

DEVELOPMENT OF ROAD SAFETY MANAGEMENT SYSTEM IN NEPAL (NRSMS)

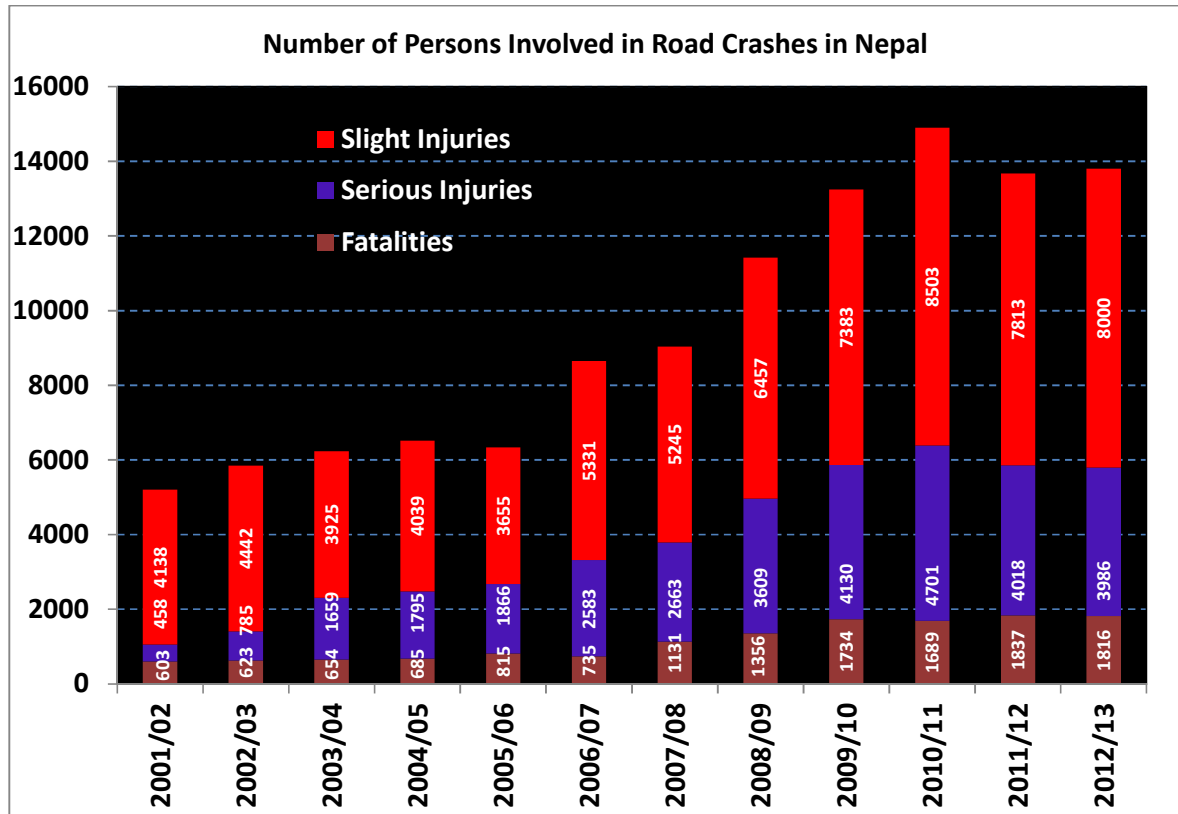
A COMPREHENSIVE APPROACH FOR ROAD SAFETY MANAGEMENT



PROPOSAL FOR PROJECT PREPARATORY WORKS

APRIL 2015

Funding Proposal
Project Preparatory Technical Assistance
for
Development of Road Safety Management System in Nepal
(A comprehensive approach for developing Road Safety Management System)



Submitted to:

Ministry of Physical Infrastructure and Transport, Kathmandu, Nepal

Submitted by:

Sustainable Transport and Traffic Solutions Brisbane Australia

in association with

Nepal Transportation and Development Research Centre Kathmandu Nepal

and

Road Safety Society of Nepal, Kathmandu Nepal

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Introduction

- 01 This proposal is prepared by Sustainable Transport and Traffic Solutions (STTS), Australia in association with Nepal Transportation and Development Research Centre (NTDRC) and Road Safety Society of Nepal (RSSN) in order to seek funding support from Asian Development Bank for undertaking Project Preparatory Technical Assistance (PPTA) for the development of Nepal Road Safety Management System (NRSMS). The submission is made to the Government of Nepal for seeking its endorsement of the Proposal with recommendation for funding PPTA. Ministry of Physical Infrastructure and Transport (MoPIT) is expected to take the ownership the NRSMS Proposal. This funding proposal is a companion document to the Big Picture NRSMS Proposal. National Road Safety Council (NRSC), Nepal is expected to be the lead agency to drive its implementation. Consultations were held with the selected high level officials from the Ministry of Physical Infrastructure and Transport (MoPIT) and Ministry of Finance (MoF) in the preparation of the proposal. Officials from funding agencies such as Asian Development Bank and World Bank have also been consulted.
- 02 A team of international experts of Nepalese origin working overseas in road safety and related field of expertise and having interest in the development of Nepal came together to form an Alliance for Improving Road Safety in Nepal (AIRSN). The aim of this alliance is to assist the Government of Nepal to implement ways on reducing road deaths in the country. Members of alliance have been watching closely frequent occurrences of unfortunate incidents in their country of origin. These members are considering options to contribute their expertise gained internationally to save innocent lives on roads in the country. These crashes are occurring on the door step of their parents, brothers, sisters, relatives and close friends back home. The lead team members have been working in the research of these crashes and in finding potential solutions that can be implemented in Nepal to reduce the frequency of occurrences of these crashes and make the roads safer. The Alliance has recently been registered recently as a not-for profit charity business entity in Australia under the name of Sustainable Transport and Traffic Solutions (STTS).
- 03 Members of STTS believe that the carnage on Nepalese roads can be significantly reduced with just a few selected low cost interventions on key governance, policy, planning, social and infrastructure development fronts. Piece meal approaches being currently taken in these fronts needed to be replaced by a more holistic approach with vision. The holistic approach is to develop and implement a sustainable road safety management system in Nepal. A draft proposal for the development of this management system has been developed by the members of STTS for submission to the Government of Nepal for its consideration as its contribution to the country so that the Government of Nepal and other agencies having stake in road safety could have a visionary document for guidance.
- 04 With sharply rising cases of road crashes involving multiple fatalities (exceeding well above 50), the initiative has been considered to be very timely. A workshop was organised in Kathmandu Nepal on October 31, 2014 and the proposal presented. This was the first workshop in series which aimed at presenting the overall framework of the proposed Road Safety Management System and collecting input from stakeholders which could be used to finalise the proposal. More workshops will be planned in future which focus on elaborating the concept of each component / sub-components of the management system with details at individual project and sub-project level, while concurrently finalising and refining the proposal. These project and sub-project level workshops will be of more interest to the government, industry and road safety practitioners who like to see the impacts on the ground today and not tomorrow. The second workshop/ seminar proposed in April, 2015 is expected to disseminate the works done so far and hand over the ownership of the proposal to the Government of Nepal for its consideration and gradual implementation of its recommendations.
- 05 Members of STTS have been working closely with many government, non-government and funding agencies in Nepal during the development of the draft proposal. These included Ministry of Physical Infrastructure and Transport (MoPIT), Kathmandu Valley Development Authority (KVDA), Department of Roads (DoR), Department of Transport Management (DoTM), Metropolitan Traffic Police Division (MTPD), Department of Local Infrastructure Development and Agricultural Roads (DoLIDAR), Road Safety Society of Nepal (RSSN) and many other agencies. The workshop of

October 2014 received funding support from the Ministry of Physical Infrastructure and Transport (MoPIT), Asian Development Bank (ADB), Department of Roads (DoR) and Nepal Engineering College (*nec*). Members of STTS Australia presented draft proposal on the development of the NRSMS and there was overwhelming support to the technical proposal. The technical proposal has been finalised incorporating input from various stakeholders. The proposal is attached as a separate document with this funding proposal. This funding proposal is primarily for the purpose of scoping all projects identified in the finalised technical proposal and to provide technical support in the implementation of two pilot projects on the ground. The third project is proposed for the development of Nepal Road Safety Information Management System and Crash Database System which are considered to be essential for any future road safety project development implementation, monitoring and evaluation. These two key and other three activities proposed in PPTA are more particularly described in the following sections

Genesis and Rationale

- 06 Thinking about the need of the development of Nepal Road Safety Management System started soon after the launch of Road Safety Unit by Nepal Transportation and Development Research Centre (NTDRC) in Kathmandu Nepal on 30 September 2012, where Dr Partha Parajuli had the opportunity to present a paper on road safety and shared his experience working in Queensland Department of Transport and Main Roads. A number of other local road safety specialists also presented the paper in the event. From the papers presented and discussions among the delegates it was not difficult to appreciate the challenges posed by the existing situation of road crashes and opportunities available to contribute to manage road safety in Nepal.

- 07 On return to Brisbane Dr Parajuli discussed the urgency of the matter with his few colleagues and friends. Dr Kali Nepal, senior lecturer in Deakin University, quickly agreed to work on it. The need to form a team was conceived and search for more specialists, primarily of Nepali origin, who could potentially be interested to contribute back to their home land, started while continuing works on the development of proposal.

- 08 With over one year of voluntary works, a basic draft of the proposal was completed. The need to engage local specialists and road safety stakeholders and to seek local input was realised soon. Consideration of local input was felt necessary primarily for two reasons. First, a check of the proposal's ability to capture ground reality and validation would offer the opportunity to incorporate more convincing models/ elements in the proposed safety management system. Second, the engagement of local stakeholders at the very early stage of the proposal development would provide opportunity to take key stakeholders into confidence and work collaboratively. Taking the ownership of the management system to be developed under the proposed framework by the Government of Nepal and Nepalese Community is very critical for ensuring desired outcomes from this great work, which has been completed entirely by voluntary contributions of time and resources of the key members of the team and their friends. It is pleasing to note that National Road Safety Council, the peak government body having responsibility to coordinate multi-sectoral road safety activities across many agencies (MoPIT, DoR and DoTM, DoLIDAR, Traffic Police, Department of Health, Emergency Services, Planning Agencies as well as NGOs and CBOs), has been the key partner of this initiative. It is believed that NRSC would take the lead role in the development of Nepal Road Safety Management System envisioned in the presented proposal and therefore its ownership. STTS would continue to contribute to the development of the system to the extent possible depending on the need of the day and resources available for it. The funding proposal for PPTA presented here, however, is not for the development of a full scale functional Nepal Road Safety Management System but to undertake a few pilot projects to show the pathway and establish ground work towards its establishment. The development and implementation of the management system is an ongoing process. Specific objectives of the proposed PPTA are described in the next section.

Project Objectives

- 09 The first objective of PPTA is to provide technical and management leadership for the provision of implementing two sets of pilot projects. The first set includes (a) safe pedestrian crossings in an

urban road corridor and (b) "gateway" treatments at the entry points to rural township/settlement along a selected strategic road. These two pilot sub-projects proposed to be undertaken in PPTA phase expected to provide immediate safety benefits to Vulnerable Users Group (VUG). The second set of projects includes (a) road side barriers in a selected section or sections of a strategic road and (b) median treatments in the same section or sections of the selected strategic road. The first sub-project in this set is expected to provide immediate safety benefits by reducing the risk of multiple fatalities due to run-off road (ROR) or Road Departure (to the left) type of crashes. The second sub-project in this set aims to reduce the risk of head-on (HO) crashes resulting from Lane Departure (LD) (to the right). The role played by the members of the proposed team in the provision of technical assistance will provide confidence to both government authorities as well as funding agencies that STTS is an action oriented not-for-profit entity with desire to contribute to road safety improvements in Nepal. In all these projects, standard typical designs of these treatments will be developed and implemented considering international best practices but modified to suit local use environment. Before and after studies will be carried out to demonstrate informed safety benefits from these treatments. These treatments can then be replicated in other road corridors by local engineers using the know-how disseminated during the implementation of this technical assistance.

- 10 The second objective of PPTA is to scope each project identified in the Technical Proposal: In the Technical Proposal about 150 individual projects/ actions are identified, which are linked to UN Decade of Action for Road Safety (2011-2020) and Nepal Road Safety Action Plan (2013-2020). In order to enable the implementation of these projects, these projects need to be well scoped, resources identified (e.g., person-months of input) and expected time estimated so that government departments can engage consultants to carry out the study or contractors to implement these projects, all of which are consistent with the "Big Picture" management framework and with ADB's Road Safety Guidelines for Asian and Pacific Regions¹.
- 11 The third objective is to undertake initial works (while the framework will be developed fully with one year crash data set, it is called initial works because there is a need to give this work continuity for at least another five year to have meaningful use of crash data and this activity is to be ongoing for any future use of crash data) for the development of Nepal Road Safety Information Management System (NRIMS) and Crash Investigation and Database System (CIDS). Information about roads, vehicles, users/ population, travel and crashes are vital for meaningful development, implementation, monitoring and evaluation of any road safety projects and this project is to be started as soon as possible so that following projects can benefit from good quality data sets. At this stage, in this PPTA phase, Road Crash Database will be developed with one year crash data. This work should continue for five years to get the full base data required to understand the trend and identify black spots and then on an ongoing basis. The initial works completed in the proposed PPTA will constitute ground work to establish NRSIMS and CIDS with trained manpower, resource materials (such as users' manual) and institutional framework. Depending on the institutional capacity, needs assessment, funding availability, extent of interest from private institutions (privatisation of data collection and supply services), ongoing technical support may be discussed towards the end of this PPTA with the Government of Nepal, and if need be, limited voluntary contribution can be offered to ensure continuity in the populating, creating new data set and road crash statistics reporting and monitoring.
- 12 The fourth objective of the proposed PPTA is to provide technical support to NRSC. It has been found that NRSC do not have its own staff with road safety expertise to coordinate and monitor road safety project outcomes. Road Safety is a relatively new field to local engineering medical and management professions and there are very limited road safety professionals in the local market. Even if the Government has plan to reinforce NRSC with new trained staff, there is always room to do more in the field of road safety. Capacity building of DoR's and DoLIDAR's staff in undertaking road safety audit and treatment of black spot locations based on crash patterns is to be number one priority. Also MTPD's technical capacity to undertake crash investigation is vital for good

¹ ADB, Road Safety Guidelines for the Asian and Pacific Regions, Regional Technical Assistance (RETA 5620), ADB, 2003.

foundation for road safety management. Further, it has been found that there are already a number of road safety initiatives currently underway with funding support from Asian Development Bank and World Bank. These projects can be managed better to avoid further fragmentation with the proposed technical support. Efforts will be made to work together with the government departments and funding agencies to align these projects to the spirit and intent of Big Picture Proposal and to bring them into the holistic road safety management framework. For instance, works are understood to be already in progress to develop road crash information system, but the utility of this information system will be limited if crash data are not collected in a way that would allow safety engineers to understand the type of crashes. There is a need to develop unified crash coding system which would allow crash investigators and analysts to disaggregate segregate crash data in a defined crash group and engineers to use these data to suggest suitable interventions. Similarly, Vehicle and Transport Management Act (VTMA) and Vehicle and Transport Management Regulations (VTMR) are under review. A new Road Safety Act (RSA) is being proposed to develop. Transport Sector Policy is also considered for review to incorporate safety requirements. Road Safety Regulations (RSR) may be required to supplement Road Safety Act similar to VTMR supplementing VTMA. While developing a separate RSA and VTMA is an option, option of combining these two Acts into Road Use Management Act could provide better clarity, comprehensiveness and conciseness. After all, the purpose of these Acts is how to use roads safely and efficiently and the name Road Use Management Act delivers simple and easy to understand message. There are other projects in engineering fronts which also currently lack in technical expertise for their implementation. Examples include road side barriers - it is understood that there are no standards as well as guidelines for constructing W-Beam barriers that are currently being proposed at selected rural roads. There are other road side hazard management measures which are not considered in the project design.

- 13 The fifth objective is to produce a revised and updated proposal with scoped projects for use by the Government of Nepal. The proposal can be used by the Government in a number of ways: to select the projects already scoped, to have the appreciation of the extent and nature of works involved in the project selected, to have clarity in the objectives, resources, time line, deliverables and so on. In other words it would provide a guide to the agencies responsible for implementing a large chunk of the building block of, and ultimately assist in establishing, a comprehensive road safety management system as envisaged in the Big Picture proposal. The experience of implementing the treatments proposed as above will be reflected in the updated technical proposal. Every aspect of six components (see below) such as issues related to the development of road safety information management, governance and planning, crash prevention and road risk management, pre-crash management, post crash response management, crash investigation and crash data management, and road safety research and development of the technical proposal will be revisited based on the ground realities. In fact, the technical proposal is a dynamic document which needs to be continually updated and opportunities for fine-tuning would always be there. The on-site observations of these pilot projects will further improve the presented Big Picture Technical Proposal. Concurrently, the Big Picture Proposal will be improved for better readability and contents: Also, as updated information is obtained as works progress, there will be rooms for further improvements and refinements.

Proposal for Nepal Road Safety Management System

- 14 In Nepal, every day on average 5 persons are killed 11 are seriously injured and 22 sustain minor injury in about 25 road crashes. Until recently, in spite of repeated alarms raised by several sectors of society, a reduction in road trauma has not been a key national objective. Road safety has not been considered as a major strategic component of Nepal's road sector development programme. Interest in the road safety epidemic has however increased significantly during the last few years in accord with the UN Decade of Action for Road Safety 2011-2020. A National Road Safety Council (NRSC) has been recently established and actions are being taken on several fronts, albeit on isolated and fragmented ways.
- 15 Road Safety Management is a complex, integrated, dynamic and multi-dimensional problem. Improvement in road safety requires actions on several fronts: engineering and social science,

- education and public awareness, law and enforcement, health and emergency services, and media and publicity campaigns, to name just a few. Actions on multiple fronts are required in a complex environment often with conflicting and competing interests. A well coordinated and concerted effort from all agencies working on these fronts is essential. This is possible only by implementing a holistic Road Safety Management System with vision.
- 16 Road safety is a shared responsibility. Every member of society can contribute to improve road safety.
 - 17 This collaborative proposal is developed for widespread discussion and application for possible contributions to help develop this holistic Road Safety Management System in Nepal. A ‘Safe System’ approach, which makes allowance for human error and minimises the consequences, especially the risk of death and serious injury, has been accepted internationally as an approach to manage road safety. This proposal is developed making this approach a core principle.
 - 18 All stakeholders, who have interests in road safety in Nepal, can be part of this initiative and their involvement will always be welcome. Contributions will be requested from national and international institutions, and bilateral and multilateral funding agencies in order to initiate, conduct and complete the road safety project activities identified in this proposal. It is expected that a full-scale Road Safety Management System will be institutionalised, implemented and sustained once these project activities are completed.
 - 19 The technical proposal covers a wide range of issues related to road safety. After the review of existing information and international best practices, it is proposed to develop the system with the following six components:
 - Component 1 (C1) Nepal Road Safety Information Management (NRSIM) and Database System: population, vehicle, drivers, traffic, road and summary crash statistics etc.
 - Component 2 (C2) Governance and Planning: leadership and commitment, institutional framework (organisational structure, resources, roles and responsibilities), funding framework (funding model), legal frameworks (acts and regulations) and technical frameworks (road safety documents); road safety countermeasures; road safety evaluation and improvement process; and road safety planning, policy and strategy (policy, vision, mission/targets, strategy and action plans and activities)
 - Component 3 (C3) Pre-crash (Crash Prevention) Systems: crash prevention and road risk management system: road users, speeds, vehicles and roads
 - Sub-component 3.1 (C3.1) Safer Road Users: road use rules, driver licensing system, public education and awareness, law enforcement, competence and training
 - Sub-component 3.2 (C3.2) Safer Speeds: speed management system and speed limits
 - Sub-component 3.3 (C3.3) Safer Vehicles: roadworthiness - national car assessment program, vehicle standards compliance, vehicle inspection and maintenance system
 - Sub-component 3.4 (C3.4) Safer Roads: road design and maintenance, traffic control devices, road safety audit, roadside hazard management
 - Component 4 (C4) Post-crash (Post-crash Response and Management) System: post-crash response and management system such as emergency preparedness, response and treatments
 - Component 5 (C5) Crash Investigation and Database System: road crash investigation, data coding, data collection, data recording and creation of road crash database
 - Component 6 (C6) Road Safety Research and Development: road safety monitoring, measurement, investigation and analysis
 - 20 The above components are finalised in consultation with the relevant stakeholders. A list of projects under each component has been identified and provided in the technical proposal to demonstrate the extent and nature of works envisaged at this stage.
 - 21 It is considered that the current road safety activities in Nepal do not capture all these components. The first step of this comprehensive approach is to bring together all these activities into one management system taking into account both national and international practices, supported by

scientific research. The best practices around the world will be used as far as possible. However, site and context-specific information must also be collected, analysed and utilised.

- 22 A number of specific projects that help develop a comprehensive Road Safety Management System in Nepal have been identified. These projects will be discussed and more will be identified in the next stage as the works will progress. Identification of additional projects will be done from a series of workshop discussions and deliberations. Each project suggested in the proposal will be scoped, costed and project submitted to interested agencies for funding. This will be done in the preparatory phase of the project for which this funding submission is being made.
- 23 The development of Road Safety Management System has the key objective of bringing all these efforts into one single holistic system management framework and moving these efforts forward in order to reduce road deaths in Nepal. The workshop of October 2014 discussed the various components of the system and the action plan for its development and implementation formulated following from the workshop outcomes.

NRSMS Process

- 24 The system will be developed in stages. It is essentially a 'building block' approach involving several activities. Each component of the system can be developed concurrently and mostly independently. When all the sub-systems or components are delivered a full-scale safety management system will eventually be established. For example, the crash database system needed for safety management will have to be developed in the first stage. This system uses data collected from the crash investigation system which would contain data from crashes duly coded using an acceptable crash coding system – by severity, by type and by crash cost. Crash data obtained from a well maintained central crash database system will then be used to identify black spots and corresponding types of treatment. Targeted road safety initiatives can then be suggested to reduce road crashes on that particular location, monitored and evaluated.
- 25 Five year crash data are generally used internationally to identify black spots in a formal sense. The development of the crash database system will be a one-off project with periodic improvement but populating the database with data is an ongoing implementation activity for the Road Safety Management System.
- 26 The above is an example of one component/sub-system. Each sub-system or component will be developed with the same approach. A long-term vision for the system has been considered. A prerequisite to realise this vision and deliver the system is a robust institutional, legal, funding and technical framework. This is proposed as a part of governance component. This framework needs to be developed in tandem in order to sustain the above system and sub-systems.

Alignment with ADB's Road Safety Action Plan

- 27 The proposal for the development of NRSMS is fully aligned with the ADB's Road Safety Action Plan. Road crashes result in social (human) impacts, poverty impacts and economic impacts (See Box 1 below), all of which undermine the key objectives and outcomes expected from ADB's assistance to its developing member countries (DMCs) in the Region. Timely development of NRSMS and its successful implementation will greatly reduce deaths and disabilities in the country contributing to ADB's Sustainable Transport Initiatives (STI). One of the key focus areas of the STI is improved Road Safety. NRSMS contributes to this Initiative greatly.
- 28 Most multi-lateral development banks including ADB have recognised that the successful implementation of Road Safety Management System should ensure the safety of the human, the vehicle and the roadway as a system². This proposal is about the development and implementation of road safety management system and therefore naturally contributes to ensuring road safety to save lives and properties in Nepal as envisaged by ADB. Table below shows how the proposed NRSMS proposal supports each of the ADB' key initiatives on road safety.

² ADB, Road Safety Action Plan: An Overview, ADB, April 2012

Box 1: The Real Impacts of Road Accidents

The Real Impacts of Road Accidents

Human Impacts


- » Accidents cause over 645,000 deaths and 30 million injuries every year.
- » Accidents have caused nearly 3.5 million deaths and permanently disabled 18 million people in the last 5 years.
- » Accidents are the second leading cause of death for children 6–14 years old.
- » Road deaths exceed malaria deaths, and, by 2030, will double deaths due to HIV/AIDS and quadruple those from tuberculosis.
- » According to the World Health Organization, accidents are now one of the leading health problems facing humanity.

Poverty Impacts

- » Road deaths are concentrated among vulnerable road users.
- » Seven out of 10 victims' families suffer decreased income.
- » Two-thirds of victims' families take loans to cover income loss.
- » Many victims' families are driven into poverty or debt.
- » Women and girls in victims' families assume greater caregiving responsibility and, as a result, have fewer economic opportunities in life.
- » In the last 5 years, 22 million families had a family member killed or permanently disabled.
- » In the next 5 years, 32 million families will be affected.

Economic Impacts

- » In ADB's developing member countries, \$96 billion is lost annually to road accidents.
- » Economic losses are greater than annual development aid received in the region.
- » Road accidents impede economic development.



Rapid growth in private motorization in Asia and the Pacific has produced high levels of congestion, contamination, and road traffic accidents. Thailand

Source: Road Safety Action Plan - An Overview, Asian Development Bank, April 2012

- 29 STTS Team is very much aware that the implementation of certain road safety measures such as safety education to school children, prevention of overcrowding of buses plying on rural roads, community action safety management plan, road safety advertisements, post-crash treatments, care and rehabilitation can be more effective if women are engaged in these activities. For instance, the design and implementation of safety measures such as pedestrian crossings, a project proposed in the PPTA, can be made more gender inclusive by engaging women traffic officers on roads during the weeks of new pedestrian crossings operation. TV and radio advertisement and children awareness campaign will also engage rural women. The project design shall include Gender Action Plan (GAP) where appropriate and women will be empowered in the formation of Community Action Groups (CAGs) which are proposed to be formed in one of the pilot projects for preventing overcrowding of vehicles expected to be funded by Direct Aid Programme (DAP). The programme is administered by Department of Foreign Affairs and Trade (DFAT), Australia through Australian Embassy in Kathmandu. All these and other projects will be scoped / developed considering ADB's Guidelines for Gender Mainstreaming Categories of ADB Projects³ and Gender Tool Kit: Transport⁴

³Guidelines for gender Mainstreaming Categories of ADB Projects, ADB, July 2012

⁴ Gender Tool Kit: Transport, ADB, June 2013

Table 1: ADB's Initiatives on Road Safety and Linkage with NRSMS

ADB's Initiatives on Road Safety	How does the NRSMS support ADB's Safety Initiatives?
Strengthening ADB's internal road safety capacity	STTS and its partners will work with ADB's Road Safety Groups and other donor agencies to establish road safety management system in Nepal, which ADB can take as an example for other countries in the region
Developing procedures, guidelines and tools for improving road safety and making these operational	The NRSMS development proposal includes many activities /projects (under six different components) which involve the development of most necessary policies, guidelines, procedures, manuals (tools) required to establish full scale and robust road safety management system
Identifying opportunities for improving and scaling up road safety	NRSMS Proposal has identified almost 150 short to medium term projects to improve road safety outcomes. The list of the projects includes small scale safety awareness raising campaigns targeted to poor disadvantaged rural communities to the complex project involving the development of full scale safety information management system and crash database system. If these projects are implemented, it will certainly assist in improving and scaling up of ADB's initiatives on road safety.
Mainstreaming and strengthening road safety components	NRSMS has proposed reviving and strengthening road safety components in ongoing investment projects and technical assistance by improving design, attracting additional funds and monitoring road safety inputs - mainstreaming road safety components in new projects by including these in project design and increasing their importance in the design phase
Establishing stand-alone road safety components	NRSMS Proposal has recommended many stand alone road safety projects under each of the six components of the system. Under PPW, four different stand alone road safety projects are proposed under Safer Roads sub-component of Pre-crash component. The project will be backed by other projects such as development of road rules including schedule of penalty units (fines) and demerit points (number of holes in the licence) education and awareness related projects, enforcement, training for police officers and other road users
<p>Collaborating and coordinating to support the UN Decade of Action for Road Safety (UN DOA)</p> <p>ADB is engaging in discussions with multilateral development banks on establishing a global Road Safety Incentive Fund to scale up road safety work to support the Decade of Action. This work is referred to as the</p>	<p>In the development of NRSMS, STTS has linked most key projects with UN DOA for Road Safety and Nepal Road Safety Action Plan. STTS will support ADB with the country specific data collected as part of its proposed projects for the development of NRSIMS and CIDS, project monitoring and evaluation and road safety research and development.</p> <p>Activity 2 proposed under PPW will scope and identify, task, time and resource allocation for 150 projects identified in the proposal which can be used to estimate the cost. ADB can access this information to prepare estimates of demand for funding under the Road Safety Initiative consistent with the United Nations Global Plan for the Decade of Action;</p>

Road Safety Initiative. ADB and other multilateral development banks are preparing estimates of the demand for funding and activities under the Road Safety Initiative consistent with the United Nations Global Plan for the Decade of Action; governance arrangements; and harmonized results framework	governance arrangements; and harmonized results framework. Asia contributes approximately half of global road deaths and injuries, ADB has the plan to endeavor ensure that the region receives a commensurate share (about 50%) of global resources to address road safety, and assist with the administration of such funds as needed. Costing of the projects identified in NRSMS proposal is expected to support ADB's endeavor in this direction.
Mobilising international partners ADB plans to identify and mobilize international partners to collaborate in road safety. The partnerships will lead to improved road safety across the region and will engage the private sector in solving the problems of unsafe roads. ADB will also work with universities and research institutes in the region to encourage road safety research and introduce road safety into the training of future professionals studying for civil engineering, economics, planning, and related courses. There are several international networks of road safety professionals with an interest in road safety and injury prevention. These too can be mobilized to partner with ADB.	Similar to ADB's plan to work with its international partners, STTS also intends to work directly or through ADB with international partners including ARRB, iRAP, universities (Monash, Deakin, RMIT) in Victoria, (QUT and GU) in Queensland and other universities of Australia. It also has excellent relationship with the engineering colleges and institutes in Nepal (Institute of Engineering, Nepal Engineering College with Masters Program in Transportation and Traffic). Key members of STTS have excellent networking capabilities and will mobilise resources from AusAid, USAid, DfID, GIZ New Zealand, ESCAP, Global Road Safety Fund, WHO and many other international and national agencies having stake in road safety.

- 30 ADB has identified a number of low cost high benefit road safety initiatives, based on its own research or its partners or on the research works done by other reputed road safety agencies, which when implemented by its developing member countries, can make significant differences. It is understood that ADB would be interested to fund the implementation of these internationally tested countermeasures for delivering immediate safety benefits on road built with its assistance while working with developing countries for sustained and improved road safety outcomes (See Box 2 below). Consistent with these identified initiatives, STTS has suggested in the NRSMS proposal a number of project activities which would contribute to these initiatives with immediate effects. In fact, the first three road safety measures (Road Safety Audit, Centreline Rumble Strips and Roadside Absorptive Crash Barriers) are proposed in the pilot projects of PPTA and remaining five measures are identified as short term projects in the Big Picture NRSMS proposal. Projects on the development of road rules and enforcement including review of the schedules of penalty units (fines) and demerit points, development and implementation of Graduated Licensing Scheme (GLS), Community Action Road Safety Management Plan for mass education and awareness campaign, identification of strategic locations for post-crash response facilities along strategic roads and research on response time (within 10 minutes) minimizing locations of such facilities are all identified in the proposal.

Box 2: Example of Internationally tested Road Safety Measures

- Road safety audits reduce annual fatal and injury crash frequency.
- Centerline rumble strips reduce the frequency of head-on crashes by 21%–30%.
- Energy-absorbing barriers and treatments reduce the probability of fatalities by up to 78% and injuries by up to 68%.
- Graduated licensing systems reduce fatal crashes by 7%–35%.
- Seat belt use reduces the risk of drivers and passengers being killed by 40%–50%.
- Road safety mass media campaigns reduce crashes by 8.5%–14.8%.
- Ambulances that can arrive in less than 10 minutes reduce the risk of a fatality by 50%.
- Effective enforcement of laws on speeding, drunk driving, and helmet and seat belt wearing also reduce fatalities.

Source: Road Safety Action Plan - An Overview, Asian Development Bank, April 2012

Project Team

- 31 STTS is a team of professionals spread around the world having desire to contribute something to the community to which they belong. Having developed expertise in varied sectors (mainly in traffic, transport and allied fields) nationally and internationally, these professionals know the places, people and problems, on both sides of the world and they are able to see clearly prospects for solutions. They are aware that what works overseas might not work in Nepal. Also, what is required in Nepal may not be available overseas. But when the basic principles and policies required for solutions available overseas are blended with the real needs and environment in Nepal, the inefficiencies in reinventing an entirely new wheel for developing potential solutions for problems dominating the country can be significantly reduced. One of the potential problems, which has been well recognised nationally and globally, is how to reduce the burden of road crashes on public health and resulting negative impacts on Nepal's economy.
- 32 Thousands of people are getting killed in Nepal for no fault of their own. With the expansion of road network and increase in the number of vehicles across the country, the problem of road safety has been clearly felt by everyone concerned. Roads built for the sake of national development using the scarce aid resources from around the world are becoming death traps. The dangers and potential risks can be removed or reduced by applying simple but sustainable solutions. STTS is a team of like-minded people, who have the similar feelings and common interests to contribute to develop such solutions. The team moves forward with the vision that “no one should be killed or seriously injured on the roads in Nepal”. The team aims to work together with National Road Safety Council (NRSC) which is a peak advisory body established to coordinate multi-sectoral and multi-disciplinary activities and solutions across various Governmental and Non-governmental agencies of Nepal as well as funding agencies. STTS will collaborate with all relevant government and non-government agencies as well as multilateral and bilateral aid agencies, overseas and local road safety research agencies, local and international businesses and industries who have a stake in road safety.
- 33 The following members have expressed their commitment to work as a team and contribute to this work at the time of developing this proposal. The team can be expanded as and when more interests to contribute are received. In fact, contributions are open to everyone. Each team member identified below is expected to lead a key strategy area for potential solutions. Over time, more professionals can be included in the project team attached to one or more of the relevant components. This is a loose and flexible association of individual professionals, who are bound together with the common desire to collaborate and deliver meaningful outcomes, which will help to reduce road trauma and the burden on the public health system and economy of Nepal. Key team members include:
- Dr. Partha Parajuli (Australia)
 - Dr. Kali Prasad Nepal (Australia)

- Dr. Prem Chhetri (Australia)
- Dr. Nirajan Shiwakoti (Australia)
- Dr. Prakash Ranjitkar (New Zealand)
- Dr. Shyam Sharma (USA)
- Dr. Ganesh Karkee (USA)
- Dr. Shovakar Dhakal (Thailand)
- Dr. Chandra Shrestha (Nepal))

The structure of the NRSMS development team is included in Appendix A. Brief resumes of core team members are included in Appendix B.

- 34 Project team leaders who have expressed interest to contribute are listed below. They will be called upon to lead the project when the projects of his/her expertise would get funding. It is expected these numbers will grow over time as STTS would be able to secure project level funding once this Preparatory Project will scope all identified projects for short to medium term implementation. Core team members will continue to contribute for better road safety outcomes limited to their capacities voluntarily to develop projects even if the proposed projects would not be able to secure funding. Projects implemented through voluntary contributions would be of smaller size and less resource intensive and their implementation and expected outcomes would not be at desired pace. Resume of selected project team leaders are also included in Appendix B.

- Anthony Eagle (Australia)
- Santosh Tripathi (Australia)
- Saroj Shrestha (Australia)
- Manoj Munakami (Australia)
- Ashis Parajuli (Australia)
- Rajan Koirala (Australia)
- Dasharath Nyaupane (Australia)
- Dr Ranjan Pant (New Zealand)
- Subhash Dhungel (Nepal)
- Kamal Bahadur Shrestha (Nepal)
- Pushpa Shrestha (Nepal)

Depending on the need, local professionals of repute, who are currently contributing to road safety on their own efforts or would be willing to contribute in some ways, will also be requested to join hands and work together in one of the projects identified (or to be identified) in the Proposal. If there are any projects these and other local professionals are found working on road safety, attempt will be made to bring their projects under the "holistic" umbrella of the management system. Most of these professionals were invited in the workshop of October 2014. They are known to STTS Team and have expressed willingness to contribute to this not-for profit initiative. In fact, a database system of individual professionals and organisations, who are prominently involved in road safety, will be established to create a forum for ongoing discussions and exchange of knowledge and experience in the field of road safety. Some of these professionals include:

- Madan Maleku
- Dr Padma Shahi
- Dr Ashok Ratna Bajracharya
- Dr Sunil Kumar Joshi
- Dr. Ram Kewal Shah
- Sunil Poudel
- Saroj Pradhan
- Kamal Pande
- Laxman KC
- Saroj Khanal
- Naresh Shrestha

- 35 STTS has collaborated with NTDRRC, Nepal to get local support. NTDRRC has launched Traffic Safety Unit in 2011. STTS will work with NTDRRC to mobilize other local resources required for undertaking this and other future projects. STTS is also working with Road Safety Society of Nepal (RSSN) and intends to continue work with it especially in the area of road safety advocacy, education, public awareness and safety campaign. Copies of Memorandum of Understanding (MoU) with NTDRRC and RSSN to this effect are included in Appendix C. It is considered, based on the working relationship of almost one year, NTDRRC platform will be best used for all engineering and management aspects of road safety while RSSN platform, would be more interested in safety education, awareness and advocacy. As mentioned in the MoUs, operational arrangements with them will be detailed out for each project upon securing funding based on the nature, project requirements and requirements of the government and funding agencies. However, the delivery responsibility will lie on the core team.
- 36 In order to reinforce the strength of the NRSMS Project Team further, STTS also intends to work with other Australian Transport and Traffic consultants. Preliminary consultations have indicated overwhelming desire to contribute to developing countries' effort towards better road safety. The actual operational details with these agencies /consultants will be determined on need basis depending on the nature and scale of the projects after receiving funding support for individual projects. Copies of the Memorandum of Understanding with PSA Consulting Australia and Bitzios Consulting Australia are also included in Appendix C.
- 37 Informal discussions so far with selected Australian Road Research Board (ARRB) officials have also encouraged the STTS Team to collaborate with ARRB in complex projects proposed in the Technical Proposal. STTS has explored that ARRB, as a global leader in road safety research and as a responsible organization committed to reduce road deaths globally in response to UN Decade of Action Road Safety target, has the policy to support developing nations' effort on improving road safety through making its research publications available to interested agencies. Many STTS Team members (core and project) have ongoing working relationship with ARRB officials. STTS, as a not-for-profit charity organisation dedicated to improve road safety in developing countries, will be in a very advantageous position to get the benefits from this commitment from ARRB (as well as other not-for-profit agencies such as iRAP). Such potentials will be explored fully to help create and maintain in Nepal an e-library of road safety reference materials (one of the projects proposed in the Technical Proposal under Planning and Governance Component). With its strong international networking capability, STTS team will work to explore and make use of such potentials fully. The proposed e-library will benefit all local road safety professionals, managers and policy makers largely with quick and easy access of much needed resource materials.

Consultation with Stakeholders

- 38 A half day workshop was organised jointly with National Road Safety Council (NRSC), MoPIT and NTDRRC in the second half of Friday October 31, 2014. The purpose of the workshop was to seek input on the draft proposal from stakeholders. The workshop was attended by about 85 participants including distinguished guests from the Government of Nepal, ADB, World Bank, various engineering professionals, health professionals, media people and other non-governmental organisations. Chief Secretary of the Government of Nepal, Mr Lila Mani Paudyal was the chief guest in the workshop. Mr Tulasi Sitaula, Secretary of MoPIT chaired the technical session. Mr Suman Sharma, Secretary of the Ministry of Finance also made a short presence to demonstrate his support to the Team's endeavour. Attendance by distinguished guests from the Government as well as from funding agencies demonstrates the importance of the work on the development of comprehensive road safety management system. The workshop program was as follows:
- Pre-workshop Lunch and getting to know each other
 - Workshop Chair: Mr Tulasi Sitaula, Secretary/ MoPIT
 - Workshop Sessions:
 - Current Road Safety Awareness and Education in Nepal: Mr Saroj Pradhan/RSSN
 - Introducing Proposal on NRSMS: Dr Partha Parajuli, NRSMS Project Coordinator
 - Address by Chief Guest: Mr Lila Mani Paudyal, Chief Secretary

- Presentation of Technical Proposal on NRSMS: Dr Kali Nepal, NRSMS Deputy Project Coordinator
- Presentation of Papers on TRRL's work on Crash Database for developing countries by guest speakers from TRRL UK
- Open for Discussion
- Concluding Remarks: Mr Tulasi Sitaula, Secretary/ MoPIT and the Session Chair
- Refreshments and Networking

Approach and Methodology

39 There are five different categories of project activities corresponding to five key objectives of the Project Preparatory Technical Assistance.

- Activity 1: Technical assistance to two sets of pilot projects involving countermeasures to reduce
 - Pedestrian crashes
 - Mid-block crossings
 - Gateway treatments
 - Road departure crashes
 - Roadside barriers and audio tactile line marking (ATLM) on road edges
 - Median treatments (wide centre line marking with or without ATLM, raised medians, with the provision of passing lanes or 2+1 lanes as appropriate)
- Activity 2: Scoping of all identified projects (short to medium term)
- Activity 3: Development of Nepal Road Safety Information Management System and Crash Investigation and Database System
- Activity 4: Technical support to NRSC and Capacity Building of local engineers on road safety
- Activity 5: Refinement / Update of Big Picture Proposal and Ongoing Improvement

40 While the general approach for developing NRSMS has been well covered by the "Big Picture Proposal" attached herewith, approach and methodology to complete each of the above five activities would require specific tasks identified and completed. Each project is unique and one single approach will not be applicable. For this purpose, STTS will use the "state of art" project management approach involving the development of Work Breakdown Structure (WBS) with tasks, time and resource allocations. WBS elements will be developed in sufficient detail to guide the project leaders. And time, cost and quality control framework will be built in these WBS elements together with the risk management tools. This is the project management framework most STTS team members are using in their day to day work of their current professional affiliation and will be used in this project. WBS structure for each of the above five projects will be developed at the inception phase and included in the Inception Report.

41 Typical WBS elements for Project Activity 1 (sub-project 1 (a) mid-block crossings could be, for example as follows:

(1) Review of international best practice on the provision of mid-block crossings: STTS team does not require much effort to review existing practices as the team members are already using these on day to day basis. It is just the time required to briefly document the references in use for the benefit of local engineers.

(2) Compile available type designs, compare and contrast in terms of their pros and cons and applicability to Nepalese urban road conditions and usage characteristics: It is suggested that, due to poor maintenance practice, marked only mid-block pedestrian crossings (zebra crossings) will fade away and chances are that these will not be re-painted timely, the raised pedestrian crossings (double staged with protected median refuge for wider roads and single stage crossings for narrower roads) could be more appropriate in Nepal. Raised pedestrian crossings (or platform crossings) will also enforce motorists to slow down as they approach to pedestrian crossings. Also special considerations should be allowed for poor or non-compliance of road rules, poor driving behaviours, bad state of vehicle condition (e.g., brake) in the development of modified mid-block pedestrian crossings

typologies for use in Kathmandu/ Nepal conditions. A standard separation between the vehicle stop line, and crossing zone (which depends on the posted speed limit), used in the western world may not be adequate in Kathmandu. A single design will not fit for every situation. A series of typical designs will be developed and delivered with recommendation where to use which design.

(3) Select an urban road corridor to run a pilot / demonstration project: It is to be mentioned at the onset that trialling the designs developed just at one location would not be effective and sometimes even counterproductive. STTS Team suggests that a corridor with the highest risk to cross the road be selected for pilot project. The other criteria for selection should be that the corridor should have been included by relevant road authority (DoR) for improvement in its ongoing programme. Based on the preliminary risk analysis and the need and DoR's program, Maitighar -Tinkune corridor (the widest road corridor with frightening level of risk) would be the most potential candidate for piloting such treatments. However, the corridor selection will be finalised in consultation with DoR. DoR may also wish to extend the trial beyond Tinkune depending on what is on in their programme in relation to overhead bridges. STTS's proposal is a low cost effective safety solution (provided drivers and pedestrians are educated and enforcement are implemented at least for the first few months strictly) for pedestrians crossing the road. The beauty of this method is that no costly and ugly overhead bridges are needed while minimising stops/ delays to through main stream traffic. A coordinated / synchronised traffic signal system at intersections and mid-block crossings (where warranted) would avoid frequent "stop and go" for main stream traffic.

(4) Undertake before-study as relevant (number of crashes in the corridor including near misses, number of traffic offence cases - not giving way to pedestrians

(5) Work with DoR (facilitating role) to implement the project.

(6) Supervise the construction of mid-block crossings as per design.

(7) Prepare education awareness and mass campaign and training materials (flyers, leaflets, radio/TV advertisement materials for proper interpretation and use of pedestrian crossings (communication plan)

(8) Train traffic police officer about the road rules and enforcement: Develop a set of road rules (or update as relevant) including demerit points and penalty units (It is required to come up with the value of one penalty unit in Rupees) associated with various types of offences related to pedestrian crossing use (pedestrians for jay walking, crossing on Don't walk phase etc and motorists, motorcyclists and cyclists for not stopping on red or not giving way to pedestrians etc as appropriate depending on the type of crossings installed.

(9) Provide on-site education and awareness campaigns to road users (pedestrians, drivers, motorcycle riders regarding the proper use of pedestrian mid-block crossings (signalised or un-signalised - whatever would be the case).

(10) Undertake after-study (monitoring and evaluation)

(11) Prepare a brief report summarising the issues involved in the development and implementation, outcomes of the monitoring and evaluation of the suggested safety measure and lessons learnt which can then be used in the replication in other locations.

- 42 Other three subprojects under this Activity as well as remaining four activities of the project preparatory works can be broken down into WBS elements in a similar way. This task will be completed as a part of the inception report. Time, task and resource allocation for each of these WBS elements will also be the subject of the same inception report.
- 43 In terms of Activity 2: Scoping of individual road safety projects and sub-projects, a sample scoping document that will be delivered for each project/ subproject is included in Appendix D, which is self explanatory. This is to demonstrate what is proposed to be carried out. If ADB would like to use separate template to suit its project scoping requirement, this will be discussed and agreed.

- 44 A detailed worksheet was prepared to cost Activity 3, the largest and the most important activity of the Project Preparatory Work (PPW). For brevity, the worksheet has not been included in this proposal, but can be provided on request during the discussion phase.

Project Time

- 45 The PPW has been designed for the duration of one year. Activity 3: Development of Nepal Road Safety Information Management System and Crash Investigation and Database System will run continuously for the entire period of one year followed by the second longest Activity 1 with intermittent involvement of technical input. The remaining activities are not critical in terms of timing. Some of the activities are on demand. Therefore the presented budget represents the upper bound estimate of project cost.
- 46 It is to be noted that the Road Crash Database developed as a part of this PPTA Proposal captures crash data for one year only. The work should not stop here. The development of Nepal Road Safety Information Management System and Crash Investigation and Database System will be completed at the end of the PPTA period but updating of the systems is to be an ongoing activity. The training component is critical for its sustained maintenance and the proposal for ongoing maintenance and use is captured by another project under Governance and Planning Component (See Institutional Framework).

Project Cost

- 47 The Project is estimated to cost US\$ 590,000. Details are included in Appendix E and the summary is given below in Table 2. The estimate takes into account "commitment to contribute".

Table 2: Project Cost

S. No.	Particulars	Amount (US\$)
1.	Activity 1: Technical assistance to two sets of pilot projects (four sub-projects) involving the implementation of well tested countermeasures to reduce (a) pedestrian crashes (b) road departure crashes	64,000
2.	Activity 2: Scoping of projects identified in the NRSMS	50,000
3	Activity 3: Road Safety Information Management System and Crash Database Development	152,250
4.	Activity 4: Technical Support to NRSC and Capacity Building	50,000
5.	Activity 5: Refinement / Update of Big Picture Proposal and Ongoing Improvement	24,000
Sub-total of honorarium		340, 250
10	Total of Out of Pocket Expenses and Office Logistics including Local Support Staff for all activities combined	195,770
11	Total of Honorarium, Out of Pocket Expenses, Office Logistics including Local Support Staff and Provisional Sums	536,020
12	Contingency (10%)	53,602
13	TOTAL BUDGET ESTIMATE	589,622

APPENDIX B: RESUME OF SELECTED COMPONENT LEADERS & PROJECT LEADERS

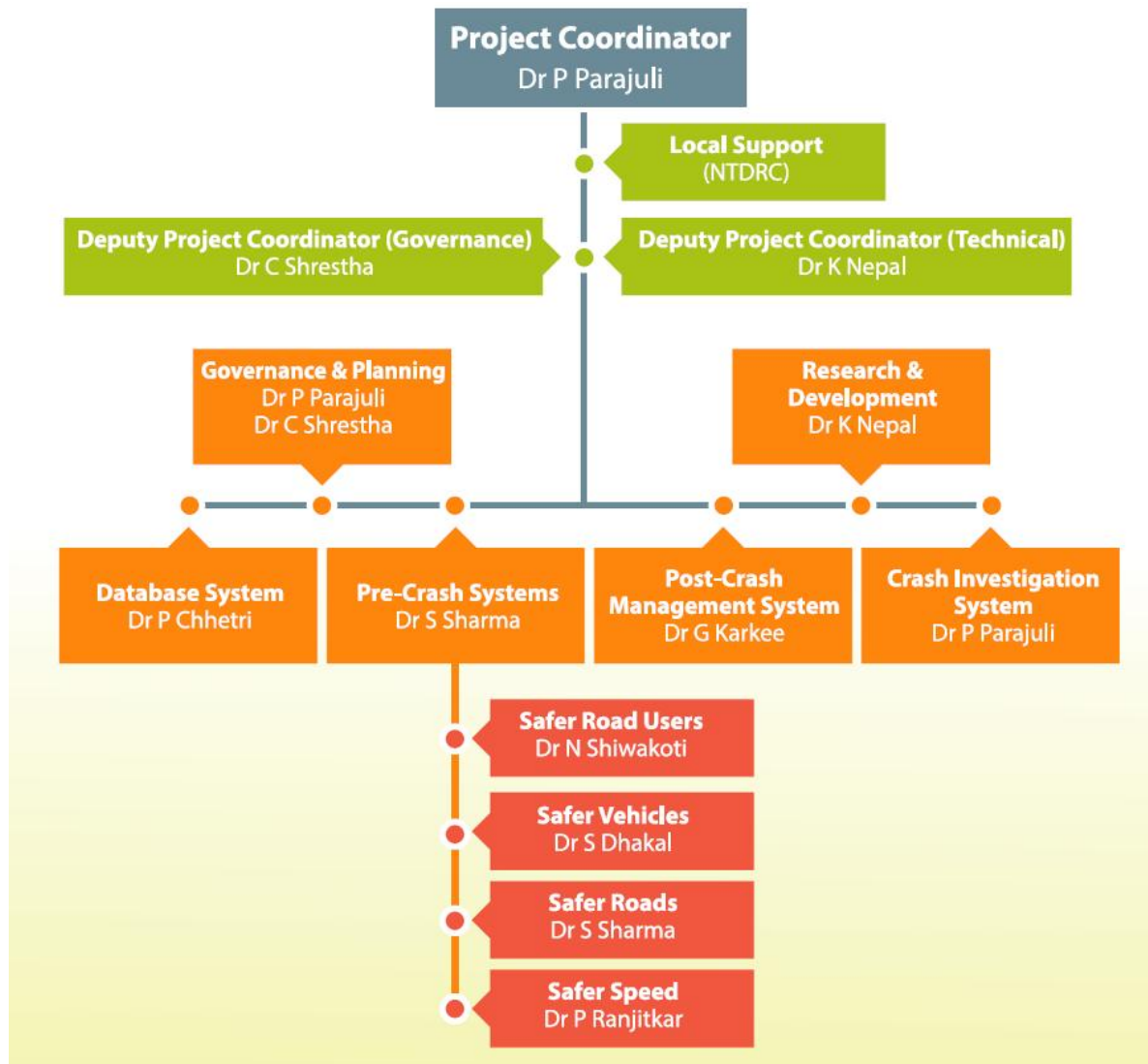
(a) Component Leaders

S. No.	Name	Responsible Areas
1	Dr. Partha Mani Parajuli	Project Coordinator, Crash Investigation System, Governance and Planning
2	Dr. Kali Prasad Nepal	Deputy Project Co-ordinator (Technical), Research and Development
3	Dr. Chandra Bahadur Shrestha	Deputy Project Co-ordinator (Local Support), Governance and Planning (Local Support)
4	Dr. Prem Chhetri	Road Safety Information Management System
5	Dr. Shyam Lal Sharma	Coordination of sub-components of Pre-crash System and leading Safer Roads sub-component of Pre-crash System
6.	Dr. Nirajan Shiwakoti	Safer Road Users
7	Dr. Prakash Ranjitkar	Safer Speeds
8	Dr. Ganesh Jung Karkee	Post-crash Management System
9	Dr. Shobhakar Dhakal	Safer Vehicles

(b) Project Leaders

S. No.	Name	Types of Projects Leading
1	Santosh Tripathi	Projects related to the development of Crash Investigation Policy, Guideline, Manual; Projects related to the development of Policy, Guideline, Manual on Road Safety Audit, Train local engineers in undertaking crash investigation, road safety audits
2	Anthony Eagle	Projects related to the development of Nepal Road Safety Information Management System and Crash Database System; Training for its ongoing maintenance / update
3	Subhash Dhungel	Projects related to governance and planning, road safety acts, local laws, rules and regulations, local input into road safety audit, crash investigation policies and procedures and other relevant local inputs required in various projects and sub-projects.
3	Saroj Shrestha	Projects related to undertaking of road safety audits; road side hazard management, training of local engineers in undertaking road safety audit, safety analysis, traffic and transport modelling with due considerations of road safety.
4	Manoj Munakami	As above
5	Ashis Parajuli	Projects related to road use management, corridor management and access control and rationalisation for road safety
6	Rajan Koirala	Projects related to road safety risk assessment and control measures due to landslides, slope instability as well as road safety asset inventory preparation
8	Kamal Bahadur Shrestha	Projects related to Community Mobilisation, Community Management Action Plan, Formation of Community Action Groups for Overloading/crowding Prevention etc
9	Pushpa Shrestha	Projects related to Social Development, Gender, Social Grievance Management, Women Empowerment in Road Safety

APPENDIX A TENTATIVE TEAM STRUCTURE AND RESPONSIBILITIES



Dr Partha Parajuli

Dr. Partha Mani Parajuli, CP Eng., holds a Ph D Civil Engineering (Transport) from the University of Calgary, Canada and MSc in Civil Engineering (Highways) from Moscow Automobile and Road Engineering Institute, Former Soviet Union. He has over 35 years of experience in planning, design, operation and management of transport and traffic systems. Partha Parajuli has extensive experience in leading and managing many large scale road, transport and traffic projects and in applying portfolio, program and project management and contract administration systems for various study design and construction projects including in the field of road safety. He has extensive experience in managing World Bank, Asian Development Bank and other multilaterally and bilaterally funded road and transport projects in Nepal. Partha Parajuli has gained significant experience in road safety covering all phases of project cycles including investigating, identifying, planning, programming, conceptualising and developing road safety improvement projects and road safety system development and management. He is well informed about the current road safety situation in Nepal and is very much familiar with Nepal Road Safety Action Plans. He is the chief proponent and key lead member (Project Coordinator) of the Project entitled "A comprehensive proposal for the development and implementation of Road Safety Management System in order to contribute to Nepal's effort in saving innocent lives on roads and in reducing social, health and economic burden resulting from road crashes.

CURRENT POSITION	Principal Engineer (Safer Roads), Queensland Department of Transport & Main Roads
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ACADEMIC QUALIFICATIONS	<ul style="list-style-type: none"> • 1992-1996: Ph D in Civil Engg. (Transportation), The University of Calgary, Canada • 1972-1978: M Sc in Civil Engg. (Highways), Moscow Automobile and Road Engineering Institute, Former USSR
TRAININGS SEMINARS CONFERENCES PUBLICATIONS	<ul style="list-style-type: none"> • Over three dozens of formal and on-the-job/ workplace training including on Road Safety, Capacity & Safety Analysis packages • Over half a dozen of international, regional and national level conferences including scholarly paper presentation • Over a dozen of transport and road safety research publications on International Journals and Conference Proceedings and series of articles
MEMBERSHIP OF PROFESSIONAL SOCIETIES	<ul style="list-style-type: none"> • Member, Chartered Professional Engineer (CPEng), Institute of Engineers Australia • Registered Professional Engineer, National Professional Engineers' Register (Civil Engineering), Australia • Registered Professional Engineer of Queensland • Chartered Engineer, India; Life Member, Institute of Urban Transport, India. • Life Member, Nepal Engineers' Association, Nepal; • Member, Institute of Transportation Engineers, USA • Fellow, The Institution of Engineers, India
DETAILS OF EMPLOYMENT	<ul style="list-style-type: none"> • Oct 2007 - Present: Principal Engineer (Road Safety), Queensland Department of Transport & Main Roads (QDTMR), Brisbane, Australia • Aug 2014 - Present: Urban Transport Planner/ Traffic Management Specialist & Trainer, Kathmandu Sustainable Urban Transport Project (Intermittent - on leave from QDTMR), Kathmandu, Nepal • Aug 2012 - Feb 2015: Traffic Management Specialist & Trainer, Kathmandu Sustainable Urban Transport Project (Intermittent - on leave from QDTMR), Kathmandu, Nepal • Oct 2002 - Oct 2007: Principal Adviser (Transport & Traffic), Redlands City Council, Cleveland, Queensland, Australia • Aug 2001 - Oct 2002: Senior Adviser (Integrated Transport), Department of Transport, Queensland, Australia • Jan 2001 - Jul 2001: Principal Adviser (Transport & Infrastructure), Redlands City Council, Cleveland Queensland, Australia • Jul 1979 - Sep 2000: Director/ Consultant (Roads and Transport), TAEC Consult Pty Ltd, Kathmandu, Nepal • Jan 1992 - July 1996: Research Associate (Transport & Traffic) (on leave from TAEC and IOE), Department of Civil Engineering, The University of Calgary, Alberta, Canada • Apr 1979 - Sep 2000: Lecturer/ Associate Professor (Transport and Traffic), Institute of Civil Engineering, Tribhuvan University, Kathmandu, Nepal • Sep 1978 - Mar 1979: Engineer, National Construction Company of Nepal, Nepal

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6. Khan, O., Ferreira, L., Bunker, J., Parajuli, P. (2005), Design of a computer based survey instrument for modelling multi-modal passenger demand, 27th Conference of the Australian Institute of Transport Research, Brisbane, Australia, 2005
7. Parajuli, P. M., Wirasinghe, S. C., Hunt, J. D., Abraham, J. E. (2005), A Nested Logit Model of Mode Choice Behaviour in Heterogeneous Modal Environment, paper presented in the international conference in Hong Kong, December 2005 and published in referred Conference Proceedings
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10. Parajuli, P. M. (2013), Safer Roads take me home, an article published in the weekend edition of the Kathmandu Post advocating the importance of integrating safety measures on roads during design and construction of roads and that policing alone does not address safety issues (12/09/2013)
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12. Parajuli, P. M. (1999), Kathmandu: A City without Arterial Roads, an article published in the weekend edition of the Kathmandu Post presenting the problem associated with the transport system in Kathmandu in absence of control of access to existing arterial roads and plan for constructing new arterial roads (26.12.1999)

Dr Kali Prasad Nepal

Dr. Kali Prasad Nepal is a Senior Lecturer in Civil Engineering (Traffic and Transportation) in the School of Engineering at Deakin University, Australia. Dr. Nepal completed his Ph.D. in Civil Engineering (Transportation Planning and Engineering) at Tokyo Institute of Technology, Japan; M.Eng. in Civil Engineering (Transportation Engineering) at Asian Institute of Technology, Thailand; Graduate Certificate in Higher Education at Griffith University, Australia; and undergraduate studies in Civil Engineering at Tribhuvan University, Nepal. Before joining to Deakin, he worked as an academic at Griffith University and Central Queensland University in Australia. His research interests lie in the area of transportation/traffic engineering and engineering education. In recent years, he has focused his research on transportation safety, transport planning and policy and contemporary learning environment in higher education. Dr. Nepal has taught traffic and transportation engineering subjects/units in both undergraduate and postgraduate levels. He has published more than 30 reviewed journal and conference articles and presented his research at over a dozen of international conferences.

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ACADEMIC QUALIFICATIONS	<ul style="list-style-type: none"> • Graduate Certificate in Higher Education, Griffith University, Australia (2011) • PhD in Civil Engineering (transportation), Tokyo Institute of Technology, Japan (2005) • MEng in Transportation Engineering, Asian Institute of Technology, Thailand (2002) • BEng in Civil Engineering, Tribhuvan University, Nepal (1999)
AWARDS AND PRIZES	<ul style="list-style-type: none"> • Civil Engineering Coordination Award- Deakin University (2014) • Best Paper Presentation Award- JSCE (2004) • Japanese Government – Monbukagakusho Scholarship (2002 ~ 2005) • Asian Development Bank - Japan Scholarship (2000 ~ 2002)
PUBLICATIONS AND CONFERENCES	<ul style="list-style-type: none"> • Published more than 15 reviewed papers in transportation engineering • Published more than 10 reviewed papers in engineering education and training • Presented in more than 15 international conferences
PROFESSIONAL AFFILIATIONS	<ul style="list-style-type: none"> • Associate Editor: International Journal of Urban Sciences, Taylor & Francis • Member: Concrete Institute of Australia • Member (MIEAust): Institution of Engineers Australia • Member: Australian Domestic Society of EASTS • Member: Nepal Engineers Association • Member: Nepal Engineering Council
DETAILS OF EMPLOYMENT	<ul style="list-style-type: none"> • Senior Lecturer & Coordinator, Deakin University, Australia (2012- Present) • Lecturer, Griffith University, Australia (2009-2011) • Lecturer, Central Queensland University, Australia (2006-2008) • Research Fellow, Institute for Transport Policy Studies, Tokyo, Japan (2005-2006) • Civil Engineer/Transportation Planning, Government of Nepal (1999-2000)

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9. Nepal, KP (2012), A comparative evaluation of analytical methods to allocate individual marks from a team mark, European Journal of Engineering Education, 37 (4), pp. 397-404.
10. Nepal, KP and L Lehtinen (2011), Measurement and analysis of pavement marking retroreflectivity, Transport Engineering in Australia, Vol. 13(1), pp. 49-60.
11. Nepal, KP, N Nedumpallile and SJ Courtney (2011) Impacts of mixed-use development on parking requirements, Proceedings of the Eastern Asia Society for Transportation Studies (EASTS), Vol.8, pp. 164-172
12. Nepal, KP and GA Jenkins (2011) Blending project-based learning and traditional lecture-tutorial teaching approaches in engineering design courses, Proceedings of the 2011 AAEE Conference, Fremantle, Western Australia, pp. 338-343
13. Nepal, KP and K Panuwatwanich (2011) Comparative study of project-based learning and traditional lecture-tutorial teaching approaches in undergraduate engineering courses, Proceedings of the 2011 AAEE Conference, Fremantle, Western Australia, pp. 351-356
14. Panuwatwanich, K, RA Stewart and KP Nepal (2011) Project management skills for engineers: industry perceptions and implications for engineering project management course, Proceedings of the 2011 AAEE Conference, Fremantle, Western Australia, pp. 569-575
15. Jenkins, GA, D Edwards, KP Nepal and M Bolton (2011) Mapping student approaches to learning within a Civil Engineering Program, Proceedings of the 2011 AAEE Conference, Fremantle, Western Australia, pp. 523-529

Dr Chandra B Shrestha

Dr. Chandra Shrestha is an infrastructure planner, development manager and researcher with multi-sectoral experience in working with organisations (as professor, infrastructure and transport specialist, regional adviser, loan and grant officer for municipal infrastructure, and diploma civil engineer), leading in strengthening of the central and local governments, facilitating donor harmonisation and aid effectiveness, formulating infrastructure projects and institutionalising transport planning and management.

CURRENT POSITION	<ul style="list-style-type: none"> • Consultant - Transport Sector, The World Bank, Nepal • Technical Services Manager: DFID - Asia Community Access Project (ASCAP - Cardno/ITT)
CONTACT DETAILS	<p>Nepal Transportation and Development Research Centre (NTDRC) G.P.O. Box - 8975, EPC: 1125; Kathamandu, Nepal E-mail: c-shrestha@ntdrc.org Tel: 977 1 5525275</p>
ACADEMIC QUALIFICATIONS	<ul style="list-style-type: none"> • Doctor of Philosophy, Asian Institute of Technology, Thailand, 2002. • M. Sc. in Rural and Regional Development Planning, University of Dortmund-Germany and Asian Institute of Technology-Thailand, 1994
TRAININGS SEMINARS CONFERENCES PUBLICATIONS	<ul style="list-style-type: none"> • Over three dozens of formal and on-the-job/workplace training including on shifting agendas from response to resilience • Over half a dozen of international, regional and national level conferences including scholarly paper presentation • Over a dozen of transport planning, fast track, routes for the International, model for cooperation Between Nepal, India and China
MEMBERSHIP OF PROFESSIONAL SOCIETIES	<ul style="list-style-type: none"> • Institution of Transportation Engineers, USA • Member Indian Road Congress • Chartered Member of Institution of Civil Engineers, UK • Member of SPRING International Association of Development Planners. • Member of Management Association of Nepal • Member of Asian Institute of Technology Alumni Association.
DETAILS OF EMPLOYMENT	<ul style="list-style-type: none"> • May 2013 – Present (Intermittent): Consultant - Transport Sector , The World Bank, Nepal Office, Kathmandu • Jan 2015 - Present: Technical Services Manager: DFID - Asia Community Access Project (ASCAP - Cardno/ITT) • Sep 2010 – Present (teaching responsibility only): Professor, Nepal Engineering College (nec) • Aug 2011 – April 2013: Managing Director, Nepal Transportation and Development Research Center (NTDRC) • April 2003 – Aug 2010: Infrastructure Adviser, Department for International Development (DFID) - Nepal • Dec 1997 – Aug 1998: Regional Adviser, Rural Urban Partnership Programme, A joint programme of the His Majesty's Government of Nepal, United Nations Development Programme (UNDP) and United Nations Centre for Human Settlement (UNCHS) • May 1995 – Dec 1997: Planning Adviser, Helvetas Nepal: Pilot Labour Based District Road Rehabilitation and Maintenance Project, Butwal, Nepal • 1992 – 1995 : Deputy Manager, Loan and Grant, Town Development Fund Board, Kathmandu, Nepal • 1984 - 1992: Diploma Engineer/Research Officer, Industrial Services Centre/ Economic Services Centre Ltd., Kathmandu, Nepal • 1981- 1984 : Diploma Engineer (Overseer), Contractor - Sherpa Construction Co. Pvt. Ltd ; Employer: Helvetas known as Swiss Agency for Technical Assistance (SATA)

SELECTED RESEARCH PAPERS AND AWARENESS ARTICLES

1. Shrestha, C.B., Cold Realities of the Kathmandu – Nijhagadh Fast Track (Fast Track of Tito Yathartha, Nepal Magazine; 01 Feb. 2015).
2. Shrestha, C.B., New Routes for the International Trade (Antarastriya Byapar ka Lagi Naya Marga, Nepal Magazine; 14 Dec. 2014).
3. Shrestha, C.B., Fast Track Strategy for Fast Track Highway, New Business Age Magazine; 01 Dec. 2014.
4. Shrestha, C.B., Model for Cooperation between Nepal, India and China (Yasari Huncha Tridesiya Sajhedari, Nepal Magazine; 21 Sep. 2014).
5. Shrestha, C. B., Strategies for Developing North South Transit Roads in Nepal, Journal of Transportation and Development, 1 (1), Jan. 2013, Nepal Transportation and Development Research Centre and Institution of Civil Engineers, UK, Kathmandu, Nepal.
6. Kruk, E. & Shrestha, C. B., Promotion of innovative heritage routes to contribute to poverty reduction, sustainable development and heritage conservation in the Kailash Sacred Landscape. A case study from Humla District, Nepal, Conference on Tourism, Roads and Cultural Itineraries: Meaning, Memory and Development; Organised by University of Laval, Canada, University of Birmingham, UNESCO and University of Paris (Published in Conference Proceedings.)
7. Shrestha, C. B., 2010. Why to preserve Trans Himalaya Heritage Routes? Nepal Forum for Rural Transport and Development, Kathmandu, Nepal.
8. Shrestha, C. B., 2008. Transport Networks: The road to prosperity. The Himalayan Times, Nepal, Oct. 27 2008.
9. Shrestha, C. B., 2003. A Comparative Overview on the Contemporary Methodologies of Rural Transport Network Planning in the Hindu Kush Himalayan Region. A Convention Paper Presented in the 8th National Convention and FEISCA Regional Meet, 3-5 April 2003, Convention Theme: Engineers in Social Transformation. Nepal Engineers Association, Lalitpur, Nepal.
10. Shrestha, C. B.; Kammeier, H.D., and Routray, J. K., 2001. District Road Network Planning Lessons from a Nepalese Pilot Project. Third World Planning Review, 23(4).
11. Shrestha, C. B., 2001. Developing a Methodology for Planning the Regional Road Network in Nepal. Technical Papers of the International Seminar on Sustainable Development in Road Transport. New Delhi, India: Indian Road Congress.
12. Shrestha, C. B., and Routray, J. K., 2001. Application of Settlement Interaction Based Rural Road Network Model in Nawalparasi District of Nepal. Conference Proceedings of the First Road Transportation Technology Transfer Conference in Africa. pp. 268-287. Arusha, Tanzania: Tanzania Technology Transfer Centre.
13. Shrestha, C. B., and Kammeier, H.D., 1998. Rural Road Planning and Management Practices in Nepal: An Assessment of the Pilot Labour-Based District Road Rehabilitation and Maintenance Project (PLRP) in Four southwestern Districts, 1994-1998. Workshop Proceedings of the Participatory Framework for Planning Rural Road Networks, Construction and Maintenance: Present Practice and Implications for Developing Countries in Asia, Bangkok, Thailand: The Asian Institute of Technology and International Labour Organisation.
14. Shrestha, C. B., 1997. District Level Planning Education and Research in Nepal: Comparison with the Education under the SPRING Programme (Asian Institute of Technology, Thailand and University of Dortmund, Germany). The HSD2000: The HSD Anniversary Workshop Proceedings pp. 142-151: Bangkok, Thailand: The Asian Institute of Technology.
15. Shrestha, C. B., 1996. Challenges of District Road Management. The Independent, Vol. V, No. 44, Kathmandu, Nepal.
16. Shrestha, C. B., 1995. User's Committees: Facilitator or Obstacle for Development. The Kathmandu Post, Vol. III. No. 186. Kathmandu, Nepal.
17. Rai, P. K. and Shrestha, C. B., 1994. Project Identification: A Challenge to Municipalities. Bulletin of Town Development Fund Board, Vol. II, No. 3. Kathmandu, Nepal.

Dr Prem Chhetri

Prem is an economic geographer with a strong interest in urban infrastructure, urban systems modelling, transport and logistics analysis, emergency services planning, and management of geographic information. He holds a number of degrees that include a Master degree in Regional Development and Planning from Jawaharlal Nehru University and a Master degree from Delhi School of Economics, Delhi University in India – the two most prestigious institutions in India.

After completing a Doctorate in Geographic Information Systems (GIS) from RMIT University, he commenced his career as a consultant with a planning firm and latter with the Local Government (Brimbank City Council) in Melbourne, Australia where he gained valuable industry experience.

In 2005, he formally started his academic career as a Research Fellow with the University of Queensland Social Research Centre where I successfully completed a number of ARC projects. He is/was a Chief Investigator on numerous Category 1 national grants including 3 ARC projects, building spatial information systems to monitor, model and simulate movement patterns of people, goods and emergency services.

Currently, he is a Professor in the School of Business IT and Logistics, RMIT University, where the focus of my teaching revolves around transport planning and distribution management. He combines research leadership and participation in research projects concerning the field of urban infrastructure planning, emergency services delivery, port and city logistics, and transport modelling.

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ACADEMIC QUALIFICATIONS	<ul style="list-style-type: none">• 2000-2003: PhD, School of Geospatial Science, RMIT University.• 1993-1996: MPhil, Jawahar Lal Nehru University, New Delhi, INDIA.• 1991-1993: MA, Delhi University, INDIA.• 1989-1991: BA Geography, Delhi University, INDIA.
DETAILS OF EMPLOYMENT	<ul style="list-style-type: none">• 2012-Current: Professor, RMIT University.• 2007-2012: Senior Lecturer and Associate Professor, RMIT University.• 2004-2007: Research Fellow, The University of Queensland, QLD.• 2002-2004: Brimbank City Council, Local Government, Melbourne.• 2000-2001: SGS Economics and Planning, Melbourne.• 1996: Centre for Science and Environment, New Delhi, India.

SELECTED RECENT PUBLICATIONS

1. Chhetri P., Jayatilleke G., Gekara V., Manzoni A. and Corbitt B. (in press), Container Terminal Operations Simulator - Simulating the impact of extreme weather events on Port Operations, *European Journal of Transport and Infrastructure Research*,
2. Chhetri P., Corcoran J. Gekara V. Maddox, C. and McEvoy D. (2014), Seaport Resilience to Climate Change: Mapping Vulnerability to Sea Level Rise, *Journal of Spatial Science*.
3. Chhetri, P., Butcher T. and Corbitt B. (2014), Characterising spatial logistics employment clusters, *International Journal of Physical Distribution and Logistics Management*, Vol. 44 (3), pp. 221-241.
4. Chhetri et al. (2012), Simulating the Vulnerability of Port Operations to Extreme Weather Events - Enhancing the Resilience of Seaports to a Changing Climate, A Preliminary Report submitted to Department of Climate Change and Energy Efficiency, May 2012.
5. Adler C.E., McEvoy D., Chhetri P. and Kruk E. (2012), The role of tourism in a changing climate for conservation and development. A problem-oriented study in the Kailash Sacred Landscape, Nepal, *Policy Sciences*, June 2013, Volume 46, Issue 2, pp 161-178.
6. Chhetri et al. (2011), Functional Resilience of Wider Port Environs - Enhancing the Resilience of Seaports to a Changing Climate, A Report submitted to Department of Climate Change and Energy Efficiency, Dec 2011.
7. Chhetri P., Hashemi, A., Basic F., Manzoni, A and Jayatilleke G. (2012), Bushfire, Heatwave and Flooding: Case Studies from Australia, A Report submitted on the WEATHER (Weather Extremes Impacts on Transport Systems and Hazards for European Regions) Project to Fraunhofer-Institute for Systems and Innovation Research (ISI) for European Commission, 2012.
8. Chhetri, P., Corcoran, J.C. and Arrowsmith C. (2010) Investigating the temporal dynamics of tourist movements: an application of circular statistics, *Tourism Analysis*, 15, pp. 71-88.
9. Chhetri, P., Stimson R., and Western J. (2010), Understanding the downshifting phenomenon in Australia, *Australian Journal of Social Issues*, 44 (4): pp. 345- 362.
10. Rohde, D., Corcoran, J., and Chhetri P. (2010), Spatial forecasting of residential urban fires: A Bayesian approach, *Computer, Environment and Urban Systems*. 34 (1), pp. 58-69.
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12. Chhetri, P., Corcoran J. and Stimson R. (2009), Exploring the spatio-temporal dynamics of fire incidence and the influence of socio-economic status: A case study from South East Queensland, Australia, *Journal of Spatial Science*, vol. 54 (1), pp. 79 - 91.
13. Chhetri, P. Corcoran, J.C., Inbakaran R. and Stimson R. (2009), Investigating the relationships between building fires and socio-economic characteristics – A case study of South East Queensland, Australia, *Geographical Research*.
14. Corcoran, Chhetri, P. Stimson R. and Fry P. (2009), Investigating the Ipswich to Brisbane commuting pattern: A quantitative approach, *Australian Planner*. vol 46, (2), pp. 40-46.
15. Chhetri, P., Han H., & Corcoran, J. (2008) "Modelling spatial fragmentation of Brisbane housing markets", *Urban Policy and Research*. vol 27 (1), pp. 73-89.
16. Corcoran, J. Chhetri, P., and Stimson R. (2008) "Using circular statistics to explore the geography of the Journey-to-Work", *Papers in Regional Science*.
17. Chhetri, P., Corcoran J., Stimson R. Bell, M. Cooper J. & Pullar D. (2007) "Subjectively weighted development scenarios for urban allocation: A case study of South East Queensland, Australia", *Transactions in GIS*, 11 (4): 267-289.

Dr. Shyam Sharma

Dr. Shyam Sharma, PE, PTOE holds a Ph D in Civil Engineering (Transportation) from Wayne State University, Michigan, USA and MSc in Civil Engineering (Transportation) from Asian Institute of Technology, Bangkok, Thailand. He has over 22 years of experience in highway design, construction, maintenance, operation, and management of transportation and traffic systems.

Shyam Sharma has extensive experience in highway traffic operation and safety including traffic safety planning, comprehensive traffic safety analyses and investigations, identifying high crash locations for safety improvement, scoping safety projects, economic analysis, design of transportation projects for improved multimodal safety and mobility, implementation, and evaluation of traffic safety countermeasures for urban and rural highways as well as city streets. The majority of such experiences are with public highway agency as well as research and teaching institutions. The natures of safety projects include intersection safety (unsignalized and signalized intersections), pedestrian and bicycle safety, and roadway departure safety improvements. Shyam Sharma has conducted several road safety studies and proposed countermeasures to mitigate traffic crashes, communicated solutions to various communities and implemented them. In addition, he has significant experience in managing risks on rural and urban highways using low cost safety improvements systematically.

CURRENT POSITION	Region Traffic Engineer/Manager Oregon Department of Transportation
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DETAILS OF HIGHER EDUCATION	<ul style="list-style-type: none"> • 2001-2006: Ph D in Civil Engg. (Transportation), Wayne State University, USA • 1999-2001: M Sc in Civil Engg. (Transportation), Asian Institute of Technology, Bangkok, Thailand
TRAININGS SEMINARS	<ul style="list-style-type: none"> • Several trainings and workshops on traffic operations, safety, planning, and highway management • Leadership Oregon – 2011 (a year long program for senior and mid-level executives of the state of Oregon) • Systematic Development of Informed Consent (SDIC) • Crucial Conversations - Tools for Talking When Stakes are High • Human Resources Training for Managers • Competent Communicator (Toast Masters International) • Operations Academy - 2012 (Senior Management Training on Traffic systems Operations and Management)
MEMBERSHIP OF PROFESSIONAL SOCIETIES	<ul style="list-style-type: none"> • Licensed Professional Engineer (PE), Oregon, USA • Professional Traffic Operations Engineer (PTOE), USA • Member, Institute of Transportation Engineers, USA
DETAILS OF EMPLOYMENT	<ul style="list-style-type: none"> • Sep 2012 - Present: Region Traffic Engineer/Manager, Oregon Department of Transportation (ODOT), Southwest Region, Oregon, USA • Sep 2011 - Aug 2012: Program Manager – Traffic Engineering, American Association of State Highway and Transportation Officials (AASHTO), Washington DC, USA • Nov 2007 - Aug 2011: Region Traffic Engineer/Manager, Oregon Department of Transportation (ODOT), Southwest Region, Oregon, USA • Jun 2006 - Oct 2007: Region Traffic/Safety Analyst, Oregon Department of Transportation, Southwest Region, Oregon • Aug 2001 - May 2006: Graduate Research Engineer, Wayne State University, Michigan, USA • May 2001 – Jul 2001: Highway Engineer, Department of Roads, Nepal • Aug 1999 - Apr 2001: Graduate Program (Transportation), Asian Institute of Technology, Bangkok, Thailand • Jul 1996 - Jul 1999: Highway Engineer, Department of Roads, Nepal • May 1993 - Jun 1996: Civil/Structural Engineer (Roads and Transport), TAEC Consult Pty Ltd, Kathmandu, Nepal

SELECTED RESEARCH PAPERS

1. Sharma, Shyam L. and Datta, Tapan K. (2007) "Investigation of Regression-to-Mean Effect in Traffic Safety Evaluation Methodologies", Transportation Research Record No. 2019, Transportation Research Board, Washington DC.
2. Park, D., Sharma, Shyam L., Rilett, L. R., and Chang, M. (2002) "Identifying Multiple Reasonable Alternative Routes: Efficient Vector Labelling Approach", Transportation Research Record No. 1783, Transportation Research Board, Washington DC.
3. Sharma, Shyam L. and Datta, Tapan K. (2007) "Investigation of Regression-to-Mean Effect in Traffic Safety Evaluation Methodologies", presented in 86th Annual Conference of Transportation Research Board, Washington D.C.
4. Datta, T.K., Schattler, K.L., and Sharma, Shyam L. "Highway Safety Evaluation Methods (2003) – A Comparative Analysis", Proceedings of the ETC 2003, Strasbourg, France
5. Park, D., and Sharma, Shyam L. (2001), "Vector Labelling Approach for Identifying Multiple Reasonable Alternative Routes in Transportation Networks", Proceedings of the fourth Conference of the Eastern Asia Society for Transportation Studies, Vietnam.

Dr Nirajan Shiwakoti

Dr Nirajan Shiwakoti is a transportation engineer with a strong interest in urban transportation systems, human factors, pedestrian level of service, safety analysis and evaluation, crowd dynamics modelling, emergency services planning and road safety audits. Dr Shiwakoti has a number of degrees in Civil Engineering that include a PhD degree in Transport Engineering from Monash University, Australia, a Master degree in Urban and Environmental Engineering from Hokkaido University, Japan and a Bachelor degree in Civil Engineering from Tribuvan University, Nepal. Dr Shiwakoti is currently a Senior Lecturer at RMIT University and has previously worked as a Lecturer at Institute of Transport Studies at Monash University, Australia.

Dr Shiwakoti has published over 50 journals, conference papers and reports and has presented his research at over a dozen of international conferences. He has received several international awards for his work that includes research fellowships from prestigious organizations like International Association of Traffic and Safety Sciences (IATSS), Japan, International Symposium on Transportation and Traffic Theory, University of California, Berkeley, USA, Fresh Science Community, Australia and Australian Road Research Board. Dr Shiwakoti has worked on several pedestrian safety projects, including a study on the Shibuya intersection in Tokyo, which is the busiest intersection in the world along with passenger's safety in Australia's busiest train stations. His research work has been supported through several competitive grants at university as well as extremely competitive Australian Research Council grant. He is using those grants for his research on enhancing the safety of people in critical situations. Dr Shiwakoti is active in promoting his research findings to the general community and has previously provided interviews on his research to various scientific media including Australian Television, Discovery Chanel, Canada, National Geographic Chanel, USA and NewScientist magazine, London.

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PROFESSIONAL AFFILIATIONS	<ul style="list-style-type: none">• Key member, US Transportation Research Board (TRB) Annual Meeting - Committee on Transit Capacity and Quality of Service (AP015), Washington D.C• Member, Engineers Australia (M.I.E.Aust.)• Contributing editor, Journal of Traffic and Transportation Engineering, Elsevier
DETAILS OF EMPLOYMENT	<ul style="list-style-type: none">• 2014-Present: Senior Lecturer, RMIT University, Australia• 2011-2014: Lecturer, Monash University, Australia• 2003-2004: Civil Engineer, D-Net (P) Ltd.

SELECTED RECENT PUBLICATIONS

1. Pender, B., Currie, G., Shiwakoti, N., Delbosc, A. (In Press) "Economic Viability of Bus Bridging Reserves for Fast Response to Unplanned Passenger Rail Disruption", *Transportation Research Record*
2. Shiwakoti, N., Gong, Y., Shi, X., Ye., Z. (2015) "Examining influence of merging architectural features on pedestrian crowd movement", *Safety Science*, Vol. 75, pp. 15-22
3. Pender, B., Currie, G., Delbosc, A., Shiwakoti, N., (2014) "International Study of Current and Potential Social Media Applications in Unplanned Passenger Rail Disruptions", *Transportation Research Record*, Vol. 2419, pp. 118-127
4. Dias, C., Sarvi, M., Ejtemai, O., Shiwakoti, N., (2014) "Pedestrian walking characteristics through angled corridors: An experimental study", *Transportation Research Record*, Vol. 2421, pp. 41-50
5. Shiwakoti, N., Sarvi, M., Burd, M., (2014) "Using non-human biological entities to understand crowd behavior under emergency condition", *Safety Science*, Vol. 66, pp. 1-8
6. Pender, B., Currie, G., Shiwakoti, N., Delbosc, A., (2014) "Social Media Use during Unplanned Transit Network Disruptions: A Review of Literature", *Transport Reviews*, Vol. 34, Issue 4, pp. 501-524
7. Zheng, Z. Liu, Z. Liu, C. and Shiwakoti, N. (2014), "Understanding public response to a congestion charge: A random-effects ordered logit approach", *Transportation Research Part A: Policy and Practice*, Vol. 70, pp. 117-134
8. Shiwakoti, N., Sarvi, M., Burd, M., (2014) "Similar crowd behavior in organisms of vastly different body size", *Journal of Insect Behavior*, Vol. 27(2), pp. 239-250
9. Pender, B., Currie, G., Delbosc, A., Shiwakoti, N., (2014) "Improving bus bridging responses via satellite bus reserve locations", *Journal of Transport Geography*, Vol. 34, pp. 202-210
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11. Shiwakoti, N., Sarvi, M. (2013) "Enhancing the panic escape of crowd through architectural design", *Transportation Research Part C*, Vol. 37, pp. 260–267
12. Dias, C., Sarvi, M., Shiwakoti, N., Ejtemai, O., Burd, M. (2013) "Investigating collective behaviour in complex situation", *Safety Science*, Vol. 60, pp. 87-94
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17. Shiwakoti, N. Sarvi, M., Rose, G., Burd, M. (2011) "Animal dynamics based approach for modelling pedestrian crowd egress under panic conditions", *Transportation Research Part B- Methodological*, Vol. 45, Issue 9, pp. 1433-1449
18. Shiwakoti, N., Sarvi, M., Rose, G., Burd, M. (2010) "Biologically inspired modeling approach for collective pedestrian dynamics under emergency conditions", *Transportation Research Record*, Washington, D.C., Vol. 2196, pp. 176-184
19. Burd, M., Shiwakoti, N., Sarvi, M., Rose, G. (2010) "Nest architecture and traffic flow: large potential effects from small structural features", *Ecological Entomology*, Vol. 35, Issue 4, pp. 464-468
20. Shiwakoti, N., Sarvi, M., Rose, G., Burd, M. (2009) "Enhancing the safety of pedestrians during emergency egress: Can we learn from biological entities?" *Transportation Research Record*, Washington, D.C., Vol. 2137, pp. 31

Dr Prakash Ranjitkar

Dr Prakash Ranjitkar is a Senior Lecturer at the Department of Civil and Environmental Engineering, University of Auckland, New Zealand. He has more than 15 years of academic, research and consulting experience in a range of transport and other infrastructure projects. His current teaching responsibilities include lecturing on topics related to traffic engineering, transportation planning, intelligent transportation systems and modelling and simulation of transport facilities to undergraduate and postgraduate students. He has research interest/expertise in traffic engineering, intelligent transportation systems, traffic flow theory, optimization of traffic control systems, human factors, traffic safety, public transportation, modelling and simulation of transport facilities, and applications of emerging technologies in transportation and has published 57 peer-reviewed research articles in journals and conferences on those topics. Prior to joining the University of Auckland in 2007, he worked for the University of Delaware in USA (2006-2007) and Hokkaido University in Japan (2001-2006).

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HONORS	<ul style="list-style-type: none"> • JSPS Fellowship, Japan Society for the Promotion of Science, Japan (2004) • Japanese Government Scholarship, Hokkaido University, Japan (2001) • Austrian Government Scholarship, Asian Institute of Technology, Thailand (1997) • PTS Fellowship, Postgraduate Technological Studies, European Union (1998)
PUBLICATIONS AND CONFERENCES	<ul style="list-style-type: none"> • 57 refereed research articles in journals (29) and conferences (28) + 43 presentations at invited seminars, workshops and conferences
PROFESSIONAL AFFILIATIONS	<ul style="list-style-type: none"> • Institute of Professional Engineers, New Zealand (IPENZ) • IPENZ Transport Group, New Zealand (Elected Member for Auckland Branch) • ITS New Zealand, New Zealand • Eastern Asia Society for Transportation Studies, New Zealand Branch (Academic Coordinator) • Institute of Transportation Engineers, USA
DETAILS OF EMPLOYMENT	<ul style="list-style-type: none"> • Senior Lecturer, Dept. of Civil and Environmental Eng., University of Auckland, New Zealand (from 2007) • Research Fellow, Dept. of Civil and Environmental Eng., University of Delaware, USA (2006 ~ 2007) • Research Fellow, Graduate School of Eng., Hokkaido University, Japan (2004 ~ 2006) • Teaching Assistant, Graduate School of Eng., Hokkaido University, Japan (2002 ~ 2004) • Technical Manager, Underground Engineering Services, Thailand (2000 ~ 2001) • Project Engineer, International Blaster Co. Ltd., Thailand (1999 ~ 2000) • Civil Engineer, Building Design Associates Pvt. Ltd., Nepal (1996 ~ 1997) • Civil Engineer, Valley View Consult Pvt. Ltd., Nepal (1994 ~ 1996)

SELECTED PUBLICATIONS

1. Chaudhry MS and P Ranjitkar. Traffic Signal Design with an Increasing Queue Discharge Rate. Asian Transport Studies, Vol. 3, 2015 (Accepted).
2. Rashidi, S and P Ranjitkar. Bus Dwell Time Modelling using Gene Expression Programming. Computer Aided Civil and Infrastructure Engineering, 2015 (Accepted).
3. Rashidi, S, P Ranjitkar and Y Hadas. Modelling Bus Dwell Time with Decision Tree-Based Methods. Transportation Research Record, 2418, pp.74-83, 2014.
4. Rashidi, S., and Ranjitkar, P. Estimation of Bus Dwell Time using Univariate Time Series Models. Journal of Advanced Transportation May 2014.
5. Li, D, P Ranjitkar and A Ceder. An Integrated Approach Combining Ramp Metering and Variable Speed Limits to Improve Motorway Performance. Transportation Research Record, 2470, pp.86-94, 2014.
6. Sinha R, PS Roop and P Ranjitkar. Virtual Traffic Lights+: A Robust, Practical, and Functionally-Safe Intelligent Transportation System. *Transportation Research Record*, Vol. 2381, pp. 73-80, 2013.
7. Li D and P Ranjitkar. Assessing Ramp Metering and Variable Speed Limits Strategies for Auckland Motorway. Journal of Eastern Asia Society for Transportation Studies, Vol. 10, pp. 1856-1871, 2013.
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11. Hadas Y and P Ranjitkar. Modeling Public-Transit Connectivity with Spatial Quality-of-Transfer Measurements. Journal of Transport Geography, Vol.22, pp. 137-147, 2012.
12. Chaudhry MS, P Ranjitkar and DJ Wilson. Investigation of Queue Discharge Behavior at Signalized Intersection based on Analytical and Micro-simulation Models. Journal of Eastern Asia Society for Transportation Studies, Vol.9, No. 0, pp. 1628-1643, 2011.
13. Bezuidenhout U, P Ranjitkar and J Wang. The influence of a new signal offset optimiser on travel reliability and drivers' route choices (INSTInCt). Road and Transport Research, 20(3):77-82, 2011.
14. Vlahos E, A Polus, D Lacombe, P Ranjitkar, A Faghri and BR Fortunato. Evaluating the Conversion of All-Way Stop Controlled Intersections into Roundabouts. Transportation Research Record, 2078, pp. 80-89, 2008.
15. Tanaka M, P Ranjitkar and T Nakatsuji. Asymptotic Stability and Vehicle Safety in the Dynamic Car-Following Platoon. Transportation Research Record, 2088, (21), pp.198-207, 2008.
16. Nakatsuji T, I Hayashi, P Ranjitkar, T Shirakawa and A Kawamura. On-line Estimation of Friction Coefficients of Winter Road Surfaces Using Unscented Kalman Filter. Transportation Research Record 2015, 113-122, 2007.
17. Ranjitkar P and T Nakatsuji. Advances in microscopic traffic data collection using instrumented vehicles. Traffic Engineering and Control, Vol. 47, No. 4, pp. 147-151, April 2006.
18. Ranjitkar P, T Nakatsuji, Y Azuta, M Asano and A Kawamura. A Contemporary Reassessment of GM Car Following Model using RTK GPS Data. Journal of Infrastructure Planning and Management, No. 793/IV-68, pp. 121-132, July, 2005.
19. Ranjitkar P, T Nakatsuji and A Kawamura. Experimental Analysis of Car Following Dynamics and Traffic Stability. Transportation Research Record, 1934, pp. 22-32, 2005.
20. Ranjitkar P, T Nakatsuji and M Asano. Performance Evaluation of Microscopic Traffic Flow Models using Test Track Data. Transportation Research Record, 1876, pp. 90-100, 2004.
21. Ranjitkar P, T Nakatsuji, Y Azuta and GS Gurusinghe. Stability Analysis based on Instantaneous Driving Behavior using Car Following Data. Transportation Research Record, 1852, pp. 140-151, 2003.
22. Gurusinghe GS, T. Nakatsuji, Y Azuta, P Ranjitkar and Y Tanaboriboon. Multiple Car Following Data Using Real Time Kinematic Global Positioning System. Transportation Research Record, 1802, pp. 166-180, 2002.
23. Suzuki J, T Nakatsuji, Y Azuta and P Ranjitkar. Experimental Analysis of Reaction Time of Car Following Model. Infrastructure Planning Review, Vol. 19, No. 4, pp. 861-868, 2002.

Dr. Ganesh J Karkee

Dr. Ganesh Karkee is a Transportation Engineering Professional with proven record of delivering quality products to clients. Successfully coordinated with staff at all levels to accomplish project tasks. Proficient in nurturing relationship internally and externally with high customer service to ensure on-time project delivery. Strong ability to interface with colleagues and external clients. Worked in a variety of sponsored projects from local agency to federal government. Experienced in extensive data analysis and summarized in report format.

CURRENT POSITION	Transportation Engineer, Metropolitan Transportation Commission, California, USA
CONTACT DETAILS	Tel: (210) 723-3212 (cell) Personal Email: ganesh.karkee@gmail.com
ACADEMIC QUALIFICATIONS	<ul style="list-style-type: none"> • Ph. D. Civil Engr. (Transportation), University of Nevada, Las Vegas, December 2005. • M. E. Civil Engr. (Transportation), Asian Institute of Technology, Bangkok, Thailand, April 1997. • B. E. Civil Engineering, Tribhuvan University, Institute of Engineering, Nepal, 1993.
AWARDS AND PRIZES	<ul style="list-style-type: none"> • Institute of Transportation Engineers Intermountain Section Ellis L. Mathes Scholarship, May 2005 (Scholarship amount of \$1,000; ITE District 6 comprises the 13 westernmost states of the US) • Research/Teaching assistantship: Department of Civil and Environmental Engineering and Transportation Research Center, University of Nevada, Las Vegas (Fall 2002 to Fall 2005). • German Academic Exchange Services (DAAD) Scholarship, Asian Institute of Technology, Bangkok (September 1995 - April 1997).
AREAS OF INTERESTS	<ul style="list-style-type: none"> • Traffic Safety • Traffic Operations and Management/Traffic Engineering • Traffic Simulation/Computer Application in Transportation Engineering • Evaluation of New and Innovative Technologies • Geographic Information Systems Applications
PROFESSIONAL AFFILIATIONS	<ul style="list-style-type: none"> • Registered Professional Civil Engineer - State of California (License Number 82237), State of Nevada (License Number 016288)
DETAILS OF EMPLOYMENT	<ul style="list-style-type: none"> • October 2013 to Present: Transportation Engineer, Metropolitan Transportation Commission, California, USA • July 2011 to June 2013: Senior Engineering Associate, Dowling/Kittelson & Associates, Inc., California, USA • January 2011 to May 2011: Lecturer II (Part-time faculty), The University of Texas at San Antonio, Department of Civil and Environmental Engineering, San Antonio, Texas • April 2006 to August 2010: Assistant Research Scientist, Texas Transportation Institute (TTI), The Texas A&M University System, San Antonio, Texas • September 2002 to December 2005: Graduate Assistant, University of Nevada, Las Vegas, Nevada • October 2000 to August 2002: Assistant Professor, Tribhuvan University, Institute of Engineering, Kathmandu, Nepal • December 1998 to July 2000: Road Engineer, Asian Development Bank/TAEC Consult, Nepal • January 1998 to December 1998: Civil/Structural Engineer, Build-Max Construction Pte. Ltd, Singapore • May 1997 to December 1997: Transportation Engineer, Thai Engineering Consultants, Bangkok, Thailand • April 1993 to September 1995: Civil Engineer, Ministry of Local Development, His Majesty's Government, Nepal

SELECTED PUBLICATIONS

1. Shashi S. Nambisan and Ganesh Karkee. 2010. Pedestrian Countdown Signals Influence Vehicle Speeds? Transportation Research Record: Journal of the Transportation Research Board. Transportation Research Board of the National Academies. Volume 2149, pp 70-76.
2. Ganesh J Karkee, Steven Venglar, and Kwaku Obeng-Boampong. 2010. Analysis and Modeling of Ramps Using VISSIM to Improve Managed Lane Operations. Journal of Information, Intelligence and Knowledge. Nova Publishers. Volume 3, Issue 1, pp 1-11.
3. Ganesh Karkee, Shashi S. Nambisan, and Srinivas S. Pulugurtha. 2010. Motorist Actions at a Crosswalk with an In-pavement Flashing Light System. Traffic Injury and Prevention. Volume 11 (6), pp 642-649. DOI: 10.1080/15389588.2010.509767.
4. Shashi S. Nambisan and Ganesh Karkee. 2010. Pedestrian Countdown Signals Influence Vehicle Speeds? Transportation Research Board 89th Annual Meeting, Compendium of Papers. Washington, DC, January 10-14, DVD ROM.
5. Ganesh Karkee, Srinivas S. Pulugurtha, and Shashi S. Nambisan. 2009. Statistical Analysis of Pedestrian Crossing Behavior on Streets. Transportation Research Board 88th Annual Meeting, Compendium of Papers. Washington, DC, January 11-15, DVD ROM.
6. Kwaku Obeng-Boampong, Steven Venglar, and Ganesh J Karkee. 2008. Modeling and Analysis of Ramps to Support Managed Lane Operations. Transportation Research Board 87th Annual Meeting, Compendium of Papers. Washington, DC, January 13-17, DVD ROM.
7. Ganesh Karkee, Shashi S. Nambisan, Srinivas S. Pulugurtha, and Ashok K. Singh. 2006. An Evaluation of the Effectiveness of an In-pavement Flashing Light System. Transportation Research Board 85th Annual Meeting, Compendium of Papers. Washington, DC, January 22-26, DVD ROM.
8. Mohamed S Kaseko and Ganesh J Karkee. 2005. Development of a Midblock Pedestrian Crossing Simulation Model Using VISSIM. Transportation Research Board 84th Annual Meeting, Compendium of Papers. Washington, DC, January 9-13, DVD ROM.
9. Ganesh Karkee, Shashi S. Nambisan, and Srinivas S. Pulugurtha. 2006. Evaluating the Effectiveness of "Turning Traffic Must Yield to Pedestrians (R10-15)" Sign. ASCE Proceedings of the 9th International Conference on Application of Advanced Technologies in Transportation. Chicago, Illinois, August 13-16, p (400-405).
10. Ganesh Karkee and Shashi S. Nambisan. An Analysis Effectiveness of Pedestrian Countdown Signals Based on Pedestrian Actions. Compendium of Technical Papers (CD-ROM), ITE 2006 Technical Conference and Annual Meeting, Milwaukee, Wisconsin, August 6-9.
11. Shashi S Nambisan, Srinivas S. Pulugurtha, Vinod Vasudevan, and Ganesh Karkee. 2004. Field Data Collection and Analysis to Support the Selection of Countermeasures for the Las Vegas FHWA Pedestrian Safety Program. ASCE Proceedings of the 8th International Conference on Application of Advanced Technologies in Transportation. Beijing, China May 26-28, 2004, p (104-108).
12. Ganesh Karkee, Shashi Nambisan, and Shital K. Patel. 2006. An Evaluation of the Effectiveness of an In-pavement Flashing System. WesternITE, Bi-monthly publication, July-August Issue, District 6 Institute of Transportation Engineers. p (1-3).
13. Ganesh Karkee, Shashi S. Nambisan, and Srinivas S. Pulugurtha. Evaluation of an In-pavement Flashing Light System. Compendium of Technical Papers (CD-ROM) , Institute of Transportation Engineers District 6, 2005 Annual Meeting Kalispell, Montana, July 10-13.
14. Mohamed S. Kaseko and Ganesh Karkee. Analysis of Pedestrian Midblock Crossing Using the Microscopic Traffic Simulation Software VISSIM. Institute of Transportation Engineers District 6, 2004 Annual Meeting Sacramento, California, June 20-23.
15. Ganesh Karkee. Travel Behavior Analysis of Motorized and Non-motorized Public Transportation in Developing Countries: A Case Study of Khon Kaen, Thailand. At the seventh national convention of engineers: "Engineering Profession in Nation Building: Contribution & Vision," Nepal Engineers Association, Kathmandu, Nepal, April 11-13, 2001. p (206-213).

Dr Shobhakar Dhakal

Dr. Shobhakar Dhakal is an associate professor in energy field of study at Asian Institute of Technology, Thailand. Dr. Dhakal completed his Ph.D. in urban energy and urban heat island mitigation at the University of Tokyo. He has worked at numerous professional organisations before joining Asian Institute of Technology in 2012.

CURRENT POSITION	Associate Professor Asian Institute of Technology, Thailand
CONTACT DETAILS	PO Box 4, Khlong Luang, Pathumthani, Thailand 12120 PHONE +66 2 524 5403 Shobhakar.dhakal@gmail.com
ACADEMIC QUALIFICATIONS	<ul style="list-style-type: none"> • 2000 Ph.D. (Urban energy and urban heat island mitigation), The University of Tokyo, Japan • 1996 M.Engg. (Energy Economics and Planning), Asian Institute of Technology, Thailand • 1993 B. Engg. (Power system), National Institute of Technology Surat, India • 1999 Special Graduate Student (Jan-May 1999), Massachusetts Institute of Technology, USA
JOURNAL EDITORIAL INVOLVEMENTS	<ul style="list-style-type: none"> • Senior Editor/Editor-in-Chief, Carbon Management, Taylor and Francis, 2010 ~ ongoing • Associate Editor, Journal of Industrial Ecology (JIE), Yale University, 2011-12 • Member of Editorial Board, Urban Climate, Elsevier, 2012-2015 • Member, Board of Editorial Advisors, International Energy Journal, 2009 ~ onwards • Guest Co-editor, Special Issue on Sustainable Urban Systems, Journal of Industrial Ecology, December 2012, Volume 16, Issue 6 • Guest Co-editor, Special Issue on Pathways toward Low-carbon Cities: a US–China Focus, Carbon Management Journal (Volume 2, No 4, 2011) • Guest Co-editor, Special Issue on Carbon Emissions and Carbon Management in Cities, Energy Policy Journal (Volume 38, Issue 9, 2010) • Guest Co-editor, Special Issue on Environmental Implication of Urban Transportation in Asia, International Journal of Pollution and Environment (Volume 30, No.1, 2007). Web-link. Editorial Preface.
PROFESSIONAL ACTIVITIES	<ul style="list-style-type: none"> • Member of the Steering Committee (SC) of Asian Center of Innovation for Sustainable Agriculture Intensification (ACISAI) Center – March 2013 onwards • International Expert, Task force on Urban Development and Energy Efficiency, China • Member of Thematic Group on Sustainable Cities
DETAILS OF EMPLOYMENT	<ul style="list-style-type: none"> • (July 2012 – onwards) Associate Professor, Energy Field of Study, School of Environment, Resources and Development, Asian Institute of Technology, Thailand • (Apr 2006 – July 2012) Executive Director, Global Carbon Project (www.globalcarbonproject.org), hosted by National Institute for Environmental Studies (NIES, www.nies.go.jp), Japan • (Apr 2004-Mar 2006) Senior Policy Researcher and Project Manager, Urban Environmental Management Project, Institute for Global Environmental Strategies (IGES, www.iges.or.jp), Japan • (Apr 2003- Mar 2004) Policy Researcher and Project Manager, Urban Environmental Management Project, Institute for Global Environmental Strategies • (Apr 2002 – Mar 2003) Policy Researcher, Urban Environmental Management Project, Institute for Global Environmental Strategies • (Apr 2001 – Mar 2002) Researcher, Urban Environmental Management Project, Institute for Global Environmental Strategies • (Nov 2000 – Mar 2001) Intern, Climate Policy Project, Institute for Global Environmental Strategies • (Aug 1996 – Jan 1997) Research associate, Energy Program, Asian Institute for Technology, Bangkok • (1993-1994) Research Officer- Energy Management, National Productivity and Economic Development Centre, Kathmandu, Nepal

SELECTED RECENT PUBLICATIONS

1. Seto K. C., S. Dhakal, A. Bigio, H. Blanco, G. C. Delgado, D. Dewar, L. Huang, A. Inaba, A. Kansal, S. Lwasa, J. E. McMahon, D. B. Müller, J. Murakami, H. Nagendra, and A. Ramaswami, 2014: Human Settlements, Infrastructure and Spatial Planning. In: *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
2. Christopher Kennedy, Lawrence Baker, Shobhakar Dhakal, and Anu Ramaswami (2012). Sustainable Urban Systems: An Integrated Approach. *Journal of Industrial Ecology* 16(6): 775-779.
3. Venkatesh, Govindarajan; Dhakal, Shobhakar (2012). An International Look at the Water-Energy Nexus, *Journal of American Water Works Association*, 104 (5) 93-96.
4. Yasuyo Makido, Shobhakar Dhakal and Yoshiaki Yamagata (2012). Relationship between urban forms and CO₂ emissions: Evidenced from 50 Japanese cities. *Urban Climate* 2: 55–67.
5. S. P. Seitzinger, U. Svedin, C. Crumley, W. Steffen, S. A. Abdullah, C. Alfsen, W. J. Broadgate, F. H.B. Biermann, N. Bondre, J. A. Dearing, L. Deutsch, S. Dhakal, T. Elmqvist, N. Farahbakhshazad, O. Gaffney, H. Haberl, S. Lavorel, C. Mbow, A. J. McMichael, J. Morais, P. Olsson, P. Pinho, K. C. Seto, P. Sinclair, M. Stafford-Smith, L. Sugar (2012). Planetary stewardship in an urbanising world: beyond city limits. *Ambio* 41:787-794.
6. Phetkeo Poumanyong, Shinji Kaneko, Shobhakar Dhakal (2012). Impacts of urbanization on national transport and road energy use: Evidence from low-, middle- and high-income countries. *Energy Policy* 46:268-277.
7. Ada Ignaciuk, Martin Rice, Janos Bogardi, Pep Canadell, Shobhakar Dhakal, John Ingram, Rik Leemans and Mark Rosenberg (2012). Responding to Complex Societal Challenges: A Decade of Earth System Science Partnership (ESSP) Interdisciplinary Research. *Current Opinion in Environmental Sustainability* 4(1)147-158.
8. Grubler, A., X. Bai, T. Buettner, S. Dhakal, D.J. Fisk, T. Ichinose, J. Keirstead, G. Sammer, D. Satterthwaite, N.B. Schulz, N. Shah, J. Steinberger and H. Weisz. 2011: Urban Energy Systems. In *Global Energy Assessment: Toward a Sustainable Future*. L. Gomez-Echeverri, T.B. Johansson, N. Nakicenovic, A.
9. Anu Ramaswami and Shobhakar Dhakal (2011). Low carbon policies in the USA and China: Why cities play a critical role. *Carbon Management* 2(4) 359-352.
10. Houghton RA and Shobhakar Dhakal (2010). Welcome to Carbon Management. *Carbon Management* 1(1):1-3, Future Science Publishers.
11. Josep G. Canadell, Philippe Ciais, Shobhakar Dhakal, Han Dolman, Pierre Friedlingstein, Kevin R. Gurney, Alex Held, Robert B. Jackson, Corinne Le Quéré, Elizabeth L. Malone, Dennis S. Ojima, Anand Patwardhan, Glen P. Peters, Michael R. Raupach (2010). Interactions of the carbon cycle, human activity, and the climate system: A research portfolio. *Current Opinion in Environmental Sustainability* 2(4)3 01-311.
12. Corinne Le Quéré, Josep G. Canadell, Philippe Ciais, Shobhakar Dhakal, Anand Patwardhan, Michael R. Raupach, and Oran R. Young (2010). An International Carbon Office to assist policy-based science. *Current Opinion in Environmental Sustainability* 2(4) 297-300.
13. Dhakal, Shobhakar (2010). GHG emissions from urbanization and opportunities for urban carbon mitigation. *Current Opinion in Environmental Sustainability* 2(4): 277–283.
14. Shobhakar Dhakal and Anil Raut. 2010. Potential and bottlenecks of the carbon market: Case of developing country, Nepal. *Energy Policy*, 38 (2010) 3781–3789.
15. Dhakal, Shobhakar and Shrestha Ram M. (2010). Bridging the research gaps for carbon emissions and their management in cities. *Energy Policy*, 38(2010)4753-4755.

Mr Santosh Tripathi

SUMMARY

Mr. Santosh Tripathi CP Eng. is currently Principal Engineer (Road Safety) with the Department of Transport and Main Roads in Queensland Australia. Prior to this he was a Senior Engineer (Traffic Management) in the same department. Santosh contributes significant local and international experience from his private and public sector work both in the Nepal and Australia working on road design, construction, traffic engineering, transport planning and road safety.

Santosh is a registered Senior Road Safety Auditor in Queensland Australia and is an experienced road safety professional who provides balanced skill base of engineering design, operational transport assessment and implementation, along with practical Road Safety Audit experience. This strong mix of skills enables him to assist clients across a range of Road Safety Initiatives. He provides specialist technical expertise and advice to road safety projects and to other professional and technical staffs.

Santosh has a special interest, with the back-up of specific training and experience, in Road Safety and Traffic Engineering and is able to apply his knowledge and capability to providing specialist services in the area of Road Safety and traffic investigations. Santosh has extensive knowledge of national and state policies and guidelines including in Road Safety Audit and Crash Investigation and has worked in national working committee (Austroads) for review of Road Safety Audit and Crash Investigation Guidelines. He has published a number of papers and/or presentations on traffic congestion, traffic engineering devices, speed management and road safety.

CURRENT POSITION AND WORK ADDRESS	:	Principal Engineer (Safer Roads) Queensland Department of Transport & Main Roads Floor 7 230, Brunswick Street Fortitude Valley, QLD 4006 AUSTRALIA
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CONTACT DETAILS	:	T: +61 4 3066 2424 F: +61 7 3420 4245 E: Santosh.z.tripathi@tmr.qld.gov.au; santoshtripathi@hotmail.com
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DETAILS OF HIGHER EDUCATION	:	1998-2002: Bachelor of Engineering (Civil), Visveswararajah Technological University (VTU) Karnataka India
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TRAININGS SEMINARS AND CONFERENCES	:	Santosh has undertaken a large number of trainings and courses that include Traffic Modelling (AIMSUN, VISSUM, VISSIM, SIDRA, PARAMICS and Transyt 7F), Intelligent Transport System (STREAMS), Transport Planning (University of Queensland), and on Writing Skills, Communicates with Influence, Road Operations, Road Safety Audit, Road Safety Barrier, Speed Management and Treatment of Crash Locations.
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Santosh has participated in a wide range of international, national and regional level conferences and seminars including Transport Operations and Management, Road Safety, Automated Engineering Inspections and Road Design.

MEMBERSHIP OF PROFESSIONAL SOCIETIES	:	Member, Chartered Professional Engineer (CP Eng), Institute of Engineers Australia Registered Professional Engineer, National Professional Engineers' Register (Civil Engineering), Australia Registered Professional Engineer of Queensland Member, Professionals Australia Member, Nepal Engineers' Association, Nepal
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DETAILS OF EMPLOYMENT : **Apr 2011 - Present:** Principal Engineer (Road Safety), Queensland Department of Transport and Main Roads (QDTMR), Brisbane, Australia
May 2008 – Apr 2011: Engineer (Traffic), Senior Engineer (Traffic), Queensland Department of Transport and Main Roads (QDTMR), Brisbane, Australia
Jul 2007 - May 2008: Traffic Engineer / Transport Planner, Bitzios Consulting, Brisbane, Queensland, Australia
Mar 2004 - Jun 2007: Project Engineer, Astra Development Network, Kathmandu, Nepal
 June 2006 – Jun 2007: Lead Engineer, Sushma Koirala Memorial Trust
Feb 2003 – Mar 2004: Technical Manager, Scott Wilson, Kathmandu, Nepal
Sep 2002 – Feb 2003: Site Engineer, Middle Marsyangdi Hydroelectric Project, Lamjung, Nepal

SELECTED RESEARCH PAPERS AND AWARDS

(a) Presentations and Conference Papers

Tripathi, S. (2014) Current Status of Road Safety Audit, presented in Queensland University of Technology's (QUT) Road Safety Audit, Investigation and Treatment of Crash Location training in Brisbane Australia

Tripathi.S. (2014) Queensland's Road Safety Audit Policy and Guidelines, presented in regional road safety workshops in Mackay, Gold Coast, Toowoomba, Bundaberg and Rockhampton Australia.

Tripathi.S. (2014) Queensland's Crash Investigation Policy and Guidelines, presented in regional road safety workshops in Mackay, Gold Coast, Toowoomba, Bundaberg and Rockhampton Australia.

Tripathi.S. (2014) Queensland's Crash Reduction / Modification Factors, presented in regional road safety workshops in Mackay, Gold Coast, Toowoomba, Bundaberg and Rockhampton Australia

Tripathi, S. (2013) Current Status of Road Safety Audit, presented in Queensland University of Technology's (QUT) Road Safety Audit, Investigation and Treatment of Crash Location training in Brisbane Australia

Tripathi. S., Eveleigh. M.(2012) Wet Weather Vehicle Activated Signs, Queensland Experience, Paper published and presented in Queensland Transport and Main Roads Technology Forum in Brisbane Australia

Tripathi.S. (2011) Travel Time Signs – Queensland Status and where to from here, presented in Queensland Transport and Main Roads Road System Operations Sharing Day in Brisbane Australia.

Edgar.N., **Tripathi.S.** (2011) Queensland's Experience with Speed Limit Reductions on 'Black Links', Paper published and presented in Australasian Road Safety Conference in Perth Australia.

Tripathi, S. (2012) Current Status of Road Safety Audit, presented in Queensland University of Technology's (QUT) Road Safety Audit, Investigation and Treatment of Crash Location training in Brisbane Australia

(b) Research Paper:

Hammond. R., Kosovic.D., Willing.C., Bordes.N., Pailthorpe. B., Stewart.K.D.,Tripathi.S.,Eilert.F. (2009) Development and implementation of a real-time visualisation system of traffic data for Southeast Queensland, published online on the University of Queensland Australia Website

(c) Major Award:

Certificate of recognition (2009), Department of Transport and Main Roads, presented for the development of National Performance Indicator (NPI) for Queensland.

Mr Anthony Eagle

SUMMARY

Anthony Eagle holds a Bachelor of Economics and Statistics from the University of New England, Australia. He has over 25 years of experience in data analysis, information management, road crash database development and in planning and programming of road safety programs and projects.

After graduating with Economics and Statistics major, Anthony has been working in varied role. He worked for Queensland Department of Transport and Main Roads (QDTMR) and in Queensland Transport for several years. During this period he gained significant experience in data collection analysis for transport, advanced level excel, road safety investigation, ARMIS (**A Road Management Information System**) (includes RoadCrash2, a Crash Database Package used in QDTMR), WebCrash (GIS based Crash Database used by Local Governments) and MapInfo Package. He has travelled Nepal and presented a seminar on road safety titled "How we develop road safety programs and projects in Queensland Australia" and co-authored a paper titled "Road Transport Infrastructure Funding in Federated Nepal: Who pays for What?" He is well familiar with the current road safety situation in Nepal.

CURRENT POSITION AND WORK ADDRESS	:	Parking Compliance Officer (mainly issues of unsafe parking) Fraser Coast Regional Council Fraser Coast QLD 4665 AUSTRALIA
CONTACT DETAILS	:	M: +61 4 1611 1090 T: +61 7 4124 4159 E: anthony_eagle@hotmail.com
DETAILS OF HIGHER EDUCATION	:	Bachelor of Economics (Economics and Statistics), University of New England, Australia Post Graduate Diploma in Road Safety, Queensland University of Technology (Current)
TRAININGS SEMINARS AND CONFERENCES	:	Over a dozen of formal and on-the-job/ workplace training including on workplace assessment & Training Certificate IV, Data Collection and Analysis for Transport, Advanced Level Excel, Road Safety Investigation, ARMIS (RoadCrash2), WebCrash, MapInfo and others (Details available on request)
MEMBERSHIP OF PROFESSIONAL SOCIETIES	:	NA
DETAILS OF EMPLOYMENT	:	Feb 2013 - Present: Parking Compliance Officer, Fraser Coast Regional Council Queensland Australia Aug 2007 - Nov 2011: Senior Adviser (National Programs), Senior Traffic Investigator (Road Operations), Senior Traffic Officer (Traffic Safety & Performance), Queensland Department of Transport & Main Roads, Brisbane, Australia May 1998 - Aug 2007: Senior Adviser, Information Management Division, Queensland Transport, Australia Jan 1987 - May 1998: Trainer and Held Desk Supervisor Jupiter's Network Gaming, Jupiters Brisbane), Owner/operator (HeyHey Cafe and Wide Bay Deli, Bundaberg), State Customer Relations Manager (Kodak Australia NSW), Conference Coordinator (Kooralbyn Valley Resort Kooralbyn Valley Queensland), Research Officer, Bureau of Agricultural Economics, Canberra, ACT)

Mr Subhash Dhungel

SUMMARY

Subhash Dhungel holds a M.S. Degree in Civil Engineering (Transportation) from the University of Massachusetts Lowell, Massachusetts, USA with 24 years of experience in transportation planning and designs. His expertise is in planning, management, design and policy for surface transport and road-safety. While the bulk of his experience is confined to Nepal, he is acquainted with the global state-of-the-arts in transportation planning and design through his association with leading international consulting firms in different transportation projects in Nepal and 1.5 years work in the US. Majority of the projects he has worked were led by renowned international consulting firms such as Roughton International (UK), Nippon Koei (Japan), Oriental (Japan), CONSIDA (Denmark), MMM Group (Canada), VHB Inc. (USA), IMC Worldwide (UK), Cowater (Canada), SNC Lavalin (Canada), SMEC (Australia), etc.

Through his assignment in various projects related to sustainable urban transportation; urban transport management; arterial road development; tolled expressway feasibility; intersection improvement; multimodal transit transportation; land development; transport policy, etc., Subhash has acquired the necessary skill to handle complex transportation projects and formulate enabling policies/plans for surface transport.

In road-safety, Subhash has safety audited more than 2500 km of roads in the hills and plain areas of Nepal comprising roads of various standards (arterial, national highways, single lane to intermediate lane roads, urban roads, etc.). Subhash has refined road-safety practice to be compatible for a developing country like Nepal which is unique with major terrain being hilly.

His portfolio of diverse assignments such as development of Nepal's National Action Plan on road-safety for the Decade of Action (2013- 2020); analytical studies (accident data-management and costing, assessment of Nepal's road-safety management capacity); development of guidelines (urban road safety, utility management coordination for a major water-supply improvement project in Kathmandu), etc., validate his credential to handle all aspects of road safety. In addition, he is currently working as road safety consultant for Department of Transport Management for a World Bank funded project involving several tasks ranging from developing scientific procedure for route assessment/permitting of public transport vehicles, web-based crash database system in Nepal, road safety awareness campaign guideline, updating road traffic signs to formulating code of conduct for road users.

CURRENT POSITION AND WORK ADDRESS	: Road Transport Safety Expert (National) Road Transport Safety & Axle-load Control in Nepal (IDA Credit/Grant 5273/H863- NP) Katahira & Engineering International (Japan) – Full Bright JV Project Office, Sinamangal, Kathmandu
CONTACT DETAILS	: T: +977-1-5523916 (landline); +977-9851074844 (mobile) E: Subhash_dhungel@yahoo.com
DETAILS OF HIGHER EDUCATION	: 1997 - 2000: M.Sc. in Civil Engineering (Transportation and Traffic), University of Massachusetts Lowell, MA, USA. 1984 - 1988: Bachelor of Technology (Civil Engineering), Regional Engineering College Warangal, AP, India.
TRAININGS SEMINARS CONFERENCES PUBLICATIONS	: Training in the Japanese/American state-of-the-arts in traffic & transportation planning, design and road safety through seminars and trainings (1 week) Training on present tools and techniques applicable in road safety, traffic engineering, and highway design through training, workshop and seminars (>2 months) Proficient in software applicable in traffic engineering like SIDRA INTERSECTION v5.1/6.0, v5.3/US HCS v2.1g/3.0/3.2/2000, TSIS v3.0/4.0/4.3, TRANSYT 7F v3/v4, SYNCHRO v3/4/5, OPACv3.0, Statistical package SPSS, Excel etc. Competent Communicator, Toastmasters International
MEMBERSHIP OF PROFESSIONAL SOCIETIES	: Nepal Engineering Council (Reg. No. 3123 Civil 'A' category) Nepal Engineering Association (life member) Registered Engineer, State of Massachusetts, USA (E.I.T/FE) Member, Everest Toastmasters Club, Lalitpur, Nepal

DETAILS OF EMPLOYMENT:

From:	Dec 2014	To:	date (intermittent)
Employer:	Katahira & Eng. Int'l (Japan) – Full Bright Consultancy JV		
Positions held:	Road Transport Safety Expert (National)		
From:	Augst 2012	To:	date (intermittent, 16 mm)
Employer:	SMEC International Pty Ltd— BCE (Australia) - TP Int'l (UK) - GEOCE JV		
Positions held:	Traffic Management Specialist & Trainer (National)		
From:	August 2012	To:	Oct 2014 (intermittent, 7.7 mm)
Employer:	IMC Worldwide (UK)- METCON JV		
Positions held:	Urban Transport Infrastructure Specialist (National)		
From:	Dec 2011	To:	Nov. 2012 (intermittent, 8 mm)
Employer:	SNC - Lavalin Int'l- SILT- ERMJ JV		
Positions held:	Traffic Engineer		
From:	Mar 2012	To:	Jun 2012 (intermittent, 10 md)
Employer:	ICT(India) – Full Bright Consultancy JV		
Positions held:	Road Safety Specialist		
From:	Aug 2011	To:	Feb 2013 (intermittent, 2 mm)
Employer:	Govt. of Nepal, Department of Roads		
Positions held:	Road Safety Consultant		
From:	June 2010	To:	Oct 2011 (intermittent, 4 mm)
Employer:	Cowater Int'l (Canada)– SILT JV		
Positions held:	Urban Transport Specialist (National)		
From:	Jul 2010	To:	May 2011 (intermittent, 14 md)
	May 2010		Dec. 2010 (intermittent, 1 mm)
	Jun 2009		Nov. 2009 (intermittent, 1 mm)
	Apr 2008		Jun 2008 (intermittent, 0.8 mm)
	Jul 2006		Oct 2006
Employer:	Full Bright Consultancy		
Positions held:	Traffic & Road Safety Engineer/ Road Safety Specialist/Transportation Expert/ Traffic Expert		
From:	Apr 2011	To:	Apr 2011 (intermittent, 14 md)
	May 2010		Aug 2010 (intermittent, 2 mm)
Employer:	MMM (Canada) - ITECO Nepal – TMS JV		
Positions held:	Traffic Engineer		
From:	July 2007	To:	Nov. 2008 (intermittent, 11 mm)
Employer:	MMM (Canada) - CEMAT - Soil Test - TMS JV		
Positions held:	Road Safety Specialist		
From:	Nov 2003	To:	Jun 2009 (intermittent, 20.9 mm)
Employer:	Roughton Int'l (UK) - MWH (New Zealand)- ITECO - Full Bright-ICGS JV		
Positions held:	Road Safety Expert (National)		
From:	May 2010	To:	May 2010 (intermittent, 14 md)
	Jun 2002		Dec. 2002 (intermittent, 0.5 mm)
Employer:	ITECO Nepal P Ltd		
Positions held:	Traffic Engineer/ Transportation Planner		
From:	Apr 2007	To:	Mar 2008 (intermittent, 5.33 mm)
Employer:	Oriental Consultant (Japan) – ITECO - NDRI JV		
Positions held:	Road Safety Engineer/Traffic Engineer		
From:	Oct 2009	To:	Mar 2010
Employer:	WSP International Managing Consulting (UK) – GEOCE JV		
Positions held:	Transportation Engineer (National)		
From:	Sep 2009	To:	Mar 2010 (intermittent, 2.5 mm)
Employer:	GHD (UK) – ICON JV		
Positions held:	Utility Management Coordinator		
From:	Apr 2009	To:	Oct 2009 (intermittent, 2.5 mm)
Employer:	Consia Consultant (Denmark) - TMS JV		
Positions held:	Road Safety Expert		
From:	Sep 2006	To:	Jan 2007 (intermittent, 1.2 mm)
Employer:	Full Bright - ITECO JV		

Positions held:	Road Safety Specialist	
From:	Nov 2006	To: Dec. 2006 (intermittent, 1.2 mm)
Employer:	DHV Consultants (Netherlands) - SILT – TAEC - CMS JV	
Positions held:	Traffic Expert	
From:	Jul 2003	To: Sep 2005
Employer:	SILT - Full Bright- CEMECA JV	
Positions held:	Civil Engineer/ Traffic Expert	
From:	Dec 2001	To: Mar 2003
Employer:	NIPPON KOEI CO. Ltd	
Positions held:	Traffic / Civil Engineer	
From:	Jan 2000	To: Jul 2001
Employer:	Vanasse Hangen Brustlin, Inc.	
Positions held:	Traffic Engineer	
From:	Jul 1990	To: Aug 1997
Employer:	Ministry of Works & Transport, Policy & Appraisal Division	
Positions held:	Civil/Transportation Engineer	
From:	Dec 1988	To: Jul 1990
Employer:	Department of Water Supply & Sewerage, Western Regional Directorate, Pokhara	
Positions held:	Civil Engineer	
From:	Oct 1988	To: Dec 1988
Employer:	Shanker Nath Rimal Engineers & Architects Pvt. Ltd.	
Positions held:	Civil/Structural Engineer	

Mr Saroj Shrestha

SUMMARY

Saroj Shrestha is a Senior Traffic Engineer/Transport Planner at Bitzios Consulting, Brisbane Australia. With over 13 years of experience in traffic engineering and transport planning, Saroj's specialist skills include road safety audits, transport modelling, integrated transport studies and traffic investigations. In his capacity as a Registered Senior Road Safety Auditor, Saroj has led audit teams to audit various auditing projects covering all phases of project cycles including preliminary design, design, pre-opening, operational and existing phases. In addition to the Road Safety, Saroj also has extensive experience in leading and managing many large scale road, transport & traffic modelling and planning projects throughout Australia and Middle-east. He is also well informed about the current road safety situation in Nepal and is very much familiar with Nepal Road Safety Action Plans.

CURRENT POSITION AND WORK ADDRESS	: Senior Traffic Engineer/Transport Planner Bitzios Consulting Level 2 428, Upper Edward Street Spring Hill, QLD 4000 AUSTRALIA
CONTACT DETAILS	: T: +61 4 2178 0509 (Cell) T: +61 7 3261 4794 (Home) E: shresaroj@gmail.com
DETAILS OF HIGHER EDUCATION	: Master of Transport, Monash University, Australia (2013) BEng in Civil Engineering, Tribhuvan University, Nepal (2002)
TRAININGS SEMINARS AND CONFERENCES	: Numerous on-the-job/ workplace training including on Road Safety, Capacity & Safety Analysis packages, Traffic Signal Design, Traffic Studies, Transport Modelling (Details available on request)
MEMBERSHIP OF PROFESSIONAL SOCIETIES	: Member, Institute of Engineers Australia Member, Australian Institute of Traffic Planning and Management
DETAILS OF EMPLOYMENT	: Sept 2006 - Present: Senior Traffic Engineer/Transport Planner, Bitzios Consulting, Brisbane, Australia Oct 2002 - August 2006: Site Engineer, Various Construction Companies, Kathmandu Nepal

Mr Manoj Munankami

SUMMARY

Manoj Munankami is a Traffic Engineer / Transport Planner at Bitzios Consulting, Brisbane Australia.

Manoj has over 13 years of overall experience in Civil Engineering and six years of experience in traffic engineering and transport planning. His specialist skills include road safety audits, transport modelling, integrated transport studies and traffic investigations. He is a Registered Senior Road Safety Auditor and has led audit teams to audit various projects covering all phases of project cycles including preliminary design, detailed design, pre-opening, operational and existing phases. In addition to Road Safety, Manoj also has extensive experience in transport & traffic modelling and planning projects throughout Australia.

Manoj is well informed about the current road safety situation in Nepal and is very much familiar with Nepal Road Safety Action Plans.

CURRENT POSITION AND WORK ADDRESS	: Traffic Engineer / Transport Planner Bitzios Consulting Level 2 428, Upper Edward Street Spring Hill, QLD 4000 AUSTRALIA
CONTACT DETAILS	: T: +61 4313 07615 (Cell) E: manojmun@hotmail.com
DETAILS OF HIGHER EDUCATION	: BEng in Civil Engineering, Tribhuvan University, Nepal (2002)
TRAININGS SEMINARS CONFERENCES PUBLICATIONS	: Numerous on-the-job / workplace training including Road Safety, Capacity & Safety Analysis packages, Traffic Studies, Transport Modelling
MEMBERSHIP OF PROFESSIONAL SOCIETIES	: Member, Institute of Engineers Australia Member, Australian Institute of Traffic Planning and Management
DETAILS OF EMPLOYMENT	: Nov 2008 - Present: Traffic Engineer / Transport Planner, Bitzios Consulting, Brisbane, Australia Oct 2002 – Oct 2008: Civil Engineer, “create acme associates”, Bakhundole, Lalitpur, Nepal

Mr Ashis Parajuli

SUMMARY

Ashis Parajuli holds a Master of Engineering (Transport) from the Queensland University of Technology and Bachelor of Civil Engineering from Nepal Engineering College. He has over 13 years of experience in planning, design, operation and management of transport and traffic systems.

Ashis has experience in leading and managing many small to medium scale road, transport and traffic projects both as a consultant and as a client (State Government). He has been undertaking road safety analysis and implementing several road safety initiatives in both design stage and also at the implementation stage.

CURRENT POSITION AND WORK ADDRESS	: Senior Road Planning Officer Main Roads Western Australia Waterloo Crescent East Perth, WA 6004 AUSTRALIA
CONTACT DETAILS	: T: +61 4 0247 2924 E: ashis.parajuli@gmail.com
DETAILS OF HIGHER EDUCATION	: Master of Engineering, Queensland University of Technology (QUT), 2005. Bachelor of Engineering (Civil), Nepal Engineering College, Tribhuvan University, 2001.
TRAININGS, SEMINARS AND CONFERENCES	: Advanced SIDRA Training, Main Roads, 2015. Project Management (in house), Maunsell AECOM, 2009. Traffic Signals Design training provided by Downer Engineering, 2007. Paramics technical sessions and trainings (in house), GHD Melbourne, 2007. Several in-house trainings covering Road Safety, Design, Transport Modelling and Transport Planning.
KEY SKILL AREA	: Road planning and land reservation protection for road purposes. Transport and Traffic modeling using VISSIM, SIDRA and PARAMICS modeling packages. Spatial data analysis using GIS tools such as MapInfo. Transport/Traffic studies, engineering and analysis. Crash analysis and Road Safety audits
DETAILS OF EMPLOYMENT	: Feb 2012 - Present: Senior Road Planning Officer, Main Roads Western Australia (MRWA), East Perth, Australia Jul 2009 – 2012 Jan: Senior Transport Engineer/Transport Planner, Department of Planning, Western Australia. Apr 2008 – Jul 2009: Transport Engineer, Maunsell AECOM, Perth, Western Australia. Feb 2007 – Apr 2008: Transport Engineer, GHD, Perth, Western Australia. Jan 2005 – Dec 2006: Transport Engineer, Bitzios Consulting, Queensland. Mar 2003 – Dec 2004: Research Student and Research Assistant, Queensland University of Technology, Brisbane, Queensland. 2002 – Mar 2003: Graduate Civil Engineer, Bagmati Integrated Watershed Management Project, Kathmandu, Nepal.

PUBLICATIONS

“Examining lateral positions of cars and heavy vehicles on a two lanes, two way motorway”, Transport Engineering in Australia, Vol 10 No 2.

“Freight Modal Energy Efficiency: A comparative study”, Conference of Australian Institute for Transport Research, Adelaide, 2003.

“Modeling Freight Modal Energy Use”, Transport Future 2004, The University of Queensland, Brisbane, 2004.

“Modeling road and rail freight energy consumption: A comparative study”, Master Thesis, Queensland University of Technology, 2005.

Mr Rajan Koirala

SUMMARY

Rajan Koirala, CP Eng., holds Master of Engineering (Geotechnical) from Asian Institute of Technology, Bangkok, Thailand and Bachelor of Science in Civil Engineering from Kurukshetra University, Haryana, India. He has a Post Graduate Diploma in Management from Deakin University, Melbourne, Australia. Rajan has over 30 years of experience in design, delivery, operation and management of road, traffic and transport assets. His expertise in geo-technical field (slope stability) is of particular relevance in managing road safety in low cost roads of regional and local significance along the mountainous terrain of Nepal.

Rajan has extensive experience in leading and managing road asset management projects. His long experience working in pavement performance evaluation and slope stability analysis as well as in the field of managing safety improvement / treatments such as skid improvement, road width widening, batter slope stabilisation and installation of guard rails will be of great value for leading related projects such as safety improvement infrastructure inventory and asset management.

CURRENT POSITION AND WORK ADDRESS	: Acting Principal Engineer/Senior Engineer (Asset Management) Queensland Department of Transport & Main Roads Floor 12 313 Adelaide Street Brisbane, QLD 4000 AUSTRALIA
CONTACT DETAILS	: M: +61 4 1131 2973 T: +61 7 3264 6248 E: rajan.koirala14@gmail.com
DETAILS OF HIGHER EDUCATION	: Post Graduate Diploma in Management, Deakin University/APESMA, Melbourne, Australia (1997) Master of Engineering (Geotechnical), AIT, Bangkok, Thailand (1989) Bachelor of Science in Civil Engineering, Haryana, India (1983)
TRAININGS SEMINARS AND CONFERENCES	: Trainings (2002- 2014): Paper presented on Warrego Highway Mine Subsidence (2014) Extensive field based training on Land Slide Investigation and Stabilisation: one week, 2014 by Road and Traffic Authority, NSW Safety Leadership Foundation: one week training Pavement Engineering & Maintenance Engineering (2 days) Pavement Design Training (1 day) Asset Management for Roads and Highways (1 day) Journey into Leadership Geometric Road Design & Intersection Design Bridge Construction and Maintenance Divisional Awards for: Business Innovation and Improvement Valuation of Road and Bridge Assets Focus on Corporate Strategic Asset Information-Support for Roads Programs and National Highway Investment Reporting
MEMBERSHIP OF PROFESSIONAL SOCIETIES	: Member, Chartered Professional Engineer (CPEng), Institute of Engineers Australia Registered Professional Engineer of Queensland

DETAILS OF EMPLOYMENT	OF :	<p>Nov 2006 - Present: Acting Principal Engineer/Senior Engineer (Asset Management), Metropolitan Region, Queensland Department of Transport & Main Roads (QDTMR), Brisbane, Australia</p> <p>Dec 2009 - Oct 2010: Acting Principal Adviser, Contracts and Standards Branch, QDTMR (On secondment), Brisbane Australia</p> <p>Jan 1999 - Jul 2004: Asset Management Engineer, Road Asset Management Branch, QDTMR, Brisbane, Australia</p> <p>Sep 1995 - Dec 1998: Transport Planning/ Design Engineer, Cloncurry District, QDTMR, Cloncurry, Australia</p> <p>1994 - 1995: Maintenance (Asset) Engineer, Works Construction and Maintenance Department, Penrith City Council, Penrith, Sydney, Australia</p> <p>1991 - 1993: Site Engineer, Second Stage Expressway Project, Kumagai Gumi Company Ltd., Bangkok, Thailand</p> <p>1988 - 1991: Post Graduate Student/Research Associate, Geotechnical and Transportation Engineering Division, Asian Institute of Technology, Bangkok, Thailand</p> <p>1983 - 1988: Civil Engineer, Various Non-Governmental, Semi-governmental and Governmental Agencies, Kathmandu, Nepal</p>
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Mr Kamal Bahadur Shrestha

SUMMARY

Kamal Bahadur Shrestha holds Bachelor in Biological Science and Bachelor in Arts (Social Science) from Tribhuvan University. He has over 30 years of experience working in various aspects of community and social planning and development in a variety of complex infrastructure including road and transport projects. He has worked in varied roles ranging from monitoring and outreach specialist, public private partnership specialist, social development specialist, resettlement safeguard specialist, environmental specialist, gender equality and social inclusion specialist, community development specialist, community mobilization specialist, child labor prevention and control specialist, training specialist to user group specialist for a number of multilaterally and bilaterally funded projects.

Kamal has extensive experience in dealing with community mobilisation and social development issues relevant to transport and traffic projects and in developing plans and programs of impact mitigation including social and economic upliftment of Project Affected Population (PAPs) targeting vulnerable people, disadvantaged groups, poor, and women, in establishing rapport and undertaking public consultations with the PAPs, stakeholders, vulnerable people, poor, women groups, government bodies mobilizing their participation, disseminating survey findings, verifying the eligible PAPs and so on.

Kamal has gained significant experience in the field of community mobilisation, formation of community action groups, developing capacity of community groups, mobilising community based organisations (CBO's) for public education, awareness and training, strengthening CBOs and in raising community awareness on road safety through education and awareness programs, which would be very relevant to this project.

CURRENT POSITION AND WORK ADDRESS	: Community Mobilisation Specialist Kathmandu Sustainable Urban Transport Project Kupondole Height Lalitpur Kathmandu NEPAL
CONTACT DETAILS	: T: +977 9851195395 E: kamalbshrestha@yahoo.com
DETAILS OF HIGHER EDUCATION	: Post-Graduate Diploma, Development Training Cooperation Program Studies DTCP, Bangkok, 1983 (Sponsored by UNDP) Post-Graduate Diploma, Forest & Wood Preservation, Forest Research Institute & College, Deharadun, India, 1982 (Scholarship by GIZ/GTZ) B.A. Social Science, Tri-chandra Campus, Tribhuvan University Kathmandu, Nepal, 1981 B. Sc. with Major in Biological Science, Tri-chandra Campus, Tribhuvan University Kathmandu, Nepal, 1979 Trade & Industry Vocational Education, Institute of Education, Ghatthaghar, Bhaktapur
TRAININGS SEMINARS AND CONFERENCES	: On-the-Job ARC GIS & Database Management, Fintrac Inc.– USA/Nepal, 2010 - 2012 Web Design & Web-based Data Management, Aptech Institute 2010 (3 months) & UNDP/ DFID, 2007 (6 days) ARC GIS & Database Management, Nepasoft/ World Distribution Network/ Strengthening Environmental Administration and Management – Nepal (SEAM-N), Nepal - Finland Cooperation, 2004 (1 week) Logical Project Planning & Project Cycle Management, Strengthening Environmental Administration Management at Local Level, Nepal, Plan Centre - Finland/ Institute of Environment Management - Finland, financed by Finland Government, January 2004 (1 week) Social & Environmental Impact Assessment, Strengthening Environmental Administration and Management at Local Level (SEAM-N), SchemeMS, Nepal - Finland Cooperation, February 2004 (1 week)

	<p>HIV/AIDS Prevention Training of Trainers, SC - US, 2003 (1 week)</p> <p>Enhancing Skills for Networking and Communications, EU/UNFPA Initiative for RH in Asia, COMNET- Germany, 2002</p> <p>Project Planning, EU/UNFPA Initiative for RH in Asia, UP/EHDAG and Power Point Presentation, EU/UNFPA Initiative for RH, 2001 (4 week)</p> <p>Participatory Rural / Urban Appraisal, Kathmandu Valley Mapping Program, KMC/EU, 2001 (4 days)</p> <p>Outreach Intervention, AIDSCAP/FHI/USAID, Manila, Philippines, 1997 (2 weeks)</p> <p>Field Monitoring & Management, AIDSCAP/ FHI/ USAID, 1995 (4 days)</p> <p>Team Building, Leadership Development, Organizational Communication, KJ Method of Management, Human Relation, Communication Skill & Leadership Development, Japan JCs, 1987 (6 weeks)</p> <p>Research Methodology, National Population Commission/BDP, 1984 (5 weeks)</p> <p>Training of Trainers, Nepal Jaycees, 1983 (3 weeks)</p> <p>Communication & Motivation Skills, NJC/JCs International, US, 1983 (1 week)</p>
MEMBERSHIP OF PROFESSIONAL SOCIETIES	<p>Human Development Nepal Consulting Group. 2005 – Present</p> <p>Zero Waste Nepal, 2004 – Present</p> <p>Lifesaving & Life-giving Society, 2002 – 2014</p> <p>Human Development Foundation, 1997 – Present</p>
DETAILS OF EMPLOYMENT	<p>Nov 2014 – Present: <u>Gender and Social Inclusion Specialist/ Safeguard Coordinator</u>, ADB-funded South Asia Subregional Economic Cooperation Road Connectivity Project (SRCP).</p> <p>Oct 2014 - Present: <u>Community Mobilisation Specialist</u>, ADB-funded Kathmandu Sustainable Urban Transport Project (4 person-months)</p> <p>Nov 2013 - Present: <u>Gender and Social Inclusion Safeguard Specialist</u>, ADB funded Sub-regional Transport Enhancement Project (10 person-months)</p> <p>2013 - 2014: <u>Public Private Partnership Specialist</u>, ADB-funded Secondary Town Integrated Urban Environment Improvements Project (5 months)</p> <p>Jun 2008 – Oct 2012, <u>Monitoring and Outreach Specialist</u>, USAID/Nepal Flood Recovery Program (USAID - NFRP)</p> <p>May 2007 – Oct. 2008, <u>Social Development & Resettlement Safeguard Specialist</u>, Kathmandu–Terai Fast Track Road Project- ADB TA 4842 (5 months)</p> <p>March 2008 – Nov. 2008, <u>Social Development and Resettlement Specialist</u>, Road Connectivity Sector 1 Project - ADB funded (3 person-months)</p> <p>Jun 2007 – Feb 2008 <u>Social Development and Resettlement Safeguard Specialist</u>, Preparing the Improved Water Quality, Sanitation and Service Delivery Sector Development Program - ADB PPTA No. 4972-NEP (3 months)</p> <p>Aug. 2007 – May 2008, <u>Community Development Specialist</u>; South Asia Sub-regional Economic Cooperation Tourism Development Project in Nepal, Bhutan, Bangladesh, Sri-Lanka & India (Intermittent: 2.5 person-months)</p> <p>March – November 2008, <u>Social Development and Resettlement Specialist</u>, ADB-funded Road Connectivity Sector 1 Project (3 person months)</p> <p>Mar 2006 – Dec. 2008, <u>Gender, Human Trafficking, HIV/AIDS, Social Development & Resettlement Specialist</u>, ADB-funded Sub-regional Transport Facilitation Project, Loan 2097 ADB (Intermittent: 14 person-months)</p> <p>Jan 2006 – Mar 2007, <u>Community Development Expert</u>, ADB-funded Urban and Environmental Improvement Project (6 persons-months);</p> <p>May 2006 – Dec. 2007, <u>Team Leader/ Social Development Specialist</u>, ADB-funded Small Town Water Supply & Sanitation Sector Dev. Project (6 months)</p> <p>Dec. 2005–Apr 2006, <u>Team Leader / Social Sustainability Measurement Expert</u>, Community Development Programs of Women Groups, and Area Development Program of the CBOs of the World Vision International.</p> <p>Jan 2005 – Sep 2006, <u>Environment & Community Expert</u>, Phewa Lake Environment Awareness and Capacity Building Project, JICA/MOE (4 months)</p> <p>Nov 2005 - Oct 2007, <u>Technical Advisor</u>, HIV Prevention & Harm Reduction Program, LALS/SC-US/DFID/UNDP. (6 person-months)</p> <p>Dec 2003 – Feb 2005, <u>National Expert for Management of Waste Environment</u>,</p>

Strengthening Environmental Administration & Management at Local Level in Nepal (SEAM – N), Finland Government

Jan 2003 – Mar 2004, Public Outreach Expert for USAID-funded Private Sector Participation in Environmentally & Socially Sustainable Hydropower Development Project, DOED/ Ministry of Water Resource

Sep 2003 – Jan 2004, Community Development Specialist / Mission Member Fact Finding for Tansen Palpa Eco-tourism Project, ADAF - New Zealand.

Feb - May 2003, Team Leader/ Community Development Expert, Evaluation of Integrated Community Development Program of Rural Women, funded by the Government of Germany through AWO International – Germany (2.5 months)

Mar 2001 – Jul 2003, Reproductive Health Program Specialist, EU/UNFPA Initiative for Reproductive Health in Asia.

2003 (6 months), Technical Advisor / HIV/AIDS Specialist, Nepal Initiative: Right-based Approach to the concentrated HIV/AIDS Epidemic in Nepal: Harm Reduction Program funded by UNDP/AusAID

Sep 2002 - Jan 2003, Project Team Leader, USAID-RUDO New Delhi funded Community-based Waste Management

Nov 2002 – Jan 2003, Social Development Specialist, Poverty Mapping for Melamchi Water Supply System to the Below Poverty Level Users, funded by Japan Bank of International Cooperation (3 months)

Nov 2001 – Mar 2002, Consultant Sociologist, EU-funded Kathmandu Valley Mapping Program of Kathmandu Metropolitan City.

Nov 2001 – Mar 2002, Community Development Specialist, JICA-funded Phewa Lake Environment Conservation Project of Pokhara Sub-metropolis.

2001 (3 months), Community Development & Hygiene Specialist, ADB-led Multi-Donor funded Melamchi Water Supply Project

Oct 2000 – Apr 2001, Consultant Sociologist, Kathmandu Valley Mapping Program, European Union / Kathmandu Metropolis

1998 - 2001, Team Leader/ Social Mobilization Expert, ADB funded Pokhara Environmental Improvements Project/ Second Tourism Infrastructure Development Project (30 person-months full time & 6 person-months intermittent input)

May 1997 – Dec. 1997, Community Development Specialist, Community Water Supply, Sanitation and Health Project, Global Partners – UK (6 person-months)

Jul – Oct 1997, User Group Expert, Dumre - Besishahar Rural Electrification Project funded by the Nordic Development Fund (3 persons-months)

Sept 1995 – May 1997, Team Leader, Human Resource Development Technical Services for HIV/AIDS Control & Prevention, Nepal & Border India

Aug 1993 – Jun 1994, Community Development & Training Specialist, ADB-funded Strategic Planning of Department of Water Supply & Sewerage (7 months)

Jan 1984 - Jul 1993: Environment Education Specialist, IUCN (World Conservation Union); Research Consultant, Research Appraisal on Waste Management in South Asia, IDRC-Canada; Environmental Planning Specialist, MS/DANIDA for Kuponhole Project; Curriculum Development Expert, Solid Waste Management & Resource Mobilization Center/GIZ/Ministry of Education; Community Development Specialist, Urban Development through Local Efforts Project/GIZ; Program Coordinator/ Community Development Expert/ Community Participation Officer, GIZ-funded Bhaktapur Development Project; Cooperative Incharge, Bhaktapur Woodcarvers Cooperative Society; Founder, Bhaktapur Craft Printers supported & funded by UNICEF/GIZ; Co-manager, Bhaktapur Emporium supported by GIZ; Lower Secondary Science Teacher, Bageswori Secondary School/ DEO/ Ministry of Education.

(Employment history beyond 1984 is available on request).

Mrs Pushpa Shrestha

SUMMARY

Mrs. Pushpa Shrestha holds Masters in Education (Development Education) from the Institute of Education, Tribhuvan University, Nepal. She has over 30 years of experience working in various aspects of community and social planning and development in a variety of complex infrastructure including road and transport projects. She has worked in varied roles ranging from social development and gender specialist, social resettlement manager, NGO's capacity assessment specialist, women empowerment specialist, public health and hygiene awareness specialist, communication specialist, social inclusion specialist, Women Groups institutional specialist, community development specialist to community training specialist for a number of multilaterally and bilaterally funded projects.

Pushpa has extensive experience in dealing with community mobilisation and social development issues relevant to many infrastructure development and service projects, in mobilizing women for delivering various social action plans and in communicating the benefits of project implementation. She has the excellent skill to work both with rural and urban communities and her ability to work in engaging and empowering women in development projects especially stands out.

Pushpa's significant experience in the field of community mobilisation, formation of community action groups, developing capacity of community groups, mobilising community based organisations (CBO's) for public education, awareness and training, strengthening CBOs and in raising community awareness on road safety through education and awareness programs would be very relevant to this project, particularly in mobilising rural and urban communities to establish community action groups, train and institutionalise them for sustained functioning of these group in improving road safety, particularly in raising awareness on developing safe road use habits and in preventing vehicles from overcrowding.

CURRENT POSITION AND WORK ADDRESS	:	Gender & Social Inclusion Specialist, Sub-regional Transport Enhancement Project funded by ADB and implemented by the Project Directorate (PD)/DOR. Kathmandu NEPAL
CONTACT DETAILS	:	T: +977 9841552416 E: kritesh.shrestha@gmail.com
DETAILS OF HIGHER EDUCATION	:	M. Ed. (Development Education) , Institute of Education, Tribhuvan University, Nepal 1985.
TRAININGS SEMINARS AND CONFERENCES	:	Appreciative Inquiry Planning and Action (AIPA), EHDAG/Umbrella Project for Reproductive Health Initiative in Asia, EU/UNFPA, 2002 Capacity Building of Local Organizations in undertaking Local Environmental Improvements Activities, PEEST, 1999 Gender Equity and Equality, National Planning Commission, April 1994 Participatory Rapid Rural/Urban Appraisal Technique, Staff College/ Koshi Hills Development Program, ODA (DFID) - UK, 1990 Community Forestry Reorientation Training, CFDD/Dept. of Forestry 1989 Human Relations, Public Speaking & Communication Skills, 1987 Advance Training Counselor, Nepal Girls Scout/Nepal Scout, 1985 National Trainers Course, Nepal Scout, 1985 Planning of Non-formal Education Program, Education for Rural Development, Seti Project, 1983. Cooperation within a Team: Including Local and Foreign Experts, GTZ, German Agency for Technical Cooperation, 1981 Project Communication Problems and Solutions, Bhaktapur Development Project / German Technical Cooperation (GTZ) 1980 Leader Trainer Course, Regional Scout Committee/ Asia Pacific, 1978
MEMBERSHIP OF PROFESSIONAL SOCIETIES	:	Vice Chairperson, Society of Community Development, 1991 - 1997 Executive Vice-President, BJC, Society of Leadership Development, 1987
DETAILS OF EMPLOYMENT	:	May 2014 to Date , <u>Gender & Social Training Specialist</u> , Inter-continental Consultants with Full Bright Consultancy P. Ltd for ADB-funded <u>Sub-regional</u>

Transport Enhancement Project: Awareness, consultation & capacity building of PAPs, labour & stakeholders (government, CSC, & contractors).

Apr 2008 – Mar 2009, Gender & Social Development Specialist, FCG/McDonald/TMS/Multi for ADB TA 4972-NEP: Preparing the Improved Water Quality, Sanitation & Service Delivery Sector Development Program: Poverty & social assessment, consultation, Gender Action Plan, community management capacity building support.

Jan 2008 – Mar 2008, Social Development Resettlement Manager, ADB-funded North - South (Kathmandu – Terai) Fast Track Road Project Preparation Technical Assistance

Aug 2003 – Sep, 2006, Social Development & Gender Specialist: SKMT/DWSS for ADB-funded Small Town Water Supply & Sanitation Project: User-managed water & sanitation facilities development, operation & maintenance.

Jul 2003 – Aug, 2003, NGO's Capacity Assessment Specialist: Capacity Assessment of Non-government Organizations (NGOs) for HIV/AIDS Prevention & Harm Reduction Program, SC-USA / GON-UNDP

Mar 2003 – Jul, 2003, Women Empowerment Specialist, AWO International Cooperation-Germany: Evaluation of Community Development Program of Women Groups in Sunsari District, implemented by SKMT.

Sep 2001 – Mar 2002, Social Development Specialist, SILT Consultants (P.) Ltd.: ADB-funded Project Preparation Development Study for Environmental Conservation of Phewa Lake in Pokhara, Ministry of Environment

Jun 2001 – Aug 2001, Public Health Social Expert, TAEC Consult P. Ltd.: Technical and Operational Audit of the Batch – II Schemes of World Bank-funded Rural Water Supply and Sanitation Fund Board.

Oct, 2000 – Apr 2001, Consultant Sociologist, Kathmandu Valley Mapping Program, KMC/European Union (EU): Assessing of underprivileged communities; preparation of town profiles & public participation plan; consultation, implementing of pilot welfare schemes of disadvantaged groups.

Jan 1998 – Dec 2000, Public Communication Specialist, TAEC Consult P. Ltd. for ADB funded Pokhara Environmental Improvement Project, Public awareness, training, community mobilization.

Jul 1999 – Jan 2000, National Hygiene Education Specialist, TAEC Consult P. Ltd. for ADB-led multi-donor funded Melamchi Water Supply Project.

Jan 1997 – Apr 1997: Self-help Group Social Development Specialist for NGO Fund Project/ German Technical Cooperation (GTZ/GIZ).

Jun 1996 – Mar 1996, Tracking Researcher, METCON Consultants for ADB-funded Secondary Education Development Project.

Aug 1996 – Sep 1996, Gender Specialist, Pro-Public/Asia Foundation for USAID-funded "Environmental Scan Survey: Women in Politics".

Feb 1994 – Feb 1995, Women Groups Institutional Specialist, Decentralization Support Program, NPC, HMG/NEP/92/027/UNDP

Jan 1995 – Aug 1995, Awareness and Communication Specialist, HEMRA for GTZ-funded Patan Conservation & Development Project of Patan Municipality

Oct 1994 – Dec 1994, Social Development Specialist, JAKPAS/ UNDP – World Bank Water Supply and Sanitation Program

Jan 1992 – Aug 1993, Community Forestry and Training Specialist, DANIDA Community Forestry Training Project: Forest User Group-based Training of Foresters & Rangers in Central, Eastern and Western Nepal.

Jan 1991 – Nov 1991, Community Forestry Development Specialist, UNDP/FAO/World Bank funded Community Forestry Development Project

April 1989 – Dec 1990, Community Forestry Development Specialist, Koshi Hills Development Program

Jan 1988 – Mar 1989, Community Development Specialist, UDLE/GTZ for Bhaktapur Development Project & TDFB

Jun 1984 – Dec 1987, Community Development Specialist, GTZ for Bhaktapur Development Project (BDP)

Mar 1982 – Dec 1983, Field Coordinator, UNESCO/UNICEF/UNDP for Education for Rural Development, Seti Project.

Memorandum of Understanding
between
Sustainable Transport & Traffic Solutions Ltd., Australia
and
Nepal Transportation and Development Research Centre

Sustainable Transport and Traffic Solutions (STTS), 3 Picardie Close Mansfield, Queensland, Australia and **Nepal Transportation and Development Research Centre (NTDRC)**, Jawalakhel, Lalitpur (individually as a party and collectively as parties to this Memorandum) believe that:

1. Mutual benefit can be derived from professional and scholarly interaction, co-operative consulting and research and other forms of industry and academic collaboration;
2. The parties regard the following areas of cooperation as desirable and feasible:
 - (i) consulting works in the field of mutual interest;
 - (ii) networking and mutual development in the field of transport and traffic engineering;
 - (iii) study and research exchange programs;
 - (iv) collaborative research and exchange of study reports and research papers relating to those programs of consulting and research services;
 - (v) mutual assistance in the preparation of safety awareness, safety campaign, training, workshop, seminar and conference materials;
 - (vi) opportunities for other forms of co-operation, such as the delivery of short course training and workshops;
 - (vii) opportunities for NTDRC to act as a representative of STTS (and vice versa) in specific collaborative projects and programs as identified individually or collectively by the parties and/or their members; and
 - (viii) local support (platform for undertaking agreed activities) to interested members of the parties.
3. The terms of specific areas of cooperation shall be further considered and agreed upon in writing by the parties prior to the initiation of any particular project activity.
4. Any specific program will be subject to mutual consent, availability of funds and approval of both parties. Operational details of each project activity shall be agreed by both parties before initiating each activity.
5. The parties agree that this Memorandum of Understanding is not a formal legal agreement giving rise to any legal relationship, rights, duties or consequences, but rather a definite expression and record as to the purpose of the parties to which the parties are bound in honour only.
6. This Memorandum of Understanding shall remain in effect for a period of five (5) years from the date of signing and may be renewed for a further five (5) years by the mutual agreement of both parties. The Memorandum can be terminated at any time by either party upon provision of six (6) months written notice to the other party.

SIGNED for and on behalf of:

Sustainable Transport & Traffic Solutions:

.....
Dr Partha Parajuli
Managing Director
Sustainable Transport & Traffic Solutions Ltd

Date:

**Nepal Transportation and Development
Research Centre:**

.....
Er Madan Maleku
Managing Director
Nepal Transportation and Development Research
Centre

Date:

Memorandum of Understanding
between
Sustainable Transport & Traffic Solutions Ltd
and
Road Safety Society of Nepal

Sustainable Transport & Traffic Solutions (STTS), 3 Picardie Close Mansfield, Queensland, Australia and **Road Safety Society of Nepal**, Floor 4, Trade Tower, Thapathali, Kathmandu (individually as a party and collectively as parties to this Memorandum) believe that:

1. Mutual benefit can be derived from professional and scholarly interaction, co-operative consulting and research and other forms of industry and academic collaboration;
2. The parties regard the following areas of cooperation as desirable and feasible:
 - (i) consulting works in the field of mutual interest;
 - (ii) networking and mutual development in the field of transport and traffic engineering;
 - (iii) study and research exchange programs;
 - (iv) collaborative research and exchange of study reports and research papers relating to those programs of consulting and research services;
 - (v) mutual assistance in the preparation of safety awareness, safety campaign, training, workshop, seminar and conference materials;
 - (vi) opportunities for other forms of co-operation, such as the delivery of short course training and workshops;
 - (vii) opportunities for RSSN to act as a representative of STTS (and vice versa) in specific collaborative projects and programs as identified individually or collectively by the parties and/or their members; and
 - (viii) local support (platform for undertaking agreed activities) to interested members of the parties.
3. The terms of specific areas of cooperation shall be further considered and agreed upon in writing by the parties prior to the initiation of any particular project activity.
4. Specific program designed and planned shall be subject to mutual consent, availability of funds and agreed by both parties. Operational details of each project activity shall be agreed by both parties before initiating each activity.
5. The parties agree that this Memorandum of Understanding is not a formal legal agreement giving rise to any legal relationship, rights, duties or consequences, but rather a definite expression and record as to the purpose of the parties to which the parties are bound in honour only.
6. This Memorandum of Understanding shall remain in effect for a period of five (5) years from the date of signing and may be renewed for a further five (5) years by the mutual agreement of both parties. The Memorandum can be terminated at any time by either party upon provision of six (6) months written notice to the other party.

SIGNED for and on behalf of:

Sustainable Transport & Traffic Solutions:

.....
Dr Partha Parajuli
Managing Director
Sustainable Transport & Traffic Solutions Ltd
Date:

Road Safety Society of Nepal:

.....
Saroj Kumar Pradhan
General Secretary
Road Safety Society of Nepal
Date:

Memorandum of Understanding
between
Sustainable Transport and Traffic Solutions Ltd.
and
Bitzios Consulting Pty. Ltd.

Sustainable Transport and Traffic Solutions (STTS) Ltd., Queensland, Australia and **Bitzios Consulting (BC) Pty. Ltd.**, Queensland, Australia (individually a party and collectively parties to this Memorandum) believe that:

1. Mutual benefit can be derived from professional and scholarly interaction, co-operative consulting and research and other forms of industry and academic collaboration;
2. The parties regard the following areas of cooperation as desirable and feasible:
 - (i) consulting works in the field of mutual interest;
 - (ii) networking development in the field of transport and traffic engineering as well as in urban and regional planning;
 - (iii) study and research exchange programs;
 - (iv) collaborative research and exchange of study reports and research papers related to those programs of consulting and research services;
 - (v) mutual assistance in the preparation of training, workshop, seminar and conference materials;
 - (vi) opportunities for other forms of co-operation, such as the delivery of short course training and workshops;
 - (vii) explore the opportunity for STTS to act as a representative of BC (and vice versa) in specific collaborative projects and programs as identified individually or collectively by the parties and/or their members;
 - (viii) provide local support (platform for undertaking agreed activities) to interested members of the parties.
3. The terms of specific areas of cooperation shall be further considered and agreed upon in writing by the parties prior to the initiation of any particular project activity.
4. Any specific program will be subject to mutual consent, availability of funds and approval of both parties. Operational details of each project activity shall be agreed by both parties before initiating each activity.
5. The parties agree that this Memorandum of Understanding is not a formal legal agreement giving rise to any legal relationship, rights, duties or consequences, but it is only a definite expression and record of the purpose.
6. Either party can terminate this MOU on written notice to the other at the address contained within this agreement

SIGNED for and on behalf of:

Transport and Traffic Solutions Ltd.

Bitzios Consulting Pty. Ltd.:

.....
Dr. Partha Parajuli
Managing Director
Sustainable Transport and Traffic Solutions Ltd
Date:

.....
Damien Bitzios
Managing Director
Bitzios Consulting Pty Ltd
Date:

Memorandum of Understanding
between
Sustainable Transport and Traffic Solutions Ltd.
and
PSA Consulting (Australia) Pty. Ltd.

Sustainable Transport and Traffic Solutions Ltd., Queensland, Australia and **PSA Consulting (Australia) Pty Ltd,** Queensland Australia (individually as a party and collectively as parties to this Memorandum) believe that:

1. Mutual benefit can be derived from professional and scholarly interaction, co-operative consulting and research and other forms of industry and academic collaboration;
2. The parties regard the following areas of cooperation as desirable and feasible:
 - (i) consulting works in the field of mutual interest;
 - (ii) networking and mutual development in the field of transport and traffic engineering as well as urban and regional planning;
 - (iii) study and research exchange programs;
 - (iv) collaborative research and exchange of study reports and research papers relating to those programs of consulting and research services;
 - (v) mutual assistance in the preparation of training, workshop, seminar and conference materials;
 - (vi) opportunities for other forms of co-operation, such as the delivery of short course training and workshops;
 - (vii) opportunities for Sustainable Transport and Traffic Solutions Ltd. to act as a representative of PSA Consulting (Australia) Pty. Ltd. (and vice versa) in specific collaborative projects and programs as identified individually or collectively by the parties and/or their members; and
 - (viii) local support (platform for undertaking agreed activities) to interested members of the parties.
3. The terms of specific areas of cooperation shall be further considered and agreed upon in writing by the parties prior to the initiation of any particular project activity.
4. Any specific program will be subject to mutual consent, availability of funds and approval of both parties. Operational details of each project activity shall be agreed by both parties before initiating each activity.
5. The parties agree that this Memorandum of Understanding is not a formal legal agreement giving rise to any legal relationship, rights, duties or consequences, but rather a definite expression and record as to the purpose of the parties to which the parties are bound in honour only.
6. This Memorandum of Understanding shall remain in effect for a period of five (5) years from the date of signing and may be renewed for a further five (5) years by the mutual agreement of both parties. The Memorandum can be terminated at any time by either party upon provision of six (6) months written notice to the other party.

SIGNED for and on behalf of:

Sustainable Transport and Traffic Solutions Ltd:

PSA Consulting (Australia) Pty Ltd:

.....
Dr Partha Parajuli
Managing Director
Sustainable Transport and Traffic Solutions Ltd
Date:

.....
Philip Stay
Managing Director
PSA Consulting (Australia) Pty Ltd
Date:

APPENDIX D: SAMPLE PROJECT SCOPING DOCUMENT

PROJECT: STRATEGIC REVIEW OF RUN-OFF-ROAD (ROR) AND CROSS-OVER (CO) CRASHES			
Project Number:	NRSMS/C6 P11.1.7/01	Status:	To be submitted for funding
Project Component	Research and Development	Component Leader	Dr. K. P. Nepal
Title:	Strategic Review of Run-Off-Road (ROR) or Cross Over (CO) Crashes	Project Type:	Research and Development
Review Panel:	NRSMS Steering Committee (TBD)	Mode of Undertaking	Outsourcing
Objective:	<p>The main objective of this project is to identify national strategies that ultimately contribute to reducing the number of Fatal and Serious Injury (FSI) crashes occurring on National Highways (NH), Strategic Road Network (SRN) and Local Road Network (LRN) of Nepal. These strategies will inform the followings:</p> <ul style="list-style-type: none">• Development of Nepal Road Safety Management System;• Development of Strategies for reducing CO and ROR types of crashes;• Review and Revision of Nepal Road Safety Action Plan;• Road Safety Funding Programs;• Development of Road Design Standards incorporating safety Retrofit. <p>In order to meet the above objective, the project entails the following two sequential activities:</p> <ul style="list-style-type: none">• Assess the effectiveness of existing treatments for CO and ROR types of road crashes based on international and regional best practice road safety countermeasures review;• Identify and evaluate potential new treatments of these crashes for use in Nepal in developing safety improvement projects for various funding programs.		
Issue:	<p>Although no studies have been yet undertaken to identify key crash types in Nepal in any formal way, anecdotal evidence suggests that Run-Off-Road crashes (also called Road Departure crashes - to the left) and Cross-Over crashes (also called Road Departure crashes to the right) constitute two leading and frequently occurring types of Fatal or Seriously Injured (KSI) crashes. The frequent cases of ROR crashes leading to roll over along the steep downhill slope and plunging into the deep river warrant the immediate need for the implementation of strategies aimed at reducing these types of crashes and reduce the risk of multiple fatalities.</p>		
Linkage to Strategic Documents	NRSAP 2011- 2020	Pillar 1: Road Safety Management [Activity A(5)] Pillar 2:Safer Roads and Mobility [Activity B(4)]	
	UN DOA 2011-2020	All Pillars 1-5	
	ADB RSAP and Guidelines	Activity B1: Developing procedures, guidelines, and tools, and making these operational Activity B2: Identifying opportunities for improving and scaling up road safety	
Deliverables:	<p>The following deliverables are expected:</p> <ul style="list-style-type: none">• Inception Report: outlining the background, context, need, objective, potential		

	<p>methodologies, preferred methodology, WBS elements (tasks), time line (study schedule), an estimate of resources, allocation of tasks, time and resources required for the delivery of the project;</p> <ul style="list-style-type: none"> • Discussion Paper 1: outlining the findings from literature review and analysis of crash data; • Discussion Paper 2: outlining the findings from the evaluation of existing strategies based on international and regional practices, additional engineering treatments, assessment of the effectiveness of existing and potential new treatments that are suited to the country's specific situation with supporting evidence; • Draft Report: for circulation to all stakeholders for comments. This would be the compilation of the first two; • Final Draft Report: incorporating comments from stakeholders.
Scope Management (Methodology):	<p>The suggested methodology based on the current state of knowledge on related subject matter is outlined as follows. The strategic research nature of the project suggest that there could be a need to continually review the suitability of the identified tasks, time, resources, and method statements in order to deliver the desired project outcomes. The component leader and project leader will monitor the progress, review the completed works and suggest changes during the project delivery period.</p> <ol style="list-style-type: none"> 1. Undertake literature review to identify relevant research findings. This literature review to include a general summary of available countermeasures (for relevant crash types) including researched crash reduction potentials; 2. Identify the part played by infrastructure in crash rate reductions or increases (for NH, SRN, and LRN and for rural and urban environment)); 3. Undertake a comprehensive analysis of all ROR and CO crash data on the road network to the extent available and limitations of existing data (for NH, SRN and LRN) and restricted to FSI crashes. This is to: <ul style="list-style-type: none"> • Understand the current crashes occurring on the road network for the last five years or so (as available). • Be able to explain the causes of these crashes where the road and roadside infrastructure may have contributed, particularly where DoR, DoLIDAR and DDC/VDC and other Local Government Bodies are involved (Planning, Design, Construction and Maintenance). • Identify patterns emerging between crashes, be it to do with crash type, geographic location, road conditions, road users, road speeds, road units, type of object hit etc. 4. Identify key data sets missing (note: hospitalisation crashes are not available in Nepal) 5. Develop trend tables, charts, graphs for consultation and other reporting purposes; review and evaluate existing strategies (if any), design practices and countermeasures undertaken to address ROR and CO crashes currently and determine their usefulness in reducing FSI crashes. The expectation of the evaluation part is that all existing initiatives (and lack of) be commented on, rather than specific projects /sites within the various government bodies responsible for managing roads. As only limited data are expected to be available on LRN, evaluation process may have to be limited to NH and SRN at this stage. This will be determined in consultation with MoPIT, NRSC, DoR, DoTM, DoLIDAR and Traffic Police. 6. Identify potential engineering treatments that may be appropriate strategies to reduce OR and CO FSI crashes based on effectiveness, constructability, ease in maintenance and value for money;

	<p>7. Review current funding program (and absence of) structures to identify potential improvements. For example, are particular treatments better suited to include in the construction and maintenance program or a separate safety mass action program would be more effective?</p> <p>8. Recommend strategies to be adopted to reduce ROR and CO types of FSI crashes. These strategies will be grouped into</p> <p>(a) Strategies for NHN</p> <p>(b) Strategies for SRN</p> <p>(c) Strategies for LRN</p>
Milestones:	<p>Subjected to the availability of fund, the Project is expected to commence in February 2015 and completed by June 2017 with the proposed following time line (indicative)</p> <ul style="list-style-type: none"> • Scope refinement and Resolution on Method Statement: (Hold Point) Jul 2015 • Discussion Paper 1 - Literature review and crash data analysis Aug 2015 • Discussion Paper 2 - Review of existing strategies and option analysis of proposed strategies Sep 2016 • Draft Report - Feb 2017 • Stakeholders workshop Apr 2017 • Final Draft Report - Jun 2017
Consultation Plan:	<p>Consultation will be limited to key stakeholders (MoPIT, NRSC, DoR, DoTM, DoLIDAR, DDC ADB, WB etc) during the study process.</p> <p>It is proposed to hold seminars/ workshops in Kathmandu and selected regional centres (limited to three) to disseminate the results of the work. The target audience covers a broad range of officers involved in conceptualizing, formulating, developing, programming, realising, monitoring, evaluating safety improvement projects. Seminar / workshop materials (Hands out and Power point presentation) will also be developed as a part of this work so that these materials can be used by the road authorities to provide ongoing training programs for strategic review.</p>
Other Linkages	<p>The strategic review will have to be done keeping in mind of the various ongoing road safety initiatives / safety improvement programs within the limitations of the road safety program governance and weaknesses in the system while working toward the improvement of these weakness and establishment of full scale road safety management system. Major initiatives include, but are not limited to, the followings:</p> <ul style="list-style-type: none"> • Transport Policy and the project related to its amendment • VTMA and the planned project related to its revision; • VTMR and the planned project related its revision; • Nepal Road Safety Act Project. • Public Road Act and Regulations • Road Safety Audit Policy • RSA Capability Development Plan • Road Safety Pilot Project • Other ongoing and planned initiatives funded by WB, ADB and other funding

	agencies on road safety sector <ul style="list-style-type: none"> • LRN Road Safety Concept Paper 		
Risks and Risk Management:	The following potential risks and corresponding risk management strategies will be in place: <ul style="list-style-type: none"> • Time overrun: managed by engaging suitable int'l project leader on time; • Cost overrun: managed through the agreement on fixed hourly rate and number of work hours of all project team members involved. A schedule of person-months input will be worked out for each key input. • Movement of government staff: Work with NRSC/ MoPIT and seek commitments from the Senior Management to not or reduce staff transfers during the project period; • Method/ Scope change: Steering committee to meet regularly to make decisions to minimize delay in decisions and early identification of hold points. 		
Resource Management	Project Co-ordinator: (Int'l): 0.5 person-months Component Leader (Int'l): 2 person-months Project Leader(Int'l) (Senior Road Safety Engineer): 4 person-months Engineers (Local): 12 person-months Data Analysts and other Support Staff (Local): 12 person-months Counterpart Staff: TBN (Capacity Building)		
Scheduled Start Date:	July 2016	Scheduled Completion Date	June 2017
Budget	Project Year	without contingencies	with contingencies
	Year 1 (FY 015/016)	\$50,000	\$60,000
	Year 2 (FY 016/017)	\$100,000	\$120,000
	Total	\$150,000	\$180,000



For more information please contact:

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and

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