



FACILITATION OF TRANSPORT AND TRADE IN LATIN AMERICA AND THE CARIBBEAN

# The Millennium Development Goals and transport

## Introduction

In 2000, representatives of 189 States made a commitment to eradicate poverty by 2015 with the adoption of the Millennium Declaration, which led to a series of Millennium Development Goals (MDGs). This bulletin summarizes the main findings of a longer document, soon to be published, which discusses how the transport sector can contribute to meeting the MDGs by fostering economic competitiveness and facilitating population mobility, and therefore access to basic services and employment. That said, improving transport infrastructure and services alone does not guarantee the success of anti-poverty efforts in developing countries, unless they form part of broader strategies that address the specific characteristics and needs of the target population.

## I. The Millennium Development Goals

At the end of the twentieth century, in response to the millions living in critical conditions of poverty, the Millennium Summit was held at United Nations Headquarters in New York in 2000. There, representatives from 189 States signed the Millennium Declaration, committing themselves to fighting poverty and halving it by 2015.

Insofar as people's well-being depends on access to work, school, health care or other social structures and services, improving transport should contribute to combating poverty, given this sector's cross-cutting influence on all kinds of activities. This potential, however, seems to be underestimated, possibly owing to a lack of empirical evidence on the links between transport, development and overcoming poverty. Recently, studies examining the impact of infrastructure, especially transport, in reducing poverty have attracted growing interest in the academic community and, although there is no unanimity as yet, a broad consensus exists regarding the positive effects of transport, when investment meets the right conditions. Similarly, the lack of

This issue of the *FAL Bulletin* analyses how the transport sector can contribute to achieving the Millennium Development Goals by fostering economic competitiveness and facilitating population mobility, access to basic services and employment, and therefore more sustainable development. This study forms part of the activities being carried out by the Infrastructure Services Unit of the Economic Commission for Latin America and the Caribbean (ECLAC) in the context of the project "Strategies for environmental sustainability: climate change and energy," which is financed by the Spanish agency for international cooperation (Agencia Española de Cooperación Internacional para el Desarrollo, AECID).

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modern, efficient facilities is widely seen as hampering both development and the achievement of the MDGs because it limits economic growth.

This study examines the link between transport and development in the broadest sense. It finds a direct relationship between mobility and people's ability to access basic services, but it also finds that improvements to transport services alone do not guarantee development. Rather, for this to work, these improvements must respond to the specific needs and context of the target population.

This study begins by presenting the goals established further to the Millennium Declaration to deal with poverty and the role of transport services and infrastructure. It then discusses why improving transport alone is not enough to improve the population's welfare in developing countries, closing with the main conclusions.

## II. Transport, growth and the Millennium Development Goals

Among the different kinds of infrastructure, those associated with transport are key to economic and social development because they allow people and goods to move across space. Thus, they promote trade and improve living standards by facilitating access to sanitation, education, social services and markets. Investment in transport infrastructure should boost service capacity, efficiency, reliability and quality, and thereby improve company competitiveness by reducing monetary costs and wait times. By contrast, poor transport conditions hurt profits, both directly and indirectly, because they push up production costs and reduce potential earnings from different kinds of trade.

Space, it should be noted, is not economically neutral. Geographic space (understood as physical distance) involves additional costs, on top of those required by production, and opportunity costs associated with the time necessary to cover distance. Market size depends inversely on the sum of production and transport costs: that is, reconciling economies of scale with reduced costs in accessing markets. Similarly, lowering transport costs encourages companies to interact with each other, an interaction that, when they share costs, generates economies of agglomeration. These savings in turn take the form of economies of location and urbanization; positive externalities that allow companies to maximize the potential benefits of specialization and the region where the conglomerate is located to optimize public service provision.

Investment in transport infrastructure generates direct and indirect benefits in the economy and productivity gains that benefit both companies and the regions where they

locate. Direct benefits are distributed among those who supply and those who demand service. Suppliers can boost their income by increasing flows and expanding markets; their users, meanwhile, may enjoy improved mobility, saving time and resources and gaining access to a greater variety of suppliers and consumers. Indirect benefits are apparent at both the micro- and macroeconomic scales. At the micro level, prices of goods may fall or the supply may rise in a given market. From a macro perspective, as better distribution chains emerge, activity increases, as do competitiveness and consumption, and mobility needs are better met.

Generally speaking, improving mobility encourages: (i) companies to expand their markets and get more out of economies of scale; (ii) economies of agglomeration, which favour interactions among locations connected by the new transport infrastructure; (iii) a rise in competition and therefore efficiency; and (iv) savings for consumers in both time and resources.

The greater the gaps in transport and communications infrastructure, the harder it is for remote regions to participate in international trade. Today, the effective rate of protection imposed by transport costs restricts foreign trade more than tariffs. Encouraging a region's participation in international trade therefore requires knowledge about factors influencing transport costs. Similarly, it is important to analyse the extent to which these costs limit trade through loss of competitiveness and potential earnings arising from specialization. In other words, a given population's income level (and well-being) may improve if its mobility does. Mobility is crucial to favouring the most vulnerable populations and gaps are often mentioned as causal factors in the lack of development.

In short, the transport sector plays a major role in any country's economy, given its impact on the efficiency and competitiveness of other sectors, expenditure items (in both national budgets and aid from donors) and living conditions, since it facilitates access to markets and basic services, such as education and health care. Nonetheless, the role of transport in reducing poverty seems to be underestimated. The MDGs focus on the most immediate expressions of poverty, overlooking the need to improve transport conditions, with transport treated more as a means of achieving these basic goals rather than a focus for action in itself.<sup>1</sup>

Despite this oversight, infrastructure, particularly for transportation, can play a key role in achieving the

<sup>1</sup> The MDGs, however, include goals that go beyond primary needs, such as respect for the environment or the formation of international partnerships.

MDGs because the transport and communications system determines a region's level of access, and through this prosperity and lifestyles. For the MDGs, then, improving transport can contribute to meeting MDG 1, by stimulating productivity gains that favour income growth; MDGs 2 and 3, by making it easier for children to attend school and, through better education, help to eliminate sociocultural factors behind discrimination against women; MDGs 4, 5 and 6, by facilitating access to hospitals and treatment; MDG 7, since an obsolete, inefficient transport system generates negative externalities harmful to the environment; and MDG 8, by permitting and fostering international interconnections. The magnitude of the impact expected from transport in achieving the MDGs is shown in table 1 by type of transport service.

**Table 1**  
**TRANSPORT: CONTRIBUTION TO ACHIEVING THE MILLENNIUM DEVELOPMENT GOALS**

Performance level	Type of transport			
	Urban	Interurban	Rural	Regional / International
High	MDG 1	MDG 1	MDG 1	MDG 1
	MDG 2	MDG 7	MDG 2	MDG 7
	MDG 3		MDG 3	MDG 8
	MDG 7		MDG 4 MDG 5	
Medium	MDG 4		MDG 7	
	MDG 5			
Low		MDG 4	MDG 8	
		MDG 5		MDG 3

Source: Prepared by the authors, on the basis of Jerome (2011).

On the basis of a report from the Department for International Development (DFID, 2002) on the transport sector's role in meeting the Millennium Development Goals, the benefits of improved transport in fighting poverty can be analysed in more detail. This study reveals that efforts in this sector help to meet every one of the MDGs, although it recognizes that there are no indicators that clearly demonstrate its link to poverty levels.

### MDG 1: Eradicating poverty and hunger

Since a large proportion of the world population suffering from chronic hunger lives in rural areas, helping farmers to produce more food should help reduce hunger and poverty. Improvements to the transport sector can stimulate an increase in agricultural output by promoting access to inputs and the distribution and sale of food. All this can improve and stabilize income and quality of life among communities who gain better access to markets.

Although the impact of transport improvements varies depending on the type of product transported, the efficiency of the transport service and the distance to markets, immediate benefits can be expected: first, cutting costs and travel times improves access to points of sale and reduces producers' dependence on monopsonist buyers who travel to remote production areas;<sup>2</sup> and also a better access to input markets, meanwhile, also improves their profit margin.

Hunger, moreover, is present even in countries where food production is sufficient, because part of the population has limited access to it. Ending hunger, then, requires that the poor have more income, which in turn requires that the landless and urban dwellers have access to employment. Both the poor in remote areas and those living in marginal areas within large cities have access only to very poor services and infrastructure, with high transport costs and lengthy travel times. This places them at a disadvantage when it comes to accessing the jobs available and, for those employed, consumes a larger percentage of their wages. Better transport services and infrastructure enhances mobility, opening up more job opportunities and the chance for a better quality of life.

Finally, investment in transport does not just improve access to employment, it can also create jobs, particularly in urban areas where public services take multiple forms.<sup>3</sup> Building and adapting infrastructure also creates jobs. Moreover, there is a third dimension to benefits, as maintaining this infrastructure reduces the vulnerability of these regions to recession and natural disasters, and when disaster strikes, it makes it easier for assistance to arrive.

### MDGs 2 and 3: Universal primary education and gender equality

Physical distance from schools limits access to education, which is the best way for children to improve their future prospects and fight gender-unfriendly traditions. Thus, improving transport should enhance children's school attendance and women's well-being. Improved access reduces the time, energy and money invested by children themselves, to reach school, and by women in their daily labours. Mobility improvements make it easier for women to earn more and have more time of their own, which can be used to improve their own education. Moreover, better transport makes it easier to attract and retain qualified

<sup>2</sup> Buyers travelling to remote areas to purchase goods impose very low prices, reflecting the lack of competition from other buyers and local producers' lack of information about market prices for local products.

<sup>3</sup> For example, the use of cycle-taxis in Kenya has created many jobs and increased income for those from rural areas who, when they reach paved areas, transfer to other modes, thereby increasing demand and generating more jobs.



teachers, who may otherwise be unwilling to stay in remote schools, a factor which improves the quality of education provided.

### MDGs 4, 5 and 6: Reducing child mortality, improving maternal health and fighting disease

The longer the distance travelled, the more difficult it is to receive pre- and post-natal care, give birth with assistance from qualified staff, receive immunization or follow up on medical treatments. The same is true when accessible transport modes are not available. In this sense, it is important to remember that about one third of women in developing countries live more than 5 km from a health-care facility and that four in every five live more than 5 km from the nearest hospital, a distance, moreover, that they often have to travel on foot. Anything that makes these services more accessible will have a positive effect on maternal and child mortality and improve treatment. While it is true that rising mobility has increased the propagation of some diseases, such as HIV/AIDS, better transport helps fight diseases more effectively, especially those that require medication. Similarly, rising motor vehicle use has increased the accident rate in developing countries, even among pedestrians, but improving infrastructure and the vehicle fleet can address that issue.

### MDG 7: Environmental sustainability

The efficient use of resources promotes environmental sustainability. Thus, the transport sector can play a major role in protecting the environment, to the degree that it improves the efficiency of other production sectors. The ability of developing countries to manage infrastructure according to environmental criteria has been limited, however, due to lack of awareness or because they give priority to meeting other, more urgent, demands. Nonetheless, any improvement in the transport sector that minimizes its negative externalities will have positive results for society and there are many opportunities. Building sustainable highways, which is particularly important in fragile environments, using innovative material that reduces maintenance costs and impacts on the environment and biodiversity, promoting public transport, retiring high-polluting vehicles or promoting

more sustainable modes from an ecological perspective (such as river or maritime transport) can respond well to the requirements of building a more sustainable economic development model. The transport sector can also contribute to environmental sustainability by promoting recycling, which creates jobs as well as processing waste.

### MDG 8: Partnership for development

Improving the mobility of the rural population in the most remote areas expands their contact with the rest of the world, offering them more opportunities for social interaction and for making themselves heard. In this respect, transport can help to empower the poorest communities by improving their mobility and their ability to foresee and respond to challenges arising from crises and conflicts. Similarly, it can encourage the integration of developing countries into international trade circuits and reinforce their ties with the developed world.

### III. Some caveats regarding transport improvements and MDG compliance

The link between transport and poverty, or sector development and poverty reduction seems obvious. People living with the least need better access to services (such as education and health) and opportunities (for example, jobs), so providing them with better transport services can be very efficient. Nonetheless, the characteristics of the transport-poverty link vary according to context, with different kinds of poverty involving different needs. For example, when basic service provision occurs far from the residential areas inhabited by part of the population, it is worth evaluating which strategy will produce the best results: bringing services closer or improving the population's ability to reach services.

Similarly, in poor societies with sharp inequalities in income distribution, the actual demand for transport may not reflect the real mobility needs of these communities. Often, those with the greatest need for transport, given their rural location, socioeconomic or other conditions, are those who make no apparent demand on the system (understood as demand for vehicles). Thus, to design transport strategies that can improve living conditions for the poorest sectors, it is important to consider the needs of those who do not currently demand motorized transport, for example, because they meet their needs by walking or using non-highway modes.

As discussed in the previous section, improvements to transport should boost productivity and thus economic growth, and with it, development. Similarly, any growth

that is limited by unsuitable transport sector conditions will also limit progress in reducing poverty. Provision of a good transport service, then, seems like the right strategy for meeting the MDGs. These strategies must, however, be designed according to the specific circumstances of the target population. Moreover, we cannot forget that an expanding economy offers more and better jobs, without necessarily distributing them fairly. This happens when countries find it difficult to guarantee inclusive growth and segments of the poor remain excluded.

In reality, there is considerable consensus that spending on infrastructure contributes positively to growth and poverty reduction, but there is little evidence about how this actually happens. In fact, there is a risk of adverse effects. What is known is that investment in public transport encourages sustainable development. From the economic, social and environmental perspectives, public transport is more efficient than private vehicles; it can move more passengers and goods per unit of space and energy consumption, and this makes it preferable from the perspective of social equity and the good use of public resources.

We will now examine in more detail some of the pitfalls inherent in using transport sector improvements to meet the MDGs.

### MDG 1: Eradicating poverty and hunger

Investment in transport infrastructure is expected to promote economic growth and poverty reduction. In developing countries, this happens mostly through increasing agricultural production. But if producers do not have suitable access to energy, or if boosting mobility brings with it a decline in agricultural prices or an increase in land prices over and above the profits obtainable from improving productivity, or if agricultural output has to be sold in monopsony conditions, isolated improvements to infrastructure will not have the desired effect. Similarly, logistical difficulties (such as a fragmented market access chain) make access to food—and therefore combating hunger—more difficult. Obviously, providing food is more expensive in the most remote rural areas with the least communication, so improving transport tends to reduce market access costs, bringing down the cost of the inputs necessary to obtain food and facilitating sales.

But these communities are not homogeneous. Mobility and accessibility requirements vary depending on which group people belong to, and traditional transport policies often miss this fact, assuming that existing travel patterns mirror the population's needs. The importance of understanding the specific needs of rural communities for transport and development is often underestimated, even though these are the populations that most need help or infrastructure investment.

In developing countries, there are also major pockets of poverty in urban areas,<sup>4</sup> especially on the outskirts of cities.<sup>5</sup> In order to meet their basic transport needs, people living in these areas face considerable costs in both time and money and therefore significant barriers in accessing jobs. The degree to which these barriers affect the income of the poorest families varies according to factors such as travel patterns, city size and employment conditions. Nonetheless, some general factors include: (i) the worse the poverty, the fewer the trips and the slower their speeds; (ii) travel difficulties experienced by poor workers worsen with city size and motorization levels; (iii) the poorest population moves mainly on foot or by bicycle when this mode is within reach; (iv) those employed spend a much larger share of their income on travel compared to the unemployed, suggesting that mobility problems constitute an additional barrier to the poorest segments and their access to jobs; and (v) poor mobility also makes it harder to attend school and obtain basic health care in these areas.

In short, the poor population in developing countries faces serious mobility problems, regardless of whether people live in rural or urban areas. As a result, their transport use reflects a duality typical of developing countries. At one end of the spectrum we find the sector that we could consider traditional, which requires short trips for small loads, often made by non-motorized vehicles, which prevail in most countries. At the other end is the modern sector, which needs to transport large volumes of goods or passengers (from both urban and rural areas) over large distances, and uses motorized vehicles. Typically, the latter is the main beneficiary of transport infrastructure projects implemented by poor countries, whereas the former has been forgotten in most development programs. The result is that the potential benefits from investment often favour those with the most resources.

This occurs when transport improvement strategies focus primarily on building highways rather than on the specific needs of the poorest sectors in the population and those facing penury, for example, when crops fail.<sup>6</sup> At those times of particular hardship, when farmers cannot hire workers or ranches cannot sell their animals, the value of their assets plummets and the rural subsistence economy stagnates. Being able to sell in more distant markets does not alleviate the problem, which lies in the decline in their surpluses and their purchasing power.

<sup>4</sup> The poor state of basic infrastructure in residential areas (sanitation, water, health care, education) hurts their chances of improving their lives, especially for women.

<sup>5</sup> Pockets of poverty are not concentrated only on the outskirts of cities, but rather are scattered throughout and can even be found near economic and social centres and high-income districts.

<sup>6</sup> Nonetheless, in extreme situations brought on by natural catastrophes or confrontations, highways may facilitate the arrival of assistance to the neediest population, provided the highway has not suffered damage or been used to expand a revolt.

In addition, highway building in developing countries often requires loans, whose repayment requires a high yield on investment, which pushes potential for social benefits into the background. In this case, investment in highways that will attract enough traffic to generate a profitable investment gets priority, and these connect the main cities and areas with the highest well-being. If public and finance sectors do not provide specific incentives to the private sector to improve transport, beneficiaries will belong to the wealthiest sectors and not the poor.

Problems associated with highway building to fight poverty are the focus of most of the literature on development from the perspective of the transport sector. Nonetheless, when the population is very spread out or in very remote locations, a complementary or even alternative strategy may focus public investment or subsidies on low-cost housing in better connected locations. It should be kept in mind, however, that although from a planning perspective it may seem appropriate to create less densely populated areas, low density itself makes mobility more difficult, as it increases service costs, reduces frequency and generates longer routes.

### MDG 2: Universal primary education

There is consensus that the greatest difficulty children face in the most depressed areas is the distance from schools, usually covered by walking. This requires significant time, which has a high opportunity cost in terms of domestic tasks assigned to children, who are typically responsible for getting water and firewood, caring for younger siblings or working in fields, all necessary to family maintenance. Thus, children's attendance at school (particularly by girls) is directly influenced by the nature of the available transportation.

The presence of paved roads has been shown to correlate positively with children's attendance at school, for both boys and girls, but these results raise questions about whether the greater attendance at school reflects more development and particularly infrastructure improvements, or whether it is really the other way around. It is also necessary to keep in mind that transport investment is not enough to guarantee children will attend school. Aside from the opportunity cost that attendance involves with regard to tasks that the child no longer performs at home, the transport cost, combined with other, education-related costs, can often become insurmountable barriers to the poorest families, regardless of infrastructure improvements.

When the opportunity costs for children and the distances travelled to school are high; when the monetary costs of transport/education are too high for a given population;

or when towns are particularly remote, the best transport infrastructure requires a major investment that will be hard to match with increased attendance at school. In these cases, it is better to rethink the objective and understand it as more access to education than to facilities. From this perspective, improving infrastructure and communications may promise better results.

### MDG 3: Gender equality and women's empowerment

In the developing world, women account for more than two thirds of the population and their transport needs differ from those of men. Transport investment does not reflect this reality, because it is considered gender-neutral. It has been demonstrated, however, that in developing countries transport needs vary by gender, especially in the most remote rural areas,<sup>7</sup> where women's access is particularly limited. Authors warn that trips by women in developing countries to fulfil their social roles are far more numerous and time-consuming than those made by men. This makes it harder for them to meet their own needs and participate in other social activities, leading to the phenomenon known as the feminization of poverty. In addition, women's access to available transport modes—which in the poorest and most remote areas tend to be non-motorized—may be limited for social, cultural or religious reasons.

This means that where transport sector improvements respond mainly to men's need to access work and ignore women's specific needs and those of children or other dependents for whom they are responsible, women's productivity will worsen compared to that of men, limiting their access to public services and their active involvement in social life. For example, when highway-building is fostered to promote market access and motor vehicle use, small markets may disappear; these are often the markets close to rural settlements where women go, typically on foot, to sell their own products directly. When this coincides with societies that traditionally limit women's mobility, instead of improving, these initiatives worsen women's lot by eliminating their source of income. This underlines the importance of understanding to what degree social roles assigned to men and women determine their mobility needs and potential for improving their living conditions, because these roles include a significant spatial component.

<sup>7</sup> Most studies in this area reveal significant disparities between men and women in their access and pattern of using transport services. Most studies examine rural experiences and results from urban areas indicate fewer differences in trips, especially in city centres.

### MDGs 4, 5 and 6: Reducing infant mortality, improving maternal health and fighting disease

Health-care provision reveals similar trends to education: transport service provision is not enough to fight disease if the neediest part of the population has no access to transport or primary health care. Moreover, alternative improvements to other kinds of infrastructure may offer more immediate benefits for the population's health. For example, data indicate that infant mortality is disproportionately high among families with poor access to drinking water and sanitation.

### MDG 7: Environmental sustainability

It is generally acknowledged that developing countries tend to have limited capacity and concern for managing infrastructure using environmental criteria. The desire for economic growth, so essential to reducing poverty and achieving other social benefits, imposes too much pressure on natural resources and the environment. For example, the rise in demand (private, commercial and industrial) for water is starting to generate supply problems, and urbanization is deforesting many countries and driving up food prices by reducing arable land.

The resulting environmental degradation hurts the poorest population most, as it is most vulnerable to natural disasters that destroy homes and crops. The devastating effects of these disasters can be worsened by the transport sector when both building and maintaining minimum service levels negatively affects the natural environment. These effects may be felt directly, as pollution and deforestation (or ecosystem degradation, in the case of maritime traffic), or indirectly, when transport planning encourages urban sprawl.

Where improving transport services is limited to highway construction and encouraging motor vehicle use, it will also generate adverse impacts, which vary according to whether the areas affected are urban or rural. In urban areas, aside from increasing problems arising from congestion, pollution and noise, these tendencies create sprawl, which reinforces the barriers experienced by the poor; in rural areas, they harm the environment. Moreover,

motor vehicle use involves greater consumption of non-renewable energy and generates dependency on inputs which are often not available locally. Paradoxically, if transport improvements are not suitably planned in developing countries, rising motor vehicle use will expel common transport modes, which are often the most environmentally friendly.

## IV. Conclusions

Inadequate provision of transport services hampers the economic growth necessary to reduce poverty. By contrast, suitable provision improves the efficiency and quality of this sector's services, reducing costs and wait times experienced by users and making the economy more competitive. In addition, these improvements improve people's mobility, which in the case of developing countries can improve quality of life by facilitating access to basic services and jobs.

Nonetheless, transport sector improvements alone do not guarantee the success of anti-poverty efforts. To meet the MDGs through these kinds of measures, planners must consider the specific needs and characteristics of the target population. If not, the poor may end up even more excluded from the benefits arising from transport investments.

Moreover, the wrong transport improvement strategy can even damage the quality of life of the poorest sectors in developing countries. This can happen when strategies are based on observed demand for transport. The more improvements focus on responding to the economic, financial and social needs of those already using the service, the greater the tendency to improve services for those with the resources to pay for them. Given the poor's very tight budgets, their demand is very low and mainly for short trips. Services for the poor tend thus to be less profitable, higher risk, more irregular and poorly planned. This raises such barriers to their mobility that it severely undermines any effort to improve their quality of life, thus reducing the chances of meeting each of the Millennium Development Goals.