

**ADB/gTKP/SEACAP TRANSPORT FORUM**

**Asia on the Move:  
Energy Efficient and Inclusive Transport**

**Manila, Philippines**

**9 – 12 September 2008**

**Report on the presentations and discussions in the  
Rural Transport Theme Sessions**

**by Tony Greening**

**on behalf of DFID/SEACAP**

**Report on Presentations and Discussions**  
**in the Rural Transport Sessions of the Transport Forum**  
**Asia on the Move: Energy Efficient and Inclusive Transport**

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## **ASIA ON THE MOVE: Energy Efficient and Inclusive Transport Rural Transport Sessions**

### **INTRODUCTION**

This is a report on the presentations and discussions in the Rural Transport Theme of the “Asia on the Move” Energy Efficient and Inclusive Transport Forum held in Manila, Philippines on 9 to 12 September 2008 and sponsored by the Asian Development Bank, the Global Transport Knowledge Partnership and SEACAP

The forum programme consisted of plenary sessions that covered the broader transport issues and theme sessions on Climate Change, Rural Transport, Urban Transport, Governance, Inclusive Transport and Social Development, Road Safety and Finance.

The forum began with two plenary sessions followed by parallel theme sessions and a wrap-up plenary on the final day.

### **Plenary Session 1 and 2**

The Asia on the Move Transport Forum was introduced by Woochong Um, Director of the Energy, Transport and Water Division of the Asian Development Bank (ADB) and was followed by welcome and opening remarks by Ursula Schaefer-Preuss of ADB, Tony Ridley of the global Transport Knowledge Partnership (gTKP) and Peter O’Neill of the UK Department for International Development (DFID). The forum opening address was delivered by Shri Jaipal Reddy, Minister of Urban Development in India.

These presentations described the problems faced by the transport sector, the current activities being carried out and the future plans of ADB, DFID and the World Bank to help solve them.

Full details of these presentations are available on the Forum CD.

### **Highlights of the presentations in Plenary Session 1**

#### ***Introduction by Woochong Um***

Mr Um welcomed the participants to Manila and to the forum and explained that the purpose of the forum was to highlight problems in the transport sector and to discuss possible solutions.

### ***Welcoming Remarks by Ursula Schaefer-Preuss***

Approximately 250 delegates from 30 countries are participating in the forum which will contribute to the emerging challenges in the transport sector in Asia. It co-incides with the release of the ADB strategic framework Strategy-2020 defining ADB's goals and vision – an Asia-Pacific region free from poverty. Transport is 30% of ADB lending since 2006 with the aim of contributing to inclusive socio-economic growth, improved rural accessibility and mobility for the poor through affordable rural transport solutions.

Motorization growth is 10% per annum in Asia and environmentally sustainable transport is essential to protect the environment and address climate change and the explosive growth in Greenhouse Gas Emissions (GHGE's). ADB is supporting developing countries to mitigate the effects of climate change through a policy of climate proofing in transport and infrastructure projects. Regional cooperation is needed to address the social consequences arising through changing travel patterns. ADB will focus on environmentally sustainable, energy efficient and safe transport and the concept of transport for all.

### ***Opening Remarks by Tony Ridley***

gTKP is an innovative partnership working through existing initiatives established by its partners to make effective use of available knowledge and increase the capacity of less developed countries to access and apply knowledge and good practice. gTKP is a global organisation providing opportunities for networking between practitioners and the building of partnerships through its website.

Road infrastructure is essential for developing countries to compete in world trade. The urban population in Asia is increasing and by 2020 four billion people are expected to be living in 2,500 cities with a populations exceeding 100,000. Problems associated with pedestrian movement, provision of adequate public transport services, climate change, use of bio-fuels and the impact of energy prices need to be solved. Transport contributes to 25% of GHG emissions. Change is needed now to have an impact by 2020. gTKP can contribute by making knowledge and evidence of good practice available to policy makers through the Technology, Infrastructure and Planning Resource Centre (TI-UP).

gTKP is overseen by an international steering group headed by Tony Ridley with the thematic areas led by theme champions headed by Charles Melhuish. These are:

- **Road safety** (Adrian Walsh)
- **Rural transport** (Robert Petts)
- **Social development** (Xochitl Benjamin)
- **Environment & climate change** (Sanjivi Sundar)
- **Governance** (Stephen Vincent)
- **Urban transport** (Peter Midgley)
- **Finance & economics** (Lynn Harmon)

Individuals and organisations registered with gTKP ([www.gtkp.com](http://www.gtkp.com)) can access information on events and obtain support and advice through its theme champions, website, helpdesk and newsletters.

### ***Opening remarks by Peter O'Neill***

Transport consumes 20% of DFID funding on projects that are considered to give value for money, are appropriate, sustainable and environmentally sound. Projects include research, guidance notes and partnering with international organisations in activities across a wide spectrum of activities in the transport sector. DFID is contributing to the achievement of the Millennium Development Goals (MDG's) of 'transport for all' and 'access for all' through programmes that optimise the transport impact on poverty. The themes it is supporting in gTKP are aimed at promoting knowledge sharing activities and the implementation of good practice in the transport sector.

DFID is currently supporting the South Asia Community Access Programme (SEACAP) in partnership with the WB, ADB and local country partners. A similar programme (AFCAP), has begun in Africa in partnership with the WB-supported Sub-Sahara Transport Programme (SSATP) and other stakeholders.

Future plans include the expansion and independence of gTKP, support for mainstreaming evidence-based outcomes from SEACAP, growth of AFCAP and convergence and cooperation with the WB on TRS. Future activities will also include those supporting the UK "White Paper 3" priorities for promoting growth through good governance and sustainable policies and infrastructure. Support will continue for ADB and the WB, with the private sector through PPP's and other organisations to develop innovative policies, strategies and technology.

### ***Keynote Address by Shri Jaipal Reddy***

India is one of the emerging urban economies in the world with the contribution to GDP changing from agriculture to tertiary and manufacturing sectors. Indian cities are growing at a fast rate with an urban population of 310 million people and 5,161 cities and towns. The presentation described the National Urban Transport Policy 'to move people' rather than vehicles and to ensure safe, affordable, quick, comfortable, reliable and sustainable access.

The policy offers guidelines and financial and fiscal incentives to the States and cities for designing their urban transport strategies. State governments adopt and adapt the policy in their urban centres to prioritise public transport, non-motorised transport and pedestrianisation. Bus services in Indian cities are poor which deters use of public transport.

The Central Government in India is setting up an ITS-enabled modern city bus service with a stress on quality whilst introducing measures such as higher parking costs designed to encourage the use of public transport and Metro Rail projects are planned

The key challenge will be a paradigm shift in the way we view urban transport by (a) keeping the interests of the pedestrians/cyclists at the core of all urban infrastructure and transport projects and (b) aligning the land-use and urban planning with the transport requirements.

## **Highlights of the presentations in Plenary Session 2**

This session began with presentations by Manmohan Parkash on the ADB Transport Vision 2020 and by Marc Juhel on the Safe, Clean and Affordable Transport for Development World Bank Transport Business Strategy. Each of the gTKP theme champions then presented an overview of the various theme sessions.

### ***ADB Transport Vision 2020 by Manmohan Parkash***

Growth rates in Asia have increased by 6% since 1999. A 27% share of global exports by 2006 has resulted in an increased middle class and declining poverty. Transport is an intermediate service industry providing added value and contributing to economic growth. There is a close link between transport and development. The motorisation rate is expected to triple by 2050 and modes of passenger and commercial traffic will increase. The population in the PRC is expected to rise by 13% and in India by 37% in the period from 2000 to 2025 with a doubling of the urban population in Asia/Pacific region, which has 50% of the world's poor, 200 cities of over 1 million people and 10 of the world's 25 largest cities.

Other statistics were presented that indicate the way in which vehicular ownership and energy consumption are expected to grow over the next decades together with congestion and GHG emissions. Global warming will adversely affect economic growth in cities and economies. ADB's 2020 strategy is for an environmentally sustainable transport system that is inclusive to help achieve equitable development, improve the quality of life through economic growth and eradicate poverty.

A paradigm shift is needed to promote environmentally sustainable transport and shift the focus from mobility to accessibility with the long term goal of decoupling transport demand from population and economic growth and a short term goal of reducing the rate of energy demand and CO<sub>2</sub> emissions. ADB assistance is planned to be 1% of the expected \$2-3 trillion investment in transport up to 2020, to act as a catalyst for change and help make Asia a great place to live, work and do business.

### ***Safe, clean and Affordable Transport for Development: World Bank Transport Business Strategy by Marc Juhel***

1.2 billion people do not have access to an all-weather road. 40% - 60% are more than 8kms from a health centre. Approximately 3,000 people die each day in road accidents with 85% of these in developing countries. Transport costs are 9% of export values in developing countries compared with 4% in developed countries. Transport contributes 15% to global GGE's and more cars are expected to be built in the next 20 years than in the last 110 years.

Transport is now recognised as a key ingredient to achieving the MDG's and is key for inclusive, sustainable globalisation to overcome poverty, promote growth, access challenges in fragile states and for Public Private Partnership (PPP).



Safe clean and affordable transport that gives access to social services and opens up rural communities supports development. The WB plan for 2009-2012 includes key strategies to drive this process. The WB will catalyze increased support for transport investment accompanied by governance and anti-corruption measures.

The WB intends to deepen engagement in rural roads and urban highways to provide roads that perform, are affordable and enhance transport for trade whilst addressing issues of road safety, GGE's and HIV/AIDS and climate change. Adjustments will be made to process increase lending, enhance dialogue, extend knowledge sharing and improve monitoring and evaluation and capture synergies across WB sectors.

In East Asia/Pacific focus will be on transport capacity and efficiency, regional integration, PPP financing, road safety, urban transport and air quality. In South Asia focus will be on trade and transport facilitation, expanding rural access, urban transport and disaster mitigation. The next steps are dissemination of the business strategy, operational guidelines and progress reporting on implementation.

### ***Overview of the forum by the gTKP theme champions***

Each theme champion gave a very brief overview of the key areas to be discussed in the theme sessions.

### ***Overview of the Rural Transport Theme sessions by David Salter***

It was explained that the presentations in the rural transport sessions were aimed at stimulating awareness and discussions on the major issues in the sector, including poverty reduction, the needs of rural people, sustainability issues and on what more needs to be done.

Specific aims included identifying problems of sustainability, emerging solutions and the critical gaps in knowledge.

Theme presentations and discussions were grouped under the sub-headings of Access and Agriculture, End User Requirements, Emerging Solutions (Technical, Managerial, Financial) and Outstanding Knowledge Gaps. The final Conclusions session included a presentation on the key issues.

## RURAL TRANSPORT THEME SESSIONS

### Rural Transport Theme Session 2.1: Access and Agricultural Production

The session opened with an introduction to *Rural Transport: Access and Agricultural Production* by David Salter.

Poor access results in subsistence existence and poverty. Studies in Cambodia revealed that the poorest people spend 450% more time on journeys which are also three times longer.

There is quantitative evidence that improvements in access and farm to market links produce agricultural surpluses, grow the economy and reduce poverty.

Improved access results in an increase of produce loads by a factor of between 2 and 5 and agricultural surpluses equivalent to 61% of total loads. Market traffic is 80% of total traffic. Goods are more affordable with vendors selling at prices 50% less but with an increase of 600% in the volume of goods being traded. Off-farm income has increased together with business opportunities and investment in agriculture. Farmers are also 68% of transporters.

Reducing transport costs is pro-poor but deteriorating roads cause the reverse effect. Better road management and investment decisions as well as good practice based upon a sound knowledge base are needed for more sustainable results.

### ***How and When Rural Roads Improve Inclusive Access: Experiences from ADB Case Studies by Hemamala Hettige***

The project was a deep and narrow study into when and how rural road components improve inclusive access and its impact on the poor. No baseline data was available. Data was collected through household surveys, interviews and traffic data on project and control sites with photographic of these shown in the presentation.

External factors such as climate, land quality, commodity prices access and social status affect the ability to graduate from poverty. Without access roads and land rights, productive time is spent on subsistence needs with indebtedness and large family size contributing to poverty.

Sections of society such as transport operators, traders and agricultural middlemen seem to benefit from both poor and improved roads but improved roads significantly reduced the access time to services and the time spent on essential travel by the poor.

Improved inclusiveness needs other actions such as dependable transport services, reduced travel costs, road maintenance and access to capital that enables the poor to participate in business enterprises.

All types of improved basic access reduce the vulnerability of the poor and labour-based techniques can provide cash injection. Roads are a necessary but not sufficient condition for

inclusiveness. An integrated approach is needed for effective impact. Participatory planning, community participation and institutional responsibility increase the chances of success.

### ***Investing in Rural Roads as Part of Rural Development: Project-Level Observations by Su Chin Teoh***

This presentation described poverty reduction projects undertaken in 3 provinces in the Punjab Province in Pakistan involving infrastructure improvements aimed at increasing rural incomes, employment and the quality of life.

The greater part of the investment of \$64.8 between 1996 and 2008 has been on rural roads but also included watercourses, small scale infrastructure, electrification and institutional strengthening.

The factors used to select projects were EIRR, remoteness, poverty, community and environment but excluded connectivity, rural growth, production and land use. Projects included main roads, link roads and farm-to-market roads. There is some doubt about the preferred selection and project evaluation approach and the road selection criteria were not rigidly applied.

The EIRR ranged from 8.5% to 23.4% depending on the timing and the approach. It is suggested that a paradigm shift from conventional appraisal and evaluation techniques should be applied to rural projects in terms of the rural economy with emphasis on complementary investments, increasing opportunities and choices for poor rural communities.

#### ***Panel Discussion on Session 2.1***

Questions and discussions mainly centred on the selection process for the roads in the Pakistan projects, on quantifying the impact of rural infrastructure, on the models used in economic evaluation and provision for the disabled of whom 80% dwell in rural areas. It was also suggested that agricultural production can sometimes decrease following infrastructure improvements that there is sometimes no rational approach for investment in roads. The impact on the disabled as a separate group was not studied in the case studies.

There was general agreement that the evidence from SEACAP and other projects clearly indicated the positive benefits from improved road infrastructure by more frequent trips to markets, increased agricultural production, increased trade and improved quality of life but that the quantitative response to improvements varied in different areas.

The presenters were congratulated for raising issues not mentioned in plenary, particularly the plight of the landless and the contribution of NMT. Phnom Penh was cited as an example of the transport problems faced by the urban landless in relation to locating employment and housing.

The demand for investment is large especially now that transport is recognised as having important an important role in achieving the MDG's. Targeting and understanding is needed

and investments must be practical.. An important point made was that the road itself is inanimate and it is the use made of it that produces benefits.

Poor roads reduced agricultural production by 30% in Tajikistan and roads are poor due to the economy. Advice was requested from experience elsewhere on quantifying the benefits of road improvement on agricultural production and on the relative split between investments in main/rural roads. A comment was made that the World Bank has done work on the socio-economic benefits that accrue from rural road improvement.

The use of economic indicators such IRR to assess the impact on rural poverty provoked considerable comment. It was generally agreed that current economic models are not appropriate for LVRR's although a number of speakers stated that alternative approaches (e.g. producer surplus) are available and give better results than IRR. A change from demand-based to a needs-based approach was suggested and it was also noted that many of the benefits are time-dependent. However, it was agreed that more data, including good baseline data is essential and that better models are needed, although some non-economic benefits are difficult to quantify.

It was also suggested that fewer case studies, which have better data, especially baseline data, might be preferable to a larger number with inferior data and the comments can be applied to ongoing projects.

The inability to carry out adequate maintenance was identified as a chronic problem that inhibited the realisation of sustainable benefits from the provision of good rural transport services.

## **Rural Transport Theme Session 2.2: End User Requirements**

### ***End user requirements (Rural Transport in Vietnam) by Tran Quoc Tuyen and Pam Kim Hanh***

Despite rapid economic growth, Vietnam still has pockets of poverty. Rural roads (81% of the network) are key to development but standards are often poor with poor maintenance and insufficient bridges. 290 communes remain unconnected. Road infrastructure improvement targets have been set for 2010 and 2020.

It was noted that the better off benefit first. Cultural benefits are included together with the usual benefits to health, agriculture employment and quality of life. Benefits of 2% - 50% are recycled and multiplied (another important observation). Better connectivity alone does not always have significant benefits for the poor, who often travel by foot.

Community participation in the preparation and planning stage of projects is very important. The contribution from communities varied from 5% to 70% of the cost and the contribution was in both maintenance and management.

The perception by rural communities of the impact of improvements is both positive and negative. Positive impacts include stability in living standards, convenient travelling, and greater awareness of the role of women. Negative impacts include adverse effects on land

from construction, increase in traffic accidents, social evils, disease and increased price of land.

The local expectations and needs included better information, paved roads (100% response), employment opportunities that prioritise women and local labour, equal payment, adherence to supervision standards, government assistance with resource requirements and sensitivity to environmental impact.

Communities regard rural road transport as important to attract investment and wish to be involved at all stages.

### ***Community Participation in Planning and Implementation of Rural Roads by Francesco Tornieri and Marcelo Minc***

The presentation described a case study of a road sector improvement project in Timor-Leste in which innovative approaches developed by NGO'S, faith and community based organisations were used in project design and implementation and in mitigating the impacts on health and cultural sensitivities.

Stakeholder consultation meetings and focus groups for men and women both together and separately was a feature at every stage of planning, design and construction. The constraints, needs and opportunities for the involvement of women were addressed with varying degrees of success Training and skills development for women were also included.

The \$12.5 million project involved community-based construction and maintenance projects using I-b methods with components for women of 30% overall and 75% in the bio-engineering activities. Skills transfer activities included bio-engineering, agro-forestry, literacy, food nutrition, reproductive health, maintenance, HIV and raising awareness of other health and road safety risks.

75% of rural roads have been completed with an increased pool of local workforce. CARE involvement has resulted in an increase in the women component to 60%, has set up savings funds for the workers and will continue with health care. The model established by CARE is recognised as good practice by ADB and the government of Timor-Leste. A similar road rehabilitation project is planned for 2009 for which ADB is seeking co-funding.

The project reflects ADB's focus on infrastructure projects that particularly benefit women, with gender as a driver of change. Emphasis on community participation has resulted in a bottom-up approach and the strengthening of local institutions.

### ***Panel Discussion on Session 2.2***

Questions included the definition of poverty, the planning and funding of maintenance, incidence of local inputs (especially social development experts from the local community), the role of NGO's, clarification on socio-economic issues and possible problems with quotas for women.

Project such as the one in Timor-Leste, is a bottom-up approach with the needs articulated and the planning set by villagers. Otherwise technically it was no different to the approach for higher order roads. The cost and choice of CARE was not an issue. CARE was chosen

because of previous experience but other NGO's were also involved. The targets for participation by women were not an issue with communities or contractors.

There was general affirmation that quotas for women and other target groups were beneficial and that the percentage of women involved in projects is increasing, including recognition of the need for including single female households, which was also a feature of the Timor-Leste project.

The ADB hopes to scale up from the project presented but the involvement and job component for women depend on local circumstances.

## **Rural Transport Theme Session 2.3: Emerging solutions - Technical**

### ***Key Engineering Issues in Designing Sustainable Low Volume Rural Roads by John Rolt***

It was stated that designing low volume roads (LVR's) is challenging because of the low cost, which introduces more constraints on design options than higher order roads. There are a number of factors that affect the sustainability of rural roads but only "economically viable" and "technically appropriate" factors are considered for design purposes.

LVR's can be earth, gravel or paved with varying structural designs depending on factors such as traffic composition. Environmental factors are most important for roads carrying light traffic. Axle loading is the most important factor for roads carrying heavy traffic.

The critical factor in the design of engineered natural earth roads is the bearing capacity of the soil although other factors such as climate and tyre pressures are also significant. Whole-life costing is important but needs performance data. The performance of earth roads depends on many factors including soil properties, rainfall, traffic, gradient and drainage. The analysis of SEACAP 19 data will provide valuable information.

Evidence from Vietnam shows the problems with maintenance of gravel roads. Benefits include construction by local labour and women but they need good materials, drainage and maintenance to perform well and benefit users.

The threshold for upgrading gravel roads is decreasing due to many factors including more appropriate design, shortage of good gravel, realistic of likely maintenance, adverse impacts of dust, etc and a whole-life approach to costs and benefits. An environmentally optimised design approach is required. Various strengthening options can be used for greater durability. Various alternative surfacing options are available for sealed roads.

The problem with road design is the variability in performance of roads with similar characteristics. The evidence from the SEACAP trials will provide information on performance which will enable the whole life costs for these roads to be determined.

### ***The effective application of Appropriate Standards and Specifications by Jasper Cook***

Low volume roads in SE Asia can be classified as those carrying less than 200 vehicles per day with a maximum axle loading of 6 tonnes and a life-time loading of approximately 150,000 standard axles.

Imported standards and specifications governing road provision in many developing countries do not consider the sensitivity of the road environment to local conditions and physical resources. The safety of all road users needs to be considered in the design of LVRR and the traffic mix is very different from that of developed countries.

A paradigm change of approach is needed from “where can I find materials that meet the specifications” to “what road can be built with these local materials”. This approach leads to “out of the box” thinking in the development of alternative techniques, innovation, exploitation of locally-available local materials and “fit for purpose” designs.

Gravel roads continue to play an important role in rural transport provision and valuable information has been obtained from Vietnam on which approaches are sustainable in different circumstances. Good maintenance practice is vital for good performance.

The SEACAP programme covers a wide range of topics such as pavement trials and monitoring, costing, materials, guidance documents, slope protection and standards and specifications. Environmentally Optimised Designs (EOD) and innovative solutions for the use of local materials have played a major role in the trials. In some circumstances, using an EOD approach, a surfaced road is cheaper in whole-life-cost terms than gravel.

The outcome of the work is that LVRR standards are being reviewed in Vietnam and are expected to be reviewed in Cambodia following analysis of data from SEACAP 19. Integration of the recommendations into Lao documentation is planned by the Lao government. A low-cost structures manual for the region has been produced as well as other guidelines. Research continues under SEACAP to fill other knowledge gaps.

### **Rural Transport Theme Session 2.4: Emerging Solutions – Management**

The presentations in this session were preceded by a short presentation by Robert Pets in which he urged practitioners to be more creative to help achieve the MDG's. He cited a number of areas where more effort is needed including the involvement of communities, areas of post conflict and post disaster, rural transport design and appraisal, achievable and manageable maintenance and quality assurance.

#### ***Community Participation in Construction of Village Roads in Punjab, India by Kulwinder Rao***

The Punjab is the food bowl of India and connectivity is vital for an effective and functioning transport system. The programme objective is to pave 1 000kms of road per year. The length of paved roads has increased from 36 000km in 1994 to 48 000 in 2008.

The programme is funded by the state with a target of 100% village connectivity. It is a self-help programme with land provision. Government engineers set the alignment. Earthwork construction is carried out by the local community with food provided for the workers. Some activities are funded with assistance from state government.

Supervision is by “citizen oversight” and funding for maintenance is ring-fenced. Elders motivate young people to participate. Other technical inputs are provided by faith institutions and public works departments for specific components such as some bridges but the programme is very much a “bottom up” approach.

The benefits include cost reduction, stakeholder participation and ownership. Key lessons include the role of faith institutions, desire for economic benefit by the community, effective growth of the road network, non-restrictive supervision and empowerment of the local community.

***Peace Building through Road Maintenance: a case study from Bougainville, PNG by Peter Kelly***

This was a presentation on an Australian-sponsored post-conflict recovery programme to rehabilitate the supply chain for agricultural exports in the autonomous region of Bougainville in Papua New Guinea following a period of clan warfare.

A large number of community contracts were allocated to rehabilitate and maintain unpaved roads. A small dedicated team managed the project for over 8 years. Women formed 19% of work force and youths and men (under 24 years) 16%.

The use of contractors from the PNG mainland was not feasible and the role of managing contractor was to re-establish local contractors and contribute to re-building community and peace facilitation. Expatriate staff needed to have additional skills of communication and sensitivity to local culture.

The impacts included the halving of travel times, cash injection to the local economy, local contractors re-established, payment of school fees and increased school attendance. Travel outside clan areas improved with fewer road closures and changes in land tenure.

Amongst the lessons learned were that a long term commitment is essential in circumstances where weak institutions exist but the exclusion of feeder roads marginalised remote communities and opportunities for donor harmonisation were not exploited.

***Investment Appraisal Methods: Whole life costing by Heng Kackada***

The whole-life-costing (WLC) approach to the choice of road type and a method of calculating WLC's was presented using Cambodia experience as an example.

The broad categories of choice in the provision of LVRR's, in an approximate ascending order of construction costs, are earth, gravel, bitumen sealed or concrete. In general, more frequent maintenance is required on earth and gravel roads and vehicle operating costs (VOC's) are higher due to relatively high values of “roughness”. The relationship between construction, maintenance and road user costs was presented.



Research carried out in Vietnam indicated that the rate of gravel loss on many roads was so high that only one third of the gravel road network was sustainable if effective maintenance was provided.

Research in southern Africa and reported in the publication of the “SADC Guideline for Low Volume Sealed Roads” showed that in many circumstances and in whole-life-cost terms, a sealed road is the most cost-effective option.

The various models used for the economic appraisal of road projects were presented and formulae were given for the calculation of whole life costs and for the residual value of the roads asset from which the NPV of WLC could be calculated.

The results of a comparison exercise showing a sealed road as the better option in WLC terms was given together with a spreadsheet example showing typical construction and maintenance costs over a 12 year period and the calculation of WLC's.

### ***Prime Minister Rural Road Program (PMGSY) in India by Aniruddh Kapaley***

This presentation described the national plan to improve connectivity to and between villages. Although India has over 2.7 million kilometres of rural roads 40% of habitations lacked the all-weather connectivity considered necessary to improve farm and off-farm employment and generate other socio-economic benefits.

The plan was facilitated by the provision of technical and operational support from central government which financed construction costs but implementation is by state governments. The programme comprises the new construction and rehabilitation of over 730,000km of roads at a cost of over \$48 billion financed through a fuel levy, ADB, WB and National loans and central government grants.

Core network planning for districts was assisted by central government with examples given in the presentation. Participatory planning was undertaken for the road alignment and other local issues in consultation with villages.

Various documentation and manuals on standards, specifications and quality assurance were prepared. Total quality management was considered very important. Online management, monitoring and accounting provides transparency.

Technical coordination was effected through Principal Technical Agencies. Maintenance contracts were for 5 years. Over 17,000 people were trained in colleges and other institutions.

Outcomes include increased motor cycle and light vehicle traffic, reduced travel time, increase in number of work, health and market trips, reduced female student drop out, increased teacher attendance and reduced transport damage to produce. Over 330,000km completed to date connecting over 50 000 habitations. The target set for 2007 – 2008, are 113km road constructed with links to 31 habitations per day.

## **Rural Transport Theme Session 2.5: Emerging Solutions – Finance**

### ***Options for Rural Road Finance by Lynn Harmon***

Rural roads are critical to development strategies and typically comprise about 70% of the national road networks. Most Asian countries are using a state or provincial model but funding for maintenance and community access are scarce.

In Vietnam, provincial governments determine the level of contribution by the community. This can be according to the plot size or family size and can be voluntary or compulsory. In hilly areas, labourers can be paid to work. Local feedback showed a willingness to contribute but the cost to families was considered to be too high. Private firms have capacity but relatively few contracts are given to these companies.

In a joint WB/Government-funded project in Argentina, the model used was output based with uniform standards set for rehabilitation and maintenance. Contracts covered roads in good to fair condition with payments made according to compliance with technical standards. Penalties for poor performance were 1% of total contracts. Benefits included a cost reduction of 30% on capital projects with the proportion of poor roads reduced to 5% and a decrease in user costs of 10%.

In Namibia, new roads are prioritised by government in National Development Plan (NDP) and are shared between machine-based contractors, and small to medium enterprises (SME's). The prime contractor must allocate 60% of work to SME's and 30%-40% to women. There is a National SME training programme covering technical methods, supervision, financial management, labour law, HIV/AIDS awareness, cost accounting, etc. Costs of labour-based projects are 15% higher due to increased supervision.

In Kyrgyzstan a "value chain" approach involved a chain of "actors" working together to produce the desired economic activity. Many constraints exist to increasing agricultural production including lack of trust, inputs and modern mechanisation. Local NGO's were used to train farmers, develop new products and facilitate the use of improved transport.

Conclusions included recommending the strengthening of community inputs, the need for output based contracts and evaluation of projects on the basis of economic benefit. Rural road development projects were used to build SME expertise. Road projects need integration with other development projects to increase benefits.

### ***Framework for a Sustainable Road Maintenance Fund by Marcelo Minc.***

Contributory causes for inadequate maintenance include funding not allocated, funding not sufficient or funding not spent efficiently nor effectively, resulting in costs to the nation and users and this should be of concern to finance ministries. One solution is a toll road or a toll road approach, which is a business and maintenance is important to the business. Users benefit and road administrations need to learn from the experience of toll roads.

Reform of road administrations is needed to recognise the need for independent Road Maintenance Funds (RMF) to charge road users and raise the funds for the various routine and periodic maintenance activities.

Road tariffs should be set to match expenditure with fees for road usage and access through fuel levies (with protection for non road use), licence fees, transit fees and fines for overloading but the RMF should not be allowed to affect the national consolidated fund used to finance other services. Road users are prepared to pay if they benefit from improved maintenance.

The RMF is accountable to road users whose representatives with appropriate expertise should form the majority. The road agency should be in the minority. The Road agency retains responsibility for policy, planning, contract procurement and financial and technical audits.

The duties of the RMF should be well-defined with legal powers to collect and bank tariff funds and to be entrusted with spending revenues in the interest of users and to protect them against "raids".

In some cases, reform is effected through the road agency which itself becomes strengthened to the extent that RMF is less effective. A country needs to recognise that it has problems and initiate the reform required to establish a RMF.

### ***Panel discussion on Sessions 2.3, 2.4 and 2.5***

Concern was expressed on quality assurance and on the need for supervision and inspection in the various case studies; although it appeared that government inspectors are used on most projects. It was also confirmed that in the second stage in Argentina standards are set, which contractors have to meet during the maintenance contract period. It was pointed out that transferring too many responsibilities to contractors has some dangers because risks could also be transferred.

The topic of funding for road maintenance provoked considerable discussion. It was agreed that RMF is generally of no help in funding new projects although provision for maintenance is still needed and the RMF in Namibia does fund some new road projects. It was suggested that rural roads do not get an equitable share of RMF and that alternative sources of funding are required for the maintenance of rural roads. The response was that full recovery costs are difficult to achieve but community participation in projects can help and this can occur in diverse ways. Border charges were included in the RMF in Namibia and countries in the SADC region had an agreed policy on road user charges.

The question of the balance of the funding allocation between provision and research was raised and another on the need for maintenance planning. There was agreement on the need for planning and budgeting for maintenance and that maintenance based on a guarantee may be a good model to follow. As for investment in research, it was reported that **the results of just 10 projects monitored over 10 years by TRL justified 40 years of TRL existence.**

It was stated that even in countries such as Australia there is a fourfold maintenance backlog and it is clearly even greater in most developing countries. The challenge is for optimised designs which minimise total costs. There appeared to be a consensus that “We need to deliver what we know”. The SADC Guideline is an important document for the dissemination of knowledge for that region but the gestation period from the initial idea to delivery took 10 years. If a similar Guideline is required for Asia then a start needs to be made now.

The suggestion was made and endorsed that the pioneers of new technology and innovation need to be supported. The Swedish International Development Agency (SIDA) and SEACAP are supporting engineering modules at local universities to promote innovative thinking amongst trainee engineers.

The allocation of RMF's was also the subject of discussion and comments were made on the allocation of financial and equipment resources for the maintenance of rural roads in the Philippines despite the fact that these roads comprised a high proportion of the road network. It was explained that initial contributions to the RMF were used to build up the fund so that meaningful allocations could be made.

On the question of upgrading gravel roads to sealed roads by stage construction, it was pointed out that it depends on the environment. Africa is generally drier than SE Asia and this strengthens the case for upgrading at relatively low levels of traffic but a document similar in concept to the SADC Guideline would be of assistance for the region. It was also stated that RMF's in Africa are making a significant contribution to improving maintenance.

Comments were made about accidents on labour-based works and the response was that accidents were normally covered by contractor insurance.

## **Rural Transport Theme Session 2.6: Outstanding knowledge gaps.**

### ***Outstanding Knowledge Gaps by Danang Parikesit and Ranjith de Silva***

The presenters explained that the International Forum for Rural Transport and Development (IFRTD) is a global network of 4 000 individuals and organisations with offices in the UK, Kenya, Cameroon, Sri Lanka and Peru, working to improve access and mobility and supported by the Swiss Development Corporation (SDC) and Swedish International Development Agency (SIDA).

For many poor people, rural waterways are the main means of access. Greater focus is needed on this mode because there are few data or models available for this mode of transport. Greater complementary is needed between different modes.

Statistics were presented on typical distances and loads carried by on-farm and off-farm roads and on the variation in the definition of a hamlets and villages in different countries in relation to population.

The impact of transport on the various MDG's was described.

MDG 02 (Create universal primary education), Case studies in Morocco and India show that paving roads reduced drop-out rates and increased the quality of teachers and there is other evidence to confirm improvements in education, maternal health and infant mortality.

MDG 03 (to promote gender equality and empower women). Women tend to travel more, longer distances and carry heavier loads than men and have less access to Intermediate Modes of Transport (IMT's)

MDG 04 and 05 (Reduce child mortality and improve maternal health) Association between the distance to health services and infant, child and maternal mortality.

MDG06 (To combat HIV/AIDS/Malaria and other diseases). Clear links exist between transport corridors and dispersion of HIV/AIDS. Poor transport links negatively impact on other health initiatives. Projects are underway to improve the situation (e.g. Azerbaijan)

MDG07 (To ensure environmental sustainability) Bio-engineering for slope stability is an example of good practice

MDG08 (Create a global partnership for development) - IFRTD is also playing a role

15 years of development has given a better understanding of how transport works, of how best to provide technical managerial and financial solutions and the need for checks and balances.

### ***Discussion on Session 2.6***

This discussion period covered a wide range of topics. Training was considered important especially at practitioner level (district engineer) and there is a need to include the private sector.

The need to address the aspirations of rural communities was stressed, especially in the context of ownership of and access to NMT and IMT.

There was considerable discussion on the dissemination and application of knowledge. It was suggested that many innovative solutions exist but there is a problem of implementation. Political factors have an influence. The SEACAP model is focused on building local capacity and the implementation of local and international knowledge. In India, rural transport is portrayed as a business investment concept. It is the socio-economic benefits arising from the use of road transport investment that impact on communities rather than the technical achievements themselves. Greater sharing of South-South knowledge was also mentioned as was the need for champions to facilitate implementation of knowledge.

The need for better models was again raised in the context of broadening concepts for project prioritisation and for investment in maintenance. However, a number of examples were also cited with quantifiable benefits from road transport investment, including one on the WB website. There was a comment that the Vietnam experience indicated that connectivity will continue to have an impact regardless of economic evaluation and that programmes such as SEACAP can have an influence outside country loan agreements.

There was also a plea for urgent action on problems that have been discussed for many years, particularly support for greater community participation and for better ways of motivating governments. However it was also pointed out that government policy on rural

transport can effect change, as in India. The need for the involvement of communities was stressed by a number of participants.

## **Rural Transport Theme Session 2.7: Breakout Groups**

The participants split into two groups to discuss the knowledge gaps in (a) technical areas and (b) socio-economic areas of rural transport. The time allocation for this exercise, including reporting and discussion was relatively short but both groups produced an oversight on the question asked of them, which also prompted comment and discussion.

### ***Feedback on the on the Technical Areas Group discussion***

The immediate comment was that nobody knows the specific answer to the question, although there is clearly a need for more data and analysis as evidenced in both the presentations and the discussion group, especially on the benefits arising from different technical interventions but the immediate need appears to be for the application of existing knowledge.

The resistance to change and a “straightjacket approach” are barriers to implementation, innovation and good practice even if alternative approaches are matched to the local environment. Demonstration projects help.

Other concerns were about adapting knowledge to local needs, better communication, concerns about use of EIRR and sources of finance for maintenance.

The overall message from the group was that knowledge gaps exist but many solutions are already available and there is a basic gap in the application of existing knowledge. Priority actions include the involvement of universities, better management of the road asset, an independent audit of assets and the training of managers.

### ***Feedback on the Socio-Economic Group discussion***

This group identified the main knowledge gaps as being in financing mechanisms, allocation of funding for rural road maintenance, alternative modes for rural transportation, rural road classification and accommodating the disabled.

There is a need for guidance on the ideal modality of funding from the components from central government, local government and communities and a need for the management of RMF specifically dedicated to rural transport.

Effort is needed to create opportunities for other modes such as waterways, trail bridges, etc and for management of these modes.

Rural road classification should be functional and be based on socio-economic needs rather than administrative.

A need for better international and national policies for accommodating people with disabilities was also identified together with the development of mechanisms for appropriate implementation supported by technical instruments.

### ***Discussion on Session 2.7: Breakout groups***

The need for new policies and recognition of the needs of the disabled in rural areas was raised and a need for engagement with the disabled in community meetings.

Comments were made on the evidence of the strong links between technical interventions and social benefits although the need for a better understanding of socio-economic needs and benefits was also raised.

Documentation that is easy to read was identified as a conduit for implementation.

Better coordination between sectors was suggested as a way of improving benefits.

It was also mentioned that the benefits of community participation are not always recognised by people at higher levels of government.

Adjustment to university curricula could facilitate greater awareness and acceptance of both the technical and social implications of investment in rural transport.

### **Rural Transport Theme Session 2.8: Conclusions**

#### ***Rural Transport: Where do we go from here? Keynote Issues for discussion by Robert Petts***

At stake are poverty and National and the MDG's, economic growth (including inclusiveness), socio-economic and political stability and sector performance. The risks of include failure to escape subsistence mode by the rural poor, retarded markets, deterioration of national assets, food insecurity and apathy.

Implementation of knowledge and increased awareness of impacts can help transport become a national priority but a strategy is needed for implementation and mainstreaming knowledge, including demonstration projects, case studies and guideline documents.

Priority actions include informed decision making required on appropriate standards and specifications, the involvement of stakeholders, sector competence and the need to be inclusive so that development is community-driven.

Access and ownership of locally fabricated NMT and IMT's is an important contributor to socio-economic growth that requires greater involvement by governments.

Effective asset management is required for all the components of rural transport to ensure the provision of universal affordable and sustainable basic access. The link between poverty and poor access has been clearly established and similarly, the beneficial impact of technical and other interventions.

The constraints of gravel roads have been reported together with innovative alternative low-cost, low-maintenance solutions and low-cost structures which improve sustainable access and a spot improvement approach for the stage improvement of rural roads.

Local capacity development is a key factor that is achieved through activities such as education, training, encouraging the next generation of expertise, identifying funding partners, knowledge transfer and identification of country champions.

Better roads alone are not enough. Other complementary initiatives are required to maximise benefits. Investment is needed in the development of knowledge (e.g. SEACAP and AFCAP) and sharing of knowledge (e.g. TKP, IFRTD), for mainstreaming existing knowledge and for the development of toolkits.

What do we do next? Priorities for action include discussion and agreement on priority issues, achieving consensus, use of all means to achieve positive change and documents on the evidence of good practice through case studies.

### **Panel Discussion on Session 2.8**

The experience from India shows that a policy decision at senior political level creates the enabling environment to facilitate change and improve connectivity with considerable success. Differences in the success rate in different states were mainly due to governance. The identification of champions and the risks associated with changes of personnel is less critical in these circumstances. It was stated that, in general, the leadership in rural areas is not particularly vocal in pressing for improvements in rural transport.

The need for urgent action on training at village level was stressed and for greater awareness of the contribution of communities in the provision of trail and foot bridges to improve access.

The need for “real economics” to encompass all components of rural transport was mentioned. Some of the issues of governance, women, children and the disabled are being addressed by IFRTD but greater awareness is needed.

The positive impact from the application of good practice was appreciated but the responsibility for the identification of good practice and for knowledge management in general remains problematic.

There was some agreement to the comment that the topic of NMT had not been sufficiently addressed but the important role of NMT's to the rural poor was re-affirmed.

A request was made for improved collaboration between technocrats and social development experts in the development of more appropriate models for project appraisal and evaluation.

Sources of good practice were reported at a recent REAAA meeting Kuala Lumpur although concentration was mainly on higher order roads. The same speaker also stated that in most circumstances, a local champion can help influence change.

There was general agreement on the need for practitioners and stakeholders to be more proactive to influence change, for continued and better interaction between professionals and to share knowledge through IFRTD and gTKP.



### ***Key outcomes from the presentations and discussions in the Rural Transport Theme***

The involvement of local communities at an early stage in projects aimed at improving access was a recurrent theme in discussion as was the need for improved models for the appraisal and evaluation of rural transport projects in which the social benefits form a significant proportion of the overall benefits.

On technical issues, it was evident that engineers need to be more proactive in embracing innovative solutions proven through national and regional research and demonstration projects such as SEACAP.

Appropriate standards and local specifications need to be developed that enable greater use to be made of locally available materials and roads need to be designed for the safe passage by all the anticipated road users, including NMT, IMT and pedestrians.

A paradigm change is needed in the provision of low-volume rural roads. Sources of materials for gravel roads are often unavailable or are becoming depleted, exacerbating the problems for the construction and maintenance of rural roads and, in these circumstances, a road with a sealed surface can be the best option in terms of whole-life-costs.

The role of women was also a recurring theme with the acknowledgement that the component of women involvement in road and transport projects is increasing generally but that local cultural factors can inhibit progress.

Experiences in India are clear examples of how strategic improvements to rural access are facilitated by national policies.

Adequate finance for the maintenance of access roads is a recurring problem with examples given of both the positive and the negative impacts of road condition on rural economies. Road Maintenance Funds are a means of raising dedicated funding for road maintenance but the equitable distribution of funds for rural road maintenance is clearly of some concern.

Examples of inclusivity of minority groups in projects (with perhaps the need for greater awareness of the problems of the rural disabled) and the role of improved access in peace-building in areas of conflict, demonstrated just some of the additional impacts that arise from projects designed to improve rural access.

### **Concluding remarks on the Rural Transport Themes**

The forum presented an opportunity to discuss the various components of transport provision that impact on the poor in developing countries. The various theme sessions were held in parallel, enabling detailed discussion on the various issues, with the plenary sessions focussing on the broader policy issues and integrated solutions that serve the needs of all road users.

The Rural Transport theme sessions were clearly a success as evidenced by the quality of the presentations, the lively discussion sessions and the many favourable comments made by the participants.

## **Highlights of Plenary Session 3**

### **Session 7.1 Public-Private Partnerships**

#### ***ADB Support for Private Sector Transport Initiatives in DMC's by Michael Barrow***

ADB support for private sector projects in Asia has poverty reduction goals through increased involvement by the private sector through direct funding, credit enhancement and co-funding. Private sector and ADB involvement in projects is increasing. The benefits and constraints of PPP were described.

#### ***Enabling Environment for Infrastructure by Paul Reddel***

Details were presented of the Public Finance Infrastructure Advisory Facility (PPIAF) which is a multi-donor assistance facility providing grants. Much of the activity has been in Asia but examples were also given of projects in SE Asia. Other topics presented included examples of performance-based contracts (PBC).

#### ***India Government Experience with Private Public Partnership in the Road Sector by Sajeev Gupta***

The presentation described PPP experience in India. The aim is to expand the private sector involvement from around 10% of the value of public finance to 200% mainly through involvement by local and foreign firms in toll roads.

#### ***Proponent perspectives by Juan Jose de Olazabal Churrucá***

The benefits and possible problems that can arise from Public Private Partnerships were presented. Although a useful source of additional funding but it is generally more expensive than public finance and with additional risks. Examples of PPP were also presented.

### **Session 7.2 Innovative Finance**

#### ***Overview of the carbon market and ADB's initiative by Toru Kubo***

An insight into the carbon market were presented by the speaker and included the ways in which carbon credits are traded. Also presented was ADB's climate change program and the use of the carbon market initiative to turn cash flow into project financing.

#### ***Innovative Financing – Transport Logistics and Trade Facilitation by Lynn Harmon***

The main cause (75%) of the delays in transport corridors are caused by poor facilitation. Logistical measures to facilitate the passage of commercial traffic through transport corridors and border crossings were presented including the provision one-stop border posts. Examples were given for southern Africa and the Greater Mekong sub-region in South East Asia.

## **Closing session**

Session conclusions were given by the theme champions

### ***Rural Transport (David Salter)***

A brief summary of the core activities and outcomes of the rural transport theme sessions was presented. The involvement of local people is essential for sustainability. The discussions in the panel discussions demonstrated a need for political priority to address the needs of the rural poor, for professional knowledge to be transferred into good practice and to put experiences of good practice into practice through communities for sustainable development.

### ***The forum closing remarks were delivered by Xianbin Yao***

The speaker summarised the objectives and achievements of the forum, thanked the organisers, sponsors, presenters and participants and formally closed the proceedings.