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SEACAP PROGRAMME

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**SEACAP 2
CAMBODIA TRANSPORT
MAINSTREAMING PARTNERSHIP**

FINAL REPORT

May 2006

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Our Ref: 0421/VA7
Your Ref: CTMP – SEACAP 2

31 May 2006

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

Dear Excellency Suos Kong,

RE: SEACAP 2 Final Report

Please find attached a copy of the Final Report for the Cambodia Transport Mainstreaming Partnership (SEACAP 2).

We hope that components of the SEACAP 2 will be taken up by the new SEACAP 19.

Yours sincerely

Robert Petts
Project Manager

cc H.E. Lim Sidenine, MPWT, Vice Chairman SEACAP Steering Committee
Dr. Om Romny, ITC, Member SEACAP Steering Committee
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Heng Kackada, Intech Cambodia

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Appendix 6 – Development Engineering Course Material, ITC

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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
CTMP	Cambodia Transport Mainstreaming Partnership
DFID	Department for International Development
DTW	A Mechanical Engineering NGO
EDC	Economically emerging and Developing Country
EIC	Engineering Institution of Cambodia
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 Resources Development
IFG	International Focus Group (on Rural Road Engineering)
IFRTD	International Forum for Rural Transport Development
ILO	International Labour Organisation
IRAP	Integrated Rural Accessibility Planning
IRD	Integrated Rural Development
ITC	Institute of Technology of Cambodia
JFPR	Japanese Fund for Poverty Reduction
JICA	Japanese International Co-operation Agency
KaR	Knowledge and Research
km	kilometre
Koyun	Locally assembled light truck
LB	Labour Based
LBAT	Labour-Based Appropriate Technology
LBRIRMP	Labour-Based Rural Infrastructure Rehabilitation and Maintenance Project
LCS	Low Cost Surfacing
M	metre
MEF	Ministry Economic and Finance
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
PDP	Provincial Development Programme
PDRD	Provincial Department of Rural Development
PIARC	World Road Association
PIAS	Poverty Impact Audit System
PIP	Public Investment Programme

PLG	Partnership for Local Governance
PMU	Project Management Unit
PRDC	Provincial Rural Development Committee
PRIP	Provincial and Rural Infrastructure Project
RD&RP	Rural Development and Resettlement Project
RDS	Rural Development Structure
RGC	Royal Government of Cambodia
RIIP	Rural Infrastructure Improvement Project
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
SEDP I	First Five-Year Socio-Economic Development Plan, 1996-2000
SEDP II	Second Five-Year Socio-Economic Development Plan, 2001-2005
SEILA	Multilateral donors - Government Rural Infrastructure Development Programme
SIDA	Swedish International Development Agency
SWOT	Strengths, Weaknesses, Opportunities & Threats
TDSI	Transport Development Strategy Institute
TEDI	Transport Engineering Design Incorporation
TIM	Transport Infrastructure Management
TKP	Global Transport Knowledge Partnership
TMP	Transport Mainstreaming Partnership
ToR	Terms of Reference
TRIP	Tertiary Roads Improvement Project
TRL	Transport Research Laboratory
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
WSP	A firm of International Management Consultants
ZOPP	German acronym for Goal Orientated Project Planning

EXECUTIVE SUMMARY

The Cambodia Transport Mainstreaming Partnership (TMP) 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 has been launched under the South East Asia Community Access Programme (SEACAP), as the SEACAP 2 initiative.

The SEACAP 2 initiative was 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**

These outputs were all achieved during the original contract period (October 2004 – December 2005), except for actual delivery of training courses. However, outputs on this item relied on the inputs of others which were not able to be arranged within the contract period. In the circumstances suitable training material has been prepared for ITC Development Engineering courses and ITC training and human resource development events have been supported by the project. Furthermore, other additional training orientated products have been produced by the SEACAP 2 initiative. SEACAP 2 has also facilitated a number of outputs beyond that originally envisaged.

The activities and outputs relating to the various TMP components are described in this Final Report. The Key Outputs are:

- Operational transport sector forum (CNCTP)
- Operational website and electronic library of key sector documents
- Interim Rural Road Standards
- National workshops on key topics
- International Rural Transport Seminar in association with the World Road Association
- Training material for ITC Development Engineering courses,
- Review or guidance documents on Human Resources Development, Road Safety, Road Surfacing and Road Maintenance.
- Concept for a Transport Infrastructure Management system (TIM)
- Concept for a Poverty Impact Audit System (PIAS)
- BBC television World Service documentary transmission as part of the “Earth Report” series.

Capacity building takes longer than the short duration of the initial SEACAP 2 project. It is recommended that all of these initiatives will be followed up and consolidated under the new SEACAP 19 project planned to commence in 2006.

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). Plans are being made to extend the programme into Sri Lanka and elsewhere. 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 to 24 projects. SEACAP has built 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 objective of the Programme is:-

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

and includes empowering local ownership of their access. This involves 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, Vietnam and other countries by improving access for the rural poor, lowering transport costs and creating 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 to 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

No	Projects under SEACAP	Country
1	Rural Road Surfacing Research : dissemination and mainstreaming, phase 1	Viet Nam
2	Transport Mainstreaming Partnership	Cambodia
3	Development of Rural Road Standards and Specifications	Laos
4	Assessment of Existing Rural Road Surfaces	Viet Nam
5	Impact of Rural Road Access on Poverty Reduction and Growth	Viet Nam
6	Infrastructure Constraints to Growth and Poverty Reduction	Cambodia
7	Dissemination Mechanisms to Increase Ownership of Local Stakeholders	Viet Nam
8	Low-Cost Surfacing, phase II	Cambodia
9	Rural Road Data Collection in 2 Provinces (covered under Rural Transport 2 Project)	Viet Nam
10	Commune Handbook Training	Viet Nam
11	National Training Programme on Rural Road Management	Viet Nam
12	Road Map Field Verification and Nationwide Roll Out	Viet Nam
13	Provincial Level Rural Handbook Training (covered under Rural Transport 3 Project)	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	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	Local Resource Solutions to Problematic Rural Road Access: Slope Stabilisation	Laos
22	Time and Distance Study	Viet Nam, Cam + Laos
23	Local Resource Solutions to problematic rural road access: Slope stabilisation trials	Viet Nam
24	Bridging TA to Support RT3 Project	Viet Nam

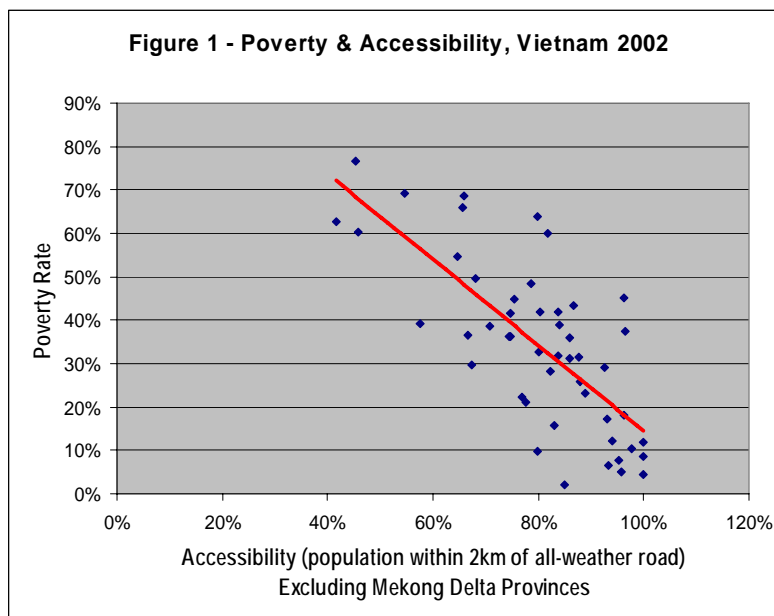
This TMP knowledge mainstreaming programme has aimed to support initiatives to address the following issues:

- ❑ 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 is coordinating 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 works with the established institutions and organisations with a sector interest in Cambodia. 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 has built 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 in 4 provinces,
- ❑ The Rural Road Surfacing trials Phase II (RRST-II) in 8 provinces.
- ❑ 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 and dissemination of the Rural Road Maintenance system under WSP support for RT2, and SEACAP projects 10, 11 and 13,
- ❑ 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, and SEACAP 14,
- ❑ 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 led 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 has effectively taken over many of the development and knowledge dissemination roles of the Upstream Project.

1.5 SEACAP 2 – Components

The SEACAP 2 initiative was 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

2 BACKGROUND

Cambodia has 'lost' about 75% of its road network through the years of conflict associated with the civil conflicts, the Khmer Rouge regime and ineffective maintenance. The professional, business, educated and educational cadres were also decimated by the mass genocide perpetrated by the Khmer Rouge.

2.1 Sector Challenges

There are key constraints inherited from this period and from the current operational environment of the transport sector in Cambodia that need to be tackled. These have been identified as:-

- ❑ The particular physical, climatic, poverty and operational environment of Cambodia is extremely demanding on the road sector compared to most other countries,
- ❑ An underdeveloped road network, much of which currently has an unsupportable maintenance burden,
- ❑ Gravel/laterite is used often in unsustainable situations, knowledge of alternatives and benefits are not widely known or available for application,
- ❑ Road management and maintenance systems are not developed, assets are not efficiently preserved,
- ❑ A lack of information on best practice key documents and facts for practitioners and students, in either English or Khmer (official Cambodian language),

- ❑ Established policy is not yet widely mainstreamed or supported by a pragmatic strategy for implementation,
- ❑ A lack of appropriate established specifications and standards for rural roads,
- ❑ A lack of demonstration and practical training facilities,
- ❑ Labour based/small scale contractors do not have an 'enabling environment' to operate and survive,
- ❑ The ILO Upstream Project successes and institutional memory are in real danger of being lost, due to lack of support and adequate follow up initiatives,
- ❑ A weak capacity in MRD and MPWT for planning and operational duties,
- ❑ A weak capacity in ITC and EIC for educational and professional improvement,
- ❑ Severe overloading of road vehicles with associated safety risks and accelerated deterioration of roads,
- ❑ The Road Safety situation is very serious, with high consequential social and economic costs.

2.2 Dependency on Gravel Roads

Although a considerable length of the rural road network has been rehabilitated in the last 15 years, most of this has been to earth or **gravel/laterite**¹ standard. The gravel roads in particular are expensive to maintain and are an unmanageable burden on the government and communities (see Tables 2.1 and 2.2).

This data may seem a little outdated, however this is part of the problem of insufficient knowledge or systems for decision makers to make informed decisions. There has been no national road inventory established, and road condition information is not collected methodically.

The gravel/laterite is often of poor quality and the constructed gravel layer can disappear in a period of between 1 and 4 years due to traffic and weather. Haul distances for gravel are often long (more than 50 km), whereas alternatives should be seriously considered in economic whole life terms if gravel haul distances are longer than 10 km. The disturbing fact is that there were no **maintenance funds or arrangements** for most of the rural road network in 2000. This situation has improved little since that time.



Figures 2 and 3 – Gravel road problems

¹ In the context of this document, laterite is a type of gravel surfacing.

Table 2.1 - Cambodia National and Provincial Road Length and Condition.

National and Provincial Road Conditions at beginning of 2001	Total (Km)	Non-maintainable		Maintainable	
		Km	%	Km	%
Main National Roads (NR 1 – 7)	1,988	1,088	55	900	45
Other National Roads	2,177	2,027	93	150	7
Subtotal National Roads	4,165	3,115	75	1,050	25
Provincial Roads Region 1: Tourist Sector in Siem Reap, Preah Vihea, Kampong Thom provinces.	1,470	1,420	97	50	3
Provincial Roads Region 2: Industrial Sector, includes the whole coastal region of the country.	955	905	95	50	5
Provincial Roads Region 3: Agricultural Sector east of the Mekong River.	1,130	1,080	96	50	4
Sub total Provincial Roads	3,555	3,405	96	150	4
Grand Total 2001	7,720	6,520	84	1,200	16

Source: Rural Transport Infrastructure Report, ILO 2001.

A report by ILO ² in 2001 estimated that each km of gravel rural road typically requires approximately US\$1,600 of **funding** each year for **maintenance**. This level of resourcing is simply not available in the local economy at this point in time.

Table 2.2 on the following page, illustrates the estimated length of tertiary roads and the length of improved roads that were under MRD's responsibility in 2000. The lack of maintenance arrangements for most of the network has been a cause for serious concern.

2 Johnston, D. and Salter, D., Rural Road Investment, Maintenance and Sustainability, A Case Study on the Experience in the Cambodian Province of Battambang, , May 2001.

Table 2.2 - Cambodia Rural Road Network – Lengths of Roads that have been Improved 1990 - 2000.

NO.	PROVINCE	POP.	AREA (Km2)	ADB RIIP	KfW TRIP	ILO	MRD PAP	MRD PIP	PRIVATE	OTHER	WFP Laterite	TOTAL Laterite	WFP FFW	TOTAL (km)
1	Banteay Meanchey	577,300	6,679			116.7	9.5			333.3		459.5	556.6	1,016.1
2	Battambang	791,958	11,702			173.5	9.5			26.2	12.6	221.8	742.0	963.8
3	Kampot	527,904	4,873	85.3			21.8	5.5	27.0	10.4	66.5	216.5	315.1	531.6
4	Kandal	1,073,586	3,568	75.2		9.4		24.0	80.0			188.6	207.2	395.7
5	Kep	28,677	336					1.4	4.0			5.4	3.0	8.4
6	Kompong Cham	1,607,913	9,799	127.9	522.1			40.8	30.0			720.8	506.2	1,227.0
7	Kompong Chhnang	416,999	5,521		33.4		11.1	45.0			24.5	114.0	174.7	288.7
8	Kompong Speu	598,101	7,017				28.7	56.0	30.0	45.0	71.3	231.0	541.1	772.0
9	Kompong Thom	568,454	13,814		60.0		24.7				17.3	102.0	541.2	643.3
10	Koh Kong	131,912	11,160				3.7	15.1				18.8		18.8
11	Kratie	262,945	11,094		18.7			37.8	17.1			73.6	24.9	98.5
12	Mondulkiri	32,392	14,288									0.0		0.0
13	Odor Meanchey	68,836	6,158									0.0	65.0	65.0
14	Pailin	22,844	803									0.0		0.0
15	Phnom Penh	997,986	290						40.0			40.0	5.3	45.3
16	Preah Vihear	119,160	13,788								2.6	2.6	35.4	38.0
17	Prey Veng	945,129	4,883	79.2	54.2			81.8				215.2	675.4	890.6
18	Pursat	360,291	12,692			93.4	7.7	12.5		48.7		162.3	284.9	447.2
19	Rattanakriri	94,188	10,782									0.0		0.0
20	Siemreap	695,485	10,299			135.5				8.0	1.9	145.4	607.8	753.2
21	Sihanoukville	155,376	868						11.6			11.6	2.0	13.5
22	Stung Treng	80,978	11,092									0.0	69.0	69.0
23	Svay Rieng	478,099	2,966	70.6					45.0			115.6	242.5	358.1
24	Takeo	789,710	3,563	111.9		44.9		12.0	43.4		50.8	262.9	197.4	460.3
	(include Tonle Sap)		3,000											
	TOTAL	11,426,223	181,035	550.1	688.5	573.4	116.7	331.8	328.0	471.6	247.5	3,307.5	5,796.7	9,104.2
	<i>Funds Available for Maintenance</i>			530.5	688.5	145.0		0.0	0.0	0.0		1,363.9	159.2	1,523.2
	<i>No Funds for Maintenance</i>			19.6	0.0	428.4	116.7	331.8	328.0	471.6		1,943.5	5,637.5	7,581.0

Notes

Source: MRD, Cambodian Rural Transport Infrastructure Program, A Sub-Sector Overview, September 2001.

WFP roads are principally to earth standard.

2.3 The ILO Upstream Project

The ILO managed Upstream Project (1997 – 2003)³ was financed by SIDA with additional support from the World Bank, Netherlands, Ireland and Australia. The project objective was to provide institutional support to improve capacity to train for, plan and manage local-resource-based road works programmes, as a development from previous successful labour based infrastructure projects. Local employment generation and support for small labour orientated enterprises continued to be a core focus of the programme through works construction and maintenance programmes, as well as policy, strategy and institutional development initiatives.

Key achievements of the US\$7.3 million Upstream Project included:-

- ❑ Development of MRD Rural Roads Policy through project support,
- ❑ Establishment of the Engineering Institution of Cambodia through project support,
- ❑ 5 No. courses and capacity developed at the Institute of Technology of Cambodia,
- ❑ Development of an Integrated Rural Accessibility Planning (IRAP) tool,
- ❑ 33 No. small scale contractors (SSC) trained, equipped and employed,
- ❑ Human resource capacity development at MPWT and MRD,
- ❑ Labour based technology adopted by a number of other road sector projects,
- ❑ Maintenance of 123 km of rural roads in Siem Reap Province,
- ❑ Research on socio-economic and engineering aspects of rural infrastructure works,
- ❑ Cooperation with LCS road surfacing trials in Siem Reap Province,
- ❑ Stone paved road trials in Kampong Cham Province,
- ❑ 750,243 workdays of employment on rural infrastructure.

For a number of reasons it was not possible for ILO to continue to support the important capacity building initiative, despite the identified ongoing needs for such assistance. Outstanding issues still to be tackled are outlined in Section 2.1. The Upstream Terminal report cites further support as being required for:-

- ❑ Setting up technical guidelines,
- ❑ Strengthen advocacy and uptake for use of poverty reducing, local-resource-based approaches,
- ❑ Demonstration of best practices,
- ❑ Establishment of costing standards,
- ❑ Further development of local-resource-based road construction and maintenance technologies, and development of the “enabling” environment for SSC,
- ❑ Further capacity development for EIC, ITC, MRD & provincial departments.

3 THE CAMBODIA TRANSPORT MAINSTREAMING PARTNERSHIP – PROJECT OUTPUTS

From the lessons of the background to the sector summarised in Section 2, the SEACAP 2 Cambodia Transport Mainstreaming Partnership initiative was designed to address the following aspects of transport knowledge generation, dissemination and mainstreaming:-

- Operational Transport Mainstreaming Partnership
- Knowledge Products
- Practical Demonstration

³ ILO, Upstream Project, Technical Assistance to the labour based rural infrastructure Works Programme, CMB/97/M02/SID, Terminal Report July 2004.

- Website
- Policy, Standards and Procedures
- Improved Road Maintenance
- Training Courses
- Training Needs Assessment & Delivery (Human Resources Development Strategy)
- Improvement of Road Safety

These components and the project outputs produced are discussed in the following sections of this Final Report in the respective sub-sections 3.1 to 3.9.

The Intech-TRL team endeavoured to build on the existing knowledge, resources and capacity of the Cambodian organisations, and help to improve and extend their performance, by a process of support, consensus and agreement.

The core team of Intech-TRL had been established for operations in Cambodia prior to the SEACAP 2 project (some individuals having been advising the local sector since 1997) and were able to immediately mobilise for the project work over the period October 2004 – December 2005. The core team was augmented with a team of international and Cambodian experts specifically assembled for SEACAP 2.

3.1 Output 1 – Operational Transport Mainstreaming Partnership

This is the principal framework or ‘architecture’ for the Transport Mainstreaming initiative. It has been essential to formulate practical and feasible arrangements to help both steer and manage knowledge exchange in the transport sector, and the SEACAP 2 initiative. It was considered essential to involve representation from both the public and private sector in an effective transport knowledge partnership acceptable to the key sector stakeholders. Intech-TRL used their existing longstanding operational relationships and experience with all the key stakeholders and external knowledge networks to help achieve this. Initial consultations lead to the background, rationale and options being presented to the stakeholders for obtaining consensus agreement before implementation. Effective stakeholder participation, clear governance and responsibilities and financial sustainability were all key aspects to address. Based on the principle of building on what is already in place, the arrangements were developed utilising the concept of the Cambodia National Community of Transport Practitioners (CNCTP) which was already in its early stages of formation. The knowledge partnership concept is shown in Figure 5.

Through the active support and facilitation of the SEACAP 2 team the CNCTP was developed from a consensus idea into an established and operational forum during the project period.

The CNCTP now has a formal structure, constitution, Memorandum of Understanding and a cross sector membership. The official launch workshop was held with the support of SEACAP 2, The Ministry of Public Works and Transport, Ministry of Rural Development, ILO and ADB on 31 May 2005. Dr Simon Lucas, Infrastructure Adviser of DFID attended.

Full details of the proceedings of the launch workshop and other documentation, and CNCTP operations are found on the website www.cnctp.info .

CNCTP will still require some support during the initial period of operations. However a very strong participative foundation has been laid and it is expected that under SEACAP 19 the sustainability of the forum will be substantially strengthened.

PROCEEDINGS OF THE LAUNCH WORKSHOP FOR THE CAMBODIA NATIONAL COMMUNITY OF TRANSPORT PRACTITIONERS (CNCTP)

31st May 2005
Sunway Hotel, Phnom Penh

ORGANISED BY

TECHNICAL ASSISTANCE BY

SUPPORTED BY



ANNEX 2 STRUCTURE OF CNCTP

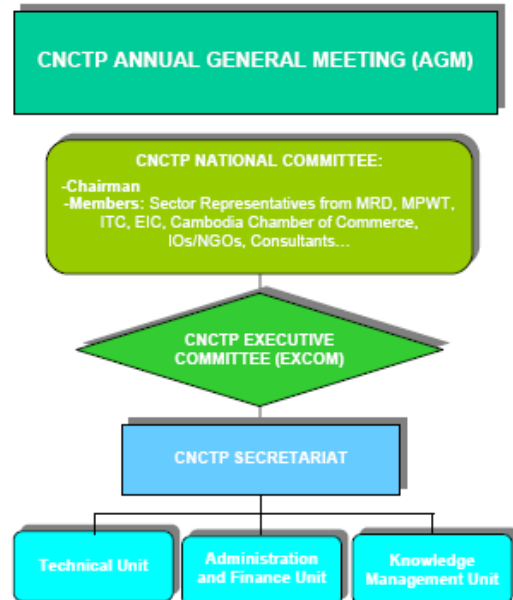
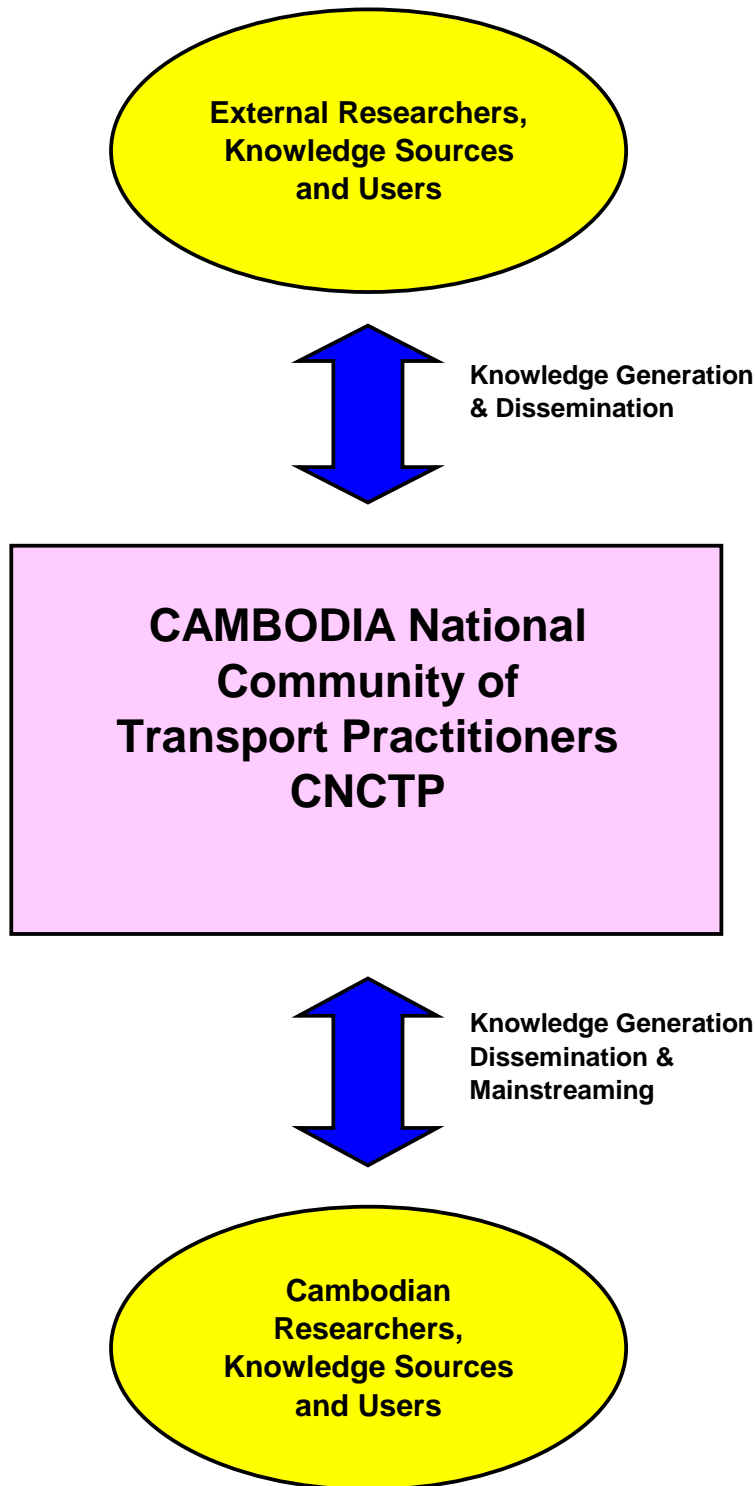


Figure 4 - CNCTP Launch Workshop

Figure 5
CONTRIBUTING TO AND GAINING FROM RESEARCH AND TRANSPORT KNOWLEDGE

CAMBODIA NATIONAL COMMUNITY of TRANSPORT PRACTITIONERS - SHEET 1
CONCEPT

Roads & Waterways
(Not Rail or Air Transport)



SEACAP 2 – TMP Design Framework - Output 1

TMP Output 1 Objectives	Indicative Scope of Activities <i>The scope of activities will be expected to include investments in the following activities</i>	Indicative Result Areas <i>The deliverables will be expected to include the following</i>
<p>Transport Mainstreaming Partnership (TMP) is to be designed to allow access and supply information to all levels of the government and private sector involved in transport;</p> <p>The TMP will encourage access to research and best practice information on potential and ongoing investments in the transport sector</p>	<p>The TMP's initial tasks will be to assimilate all key existing information and research work completed in the Cambodian transport sector. Initially, this would be limited to road transport, however, this could be extended e.g. to rail and water. Specific activities include:</p> <p>Consultations are required with government officials (MRD and MPWT) and donor organisations ILO, ADB, WB and bilateral aid donors. The consultant will set up and implement the TMP through the following activities:</p> <p>(a) Identify an appropriate contractual structure for the TMP in consultation with MRD and MPWT and donor/agency organisations:</p> <ul style="list-style-type: none"> - Formalise the existence of TMP; - Seek memberships from stakeholders within both the public sector and the private sector; - Promote the concept of TMP as a link between Cambodian organisations and the Global Transport Knowledge Partnership (TKP) and the International Focus Group (IFG); <p>(b) Carry out other activities, including; draw up guidelines leading to the formation and sustainable functioning of the TMP to ensure continued government interest in mainstreaming of the TMP.</p>	<p>A report on the proposed TMP structure, objectives, linkages with stakeholders and beneficiaries</p> <p>Formal setting up of TMP and recommendations on the operation of the MRD and MPWT to maintain the TMP</p> <p>Develop an approach to encourage local membership to the TMP and international memberships</p> <p>Provide summaries of key research reports to all interested/relevant agencies under the two ministries</p> <p>Develop information and guidelines on the use of information dissemination and awareness raising, data base and website.</p> <p>Quarterly reports on transport developments within the country.</p> <p>Establish a steering committee</p>

SEACAP 2 - Output 1 - Achievements***The Outputs of this component have been achieved completely.***

The CNCTP has been developed and established formally as a transport sector knowledge forum for Cambodia. All of the key sector stakeholders are members; including representatives of Ministry of Public Works and Transport, Ministry of Rural Development, the private sector, the Cambodia Chamber of Commerce, training and academic institutions. The Chairman of the CNCTP for the initial period of operation is H.E. Suos Kong, Secretary of State of MRD. Management and operational structures are in place. The secretariat provides the required services to the sector utilising the CNCTP website.

Recommended follow up: It is recommended that the support for CNCTP is continued but phased out over the period of the SEACAP 19 project.

3.2 Output 2 – Knowledge Products

There is a range of important documentation on the Cambodia transport sector and related experiences in other countries. Unfortunately, prior to the SEACAP 2 project, most of these documents were not easily available to sector decision makers, practitioners, education and training providers, and students. The identification, listing and storing of these important documents has been systematised, and key documents and summaries have now been made available through the CNCTP website for downloading free of charge (about 90 items).

This is a major step forward in accessibility to relevant knowledge for the transport sector. The current database and listing of the web-posted documents is provided in Appendix 1.

Furthermore, besides the creation of easy access to these existing documents, SEACAP 2 has also specifically produced, or been instrumental in the production of, a number of important documents for the Cambodia transport sector as follows:-

- ❑ Interim Rural Road Standards, MRD Cambodia (Appendix 2)
- ❑ MRD Technical Guideline No 1, Rural Road Surfacing (Appendix 3)
- ❑ Rural Road Maintenance & Surfacing, Discussion Paper (www.cnctp.info)
- ❑ SEACAP 2 - WORKING PAPER 1, Human Resources Development, (Component 8)
- ❑ SEACAP 2 - WORKING PAPER 2, Website & Dissemination Strategy, (Component 4)
- ❑ SEACAP 2 - WORKING PAPER 3, Improving Road Safety, (Component 9)
- ❑ LCS Working Paper No 14 - Grading Equipment for Earth & Gravel Roads
- ❑ LCS Working Paper No 15 - Grading Equipment Development for Earth Roads
- ❑ LCS Working Paper No 19 - Evaluation of Mark 2 Cambodia Light Grader
- ❑ LCS Working Paper No 21 - Providing sustainable access through road works techniques suitable for small & medium enterprises
- ❑ Proceedings of the launch workshop for the Cambodia National Community of Transport Practitioners (CNCTP)
- ❑ Proceedings of the Workshop on Transport Infrastructure Management (CNCTP)
- ❑ Proceedings of the Workshop on Road Planning, Pavement Design & Axle Loading Strategy (RGC)
- ❑ Proceedings of Institutional Capacity Building Needs for Better Rural Infrastructure Development (ITC and GMSARN)
- ❑ Various international forum papers and presentations on Low Cost Surfacing.
- ❑ 26 No. papers on rural transport presented at the PIARC – RGC Seminar on Sustainable Access and Local Resource Solutions, Siem Reap, Cambodia.



Figure 6 – Document display at TIMS Workshop

SEACAP 2 – TMP Design Framework - Output 2

TMP Output 2 Objectives	Indicative Scope of Activities <i>The scope of activities will be expected to include investments in the following activities</i>	Indicative Result Areas <i>The deliverables will be expected to include the following</i>
Systematize all local rural transport standards specifications and local transport studies	<p>Set up a data repository and retrieval system of all existing transport information available for Cambodia and, where possible, relevant East – Asia information. Either in the MPWT or the MRD to store research reports and other documentation and ensure that information can be accessed quickly and easily and can be added to and amended where necessary.</p> <p>If a computer based system is developed this would be required to be easy to operate and user driven, and sustainable with the resources available to the government. Software to support the data base should be easily and cheaply available in Cambodia and shall be a well known commercial brand.</p> <p>Verify, revise or re-edit, useful information and establish a list of the existing information in order of priority and interest.</p> <p>Information will include data on local-resource-based technologies and appropriate road surfaces, national road building and maintenance resources and similar relevant information.</p>	<p>Define the parameters of an appropriate and sustainable data management system, which may include options for a computer data base, and will include technical specifications and operational guidelines.</p> <p>A report on the proposed data base structure and the linkages with stakeholders and users.</p> <p>Provide training workshops to introduce the data base and the operationalisation of the data base.</p>

SEACAP 2 - Output 2 - Achievements***The Outputs of this component have been achieved completely.***

The database of key sector documents in English and Khmer has been compiled (Appendix 1) and these documents are available for downloading on the website www.cnctp.info. The awareness of the facility has been created with sector practitioners through events organised by CNCTP. Links have been created with gTKP and IFG for wider dissemination purposes, and to the Rural Road Surfacing Research website in Vietnam (SEACAP 1). The e-library is being augmented by the CNCTP secretariat on an on-going basis.

SEACAP 2 has also contributed to the creation of a number of key sector documents beyond that envisaged in the original ToRs.

Recommended follow up: It is recommended that the support for CNCTP e-library is continued, but phased out over the period of the SEACAP 19 project. Efforts should be made to bring awareness of the facility to a wider audience in Cambodia.

3.3 Output 3 – Practical Demonstration

The Puok Market rural road surfacing trials in Siem Reap Province were planned and managed by Intech Associates under the DFID funded LCS research programme. They

are the principal existing practical demonstration of a range of local-resource-based surface options in Cambodia. SEACAP 2 intended to follow up activities on these trials to roll out the practical demonstration of these techniques, in support of MRD policies.

The ILO Kampong Cham stone paved road is also a useful demonstration. However some rehabilitation of that road is required due to the particular geo-technical characteristics of that site. The SEACAP 2 team provided preliminary advice to MRD on the suggested rehabilitation of the paving trial.

Intech-TRL's strategy under SEACAP 2 has been to consult clients, organizers and financiers of other projects to investigate the possibilities of expanding the programme of demonstration and "roll out" full scale works sites. This would have a beneficial two way knowledge exchange. The other projects will benefit from Intech-TRL's intimate knowledge of all the current regional rural road surfacing research initiatives. SEACAP 2 will benefit from expanding the influence of its limited initial resource base to influence other projects and sector stakeholders.

The consultations were carried out with potential demonstration partners including:-

NRDP – this ADB funded project is located in the North Western Cambodian provinces of Banteay Meanchey, Oddar Meanchey, Siem Reap and Battambang. Paving demonstration sections were planned as an integral part of that project. Intech have provided support to this project in the development of detailed designs for 3 No. of the project roads including options on 4 No. alternative surfacing options.

Mainstream ADB-JFPR – This ADB and JFPR funded project in the North Western provinces of Battambang, Banteay Meanchay and Pailin intends to construct demonstration sections of alternative surfacing and establish sustainable maintenance arrangements. Intech-TRL liaised with ADB during the planning phase of this project offering advisory support on any trial/demonstration sections, using the resources of that planned US\$5 million project. Unfortunately delays in the start-up of that project have prevented follow up of this option.

TRIP – This KfW supported project is entering a new (4th) phase and alternative surfaces are being considered. Intech-TRL have provided documentation on the technical and operational constraints of gravel surfaces in the Cambodian environment, and available surface options.

SEILA-PLG – Intech-TRL have established a dialogue with this programme and involved the management with the various events facilitated under SEACAP 2. The SEILA-PLG programme strategy of avoidance of gravel roads in unsustainable circumstances and promotion of Engineered Natural Surfaces (Earth Roads) in suitable situations has been reinforced.

PRIP – This World Bank funded project has been kept informed of the surfacing options research and development work in Cambodia and Vietnam.

SEACAP 2 - TMP Design Framework - Output 3

TMP Output 3 Objectives	Indicative Scope of Activities <i>The scope of activities will be expected to include the investments in the following activities</i>	Indicative Result Areas <i>The deliverables will be expected to include the following</i>
Practical demonstration and mainstreaming of proven and appropriate techniques including local-resource-based technologies and appropriate road surfaces	Evaluate and recommend possible projects for applying appropriate technology. Such projects could include road surfacing projects or an innovative cost-effective maintenance technology. Provide expert advice to the MRD and the MPWT to implement such technologies in Cambodia.	Implementation of projects in conjunction with the MRD and the MPWT. The actual implementation of such projects could be funded by other donor agencies and as such will not be within the scope of this project.

SEACAP 2 - Output 3 - Achievements***The Outputs of this component have been achieved completely.***

Liaison was established with MPWT, MRD and the funding agencies of other rural road sector projects. The local resource based surfacing techniques have been incorporated in the designs for 3 No. roads in the NRDP project.

Recommended follow up: It is necessary to follow up with the dialogue with other projects and Ministry initiatives for the adoption of the local resource based surface options to fully realise the potential application and mainstream the surface option alternatives to gravel. An important initiative in this respect will be to assist MRD to revise the national standards and specifications for these options. This should be achieved under the SEACAP 19 project.

3.4 Output 4 – Website

Intech-TRL developed proposals for the web system design, after review of the available web site management options and existing sites, both in Cambodia and internationally. Existing established websites were also reviewed with regard to linking to the TMP website, to establish access to other relevant knowledge sources.

Web documents should be download-able in English and Khmer. The interactive interface of the system will be both in Khmer and English language.

After the investigations the website proposals were presented in the following document and accepted:-

SEACAP 2 - WORKING PAPER 2, Website & Dissemination Strategy, (Component 4), April 2005

It was recommended and agreed to set up a website specifically for the CNCTP; this has now been completed. The website is promoted by CNCTP and MRD at every opportunity to interact with sector stakeholders. The Website is currently being managed by the CNCTP secretariat with interim funding support from the SEACAP 2 project. It is intended that the website operations will become self-sustaining during the period of the follow on SEACAP 19 project.

The website features news on the Cambodian transport sector. It allows key documents to be downloaded free of charge in English and Khmer language. It has links to other important relevant websites. It is possible to download the maps of the Cambodia road network. The website is a major step forward in accessibility to transport knowledge for the stakeholders in the Cambodia Transport sector.

An important facility is the provision of the monthly road accident reports prepared with the help of Handicap International to support Government and ASEAN initiatives to improve the very serious road safety situation.

Home About Us Library Links Forum Themes Site Map

Thursday March 23, 2006

• Welcome to CNCTP W

Cambodia Road Accident January 2006
2157 casualties including 553 severely injuries and 113 dies.
[Report in \[Khmer\]](#) [\[English\]](#)

Report on Rural Gravel Road Assessment Programme Vietnam

Latest SEACAP-17 Newsletter Research & Development Lao PDR

Download Maps of Cambodian Roads Network

Projects Information

- Road Traffic Accident and Victim Information System
- Northwestern Rural Development Project
- Provincial Rural Infrastructure Project
- South-Est Asia Community Access Programme

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Quick Links

Number of visitors: 00000714

CNCTP Secretariat Office: Ministry of Rural Development, Corner Street 169 & Russian Blvd., Phnom Penh, Cambodia.
Tel.: (855) 23 883607, E-mail: cnctp@online.com.kh

CNCTP is a partnership of organisations and individuals that share a concern for good management and use of rural road network assets in Cambodia and whose interests are best served and developed through a common platform that has strong government recognition. The CNCTP is also a network of transport development stakeholders seeking to accelerate the implementation of effective, efficient and equitable transport services in Cambodia through broader integrated information and communication of transport knowledge.

CNCTP is a transport sector stakeholders' knowledge forum committed to the provision of sustainable transport access for the rural poor. CNCTP seeks to foster collaborative efforts amongst members, donors and other organisations that encourage management and dissemination of transport knowledge so as to participate in improving transport policies and decision-making.

Latest News & Events

1st December 2005
[Regional Meeting on Road Safety Siem Reap - Cambodia](#)
Road crashes are a growing worldwide problem and currently result in over 1.2 million deaths and over 23 million injuries per year. The problems continue to grow in developing countries and in particular South East Asia where motorcycles dominate the traffic & crashes.
[more...](#)

28-30 Nov 2005
[World Road Association Technical Committee 2.5](#)
International Seminar on Sustainable Access & Local Resource Solution [more...](#)

Workshop 23-24 June 2005
Transport Infrastructure Management Workshop
[more...](#)

Workshop 31 May 2005
CNCTP Launch Workshop
[more...](#)

Workshop 07 April 2005
Institutional Capacity Building Needs for Better Rural Infrastructure Development
[more...](#)

Figure 7 – CNCTP website Home Page

SEACAP 2 - TMP Design Framework - Output 4

TMP Output 4 Objectives	Indicative Scope of Activities <i>The scope of activities will be expected to include investments in the following activities</i>	Indicative Result Areas <i>The deliverables will be expected to include the following</i>
<p>Dissemination of Information</p> <p>Access to information on national road building and maintenance resources, provide guidelines on the setting up of asset management, supply useful information</p> <p>This is one of the main objectives of the TMP. The Consultant will ensure that information gathered during the earlier activities is disseminated widely within Cambodia</p> <p>The recipients of this information would be both public and private sector and donor organisations. In addition, the Consultant will need to ensure that information is disseminated at both junior and senior hierarchy levels in such organisations.</p> <p>The Cambodia TMP will support ongoing DFID funded initiatives in Transport and Poverty Reduction.</p>	<p>Briefly review possible alternatives for the dissemination of information at various levels, including the use of a web site, to assist MPWT and MRD in revising their rural transport standards and specification</p> <p>Develop a website (or use an existing website) to upload selected information for wider dissemination</p> <p>Establish or update a system for maintaining the website on a continual basis to ensure that the data is verified and current;</p> <p>Set up a programme including financial requirement for MPWT and MRD to maintain this information delivery system</p> <p>Information access guidelines</p> <p>Workshops: number of relevant topics</p>	<p>Define the parameters of the web site or updating of an existing website. This will include technical specifications and operational guidelines</p> <p>A report of recording all procedures and results from information dissemination to the related agencies and organisations, including their responses and recommendations, and follow up actions required</p>

SEACAP 2 - Output 4 - Achievements***The Outputs of this component have been achieved completely.***

The website facility has been fully researched by SEACAP 2 and the new website developed and established. It is now fully operational providing easy access to a wide range of key knowledge and documentation for the various sector stakeholders for the first time ever, and free of charge to the users. Links to key international organisations and websites are also established.

Recommended follow up: It is recommended that the website operation, although relatively inexpensive, should be continued to be supported financially for a period of two years under the follow on SEACAP 19 project. It is anticipated that during this period the possibilities for commercial sustainability will be investigated so that SEACAP support will be able to be withdrawn in 2008.

3.5 Output 5 – Policy, Standards and Procedures

The MRD already had a policy on Rural Roads in place at the start of the SEACAP 2 project (developed with the assistance of Intech Associates). MPWT has still not produced a road

sector policy. However a new draft law or Road Act is under preparation. Regarding vehicle loading, MPWT is endeavouring to harmonise regulations with regional partners. However the very serious overloading of trucks in Cambodia makes the control of loading to reasonable limits extremely problematic. At a MPWT and MRD national workshop facilitated by Intech-TRL (under SEACAP support) and ILO Cambodia, and attended by the key sector stakeholders, the issues relating to overloading and Road Law were discussed and proposals developed to help tackle the serious current situation.

The workshop⁴ made the following Key Recommendations after group & plenary discussions:

- 1 There is a need for better **Management Information** for improved decision-making. Therefore, an updated MRD **Road Inventory** needs to be established by applying a combination of Transport Infrastructure Inventory and mapping. **IRAP planning** should be the basis for prioritisation for road rehabilitation and maintenance. The MRD road inventory should be linked to the MPW&T Location Reference Database.
- 2 To study the current vehicle loading and the effect on the road, an optimum axle load⁵ assessment should be carried out to determine the ideal loading conditions for the various categories of road network in Cambodia. This will assist in providing informed guidance for consideration on legal regulation and appropriate levels of enforcement. **IRAP Planning** should include the recognition of roads that have a high probability of overloaded traffic (e.g. materials & log haulage).
- 3 The draft **Road Law** needs to be revised to properly tackle the issue of overloading. The law and sub-decrees related to road ownership, vehicle regulation, traffic, loading & control should be strengthened. Solutions must be identified to achieve an effective enforcement regime.
- 4 Pavement and surfacing **Designs** need to be improved and based upon road category, vehicle type, traffic, and realistic axle loading forecasts. Standards and design guidelines should be appropriate to traffic, environmental factors, loading, local materials resources and economics.
- 5 The **Quality of Road Construction** needs to be improved in accordance with design assumptions and the application of appropriate standards and materials specifications.
- 6 An effective **Maintenance Regime** needs to be established, including sustainable funding and improved management, which will eventually lead to a reduction in pavement whole life and vehicle operation costs.
- 7 **Further Consultation** is needed after the workshop, with key decision and policy makers. Discussion needs to be promoted at national and provincial level with all stakeholders in both the public and private sectors.
- 8 More **Research** is required on appropriate designs for improved pavement performance for the particular conditions experienced in Cambodia, in order to lower the construction and whole life costs, contributing towards lower transport costs & sustainable development.
- 9 **Ownership** of lower category roads; sub-tertiary should be considered for transfer to local authorities, for empowerment; to implement access control and decide traffic development, and contributions to maintenance.

4 Proceedings of the National Workshop on Road Planning, Pavement Design and Overloading Prevention, 11 – 12 November 2004, Phnom Penh, Cambodia, MPWT and MRD, supported by ADB, DFID and KfW.

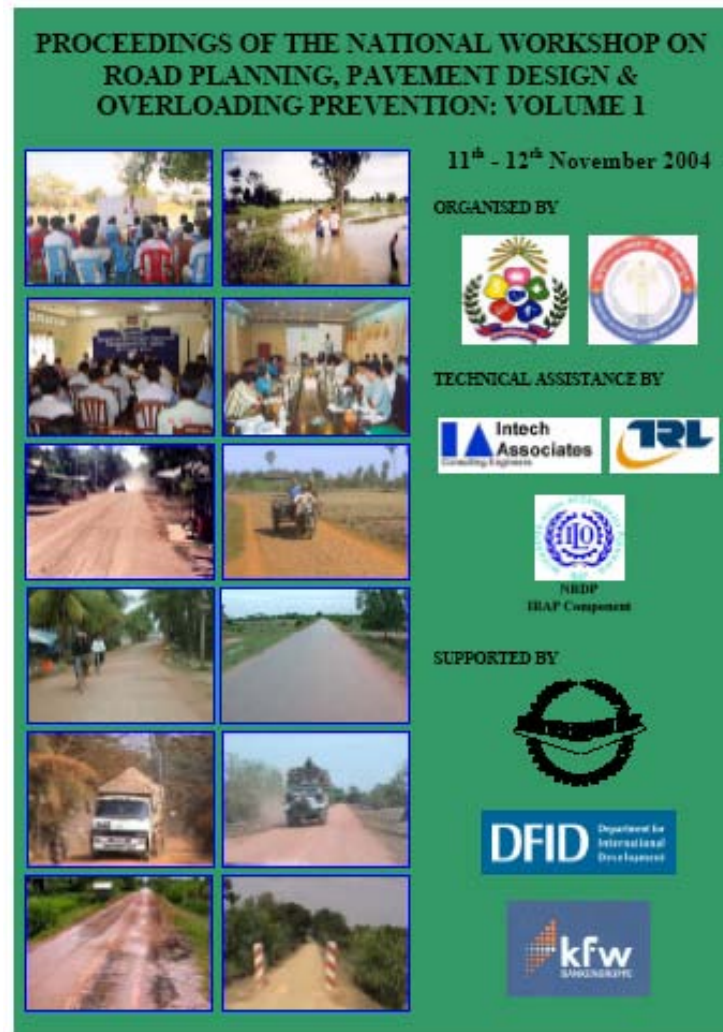
5 Optimum Axle Load is the axle loading at which Total Transport Costs to the national economy are minimised.

The CNCTP will endeavour to facilitate the recommended follow up to the National Workshop.

Low cost surfacing and use of local-resource-based technologies have already been incorporated in the MRD policy. Intech-TRL have continued this support to both ministries, and help them to develop pragmatic strategies for putting the appropriate policies into practice. Intech-TRL have also assisted MRD to adapt its specifications and standards to incorporate the surfacing and local-resource-based technology best practices.

With this support MRD have developed the Interim Rural Road Standards, which are currently receiving Ministerial approval (Appendix 2).

This is a major step forward as previously MRD did not have their own standards and the MPWT standards for rural roads were considered by many professionals to be inappropriate for the rural road conditions in Cambodia.



From the gravel road performance in neighbouring Vietnam (SEACAP 4) and experiences in Cambodia, guidelines on the selection of rural road surfacing have also been developed for consideration on adoption by MRD (Appendix 3).

Intech have also been helping the MRD through the NRDP to develop appropriate specifications and contract documentation to utilise some of the alternative rural road surface options.

Intech have provided inputs and support for the MRD Road Strategy document being developed through the support of SEACAP 6 through discussion groups and contributions at workshops.

Section 3.2 of this document lists the key documents developed or facilitated by SEACAP 2 of relevance to this component of the project.

SEACAP 2 - TMP Design Framework - Output 5

TMP Output 5 Objectives	Indicative Scope of Activities <i>The scope of activities will be expected to include investments in the following activities</i>	Indicative Result Areas <i>The deliverables will be expected to include the following</i>
<p>Support for ongoing development of policy, standards and procedures by launching good and suitable results, provide valuable assessment and recommendations from Knowledge and Research (KaR) trials</p>	<p>Coordination is required with other DFID and donors' initiatives, particularly WB and ADB, as major investors in the road programmes including the following;</p> <p>(a) Knowledge and Research (KaR) on Low Cost Surfacing for Poor Communities. This activity includes results from ongoing projects which will develop guidelines for appropriate road surfaces. The TMP will facilitate the dissemination and mainstreaming of these experiences.</p> <p>The Puok Market trials conducted as a result of partnership between MRD and MPWT with the ILO Upstream Technical Assistance Project, have demonstrated some of the local-resource-based surfaces are appropriate for application in Cambodia as alternatives to problematic gravel/laterite.</p> <p>(b) SEILA</p> <p>This DFID-SIDA-UNDP funded project is providing low cost infrastructure to many communes in Cambodia. Roads interventions comprise more than 50% of the project initiatives. The TMP will provide essential technical support to the MPWT and the MRD for this multi-donor initiative.</p> <p>(c) Global Transport Knowledge (TKP) Partnership</p> <p>The recently launched Global TKP will support national forums currently being set up in Cambodia and elsewhere.</p> <p>The Cambodia TMP will consolidate the previous work and achievements of the ILO, IFRTD, and provide a two way flow of experience and expertise to the Global TKP.</p> <p>(d) DFID In-Country</p> <p>The Consultant will support DFID's current Cambodia Poverty Reduction initiatives.</p> <p>(e) IRAP Initiatives</p> <p>The Consultant will coordinate with the Cambodian Integrated Rural Accessibility Planning (IRAP) initiatives to facilitate the incorporation of relevant and appropriate knowledge available to the TMP, and support the dissemination and mainstreaming of IRAP practices.</p> <p>(f) MRD Activities</p> <p>The Consultant will support ongoing MRD efforts to further develop and extend the MRD "Policy of Rural Roads" and the standard specifications for rural roads and structures.</p>	<p>Country specific guidance to road and transport investment</p>

SEACAP 2 - Output 5 - Achievements

The Outputs of this component have been achieved completely.

Guidance has been provided by the project to MPWT and MRD on a wide range of issues relating to improved and sustainable management of the national roads assets.

Recommended follow up: It is recommended that this support for Policy Standards, Specifications & Procedures should be continued and strengthened under the SEACAP 19 project, to facilitate the mainstreaming of the local resourced based technologies at a national and local level. Otherwise sustainable changes cannot be achieved.

3.6 Output 6 – Improved Road Maintenance

This is a major and complex issue that has not yet been solved in Cambodia, and also many other developing countries (see Figure 8 Problem Tree developed by the PRIP investigations). It will take a considerable period of time (in years) and a coordinated range of initiatives to do so according to World Bank knowledge and experience in other countries.

Maintenance studies, including the assessment carried out by Intech Associates for the PRIP design identified a number of serious constraints to be tackled to achieve satisfactory road maintenance for both MPWT and MRD networks. Recommendations included:-

- ❑ ***Existing Institutional constraints have been identified. Comprehensive initiatives to be agreed to overcome them based on the recommendations in the PRIP report,***
- ❑ ***Dedicated funding and performance monitoring systems to be developed for road maintenance operations of MPWT and MRD,***
- ❑ ***MPWT road network management and maintenance policy to be developed,***
- ❑ ***Maintenance management systems, and operational 'environment' for both MPWT and MRD require substantial further development,***
- ❑ ***MPWT should have a Provincial Force Account emergency maintenance capability,***
- ❑ ***All other maintenance to be implemented by contractors using local-resource-based methods where feasible,***
- ❑ ***Axle load surveys recommended to be carried out prior to finalisation of contracts pavement designs,***
- ❑ ***Policies on axle load control and roadwork's design with respect to vehicle loading to be reviewed (see Output 5),***
- ❑ ***Programme of awareness creation, training and capacity building associated with the foregoing issues is required (see Outputs 7 and 8).***

Intech-TRL have been involved with a number of maintenance related initiatives in Cambodia. In Vietnam the consultants have been assisting with the development of the national rural road maintenance system and handbooks. Intech-TRL will be able to support the development of better road maintenance arrangements through advice to MPWT and MRD based on surfacing and local-resource-based technology best practices.

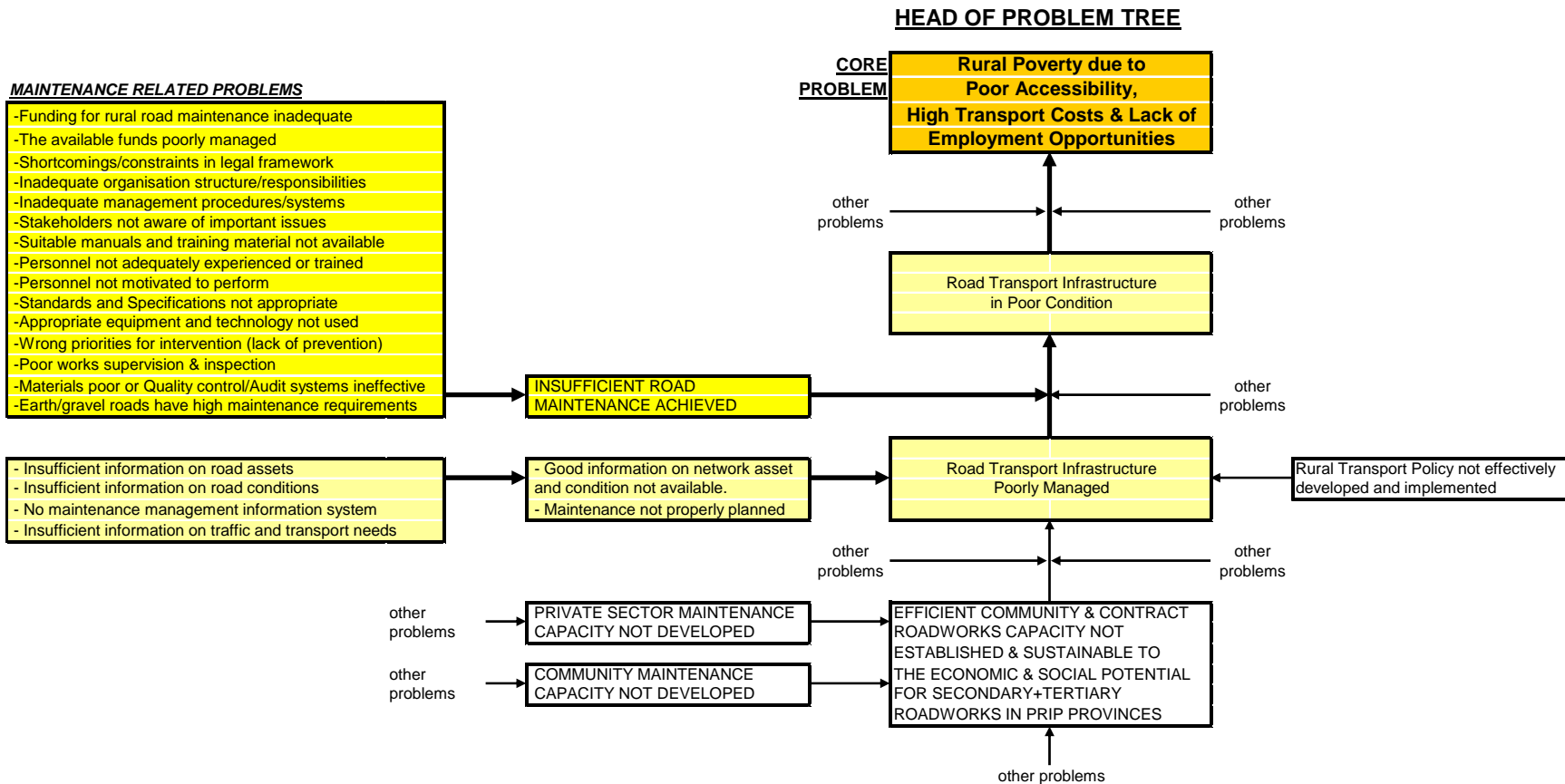
The PIARC (World Road Association) International Road Maintenance Handbook, developed by Intech, was translated into Khmer under the ILO Upstream Project. This is an important resource for capacity building initiatives for improved road maintenance.

Intech-TRL has recommended a two pronged strategy to MPWT and MRD which will aim to reduce the maintenance burden and at the same time improve maintenance capacity.

Figure 8 – Problem Analysis

CAMBODIA RURAL TRANSPORT PROBLEM ANALYSIS (to be investigated, extended/refined and verified through a workshop process)
Focussing on current Road Maintenance Constraints

All existing Problems must be identified and made into statements, then arranged into a 'tree' or 'root system' of cause & effect relationships. One particular problem may be caused by one or more other problems. A particular problem may occur at different locations in the 'tree'. The first step is to confirm whether the possible problems shown below are actually experienced in the PRIP provinces, and their inter-relationship. Any other problems should also be identified. Understanding these relationships will help develop initiatives to overcome or reduce the impact of the problems.



Each identified problem should be tackled by a single or number of initiatives. Thereby problems will be overturned and positive contributions will be made to improve the current situation. e.g. in the scenario of 'SUFFICIENT road maintenance achieved', that should contribute to 'Road Transport Infrastructure in GOOD condition'?

PRIP

The reduction in the maintenance burden could be achieved by a series of initiatives, including the adoption of appropriate surface options according to the particular circumstances of each road. The improvement of maintenance capacity requires a complementary range of initiatives to be taken in a coordinated manner. These concepts are shown in the diagrams in Figure 9.

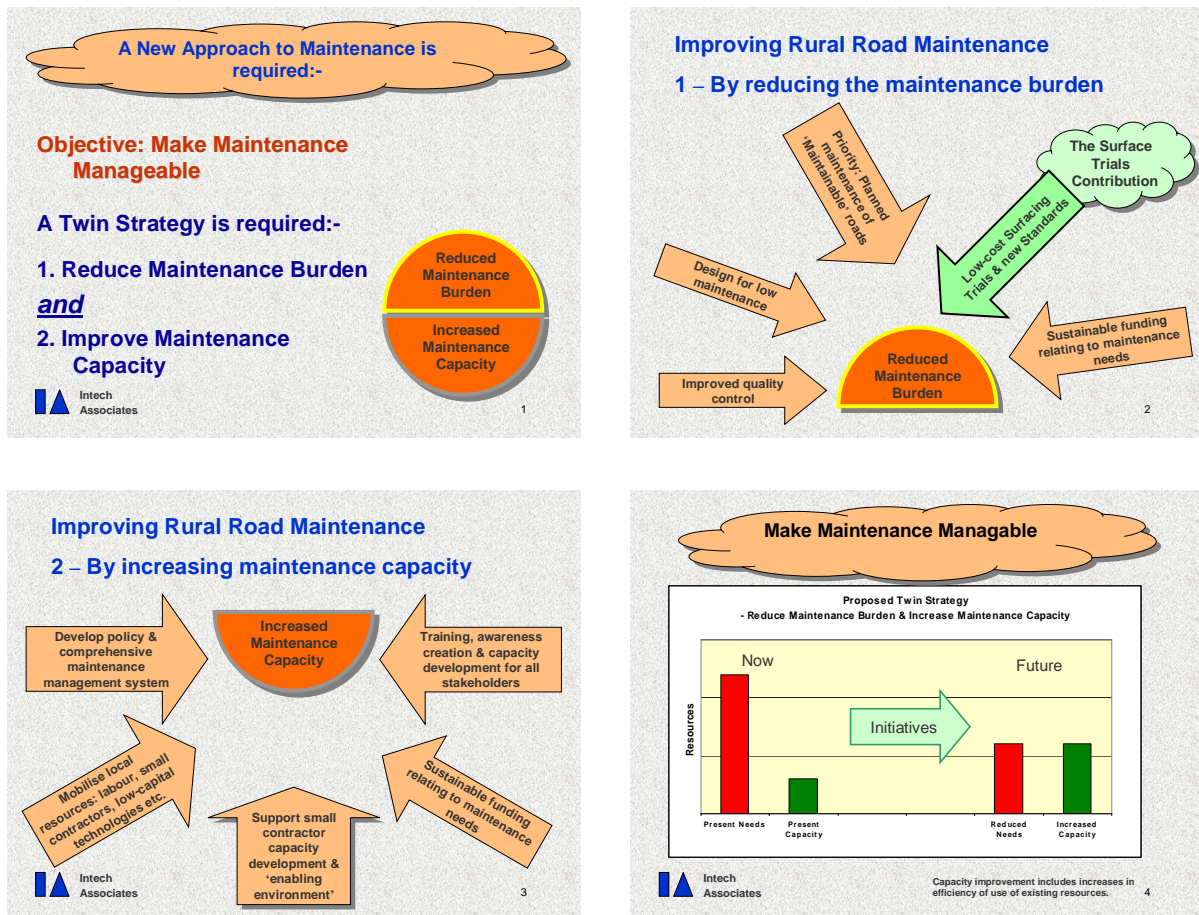


Figure 9 – Concepts for the Improvement of Road Maintenance Performance

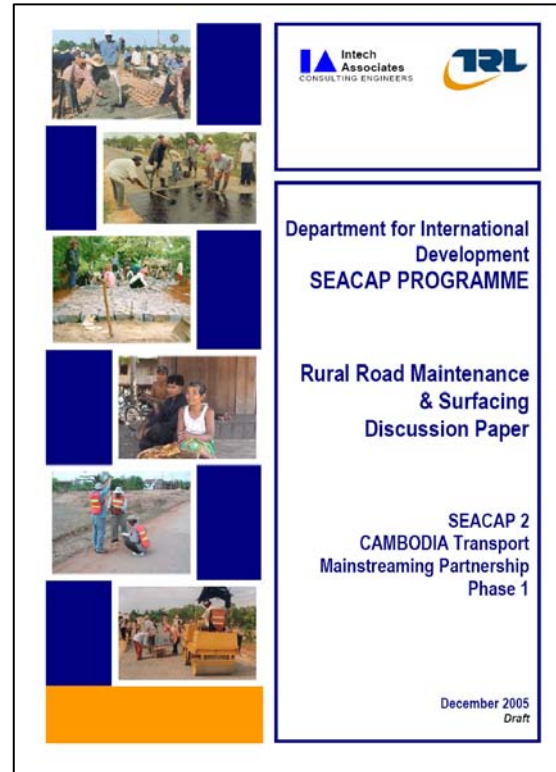
Two significant Road Maintenance initiatives were developed under the SEACAP 2 project which incorporate the above concepts:-

- ❑ A Transport Infrastructure Management (TIM) Workshop involving the key national stakeholders organised together with the NRDP IRAP component, and
- ❑ A discussion document entitled: Rural Road Maintenance & Surfacing.

This documentation provides a synthesis of the current sector knowledge on the way forward in Cambodia to develop affordable, effective and sustainable road management and maintenance systems.

Both documents are available for downloading from www.cnctp.info

The TIM workshop arrangements were achieved with the close cooperation of the NRDP IRAP project team.



SEACAP 2 - TMP Design Framework - Output 6

<p>TMP Output 6 Objectives</p>	<p>Indicative Scope of Activities <i>The scope of activities will be expected to include investments in the following activities</i></p>	<p>Indicative Result Areas <i>The deliverables will be expected to include the following</i></p>
<p>Support for developing effective, affordable and sustainable Road Rehabilitation and Maintenance which is being developed under other ongoing and proposed projects</p>	<p>Define approaches to priorities for investment in transport infrastructure and maintenance strategies and priorities.</p>	<p>Country specific guidance on reducing road maintenance burden and improving road maintenance capacity</p>

SEACAP 2 - Output 6 - Achievements

The Outputs of this component have been achieved completely. The documentation facilitated by the SEACAP 2 project provides a synthesis of the experiences and knowledge on road maintenance in Cambodia and other developing countries.

It provides a strong basis of what will need to be a comprehensive and well resourced range of initiatives for both the MPWT and MRD to develop effective and sustainable

maintenance arrangements for the Cambodian road network.

The task must not be underestimated as the particularly adverse factors affecting Cambodia regarding physical conditions, climate, flooding, materials available, current institutional capacity, operating environment, vehicle loading and poverty make this task extremely challenging.

Recommended follow up: A good start has been made. It is strongly recommended that this support for development of effective and sustainable road maintenance arrangements should be continued and strengthened under the SEACAP 19 project.

3.7 Output 7 – Training Courses

This project component involves support for Capacity Building and Human Resources Development in the government and private sectors, and development of appropriate training courses. It was intended that this component of SEACAP 2 would be developed in consideration of the work to be carried out under component 8. It was therefore necessary to carry out the component 8 work before developing detailed proposals for Training Courses.

There were a number of initiatives made under this project component to support knowledge, training and education initiatives:

- Human Resources Development workshop with ITC and GMSARN,
- Compilation and web-posting of existing ITC training material,
- Development of training material for ITC Development Engineering courses,
- Web signposting of material and sources for training,
- Organisation of PIARC – RGC seminar on Sustainable Access and Local Resource Solutions,
- Discussions with PRIP and NRDP regarding specific training courses,
- Development of a listing of identified subjects for required training courses,
- BBC Earth Report documentary transmission on Rural Roads.

Human Resources Development workshop, April 2005

This event was held at ITC on 7 – 8 April 2005 with the support of ASEAN Foundation, GMSARN, Asian Institute of Technology and the SEACAP 2 project. The project provided a number of presentations and documents, helped facilitate the event and produced the proceedings documentation. The event highlighted the academic and training challenges in the sector.

Compilation and web-posting of existing ITC training material

Five training courses were developed by the ILO Upstream Project for delivery at ITC. Intech provided inputs for this initiative. The materials for these courses have been compiled and web-posted by the project. The courses are:-

- **Development Engineering Course (DEC)**
- **Technicians Development Engineering Course**



- Rural Roads and Infrastructure Course (RRIC)
- Road Construction Course (RCC)
- Rural Development Course

Development of training material for ITC Development Engineering courses

The SEACAP2 project developed new training material for the ITC Development Engineering courses based on the research and development experiences of the Low Cost Surfacing and SEACAP projects carried out by Intech and TRL. This material has been introduced to ITC at a number of training events. The new material is included as Appendix 6 to this report.

Web signposting of material and sources for training

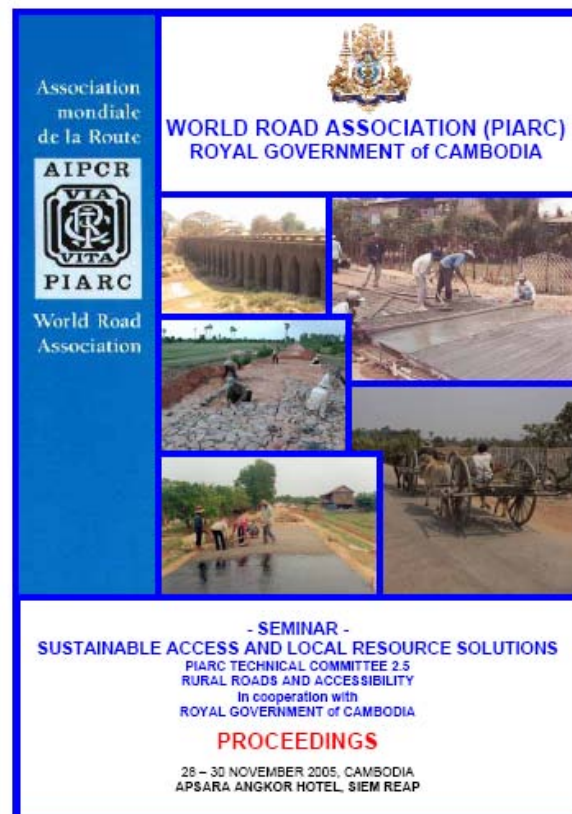
SEACAP 2 has compiled a substantial range of key documentation in electronic format for the sector and arranged for the web-posting. Furthermore as discussed in Section 3.2 of this report, a number of other important documents have been initiated which will provide source information for future training initiatives. Other sources of transport sector knowledge have been signposted through other portals such as gTKP, PIARC, IFG and other SEACAP initiatives.

Organisation of PIARC – RGC seminar on Sustainable Access and Local Resource Solutions, November 2005

This was a major international initiative supported and facilitated by the SEACAP 2 project and the NRDP IRAP project. The project provided considerable support for the planning, resourcing, management, documentation and reporting of this important international event which attracted over 100 participants and the submission and presentation of 26 papers.

Discussions with PRIP and NRDP regarding specific training courses

SEACAP 2 has held a series of discussions with both the NRDP and PRIP projects regarding the development and delivery of training courses for those projects on local resource based road works. There have been delays in the agreement and programming of arrangements for these initiatives, however they are expected to be implemented in 2006.



Development of a listing of identified subjects for required training courses

Through the discussions with the various sector stakeholders, including the sector ministries, ITC and EIC, a preliminary listing of desirable course modules has been developed. The following list of required course topics has been identified:-

- Road Network Management

- Rural Road Financing
- Local-resource-based Roadworks
- Basic Access Road Engineering
- Structures for Rural Roads
- Road Surfacing Options
- Appropriate Road Standards
- Road Maintenance
- Road Funding
- Local Contractor Development
- Local Consultant Development
- Road Pavement Assessment
- Integrated Rural Assessability Planning (IRAP)
- Materials Resources Management
- Materials Testing & Quality Assurance
- Community Roads (Ownership & Management)
- Project Planning & Evaluation
- Axle Loading Management
- Road Safety
- Appropriate Roadworks Equipment
- Rural Transport Services
- Effective Communication (Report and Proposal Writing)

BBC Earth Report documentary transmission on Rural Roads

SEACAP 2 provided advice and support to TVE for the scripting and filming of a documentary on rural road engineering using local resource based techniques. This documentary was transmitted worldwide in March 2006 as part of the Earth Report series. An accompanying bulletin was webposted relating to the documentary and is contained in Appendix 5.

SEACAP 2 - TMP Design Framework - Output 7

TMP Output 7 Objectives	Indicative Scope of Activities <i>The scope of activities will be expected to include investments in the following activities</i>	Indicative Result Areas <i>The deliverables will be expected to include the following</i>
Support for Capacity Building and Human Resources Development in the government and private sectors	<p>The Cambodia TMP will facilitate development of a suite of courses leading to a Rural Transport Diploma to be held in Cambodia. It will draw on the DFID KaR programme experiences and the Transport-Links website, to provide practical and informed in-career training for sector practitioners and educationalists in Cambodia and other countries in the region.</p> <p>The aims of this component will focus on broad dissemination to facilitate the training being delivered. The training initiative is also to support the practice approach to the sector practitioners to access the data base and TKP.</p> <p>Awareness raising workshops, international contacts and accepted best practice procedures</p>	<p>Courses leading to a Rural Transport Diploma to be held in Cambodia</p> <p>Training courses also to supply the practice approach to the sector practitioners to access data base and TKP.</p> <p>All these reports will need to be in English as well as in Khmer (Cambodian) languages</p> <p>Design and procedural guidelines and handbooks</p>

SEACAP 2 - Output 7 - Achievements

The Outputs of this component have been achieved. The ILO courses material has been compiled and made available on the CNCTP website. New training material has been developed and delivered to ITC. Two important workshops/seminars have been organised to help develop educational/training strategy for the sector. Important source guidelines, training and human resource development material are web-posted. Preparatory work has been carried out with partner organisations for delivery of training courses in 2006.

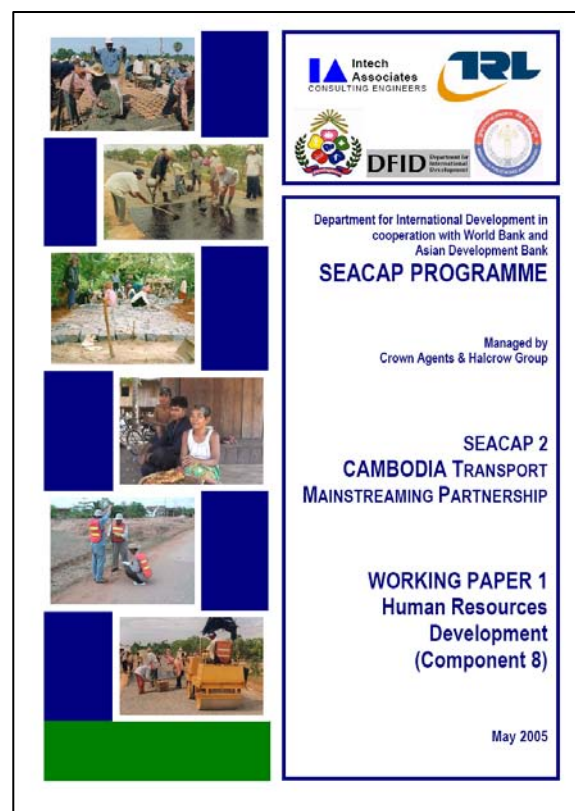
Recommended follow up: A good foundation has been laid for the development of training and educational courses to support the development of the local resource based rural infrastructure sector. However the initiatives need to be further supported under the SEACAP 19 project to achieve impact and sustainability.

3.8 Output 8 – Human Resources Development Strategy

A study of the Human Resource Development requirements of the Cambodia Rural Infrastructure sector was carried out under the SEACAP 2 initiative: WORKING PAPER 1, Human Resources Development (Component 8), May 2005.

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

- a) 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.
- b) 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.
- c) 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 last year 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.
- d) 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,
- e) The CTMP programme intends 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.
- f) 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.
- g) 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.
- h) 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.
- i) 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.

- j) 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.
- k) 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.
- l) 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 project 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.
- m) 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.
- n) 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.

The findings of this component study will be used to develop specific further training and educational initiatives for the sector.

SEACAP 2 - TMP Design Framework - Output 8

TMP Output 8 Objectives	Indicative Scope of Activities <i>The scope of activities will be expected to include investments in the following activities</i>	Indicative Result Areas <i>The deliverables will be expected to include the following</i>
Support for development of professional and educational bodies	<p>Conduct a review of institutions involved in transport, this could include a SWOT analysis, training needs analysis etc to develop a strategy for investment in training establishments.</p> <p>Develop priorities for training, develop or make inputs to improve a curriculum</p>	Concise strategy document including detailed investment plans with draft 3 year budgets and TORs, of key staff and a curriculum proposal

SEACAP 2 - Output 8 - Achievements

The Outputs of this component have been achieved completely. The SEACAP 2 study report provides a comprehensive overview of the human resources development issues and constraints for the rural infrastructure sector in Cambodia. It provides a strong foundation for the RGC to develop a range of initiatives to improve sector capacity and thus the effectiveness of the sector.

Recommended follow up: The Human Resources Development Study carried out provides a good foundation for a range of sector initiatives. The task is substantial and coordination of these initiatives is required across government bodies, the development agencies, the private sector and academic institutions. SEACAP 19 should provide support for this.

3.9 Output 9 – Improvement of Road Safety

Road Safety was the ninth and final component of the SEACAP 2 initiative.

The problem of road accident casualties is particularly acute in the countries of the Asia – Pacific region as this region currently contributes 44% of global road deaths despite it having only around 16% of the worlds motorised vehicle fleet (Jacobs et al, 2000). Indeed more recently, in June 2005, the ADB has stated that “the increase in the number of road crash deaths and injuries is having a substantial impact on the economic and social development of the Region. If no major road safety measures are implemented there will be more than 385,000 road deaths and 24 million injuries over the next 5 years in the ASEAN countries, incurring more than US\$88 billion in economic losses.”

Unfortunately Cambodia has the worst road accident fatality rate in the ASEAN Region when related to vehicles using the road network (currently 21.5 fatalities per 10,000 registered vehicles). The road safety situation in Cambodia is inevitably likely to be adversely affected by the rapidly increasing vehicle fleet of the country, with which there is likely to come a much higher risk of road accidents. However, such an increase in deaths and injuries should not be accepted as the inevitable price for increased mobility. Indeed, it can be regarded as one of the responsibilities of government to help to maintain as safe a road environment as

possible for its population of road users.

Over the past six years, not only have recorded accidents increased overall but the severity of injury of accident victims appears to have been increasing at an even greater rate. Fatalities increased by 32.7 per cent in 2003, and a massive **46.8 per cent in 2004 alone**, a trend that is obviously causing great concern. The situation with regard to people seriously injured in crashes is also likely to be deteriorating sharply but there are indications of a high level of under-reporting of such accidents.

Handicap International and the Cambodian Red Cross have realised this under-reporting problem and have made a very valuable contribution by organising the production of a more accurate accident and casualty database combining police information with that gathered from a number of hospitals, initially in Phnom Penh but later being extended to the whole country.

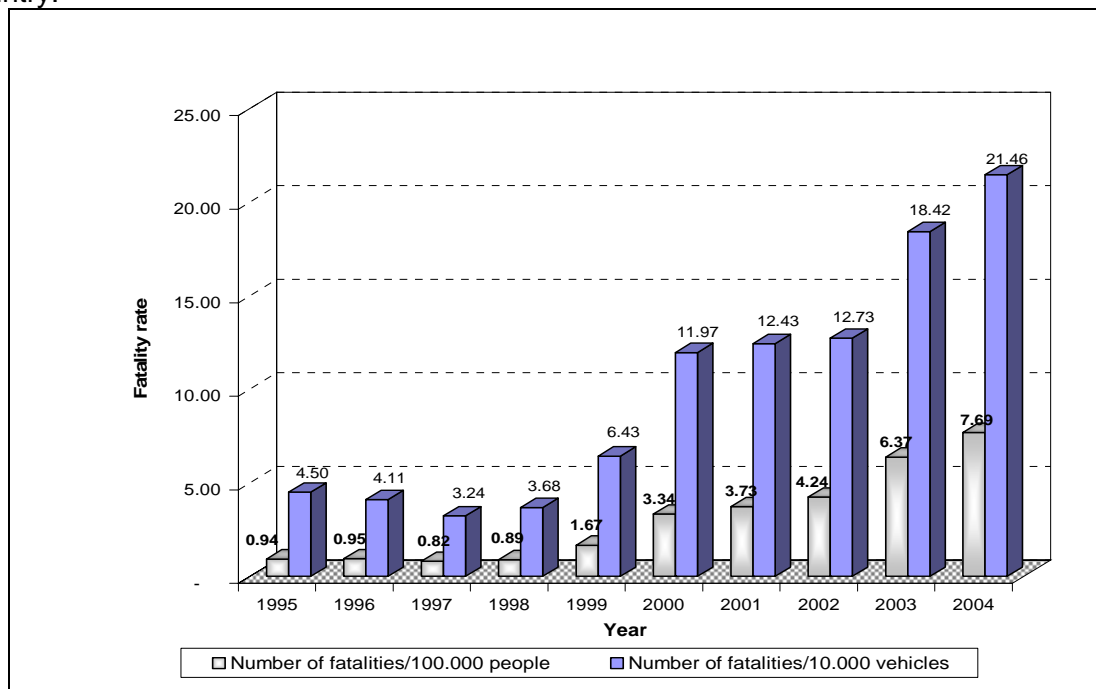


Figure 10 - Trends in fatality rates, 1995 to 2004 (source: MPWT)

Some key facts that they have already shown from this new database are that:-

- The system records about **five times more** casualties than the Police system alone.
- There is currently an average of **17 fatalities per month** in Phnom Penh (about half dying at the scene).
- Casualties aged between 15 and 24 years old account for **48 per cent** of all casualties (though this age group represents only 24 per cent of the population). This proportion is almost twice that of the average found in South East Asia and much higher than the worldwide average.
- Males account for **71 per cent** of all casualties (although only 48 per cent of the population)
- Motorcyclists account for the majority of casualties at **76 per cent** and almost **80 per cent** of casualties suffering from head injuries are motorcycle users. (Only 4.4 percent of these wore a crash helmet).
- The second most common casualty group is pedestrians at **9 per cent** of the total.
- **39 per cent** of casualties occur during the hours of darkness.
- The three most common causes of accidents recorded are :

- **Excessive speed (36 percent),**
- **Not respecting the give way rule (28 per cent), and**
- **Alcohol or drug involved (15 per cent).**

The government of Cambodia has already recognised the serious and deteriorating road safety situation that the country faces and has signed up to an ADB-ASEAN road safety project. This was led by ADB to assist the 10 ASEAN countries to strengthen their institutional capacity and to address road safety issues more effectively. The project focused on developing national Priority Action Plans and a regional Action Plan through a series of in-country workshops and a regional workshop.

At a meeting of ASEAN Transport Ministers in Phnom Penh in November 2004, the Government of Cambodia agreed the following key actions:-

1. Adopt the ASEAN Road Safety Strategy and Action Plan 2005-2010;
2. Establish a multi-sector body to coordinate and manage the implementation of the National Road Safety Action Plan;
3. Establish an ASEAN Multi-Sector Road Safety Working Group to coordinate and oversee the implementation of the ASEAN Road Safety Strategy and Action Plan 2005-2010;
4. Institute a system for the effective monitoring of implementation of the national road safety plans and the ASEAN regional road safety action plan;

One of the first important actions, (item 2 above) is the setting up of a National Road Traffic Safety Committee (NRTSC) to manage the implementation of the national Road Safety Strategy & Action Plan. This proposal was approved by the Prime Minister in May 2005, and the Committee has now been formed. One of the NRTSC's first important actions was to finalise the adopted National Road Safety Action Plan, and to form Municipal & Provincial level Road Safety Committees.

This Action Plan was thus made the focus of this Road Safety component of SEACAP 2 with a view to determining progress in implementation and any further problems and needs.



Figure 11 - Deep irregularities in shoulders can cause vehicles to roll over if they veer off the carriageway.

©



Figure 12 - Dust clouds on gravel roads created by vehicle passage in dry season can adversely affect visibility: drivers would not have a clear view of overtaking vehicles.

The National Road Safety Action Plan: Target Setting

The target fatal accident rates that have currently been agreed between the ASEAN countries for Cambodia are:-

- By 2010 – not more than 7 fatalities per 10,000 registered vehicles
- By 2015 – not more than 2 fatalities per 10,000 registered vehicles.

With the current rate of 21.5 fatalities per 10,000 vehicles (for 2004), it is considered that these present extremely challenging targets that are not achievable even with a

considerable dedicated effort by the many stakeholders capable of contributing to safety, and backed by adequate financial investment. The current economic activity and growth of the country is likely to mean that the vehicle fleet of the country is also likely to be growing at such a rate that more realistic targets would be: -

- **By 2010 – not more than 17 fatalities per 10,000 registered vehicles**
- **By 2015 – not more than 8.5 fatalities per 10,000 registered vehicles.**

The contents of the current draft Road Safety Action Plan are generally sound and relatively comprehensive covering a total of 15 different sectors or subject areas, each having its own series of Actions. These summary tables of Actions are reproduced in the main body of the SEACAP 2 Road Safety report and the sectors' weaknesses and strengths are each discussed. Thus, only the additional recommendations of the SEACAP 2 study for each of the 15 sector Action Plans are included in Appendix 4 of this SEACAP 2 Final Report document.

The SEACAP 2 project has worked closely with the Handicap International Road Safety programme in Cambodia and the monthly road safety reports from that programme are web posted on the CNCTP website.

SEACAP facilitated a special Road Safety session at the PIARC – RGC seminar at Siem Reap, organised by ADB and SIDA, which was attended by many practitioners and agency representatives (documented on the www.cnctp.info website).

SEACAP 2 - TMP Design Framework - Output 9

TMP Output 9 Objectives	Indicative Scope of Activities <i>The scope of activities will be expected to include investments in the following activities</i>	Indicative Result Areas <i>The deliverables will be expected to include the following</i>
Improve road safety	Develop an investment strategy, which should include development of an approach for road safety reviews, with the intention of building up the cost of crashes, road causality reporting, urban and rural road safety education; and developing improved road standards and guidelines.	Concise policy and strategy documents for road safety. Transfer of knowledge of the policy and strategy to key ministries and international donors.

SEACAP 2 - Output 9 - Achievements

The Outputs of this component have been achieved completely. The SEACAP 2 Road Safety report and initiatives have substantially complemented the existing road safety plans in Cambodia.

Recommended follow up: The Road Safety initiatives for Cambodia are obviously high priority for the RGC, ASEAN, ADB, SIDA and Handicap International. The main initiatives are being taken by these stakeholders. SEACAP should continue in a supportive role by facilitating knowledge exchange and providing the web-posting of the important documentation through SEACAP 19.

4 SUMMARY AND CONCLUSIONS

The SEACAP 2 programme has been an important and successful catalytic initiative to facilitate a number of capacity building and mainstreaming goals in the rural transport sector for the RGC.

It has been achieved through cooperation with a range of other bodies and programmes, mobilising the limited SEACAP and other resources. These bodies have included MWPT, MRD, ITC, EIC, SEILA-PLG, ILO, and Handicap International.

The SEACAP 2 initiative was 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**

These outputs were all achieved during the original contract period (October 2004 – December 2005), except for actual delivery of training courses. However, outputs on this item relied on the inputs of others which were not able to be arranged within the contract period. In the circumstances suitable training material has been prepared for ITC Development Engineering courses and ITC training and human resource development events have been supported by the project. Furthermore, other additional training orientated products have been produced by the SEACAP 2 initiative. SEACAP 2 has also facilitated a number of outputs beyond that originally envisaged.

The activities and outputs relating to the various TMP components are described in this Final Report. The Key Outputs are:

- Operational transport sector forum,
- Operational website and electronic library of key sector documents,
- Interim Rural Road Standards,
- National workshops on key topics,
- International Rural Transport Seminar in association with the World Road Association,
- Training material for ITC Development Engineering courses,
- Review or guidance documents on Human Resources Development, Road Safety, Road Surfacing and Road Maintenance,
- Concept for a Transport Infrastructure Management system (TIM),
- Concept for a Poverty Impact Audit System (PIAS),
- BBC television World Service documentary transmission as part of the “Earth Report” series.

Capacity building takes longer than the short duration of the initial SEACAP 2 project. It is recommended that all of these initiatives will be followed up and consolidated under the new SEACAP 19 project planned to commence in 2006.

APPENDICES

- Appendix 1** – CNCTP E-LIBRARY – Available for web downloading
- Appendix 2** – MRD Interim Rural Road Standards
- Appendix 3** – MRD Technical Guideline No 1, Rural Road Surfacing (draft)
- Appendix 4** – SEACAP 2 Road Safety Recommendations
- Appendix 5** – BBC Earth Report transmission Bulletin
- Appendix 6** – Development Engineering Course Material, ITC



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