Transportation, Energy, and Environment in Hungary: The Role of Government Policies and the World Bank

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1. SYNOPSIS

The paper examines the transportation trends in Hungary and government and World Bank policies affecting those trends and makes recommendations on future policies to improve energy and environmental performance of the transport system.

2. ABSTRACT

Since 1989, growth rates in private motor vehicles throughout most of Eastern and Central Europe have increased substantially, while public transport modes have experienced declines in use and support, and non-motorized modes have become increasingly unsafe. Perhaps nowhere in the region are these trends more apparent than in Hungary. Despite deep economic recession, motorization rates in recent years in Hungary have approached 11 percent per year. This paper will examine the policies affecting transportation developments in Hungary and the potential implications of these policies on infrastructure investment costs, energy use, and air pollution.

Specifically, the paper will analyze government policies addressing: road construction and maintenance, vehicle manufacturing, public transit infrastructure investment and operating support, non-motorized transport, privatization of transport services, inter-city land transport, parking policy, and land use and zoning regulations. In addition, the paper will look at recent World Bank activity in the country, including lending for: motor vehicle manufacturing and purchasing, transit operations, road construction and maintenance, and sector restructuring.
The paper will then examine the impacts of these policies and investments on transport modal splits in the country, traffic growth, land uses and suburban development, energy consumption, air quality, health, and overall economic development. The paper will conclude with a discussion of methodological, technological, and policy proposals to help move the country towards sustainability in the transport sector.

3. INTRODUCTION

The Hungarian economy is currently coming out of a deep economic recession that might more properly be called a depression. While growth in GDP averaged 5,7% from 1965 to 1980 and 1,3% from 1980 to 1990 (World Bank 1992), growth virtually stopped from at least 1990 onward (World Bank 1994). This economic crisis has manifested itself in falling per capita incomes and rising unemployment, previously unknown in Hungary. In January 1993 12,2% of the active population was unemployed and unemployment reached 20% in some regions (MER 1993).

Hungary is actually losing population. Between 1980 and 1985 Hungary's population declined at an average 0,12% per year and is estimated to decline at an average 0,15% per year from 1990-1995 (WRI 1994). Budapest, the capital and major city, lost population at 0.4% per year from 1984 to 1990, and is projected to lose another 0.2% per year until the year 2000 (EBRD 1993a).

4. The Transport System

4.1 Private Vehicles

Despite the declining population and the deep economic recession from 1989 until 1994, motor vehicle ownership and use in Hungary, particularly in Budapest, continues to grow rapidly. Between 1980 and 1987, national car ownership grew at 9,5% per year (Pucher 1990), and from 1987 to 1991 growth averaged about 6% per year (MVMA 1987, AAMA 1993). In 1980, there were an estimated 95 private cars per 1000 inhabitants in Hungary (Timar 1991); in 1987, there were an estimated 157 autos per 1000 (Pucher 1990); by 1988 this number was estimated at 169 autos per 1000 (Timar 1991; EBRD 1993b).[1] Budapest has higher vehicle ownership rates; five years ago the municipal government believed that the number of cars per 1000 people in Budapest would increase from 260 to 345 by the year 2000 (Hook 1995). Now, the municipality projects that car ownership rates could reach 500 vehicles per 1000 residents by the year 2000 (Hook 1995). In Budapest, the passenger car fleet was only 6800 in 1960 and is well over 455.000 today (Kiss 1992).

In 1990, Hungary spent 294,6 million ECU (US$1 = .76 ECU) of its foreign exchange on passenger car imports. Many of the cars imported are used cars from Austria. To the extent that these imports are replacing the polluting two-stroke vehicles currently in use in Hungary, they represent an upgrading of the vehicle fleet; in the short term this upgrade will help improve urban air quality, but in the medium to long term, the increased emissions from the overall growth in vehicle numbers will more than offset the improvements from vehicle fleet upgrading.

Auto use (in passenger kilometers per capita) more than doubled between 1970 and 1980 and increased by an average 0,3% per year from 1980 to 1985 (Pucher 1990). In 1988, auto and taxi use accounted for 47% of all motorized trips in the country (EBRDb 1993).

4.2 Public Transport

While the private vehicle fleet is increasing at an alarming rate, public transport continues to play an important role in motorized trips, accounting for approximately 52% of all trips in 1988; of this 52%, 37% is by bus, trolley, and tram and 15% is by rail (EBRDb 1993). During the 1980s, total public transport use increased by 10%.[2] Since 1990, however, public transport use has been declining; by 1992 public transport mode share was 46% and is estimated to drop to 38% by the year 2000 if current trends continue (MER 1993). Buses actually increased their ridership by 14% during this period; the decline was due to lost ridership on subways, trolleys, and trams (MER 1993). This follows longer term trends, as tram use was cut in half and the subway use fell by 17% from 1980 to 1990, while bus use increased by 67% during the same period.

Some of this ridership loss is due to the increase in transit fares -- fares increased by between 5 and 9 times between 1989 and 1992 alone (Kiss 1992), and increased by 22% in 1993 (EBRD 1993a). These fare increases were largely to compensate for higher energy prices and reduced subsidy levels related to the transfer of transit authority from the national to the municipal government. While some downturn in transit ridership can be expected due to the recession, the decline in the face of continued increase in motor vehicle traffic is alarming, especially because the greater number of cars on the road further deteriorates the efficiency of the tram and bus fleet. The familiar downward cycle of decreasing efficiency of the public transit system alienating riders which then reduces the system's revenues, leading to further deterioration of service, has begun in Hungary. Annual investment into public transit has been cut in half in real terms since 1985. At current investment levels it would take 400 year to replace the entire fleet of rolling stock with newer, less polluting vehicles.

In the 1980s rail service in Hungary was poor; by 1989 98% of trains arrived an average 30 minutes late (Timar 1991). Deterioration of the railway tracks and poor service quality continues to be a problem.

4.3 Non-Motorized Transport

Bicycle and other non-motorized modes of transportation have also lost mode share in the past 10 years, particularly in Budapest, where bicycling now accounts for only 2% of total trips. However, bicycle ownership has increased dramatically in the last few years, as imports have become easier: over 100.000 bicycles were sold in 1992 in Budapest alone.[3] There is thus considerable latent demand for bicycle use (Pettinge 1992).

While in many countries, such as Japan and Holland, bicycles are increasing their mode share particularly to reach public transit stations (Replogle 1992) (Guitink & Flora 1995), in Budapest there is minimal use of the bicycle to reach public transit

stations. Despite an extensive network of bicycle paths in Budapest, the paths do not connect to public transit stations, nor are bicycle parking facilities provided. Bicycles continue to be used extensively in secondary cities in Hungary.

4.4 Freight Transport

Freight transport has also increasingly shifted from rail to road. Hungary opened up the road transport market in the mid 1980s, and foreign carriers, especially German and Austrian play an important role (Reynaud 1991). In addition, Hungarocamion has been a strong road freight presence since 1966 and today is an important regional shipper (Reynaud 1991). Competition within the Hungarian road freight industry is very high which has lowered costs and induced a shift from rail (Dorozik 1991). In terms of ton-kilometers, road freight has increased its share of the freight market by 2.4 times since 1970, to the point where today 45.1% is handled by truck, while only 42.5% is handled by rail (Kiss 1992). In terms of modal split, in 1960, rail accounted for 55% of freight vehicle use, by 1980, this number had declined to about 33% (Reynaud 1991). This road-freight dominance is very unusual for a former Eastern or Central European country, but is assumed to be the trend experienced by most East European countries in the 1990s (Timar 1991). Indeed, it is predicted that road transport will increase more rapidly than international trade throughout the region (Reynaud 1991).

Some of the rapid road use increase is related to the number of trucks passing through Hungary as the country is a strategically placed transport hub for traffic to Northern Europe. The number of foreign trucks crossing Hungarian borders increased by four times during the 1980s (Kiss 1992). Since the beginning of the war in Yugoslavia, trucks and cars moving from Greece to the rest of the European Community have been diverted through Hungary. Freight traffic through Hungary has reportedly increased by 81% due to war in Yugoslavia.

Because so many of the vehicles on Hungary's roads are foreign vehicles, it is difficult for Hungary to capture the costs of road use, such as wear and tear of the roadway, from traditional user-fees like annual registration fees and taxes. It is estimated that the Hungarian government failed to collect 19 billion ECUs (1 forint = .95 ECUs) from foreign freight haulers passing through Hungary in the last decade (Kiss 1992). According to World Bank internal documents, only about 22% of Hungarian roads are in good condition and over 30% of the roads are in very bad condition by international standards; these conditions are worse than Poland, the Czech Republic and most of Western Europe and the U.S. but better than most of Eastern Europe.

4.5 Energy, Environment & Safety

Energy consumption in the road transport sector was projected to double from 1980 to the year 2000, with concurrent increases in pollutant emissions (Timar 1991). Oil dependency in the transport is of concern in Hungary as the rest of Eastern Europe, as road transport consumes approximately 30% of oil imports (Reynaud 1991). Hungary imports about 7 to 9 million tonnes of oil annually, implying an oil import bill that has challenged Hungary's ability to repay foreign loans (Reynaud 1991). For public transport operators, energy costs account for 18% to 20% of operating costs (MEM 1993). In terms of energy intensity of various modes, rail and road public transport for passengers display similar energy intensities (energy consumption per passenger kilometer) while road freight haulage consumes five times as much energy per freight ton kilometer as rail (Kiss 1992).

Air pollution problems in Hungary are worse than they would be in other Western European countries at similar levels of motorization for several reasons. First, 35% of the vehicle fleet continues to use the highly polluting two stroke engines, mostly Trabants and Wartburgs from the former East Germany. Although these vehicles have been banned since 1992, many of them continue to be used. Police tend to monitor for these vehicles on major roads, which is one reason why people with older cars avoid the major through-ways. Those that are not used are being sold to neighboring Romania. Some one third of the bus fleet is also over 10 years old, and a quarter of the trucks are over 10 years old (Kiss 1992). These vehicles are using engines made in Eastern Europe which are also highly polluting. In addition, the poor condition of the road network further worsens vehicle maintenance level and performance of the vehicle fleet.

Ground transport in Hungary is responsible for 45-50% of carbon monoxide (CO) emissions, 40% of nitrogen oxide (NOx) emissions, 33% of hydrocarbon emissions, and 90% of lead emissions (Kiss 1992). Some 85% of this pollution comes from road traffic, 13% from rail, and the rest comes from water transport (Kiss 1992). Over 50% of the vehicle fleet in Hungary would not pass Hungary's own emissions standards due to lax vehicle inspection, although there has been stricter inspection since 1992 (Kiss 1992).

Airborne lead levels in congested central Hungarian cities generally exceed legal limits, and some areas had lead levels 30 times the legal level.[4] Lead levels in the blood of over 57% of the people living in highly exposed areas in major cities were above World Health Organization standards (Kiss 1992). In Budapest transport contributes the great majority of all major pollutants, with cars accounting for most CO, NOx, lead, and hydrocarbons and trucks accounting for most SO2 (Kiss 1992). Photochemical smog is also increasingly becoming a problem. The Clean Air Action Group in Hungary reports that chronic asthma cases per capita have increased by 24 times over the last 20 years, lung cancer rates have doubled, and that acute respiratory diseases have also increased substantially (Kiss 1992). Increasing transport pollution must be considered a factor in these rates.

From 1980 to 1988, the number of accidents in Hungary increased 12,5%; both deaths and injuries increased during that time, although the number of persons killed per distance traveled decreased by nearly 43% (Timar 1991). Accidents impose costs of material damage, medical expenses, injuries, loss of life and loss of productivity. The World Bank estimates the social costs of road accidents in Hungary at 1,6% of GNP (EBRD 1993).

5. GOVERNMENT TRANSPORT POLICIES

The total length of national roads remained the same throughout most of the 1980s, although the amount of motorways nearly doubled between 1980 and 1988 to about 248 km (Timar 1991). In terms of density of road way per person and land space, Hungary, in 1988, had less than Bulgaria, Poland, former East Germany, and former Czechoslovakia (Timar 1991). Meanwhile, the total length of rail lines in operation remained virtually unchanged at about 7.870 km (Timar 1991). Throughout the 1980s, railways were increasingly electrified. The length of electrified rail lines in the country increased by 8% from 1980 to 1988; by 1989 nearly 30% of all rail lines were electrified (Timar 1991).

In the past, with automobile imports tightly restricted and minimal domestic production, people typically had to wait over ten years to purchase a car. Policies also limited the number of gasoline stations, repair shops, and other vehicle service facilities. Economic liberalization however has signified a marked change in policies; with relaxations on import controls, the beginning of domestic car production, and with Shell and Exxon opening several hundred gas stations around the country, auto use has become much easier, although no less expensive. Indeed, one study estimates that 3 of 10 auto owners will soon have difficulty affording the ongoing expenses of car ownership and use (MER 1993).

5.1 Public Transport

Economic reforms and decentralization have had particularly important impacts on the public transport system. For example, when the Municipality of Budapest assumed responsibility for the entire public transit system in 1993 (except commuter rail which is controlled by the national railroad) some 20% of all municipal government revenues had to be shifted to subsidizing the public transit system. Until new sources of national level grants are found or alternative municipal taxes are approved through the political process to support the public transit system, there will be enormous pressure on the Municipality to increase user charges and close less frequently used lines. Still, public transport typically receives annual subsidies of between 152 and 190 million ECU.[5]

5.2 Road Transport

In most of Eastern Europe, countries by the late 1980s had developed ambitious road development plans, including the Trans-European North-South motorway project (TEM) -- at least 10.000 km of roadways connecting ten countries (Timar 1991). Financing the project proved difficult and Hungary as of 1990 had only completed 38% of their portion of the system (Timar 1991). Most of the region, including Hungary suffers from poorly maintained roads and estimates suggest economic losses (increased operating costs, increased travel times, accidents) and material damage is about 1%-3% of GDP (Timar 1991).

In 1992 its was estimated that only "80% of the road financing will come from road users" (World Bank 1993). The balance of road financing is coming from foreign loans.[6] While insufficient data is available to assess the full level of subsidies to motorized road travel, if environmental externalities are included, revenues from road users cover only an estimated 33% of the full social cost of road transport provision (Kiss 1992). Hungary has taken some important steps to improve the cost recovery from road users, by, for example, establishing a road user fund in 1988 and raising road freight fees[7] (Kiss 1992). A

weight tax was also introduced on passenger cars and an environmental tax on fuels of 0.475 ECUs per liter was also introduced for financing environmental improvements which should generate roughly 9 million ECUs a year (Kiss 1992).

Nevertheless, current government policy at both the national ministerial level and at the Municipal government level indicate support for a set of policies which are likely to greatly encourage car and truck use. The Hungarian Government is planning an extensive amount of new construction. Four major freeways connecting Budapest to other major cities, and the remaining unbuilt sections of the M0 ring road are planned or under construction. In central Budapest these four major highways will also act as major arterials. Many are semi-privatized planned tollways, but the government bears substantial economic costs because of a government guarantee of a certain return on investment or promises to buy back the infrastructure once completed.

Current plans for new road construction will cost 258 billion ECUs, of which only 115-133 billion are available from domestic sources (Kiss 1992). Nearly 200 billion will likely come from foreign investors. Some 130 billion of this will be for private toll road investment and another 70 billion in foreign multilateral development bank loans and credits. A huge 700 km. Southern Transit Motorway is also being planned entirely by the private-sector Hungarian firm CO-Nexus. No environmental impact assessment has ever been made public on this planned expressway (Kiss 1992).

5.3 Municipal Policies

Local policies will contribute to motor vehicle use and exacerbate the anticipated energy and environmental impacts of motorization. For example, the Municipality of Budapest has essentially no land use regulation or zoning system in place to prevent suburban development resulting from road construction, nor do they have any requirement for environmental impact assessments on major construction projects. Major new suburban shopping centers, which generate large numbers of motor vehicle trips[8] (CARB 1994), are already being constructed by Western European and Hungarian developers in the satellite cities around Budapest at the intersection of the M1 and M7 freeways near the recently completed section of the M0 ring road funded by the World Bank. These two freeways are being constructed in part with funding from the European Bank for Reconstruction and Development (EBRD) and the European Investment Bank. These large suburban developments are being approved in locations with no access by subway or commuter rail. Unchecked suburban development is damaging the fragile ecosystem of the Buda hills.

Lack of parking regulation and enforcement is also a problem.[9] For example, most parking in central Budapest is unmetered, and parking is tolerated on many sidewalks. Even where parking meters do exist some 60% of the vehicles do not pay parking fees anyway due to lax enforcement. The municipal government is also planning to subsidize the construction of extensive new private motor vehicle parking lots in central Budapest. Some 10 hectares of land and over 1000 trees will be sacrificed to make room for automobile parking lots in Budapest (Kiss 1992).

The public transport authority in Budapest has implemented a program to reduce energy consumption, a program including network optimization, driver training, a driver compensation mechanism for energy efficiency, and an electricity regeneration scheme for the trolley fleet (MER 1993).

The municipal government of Budapest has plans to expand the current bicycle network, reportedly using pedestrian facilities that are already overcrowded by parked cars. The local bicycle advocacy group does not support the plan, instead calling for a plan that uses existing roadspace (Hook 1995).

5.4 Vehicle Manufacturing

The national government is also heavily subsidizing the creation of a domestic motor vehicle industry. After World War II Hungary had no passenger car industry, although it built both trucks and buses which were exported to other Eastern and Central European countries. Currently General Motors, Ford, and Suzuki have all set up operations in Hungary, and all are receiving preferential tax treatment from the government including medium term reductions of corporate income tax, import and export duties, and other taxes.

6. WORLD BANK TRANSPORT LENDING

The World Bank Group began lending for transport in Hungary in 1985, and has since lent just under a 380 million ECUs (World Bank 1993a, 1989, 1985; IFC 1985). By far the most significant share of total lending went for motor vehicle manufacturing, principally an International Finance Corporation (IFC) loan to Suzuki Hungary, representing 47,5% of total Bank lending. Loans also went to support the purchase of new vehicles by the Hungarian trucking company Hungarocamion, which constituted another 4% of total loans.[10] Another 35.7% went to roads. At least half of the road lending has been spent on new construction, much of it for the first section of the M0 ring road around Budapest, the rest has gone to maintenance and reconstructing. Despite the predominant mode share of public transit, both bus and rail, only 12.7% of total Bank lending has been directed at these modes.

If the loan currently under consideration for the Budapest public transit system is approved, the share of rail and public transit loans relative to other modes in Hungary would increase to 24.4% out of a total of $570 million, still well below the 46% mode share that public transit represents for national travel. However, implementation of this major loan has now been delayed for over two years (see discussion in 6.4).

6.1 Road Lending

The apparent road bias in the Bank's transport portfolio in Hungary could be due to the contrasting loan evaluation techniques applied to different modes as well as loan conditions themselves. Typically, rail and public transit loans have required full cost recovery or at least increasing cost recovery, while the same has not been required for road sector loans. For example, for the Hungarian State Railway (MAV) to be eligible for a World Bank loan, it had to agree to the following terms (World Bank 1985):

> "(a) MAV shall produce for each of its fiscal years after its fiscal year ending on December 31, 1985, total revenue equivalent to not less than the sum of its (i) total operating expenses; and (ii) the amount by which debt service requirements exceed the provision for depreciation."

Meanwhile, the component of the loan for the trucking company Hungarocamion includes provisions which state that (World Bank 1985):

> "Hungarocamion shall maintain, for each of its fiscal years after its fiscal year ending on December 31, 1987, a ratio of total operating expenses to total operating revenues not higher than 80%."

While both have cost recovery provisions, it is not immediately clear whether the trucking fees paid by the trucking company are sufficient to cover the costs of maintaining the road infrastructure which they consume. Nor is there any provision in the loan agreement expressing concern about this.

Finally, the same loan (World Bank 1985) contains a significant amount of funds for the construction of the M0 ring road. For this major piece of infrastructure, no concern whatever is expressed about the new infrastructure's ability to recover its costs from the users of this infrastructure. Furthermore, there are no side agreements mandating increased cost recovery ratios from road users.

6.1.1 The M0 Ring Road

Of the First Transport Sector Loan to Hungary in 1985, some 47% went to the construction of the first 14 km piece of the M0 ring road, including two 4 lane bridges over the Danube.[11] In the Second Transport Sector Loan in 1989 another $54 million was dedicated to completing the first section of the M0. The complete first sector will connect the M1 motorway to Gyor, Vienna, Brattislava, and the M5 motorway being constructed to Szeged and will function as a bypass of Budapest for traffic from the South and Southeast (including Greece) heading towards Western Europe.

The loan for the M0 was rationalized on the following grounds (World Bank 1992b):

> "-favorable traffic conditions can be created by directing the flow of traffic around Budapest along the two most important international transit routes (E60 - E75)
> - the construction of a new bridge over the Danube, an improved road connection is established between the Eastern And Western Parts of Hungary...

- downtown areas of Budapest are relieved of heavy road traffic resulting in a reduction of the negative environmental impact of road traffic along the affected routes."

However, studies show that of the vast majority of the traffic on major arterials flowing through Budapest, over 90% is heading to Budapest as its destination (*Lelegzet* 1994). At this point, only a small number of vehicles are being diverted from the central city road network; in fact current traffic statistics and future projections show that with the completion of the first link of the M0, traffic flowing through the center of the city has actually increased (World Bank 1992b).

While no formal request for further funding of the M0 has yet been received by the World Bank, Hungarian officials have been told that the World Bank is very interested in funding further sections of the ring road. The remaining sections are far less important for the purposes of bypassing through-traffic. To the extent that the M0 does facilitate through-traffic, it will make the long distance trucking route more competitive with rail-freight alternatives. It is doubtful whether improvements in the existing rail network connecting Greece and Western Europe were considered as a possible alternative investment. The negative impacts of the highway improvement on rail links serving the same corridors were not included in the Economic Rate of Return (ERR) evaluations, which at 20% were not that impressive to begin with. Nor is it clear whether putting tolls on the ring-road has been considered as a way of both minimizing possible congestion and recouping the costs from the already heavily subsidized road user. Tolls, or any other form of improved cost recovery from road users was not part of the initial loan agreement from the World Bank (World Bank 1985a). Nor was any financial analysis done of the impact of the road on government finances.

In the United States, the prevalence of ring roads and other bypasses near major cities has lead to massive development at primary ring road junctions. Similar suburban outgrowth stimulated by road construction has occurred throughout the developed and developing world (Garreau 1991). Without growth management in Budapest, the new ring road is thus likely to stimulate the relocation of firms and shopping centers out of the center of the city. Indeed, the currently completed section of the M0 is already leading to the sort of urban sprawl and decentralization of businesses to locations accessible only by car. One major shopping center is planned at the intersection of the M1 and the M7 freeways in the satellite town of Budakeszi, very close to the M0, and the M0 will greatly facilitate access to this shopping center from all parts of Budapest. The developers have planned a parking lot for 5000 cars, and the development is inaccessible by subway or commuter rail. Thus, the construction of this section of the M0 will substantially benefit the shopping center, which is being developed primarily by Austrian, IBM Germany and British interests. The new shopping and office complex is projected to create an increase in car traffic of 20000 cars in either direction daily (Kiss 1992) with subsequent growth in energy consumption and emissions. In addition, the development of the road will further weaken the economic viability of the public transit system, which is radial, andadversely affect central city property values.

6.2 New Construction Versus Maintenance

Despite an enormous backlog of road-rehabilitation and maintenance needs, the Bank has funded $86 million of new construction, which seems hard to justify given that the Bank itself estimates the ERR on rehabilitation and maintenance in Eastern Europe tends to be in the 20-60% range, while the ERR on the M0 was estimated to be around 20%.[12] Given the current inability of the Hungarian government to finance its current backlog of road maintenance needs, it is unclear why a major new construction project which in the medium term will substantially increase their road maintenance responsibilities should be supported by World Bank funds.

World Bank road loans are increasingly targeted to road rehabilitation and maintenance rather than new construction, and these loans increasingly include as part of their accompanying agreements stipulations that the Hungarian Government increase the level of cost recovery from road users to cover the full cost of road maintenance. Still, in the absence of appropriate user charges, World Bank lending for maintenance or new construction merely acts as a further subsidy to road use; a subsidy that can be justified neither on the grounds that it minimized environmental degradation nor that it is targeted to low income people.

6.3 Vehicle Manufacturing Lending

In 1985 Suzuki Motor Company offered to enter into a joint venture with Autokonszern, a Hungarian automobile manufacturing company, to begin producing Suzuki passenger cars. To make this production economically viable, the World Bank's International Finance Corporation took a 9% equity share of the new Magyar Suzuki plant and loaned the fledgling

company $234.9 million. The Hungarian government also offered an array of tax abatements and subsidies to make the company economically viable.[13]

On one level, the sale of new cars in Hungary, whether domestically produced or imported, whether with or without catalytic converters, will have a positive environmental impact so long as they are replacing older, more polluting cars, particularly the two-stroke engined ones.[14] However, to the extent that the new manufacturing capacity further stimulates domestic fleet growth and use, it will likely exacerbate medium term emissions and energy use.

Despite the importance the public transport system plays in satisfying a large portion of Hungary's travel demand, the IFC has made no investment efforts into public transport vehicle manufacturing in Hungary.

6.4 Public Transit Lending

If the currently planned $75 million World Bank loan to the Budapest public transit system proceeds, it would substantially improve the long term viability of public transit in Budapest and help to end the downward circle of disinvestment and deteriorating service. The loan would be part of a project primarily funded by the EBRD. The bulk of project funds would be spent replacing or upgrading old buses. The new buses will be more fuel efficient and far less polluting. A significant amount of funds will also be allocated for the improvement of the tracks on the trolley system, improving system energy efficiency and decreasing noise.

Interestingly, the project also contains funds for improved parking control in the center city. While the Bank has little control over the enforcement of parking regulations, it has worked to institutionally strengthen the capability of the Municipal Government to implement proper parking controls. Part of the parking control section of the policy includes loans for park and ride at the transit stations on the outskirts of town. Despite an extensive network of bicycle paths and a dramatically increasing bicycle fleet, the loan does not consider bike and transit integration, through "bike and ride" strategies. Such facilities have been shown to be extremely cost-effective at reducing pollution (Lowe 1989), and could have been easily integrated into the Bank loan with very modest levels of World Bank funding and technical assistance. A Dutch government project intended to do just this has been initiated in Ujpest with municipal government enthusiasm, but has met with resistance from the mid-level bureaucracy and at this point seems bogged down (Hook 1995).

Because of the dire financial situation facing the Budapest municipal government, the World Bank accompanying agreements of the loan insist that the transit system increase its cost recovery to over 50% of operating costs by the year 1998; Bank representatives suggested increasing fares, laying off employees, cracking down on fare evaders, and closing several lines as the best way to meet the suggested cost recovery requirements. The Budapest Public Transit Authority (BKV) reduced its workforce by 4500 jobs since 1988 (MER 1993) and the Bank was encouraging an additional reduction of another 4000 workers, reducing the total staff to 16,000 by 1995. The BKV has implemented a program to reduce fare evasion[15] and total revenues increased by some 12% over a single year. Fares were also increased. As a result of these changes, BKV's drain on Municipal Government revenues has been reduced, despite the fact that no World Bank loan has yet been approved.[16]

7. CONCLUSIONS AND RECOMMENDATIONS

The Government of Hungary, aided in part by the World Bank, seems to be following a transport path promoting the increasing use of motorized private vehicles, at a significant cost to transit and non-motorized transport modes. Although some increased level of motorization is likely an inevitable precursor to and by-product of economic development, government policy and international lending institutions should ensure that paths of sustainability are followed.

The World Bank -- an international public institution with objectives of poverty reduction, economic growth, and environmental protection and improvement (World Bank 1993a) -- should be promoting transport policies that address these issues. In Hungary, its role has been mixed. For example, by insisting on increased cost-recovery ratios from public transport while not applying similar rules to road loans, the Bank has facilitated the shift in mode share from public transportation to the private car. Based on the above brief analysis, we recommend the Bank adopt the following minimum policies in its lending approach in Hungary to move towards sustainability.

First a level playing field must be established where the viability of proposed projects supporting different modes can be assessed using the same criteria. For example, the methodologies the World Bank uses to compare the economic and

financial viability of investments into different modes will have to be made comparable. Further, an analysis of alternative ways of addressing the same mobility need must be made.

For example, if the Bank continues to finance ring road construction, it should do so only in the context of an alternatives analysis which considers other possible ways to accommodate the access needs the project is intended to address, such as by encouraging restrictions on suburban land development, by construction of ring subway or commuter rail lines as in Tokyo or busways as in Curitiba, by a more modest ring road, or other possible measures.

In addition a full financial impact assessment must be performed for road projects as well as rail and public transit loans. This assessment must demonstrate the government's long-term ability to finance the ongoing maintenance of the existing road network and the new link, the interest on the loan, and the environmental and safety mitigation measures required to address these externalities. Also, an Economic Rate of Return analysis should be performed which quantifies the following: energy and environmental costs; health and safety externalities; the cost of adverse impacts to competing modes in the same corridor, such as rail; the full market value or opportunity cost of land being donated by the government to the project; the economic impacts on all non-motorized modes of transport.[17]

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9. ENDNOTES

1. It is important to note that information on auto use, auto distances traveled and auto ownership is very scarce and almost always roughly estimated. According to Timar (1991), "Even the published totals of vehicles on the road are suspect since, while the registration of new vehicles is well regulated, little or nothing is known about the cars taken off the roads each year."

2. Although the increase in Budapest where most of the motorization is occurring was only 7%.

3. These bicycle sales occurred despite relatively high import duties on bicycles; import duties on cars are only 13-18%, while duties on bicycles are 30%.

4. The lead in air is largely due to the high lead content in gasoline -- 0.3 grams per liter (gpl) until 1992, when they were reduced to 0.15 gpl.

5. While public transit ridership is extensively subsidized in Hungary, subsidy levels are on par with other Western European countries and the U.S. The subsidy level on the Budapest public transit system is 62% of working expenses, compared to compared to 82.5% in Rome, 77.5% in Amsterdam, 62% in Brussels, 53% in Paris, and 55% in New York. Subsidy levels have decreased slightly over the last 5 years.

6. World Bank financial projections indicate that road user revenues will be sufficient to cover the full costs of future expenditures as well as the cost of debt service. However, such statistics underestimate the level of subsidy to road users by ignoring such factors as state and local spending on local roads out of general revenues, subsidized parking in central Budapest, etc.

7. Although under pressure from the European Union (essentially Greek freight companies), Hungary issued free and preferential permits to foreign trucks (Kiss 1992).

8. A comparison of travel behavior at a major shopping centers in San Diego, CA (USA), showed that transit and non-motorized use at a downtown shopping center was 90% higher than at a comparable suburban site.

9. Free central city parking constitutes a major subsidy to motor vehicle use. If motor vehicles were expected to pay the full market rate for the amount of downtown real estate they consume for parking, parking would be much more expensive, and more people would be likely to take public transport. Parking controls have proven to be one of the most effective methods of controlling motor vehicle travel demand into central cities.

10. This estimate and the following estimates are based on analysis of Bank Staff Appraisal Reports for a 57 million ECU loan for rail and highways in 1985, a 72,2 million ECU loan for rail, trucking, highways and urban transport in 1989, and a 68,4 million ECU loan for highway rehabilitation in 1993.

11. Originally, the environmental impacts of the bridge construction on the Danube and its banks were not accounted for in the loan; the resulting problems were ultimately corrected after considerable environmental damage.

12. In addition, many costs were left out of the ERR for the M0 For example, many of the considerable extra costs required to partially mitigate the disastrous environmental impacts of the construction of a motor vehicle bridge over the Danube in a hydrological preservation area were not originally included in project costs.

13. Suzuki has to pay no corporate taxes for 10 years, with the last 5 years being conditional. It has also been granted a reduction of 22% over normal customs duties for imported parts. Export taxes are also reduced. It has also received 750.000 ECU in direct subsidies from the Employment Fund, and another 750.000 ECU from the Investment Stimulation Fund. Finally, 69 million ECU was borrowed from Japan's Export Import Bank at subsidized interest rates. State land was also sold at a substantial discount to the firm. Despite this heavy subsidy, it will only create 928 jobs, costing over 18.750 ECU in taxpayer subsidies per job (Kiss 1992).

14. The elimination of two-stroke passenger and freight vehicles was mandated by the government beginning January 1992 (Kiss 1992).

15. In 1993, an estimated 20% of passengers evaded fare payment (MER 1993).

16. The loan has been delayed for over two years, and currently there are serious questions whether the loan will ever be approved. The reasons for the delay are complex, including the Bank's cost recovery targets, the change in national governments by the time the loan came up for final negotiation and signature, and the changing the fiscal relationship between the municipality and the national government.

17. Although the quantification of full costs is still a field of much debate, recent advances (i.e. Litman 1995) suggest a methodology that enables the quantification of a broad range of costs at a level of detail useful for project evaluation. The World Bank, as an agency concerned with pay-back abilities of its clients should be leading the way in full-cost quantification. Examples of attempts at incorporating full costs into alternative evaluation are included in a growing body of literature (McCoy et. al. 1994; DeCorla-Souza and Jensen-Fisher 1994); in addition, a recent project sponsored by the United States federal government aims at developing a least cost transportation plan for the Seattle (WA) metro area.

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