitate the major part of the network will provide all-weather access to the poor communities. It will also help to establish an affordable maintenance regime to safeguard the past and future major transport sector investments. The current and currently planned projects are shown in Table 1.

1.2 SEACAP 2 – Cambodia Transport Mainstreaming Partnership

The Cambodia Transport Mainstreaming Partnership (TMP) builds on a number of previous sector initiatives to disseminate and mainstream experience and good practice principally relating to local resource based road works approaches.

SEACAP 2 supports the transport sector activities of the Ministry of Public Works and Transport (MPWT) and Ministry of Rural Development (MRD); the two road sector agencies in Cambodia. It will contribute to poverty alleviation through support for coordination of a range of complementary transport sector initiatives, which assist the aims and policies of the Royal Government of Cambodia, to provide benefits such as improved rural access, lower transport costs and create local employment and enterprise opportunities for the rural communities of Cambodia. The TMP is aimed at resolving a number of outstanding issues in the transport sector relating to consolidation of past research outputs and to the setting up of a unified knowledge sharing system.

Table 1 - LIST OF SEACAP PROJECTS

Project No.	Description	Country
1	Rural Road Surfacing Research, for Ministry of Transport Vietnam: Dissemination and Mainstreaming of Research	Viet Nam
2	Cambodia Transport Mainstreaming Partnership	Cambodia
3	Appropriate Road Technology in Mountainous areas of VN	Viet Nam
4	Assessment of existing rural road surfaces in VN	Viet Nam
	i) Scoping	
	ii) Full Survey	
5	Impact of rural road access on poverty reduction and growth Phase II	Viet Nam
6	Infrastructure Constraints to growth and poverty reduction in Cambodia	Cambodia
7	Sustainable Mechanism for ownership on local stakeholders	Viet Nam
8	Low-cost surfacing Phase II	Cambodia
9	Full data collection in 2 provinces	Viet Nam
10	Commune Handbook Training to Non-RT2 Provinces	Viet Nam
11	Second Year Programme	Viet Nam
12	Road Map Field Verification and Roll Out for Non-RT 2 Provinces	Viet Nam
13	Provincial Hand Book Training	Viet Nam
14	Role of the Private Sector in Rural Transport	Viet Nam
15	Community participation in the Rural Transport Sector	Viet Nam
16	Institutional, incentive and capacity analysis of the Rural Transport sector	Viet Nam
17	Local Resource Solutions to problematic rural road access in Laos	Laos
18	Capacity Development for Sustainable Commune Infrastructure	Cambodia
19	Development of local resource based standards	Cambodia
20	Development of locally made, low cost equipment for the road sector	Cambodia
21	Rural Infrastructure advisory services and research management	

Note: 1-17: Projects approved
18-21: Intended Projects

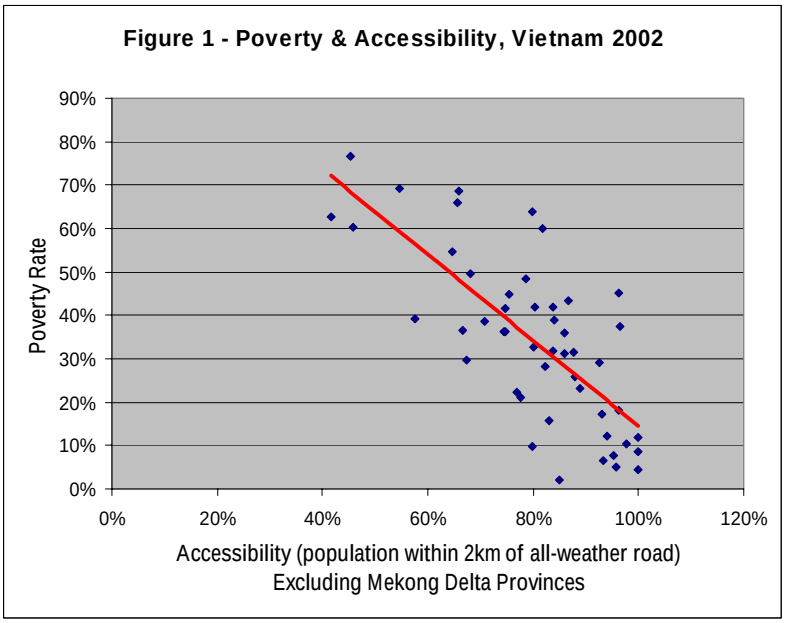
This TMP knowledge mainstreaming programme aims to support initiatives to address the following issues:

- Access to information on transport sector research and good practice,
- Rationalisation of local rural transport standards and specifications,
- Practical Demonstration and Mainstreaming of proven and appropriate maintenance techniques including local resource based technologies and appropriate road surfaces,
- Access to information on national road building and maintenance resources, to enable better asset management,
- Support for ongoing development of policy, standards and procedures,
- Support for developing effective, affordable & sustainable road maintenance that is being undertaken by other related projects,
- Support for Capacity Building and Human Resources Development in the government and private sectors,
- Support for development of professional and educational bodies,
- Improvement of road safety.

The TMP will coordinate its activities to achieve the above aims. As mentioned earlier, the TMP is essentially a coordinating, dissemination and mainstreaming initiative, drawing on existing knowledge and best practices, on-going research and development work. It builds on previous sector initiatives.

1.3 Why are Access and Knowledge Sharing so important?

There is a strong link between the existence of adequate infrastructure and achievement of the Millennium Development Goals, including poverty reduction. Most poverty assessments cite access as a key aspect associated with deprivation, and the ability for the transport sector to facilitate access therefore has a key bearing on poverty incidence (example Figure 1). However, much of the knowledge and information concerning the role of transport in development is not available to those who make policy and technical decisions in these areas. Applying appropriate knowledge to transport policy and technical development enables the sector to perform more effectively its role of supporting the national economy and social development. Being transparent and locally-based, this supports good governance and is socially-inclusive. Better-informed transport development is particularly pro-poor since it:



- Reduces transport costs for people, crops, goods and services for the communities,
- Improves access to education, health-care, markets, employment opportunities and other facilities,
- Reduces the vulnerability of isolated rural and urban communities, and so improves security,
- Supports empowerment of communities, by facilitating social networking and physical access to democratic process,
- Contributes to economic growth, and hence to economic opportunities.

1.4 Background to the SEACAP 2 Project

The SEACAP 2 Cambodia TMP builds on a number of previous and on-going sector initiatives. These include:-

- ILO-UNDP Labour based rural infrastructure rehabilitation and maintenance project (LBRIRMP)
- ILO Upstream Project
- The DFID funded Low Cost Surfacing International Research (KaR 7782)

- The DFID funded Low Cost Surfacing Trials at Siem Reap Province
- ILO - TRIP stone paved road trials in Kampong Cham Province
- Ministry of Rural Development Policy Document on Rural Roads
- SEILA – PLG rural infrastructure Programme
- Development of a locally manufactured tractor towed grader for the maintenance of earth roads in conjunction with DTW and SEILA-PLG
- Provincial and Rural Infrastructure Programme (PRIP)
- North-western Rural Development Project (NRDP)
- Support for MRD involvement with the International Focus Group (IFG) for Rural Road Engineering
- Cambodia National Forum for Rural Transport Development (CNFRTD)
- Cambodia National Community of Transport Practitioners (CNCTP)
- Appropriate Technology Infrastructure Training for Institute of Technology Cambodia (ITC), and MPWT and MRD engineers and technicians
- The establishment of the Engineering Institution of Cambodia (EIC)
- Knowledge exchange seminars, workshops and initiatives by TRL, PIARC, IFG, ILO, AFEO and GMSARN in Siem Reap and Phnom Penh.

Related and complementary initiatives in neighbouring Vietnam include:-

- The Rural Road Surfacing Research (RRSR) and SEACAP 1: Trials Modules 1 - 5 for DFID and MoT,
- The Rural Road Gravel Scoping Study for DFID and MoT,
- The Rural Road Gravel Assessment Programme (RRGAP), SEACAP 4; reviewing performance of World Bank funded RT1 and RT2 constructed roads,
- The World Bank, DFID and MoT RT2 project progress assessment and review process,
- Implementation and Dissemination of rural road surfacing research through ITST seminars,
- MoT involvement with the International Focus Group (IFG) for Rural Road Engineering,
- Development of a Vietnam Rural Transport Forum,
- The Development of the Rural Road Maintenance system under WSP support for RT2,
- The development of the Commune Maintenance Handbook for rural roads,
- Reports on Contract Capacity and Contractor Constraints in the Rural Road Sector under WSP support for RT2,
- The MoT rural road policy development process.

In 1997, ILO and SIDA initiated a review of labour based infrastructure programmes in Cambodia. From this review the need for a capacity building and development programme was identified and this lead to the design of the Upstream Project. This very successfully implemented project (1997 – 2003) is the predecessor to the SEACAP 2 project in terms of functional role. The Upstream Project contributed to capacity building in key areas such as the development of the MRD Policy on Rural Roads, technical advice, and educational material for the Institute of Technology (ITC) and training of MRD and MPWT engineers. SEACAP 2 will take over many of the development and knowledge dissemination roles of the Upstream Project.

1.5 SEACAP 2 – Components

SEACAP 2 includes the following components:-

Output 1 – Operational TMP
Output 2 – Knowledge Products
Output 3 – Practical Demonstration
Output 4 – Website
Output 5 - Policy Standards and Procedures
Output 6 – Improve Road Maintenance
Output 7 – Training Courses
Output 8 – Training Needs Assessment and Delivery (Human Resources Development Strategy)
Output 9 – Improve Road Safety

This Working paper deals with component 8 above and provides a background for component 7.

2. STUDY APPROACH

2.1 HRD Principles

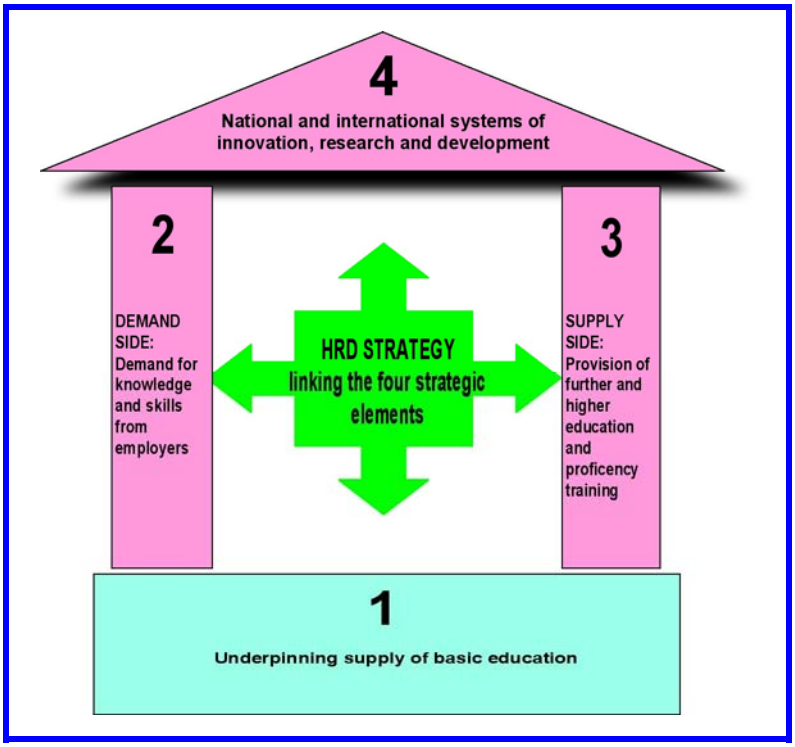
The most important means for mainstreaming and dissemination of knowledge, best practices, and on-going research and development work for the principally rural road sector are well-planned, coordinated and implemented HRD activities for all involved organisations and persons. This paper has been developed with this in mind.

The starting point for this study is an analysis of the current situation with regards to HRD in the roads sector in Cambodia.

Human Resources are the people that work for an organisation, and **Human Resource Management** is concerned with how these people are managed. However, the term Human Resource Management (HRM) means more than this because people are different from the other resources that work for an organisation. People have thoughts and feelings, aspirations and needs.

Human Resource Development is the process of enhancing the potential of people (as individuals and groups) to perform better in all spheres of life. People's potential can be developed through training and capacity-building, access to opportunities, and access to an environment which supports their development.

This study is further based on a principle understanding of HRD functions that link the four main strategic elements:



1. The **foundation** for any HRD initiative is the supply of basic education (primary and secondary) to the society and as such, is a determining factor for further capacity development inputs.
2. On the **demand** side, employers, in our case the Government of Cambodia and the private construction sector, determine the kind and degree of knowledge and skills that are required to be performed by their employees.

   For public infrastructure also the ultimate users and beneficiaries (the concerned communities) have to be included on the demand side, as they are directly and indirectly involved in infrastructure management and works.
3. The **supply** side provides the required further, or tertiary, education that prepares people for the job market. However, this is normally not sufficient, as the practical requirements of the employers often differ and change over time. Additional **proficiency (upgrading) training** is usually required at all levels in all organisations as a fundamental input to make people fit for the job.
4. **Innovation** and **research** are the essential inputs for developments to take place. These originate from international and national initiatives and need to feed into both the demand

and supply sides. In the case of rural roads in Cambodia, several innovative projects have been undertaken which include adaptations from international appropriate technology solutions as well as new international and national research results.

5. The HRD strategy also provides the **linkage** of the four elements by mainly ensuring coordination between the four sides, developing and facilitating enabling tools, and collating and disseminating information to the respective sides. Further strategic elements include performance monitoring and planning for new developments.

It is also important to mention that HRD for this study is perceived as a **capacity building effort for both the concerned organisations and individuals**.

2.2 Methodology

The methodology adopted for the development of this HRD strategy consists of a logic path that consists of the following activity steps:

- Analysing the **current reality and challenges** facing HRD,
- Identifying the involved **partners** in HRD and their roles,
- Identifying the current **mainstreaming topics** for the principally rural road sector,
- Identifying the essential **prerequisites** for effective mainstreaming and training impact,
- Identifying the principal **training needs** (training gap),
- Developing **strategy options** for training and support measures,
- Indication of **costs** for follow-up initiatives.

The **analysis steps** have been carried out through targeted interviews and by examining the available documentation.

The **strategy options** of this paper have been developed based on the overall CTMP strategy to ensure full integration and synchronisation with the other programme components.

3. CURRENT REALITY AND CHALLENGES FACING HRD IN CAMBODIA

3.1 Starting Point

Capacity Building and Human Resource Development are top priority issues for the reform process, as outlined in the current "Rectangular Strategy" for Growth, Employment, Equity and Efficiency of RGC. "Rectangle 4" covers the HRD strategic component. However, for the purpose of analysing the current situation and formulating a HRD strategy for the rural road sector, the other rectangles of the strategy are equally important. They are:

The *Rectangular Strategy* as the economic policy agenda for the third mandate of the Royal Government builds on key elements of *Cambodia's Millennium Development Goals*, the *Cambodia Socio-Economic Development Plan 2001-2005 (*SEDP2*),* the *National Poverty Reduction Strategy 2003-2005 (*NPRS*)*, and the various policies, strategies, plans and reform programs.

- Rectangle 1: Enhancement of Agricultural Sector
- Rectangle 2: Continued Rehabilitation and Construction of Physical Infrastructure,
- Rectangle 3: Private Sector Growth and Employment

A HRD strategy for the rural road sector must be seen as the catalyst for these three Rectangular Strategy issues and needs therefore to be responsive to it.

3.2 The Current Situation

In order to be able to develop feasible HRD strategy options, the current issues affecting HRD need to be identified and analysed. The following list of issues provides the basis for the HRD strategy that is presented in Section 8 of this paper.

- Currently, a key challenge is to supply high quality and trainable graduates from secondary schools, universities and technical/vocational institutions. A second constraint is the limited capacity to offer further education and training opportunities for the large number of un-employed and under-educated young people. The Government realises that rebuilding the human capital will take at least a decade. This is, for example, clearly demonstrated by the fact that currently only 264 registered professional engineers operate in Cambodia of which 73 are civil engineers specialised in building works and only 20 in bridges and roads. Both the public and the

Capacity Building and Human Resources Development "Strengthening the Quality of Education "

To enhance capacity of human resources with high technical and scientific skills that effectively responds to labour market needs in terms of entrepreneurship, high creativity, responsibility, discipline, morality, virtue, professional ethics, and honesty in an effort to promote development.

The Royal Government is committed to achieving the goal of "Education for All" by ensuring equity in the attainment of nine years of basic education for all children and ensuring access by the children of the poor households to education, especially by improving the quality and number of public education institutions and providing more scholarships to poor students. The Royal Government will continue to strengthen its partnerships with the private sector and the national and international community to enhance and improve the quality of education services, both in vocational and technical training and in higher education, consistent with international standards and the development needs of the nation.

The Royal Government will continue to increase budget expenditures, and mobilize increased international assistance to enable incentives for teachers, assure quality instruction; increase provision of education materials, equipments, libraries and laboratories; and build dormitories for students, especially female students; continue to reform curricula and training programs; provide scholarships to poor students; promote literacy and informal education programs; finance construction of schools in the rural areas and support school operating costs.

Source: Angle 1 of Rectangular Strategy of Cambodia, 2004

private sector are severely hampered by this shortage of qualified professionals.

- The new Strategic Framework for Decentralisation and De-concentration Reforms is being formulated and put in place by the Royal Government of Cambodia. The therefore required "Organic Law" that is being drafted will reflect the national decentralisation and de-concentration strategy and will provide the basic legal framework for the implementation of the strategy. The new Sub-national Governance System is based on participatory democratic principles that are focused on meeting the people's needs and the alleviation of poverty. To achieve this the RGC will establish sub-national governance institutions at provincial/municipal, district, and commune/sangkat level. The reform process will require significant time, sustained commitment, attitude change and efforts by all stakeholders. The roles and functions of line ministries will change over time. For example, the implementation of rural infrastructure projects will in future be administered and carried out at local levels while the line ministries will provide the enabling environment at national level and support where required. It is obvious that this reform process is a major determining factor for HRD. For the rural infrastructure sector this means that a training programme as described in this paper needs to address the particular needs that originate from the reform and would be a major contributor in establishing the required human resource capacity. However, as the reform will take some time, this HRD programme will still have to be supportive to the current existing government organisation and their needs in providing the infrastructure works.
- The foundation for HRD in the infrastructure sector is the basic and higher education supply in Cambodia. The National Poverty Reduction Strategy (NPRS) and Socio-Economic Development Plan II (SEDP) highlight that education development is a key enabling factor in income generation and job creation. These plans, alongside the longer term Cambodia Development Plan 2020 (CDP) reaffirm that a well-educated and trained workforce can assist in attracting foreign investment. The Education Strategic Plan (ESP) for the period 2004/08 is designed as a further step towards putting in place the necessary human resources and infrastructure.
- Both the MPWT and MRD in correspondence with the Rectangular Strategy are supposed to develop their ministerial policy papers. The MRD does already have a rural Road Policy document (2002) that includes a section on capacity building. The Transport Sector Study (2002) of the MPWT suggests concrete measures for departmental capacity development. However, none of the two departments has a particular HRD plan for their staff in place, and the recommended restructuring process for the two organisations are not yet effective.
- Over the last decade, the donor agencies of Cambodia have provided support for building capacity to the Government, specifically to the implementing ministries/agencies where their programs/projects are being implemented. This has led to a situation with increasing uncoordinated capacity building efforts on the ground.
- While the current practices of donors of providing monetary incentives to Government staff within the context of the implementation of individual programs/projects may expedite the implementation of these programs/projects, these practices have also resulted in depleting the capacity within the Government structures as qualified personnel move to more lucrative donor supported programs/projects and as a result continue to adversely affect Government's institution building efforts. In response to this, the Council of Ministers has recently initiated to introduce increased remuneration for a core staff group within Ministries. This measure would ensure that the most capable personnel could be retained and a sustainable capacity developed within the Government Departments.
- The rural road network is an integral part of the national Cambodian infrastructure sector, which is generally in a poor condition. At the same time the Government and communities

of Cambodia have very scarce resources at their disposal for the improvement and maintenance of this essential infrastructure. These particular challenges require explicit knowledge and skills that are currently only practised through individual projects. There is relatively little or no coordination between similar projects in the roads sector and between the road agencies. Research, development and application of appropriate technologies are usually project related with little replication or mainstreaming effect and thus have a limited overall impact on institutional strengthening and sustainable developments.

- Bilateral and multilateral development and funding agencies provide most of the funds for road infrastructure development. Over time 12 to 15 major agencies have been involved in infrastructure development projects. Most of these projects include significant HRD components, which usually represent 5% to 15% of the total project costs. The coordination between the various projects has not been effective and synergies are seldom sought. This is particularly the case for HRD activities. As a result, there has been a very limited sustainable mainstreaming impact through capacity building efforts of the various projects.
- ITC as the only officially recognised technical university is the main supplier of graduates for the road sector. Postgraduate courses are currently being introduced as ITC is expanding its capacity in the various departments. Certificates issued by ITC are recognised by the public and private sector. Formulation and regulation of courses is controlled through ITC's Council of Advisers. ITC is currently preparing an accreditation system for its own courses.
- Local resource based technologies provide low cost, sustainable solutions and support the Government's development and poverty reduction strategies by involving and benefiting local communities more than traditional imported equipment and technology approaches. ITC with support from the ILO introduced some years ago learning modules for the application of local resource based methods for roadworks in the civil engineering and rural engineering courses. Unfortunately only one out of the 5 original modules (labour based construction) is currently being accommodated in the academic course programme.

LOCAL RESOURCES:

These can include human resources, local government, private, NGO and community institutions, local entrepreneurs such as contractors, consultants, industrialists and artisans, local skills, locally made or intermediate equipment, local materials such as timber, stone, bricks, and marginal materials, locally raised finance or provision of materials or services in kind.

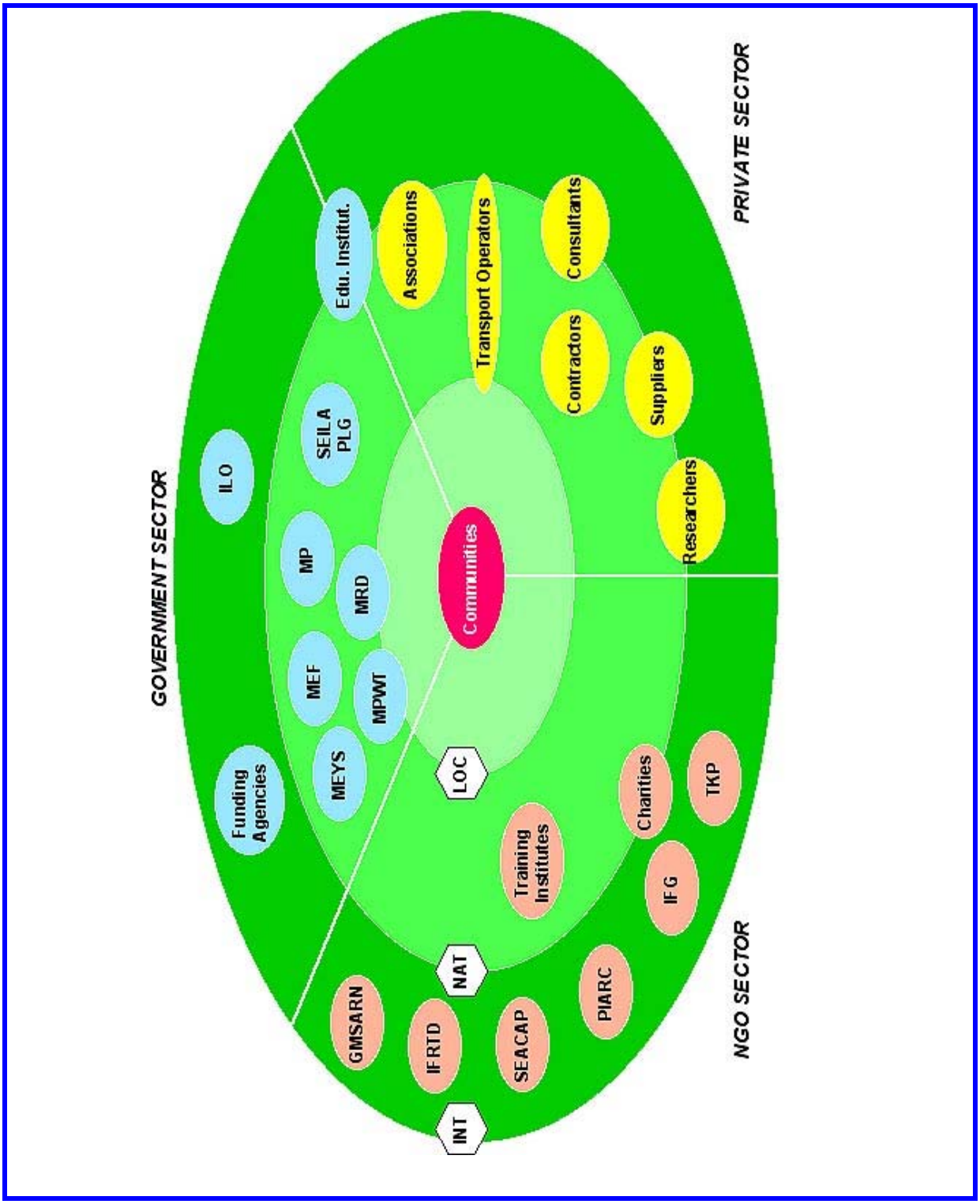
based on Petts (1997):

- Private universities, colleges and vocational training centres offer training courses in technical fields but lack official recognition. There is no particular accreditation system in place that would set standards for these training institutions and their training performance. The Ministry of Education has recently formed an Accreditation Committee of Cambodia to discuss and formulate an accreditation system. The Education Strategic Plan (ESP) of the MEYS suggests that accreditation standards for higher education would be inaugurated in 2005.
- ITC as the main supplier of engineering graduates in the country strives, naturally, for academic excellence. A wide network of affiliations to universities in the region and Europe allows ITC to access the required information on cutting edge technology. On the demand side, however, the challenges on the ground do not require cutting edge technology but innovative, practical and low-cost solutions that benefit the rural poor. Communication and coordination of research activities and training needs analysis between ITC on the supply side and the technical ministries and the private sector industry are also not sufficiently effective.

- The Engineering Institute of Cambodia (EIC) comprises of approximately 1200 members from the various engineering fields. Although this young association is recognised by the government and the private sector in the country and is a member of the Asian Federation of Engineering Organisations (AFEO), it still lacks the capacity to provide wide-ranging and professional services to its members. HRD initiatives and performances are minimal.
- The private construction sector in Cambodia is in its infancy and therefore poorly structured, developed and controlled. The capacity to carry out road works is limited and the sector requires substantial support to reach the required capabilities. Only a few domestic contractors exist that can actually carry out quality road works. Most of the larger jobs are either contracted out to the military engineering brigades or international contractors. There is no contractor association in Cambodia that could represent the interests of the domestic contractors and assist in the development of individual contractors. Many of the firms are owned/managed by civil servants.
- While the tripartite arrangement between client, contractor and consulting engineer forms the core of the construction industry's institutional framework there are many other support organisations, which are required to enable the industry to function effectively. There are also other organisations, which, although not essential, support the industry and enable it to develop new techniques, materials and improve productivity. The diagram in Appendix A highlights the complexity of the relationships between the stakeholders in the construction industry of client, consultant and contractor, their institutional requirements and the support framework that exists to meet these demands. The lines only indicate relationships which may exist to meet the demands of the construction industry and do not include linkages which may exist for other reasons.
- There are only a limited number of contractors who have been specifically trained for local resource-based rural road works. In total, there are about 35 trained contractors nationally that have undergone theoretical and practical training. Out of these only 24 of these contractors have practical experience in local resource based road works.
- Cambodian consultants usually operate on a freelance basis or as sub-consultants hired by international firms. Most of them are government employees who are forced to complement their poor salaries as civil servants with private work. Only very few established Cambodian consulting firms exist who have the capacity to carry out design, contract preparation and supervision of infrastructure works unaided.
- During the preparation of the Provincial and Rural Infrastructure Project (PRIP) Intech Associates through the ILO was involved in the formulation of the training and capacity building component. The major findings of the situation analysis at that time (2003) have not significantly changed and were summarised as follows:
  - *The road departments are in a constant state of reform and development,*
  - *At provincial level, the capacity to carry out the type of work that is required for a large-scale project like the PRIP is very limited,*
  - *Systems and procedures are being developed and are only partly institutionalised,*
  - *Many of the systems and approaches are still project related and are neither standardised nor institutionalised,*
  - *The environment for an effective functioning civil service is not sufficiently conducive,*
  - *The private sector is not yet sufficiently developed to fully take over implementation activities from the government.*

4. PARTNERS IN HRD

A number of partners at different levels and in different sectors have to cooperate for a comprehensive HRD effort to achieve the anticipated mainstreaming impact of CTMP. The principle “co-operation landscape”, that contains all relevant partners within their respective sector, is shown in the following Figure:



The following table provides an overview of the partners, their relationship to the overall HRD strategy components and their main roles and functions:

HRD PARTNERSHIP AND CO-OPERATION ANALYSIS FOR THE ROAD SECTOR			
GOVERNMENT SECTOR			
Level	**Organisation**	**HRD Strategy Side**	**Main Functions and Roles**
International	Funding Agencies: - Multilateral: WB, ADB, EU, WFP, UNDP, etc. - Bilateral: DFID, JICA, KfW, SIDA, AFPD, China, Korea, etc.	**S**	Providing funds and technical assistance
	International Labour Organisation:	**S**	Providing technical assistance
National	Ministry of Finance	**S/D**	Approving budgets Providing / disbursing funds
	Ministry of Public Works and Transport	**D**	Planning and managing/implementing road construction, rehabilitation and maintenance projects/programmes
	Ministry of Rural Development	**D**	Planning and managing/implementing rural road construction, rehabilitation and maintenance projects/programmes
	Ministry of Planning	**S/D**	Formulating and monitoring national policies and planning
	Ministry of Education, Youth and Sport	**S**	Formulating and implementing national education policies, strategies and programmes. Setting standards, targets and monitoring performance.
	ITC	**S**	Providing degree courses in engineering
	Other Educational / Technical Training Institutions	**S**	Providing diploma/vocational training
Local	Provincial Departments of Public Works and Transport	**D**	Implementing road construction, rehabilitation and maintenance projects/programmes
	Provincial Departments of Rural Development, Office of Rural Roads	**D**	Implementing road construction, rehabilitation and maintenance projects/programmes
	Provincial Rural Development Committees	**D**	Implementing road construction, rehabilitation and maintenance projects/programmes

PRIVATE SECTOR			
Level	**Organisation**	**HRD Strategy Side**	**Main Functions and Roles**
National and International	Association(s): EIC	**S/D**	Representing interests of engineers/consultants Providing services to members Disseminating knowledge, information
	Consultants	**D**	Providing technical and managerial services
	Suppliers	**D**	Providing material, equipment, tools
	Researchers	**S/D**	Developing appropriate technology solutions and work methods
Nat.	Contractors	**D**	Implementing rural road works; construction, rehabilitation, maintenance
All	Transport Operators	**D**	Providing transport for goods and people on international, national and local levels

NGO SECTOR			
Level	**Organisation**	**HRD Strategy Side**	**Main Functions and Roles**
International and National	Greater Mekong Sub-region Academic & Research Network (GMSARN)	**S**	Networking research and knowledge sharing among technical higher education institutes in the South-East Asia Region
	International Forum for Rural Transport and Travel Development (IFRTD)	**S**	Global networking for development of rural transport (accessibility and mobility)
	South East Asia Community Access Programme (SEACAP)	**S**	Providing (mainstreaming) knowledge for low-cost rural access solutions in South-East Asia
	World Road Association (PIARC)	**S**	Global networking and exchanging knowledge on roads and road transport policy and practices
	International Focus Group (for Rural Road Engineering) (IFG)	**S**	Promoting transport for development and poverty alleviation through networking of existing initiatives in developing countries
	Global Transport Knowledge Partnership	**S**	Global networking and knowledge sharing for transport
	Charities (various NGOs)	**S**	Providing various development support services, including capacity building and training
Nat.	Training Institutions; e.g. SILAKA, ACE, etc,	**S**	Developing and providing training for project management, planning, ToT, language, technical, vocational, etc.

All these, and probably more partners need to be connected and their activities coordinated and harmonised to achieve the desired mainstreaming effect through education and training. Obviously a comprehensive programme approach is therefore required. This might be a function to be taken up by the recently established Cambodia National Community of Transport Practitioners (CNCTP) with the assistance of development support inputs (see strategy in Section 8 of this paper).

5. MAINSTREAMING TOPICS IN THE PRINCIPALLY RURAL ROAD SECTOR

The SEACAP CTMP programme intents to mainstream appropriate rural road topics that contribute to knowledge, skills and attitude enhancement of all personnel involved on all management levels. In order to achieve the desired impact a comprehensive approach has to be chosen that ensures full coverage. The topics have been identified following the normal infrastructure project / programme cycle (appraisal, design, implementation, handing over, maintenance). The following list has been established as a result i) of the training needs analysis as shown in Section 7 of this paper, and ii) of the analysis of research and knowledge topics that are currently available or being developed in the rural road sector.

MAINSTREAMING TOPIC PACKAGES FOR HRD IN THE RURAL ROAD SECTOR	
1.	Awareness of relevant rural transport, local resource utilisation, sustainability and poverty issues
2.	Appropriate technology and local resource use for rural roads
3.	Human resource management and development
4.	Community participation in rural road projects
5.	Integration of crosscutting issues (gender, HIV/AIDS, minorities, environment, poverty, etc.)
6.	Project formulation, planning and preparation (appraisal; integrated rural accessibility planning and mapping, budgeting; financing; economic, environmental and social evaluation)
7.	Technology options for rural roads (standards, basic access options surfacing options, low cost structures)
8.	Technical design
9.	Contract procedures, conditions and specifications
10.	Preparation of tender and contract documents, tender evaluation and award of contracts
11.	Bid preparation, tendering (cost estimation, programming) and contract administration
12.	Management of rural road project implementation (for improvement and maintenance works)
13.	Management of rural road works contracts (work planning, supervision, quality and cost control, reporting)
14.	Resource management (finance, human, material and equipment)
15.	Site works implementation (construction, improvement, maintenance)
16.	Business management
17.	Project implementation supervision and monitoring
18.	Quality assurance
19.	Project / Programme monitoring (performance monitoring, technical and financial audits)
20.	Infrastructure asset management and maintenance
21.	Community based maintenance of rural roads (management, financing and operations.
22.	Road safety

Although the above topics are primarily concerned with the rural road sector, many of them are also applicable for other areas of rural infrastructure development and are therefore providing an additional opportunity for effective mainstreaming. The following table demonstrates the use of the above topics in the different rural infrastructure sector.

CAPABILITY REQUIREMENTS FOR RURAL INFRASTRUCTURE CONSTRUCTION AND MAINTENANCE				
Rural Infrastructure Sectors / Main Topics	Roads	Water	Irriga-tion	Others
1. Awareness of relevant rural transport, local resource utilisation, sustainability and poverty issues	✓	✓	✓	✓
2. Appropriate technology and local resource use for rural roads	✓			
3. Human resource management and development	✓	✓	✓	✓
4. Community participation in rural road projects	✓	✓	✓	✓
5. Integration of crosscutting issues (gender, HIV/AIDS, minorities, environment, poverty, etc.)	✓	✓	✓	✓
6. Project formulation, planning and preparation (appraisal; integrated rural accessibility planning and mapping, budgeting; financing; economic, environmental and social evaluation)	✓	✓	✓	✓
7. Technology options for rural roads (standards, basic access options surfacing options, low cost structures)	✓			
8. Technical design	✓			
9. Contract procedures, conditions and specifications	✓	✓	✓	✓
10. Preparation of tender and contract documents, tender evaluation and award of contracts	✓	✓	✓	✓
11. Bid preparation, tendering (cost estimation, programming) and contract administration	✓	✓	✓	✓
12. Management of rural road project implementation (for improvement and maintenance works)	✓	✓	✓	✓
13. Management of rural road works contracts (work planning, supervision, quality and cost control, reporting)	✓	✓	✓	✓
14. Resource management (finance, human, material and equipment)	✓	✓	✓	✓
15. Site works implementation (construction, improvement, maintenance)	✓			
16. Business management	✓	✓	✓	✓
17. Project implementation supervision and monitoring	✓	✓	✓	✓
18. Quality assurance	✓	✓	✓	✓
19. Project / Programme monitoring (performance monitoring, technical and financial audits)	✓	✓	✓	✓
20. Infrastructure asset management and maintenance	✓	✓	✓	✓
21. Community based maintenance of rural roads (management, financing and operations	✓	✓	✓	✓
22. Road safety	✓			

6. PREREQUISITES FOR EFFECTIVE MAINSTREAMING AND TRAINING IMPACT

6.1 Requirements for Sustainable Training Capacity

In order to create a sustainable and effective training capacity, a number of crucial requirements must be achieved, such as:

- Creation of an adaptable delivery capacity and approach to respond to the changing training requirements (market oriented, responsive to reforms),
- Establishment of a strong and permanent training management capacity,
- The actual training to be delivered by specialised training suppliers (institutions, experts) to ensure full professionalism,
- Effective co-ordination of all training related matters among all relevant stakeholders,
- Co-ordinated training needs assessment development activities,
- Co-ordinated and "streamlined" training material development by efficiently accessing good practice knowledge,
- Integration (mainstreaming) of important subjects to the curricula of educational institutions, such as universities and polytechnics,
- Established and enforced training standards and accreditation procedures,
- Development and operation of effective training planning, evaluation and monitoring systems,
- Adequate and reliable funding mechanisms,
- Inter-ministerial coordination,
- Long-term development support.

Only if these requirements are met, can quality training with a national impact be expected that would significantly contribute to:

- Poverty reduction efforts of the Government,
- Mainstreaming of appropriate technology for infrastructure provision,
- Enhanced knowledge, skill and management competencies in the construction sector, both in the public and private sector,
- Appropriate institutional strengthening to enable delivery road sector responsibilities, and
- Professional development of all personnel involved in road infrastructure work and therefore enhanced career / employment / business opportunities.

6.2 Requirements for Effective Training Impact

Road rehabilitation and maintenance comprises of a wide range of activities and products (planning, design, procurement, work implementation, supervision), which are delivered or produced by different agents (departments, consultants, contractors, suppliers, banks, other

service providers). In order to ensure effective and efficient co-operation by all parties to meet the set targets a rather complex system of relationships, contractual agreements and management issues have to be established. This is only possible through an enabling environment, relevant regulatory measures, operational procedures, guidelines and laws that are enforced.

An enabling environment is the core prerequisite for achieving satisfactory results both in training and execution of road works.

For people to perform effectively in their job, they require a set of competencies that are usually acquired through training. However, in order to bring about an adequate and sustainable performance capacity in the public and the private sector a number of preconditions have to be met that have little to do with training. **These preconditions have to be pursued parallel to the actual capacity building process** and are, as such, absolutely essential if the project objectives are to be achieved. These issues have to be dealt with by the institutional and programme management.

Many of the prerequisites are usually of procedural and technical nature and are also a direct input to the training programme, e.g. procedural and technical manuals, management guidelines, etc.

The main issues that need to be addressed in order to achieve satisfactory results both in training and execution of road works include:

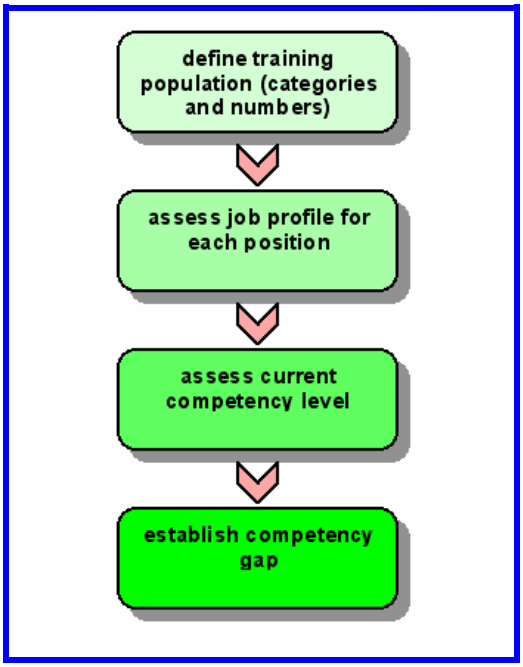
- Political goodwill and appropriate policies,
- Defined and established roles and organisation structures for implementing agencies coupled with career path systems,
- Adequate implementation capacity at national, provincial and local levels,
- Appropriate road network management capacity developed,
- Road maintenance management systems developed and established,
- Technical specifications and guidelines for local resource based road works developed and available,
- Costing norms and procedures developed and available,
- Appropriate procedures for registering and classifying contractors established*
- Procedures for selecting / short listing contractors established,
- Procedures for tendering, contract award, certification and payment established,
- Appropriate contract documentation developed, available and in use by all parties,
- Regular flow of funding and streamlined disbursement and administration procedures,
- Quality control measures developed and adopted,
- Accountability.

Many, if not most of these issues have not yet been tackled and standardised in the Cambodian road sector.

7. TRAINING NEEDS

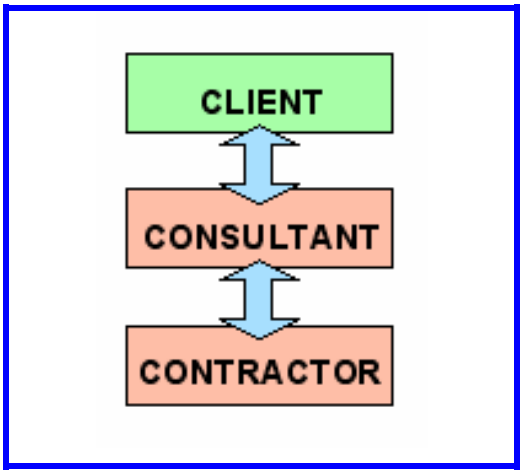
The actual training needs are usually assessed by defining the required job competencies and comparing them with the existing competencies of the target personnel to be trained. For the purpose of mainstreaming knowledge and skills on a national scale, training needs cannot be established for an individual project basis and thus may not be specific for the very requirements of a particular project. The training needs established in this paper reflect therefore the general capacity requirements for personnel involved in the rural road sector in Cambodia to enable them to competently perform in their job. However, as analysed in Section 5, most of the identified mainstreaming topics are not only useful for the rural road sector but also for any other rural infrastructure sector.

The training needs determine the content and the methodology to be applied for training interventions.



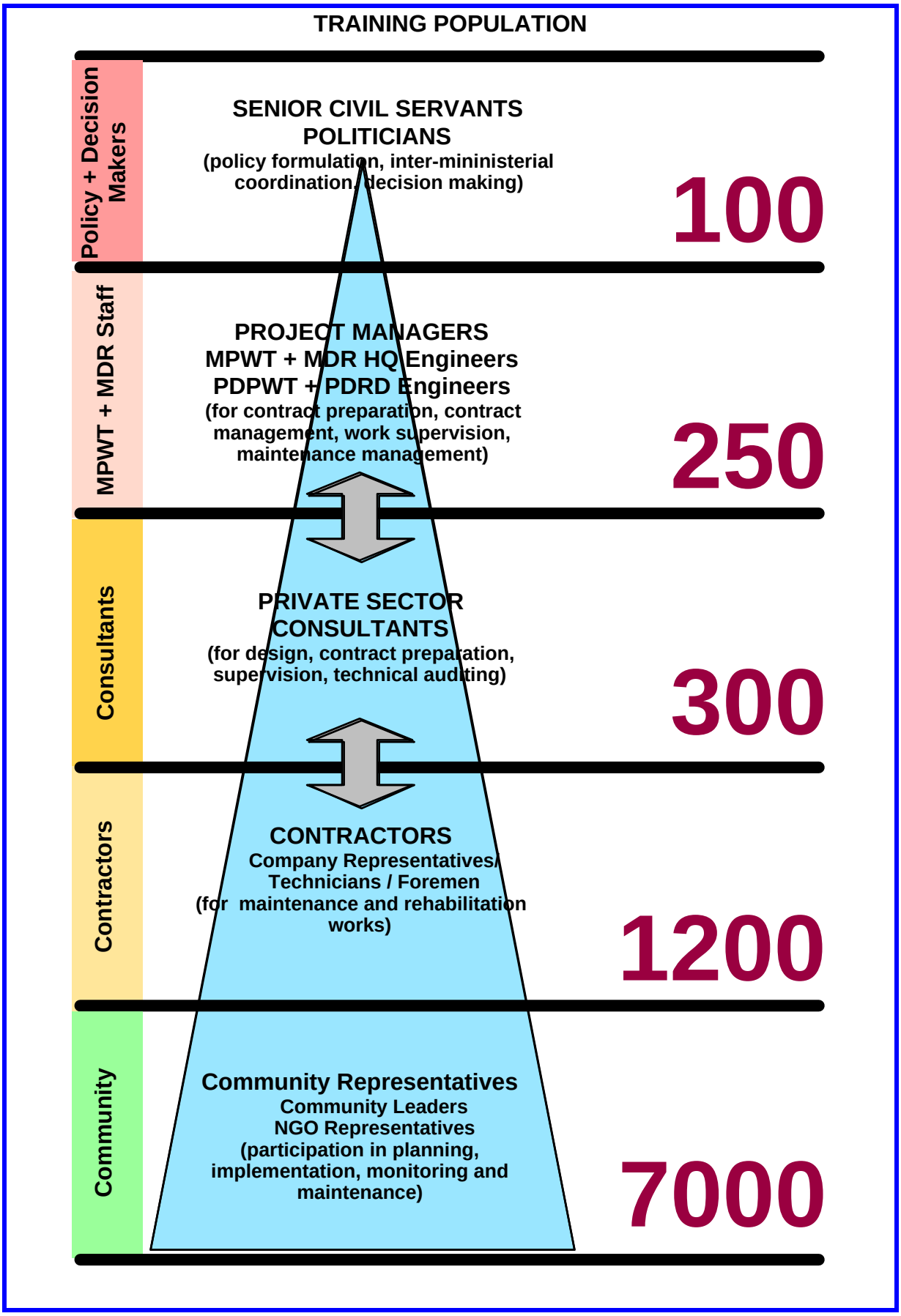
When identifying the training needs it is important to understand the positioning of the staff to be trained. All people concerned with a project or working in an organisation, operate in a field of relationships and interdependencies. For road works projects the contractual arrangements determine the roles and functions of the involved parties and thus also the job requirements of the individuals who are involved in the project.

The Figure on the following page provides an overview of the training needs in terms of personnel, their position and principal roles.



The indicated numbers of people requiring training are an estimate based on previous experiences and assumed requirements for planned rural road improvement projects and maintenance programmes in the near future.

For mainstreaming purposes of knowledge and skills, training cannot be a one-off affair as is usually the case in projects. In order to achieve the anticipated mainstreaming effect, training would have to be institutionalised and programmed as a recurrent capacity building input. The numbers of personnel to be trained is therefore only an indication of the magnitude of training that is required over time.


TRAINING POPULATION
Policy + Decision Makers
SENIOR CIVIL SERVANTS
POLITICIANS
(policy formulation, inter-mininisterial coordination, decision making)
100
MPWT + MDR Staff
PROJECT MANAGERS
MPWT + MDR HQ Engineers
PDPWT + PDRD Engineers
(for contract preparation, contract management, work supervision, maintenance management)
250
Consultants
PRIVATE SECTOR CONSULTANTS
(for design, contract preparation, supervision, technical auditing)
300
Contractors
CONTRACTORS
Company Representatives/ Technicians / Foremen
(for maintenance and rehabilitation works)
1200
Community
Community Representatives
Community Leaders
NGO Representatives
(participation in planning, implementation, monitoring and maintenance)
7000

7.2 Existing and Required Competencies

A detailed assessment of the **existing level of competencies** is a relatively comprehensive exercise that may not be achievable within the context of this study. However, during the preparation of the PRIP in 2003, Intech Associates through their involvement with the ILO had carried out a detailed survey of the existing capacity and competency levels of MPWT, MRD and private sector personnel. In essence, this may be summarised as follows:

- **MPWT and MRD Headquarters Staff:** Most civil servants working in the road sector have little or no experience with the application of local resource based methods. They also lack project management experience and working with cross-cutting issues. In the past their involvement in rural infrastructure projects has been coincidental rather than planned and structured in correspondence with a departmental HRD plan.
- **MPWT and MRD Provincial Staff:** Through the ongoing decentralisation process most of the rural infrastructure projects will be implemented through the provincial establishments. The current capacity of the present staff, however, is very limited in all aspects of project implementation.
- **Consultants:** Consultants in Cambodia are individuals who are, in most cases, still employees of the Government. Usually international consultants for project implementation works hire them on a temporary basis. Individuals may have acquired certain competencies for the rural road sector. In general, however, they lack the capacity to establish and run successfully consultancy firms.
- **Contractors:** Only few locally based contracting firms exist in Cambodia that have the required capacity to carry out road works competently and to run their business successfully. Training for local resource based approaches has so far only been provided to about 35 contractors and their technical staff (ILO Upstream Project). Most locally based contractors have a competency deficiency in most aspects of contracting and as such are usually used by large-scale contractors as sub-contractors.
- **Community Representatives;** Most community representatives have little or no reliable and standardised information on the application of local resource based-methods for infrastructure provision. Their increased involvement in selection, decision making and implementation processes for rural public infrastructure requires sound knowledge and management competencies.

The **required levels of competencies** for ensuring full mainstreaming and application of local resource based road infrastructure works in Cambodia is summarised in the following table while typical job profiles are for core implementation personnel is shown in Appendix B. The table lists the 22 training / mainstreaming packages, by whom these packages will have to be applied and to what degree (level) these packages have to be comprehended. The competency levels have been identified as follows:

Level 1: To be orientated / aware of the subject

Level 2: To have the basic comprehension and/or have the basic skill(s) to carry out the given job

Level 3: To have the full comprehension and/or have the fully developed skills to carry out the given job

REQUIRED LEVELS OF COMPETENCIES

Training Package Topic	Target Audience	Required Level of Competence
1. Awareness of relevant rural transport, local resource utilisation, sustainability and poverty issues	Policy and Decision Makers	1
	Public Sector Engineers	2
	Consultants	2
	Rural Infrastructure Project Managers	2
	Undergraduate Students	1
	Postgraduate Students	2
2. Appropriate technology and local resource use for rural roads	Public Sector Engineers	3
	Consultants	3
	Rural Infrastructure Project Managers	3
	Contractors (Management)	2
	Contractor's Supervision Personnel	1
	Undergraduate Students	1
	Postgraduate Students	3
	Community Leaders/Representatives	2
3. Human resource management and development	Public Sector Engineers	1
	Consultants	1
	Rural Infrastructure Project Managers	3
	Contractors (Management)	3
4. Community participation in rural road projects	Policy and Decision Makers	1
	Public Sector Engineers	2
	Consultants	2
	Rural Infrastructure Project Managers	3
	Contractors (Management)	2
	Contractor's Supervision Personnel	1
	Postgraduate Students	1
	Community Leaders / Representatives	2
5. Integration of cross-cutting issues (gender, HIV/AIDS, environment, poverty, etc.)	Policy and Decision Makers	1
	Public Sector Engineers	3
	Consultants	3
	Rural Infrastructure Project Managers	3
	Contractors (Management)	2
	Contractor's Supervision Personnel	2
	Undergraduate Students	1
	Postgraduate Students	3
	Community Leaders / Representatives	2
6. Project formulation, planning and preparation (appraisal; integrated rural accessibility planning and mapping, budgeting; financing; economics, environmental and social evaluation)	Public Sector Engineers	3
	Consultants	3
	Postgraduate Students	2
7. Technology options for rural roads (standards, basic access options surfacing options, low cost structures)	Public Sector Engineers	3
	Consultants	3
	Rural Infrastructure Project Managers	3
	Contractors (Management)	3
	Contractor's Supervision Personnel	2
	Undergraduate Students	2
	Postgraduate Students	3
	Community Leaders / Representatives	1
Training Package Topic	**Target Audience**	**Required Level of Competence**

8. Technical Design for rural roads	Public Sector Engineers	3
	Consultants	3
	Postgraduate Students	3
9. Contract procedures, conditions and specifications	Public Sector Engineers	3
	Consultants	3
	Infrastructure Project Managers	3
	Contractors (Management)	3
	Contractor's Supervision Personnel	2
	Postgraduate Students	2
10. Preparation of tender and contract documents, tender evaluation and award of contracts	Public Sector Engineers	3
	Consultants	3
	Infrastructure Project Managers	3
	Contractors (Management)	2
	Postgraduate Students	2
11. Bid preparation, tendering (cost estimation, programming) and contract administration	Public Sector Engineers	2
	Consultants	2
	Infrastructure Project Managers	2
	Contractors (Management)	3
	Postgraduate Students	2
12. Management of rural road projects (for improvement and maintenance works)	Public Sector Engineers	3
	Consultants	3
	Rural Infrastructure Project Managers	3
13. Management of rural road works contracts (work planning, supervision, quality and cost control, reporting)	Public Sector Engineers	3
	Consultants	3
	Infrastructure Project Managers	3
	Contractors (Management)	3
	Postgraduate Students	2
14. Resource management (finance, human, material and equipment)	Contractors (Management)	3
	Contractor's Supervision Personnel	2
15. Business management	Consultants	3
	Contractors (Management)	3
16. Project works implementation; supervision and monitoring	Public Sector Engineers	3
	Consultants	3
	Postgraduate Students	2
17. Site works implementation (construction, improvement, maintenance)	Contractors (Management)	2
	Contractor's Supervision Personnel	3
	Undergraduate Students	1
	Postgraduate Students	2
	Community Leaders / Representatives	1
18. Quality assurance	Public Sector Engineers	3
	Consultants	3
	Rural Infrastructure Project Managers	3
	Contractors (Management)	3
	Contractor's Supervision Personnel	3
	Postgraduate Students	2
19. Project / Programme monitoring (performance monitoring, technical and financial audits)	Policy and Decision Makers	1
	Public Sector Engineers	3
	Consultants	3
	Rural Infrastructure Project Managers	3
	Postgraduate Students	2

Training Package Topic	Target Audience	Required Level of Competence

20. Infrastructure asset management and maintenance	Policy and Decision Makers	1
	Public Sector Engineers	3
	Consultants	3
	Postgraduate Students	2
21. Community based maintenance of rural roads (management, financing and operations	Public Sector Engineers	1
	Consultants	1
	Rural Infrastructure Project Managers	2
	Community Leaders / Representatives	3
	Postgraduate Students	1
22. Road safety	Policy and Decision Makers	2
	Public Sector Engineers	3
	Consultants	3
	Rural Infrastructure Project Managers	3
	Contractors (Management)	2
	Contractor's Supervision Personnel	2
	Undergraduate Students	1
	Postgraduate Students	3
	Community Leaders / Representatives	2

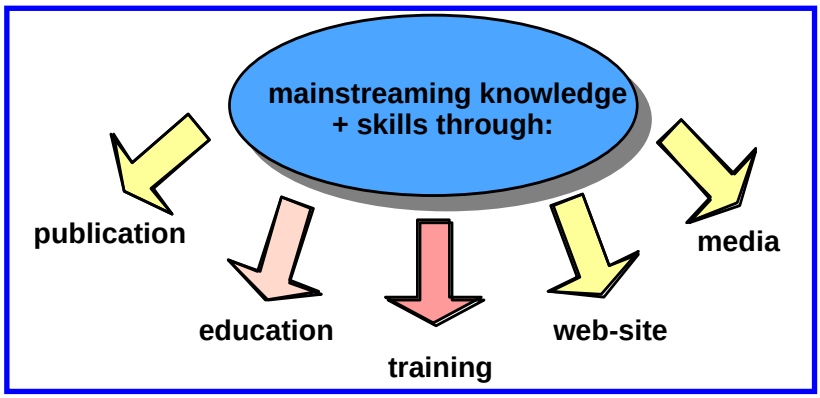
7.3 Other Training Related Capacity Building Requirements

Besides the training requirements of individuals who are already employed either in the government service or in the private sector as described in Section 7.2, there are additional capacity building requirements for a full coverage and effective mainstreaming impact:

- Support to **training providers**, such as the Institute of Technology of Cambodia (ITC), the National Technical Training Institute (NTTI), the Management Institute of Cambodia (MIC) and technical / vocational training institutes to have the capacity to review and adjust their curricula for the changing requirements and deliver the new / changed subjects/courses.
- Support to the development and institutionalisation of **Training of Trainers** to strengthen the delivery capacity of national training institutions with particular emphasise on road infrastructure related topics and methodology for practical oriented training techniques.
- Support to the **Engineering Institution of Cambodia** (EIC) to disseminate appropriate technologies and research results, and to institutionalise and enhance training activities within the association.
- Initiate and provide support to the establishment of a **Cambodian Contractor Association;** i) to enable effective dissemination of information and knowledge, ii) to promote a transparent, impartial and honest bidding environment for construction works, iii) to create a strong sector representation.
- Support to the formulation and introduction of a **national accreditation system** for civil and rural engineering education, technical vocational training and proficiency training for the construction sector.
- Integration of relevant information to **basic education** curricula; e.g. rural transport requirements and application of appropriate technology as contributing measures for poverty reduction, community participation in the provision and maintenance of public infrastructure, etc.
- Initiate and establishment of a road sector **audit system** for ensuring effective transference of national poverty reduction policies to project / programme levels.

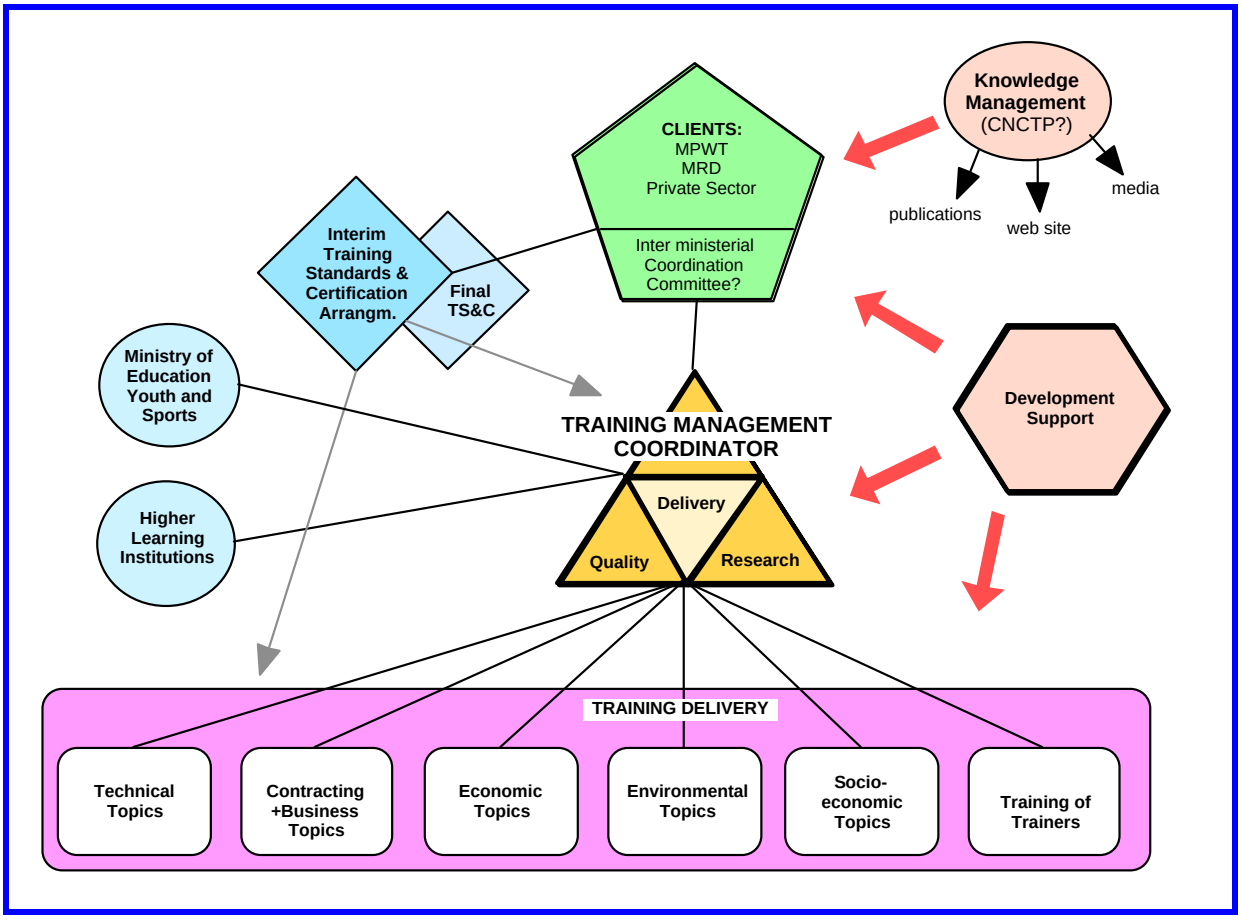
8. STRATEGY OPTIONS FOR TRAINING AND SUPPORT MEASURES

8.1 Training Delivery Strategy



A project related training strategy is meant to upgrade existing competencies in order to enable project personnel to cope with the very specific requirements of a project. In contrast, a **training delivery strategy** as the core function for knowledge and skill transfer for mainstreaming has to be broader and must be strongly linked to the other mainstreaming functions and support systems.

For the purpose of mainstreaming training interventions, a strong institutionalised and permanent training management capacity is essential. A Training Management Coordinator should be responsible of managing all training related functions. The required arrangements for an effective training delivery strategy are shown in the following Figure:



- The road agencies are the direct **Clients**, namely MPWT, MRD. For smaller projects and specific personnel, the private sector is also a client. For training related matters, the road agencies should each **appoint a Training Co-ordinator** who will be responsible for liaison with the Training Management Coordinator (TMC) in terms of identification of training needs, harmonisation of training implementation, training planning and monitoring and funding. It is clear that private sector associations (not yet established) would be suitable forums to articulate the training needs of consultants, contractors etc.

- For overall training coordination in terms of formulation of training requirements, planning of national initiatives and programmes, monitoring of training performance and impact, an **Inter Ministerial Training Coordination Committee** as a sub-committee to a proposed Inter-Ministerial Coordination Committee for roads sector should be established. Members of this committee should also represent other parties, specifically the MEF, MEYS, private construction sector (e.g. EIC), ITC, road users and community representatives.

- **Proficiency Training Standards and Certification** will have to be formulated for the two main categories of trainees. The first category covers the government civil service personnel of the road agencies for whom proficiency training will be in-service training. The second category covers personnel (consultants and contractors) of the private construction sector. Training standards and certification for both categories should temporarily become the responsibility of the Inter-Ministerial Training Coordination Committee. A proposal on standards and evaluation / certification procedures proposed would have to be developed by the TMC with assistance from the Development Support Unit and forwarded to the committee for approval.

- The **ultimate accreditation system** for setting training standards and certification may take some time to establish and should be a component of the national accreditation system that is currently under discussion. It would therefore be important to ensure that the training programme as suggested in this paper is introduced to the accreditation board of the MEYS and its incorporation followed up.

- The **Training Management Coordinator** (TMC) will have to be chosen from any of the national institutions that might have the capacity to carry out the required functions. Ideally this may be an existing training institution that has the capacity to extend its training delivery capacity to also manage a full training programme for the entire road sector. Along with this, sustainable funding mechanisms would have to be established (e.g. training levy on all road contracts, and/or dedicated percentage of road projects funded by donor agencies) to ensure funding of the TMC as well as the main training programme elements. The main management functions of the TMC are:

  1. Representing the client(s) in all matters pertaining to training planning and implementation.
  2. Advising the client(s) on training requirements and necessary actions with regards to institutional capacity building and project related training measures.
  3. Designing and planning of training programmes. This includes training plans, (syllabi), lesson plans, training material, implementation checklists, logistics, operations, resource plans, cost estimates, etc.
  4. Coordinating the training operations with all stakeholders (clients, donors, educational institutions, ministries) and training implementers through the Training Sub-Committee.
  5. Procuring training services on behalf of the client from qualified training suppliers and preparing them for their tasks. This also includes the preparation of TORs and contracts.

6. Supervising the execution of training services of the contracted training suppliers.
7. Carrying out those training activities for which the TMC is the expert.
8. Ensuring training standards, qualification and accreditation schemes for all training aspects in the programme and liaison on these issues with the Training Sub-Committee.
9. Development and implementation of a training quality assurance system.
10. Monitoring and evaluation of the entire training programme and reporting to the clients.
11. Being the custodian of all training related material and developing/updating it as a continuous process.

- **Training delivery**; The training interventions should be packaged to suit the expertise of possible training suppliers. For example, business management for emerging contractors is preferably taught by a private sector institution that has the required expertise in this field. Ideally the TMC would be in a position to deliver at least some of the packages, while the remaining ones would have to be outsourced by the TMC. At present not many institutions exist in Cambodia that can deliver the kind of training subjects required by the rural road sector. A preliminary survey has revealed that institutions such as ITC, ACE, SILAKA, and Vocational Training Institutes among others would be target institutions for developing the required training delivery capacity.

- **Training development support** may be provided through a temporary Technical Assistance (TA) arrangement for which support is sought from development partners. The TA mandate will consist of:
  - Detailed development of the strategy and support to its implementation,
  - Advisory support to the establishment of the TMC,
  - Backstopping services to the TMC on matters related to training development and management,
  - Assistance in the preparation of specific training material,
  - Advisory support to the coordination of all training matters and for the establishment of the Training Sub-Committee of NCC, and
  - Training implementation monitoring and evaluation.

  Support would be provided on a needs basis and will eventually phase out once sufficient local capacity is developed. The support may also include urgently required training hardware to run training sites. Training development support, in the context of the fragile and underdeveloped technical training sector in the country, may be required for a longer period of time until sufficient local capacity has been established.

8.2 Training Objectives

The HRD objectives are the overall basis for training. They determine how the training programme will be designed, organised and what are the resources required. The objectives also set the standards by which the success of the training will be measured.

Human Resource Development Objective:

To develop a national road sector personnel capacity for planning, designing, managing and implementing road construction and maintenance works by optimising the use of local resource based techniques for cost-effectiveness and sustainability

General Capacity Development Objectives for Road Sector Personnel:

➔ **For Departmental Management Staff**

To develop a departmental capacity to manage and control road rehabilitation and maintenance planning and implementation on a network basis by optimising the use of locally available resources

➔ **For Consultants**

To introduce and involve local consultants in the design and supervision of construction and maintenance contracts by optimising the use of locally available resources

➔ **For Contractors**

To develop contractors and their site supervisory staff capabilities to carry out construction and maintenance contracts for all appropriate road surface types by optimising the use of locally available resources.

➔ **For Training Providers and Trainers**

To develop a sustainable training development and delivery capacity for technical and managerial training providers for road construction and maintenance by optimising the use of locally available resources

8.3 Support Arrangements

Besides the direct training interventions as outlined above, a number of additional essential support initiatives (Support Packages) should be considered if sustainable mainstreaming is to be achieved.

- *Support Package A,* should the proposed training strategy receive approval by the major stakeholders (MEF, MEYS, MPWT, MRD, EIC, the Accreditation Committee of Council of Ministers and donor in the road sector), adequate **management and development support** through a dedicated programme support initiative will be required (see details in Section 8.1; Training development support).
- *Support Package B,* integration of relevant **topics to basic education curricula**; Basic education forms the foundation for all other HRD activities as outlined in the overall HRD strategy (see Section 2.1, HRD Principles). It may be argued that rural road management and works has nothing to do with primary or secondary education. However, if mainstreaming is the objective, then awareness of certain key issues must be included in the learning programme for children and youth. This might be limited but essential. For example, i) environmental protection in connection with roads, ii) road safety!, iii) community participation in road infrastructure planning and management, iv) roads and public services, etc. could be subjects that should be considered in a curricula review.
- *Support Package C*, integration of relevant **topics to higher technical education curricula**; As identified in the training needs analysis, under- and post- graduate students require adequate training in the application of local resource based techniques. Although course elements on labour-based methods are already included in ITC's curricula, additional subjects are required and more emphasize given. Other providers of technical training do not have any subjects on the application of appropriate technology issues. It would therefore require a total review of the existing curricula and development / integration of the identified subjects to new curricula.

- *Support Package D,* development and dissemination of **generic training and education material**; Besides appropriate training material for basic and higher education, a set of generic material is also required for the proficiency training programme. As these cover 22 identified major subjects, a wide range of manuals and reference material is required. This, to some extent, is already in one form or the other available from previous or ongoing projects, but needs to be collated and developed into generic material.
- *Support Package E,* development and introduction of a **media support programme**; In order to support the training efforts in "the classroom", an information and awareness campaign is required to provide information to the general public. This may be achieved through various media channels, such as TV, radio and newspapers. Specific subject topics, such as road safety, community participation in road infrastructure management and works, environmental considerations, roads and services, etc. would have to be developed and produced for public consumption and dissemination.
- *Support Package F,* development and institutionalisation of a **Poverty Impact Audit System** (PIAS) for the road sector; Practical and effective instruments must be put in place to create an interface between enabling and supportive policies and operations on the ground. For example, mandatory approval and control procedures should be developed and institutionalised to ensure that local resource-based methods are applied for all public projects. PIAS would be a system that encompasses all project/programme phases, starting from appraisal, to planning and design, to tendering, to contract award, implementation and finally to maintenance. Minimal national standards and regulations would have to be developed and enacted. Some initial ideas for PIAS are presented in Appendix C.

9. FOLLOW-UP INITIATIVES AND COST ESTIMATES

This paper represents an initial analysis study only. In order to go ahead with practical transference steps a series of follow-up initiatives are required. These require adequate funding support over a longer period of time to ensure sustainability.

The following tables contain the recommended support packages with approximate preliminary cost estimates:

Support Package A: **Training Development and Management Support**	***Approximate Duration:*** **10 Years** (on a sliding scale)
Technical Assistance, initial 3 years; (all included; international + national experts, office manager, support staff, transport, office and office equipment, services. Etc.)	US$ 2,300,000
Technical Assistance, following 3 years; (all included but reduced scale)	US$ 1,400,000
Technical Assistance, following 4 years; (all included but reduced to minimal inputs)	US$ 800,000
Total Required Support	**US$ 4,500,000**

Support Package B: **Integration to Basic Education Curricula**	*Approximate Duration:* **3 Years**
Technical Assistance; (all included; international + national experts, office manager, support staff, transport, office and office equipment, services. Etc.)	US$ 500,000
Total Required Support	**US$ 500,000**

Support Package C: **Integration to Higher Education Curricula**	*Approximate Duration:* **3 Years**
Technical Assistance; (all included; international + national experts, office manager, support staff, transport, office and office equipment, services. Etc.)	US$ 700,000
Total Required Support	**US$ 700,000**

Support Package D: **Development and Integration of Generic Education/Training Material**	*Approximate Duration:* **3 Years**
Technical Assistance; (all included; international + national experts, office manager, support staff, transport, office and office equipment, services. Etc.)	US$ 400,000
Total Required Support	**US$ 400,000**

Support Package E: **Media Support Programme**	*Approximate Duration:* **3 Years**
Technical Assistance; (all included; international + national experts, office manager, support staff, transport, office and office equipment, services, production, Etc.)	US$ 800,000
Total Required Support	**US$ 800,000**

Support Package F: **Poverty Impact Audit System**	*Approximate Duration:* **4 Years**
Technical Assistance; (all included; international + national experts, office manager, support staff, transport, office and office equipment, services, Etc.)	US$ 900,000
Total Required Support	**US$ 900,000**

TOTAL ALL SUPPORT PACKAGES	**US$ 7,800,000**

Note: There could be substantial cost savings if some or all of these support initiatives would be delivered through an integrated approach.

The total required amount appears to be a major input. However, HRD in the context as described in this paper is a comprehensive and long-term undertaking that cannot be achieved within a normal project framework. The benefits accruing from it would be easily paid back in the near future due to enhanced implementation capacity at all levels and sectors. Assuming an overall HRD development support input over a 10-year period, the total amount of $ 7.8 Million represents **less than 1.0%** of the funds Cambodia expects to spend for the improvement and maintenance of the national and rural road network over the same period of time[1].

It is anticipated that the implementation of the proposals in this working paper would lead to sector efficiency improvements of many times the cost of implementation. The socio-economic benefits of national implementation of poverty reduction focussed, local resource based approaches would be a substantial added gain.

It is recommended to deliver support services in well-planned packages on the basis of intermediate targets. Only if the implementers reach a predefined and agreed target can the next service package be “collected”. A structured review mechanism will be required to achieve this.

It is clear that the implementation of an effective human resources development strategy is in the vital interests of all of the sector stakeholders, for the development of the Cambodian economy. It is highly desirable that the key organisations (particularly MPWT, MRD and the development agencies) should actively consider the recommendations of this report and work together to achieve the substantial benefits of its implementation.

[1] According to the Transport Sector Strategy Study, Final Report for MPWT, 2002, the annual investment in the main road network alone will be more than US$50million/per year in the period until 2010. This excludes rural road investment and all maintenance spending. Current expenditure on roads by MPWT and MRD is currently approximately US$100 million per year.

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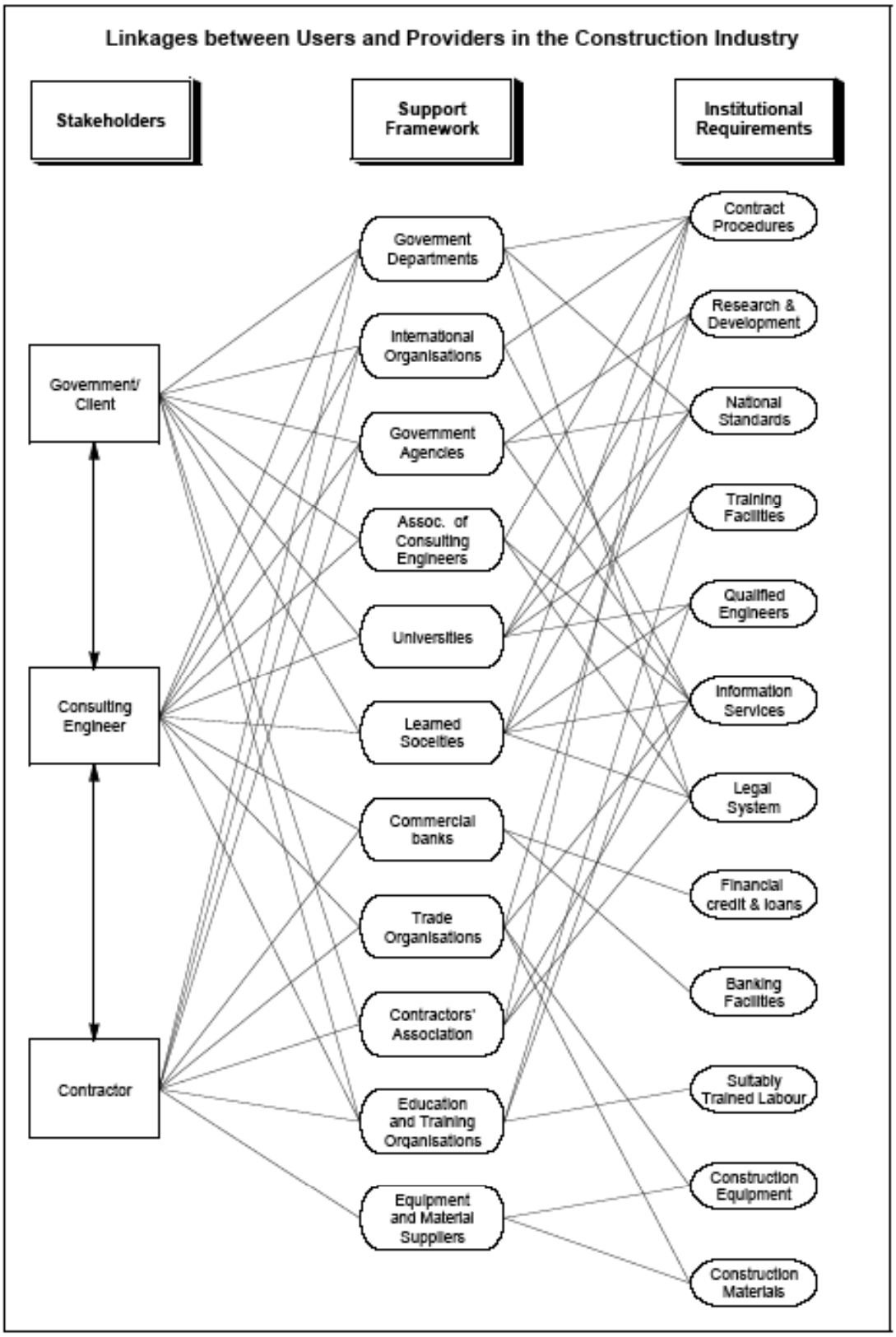
APPENDIX A; Linkages In The Construction Sector



Source:
A Model For A Contractor Support Agency; MART Working Paper No. 14, by Paul Larcher, Intech Associates & WEDC

APPENDIX B; Typical Job Profiles for Road Departments and Private Sector Companies' Personnel (example of the Provincial and Rural Infrastructure Project)

ROAD DEPARTMENT COMPETENCIES

HQ PROFESSIONAL STAFF (Engineers)

- Planning and managing the PRIP implementation
- Monitoring and control of PRIP implementation in the Provinces
- Co-ordination of PRIP activities and liaison with PRIP implementation partners
- Reporting of PRIP activities and achievements to higher level authorities
- Planning and managing maintenance on a national network basis
- Planning and carrying out participatory road prioritisation
- Designing roads in accordance with the laid down standards, norms and work methods for both capital and labour-based approaches
- Preparing contract documentation and managing bidding process
- Supervising and monitoring contract work in accordance with the conditions and specification of contract
- Managing the financial issues of the PRIP
- Managing the PRIP personnel

PROVINCIAL PROFESSIONAL STAFF (Engineers)

- Planning and managing the PRIP implementation in the Province
- Reporting of PRIP activities and achievements to higher level authorities
- Planning and managing maintenance on a provincial network basis
- Planning and carrying out participatory road prioritisation
- Designing roads in accordance with the laid down standards, norms and work methods for both capital and labour-based approaches
- Preparing tender and contract documents
- Managing tender proceedings for road work contracts
- Preparing work programmes including establishment of BQs
- Analysing of unit rates and preparing engineering estimates
- Issuing contracts
- Supervising and monitoring contract work in accordance with the conditions and specification of contract
- Supervising practical work on site on a daily basis
- Preparing work programmes and reports
- Organising quality control arrangement and carrying out quality control tests
- Instructing contractors
- Carrying out measurements of work, issuing payment certificates, arranging for payments and dealing with claims
- Managing the financial issues of the PRIP
- Managing the PRIP personnel

PRIVATE SECTOR COMPETENCIES

CONSULTANTS

- Planning and carrying out participatory road prioritisation
- Designing roads in accordance with the laid down standards, norms and work methods for both capital and labour-based approaches
- Preparing tender and contract documents
- Managing tender proceedings for road work contracts
- Preparing work programmes including establishment of BQs
- Analysing of unit rates and preparing engineering estimates
- Issuing contracts
- Supervising and monitoring contract work in accordance with the conditions and specification of contract
- Supervising practical work on site on a daily basis
- Preparing work programmes and reports
- Organising quality control arrangement and carrying out quality control tests
- Instructing contractors
- Carrying out measurements of work, issuing payment certificates, arranging for payments and dealing with claims
- Representing the client competently in all delegated aspects
- Organising community related meetings/campaigns on: HIV/AIDS awareness, gender equality, labour laws and regulations, health issues, etc.
- Handing over of the completed work to the client.

CONTRACTORS

Managing Directors, Engineers

- Fully understanding the contract procedures for construction and upgrading contracts
- Estimating contract costs
- Preparing and submitting tenders for construction and/or maintenance work
- Interpreting the contract specifications and special conditions of contract
- Measuring completed work, understanding payment certificate procedures
- Preparing claims and requests for variations of contract
- Planning construction and/or maintenance work in accordance with the contract document
- Implementing all construction and/or maintenance work activities
- Managing all required organisational and logistical activities
- Managing all site equipment
- Recruiting and managing the required labour force
- Monitoring and controlling costs for completed work
- Implementing community related meetings/campaigns on: HIV/AIDS awareness, gender equality, labour laws and regulations, health issues, etc.
- Running all administrative work of the company
- Keeping the required accounts books
- Managing the company's finances
- Dealing with banks and insurance
- Dealing with client, consultant, official authorities, suppliers and any other relevant parties

Site Supervisors (Engineers, Technicians)

- Representing the company on site
- Interpreting and using contract specifications, work drawings and BQs on site
- Planning, implementing, controlling and reporting all site work activities, including productivity and work quality
- Arranging for and managing construction materials, equipment and tools
- Managing the site staff and the labour force
- Understanding the principles of cost estimating and controlling costs on sites
- Managing all site equipment and hand tools
- Measuring completed work, understanding payment certificate procedures
- Preparing claims and requests for variations of contract
- Implementing community related meetings/campaigns on: HIV/AIDS awareness, gender equality, labour laws and regulations, health issues, etc.

Understanding the principles of managing a business

APPENDIX C; Initial Ideas for a Poverty Impact Audit System in the Road Sector

1. PIAS Objective

The objective of the PIAS tool is to ensure that all possible measures to address poverty reduction are taken when planning, approving and implementing road works in support of relevant Government policies in Cambodia.

2. What are the PIAS Tools?

PIAS is a system for predicting and auditing the impact of planned road projects and programmes on poverty reduction. It provides a planning and control procedure for ensuring that all possible measures are taken to address poverty reduction through road work activities without compromising on quality and cost effectiveness.

PIAS is designed to provide effective linkages between national policies relating to poverty reduction and project implementation. The interface between policy and practice will be provided in the form of procedures, guidelines, accompanying checklists and control/auditing mechanisms.

PIAS is built upon a suggestion – approval system that leads through all project stages and involves all planning and implementation partners.

PIAS is not a separate planning and approval system that would increase the administrative and bureau-cratic burden within the agencies but should be integrated as part of the normal and already existing project planning and implementation procedures. The PIAS concept allows planners and implementers to creatively suggest the inte-gration of effective measures for poverty reduction through all project stages **with the ultimate aim of creating meaningful employment op-portunities for local poor** to the maximum extent possible.

The PIAS tool provides a man-datory steering instrument that will aid the Government in providing solutions for rural poverty and unemployment, and the funding agencies in making decisions about how road works are conducted in Cambodia.

LEVELS OF INVOLVEMENT AND TOOLS FOR ADDRESSING POVERTY IMPACT MEASURES IN ROAD WORKS

Project Stages	Levels/Partners	Tools
Project Identification	Policy and Decision Makers (Road + Funding Agencies)	POVERTY PREDICTION IMPACT ASSESSMENT; CODES OF PRACTICE ON POVERTY REDUCTION THROUGH ROAD WORKS; IMPLEM. AUDIT
Appraisal and Prioritisation	Road Agencies and Consultants	
Planning and Design	Road Agencies and Consultants	
Project Approval	Road Agencies, Consultants and Contractors	
Tendering and Award of Work Contracts	Road Agencies, Consultants and Contractors	
Contract Implementation (Works)	Consultants and Contractors	
Evaluation	Policy and Decision Makers (Road + Funding Agencies)	CODES OF PRACTICE ON POVERTY REDUCTION THROUGH ROAD WORKS; IMPACT MONITOR.

2.3 Who is the PIAS Tool for?

The tool is principally aimed at stakeholders in the public and private sector who are directly involved in road works including the financing agencies (MEF and mutilateral + by-lateral funding agencies), implementing agencies (MPWT and MRD), and Consultants and Contractors. The MEF is the leading agency for the development and introduction of PIAS with all its tools. PIAS would also be useful to a range of other stakeholders involved in public infrastructure provision in Cambodia and could be the overall poverty impact monitoring tool for the Government with respect to public infrastructure works.