



Reducing Risk and Accelerating Recovery

A natural or man-made hazard becomes a disaster when the local population is vulnerable, that is when they lack the capacity to anticipate, cope and recover. Access and mobility are key factors in establishing sustainable livelihoods that are resistant to hazard risks.

This edition of Forum News highlights an emerging recognition of the reciprocity between two fields of policy and practice, transport and disasters. The transport sector is searching for new ways to make infrastructure and transport services less vulnerable to hazards, increasing their understanding of access and mobility needs during and after disasters, and exploring technical solutions, the appropriate siting, design and construction of infrastructure to minimise risk. In the meantime relief and reconstruction agencies are recognising the need to integrate their work in disaster preparedness and regaining access during emergency situations, with the long-term development strategies of the rural transport sector.



ITDG South Asia

Bridge maintains mobility post disaster, Pakistan

The Oxford Advanced Learners Dictionary defines a disaster as "an event that causes great damage or loss of life". Although disasters have been viewed as situations arising from natural phenomenon and consequently producing stress, personal injury, physical damage and economic disruption, these can also be manmade. Examples in the former category include what are commonly known as natural hazards such as earthquakes, cyclones and floods. The latter includes armed conflicts, technological breakdowns/failures and hunger. This edition of *Forum News* primarily focuses on natural disasters.

It is evident from the articles in this bulletin, that disasters are not confined to a particular country or continent. Natural disasters cannot be prevented, although in some countries the frequency of occurrence has meant that disasters can to some extent be predicted. Once disaster has occurred, action needs to focus on mitigatory measures that reduce/minimise vulnerability, loss of life and property. This entails instituting an effective disaster management scheme consisting of a range of activities to maintain control over disaster and emergency situations and to provide a framework for helping those at risk to avoid or recover from the impact of the disaster. The objectives of such measures are to minimise human, physical and economic losses suffered by individuals, society and the country at large, reduce personal suffering, and enhance speedy recovery.

Traditionally, people tend to think of disaster management solely in terms of immediate post disaster actions taken by relief, aid and reconstruction agencies and officials. The pre and long-term post disaster responses are equally important, and part and parcel of disaster management. In any disaster management scheme, the role of transport cannot be overemphasised. Transport is required to:

- get goods such as food, fuelwood, water, clothes and medicines to affected populations
- get services such as health care to the victims
- transport victims to safe places or hospitals

In some cases such as Cyclone Eline that devastated parts of Mozambique and Zimbabwe, transport infrastructure was also destroyed. Massive capital injection was required to restore transport infrastructure. Delays in repairing the damaged roads and bridges resulted in certain areas becoming completely inaccessible, which in turn created severe stress for affected communities who could not gain access to food or social and economic services. Sometimes the only option can be to airlift relief supplies but the non-availability of appropriate transport becomes a big constraint.

One of the most important issues in disaster management is the institutional framework that would be required to address any

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disaster situation. Most governments have set up 'Civil Defence/Civil Protection' units consisting of relevant stakeholders such as the police, army, and government departments responsible for transport, welfare, supplies etc. Such units are mandated with the responsibility of 'disaster preparedness', the mobilization of resources required to respond to any disaster situation. The article 'Ready and Waiting' (p.3) outlines the role of transport in Cuba's national disasters contingency plan.

The proposed 'Access in Emergency' network (p.3) recognizes the importance of transport infrastructure in order to maintain accessibility. To this end the authors recommend the establishment of a 'dedicated capability'. Their promotion of a multi-sectoral and holistic approach to the mitigation of risk is supported by the Instituto Mexicano del Transporte's focus on the Mexican road network in 'Reducing Risk for the Mexican Road Network' (p.3).

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Livelihood options for Flood Risk Reduction

During Pakistan's monsoon season severe floods in the Punjab and Sindh provinces devastate human life, property, local economies, and infrastructure. Government interventions primarily focus on the immediate relief effort and leave affected communities to their own devices once the emergency has passed.

Through their programme 'Livelihood Options for Disaster Risk Reduction in South Asia', Intermediate Technology Development Group South Asia (ITDG South Asia), aims to reduce the vulnerability of disaster prone communities by enhancing their capacity for self-reliance in coping with disasters. In partnership with the Doaba Foundation, a pilot demonstration project was undertaken in Kamra village, Tehsil and District Jhang, Punjab Province, to demonstrate community based flood risk reduction approaches.

Under this pilot scheme, restricted mobility was identified as a long term consequence of the yearly flood hazard. During monsoon flooding, water overflows from the Trimu

Headworks lake into a low lying strip of land about 2 kilometres long and 40 metres wide. The soil here was removed in 1939 and used to build an embankment that protects the headworks from flooding. As the overflow collects here it stagnates and takes at least 6 months to dry up. Creating a barrier between the village and the metalled road that connects Kamra village with the nearby market town and beyond. The stagnant water barrier makes even the use of bicycles hazardous. Cyclists must carry their bicycles on their backs and wade across, facing the threat of slipping, finding oneself in deep water, injury or even loss of life.

The solution to this problem was found through the construction of a bridge, and this small bridge has literally revolutionised the rural transport sector in this area. Cyclists now cross the bridge without fear of hazard and many other modes of transport for people and goods have become possible; motor cycles, motor rick-shaws, tractors, tractor trailers, jeeps, wagons, cars, goods transport trucks, horse drawn

carriages, bullock carts, horses and donkeys. In addition to eliminating the barrier created by the stagnant water the bridge has reduced the steep ascent up either side of the embankment making the use of bullock carts and horse drawn carriages which are cheap and available to many, a viable mode of transport.

Mobility is still vulnerable to the threat of flooding as the unmetalled road which links the village and the bridge and then the bridge to the metalled road will be covered if the banks of the river overflow. If this track were metalled then a minor flood would not stop the mobility of trucks, wagons, jeeps or even cars, and most people would still be able to wade through and use the bridge to cross over to the nearby metalled road. However the hazard represented by the low lying land has been completely removed with respect to minor or medium floods and in higher floods the bridge facilitates the use of boats.

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Green Roads Minimise Vulnerability

Road building is technically a big challenge in Nepal as the country has very fragile mountain topography and a huge monsoon rainfall. Heavy monsoon rainfall has always been disastrous for the road sector in Nepal and recent floods resulting in landslides have demonstrated its impact on rural road infrastructure and livelihoods.

Despite the tough conditions, there is an obvious need for an extensive rural road network to encourage Nepal's overall economic development. Conventional road building approaches have opened up roads with a bulldozer in one quick process, exacerbating the vulnerability of slopes to landslides, and necessitating curative measures to stabilize hill and valley sides. Recognising this, the German Technical Cooperation (GTZ) and Swiss Agency for Development Cooperation (SDC), have developed a more conservation-oriented mountain road building approach, popularly known as the 'Green Road Concept'.

This Concept arises from the premise that "prevention is better than cure" and from the planning stage seeks to minimize environmental hazards. Key features of the Green Roads concept include:

- The use of indigenous knowledge during alignment selection, for example alignments on the southern hill slopes are preferred as they are better exposed to sunlight and thus dry up quickly after rain.
- The use of labour-based construction technology, promoting local labour and avoiding the use of heavy construction equipment or explosives, which cause disturbance to the natural topography.
- Emphasis on 'cutting and filling' rather than 'cutting and throwing', which encourages the recycling of locally excavated materials; stone, gravel chips, and topsoil, as construction materials.
- A phased construction approach. A track of 2-3 metres is opened in the first phase causing fewer disturbances to the mountain slope and allowing time for compaction by the monsoon rain. In the next phase the road is widened to 4.5 metres and in the last phase to its final shape with necessary road furniture and bioengineering. The road will be exposed to at least two monsoons before it is ready and open for traffic.
- Bioengineering. Vegetation growth is a dynamic process and over time vegetation

strengthens and helps to stabilize slopes. The concept strongly adopts bioengineering as one of the important tools of environmental conservation and uses indigenous skills to identify the best plant species for stabilization.

- Through appropriate water management; the provision of a 5% slope towards the valley side, longitudinal and cross drains at required places, and appropriate switch backs to disperse water along the mountain slopes, the extent of soil erosion is minimised.

The Green Road Concept has emerged as a new vision in rural road building in Nepal, introducing several new dimensions which help to conserve the natural mountain topography, and to maintain natural flood defences. There are still certain aspects that could be debated, however the concept has been able to give a strong message to the entire road building community regarding the importance of nature conservation and the minimisation of soil erosion and landslides.

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Ready & Waiting

Every year during its cyclone period (June - November) Cuba faces the risk that a cyclone could become a natural disaster. Cyclones cause floods and devastate built and non-built environments, however Cuba's disaster prevention system has reduced the vulnerability of its population to this threat and the transport sector has played a key role in this disaster mitigation.

In case of disaster, State norms force transport entities to come under the unconditional management of the Chief of the Office of Civil Defence, and carry out the disasters contingency plan. The Office of Civil Defence has a Transport Unit that is responsible for all measures related to protection of transport assets and the evacuation of people, animals and cargo in the least amount of time with maximum safety and protection. Among the aspects that must be regularly updated are:

- location of transport entities
- location of potential communities to be evacuated
- location of destinations where people will be moved in case of emergency
- type and characteristics of means of transport available for transporting people and cargo
- availability of human resources
- design and state of the roads for evacuation.

During the different phases of information, alert, emergency and recovery, transport units are ready for action and available human resources receive training. They are permanently in contact through radio and are well equipped for fulfilling their rescue job in the optimum manner.

By integrating transport and Cuba's cyclone period within a contingency plan encompassing: a coherent action plan; organised, rapid, efficient and effective transport entities; other organisations, institutions, and the organised community, it has been possible to minimise the destructive effects of cyclones. In comparison to other cyclone-prone countries, less people die, there are less casualties and the impact on the economy is reduced. An example of the successful application of the contingency plan came in 2001 during cyclone Michelle when only three people died.

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GeoInforisks: Reducing Risk for the Mexican Road Network

Considering the increasing frequency and intensity of natural and man-made disasters, and the importance of road infrastructure for access during emergencies, the need to harness and synthesise the basic knowledge needed to support work during the different stages of disaster management is a pressing matter.

The Instituto Mexicano del Transporte is proposing the design of a spatial analysis system, focusing specifically on the identification of elements related to risks (primarily geologic-geomorphologic and hydro-meteorological) that could affect the road network. The objective is to create a methodology of geographic characteristics, based on GIS and GPS, in order to establish intervention strategies. On one hand, the strategies would be designed to concentrate the attention and efforts of the public sector on the prevention and mitigation of risk factors to which the national road network is exposed. Establishing the minimum acceptable condition for transport infrastructure, in terms of quality and safety. On the other hand, the strategies would be directed at the design of a subsystem for use in the re-establishment of the socio-economic system of areas affected by disasters.

This will be possible through gathering, analysing and regularly updating spatially specific information related to the environmental, social and economic conditions associated with risks to the national road infrastructure. Information will come from diverse sources (statistics, cartography, field trips, etc.) including obtaining it directly from the area, via geo-reference on infrastructure as well as the populations affected by the disaster.

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Access in Emergency

When disaster occurs, gaining and maintaining physical access to the affected area is rarely addressed until too late. Existing infrastructure is often already inadequate, or is damaged by the disaster, or indeed the relief effort itself with large loads being carried throughout wet seasons, possibly using inappropriate vehicles.

Consequences include inefficiency, delay and frustration, and the risk of increased mortality, suffering, and displacement. Costly and, in development terms, inappropriate air or helicopter operations, might be avoided if infrastructure needs were effectively addressed from the beginning.

Yet most relief agencies do not prioritise the planning and management of infrastructure interventions. Reasons include the scope of works, often over wide areas with consequent security concerns, the belief that infrastructure work is a host government responsibility, and difficulties in rapidly mobilising adequate resources or providing 'flyaway packages'.

A new initiative to assist reliable access and improve practice in disaster situations is now being developed. This would bring together a wide network of partners, local and international, from government, private, voluntary and community sectors, many of

which usually work outside the relief sector. The network would be facilitated by a small dedicated core staff, able to pro-actively assess, trigger, and support appropriate responses.

Prior research enabling immediate response to a range of potential disaster situations will need to be backed up by rapid yet detailed 'needs assessment' when disaster occurs, allowing the development of a range of response options. We are in discussion with TRL Limited (previously the Transport Research Laboratory) in the UK on the management of this initial research work.

If approval for mounting a response is granted by lead and donor agencies, a partner organisation would manage this locally, supported by other network resources. These resources might include professional and other staff on secondment; supply of materials, tools and equipment; information and advice ranging from appropriate vehicle specification, hydrological and meteorological data, design and materials testing, to forms of contract and local road maintenance policies.

For practical, economic and developmental reasons, the network will emphasise and prioritise the use of local (or regional) resources and support, including community-based groups, using external management only when the disaster overwhelms local capacities.

Emphasis would be placed on labour-intensive works, probably using local contractors or community efforts, and maintenance rather than new construction. Initially concerned mainly with road-based infrastructure, other modes such as rail and boats, and more major works, could be encompassed later.

Behind the initiative, provisionally called 'Access in Emergency' (AiE), are engineers who have themselves worked to secure access in disaster situations, with support from RedR (Engineers for Disaster Relief). We would welcome the assistance of IFRTD members. If you want more details, would be interested to get involved, or have ideas or views, please contact one of us.

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News and Events

Ageing and Mobility in Disaster Situations

When Transport is interrupted due to natural disasters or conflict older people are often the most marginalised because they are less mobile. In emergency situations older people are often left behind - unwilling or unable to travel, or missed by emergency response provisions as they cannot reach relief points or find it difficult to queue. Research for HelpAge International's publication *Older people in disasters: guidelines for best practice* found that older people face four main mobility problems in emergencies:

- Incapacity, which means that older people who are housebound are left behind or are unable to gain access to essential services.
- Older People are sometimes unable to climb into trucks transporting emergency affected populations, or are

slower than others and get left behind.

- Where there are no regular transport facilities, older people cannot reach essential services
- Some older people are disabled by the loss of mobility aids in emergencies.

The above is an extract from *Gender and Transport for Older People*, a paper written by HelpAge International following their input into the Forum News edition on Transport and Vulnerable People (issue 8.3).

To obtain a copy contact:
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<http://www.helpage.org/publications/PapersEtc/PapersEtc.html#g&t>

Improved Food Crops Marketing through Appropriate Transport for Poor Farmers in Uganda

This research project funded by the UK DFID Crop Post-Harvest Programme is undertaken by the Natural Resources Institute (NRI), UK in collaboration with the Transport Forum Group (TFG), Uganda, the Transport Research Laboratory (TRL), UK and Silsoe Research Institute.

The project aims to develop and promote strategies that will improve food security of poor households through increased availability and improved quality of food, and better access to markets. The main outputs of the project will be a baseline study, validated technology for IMTs, and promotional material.

These outputs will enhance the understanding of issues related to rural transport in Uganda, such as needs for intermediate means of transportation, constraints to uptake, and potential implications of improved transport for the farming system. Means of transportation will be tested and validated and the recommendations consequently developed will be presented to

private sector associations, Government institutions, the donor community, non-government organisations (NGOs), and relevant networks. Their uptake will lead to an improvement of poor farmers' livelihoods.

The **Kick-Start Workshop** for the project was held 27th-28th May 2002 in Jinja, Uganda, it's main objective was to involve key stakeholders and all members of the core research team in planning the baseline study in detail.

The Crop Post-Harvest Programme funds two other agricultural rural transport (ART) projects with similarities to the Uganda project, namely the KENDAT led Project in Kenya and the University of Durham Project in Ghana.

Co-ordination of the project is based at the new Transport Forum Group Office. For more information please contact:
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Transport Investments Meeting Poverty Targets?

The transport sector is a leading consumer of public resources in developing countries, yet its investments, historically conceptualised in terms of large scale infrastructure and associated motor traffic, have had a disappointing impact on the livelihoods of poor people. In many developing countries a variety of policy instruments are being developed to address deepening poverty and social inequality. Poverty Reduction Strategy papers (PRSPs) are an example of these, providing a framework through which different sectors can work together to attain agreed poverty reduction targets.

The IFRTD Secretariat together with IFRTD affiliated national networks (NFGs) will work in 12 countries to enhance the capacity of civil society to support and monitor poverty reduction targets in the transport sector investments of

developing countries. This project, part funded by the DFID Civil Society Challenge Fund aims to promote transport as a central aspect of the poverty reduction process, nurture the role of civil society organisations in influencing the design of transport sector policies and ensure more socially responsive transport investments. NFGs will provide the framework for mobilising the voices of the wider civil society that has a stake in transport sector activities, engage with other agencies and initiatives in the field of poverty reduction, and importantly engage with the PRSP processes in their respective countries.

For more information or to get involved click on the poverty links at <http://www.ifrtd.org/proj/proj.htm> or contact:

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About us:

The international Forum for Rural Transport and Development is a global network of individuals and organisations interested in addressing access and mobility needs as a means of eradicating poverty.

The IFRTD network encompasses over 2500 members, many of whom are members of affiliated National Forum Groups (NFGs). The IFRTD Secretariat is a small team tasked with facilitating networking, advocacy, information, and research activities among network members at national and international level.

At the Secretariat we would like to hear from you our members about the rural transport issues that concern you and particularly any themes which you would like to see covered in future issues of *Forum News*.

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Remember to take a look at the IFRTD website www.ifrtd.org

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