Enhancing Nonmotorized Transportation Use in Africa—Changing the Policy Climate

JOHN HOWE

There is a growing realization of the interrelation between immobility and poverty. In the least developed countries, enhanced personal mobility necessarily implies the greater use of nonmotorized means of transportation, including the freedom to walk in safety. Motorized transportation is too scarce, expensive, and—in urban areas—polluting to provide a universal means of movement for the masses. This is especially the case in sub-Saharan Africa (SSA), which is dependent on vehicular transport manufactured outside the continent. Although SSA exhibits both the least incidence of and greatest need for cheap forms of nonmotorized transportation (NMT), paradoxically it has one of the most hostile policy climates for its use. A lack of physical infrastructure in the urban areas and negative attitudes among decision makers and influential members of the public discourage NMT usage. The damaging policy constraints on the promotion and use of NMT are illustrated through an examination of the recent history of the bicycle in Africa. The roles of import and pricing policies are outlined, demonstrating that governments have tended to suppress ownership by overtaxing imports. The conclusions make proposals for policies to encourage wider use of NMT by seeking a new, international basis for their production and finance, and by removing all taxes to stimulate demand.

To determine policies toward nonmotorized transport (NMT) in Africa it is first necessary to consider the rationale for developing the transportation sector in general, motorized transportation in particular. Measuring progress is hampered by the lack of commonly agreed upon and specifically stated objectives for the transportation sector. These must be implied from patterns of investment over the past three decades of national plans and internationally aided development.

Planned investment has overwhelmingly favored road transportation—which accounts for more than 80 percent of all freight and passenger movements (*1*)—with the focus on the creation, largely by government, of physical infrastructure. Starting with generally skeletal road networks and poor intercountry land connections, there has been a perhaps understandable preoccupation with improving physical access. The emphasis has been on extension of the road network to all potentially productive parts of each country, and on connections with neighboring countries so as to facilitate trade, although officially this aspect remains limited. The notion of accessibility has, however, been very restrictive, with investment directed almost exclusively to enhancing access by motor vehicles. Little formal consideration appears to have been given as to how such policies would facilitate any change in the mobility enjoyed by the mass of the population through either better footpaths and tracks or enhanced vehicular means of moving people and goods.

Department of Transportation Engineering, International Institute of Infrastructural, Hydraulic, and Environmental Engineering, Westvest 7, 2611 AX Delft, The Netherlands.

Implicit in this pattern of investment has been a sort of unwritten understanding that the private sector could and would provide the necessary vehicles. There have been few attempts in sub-Saharan Africa (SSA) to even assemble motor vehicles from completely knocked down kits, and the contraction of the market in the 1980s had its greatest impact on local assembly operations, which have been reduced to near shut-down levels in many countries (*1*). Whereas there have been a few, relatively unsuccessful, attempts to mass produce and market nonmotorized vehicles—most notably, Raleigh bicycles in Nigeria and the Swala bicycle in Tanzania—the primary role of the state has been as the regulator rather than the facilitator of investments to enhance mass mobility.

The public/private division of transportation investment is a classically Western notion of responsibilities that has been exported unaltered to the great majority of developing countries. In the developed world, governments have traditionally provided only the physical transportation infrastructure, although this is ending rapidly with an avalanche of initiatives to secure private-sector financing for major infrastructure works, such as the $15 billion railway tunnel connecting the United Kingdom and France. Vehicle provision has been a virtual private-sector monopoly for almost a century, and the arrangement has worked very efficiently. Manufacturers are even able to finance research and development for their own products.

For a few decades the rapid increase in motorization exhibited by a number of developing countries appeared to suggest that the unwritten relationship could be transferred easily. For SSA, this was an illusion. The institutional infrastructure failed to develop sufficiently to produce a sustainable transfer of vehicular technology. Africa urbanized without industrializing: the process was more in the nature of a poorly understood deagrarianization (*2*). One consequence was that motor vehicle operation in SSA has remained expensive, and this is not attributable just to its poorly developed infrastructure (*1*). Recently published research indicates that long-distance freight transport—where, because of competition, efficiency is normally fairly high—in three African countries (Cameroon, Cote d'Ivoire, and Mali) is more than four times as expensive as comparable operations in Pakistan (*3*).

ROAD NETWORK AND MOTORIZATION PROGRESS

Road Networks

The apparent growth in the road network in most of Africa is impressive, but it has been bought at a high price. The World Bank's

1988 and subsequent reports on road deterioration showed that inadequate attention to maintenance has left most countries facing massive investments to prevent the loss of existing assets (*4*). The World Bank has estimated that partial rehabilitation of only the existing rural road network will require an outlay of $3 billion (U.S.), which compares with the $1.7 billion (U.S.) of World Bank–funded rural road rehabilitation over the past 25 years. Africa appears to have overreached. The situation is so grave in most countries that there is little if any economic justification for investment in new facilities. Resources must be concentrated on network stabilization programs and, in a number of cases, on only 20 to 30 percent of core economic networks, with the implicit acceptance that major portions of the existing road system will have to be, albeit temporarily, abandoned (*6–9*).

Zero road network expansion may make economic sense, but it is politically very difficult to accept. A country such as Ethiopia has experienced more than a decade of internal war. The new unification government is understandably anxious to reduce the isolation of the 70 to 75 percent of the population estimated to live more than half a day's walk from the nearest all-weather road (*10*). But it is likely to find little international support for the necessary investments while the bulk of its existing road system exhibits massive and continuing deterioration and is indeed in danger of needing total reconstruction at a far greater cost than if all available resources were devoted to stabilizing the current situation.

Motor Vehicle Development

Motor vehicle development has fared little better than the road networks, but for a different reason. The impressive increase in the stock of motor vehicles in the 1960s and 1970s halted and then declined in the 1980s (*1*). The main cause was the ending, in the 1970s, of the free market in foreign exchange, which was triggered by the first oil crisis in 1973 and consolidated by the second in 1979. Consequently, the total stock of motor vehicles in SSA fell in the 1980s from slightly more than to just below 7 per 1,000 population (*11*). Not even a major oil producer like Nigeria was spared. Its vehicle stock is estimated to have fallen from some 615,000 units in 1984 to a third of that figure today (*12*). Thus for more than a decade there has effectively been no free market in vehicle purchases. The overwhelming majority have been financed from foreign aid projects and nongovernmental organizations (NGOs). Only in the past few years, under structural adjustment policies, has the freeing of foreign currency markets allowed a wealthy few to reactivate some form of free market in motor vehicles. Commonly these are secondhand vehicles that will have greatly reduced lives because of age and parts problems (*13*). Indeed, the encouragement of such purchases, by suitable policy reform, is an official objective under the Second United Nations Transport and Communications Decade for Africa (*1*).

At the end of 1988, SSA's population of about 443 million shared 1.9 million light vehicles. With an average household size of 5.9 persons and assuming that only 40 percent of such vehicles are available for private use—the rest being used by international organizations and their representatives, companies, NGOs, and government—then about 1 percent of households may have had access to a private motor vehicle. This figure clearly would vary between countries and would be substantially higher in some urban areas, but it is evidently insignificant in addressing the travel needs of most of the population.

Of course public transportation provides additional access, but its extent has been modest and in recent years supply has not been able to keep up with population growth even for the limited proportion of people who can afford its services (*14*). In the larger urban areas, the level of service is low and the average expenditure on transport is high, forcing many poorer commuters—usually the large majority of the population—to walk. Because of the low level of incomes, in the smaller towns "traffic" cannot support a public transportation system for internal trips, and the only alternative is to walk or cycle. Research from Ghana indicates that public transport services become practicable only once the population exceeds a threshold of 60,000 to 80,000.

To complete the picture it is apparent that continental capacity for goods movement by road has at best stagnated. In 1981 Africa received more than 31,000 new trucks of 16 T or more capacity. In 1990 it was only 6,500 units, with a near continuous decline in the intervening period (*15*). With such a record it is inconceivable that the continent was able to maintain the goods-carrying capacity of its long-distance roads.

Today, market liberalizations carried out under structural adjustment policies have resulted in a surge in vehicle imports in several countries. However, the volumes appear to be small and it is too soon to judge whether this will reverse the downward trend in vehicle stocks. For most countries the effects of the 1970s-initiated foreign exchange crisis is a blow from which they have still not recovered since their economies remain in recession.

The current situation calls into question the implicit strategy of increasing mass mobility and accessibility primarily through the promotion of motorized transportation. Private-sector provision of vehicles has been frustrated by foreign exchange rationing. This situation is easing under structural adjustment, but future supplies are likely to remain restrained and probably below the rate of growth in population. The terms of international trade have turned against any rapid growth in motor vehicle ownership. Up to the mid-1970s, many middle-income earners could afford motor vehicles, but in the 1980s economic problems and devaluation of local currencies drove up vehicle prices. In most of the region, a medium-sized car that cost 1.5 to 2 years' average salary of a middle-income earner in the 1970s now costs 12 to 15 years' salary (*16*). This situation should have increased the demand for bicycles, and there is indeed evidence that this has happened in a few countries in the last 3 or 4 years. However, cars are predominantly urban vehicles, and safety and attitudinal factors appear still to restrain bicycle use for commuting or commercial purposes.

Nigeria provides an example of this. Its private car population has declined from an estimated 150,000 units in 1983 to 42,000 in 1992 (*12*). There is no evidence that this decline has led to any dramatically increased use of bicycles—indeed, its major bicycle factory is reported to have closed. As in most West African countries, bicycle use is popular only in the dryer north of the country and is shunned in the south and center for a mixture of climatic, safety, and prestige reasons. People who have had to forgo car, or even new motorcycle, ownership have preferred to buy secondhand motorcycles, which can cost between two and four times the price of a new bicycle, currently $110 (*10*).

There is a hidden danger in this trend toward low-cost motorization. The substitution of motorcycles for cars or bicycles carries with it the threat of a drastic increase in urban air pollution. Precisely this phenomenon has been observed in Indian cities, such as Bangalore, for almost identical reasons (*17*).

NMT

Given the bleak prospects for increased access and mobility by motorized road transport, it is legitimate to consider how NMT has been performing and can be expected to perform. Have the declining fortunes of the motorized sector been reflected by NMT? Have they fared better or worse, or have they been given more emphasis as a means of enhancing access and mobility, and to compensate for the decline of motorized transport?

It is a difficult assessment to make because NMT is rarely mentioned in official documents and information is fragmentary. Moreover, few large-scale and systematic attempts to promote their use have been made. For example, Ethiopia, with a potential working population of some 9 million animals and a centuries-old tradition of farming with animal power, has no more than a few hundred animal-drawn carts (*10*). Such situations reflect a generally patronizing and dismissive attitude among decision makers toward promoting NMT.

However, there are some indications that attitudes are changing. Much of the initiative has come from outside Africa and finds its locus in the growing appreciation that the U.S.-style notion of a car-dominated society has severe limitations. European countries, such as The Netherlands and Denmark, have rejected this notion on environmental grounds (*18*). Countries as diverse as China and Japan have demonstrated that it is not essential to achieving rapid and sustained rates of economic growth (*19,20*). In the United States itself, there is growing disenchantment with the legacy of divisive social problems that have resulted from automobile dependence (*21,22*).

In Africa the issue of NMT has come into public prominence within only the last few years, although there have been isolated initiatives over a somewhat longer period. However, unlike most other continents, NMT activities in Africa are more of a rural than an urban phenomenon. Following a general survey of prospects for intermediate means of transport (IMT) (*5*), the World Bank recently strengthened the basis for its policy formulation by completing major research studies of NMT in Burkina Faso, Uganda, and Zambia (*23*). [IMT is defined as "those means of transport which are intermediate, in terms of initial cost and transport characteristics—payload, range speed of travel and route requirements—between the traditional methods of walking and headloading, and conventional motor vehicles . . . [and] . . . intermediate in time," i.e. they are a stage in the process of developing from a traditional to a modern transport system (*24*)]. The governments of Ethiopia and Tanzania have gone a stage further by formulating new rural travel and transport strategies in which the promotion of NMT is a key element.

Complementary to the foregoing has been the World Bank's initiation, in 1993, in conjunction with the Economic Commission for Africa, of a major study of NMT in selected East and West African cities. The program marks a watershed in the development of Africa's urban areas and has the long-term objectives of

- Encouraging the development of a balanced and cost-effective urban mobility system that supports an efficient internal urban economic market and is affordable to the entire urban population;
- Stimulating a choice of construction and maintenance technologies for transportation infrastructure and vehicles that realistically reflects the economic and social conditions in SSA cities, such as the need to generate local employment and to restrict unproductive consumption of scarce financial and land resources by a small minority; and
- Supporting an urban development model that allows acceptable environmental conditions to be maintained in SSA cities: reasonable air quality, noise levels, safety, and tree cover.

It is too soon to envisage the likely outcome of these studies, but the issue of NMT will be given much greater prominence than in the past since it is central to the achievement of these objectives.

These developments are long overdue: issues associated with NMT have simply been excluded from past transportation policy formulation in most SSA countries. Some of the resulting problems can be illustrated by the recent history of the bicycle. Doing so is possible only because the bicycle is almost entirely imported and so it is the best documented of the different forms of NMT. It is also used widely throughout the continent, although popularity is subject to variation due to climate, culture, and terrain, among other things.

Bicycle Trends

Perhaps unsurprisingly, given the generally hostile climate of opinion among decision makers, the bicycle has fared badly in most of SSA for much of the past two decades. In most countries there was a catastrophic decline in the imports both of bicycle kits and spare parts throughout the late 1970s and much of the 1980s. Malawi, whose rural population traditionally has been a strong user of bicycles, saw imports plummet from some 39,000 units in 1970 to just 390 in 1985 (*10*). Imports had only "recovered" to fewer than 1,000 units in 1990. More generally, United Nations Conference on Trade on Development data on bicycle and parts imports, as reported by national customs departments from 28 SSA countries, which include all the traditionally largest importers, show that on aggregate the real value of imports fell by about 60 percent between 1980–1982 and 1989–1991. On a per-capita basis the fall was about 74 percent (*10*). Furthermore, it should be borne in mind that the base period, 1980–1982, was not boom years. Many countries were already experiencing the full effects of the second oil price shock in 1979. Furthermore, 1989–1991 were not years of deep economic depression, as were the mid-1980s. According to mainstream economic thinking, they represent a period of economic improvement with structural adjustment programs already well under way. Hence, whereas available evidence does not permit the precise measurement of the amount that bicycle stocks declined over the past decade, indications are that it must have been considerable.

Since the late 1980s there have been signs of a recovery in the market for bicycles in a few countries, most notably Ghana, Kenya, and Tanzania. In each case imports have exhibited a dramatic increase—with the bulk of vehicles destined for rural areas, the main area of use for the bicycle in Africa—and the apparent causes have been the freeing of foreign exchange markets and a significant reduction in price as a consequence of the abolition of traditional taxes and duties.

For import purposes the bicycle traditionally has been classified in Africa as a luxury, sports good, or child's toy and taxed accordingly. The accumulation of import duties and various other taxes has not infrequently inflated the purchase price to several hundred percent above the landed price at port of entry. There is a well-documented example from the mid-1980s of a large aid-donated consignment (50,000 units) being surcharged between 400 and 500 percent of the landed price (*25*), but mark-ups of several hundred percent were the norm. It was only when some countries had the

foresight to abandon such punitive rates of duty that their effect in suppressing demand became apparent.

Foreign exchange rationing clearly emerges as the binding constraint and main cause of the decline in imports, but other factors were at work. In urban areas, worsening safety conditions for cyclists were an additional cause of the decline in their use. Special route and junction facilities for cyclists are almost unheard of in African cities, and with the increased motor traffic cycling became so dangerous that many owners of bicycles abandoned them for commuting purposes (*10*).

In rural areas it is hypothesized that disincentive taxation, imposed largely and misguidedly by governments, exacerbated the effect of foreign exchange shortage on the demand for and supply of bicycles. The mechanism of price restraint on the demand for bicycles is thought to have operated as follows:

1. Taxation-inflated prices for would-be users suppressed effective demand.
2. Low demand reduced pressure for foreign exchange allocations for purchase.
3. As long as latent demand remained unrecognized, foreign exchange was the binding constraint on supply.

The government in Kenya appears to have been the first to recognize that taxes on bicycles were suppressing demand and slashed the taxes progressively from 80 to 20 percent during 1986–1989. This caused a real retail price reduction of 35 percent and a 1,500 percent increase in imports, showing that demand is highly elastic (*10*). Both Ghana and Tanzania experienced a similar phenomenon. This suggests that two conditions are necessary to reverse the recent trend in the decline of bicycle stocks: first, reduce, and preferably abolish, taxation on all bicycle imports; second, raise the foreign exchange prioritization for bicycles.

WHY A NEW DEAL FOR NMT?

It is a case that has been stated often, but it bears repetition because the alternatives have never appeared so unattractive. A new deal for NMT makes sense from the perspective of poverty reduction, energy conservation, and economic and environmental conditions. For the great majority of Africans, rural or urban, enhanced mobility and access through the mechanism of motorized transportation is a most unlikely prospect. A series of mutually reinforcing constraints, dominated by limited economic prospects, makes that outcome a near certainty. Yet enhanced mobility and access are a prerequisite for reducing poverty. Since the reduction of poverty is a universally accepted objective, the issue ought to be not whether the use of NMT should be enhanced but how? However, the case is as strong in economic as in social equity terms.

There is conclusive evidence from SSA that ownership of NMT conveys benefits on a household (*24*). Bicycles are used for personal travel, predominantly by men, to facilities outside the village, to a place of employment, and for social reasons. Using a bicycle to travel to and from work was found to be economically efficient.

NMT was also found to have an important role for load-carrying tasks. Bicycles are used, and are economically effective, for small-enterprise activities such as trading in crops, beer, and other goods, and in one area for passenger-carrying services. Animal-drawn carts perform two main functions: movement of agricultural inputs from a depot to the fields, and transport of harvested crops back to the store. They are also used to carry bulk quantities of marketed crops to a local point of sale such as a buying point. There is significant hired use of carts for these tasks, so the benefits extend much more widely than the cart owners. Carts typically generate a high return on the investment by the owners.

CONCLUSIONS

Something has evidently gone badly wrong with the transportation strategy adopted in Africa. It is not just that road network investments have been enormously wasteful or the accidental consequences of the international crises in the price of motor fuel. Instead, it is the absence of a vision of the purpose of transportation in the first place. The connection between these investments and the prosperity of the mass of population has always been vague. Were the investments ever intended to provide access or mobility to the impoverished population? Certainly it was never specified how the people were supposed to benefit.

Notwithstanding any restrictions based on concern for the environment or conservation of scare and expensive energy resources, SSA countries' low level of income—GNP per capita in 1993 was $350, and grew at an annual average of just 0.2 percent in the period 1965–1990—places personal ownership of any form of motorized transportation far out of reach of the majority (*26*). In the period 1980–1991 the annual average growth rate of GNP per capita was, at −1.2 percent, actually negative (*27*). How then, if not by NMT, can its people be made more mobile and given access to the services necessary both to reduce poverty and increase the quality of life?

Many examples, from the very richest and the most proletarian countries, show that given an enabling policy framework, NMT can play an important role in enhancing the economic and social activities of significant numbers of people. Recent research has emphasized the complexity of such a framework (*28*). It is also a policy framework that is largely absent in SSA (*29*).

The most binding constraints are those on the supply of NMT that appear to be regulated as much by accepted norms of institutional behavior in judging which activities are suitable for investment as they are by the immutable laws of economics. A few years ago it would have been regarded as very unconventional for the private sector to be involved in a significant scale in the financing of infrastructure investments. Similarly, relatively few motor vehicle producers ventured outside their own national borders to manufacture. Both of these actions are now commonplace.

Enhancing the supply and use of NMT in Africa will require as radical a change as either of the foregoing. There appears to be little prospect that the market will address the problem since few markets are really free, and most reflect Western, car-oriented values. The first requirement is industrial vision and skill of the type most developed countries have forgotten: efficient mass production for the poor masses. Leadership in this respect appears most likely to come from the developing world itself. Where better than in India or China? Why should there not be Chinese bicycle factories in SSA in just the way that there are Japanese car factories in Europe and the United States? It evidently has the industrial expertise, but can it rewrite the laws of marketing in the way that Japan did? If the markets are too fragmented, can regional agreements be negotiated with the Economic Community of West African States, the Southern African Development Coordination Conference, or the emerging East African common market to enlarge the economic scale of production? And should it have to finance such risk alone?

A second requirement is, therefore, likely to be innovative financing. If, as it declares, poverty alleviation is the central mission of the World Bank, then why should it, and the other large development institutions, not provide the lead by changing past practice of lending predominantly for the physical infrastructure of transportation? The World Bank could intervene directly in the process of low-cost mobility and access enhancement by financing the mass production and improvement of NMT.

SSA governments have it in their immediate power to boost the supply of NMT by ensuring the lowest possible purchase price. In many parts of Africa the bicycle, for example, with prices as high as $220 (U.S.), remains the choice of the relatively affluent (*30*). As this paper has demonstrated, this effectively dampens demand and supply. Prices can be lowered by exempting NMT, the components and raw materials for their manufacture, and spare parts from all taxes as is commonly the case for agricultural implements.

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