Developing and maintaining good road infrastructures, particularly those rural roads vulnerable to the negative impact of harsh weather conditions, can mean a great deal to local communities and local governments; socially, environmentally and economically.

Today, according to the World Bank, 1 billion people worldwide lack access to all-weather roads, which negatively impacts their lives in many ways:

- 500,000 women worldwide die of complications during childbirth. 75% of these deaths could be prevented with timely access to healthcare that better roads would provide.
- Malaysian Prime Minister, Dato Seri Abdullah Ahmad Badawi said in 2004, “Road safety is an investment and not a cost so we must all work together to address this urgent issue”.
- Maintenance of rural roads is regarded as one of the World Bank Transport Team’s biggest issues.

The World Bank’s transport business strategy for 2008-2012 is based on delivering “Safe, Clean and Affordable Transport for Development”. The strategy aims to help partner countries to establish the governance, strategies, policies and services that will deliver transport for development in a way that is economically, financially, environmentally and socially sustainable.

Shell Bitumen fully supports this goal. Shell Instapave Systems offer local contractors the capability to build their local infrastructures.

The value that good rural roads provide is supported by facts from the World Bank (2009):2

- Impact studies have proved the benefits good rural roads can have on local health and education.
- In just one area of India, the average household income rose from $375 to $700 p.a. and literacy rates increased from 32% to 43% following investment in local roads.
- Pakistan alone is spending $3 billion on rural road development over the next 5 years.
- The World Bank spends $1 billion on rural roads every year.

In fact, the World Bank concludes that Rural road investments are found to reduce poverty significantly through higher agricultural production, higher wages, lower input and transportation costs, and higher output prices. Rural roads also lead to higher girls’ and boys’ schooling.

Sources:
1. Bituminous Solutions for Improved Road Safety paper

“Many studies point to the economic and social impact of roads which link rural communities to schools, clinics and markets. Yet an estimated one billion people, or about 40 percent of the rural population in International Development Association countries, lack direct access to an all-weather road.”

International Development Association"
Shell Bitumen has developed a range of emulsion technologies designed to meet the economical, environmental and social needs of developing regions.

Shell Instapave Systems offer rural areas a number of attractive advantages to conventional paving systems. They offer a service suitable for light to medium traffic, making them more cost-effective than hot mix or concrete systems for use in paving rural roads. Over the road lifecycle they are also more cost-effective than maintaining gravel roads, which can sometimes require re-gravelling as often as twice a year.

Shell Instapave Systems are versatile in that they can be changed to suit local conditions and business needs. By developing long-term relationships with local contractors we work to add value within the community. By bringing Shell’s international experiences to the relationship, we can equip areas with the road-building capability to help sustain local businesses.

Whole lifecycle analysis within Shell has shown that Shell Instapave Systems are cost-effective paving systems for a medium to long-term surface lifespan. In El Salvador, Shell’s results taken over a 10-year period show a total lifecycle cost, including construction and maintenance, significantly lower than that of alternative road paving technologies. Based on these results, Shell Instapave Systems can be up to 40% cheaper than gravel road options, up to 50% cheaper than hot mix asphalt and up to 110% cheaper than concrete paving systems.

Why seal a gravel road?
Gravel surface roads are usually seen as a quick and low-cost option. However, over their lifecycle they can require a high level of maintenance with re-gravelling needed as often as twice a year. This can lead to a high level of aggregate needed over the surface’s lifetime – even if such aggregate may be found locally. Hauling aggregates along a road can contribute to road deterioration, CO2 emission and energy consumption. In dry conditions, gravel road surfaces generate dust which can affect the comfort and health of the driver, as well as damage roadside agriculture. On the other hand, in rainy conditions, gravel roads generate dust and fine particles – coming from gravel surface erosion – which can get into drainage systems and rivers along the roadside, affecting the biological balance of surface water – sandbanking, PH modification, etc.

Applied above a structural base layer that can support light traffic, Shell Instapave Systems are designed to offer a complete sealing solution.

Shell Instapave Systems are a quality, cost-effective solution that are costed per km (or m²). By costing this way Shell Bitumen helps to facilitate the planning of road network management through simplified budget allowance and supply requirements.

Shell Bitumen is committed to improving road infrastructure. By developing efficient solutions, we aim to limit the environmental impact of our products and services now and in the future.

In order to meet the needs of various road conditions, for example, climate, traffic loads and lifespan, Shell Instapave Systems use a portfolio of technical options, using emulsion from double surface dressing to microsurfacing.

Economical and social analysis carried out for the Philippines by the Philippines Transport Research Laboratory; the HDM-4 model, has shown that Shell Instapave Systems provide the best return on investment. The improved riding quality of the road compared to a gravel alternative means that it is more cost-effective than a standard hot asphalt overlay system.

Sources
1. HDM-4 is the Highway Development and Management tool developed by the World Bank
120,000 kilometres¹ of unpaved rural roads mean shops, markets, healthcare and education are out of easy reach for millions of people in the Philippines, especially in rural areas. Shell’s Instapave Systems are a simple and cost-effective solution to pave these roads and to help improve the quality of life in local communities.

“Research shows that better quality roads can lead to a better quality of life by offering improved access to amenities, but for many developing countries paved roads have always been too expensive,” said Michael Son, Shell Instapave Systems Manager in the Philippines. Shell Instapave Systems can help make quality roads affordable.

In the Philippines, Shell Instapave Systems are considerably more affordable than conventional concrete or hot mix asphalt alternatives. And, while such a solution can cost more than graveling a road initially, it is more cost-effective over the lifecycle of the road.

Typically, to make a road, you first have to mix the material in a plant and then transport it to where you need it – often over long distances – keeping the mix hot all the way. For cement concrete, once the road is built, traffic may have to stay off it for weeks while it hardens.

Shell Instapave Systems are manufactured on site, using binder transported cold in drums, often with locally-available aggregates, and are ready for traffic shortly after the final layer has been put down. This can be in as little as 30 minutes. Since it doesn’t need the batching plant used to mix material for concrete or asphalt roads, the manufacture of Shell Instapave Systems also produces less CO₂ through lower temperature mixing. And, being mobile, they can be used in remote areas.

The first Philippine province to benefit was Palawan, where a pilot project using Shell Instapave Systems was completed in Puerto Princesa in 2006. By 2007, Shell Instapave Systems were accredited by Philippines’ road authorities for use in its projects.

Paved roads can bring many social benefits. Children can have easier access to schools, farmers can reach wider markets and families can have improved access to healthcare. This can in turn help cut poverty, boost prosperity and so improve quality of life. And, as they reduce the dust generated by gravel roads, they help promote better air quality. “We are so happy and lucky that Puerto Princesa was chosen by Shell Philippines and Asphalt V Rock as the pilot site of this very innovative infrastructure development programme,” says Mayor Edward S. Hagedorn, Puerto Princesa, Palawan. “It is now faster and more convenient to provide health services and deliver medicines to people in the Barangay,” says Leonor Garga, Barangay Health Officer.

In India, for every one million rupees (US$22,000) invested in rural roads, 163 people were lifted out of poverty².

Shell Instapave Systems are also under roll-out over 2009 in El Salvador, Latin America and there are plans to introduce them to India in 2010.

Sources
3. Circumference of the earth is 40,075.16 kilometres; http://geography.about.com/library/faq/blqzcircumference.htm

Did you know...

- Bitumen is the sticky stuff that binds stone chips to make a road
- Shell Bitumen is one of the largest marketers of bitumen in the world
- Shell resurfaces 350 kilometres of road every day – that’s 1km of road every 4 minutes
- Over a year that’s enough road to go around the world four times.³
We are determined to help deliver the long-term benefits of good road infrastructures to those who need them. That is why we work closely with local authorities to make road building and maintenance possible for them.

Shell Bitumen works with local road contractors by developing relationships with them. We supply fit-for-purpose paving systems that are designed to meet the needs of local towns and villages and match these with the right technical training, business insight, guidance and advice for contractors.

“Research shows that better roads can help reduce poverty, but for many developing countries paved roads have always been too expensive. Shell Instapave Systems can help make quality roads affordable.”

Michael Son, Shell Instapave Systems Manager in the Philippines.

Our aim is to support road contractors to build long term skills and capabilities that will help them prosper, and in turn be of continuing benefit to the communities they serve and live within. We will encourage local businesses to get involved by communicating the advantages of bringing communities closer together and opening the possibilities of social economic development delivered by improved road infrastructures. Improved road surfaces can also help promote better air quality in the local environment by dramatically reducing the dust generated by traffic using gravel and dirt roads.

The advanced qualities of Shell Instapave Systems allow us to provide a method of sealing gravel rural roads that makes them practical in nearly all weathers and suitable for a wide range of situations. Above all, they are durable and affordable – using locally sourced materials.

Alongside a cost-effective paving technology, we provide our partners with a package of support for Shell Instapave Systems that includes:

- Technical support and expertise
- Business acumen and support

At Shell Bitumen, we recognise that everyone should have access to local markets, education and healthcare. This is why we develop paving systems which are designed to meet the social, economic and environmental needs of local communities.
For further information please contact your Shell Bitumen representative or visit; www.shell.com/bitumen

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