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Cities in flux

Strategies for sustainable urban mobility



Time for change – but how?

Economic development relies on mobility. Without the movement of goods and people, progress becomes impossible. And yet the majority of developing countries and emerging economies still lack quick, safe and affordable ways to keep moving. Swift expansion of environmentally-friendly transport networks that can cater to the masses is thus more important than ever before, particularly in major cities.

Most people around the world don't have access to mobility options that meet their needs.

Commuters spend hours in endless traffic jams; alternative forms of public transport are often not available, while well-linked and well-synced networks are a mere pipe dream. In Sao Paulo, for instance, traffic jams can stretch over 300 kilometres on peak days. Poorer people are forced to rely on expensive mini-buses that don't link up to existing transport systems and tend to be unfit for the road. A simple journey to work can therefore become an arduous and time-consuming exercise – as well as a daily risk for many women due to the potential for sexual assault.

As well as dealing with the direct costs involved (over-inflated ticket prices), travellers ultimately face lost time and economic losses. In the Cairo metropolitan area, traffic jams generate annual estimated costs of around EUR 8 billion – and then there are the indirect losses caused by traffic accidents and respiratory problems. In India alone, around one million people die every year as a result of diseases related to poor quality urban air.

While more and more large cities in Asia and Latin America are implementing their own underground rail networks, bus systems and even cable cars, there is still a great deal of

Transport control centre in Huainan, China



pent-up demand in Africa, particularly in the Sub-Saharan region. Local public transport in this area still consists almost exclusively of mini-buses and (shared) taxis. Only Addis Ababa in Ethiopia has a tram network (built three years ago), while Dar es Salaam in Tanzania has had a modern Bus Rapid Transit (BRT) system for the past two years. BRT networks are also at various stages of development in a number of other major cities, such as Dakar (Senegal), Lagos (Nigeria), Nairobi (Kenya) and Kampala (Uganda).

So, despite the fact its population is set to undergo heavy growth in the next few decades, Africa is still limping along behind developments

in Latin America. Countries there began creating special bus lanes and adding bus stops over 20 years ago, thus developing an effective, safe and convenient transport system. However, these BRT networks are now stretched to their limits in some cities, like Quito and Lima. These cities are now pumping additional funds into larger, rail-linked systems.

Since underground networks are expensive, difficult to plan and tricky to construct, solutions known as light railways (overground urban railways or trams) are seen as an interesting addition or alternative. Cities in India are also looking increasingly to these options. This type of railway network is also gaining ground in Tunisia

(Tunis) and Brazil (Rio) – thanks to KfW support.

Whatever solution cities opt for, one thing is clear: developing countries and emerging economies need more mobility, not less. Simply building an ever-growing number of new lanes and ring roads is not the answer either. After all, these soon reach their limit in terms of strain on people and the environment.

Even now, around 25 per cent of all energy-relevant carbon emissions can be traced back to traffic. Mobility options therefore have to be expanded on a sustainable basis.

Climate protection is just one of the reasons why the age of the combustion engine is coming to an end in industrial countries. All major vehicle manufacturers are currently rushing to advance and expand their electric vehicle ranges. On top of this, there is also the topic of autonomous driving, which is due to start growing in 2025 thanks to digital development. As our system of values is shifting more towards a “sharing economy”, it is becoming easier to say goodbye to our own vehicles, ultimately encouraging the development of electrically powered vehicles that link and mix the concepts of public and individual transport.

However, these trends cannot simply be transferred directly to developing countries and emerging economies – not least due to the lack of power and effective infrastructure for charging electric vehicles. Most countries will have to wait years before electric-based individual transport becomes available to the mass market. Until that point, other solutions are needed to resolve mobility problems in emerging and developing countries, particularly in light of the huge wave of urbanisation currently approaching many cities in these areas.

A resolute strategy of expansion for planned and integrated public transport networks is therefore crucial for these countries. To make sure this comes about, KfW will be stepping up its work with its partner countries in future. The actual options available vary from city to city; there is no “one size fits all” answer.

Solutions need to be based around factors like size, settlement structure, urban topography and the city’s level of economic development. While suburban railways and underground trains are likely to be crucial for coping with traffic levels in megacities over the long term, smaller cities could also fare well with (energy-efficient) buses or cable cars. However, efficient and effective bus systems may also be a sensible initial (interim) response in larger cities.

This is why sound planning is particularly important so as to allow the various means of transport to be brought carefully in sync with one another and incorporate non-motorised forms of transport. How do people get to the suburban railway

stations? Where can they park their bikes? While these questions may seem minor, they can be decisive in determining whether sustainable forms of transport are used or not in cases of doubt. Lots of routes around cities aren’t much longer than a few kilometres. If the infrastructure is in place, these journeys can easily be completed on foot or by bike.

Digitalisation also offers huge potential for new solutions. Traffic control systems, city toll roads, electronic bike rental services and apps can help to bring modes of transport in line with one another – and this is just the beginning in terms of how the digital world can change mobility patterns. And these solutions are often affordable and easily implemented, as well.

For KfW Development Bank, this means increasing its investments in public transport in future and promoting non-motorised, energy-efficient or electric drive systems – while keeping a firm eye on the future and all the potential systematic changes it holds.

Klaus Gühr / Friederike Bauer



Initiative for sustainable mobility

The German Federal Government is aiming to bring about a global transport transition. To achieve this, the Federal Ministry for Economic Cooperation and Development and eight partner institutions set up an initiative for urban mobility (Transformative Urban Mobility Initiative or TUMI) in 2016. The initiative supports the development and expansion of sustainable mobility systems in developing countries and emerging economies, thereby promoting climate-friendly, safe and affordable urban mobility. This approach covers elements such as bus lines, suburban railways and underground networks, as well as things like footpaths and cycle routes. TUMI is scheduled to employ funds of around EUR 1 billion a year via KfW Development Bank. “If cities fail to take action, sooner or later they will find themselves drowning in endless traffic jams or air pollution. However, if they start to act now, they will be able to offer their citizens a liveable environment on a permanent basis,” says German Development Minister Dr Gerd Müller, describing Germany’s commitment.

www.bmz.de/en/issues/klimaschutz/cities-and-climate/Initiative-fuer-transformative-urbane-Mobilitaet

“A shift in attitude is already underway”

Mobility has become one of the biggest issues of our time. Alternative drive systems and technologies are making us question our existing transport systems. Meanwhile, permanent traffic jams in many cities around the globe are increasing demand for new solutions. In our interview, KfW Senior Vice President Roland Siller explains whether poorer countries can rethink urban transport and how they can go about it.

What do you associate with the term sustainable mobility?

I think of traffic that flows without any hold-ups. Transport that is environmentally friendly, convenient, affordable and open to everyone, not just the rich.

Are you talking about cars or public transport?

Both. A transport system has to be set up to move large quantities of people using public transport and then to sync up intelligently with individual forms of transport – ideally environmentally friendly ones like bikes and footpaths, but also energy-efficient cars and, later down the line, electric cars, too.

Here in Germany, we are always talking about new forms of transport: autonomous cars, e-mobility and smart solutions in the form of apps. Are debates like this going on in developing countries, too?

In fact, we are seeing some movement there, too. The psychological strain placed on populations in the growing cities of the south is huge. Take India, for example: according to forecasts, an additional 200 million people will be moving to cities in the next few years. This is related to migration to urban areas on the one hand, and population growth on the other. More people means more



Roland Siller,
Member of the
Management
Committee of
KfW Develop-
ment Bank

traffic, especially as the standard of living starts to rise. Anyone who can afford to will buy their own car – and produce even more traffic. Sitting in traffic jams for several hours has sadly become part of day-to-day life in many cities.

And is that why action is being taken now?

Yes, a shift in attitude is already underway. In India, for instance, every one of the 25 largest cities is due to get its own transport system, some with underground trains, some with suburban railways, depending on their size and the costs of investment.

There is a lot going on in Asia in terms of mobility. In China, for example, large sums are being poured into sustainable mobility. What about other parts of the world?

We are also noticing changes in Latin America. A large number of cities are creating high-speed bus lanes, known

as “Bus Rapid Transport systems”, suburban railways and underground lines. More unusual forms of transport, like cable cars, are also on the rise, in cities like Medellín (Colombia) for example. This isn’t occurring to the same extent in Africa, though awareness of the issue is set to rise quickly there, too. This is a foreseeable trend and also depends on population growth. The number of people living in cities in Africa is expected to triple to around 1.2 billion by 2050.

In Germany, people are saying that the transport revolution is the next energy transition. Does the same apply to developing countries?

Yes, though I would increase the dimension because mobility has major economic impacts, as well as being linked to the environment. The aim therefore can’t be to restrict mobility; it is crucial to economic progress. Instead, the goal should be to design environmentally-friendly and intelligent transport and traffic networks.

What is needed to make sure this actually happens?

I believe that good planning is the most important factor. Transport can shape a city’s landscape for decades, sometimes even centuries. Take the London underground, for example.

It is therefore all the more important to make sure investments of this magnitude are well planned and concepts are developed in integrated systems. This has yet to happen in many cities, but this is what we should be aiming towards.

What is KfW doing to encourage the global transport transition?

We have only really started to get going in this area, too. In the past couple of years, we have really stepped up our commitment, but we want to do a lot more. The German Federal Government created the TUMI Initiative two years ago. The aim of this project is to invest EUR 1 billion in sustainable mobility every year. We are implementing this initiative on behalf of the Federal Government but we are also aware that projects like this have a long lead time.

What are your focus areas?

So far, we have done most of our work in Asia and Latin America, but not much in Africa. This is due to change, but it is the status quo at the moment. We promote adapted solutions, from cycle paths to suburban railways and underground networks.

Does this also include electric mobility beyond from rail traffic?

This is not part of KfW Development Bank's portfolio yet, but we are currently in negotiations concerning a large number of electric buses for India. I predict that more solutions will be added soon.

For example, e-bikes with street-scooter-style transport attachments are one feasible solution, along with a range of others.

However, the type of drive alone is not the only thing that matters to us. It is also important that a KfW



A clear road ahead for rail traffic

project fits into a sustainable overall system.

In addition to good planning and money, humans themselves are another important factor. They would simply prefer to sit in their own car than on an underground train. How do you change this way of thinking?

This is a challenge indeed. The only way to resolve this issue is to design modern public transport systems.

They have to be appealing and offer added value, such as wi-fi, entertainment or working facilities. They need good air conditioning in hot countries, and good heating in cold ones. Train stations and routes to the network need to be attractive, well-lit and safe. Changes like this take time. And so, it is all the more crucial not to lose any more time and give more priority to urban mobility.

*Interview conducted by
Friederike Bauer*



Electric, emissions-free tuk-tuks and boats

DEG – Deutsche Investitions- und Entwicklungsgesellschaft mbH is promoting a pilot project for electric mobility on the island state of Tonga. There, citizens are testing electric, emissions-free tuk-tuks and boats for long-term operation.

The project's private partner is Kirchner Solar Group GmbH from Alheim, Germany, which is contributing EUR 215,000. DEG is also promoting the project with an additional EUR 200,000 from the programme "Climate Partnerships with the Private Sector" set up by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU).

Kirchner has provided eight prototype tuk-tuks and boats to local partners. The electric vehicles are more affordable than conventional vehicles and require less maintenance. Power is provided by photovoltaic plants, which are part of the pilot project along with the relevant charging stations. Using the data collected during test operations, the aim is to develop a sustainable mobility concept for small island states. The project will also examine how electric mobility can improve the income of poorer members of society, such as the opportunity to offer affordable ways to transport people and goods.

18 million fewer car journeys

A new electric-powered tram system in Rio de Janeiro links various forms of transport, integrating previously under-developed neighbourhoods and significantly reducing carbon dioxide levels in the Brazilian city. Construction is almost complete; the KfW project is on the home straight.

The first line in the “VLT Carioca” tram network, as it is known, started operation in June 2016, just before the opening of the Summer Olympic Games in Rio de Janeiro. It runs from the historic port in the north-west of the city to its centre. The route also covers the long-distance bus and ferry terminals and Santos Dumont national airport. The tram therefore brings together various forms of transport and traffic hubs.

The second line was gradually added between February and December 2017. This route runs from the ferry terminal with links to the suburb of Niterói via the trains station and long-distance bus station, thereby incorporating other forms of transport.

Together, the two VLT Carioca lines cover a length of 28 kilometres. They currently transport around 65,000 people a day. Over the medium to long term, forecasts predict that 315,000 people will use the trams on an average working day. The trams run at a frequency of up to one tram every three minutes between six in the morning and midnight. When used at full capacity, this will help to avoid at least 5.6 million car journeys a year. “Over a usage period of 25 years, CO₂ emissions will fall by over 300,000 tonnes as a result,” says the responsible Senior Project Manager at KfW, Martin Kores.

The construction of the tram system cost around EUR 500 million, EUR 200 million of which came from

the Brazilian development bank BNDES. The rest came from the Brazilian government and private banks. On behalf of the German Federal Government, KfW contributed EUR 133 million to the BNDES loan. The financing package for VLT Carioca was part of a credit line with the partner bank with the aim of promoting particularly climate friendly investments in public transport in Brazil. “The same amount again has been invested in the underground network in Salvador de Bahia,” explains Kores. “The final supplementary construction work is due to be finished soon for both projects,” he adds.

As part of the promotion, a tool has also been developed to calculate more accurate CO₂ savings and a guideline has been drawn up for decision-makers in medium-sized Brazilian cities, helping them to select suitable means of transport for

the local public transport networks in their cities.

The rail-based systems in Rio de Janeiro and Salvador de Bahia will lead to at least 18 million fewer car journeys a year. “The impact on the climate was a clear focus in this project,” explains Kores. However, the new rail-based systems, both of which are cutting-edge and barrier free, also offer additional benefits for aspects such as urban development. For instance, the VLT Carioca connects the old port region to the centre, generating long-term improvements. These links provide incentives for companies and businesses to settle in these areas and encourage property development, in turn promoting the creation of local jobs. “This also benefits the poorer members of society who live in these areas,” emphasises the Senior Project Manager.

Katja Dombrowski



The VLT Carioca in Rio de Janeiro

Climb aboard!

Cycling is practical, healthy and environmentally friendly. This philosophy is gaining ground all the time in Europe. However, using a bike as a form of transport has yet to become part of day to day life for many people in developing countries and emerging economies – partly because cities in particular are anything but bike-friendly.

In many regions around the world, poorer members of society rely on their own two feet to get around. Their home towns either have no means of transport or lack suitable infrastructure, or citizens are unable to afford the local mini-bus, let alone their own car. Many people still dream of owning their own car – a goal that is now no longer viable in light of new climate targets. For this reason, KfW is working with its project partners on behalf of the German Federal Government to establish sustainable forms of transport and transport routes.

Cycling in both urban and rural areas offers huge benefits. Bikes allow children to attend schools outside their local area, transport people to work and make sure that microbusinesses can transport their goods. KfW believes firmly in the positive impact of cycling and supports various projects, such as helping South African municipalities to expand non-motorised transport (NMT) and implement a sustainable, affordable and safe transport strategy.

The Green Goal NMT project in South Africa has been active in the three cities of Johannesburg, eThekweni (Durban) and Polokwane since 2011. During the first phase, which is already complete, KfW financed the creation of cycle paths and footpaths. The aim of these measures was to ensure safe and speedy progress and to link particularly disadvantaged

School children use a new cycle path in Soweto, Johannesburg.



districts of South Africa with urban development centres.

During the current second phase, the focus is both on financing cycle paths and, in particular, reinvigorating them. According to Christina Rollin, senior sector coordinator for infrastructure in Pretoria, this is not such an easy task:

“The cycling culture isn’t particularly widespread in South Africa yet.” That is why the aim of the second project phase is to promote awareness of cycling as a sustainable means of transport. To achieve this, KfW is working closely with the National Department of Environmental Affairs and the Department of Transport to promote a

range of projects via its project partner with the aim of encouraging cycling. These projects include social media campaigns and measures in schools. The aim of these projects is not only to highlight the benefits of cycling, traffic rules and cycle maintenance, but also to issue bikes to schools.

Further projects will focus on the creation of rental bike stations, known as Bicycle Empowerment Centres (BEC), run by micro-entrepreneurs. Other plans include events known as Freedom Rides – group bike tours – and cycling conferences. KfW is promoting the project with a total of EUR 10 million.

Sabine Balk

Fighting chaos on the roads

Jhanja Tripathy of India has been campaigning for sustainable urban traffic policy for years.

The roads of Delhi are ruled by chaos. The road belongs to anyone: cars and mopeds honk in harmony as people weave carts through the traffic, surrounded by rickshaws and pedestrians looking for a gap to cross.

Jhanja Tripathy is aware of the traffic chaos in this Indian metropolis as she makes her way to the Ministry for Housing and Urban Affairs. She has been in charge of budgets and financing here for the past four years. “In a country like India with a growing population and lots of people moving to the cities, space on the roads has to be divided between a range of different road users,” she says, describing the situation. As in many other developing countries, large cities in India are fighting a rise in individual transport.

The reason behind this is actually a positive one: economic progress and rising prosperity. The growing middle classes are queuing up at car dealerships and the number of cars is rising all the time – bringing with it all the negative consequences we are already familiar with: toxic emis-



Jhanja Tripathy

sions, air pollution, fuel consumption, high accident rates, constant traffic jams and long waits for commuters, particularly during rush hour. “Of course, we have to convince people to do without their cars more often,” says Jhanja Tripathy, “but to do this, we need intelligent traffic management.” The individual transport systems have to be so well coordi-

nated that people can get quickly from A to B without a car and without any long waits. This calls for integrated solutions and the increased use of IT technology.

“Public transport naturally plays a decisive role in improving the flow of traffic,” says Jhanja Tripathy.

This is why she has been working hard to promote the expansion of public transport systems for a long time. As well as working for the Ministry, she is a member of the supervisory board for five rail-based local transport companies in India. In this role, she works hard to keep pushing forward projects to expand the railway network and public transport.

For poor people especially, buses and trains remain the only form of transport, simply because they can't afford a car and often have to travel a long way to work. And for more prosperous Indians, “use of the railway has to be so attractive that they will gladly do without their vehicle as often as possible,” explains Jhanja Tripathy.

Michael Bäumer

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