(DRAFT) PROCEEDINGS OF THE WORKSHOP ON TRANSPORT INFRASTRUCTURE MANAGEMENT

MAIN REPORT










CAMBODIANA HOTEL
PHNOM PENH
23rd & 24th June 2005

ORGANISED BY

TECHNICAL ASSISTANCE BY

Intech Associates
Consulting Engineers

TRL

NRDP
IRAP Component

Intech Cambodia
CONSULTING ENGINEERS

SUPPORTED BY

ASIAN DEVELOPMENT BANK

DFID Department for International Development

KINGDOM OF CAMBODIA

NATION RELIGION KING

WORKSHOP ON

TRANSPORT INFRASTRUCTURE MANAGEMENT

CAMBODIANA HOTEL - PHNOM PENH

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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
DBST	Double Bituminous Surface Treatment
DFID	Department for International Development
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 Resource Development
HRM	Human Resource Management
IFG	International Focus Group (for Rural Road Engineering)
IFRTD	International Forum for Rural Transport Development
ILO	International Labour Organisation
IOs	International Organisations
IRAP	Integrated Rural Accessibility Planning
ITC	Institute of Technology, Cambodia
ITST	Institute of Transport Science and Technology
JICA	Japanese International Co-operation Agency
KaR	Knowledge and Research
km	kilometre
Laos PDR	Laos People Democracy Republic
LB	Labour Based
LBAT	Labour-Based Appropriate Technology
LBRIRMP	Labour-Based Rural Infrastructure Rehabilitation and Maintenance Project
LCS	Low Cost Surfacing
MEF	Ministry of Economic and Finance
MoEYS	Ministry of Education, Youth and Sport
MoI	Ministry of the Interior
MoP	Ministry of Planning
MPTPC	Ministry of Communication Transport Post & Construction, Lao PDR
MPW&T	Ministry of Public Works and Transport (Cambodia)
MRD	Ministry of Rural Development (Cambodia)
NCP	National Community of Practitioners
NFG	National Focus Group (for Rural Road Engineering)
NGOs	Non-Governmental Organisations
NRDP	North-Western Rural Development Project
PDRD	Provincial Department of Rural Development
PIARC	World Road Association
PIP	Public Investment Programme
PLG	Partnership for Local Governance
PRDC	Provincial Rural Development Committee
PRIP	Provincial and Rural Infrastructure Project
RD&RP	Rural Development and Resettlement Project
RGC	Royal Government of Cambodia

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

EXECUTIVE SUMMARY

The Ministry of Rural Development and the Ministry of Public Works and Transport jointly prepared this workshop event. Despite the different responsibilities, both Ministries have one common purpose related to this workshop: the development and management of a good, safe and durable transport network in Cambodia.

Both Ministries are working under the overall policy framework as set out by Prime Minister Hun Sen: The Cambodian Rectangular Strategy. This strategy aims to articulate the development vision and approach to achieve poverty reduction and reach the Cambodian Millennium Development Goals. Of central importance to this workshop are the two strategy growth areas: ***Physical Infrastructure*** and ***Private Sector Growth and Employment Generation.***

Under this initiative, the Ministry of Rural Development hosted a two-day workshop on **Transport Infrastructure Management** on 23 and 24 June 2005 with support from the DFID funded SEACAP Programme and The ADB-Loan Northwestern Rural Development Project (NRDP).

The workshop was opened by H.E. Luy Lay Sreng, Deputy Prime Minister and Minister of MRD. There were approximately 60 participants attending the event each day; comprising national and international presenters, senior officials from MRD and MPW&T, EIC, lecturers from ITC, Funding Agencies, IOs and NGOs, and delegations from neighbouring countries: Laos and Vietnam.

This document describes the background, presentations, discussions and outcomes of the workshop.

Seventeen presentations were provided by experts on infrastructure development and management. National, regional and ultra-regional knowledge and experiences (both successes and failures) were exchanged among Cambodian, Laotians and Vietnamese presenters & participants, which then stimulated the workshop working groups to identify areas for taking further suggested follow up initiatives.

The workshop highlighted the major challenges that transport authorities face to safeguard the considerable road investments, through programmes of systematic and cost effective maintenance. Effective maintenance systems take many years to establish, the World Bank in 1981 advised that they might take as long as 15 to 20 years due to the complex range of interacting factors involved. There are four main building blocks that must be assured for a successful road maintenance programme. They are:

1. The designation of legal ownership of the roads, and control of traffic usage;
2. The designation of the responsibility for the maintenance of the roads;
3. The design and construction of roads appropriate for the local environment and with manageable and affordable maintenance liabilities, and the development of appropriate management systems to maintain the roads;
4. The flow of adequate and stable funds to finance the maintenance of the roads.

From the current situation there are substantial challenges for Cambodia on each of these building blocks. However, it is the development and resourcing of effective financing and disbursement mechanisms that is probably the most difficult to achieve. The international development banks are prepared to lend the Government money for the construction of roads, but they are usually not willing to lend money for the financing of the recurrent maintenance costs.

Today Cambodia is at a cross-roads: the Cambodian Government has reached a point at which the transport network has gradually developed and expanded both at national level, as well as in the rural areas.

The developing road network facilitates economic development and territorial integrity of the country. However the increasing kilometres of roads also pose a difficult question for road authorities.

It is now probably the time to decide from the cross-roads which direction shall be taken into the future. **Should there continue to be a concentration on construction to extend the road network into more areas** or **should priorities be modified to continue network expansion at a reduced pace and allocate more funds to the development and implementation of effective road management and maintenance systems to preserve the previous considerable investments from being wasted.**

The first approach would benefit more new areas and more isolated people, but has the danger that while we construct new roads the existing ones will deteriorate behind our backs. Studies have already raised the alarm that this is happening already[1]. The second approach will lead us to the challenges of defining ownership of the road (especially rural) network and developing pragmatic financial and management mechanisms to preserve the extensive existing assets.

This workshop has provided the opportunity for the participants and road agencies to review the challenges and draw on the many good experiences available for developing effective responses to the considerable challenges facing them.

This document has been compiled by Intech-TRL & the ILO-IRAP-NRDP with cooperation provided by the South East Asia Community Access Programme (SEACAP) supported by DFID and the Northwestern Rural Development Project funded by ADB Loan and RGC-counterpart-fund.

Photograph from left to right:

- H.E. Try Meng, Under-secretary of State – Ministry of Rural Development
- H.E. Suos Kong, Secretary of State – Ministry of Rural Development
- H.E. Luy Lay Sreny, Deputy Prime Minister – Minister of the Ministry of Rural Development
- H.E. Lim Sidenine, Under-secretary of State – Ministry of Public Works & Transport

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

1. INTRODUCTION

This workshop was organised under the auspices of the recently formed Cambodia National Community of Transport Practitioners (CNCTP), with the support of Ministry of Public Works and Transport, Ministry of Rural Development and other sector stakeholders. The workshop benefited from the financial support of DFID and Asian Development Bank through the SEACAP programme consultants Intech-TRL, and NRDP IRAP component managed by ILO.

2. BACKGROUND – CONTEXT AND CHALLENGES

Cambodia has suffered from the effects of war and insecurity for many decades, and the national infrastructure has been seriously damaged and has deteriorated, especially physical infrastructure such as roads and bridges.

The aim of the Royal Government is to reduce poverty and improve health for the whole nation and more especially for the majority who live in rural areas. To achieve this poverty reduction target and bring development and prosperity to the people, the 3rd mandate Royal Government has adopted a new policy called "the Rectangular Strategy". This is an interlinking series of 4 point strategies concerning governance, environment and growth. Of these, the 2nd and the 3rd Growth Rectangles focus on physical infrastructure development and employment creation.

The Royal Government will continue to accord high priority to the rehabilitation and reconstruction of physical infrastructure especially roads and bridges, which are considered to be strategic measures for supporting economic development and poverty alleviation. Due to this importance, the Cambodian transport networks have been developing rapidly from the post-conflict residual network and extending both national and rural roads under development projects or programmes of the key development partners, NGOs and International Organisations.

There are a number of challenges that those involved with **Transport Infrastructure Management** need to tackle in the pursuit of an effective and efficient road network to serve the economic and social needs of the Cambodian nation.

In parallel with rehabilitation and reconstruction, **Maintenance** is another growing obligation and must not be neglected[2]. Maintenance has understandably been a lower priority in the initial post-conflict surge of infrastructure rehabilitation. However, the growing and valuable road network assets require improved and appropriate maintenance if the considerable investments are not to prematurely deteriorate and be wasted.

Funding - The national road maintenance budgets are seriously deficient when compared with the maintenance requirements. Therefore not all roads, but only some prioritised and selected roads and bridges will receive any significant maintenance interventions in the near future. Maintenance funds should be used effectively in response to the needs of the road users and local communities, and for the purpose of preserving the transport asset and

[2] Road Maintenance Review, SEACAP 2, CAMBODIA Transport Mainstreaming Partnership Phase 1, Intech-TRL, 2005

accessibility in the best way with the limited funds available. This will require particular Transport Infrastructure Management skills.

Road Surfacing is another important issue to be addressed. Rural roads in Cambodia are typically surfaced with laterite or gravel, if surfaced at all. These **gravel** roads, while lending themselves easily to Labour Based Appropriate Technology (LBAT) techniques[3], have been shown by recent studies [4] [5] to be very costly in terms of maintenance, or whole life costs. These types of road are a low (initial) cost but high maintenance; beyond the capacity of the government or communities to maintain on a sustainable basis.

Good quality gravel (Laterite) deposits in Cambodia are limited in extent and location, and are becoming scarce. Gravel used as a road surface also creates health problems (dust), and is environmentally destructive in its extraction for usage as a "wasting surface". The laterite that is available generally contains too much clay and not enough durable gravel particles. The material can initially produce a reasonable road surface, but with a combination of heavy traffic and tropical weather (hot, dry conditions or monsoon rains) the laterite becomes powdery and is blown away, or turns to an easily damaged sticky mud.

Natural gravel and crushed stone aggregates are generally hauled long distances, some times up to 100km and more for rural road construction. The heavy vehicles used to transport construction materials to site damage the roads on which they travel. With limited maintenance budgets and inefficient maintenance methods and policies, the road network deteriorates further.

When haulage distances are long, the benefit of the project to local communities as well as national level is reduced. A large portion of the project funds are directed towards haulage of the materials required for construction, rather than towards the intended beneficiaries of the community. A single haulage contractor will in effect assimilate the bulk of the project funds to cover fuel consumption, spare parts and depreciation of trucks, overheads and profit.

In reality, the large numbers of gravel roads rehabilitated in recent years are reverting to earth standard through lack of maintenance. This raises the question of whether these roads should be gravelled in the first place, or whether the limited available funds should be used for more selective spot improvement of priority roads to a higher standard, low maintenance surfaces, together with simple low cost maintenance of the remainder of the priority earth road network.

Appreciating these foregoing problems, MRD needs to review **policies and strategies** and adopt approaches that move away from reliance on gravel/laterite surfacing towards longer lasting and more cost effective solutions with less maintenance burden, so that roads can be maintained with the involvement of local communities.

A national programme of selectively upgrading gravel/laterite roads is required.

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[3] However the gravel excavation, haulage and deposition activities are usually equipment based.

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

[5] Rural Road Gravel Assessment Programme (RRGAP), Vietnam, SEACAP 4, Module 4 Final Report, Intech Associates -TRL, July 2005.

Figure 1 – A donor funded project gravel road within 2 years of maintenance cessation (photographed in the dry season! – impassable to motor cars)

Providing longer lasting paving options would required higher initial investment cost if compared to gravel. However, if whole life cycle costs are to be considered, providing more durable surfacing with less maintenance requirements would show higher economic returns and better residual asset values. Moreover, if road paving options are designed to maximise appropriate use of local resources (local knowledge, skills, labour, materials, local contractors, local tools and equipment) greater benefits can be expected and project funds would be dispersed to a greater number of community beneficiaries, and foreign exchange use would be minimised.

Greater use of in-situ **materials** and materials close to the road construction site can be achieved by improving strength and performance characteristics (modifying physical characteristics by screening or remixing with other imported material, or stabilisation with cement, lime or bitumen emulsion). This will reduce haulage costs and break the cycle of haulage damage to existing roads. However more research is required to be carried out on these techniques in Cambodia.

Under the South-East Asia Community Access Programme (SEACAP) funded principally by DFID, **research** on Low Cost Surfacing is being implemented by Intech-TRL. To date, 10 different trial sections have been constructed at Puok Market in Siem Reap Province seeking suitable alternative solutions to replace laterite surfaced roads. It was realised that laterite roads are becoming more and more expensive due to the factors described previously. It is appreciated that the scarcity of good quality of laterite will lead to the need to haul ever longer distances, which will increase the haulage cost and therefore increase not only construction costs, but also maintenance funding requirements. Even though the long term monitoring of these alternative pavements has not yet been completed, the initial research results have already had significant and positive impact on other road development projects which have adopted these paving options. The experience and knowledge gained on

alternative surfaces has helped MRD substantially to move away from reliance on gravel/laterite surfacing, which is problematic and unsustainable for many situations in Cambodia. Gravel use was a necessary immediate, rapid-impact response in the post-conflict situation. However, MRD is now beginning to adopt more sustainable paving options in its rural road programmes, based on the Puok and other experiences.

Figure 2

Review of previous experiences in Cambodia has shown that many paved and unpaved roads were deteriorating faster than expected. This has caused the government unnecessary additional expenditure, and lost benefits, often resulting in the re-investment of their limited and scarce funds in reconstructing the same road section several times.

There are many factors relating to this rapid chronic cycle of deterioration, such as natural causes like excessive rain and floods, technical capacity and capability, management, maintenance and many others. But there is one predominant factor; that of **Overloading,** which needs to be considered and brought under control [6]. Overloading is probably the single major factor causing most damage to the Cambodian roads and bridges. We often see an overloading related article in the newspapers, where bridges and roads are reported collapsed or damaged by heavily overloaded trucks. It is undoubtedly overloading which has caused damage to paved and unpaved roads and which costs US$ millions to the economy

6 Proceedings of National Workshop on Road Planning, Pavement Design & Overloading Prevention, 11 – 12 November 2004, ITC – Phnom Penh – Cambodia, Intech-TRL and ILO for MPWT and MRD.

and society.

Overloading on many routes is a serious problem in Cambodia. If the loading situation is not carefully assessed, then road investments can be destroyed prematurely. Since loading control is currently ineffective, the transport operators maximise their vehicle loads to reduce the number of trips necessary and maximise profit within the capacity of their vehicles. Pavement damage is increasing significant as wheel loading increases above about 8 tonnes per (4 tyre) axle and tyre pressures are increased to raise vehicle payload. Thus the deterioration of the road network escalates exponentially with vehicle loading. The transport operator benefits and the nation pays for the damage. With little funding available even for road maintenance, then the resulting road rehabilitation burden is certainly unaffordable. Communities are hence left without all-weather satisfactory access, a vital component of the poverty reduction effort. The effects of only temporary provision of access to isolated communities through a construction/rehabilitation project, then access denial can also have serious social and economic implications for these communities.

Figure 3 – Truck bodies extended in Cambodia to carry at least 20m³ of construction materials on 3 axles.

Figure 4 – Overloaded truck damages bridge on a secondary road.

A Cambodian **Road Law** is currently being re-drafted. Reviews by stakeholders are contributing suggestions to ensure that there is insufficient recognition of the current axle loading situation and consequences for road pavement and bridge damage. Furthermore, there needs to be provision for rational monitoring and control for tackling this problem.

Road Safety – 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) [7]. 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.

[7] WORKING PAPER 3 - Improving Road Safety, (Component 9), SEACAP 2, CAMBODIA Transport Mainstreaming Partnership, Intech-TRL, June 2005.

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.

Figure 5 – Road accidents are increasing alarmingly

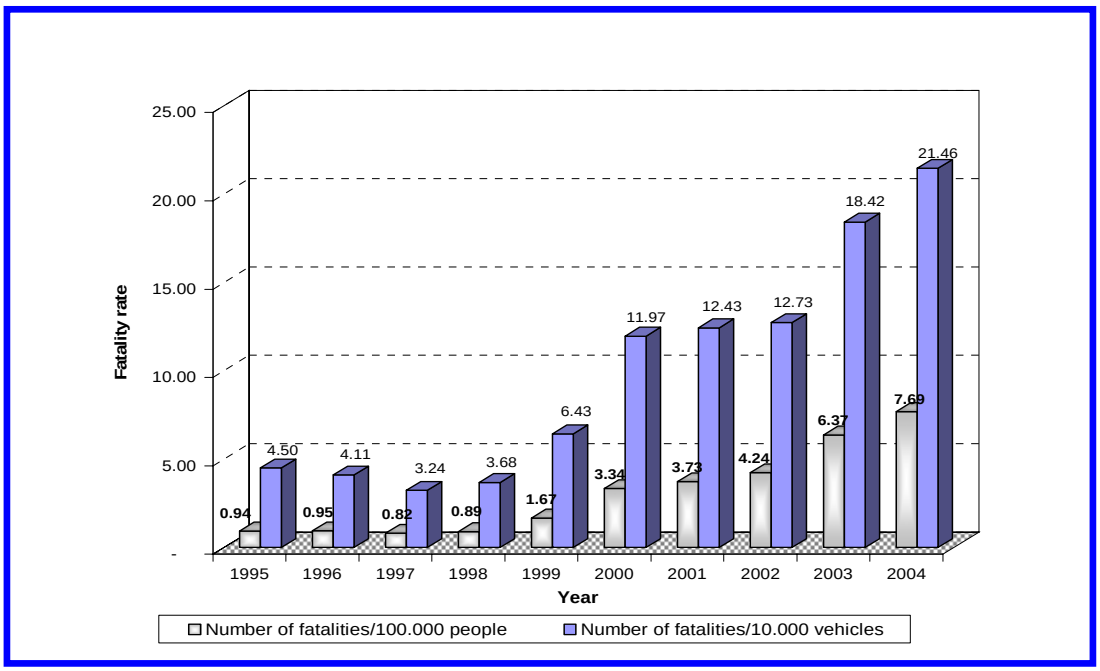


Figure 6 – Tends in traffic fatality rates, 1995 to 2004 (source: MPWT)

There are serious deficiencies in the **Human Resources** capacity and organisational arrangements in the road sector according to a recent SEACAP 2 report [8]. Initiatives are required to improve knowledge and performance.

Last but not least, in fact one of the first activities in the investment cycle, is the aspect of infrastructure **Planning**. Cambodia has developed good experience with systems such as the Integrated Rural Accessibility Planning (IRAP) developed by the ILO Upstream and NRDP projects. It is proposed to develop the current IRAP tool into an integrated planning and management system for rural transport infrastructure in Cambodia. The system will be developed based on the successful current system. Such an approach will require only modest resources and will be achieved with the involvement of the stakeholders, trialled, and then mainstreamed for the benefit of the rural communities throughout Cambodia.

With the background of these substantial challenges, but also opportunities, the key sector practitioners and stakeholders came together at the workshop to make contributions and discuss options for a more effective **Transport Infrastructure Management** approach in the future.

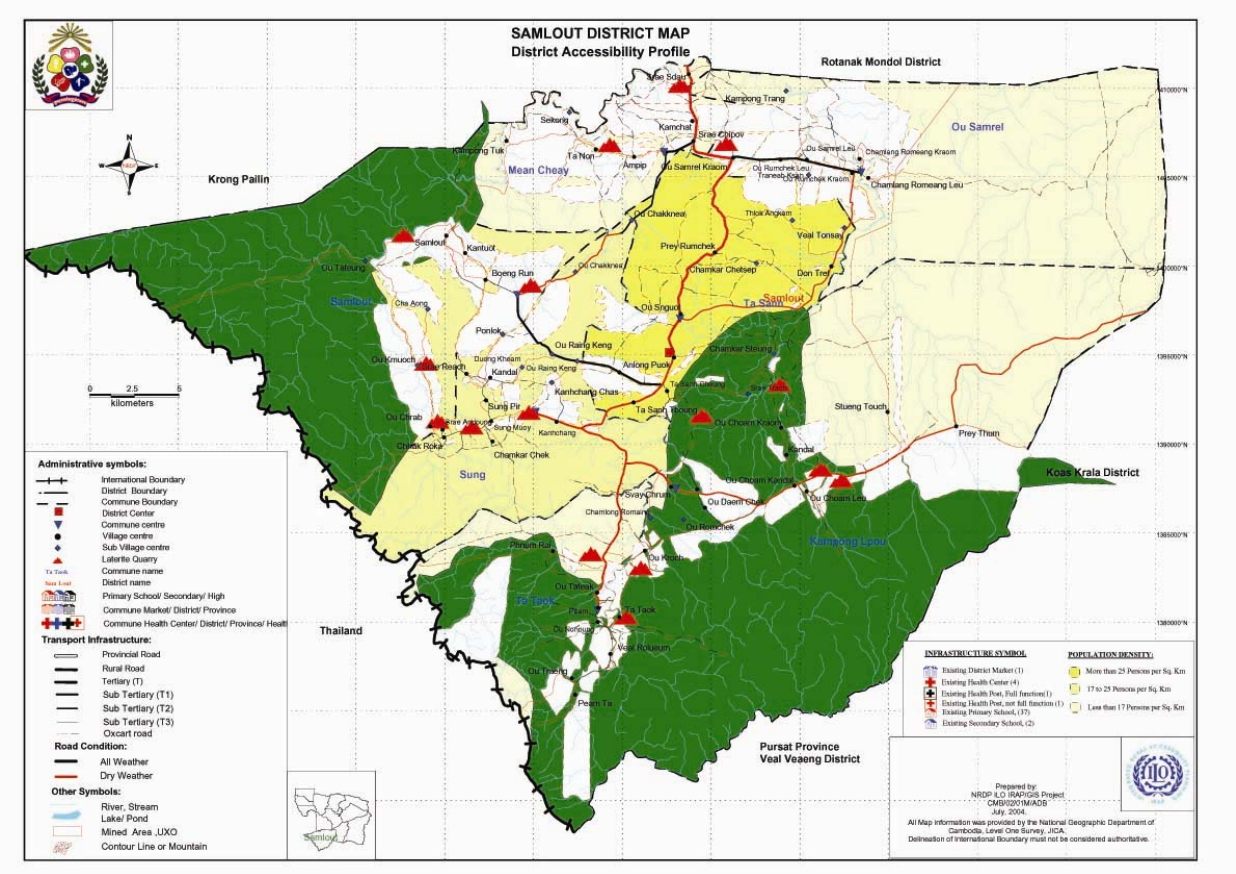


Figure 7 – Example Transport Infrastructure Inventory (TII) Mapping developed through Integrated Rural Accessibility Planning (IRAP)

8 WORKING PAPER 1, Human Resources Development Strategy, (Component 8), SEACAP 2, CAMBODIA Transport Mainstreaming Partnership, Intech-TRL, May 2005

3. THE WORKSHOP

The workshop brought together experts and practitioners from the Cambodian road management sector to make presentations and discuss the key issues relevant to the management of the national main and rural road assets. Selected Cambodian presentations were augmented by those of practitioners and positives experiences from Laos, Vietnam in South East Asia, and Kenya and Zimbabwe in Africa.

The Workshop Programme is contained in **Annex 1** of this Workshop Report.

Workshop introduction

H.E. Suos Kong, Secretary of State – MRD and Chairman of CNCTP introduced Honorable guests, distinguished delegations from Vietnam and Laos and national and international participants. He provided the audience with an introduction and background to the workshop theme and highlighted the importance of the workshop in the process of developing appropriate responses to the challenges ahead.

Official opening address

The opening remarks were addressed by **H.E. Luy Lay Sreng**, Deputy Prime Minister and Minister of the Ministry of Rural Development. The full speech is provided in Annex 3.

Session 1 - Cambodia Transport Mainstreaming Partnership

Chaired by H.E. Suos Kong, Secretary of State, MRD

After Deputy Prime Minister had delivered the opening address, the workshop had a coffee break before starting presentations of Session 1. This session was chaired by H.E. Suos Kong. H.E. Ngy Chanphal chaired the Session 2 in the afternoon.

Note: Details of PowerPoint Presentations are given in Annex 5.

PRESENTATION 1 - CNCTP BRIEFING

H.E. Suos Kong, Secretary of State MRD and Chairperson of the CNCTP presented an overview of The Cambodian National Communities of Transport Practitioners **(CNCTP)**; background, objectives and steps of the CNCTP development, expected outcomes and possible funding for short, medium and long term.

PRESENTATION 2 - OUTCOMES OF THE PLANNING & AXLE LOADING WORKSHOP

This presentation was delivered by H.E. Lim Sidenine of MPW&T. He presented the important recommendations and outcomes of the National Workshop on Road Planning and Axle loading help in November 2004. These

relate to important initiatives required to be taken relating to legal, road ownership, planning, design, quality control, road management, research and axle load control issues.

PRESENTATION 3 - MRD POLICY AND STANDARDS

The presentation was prepared by Mr. Yoeun Sophal, Director of Rural Road Department. Unfortunately he could not be available and therefore Mr. Var Synarong, an official from MRD, presented on his behalf. The presentation described the policy on rural roads developed by MRD and periodic updating. It also advised regarding the development of appropriate standards which is in process. Key policy and implementation issues to be addressed include: Harmonisation of National Transport Policy, road categorization, ownership and responsibilities, financing, planning, environment, maintenance, Use of LBAT and local resource based technologies and the move from the reliance on gravel to more sustainable surface types.

PRESENTATION 4 - SECTOR TRAINING NEEDS ASSESSMENT

The presentation was made by Dr. Om Romny, Deputy Director of the Institute of Technology of Cambodia – ITC. He made a presentation on Needs for Training and Capacity Building of the Sector for Cambodia. The constraints and challenges for the development of the human resources to satisfy the sector needs had been discussed at a recent workshop at ITC and supported by SEACAP 2. These were summarised by the presentation. A proposed Training Delivery Strategy was presented. The presentation also introduced the concept of a **Poverty Impact Audit System** (PIAS).

PRESENTATION 5 - MAINSTREAMING THE IRAP METHODOLOGY

Ms Keo Sun Sophany presented the background of the Integrated Rural Accessibility Planning (IRAP) methodology in Cambodia from 1998. The methodology was described, its beneficial features and the extent of its current application. There are a number of initiatives being taken to facilitate the expansion of the adoption of IRAP from the current provinces in the programme to a national uptake, and full integration in the provincial planning process.

PRESENTATION 6 - POUK LCS SURFACING TRIALS AND NRDP ROLL OUT

Mr Heng Kackada, Intech Cambodia made this presentation about the Puok Market Rural Road Surfacing Trials and how the experiences were being “rolled out” in large scale demonstration of some of the alternative surfacing techniques in the NRDP. The need for a Low Cost Surfacing Guidelines that use local resource based methods was described, along with some of the challenges facing designers of rural road pavements in Cambodia.

This session was brought to a close for the lunch. Therefore the presentation on Road Safety Initiative was moved into the afternoon session.

Before the first session was closed, there were discussions and exchanges of comments regarding the presentations made in the first session. Then, H.E. Suos Kong provided a summary and conclusions for session 1.

Session 2 - Towards a Road Transport Management & Maintenance Strategy

After the lunch break, the workshop reconvened for the presentations of Session 2 with the general theme "Towards a Road Transport Management & Maintenance Strategy". This session was chaired by H.E. Ngy Chanphal, Under Secretary of State, MRD. The session contained presentations of successful road safety, management and maintenance experiences and initiatives in Cambodia, Vietnam and Zimbabwe.

PRESENTATION 7 - ROAD SAFETY INITIATIVES

This presentation was made by Mr Jean Van Wetter, of Handicap International. It described the serious situation regarding road accidents and safety in Cambodia and Handicap International's involvement with initiatives to improve the conditions. The presentation described a number of road safety initiatives, progress so far and the stakeholders involved.

PRESENTATION 8 - DEVELOPING APPROPRIATE RURAL ROAD STANDARDS FOR VIETNAM

Dr Tam, of the Institute of Transport Science and Technology (ITST) described the challenges of the rural road sector in Vietnam. He presented the rural road surfacing trials in Vietnam being carried out by Intech-TRL and ITST. The research is being taken up and incorporated in the National Rural Road Standards under the guidance of a MoT Steering Committee

PRESENTATION 9 - SEILA-PLG COMMUNITY MAINTENANCE PARTICIPATION

Julian Abrams from the SEILA-PLG described how about US$8 million is being spent on road works in communes in Cambodia under the the SEILA-PLG initiative, He described the challenges of developing sustainable maintenance arrangements and some of the initiatives made to address the current situation.

PRESENTATION 10 - CAMBODIA ROAD MAINTENANCE CHALLENGES

Mr Bun Veasna of the World Bank described some of the challenges faced by the Royal Government of Cambodia in rehabilitating and developing the main and rural road networks. The key challenges identified include development of effective maintenance and management systems, transparent funding and

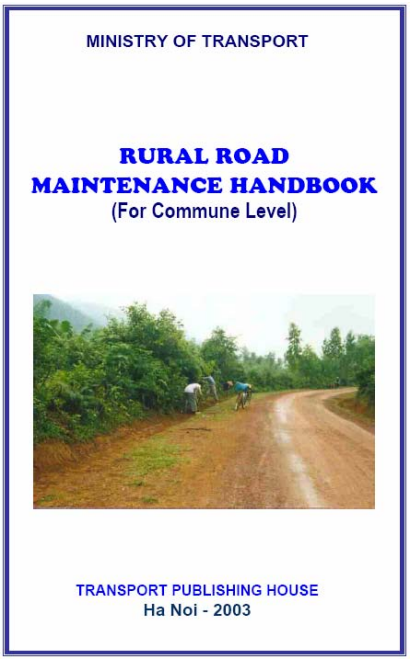
management systems, developing a competitive contracting environment, institutional strengthening and capacity building, appropriate policies and strategies. He described the World Bank's role in supporting these initiatives.

PRESTATION 11 - ROAD TRANSPORT INFRASTRUCTURE MANAGEMENT SYSTEM - TIMS

Mr Doekle Wielinga from ILO presented the current identified legal, responsibility, planning, funding, capacity, standards and technology constraints to effective management of the rural road infrastructure. He described current initiatives and proposals for developing an effective Transport Infrastructure Management System (TIMS) from the IRAP system currently in use.

PRESENTATION 12 - THE VIETNAM RURAL ROAD ROUTINE MAINTENANCE SYSTEM

Mr Pham Gia Tuan of Intech-TRL presented the Rural Road Routine Maintenance system developed by the Ministry of Transport Vietnam, with the assistance of WSP under a DFID funded technical assistance programme.



Tuan described the development of the routine maintenance system from consideration of local models of successful practices combined with international experience. The system was developed in a consultative process under the World Bank and DFID funded Rural Transport 2 (RT2) project. The features and management responsibilities of the system were described as well as the development of the Commune Handbook training programme designed to disseminate and "mainstream" the routine maintenance system.

PRESENTATION 13 - ZIMBABWE RURAL ROAD ROUTINE MAINTENANCE SYSTEM

This presentation was prepared by Kingstone Gongera, Chief Engineer of the District Development Fund (DDF) in Zimbabwe, and Robert Petts of Intech Associates. The presentation described an established and successful routine maintenance system for the 25,000km DDF network of rural gravel roads in Zimbabwe. The system is based on the use of agricultural tractors and local unskilled labour and costs only US$260/km/year, including overheads. The presentation provided the reasons for the success of the system. Full details are available from www.gtkp.org in the paper:-

A tractor and labour based routine maintenance system for unpaved rural roads, Gongera and Petts, 2003.

Discussion, Summary and Conclusions for Day 1

Before first session come to close, there was discussions and exchanges of comments regarding the presentations presented in session 2. Then, H.E. Ngy Chanphal provided a summary and conclusions for session 2.

Session 3 - Developing a toolkit for improved Road Transport Management

Chair by H.E. Suos Kong, Secretary of State, MRD. This session started with opening comments in summary from day one, then the chairman invited presenters to shared experiences with the audience. Presentations of successful management and maintenance experiences and initiatives in Cambodia, Laos PDR and Kenya were made.

PRESENTATION 14 - LAOS COMMUNITY PARTICIPATION IN RURAL ROAD MAINTENANCE

Mr Somnuk Mektakul from the Lao PDR Ministry of Communication Transport Post and Construction, made the presentation on the Road maintenance Fund which became operational in 2002. The presentation described the various road sector programmes and the features of the fund. He described the road maintenance activities, including various initiatives to develop the involvement of the rural communities.

PRESENTATION 15 - KENYA *ROADS 2000* EARTH ROAD REHABILITATION AND MAINTENANCE

The ***Roads 2000*** experiences in Kenya from pilot through to national implementation were presented by Robert Petts. From identification of the

range of maintenance constraints on the road network, through reasons why the traditional approaches to road maintenance have failed, and adoption of local resource based methods, the ***Roads 2000*** approach was described. The features of the programme were described and the current staus of the initiative.

PRESENTATION 16 - IRAP ACHIEVEMENTS AND NECESSARY SYNCHRONIZATION WITH LPP

This presentation was made by Ith Leour of the NRDP. The features of the Integrated Rural Accessibility Planning (IRAP) approach were described and its application in the four provinces of the North Western Rural Development Project. The Achivements were described and the challenges of integrating the IRAP into the Provincial Planning process.

PRESENTATION 17 - PROPOSALS FOR A PILOT DEMONSTRATION & TRAINING PROJECT

Proposals for a pilot Demonstration and Training project for rural road maintenance were presented by Robert Petts. He described the current maintenance constraints and challenges in Cambodia. A two pronged strategy is proposed which would have components to reduced the maintenance burden, and also increase maintenance capacity. The approaches are based on the use of local resource based technologies and a partnership of the sector stakeholders.

Discussion summary and Conclusions

Before the third session was closed, there were discussions and exchanges of comments regarding the presentations made. Then, H.E. Suos Kong provided a summary and conclusions for session 3.

WORKING GROUP SESSIONS

After the presentations and questions requesting further information and clarification by the participants, the workshop programme proceeded to working group activities. Participants were spit in to three groups. Three topics were proposed for discussion. Each group selected 2 preferred topics from the three proposed. The subjects for working groups were:

- **Subject 1**: Mainstreaming IRAP and aligning it with de-centralisation and de-concentration strategies – proposals and actions.
- **Subject 2**: Developing a Road Transport Infrastructure Management Strategy/System (TIMS) in Cambodia – requirements & actions.

- **Subject 3**: Implementation options and arrangements to achieve effective, affordable road maintenance – research and trial proposals.

The groups were asked to select two of the three topics for discussion. The Groups were also asked to select their reporter to record debate and deliver for presentation to the whole assembled workshop.

Annex 4 contains the Workgroup outputs.

CONCLUDING REMARKS & Official closing of the workshop

After the working group presentations, there were exchanges of questions and comments on the outputs of the group works. The workshop then proceeded to the concluding and closing session. This concluding and closing remarks were given by H.E. Suos Kong, who advised that the various stakeholders should take note of the many positive experiences gained in Cambodia and the other countries presented, and cooperate to take up the various recommendations of the workshop to improve the management of the Transport Infrastructure in Cambodia. CNCTP would actively support these initiatives.

SITE VISIT

A site visit had been organized for the overseas participants:

- 25 June 2005 both Laotian and Vietnamese delegations visited the Pouk Market Low Cost Surfacing Trails in Siem Reap Province.
- 27th June 3005 Rural Road Department of MRD organized a site visit for Laotian delegations to experience the Cambodia rural network in Kandal province, 40 kms away from Phnom Penh capital.

Figure 8
Delegations observe application of SBST

SEACAP- 8
Puok LCS Phase II

ANNEXES

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Annex 1
Transport Infrastructure Management Workshop

Cambodiana Hotel, Phnom Penh – Cambodia
23 - 24 June 2005

WORKSHOP OBJECTIVES

1. Exchange knowledge on CNCTP, SEACAP 2 progress, IRAP mainstreaming and other initiatives
2. Develop Road Transport Infrastructure Management and Maintenance Strategy

AUDIENCE

- CNCTP National Committee members
- Selected key decision makers

- Maximum 60 persons, including key donor representatives.

PROGRAMME

23rd June 2005

8.00 – 8.30 Registration
8.30 – 8.40 Official Opening (H.E. Lu Laysreng)

Session 1: Cambodia Transport Mainstreaming Partnership
Chair: H.E. Suos Kong, Secretary of State, MRD

8.40 – 9.00 CNCTP Briefing (H E Suos Kong)
9.00 – 9.20 Outcomes of the Planning & Axle Loading Workshop (Lim Sidenine, MPWT)
9.20 – 9.40 MRD Policy and Standards (Yoeurn Sophal, MRD)

10.00 – 10.30 Refreshment Break

10.30 – 10.50 Sector Training Needs Assessment (Om Romny, ITC)
10.50 – 11.10 Mainstreaming the IRAP Methodology (Ith Loeur, Director NRDP)
11.10 – 11.30 Surfacing Trials: Puok and NRDP roll out (Heng Kackada, Intech Cambodia)
11.30 – 11.50 Road Safety Initiatives (Jean Van Wetter, Handicap International)
11.50 – 12.30 Discussion, Summary and Conclusions

2.30 – 14.00 Lunch

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Session 2: Towards a Road Transport Management & Maintenance Strategy
Chair: H.E. Ngy Chanphal, Under Secretary of State, MRD

14.00 – 14.20 Developing Appropriate Rural Roads Standards for Vietnam (Dr Tam, ITST)
14.20 – 14.40 SEILA-PLG Community Maintenance Participation (Julian Abrams)
14.40 – 15.00 Cambodia Road Maintenance Challenges (Bun Veasna,WB)

15.00 – 15.30 Refreshment Break

15.30 – 15.50 Road Transport Infrastructure Management System: TIMS (Doekle Wielinga)
15.50 – 16.10 The Vietnam Rural Road Routine Maintenance System (Pham Gia Tuan)
16.10 – 16.30 Zimbabwe Rural Road Routine Maintenance System (Kingstone Gongera)
16.30 – 16.50 Discussion, Summary and Conclusions

24th June 2005

Session 3: Developing a toolkit for improved Road Transport Management
Chair: H.E. Don Sammoun, Secretary of State, MRD

8.30 – 8.40 Day 2 Opening Comments
8.40 – 9.00 Laos Community participation in Rural Road Maintenance (Somnuk Mektakul)
9.00 – 9.20 Kenya ***Roads 2000*** earth road rehabilitation and maintenance (Robert Petts)
9.20 – 9.40 IRAP achievements and necessary synchronization with LPP (Ith Loeur)
9.40 – 10.00 Proposals for a Pilot Demonstration & Training Project (Robert Petts)
10.00 – 10.20 Discussion & Summary and Conclusions

10.20 – 10.45 Refreshment Break

WORKING GROUP SESSIONS (rest of morning and afternoon) & Plenary presentations

- ❑ Mainstreaming IRAP and aligning it with de-centralisation and de-concentration strategies – proposals and actions
- ❑ Developing a Road Transport Infrastructure Management Strategy/System (TIMS) in Cambodia – requirements & actions
- ❑ Implementation options and arrangements to achieve effective, affordable road maintenance – research and trial proposals.

12.00 – 14.00 Lunch

Workgroup Sessions continued

14:45 – 15.45 Presentation of workgroups recommendations; plenary discussion

15.45 WORKSHOP RECOMMENDATIONS – H.E. Suos Kong

16.00 CLOSING REMARKS – (H.E. Suos Kong)

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Annex 2 LIST OF WORKSHOP PARTICIPANTS

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ANNEX 3

KINGDOM OF CAMBODIA
MINISTRY OF RURAL DEVELOPMENT

Speech

Transport Infrastructure Management
Workshop

H.E. Luy Lay Sreng
Deputy Prime Minister
Minister of Rural Development
Cambodia

23 June 2005
Cambodiana
Phnom Penh

"Transport Infrastructure Management in Cambodia"

On the occasion of the Workshop Official Opening Ceremony

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Good Morning Excellencies, Okhna, Distinguished Participants,

First of all let me express my heartfelt gratitude to all Excellencies, Okhna, Honoured Guests to have made time to attend this two day event.

I especially would like to welcome Excellencies and representatives form sister ministries, especially:

Ministry of Economy and Finance
Ministry of Panning
CDC

I would like to warmly welcome Representatives of the Donor Community:

The Asian Development Bank;
The World Bank;
The Department for International Development (DFID)
JICA

I wish a special warm welcome to other important institutions that are participating in the workshop including representatives of:

Cambodian Chamber of Commerce
EIC
ITC

I wish to thank Members of the National Committee of the Cambodian National Community of Transport Practitioners (CNCTP) for attending and its secretariat for organizing the workshop with the assistance of the International Labour Organization (ILO) and Intech Cambodia.

Excellencies, Ladies and Gentlemen,

Both Ministries; The Ministry of Rural Development and the Ministry of Public Works and Transport jointly prepared this event and despite the different backgrounds both Ministries have one common purpose related to this workshop: the development and management of a good, safe and lasting transport network in Cambodia

Both Ministries are working under the overall policy framework as set out by Prime Minister Hun Sean: The Cambodian Rectangular Strategy. This strategy, developed by the new coalition government in 2004, aims to articulate the development vision and approach to achieve poverty reduction and reach the Cambodian Millennium Development Goals. Of central importance to this workshop are the two growth areas:
Physical infrastructure and ***Private Sector Growth and Employment Generation***

The Royal Government of Cambodia has delegated to Ministry of Rural Development the responsibility for the development of the rural roads in the Kingdom. By rural roads we

mean tertiary and sub-tertiary roads. These are roads that connect district centers and connect to the higher order of roads. Usually these roads have few cars and trucks but often they have many people traveling by foot, by bicycle, by ox cart and by motorcycle.

The investment in rural roads and rural transport infrastructure will represent the major portion of our investment in rural development. These investments will often be financed through the international development banks in the form of loans. That is the Royal Government will borrow from the banks to develop the rural roads in the Kingdom.

These investments are well justified because an efficient rural transport system is a necessary pre-condition for the social and economic development of the rural areas of the country where many of our less well off people are found. We need to facilitate the movement of people, goods and information if we are to achieve our goals for national development. For our farmers to produce surpluses we need to make sure that they are able to move their surpluses to markets at competitive costs. Please remember that goods only have value to the extent that they can be moved.

The major challenge that we face is safe guarding these large investments through a program of systematic cost effective maintenance. Maintenance programs take many years to establish, the World Bank in 1981 estimated that they might take as long as 15 to 20 years. There are four main building blocks that must be assured for a successful maintenance program. They are:

1 The designation of legal ownership of the roads;
2 The designation of the responsibility for the maintenance of the roads;
3 The design of a management system to maintain the roads;
4 The flow of adequate and stable funds to finance the maintenance of the roads.

Of these four building blocks it is the development of financing mechanisms that is the most difficult to achieve. The international development banks are prepared to lend the Government money for the construction of roads, but they are usually not willing to lend money for the financing of the recurrent maintenance costs.

Our reality is that we will face difficulties in financing the required maintenance of these rural roads. The worst scenario is that we borrow money to build the roads and then find we are unable to finance the maintenance of the roads. In the future this would leave us in the situation where we must pay back the money borrowed to build the roads. At the same time the roads are deteriorating and in turn reducing the economic potential to finance the loan repayments. Truly this is a downward and wasteful cycle. It is one that we certainly cannot afford.

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Excellencies, Ladies and Gentlemen,

Today Cambodia as at a cross-road: the Cambodian Government has reached a point at which the transport network has gradually developed and expanded both at national level as in the rural areas. Nowadays we can reach Siem Reap in 4 to 5 hours, provided that we drive safely, five years ago the travel time would be more than double! Nowadays we can reach remote districts in Battambang, such as Samlout, 5 years ago this was still unthinkable!.

The developing road network facilitates economic development and territorial integration of our country. The ever increasing kilometres of roads also pose a difficult question for us. It is now that we need to decide from the cross-road that we are at which direction we will take that lead us into the future. Do we decide to construct more roads and connect more areas to the national economy or do we decide to invest in maintaining the assets that we have. The first road will benefit new areas and more isolated people but has the danger that while we construct new roads the existing ones will deteriorate behind our backs. The second road will lead us to the difficult task to define ownership of the road network and develop financial mechanisms that preserve.

So what kind of strategies should we develop to reduce the risks that I have outlined?

First of all I think we need to have good solid plans. Plans that include the voice of the rural people and are technically sound. Since 1999, with assistance of the ILO, the MRD has introduced Integrated Rural Accessibility Planning (IRAP). This application resulted to be so successful that Samdech Hun Sen, in his 2001 Speech at the Annual Meeting of the MRD, instructed the Ministry adopt IRAP as the planning tool of choice and to apply it nationwide. Currently both Development Banks have included this participatory infrastructure planning tool into transport infrastructure and rural development projects. IRAP has become common practice in the north-west of the country and well accepted at district and province level. The challenges ahead are in its sustainability at the provincial level and integration and synchronization with the provincial planning process. The ongoing discussion on the new organic law provides a good opportunity to realize this.

I believe that one also must examine carefully the choice in technology used in the initial investment to construct the road. One should choose the technology that enables Cambodian private sector local contractors to implement the works and a technology that enables an optimum in employment generation for the local population. This is why the MRD has adopted Labour Based Appropriate Technology (LBAT) as the preferred technology of choice for road rehabilitation and maintenance.
One should also choose a technology that will result in the lowest whole life costs, not just the lowest initial construction costs. In many cases it will be wiser to spend a little more at the outset and thereafter have lower recurrent maintenance costs over the life of the asset. Not only lower costs but a lower institutional and management burden on the Ministry is also desired. Such a strategy corresponds well to the reality concerning the availability of funds. Funds are often more readily accessible for the construction of assets in comparison to the maintenance of those assets.

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Last but not least I strongly believe that we have to develop within both ministries management systems that enable the technical staff to provide us with accurate information on the extent and condition of the road network and the funds required to preserve the road network. At the same time financing mechanisms at national level as well as local level must be strengthened, operationalized and implemented.

This brings us to the subject of this workshop: Transport Infrastructure Management. It is clear that you have an excellent line up of presentations by many of the leading thinkers in this field. I thank them for coming here to share their knowledge with us.

If I may offer one small suggestion to you: please remember not only the hard engineering technical considerations of road and transport development, but also remember the importance of transport for the social and economic concerns of the rural people. Our studies in Cambodia lead us to realize that the transport network has a huge impact on many aspects of the lives both in the cities, where commerce and industries is concentrated which form the driving force of the urban society nut also of the rural people, especially our rural poor. We need to make sure that the transport network is developed and designed to serve the real transport needs of urban and rural people. Especially important for the MRD is that we must design our programs so that the maximum possible benefit is gained by the rural people. Our strategies and programs must be pro poor

I would like to add one more point. I am pleased that the Institute of Technology of Cambodia is participating in the workshop. It is clear to me that improving the capacity of our technical people to take on the challenges of developing Cambodia is crucial. We need a strong Institute with the right program for Cambodian Engineers and Technicians. Beyond this, I envision the Institute as a place where we in the public sector and those in the private sector can look to for the upgrading of our skills. We wish to see Cambodian solutions developed for Cambodian technical problems.

I wish all of the participants a successful workshop and I look forward to the outcome of your efforts.

I declare the workshop open.

ANNEX 4 WORKGROUP OUTPUTS

Key notes of Presentation From Group 1

This group was facilitated by Ms. Keo Sun Sophany, ILO-IRAP Specialist. The group selected Subject 1 of Mainstreaming IRAP and aligning it with De-centralisation and De-concentration strategies – proposals and actions for their debate. Output of the group was presented by Mr. Srey Polrath, Official of MRD & ILO-IRAP Counterpart.

Part 1: Mainstreaming IRAP

The group identified four factors as constraints & challenges to mainstreaming IRAP and aligning it with De-centralisation and De-concentration strategies:

- Application Programme.
- Uniformity.
- Human Resources.
- Funding.

To overcome those constraints, the group proposed the following actions:

- Action 1 - Develop Operation Manual so that not only IRAP project personnel but other organisations that are willing to adopt IRAP will follow same rules and procedures.
- Action 2 - Consultative meetings are needed to get feed back from IRAP clients such as provincial and local governments and others who will use IRAP outputs.
- Action 3: Governmental Approval: The MRD IRAP unit needs endorsement from the government e.g. issuing sub decree on its establishment
- Action 4: Staff training: There is need for training & capacity building and transfer for individuals as well as the institutions which will eventually replace the ILO-IRAP technical assistance role.
- Action 5: Ensure sustainable funding. The IRAP institution needs allocated and regular funding to keep it operational and its database up to date.

Who shall be involved for each action?

- MRD shall be active in promoting the IRAP unit. With ILO technical assistance an operation document can be produced
- Dialogue between MRD, MoI and MoP is envisaged to harmonise the IRAP planning tool.
- Council of Ministers to be involved in approval of establishment of IRAP unit and fund allocation.
- Other consultants could be involved in development of technical or related documents.

Part 2: Integration IRAP and LPP

Constraints/ Challenges:

- Knowledge/ understanding: Broadening dissemination of IRAP methodology is needed. Sharing knowledge and mutual understanding between MRD and MoI will accelerate the integration process.
- MRD and MoI cooperation involving: Ownership of the planning tools indicates dialogue between the two ministries is essential.
- Decision maker (Government).
- Resource (Human, Technical, Facilitator): Current High skill staff resources are inadequate.
- Willingness: When both ministries are willing to make the integration happen, they must promote the actions to be taken.

Action to be taken:

- IRAP introduction paper: Producing and disseminating such material to stakeholders would help understanding of the planning tool.
- Consultative meeting: To follow up the trial undertaken last year, meetings should be organised at which stakeholders discuss the integration procedure.
- Governmental Approval
- Staff training
- Funds: Should be available to carry out defined integration activities

By Whom:

- MRD, MoI and ILO
- MRD, MoI and MoP
- Council of Ministers
- Other consultants

Key notes of Presentations From Group 2

This group was facilitated by Mr. Ith Loeur, Director of the Provincial Department for Rural Development of Banteay Meanchey Province and Director of the NRDP Project. The workgroup selected subject 2 and subject 3 for their debate. Output of the group was presented by Mr. Somnuk Mektakul, Deputy Director of Local Road Division – MCTPC, Lao PDR.

Subject 2: Developing a Road Transport Infrastructure Management Strategy/ System (TIMS) in Cambodia – requirements & actions

This group recommended subject 2 shall have components which:

- Focus on both construction projects and maintenance projects
- Focus on alignment and network management
- Balance of construction project and maintenance management

- Improve management for sustainable network (Short, middle, long term)

Requirements and Action:

- Identify decision marker(s) and sensitize to their needs; such as politicians, MEF, Police, Road user representatives.
- Support to road authorities for change in donor philosophy from donor driven to client driven.
- Help to establish a dedicated and independent Road Maintenance Fund (RMF) for management & operational costs of MRD. E.g. as Laos PDR case, where road maintenance funds are allocated and transferred to MCTPC (Ministry of Construction Transport and Post Communication).
- Till now World Food programme, through Food for Works Programme, are actively involved in road rehabilitation only (earth roads). The group initiates and recommends if it would be possible for WFP to be involved in road maintenance also and establish Food for Road Maintenance Programme.

Subject 3: Implementation options and arrangements to achieve effective, affordable road maintenance – research and trial proposals.

Mr. Somnuk Mektakul shared experiences from Laos PDR:

- RMP2: Maintenance and rehabilitation (NR, PR)
- LSRSPIII: D+RR BA
- JSDF :27 options (6 main options)

The team also recommended that road projects in Cambodia shall:

- Apply a uniform maintenance standard.
- Apply Quality-Based, Maintenance contracts for on-going projects.
- Develop links and synergy the on-going projects in the region.

Key notes of Presentation From Group 3

This group was facilitated by Mr. Var Synarong, MRD official. The group selected Subject 2 for their debate. Output of the group was presented by Mr. Mike James, Roughton International – SEACAP 17, Laos.

Subject 2: Developing a Road Transport Infrastructure Management Strategy/ System (TIMS) in Cambodia – requirements & actions

The workshop participants recommended the following initiatives to be taken regarding the development of a Road Transport Infrastructure Management Strategy/System (TIMS) in Cambodia:

- **Planning:** this should involved data collection with close collaboration with Communes. The current constraint at planning stage is to develop Village Development Committee (VDC) capacity (60% of villages have VDC).

- **Budgeting**
  - MRD must develop clear strategy for allocating Maintenance funds.
  - Any new MRD Maintenance Management System initiatives should be compatible with a TIMS approach.

- **Implementation**
  - MRD should have appropriate road standards and specifications.
  - Promote and support local contractors.
  - Promote LBAT where suitable and cost effective for employment creation.

- **Maintenance Options and Arrangements**
  - Length person, large and small contractor (payment systems to be refined).
  - Encourage participation from charities, Monks, villagers.
  - Encourage equitable voluntary contributions of labour or material in appropriate circumstances.
  - Restrict access to heavy vehicles (Close roads during wet periods and have an effective axle loading control mechanism).
  - Promote road ownership and community participation
  - Promote contributions and toll collection for road maintenance if transparent and cost-effective.
  - Decentralise road management to Community Level.
  - Investigate alternative sustainable pavements (higher initial cost/less maintenance burden)
  - Expand surfacing trials and disseminate to other provinces.