

RECENT TRENDS IN ROAD MANAGEMENT AND FINANCING IN LATIN AMERICA

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ABSTRACT

Increasing attention has been paid since the early 1990s to improving the quality of road networks in Latin America. The region has been broadly impacted by the new thinking on what constitutes good road management which gained currency at that time. The foundations of a regional approach towards implementing reforms were created under the PROVIAL program and a number of countries received advice and technical assistance. Since then varied progress has been made along five main dimensions: increasing funding for road conservation; reforming existing road management institutions; extending private sector participation; introducing new forms of contracting; and decentralizing road management.

Some measurable progress has been made on network quality. Expenditure on roads is however less than it needs to be, shortfalls in public resources only partially offset by increased private sector flows, and there has been no clear shift from investment to maintenance. Countries have not generally followed PROVIAL recommendations on road user based funding for maintenance. Greater success has been achieved in implementing the recommendations on contracting with considerable progress in the employment of performance-based contracting and the development of a range of options from CREMA style long term concessions to micro-enterprises for routine maintenance. A challenge will be pursue decentralization more actively as a means to address lagging network quality at sub-national level.

1. THE MAINTENANCE PROBLEM

At the start of the 1990s, increasing attention began to be paid to the deterioration of the quality of road networks in Latin America – and to the contribution to this state of affairs contributed by inadequate and ineffective maintenance. There are references to the high proportion of the network judged to be in less than good condition, - only 27% in good condition, 46% fair and 27 % poor (Gyamfi and Ruan, 1996) as well as to the negative economic consequences with an estimated annual loss of US\$10 billion or 1-3% of GDP attributable to maintenance neglect (Zietlow, 2005). Studies identified three interrelated problems that road sector design and implementation had to address (Gyamfi and Ruan, 1996) that is: lack of sufficient, reliable and timely funding; misallocation of resources between maintenance and investment; and inefficient use of funds made available for maintenance.

2. THE NEW THINKING

The Latin and America region along with others had been broadly impacted by the new thinking on road management and financing that emerged in the mid 1980s. Responding generally to underinvestment in the road sector and to inadequate past attention being paid to maintenance and asset preservation, a new strategy started to take shape with much of the initial attention being paid to Sub-Saharan Africa (Brushett, 2007). Behind the strategy were the two interrelated objectives of on the one hand improving road sector policies and strengthening institutional capacity and on the other hand establishing an understanding of the causes of ineffective road maintenance and developing better ways to manage and finance road networks (Heggie, 2003).

A key finding from early experiences at addressing the maintenance problem was that working within the established institutional frameworks was proving to be unsuccessful. Changes had to be made to the way in which work was organized and managed and how the works were actually to be carried out. Stronger incentives to perform and increased managerial accountability became to be sense as essential components of a more sustainable approach. Thus emerged “commercialized road management” and the notion that roads should be managed like a big business, this reflecting the fact that in all countries the asset value of the road network was very large (Heggie, 2003).

3. PROVIAL

Latin America showed a great deal of openness and interest towards the new thinking from the outset. However the specific approach to reform developed accorded to the primary needs as seen from a regional perspective. Thus, for example, while the approach had in terms of its strategic underpinning much in common with the reforms initiated in Sub-Saharan Africa, there were always key differences in terms of sequencing and prioritization. In this regard, early attention was paid to new forms of maintenance by contract to secure increases in effectiveness and efficiency.

In Latin America, a process comparable to the Sub-Saharan Africa Transport Policy Program (SSATP) was championed by the Economic Commission for Latin America and the Caribbean (ECLAC), working in conjunction with the International Road Federation

(IRF), the World Bank and the Pan American Institute of Highways (Zietlow, 2005). A series of regional and national seminars, which started up in 1993, led towards the development of a regional road management improvement program known as PROVIAL. IRF and the German Agency for Technical Cooperation (GTZ) agreed to provide financial and technical support to PROVIAL, which endured to 2003. The focal points of this program were road maintenance funding and the development of contracting out of maintenance on the basis of performance standards. Some 11 Latin American countries have received support at one time or other through the program (Brazil, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Peru and Uruguay).

PROVIAL assisted in the funding and dissemination of materials in support of the new approach to road management and financing, including the publication of a book setting out the basic concepts proposed (Schliessler and Bull, 1993). The key recommendations made for the Latin American countries to follow were: (i) reforming road financing such that maintenance would be funded through road user charges (road conservation fund); and (ii) relocating responsibility for carrying out maintenance away from the public sector towards road management network companies. These companies would undertake works on a contractual basis overseen by a small specialized public road management agency. The recommendations called for a reallocation of responsibilities and the development of a new, sustainable public-private partnership in the road sector.

4. THE MAIN DIMENSIONS OF REFORM

The passage of time allows an opportunity to review the impact on the road sector in Latin America that these changes have since wrought, both in terms of the implementation of specific reforms at country level and also in terms of outcomes concerning financing, effectiveness and efficiency. Below are set out in a more expanded form the dimensions of reform against which progress can be assessed, bearing in mind that further evolution in priorities as the 1990s progressed.

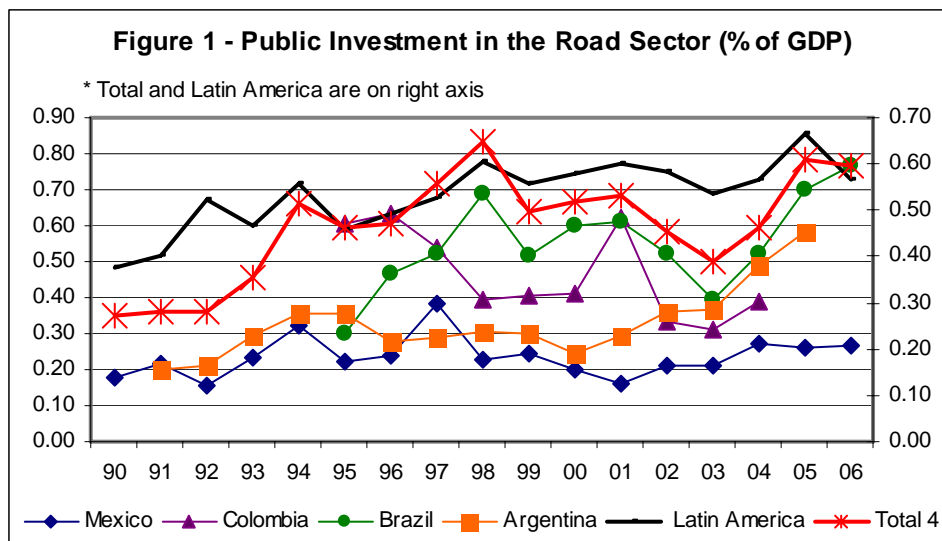
The key dimensions of the reforms in Latin America are the following: (a) increasing the flow of funds to road asset conservation and securing their availability, through not only dedicated road user funding, but also other approaches such as earmarked government accounts and tolling; (b) reforming existing government structures for the delivery of road management services to sharpen the focus on service to the end user; (c) extending private participation in the road sector with a view to both increasing the availability of finance and to introducing new and more efficient options for road management for both new investment and the preservation of existing assets; (d) introducing new forms of contract to increase the efficiency in the delivery of road management and to extend the participation of the private sector at all levels; and (e) making headway on the decentralization of road management and the more active involvement of local government structures in the management of the secondary and tertiary network

The paper now considers the available evidence in regard to these reforms. A general assessment is made in terms of how far the region has advanced and of how strong and sustainable the changes appear to be. Specific references are made to interesting country experiences to illustrate overall trends. A number of case studies are also presented.

5. MAINTENANCE FUNDING AND EXPENDITURE

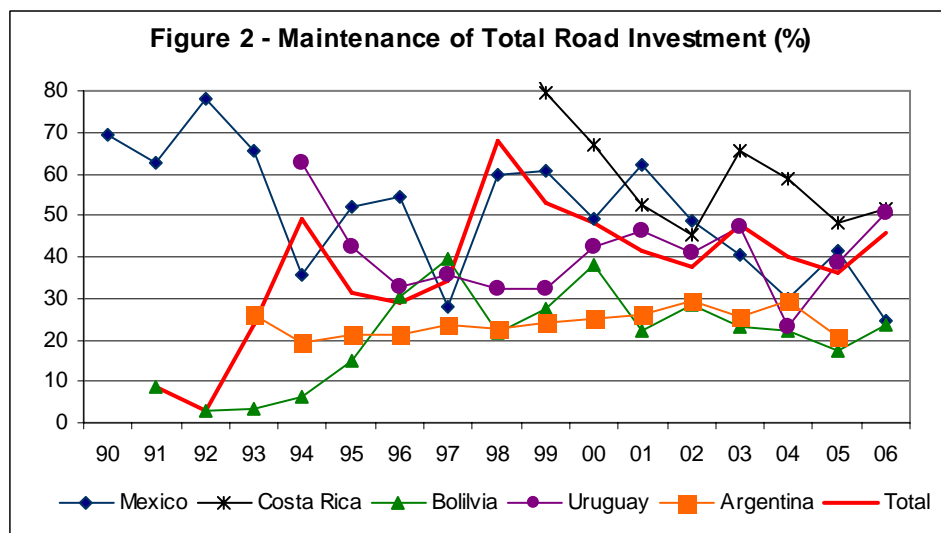
Progress made towards higher and more consistent funding made available for maintenance needs to be understood in the broader context of the trends in road sector expenditures in the region. **Annex 1** sets out the movement of some of the key aggregates for Latin American countries for which data is available.

Figure 1 graphs the evolution of public investment in the road sector in terms of GDP. There has been some progression, albeit uneven due to: the unevenness of flows of private investment into the sector which adversely affected the need for compensating public investment; and for public investment, the impact of the fiscal adjustments that the countries had to make, particularly in the late 1990s (Fay and Morrison, 2005).



Source: National information and World Bank analysis

Figure 2 suggests the record on the increasing and sustaining the expenditure on road asset preservation has been a mixed one, though trending in the right direction as far as maintenance priority is concerned. Further rebalancing towards conservation as opposed to high profile new projects is still needed and this would probably raise average returns to investment and would thus lead to an improved allocation of resources (Fay and Morrison, 2005).



Source: National information and World Bank analysis

In specific regard to maintenance funding, it will be recalled that the PROVIAL program had a specific recommendation in regard to the optimal solution to secure and predictable funding – that it a road user charge supported road conservation fund. However in the Latin America region, relatively few such funds have been created to date. In fact the only operating funds at the national level are those in the five countries of Central America – Honduras, Guatemala, El Salvador, Nicaragua and Costa Rica (which have recently formed a collaborative association of their road funds known as COCAVIAL) – see **Case 1.**, Four states in Brazil (Mato Grosso do Sul, Mato Grosso, Parana and Goias), created funds, but these are no longer in operation in their original form. A road fund has been created in Paraguay, but this is currently under restructuring – it does not as of now address maintenance funding.

Experience with those road funds that have been created generally confirm that they have helped ensure greater attention is paid to maintenance and that there is now a greater degree of assurance that funding will be provided, if not necessarily in the amounts that would be required, with the single exception of El Salvador. **Table 1** illustrates the level of recent progress achieved in Honduras in this sense. In contrast to Sub-Saharan Africa for example, the road conservation fund model has failed to become the default for addressing the funding issue. Also to be mentioned is that those Latin American road funds that have been created have developed specific mandates and structures to address sub-regional concerns, that is: a relatively narrow focus for the most part on the maintainable main road network; and the establishment of substantial in house technical resources and take on direct management of road maintenance programs. In contrast Sub-Saharan African road funds have by and large developed as small funding and programming agencies that delegate most technical functions to the multiple agencies, national and sub-national, receiving resources.

Fuel levies (US\$ Million)	2000	2001	2002	2003	2004	2005	2006
Assigned to Road Fund	47	53	64	58	90	100	111
Transfer to Road Fund	36	40	35	33	37	41	37
% Transfer over Assigned	78	76	55	56	41	41	33
% Increase in Annual	-	16	-7	10	9	13	-11
Maintenance Carried out							
Unpaved							
km	1,861	2,916	3,540	5,180	4,399	4,271	3,095
%	17	27	33	48	40	40	28
Paved							
km	1,231	1,919	2,511	2,548	2,547	3,140	3,133
%	35	60	79	83	78	89	92
Total							
km	2,837	4,587	5,739	7,479	6,705	6,915	5,844
%	21	34	42	55	49	50	42

Source: Fondo Vial

Evidently most of the other countries of the region have had to deal with – and solve in various ways – the issue of maintenance funding. The results of these efforts have been mixed. There are similar funding arrangements to road funds in other countries, such as in Argentina (fiduciary fund) and in Bolivia (maintenance account), though these are along the lines of a dedicated budget resource and are not in any way user related. To a greater extent than in many other regions, Latin America has been able to mobilize additional financing through the way in which single road or road network concessions are organized – such concessions usually including specific undertakings to assure roads are maintained. In addition tolls are levied and collected on a number of publicly managed roads - such as in Bolivia, Mexico, Panama and Paraguay – but this accounts for a very

small proportion of revenues. To a large extent countries are still dependent for the most part on regular contributions from the national budget. The fundamental drawbacks from this level of dependence have not changed much since the early 1990s. Road maintenance funding still thus suffers from unreliable and insecure funding for a large part of the needs.

6. STRUCTURAL REFORM IN THE ROAD SECTOR

For Latin America, there has been a general realization that policy and institutional reform in the road sector would have to address dysfunctions in the existing road management structures. PROVIAL does mention the need to streamline and strengthen road management agencies, although there was a tendency to lay most emphasis on the development of reformed road network management arrangements under contract to the private sector, on which more below. In Latin America there also has been less specific attention to the matter of autonomy of road agencies, which figures highly in the considerations of the reform processes carried out for example in Sub-Saharan Africa. Aside from INVIAS in Colombia, in fact there are no national road agencies in the region which operate under a separate legal and institutional basis from the core ministry responsible for roads.

However an examination of the record reveals that substantial attention has been paid to the reform of existing road agencies in the region and that the results obtained have been quite impressive. It is important to state however that the reforms carried out are in the context of the broader road policy reforms that have occurred since the early 1990s under which the roles of the public and private sectors in the delivery of road management services have been reassessed. **Annex 2** summarizes the most important policy and institutional changes of this nature that have occurred in the region.

A review of a number of cases demonstrates that the key considerations have been: refocusing road administration on policy and regulation; strengthening capacities and structures for planning and programming; downsizing direct contracting activities; decentralizing responsibilities to provincial and municipal authorities. A lot of specific attention has been directed towards ensuring road management institutions have the basic instruments in place, such as for road inventory, maintenance planning, selection of alternative intervention strategies. In Nicaragua for example, a focus of attention has been building data handling capacity and developing in-house expertise in relation to HDM-IV in order to improve the quality of annual road maintenance plans prepared in the core ministry. The progress of these reforms has been at times uneven – sometimes linked to discontinuities in policy following changes in government – but there appears generally to have been less “hostility” to institutional change at this level than has been seen for example in Sub-Saharan Africa. A bigger issue is the change in personnel that comes with the change in regimes and the tendency in some countries towards “political” appointments of key technical staff in road agencies and departments.

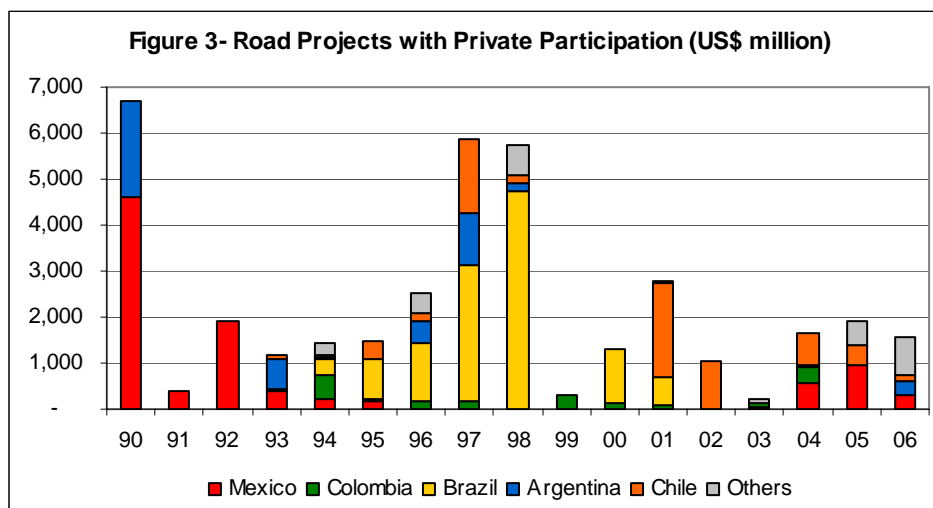
The recent experiences illustrate the potential for the substantial improvement in efficiency in road management that can result. In a number of countries there has been a quite radical downsizing of the core road management agency at a time when the scope of road maintenance activities has actually been increasing. El Salvador reorganized the vice ministry for public works in 1999 further to which staffing dropped from 7,370 to 630. Retaining only a small, residual force account, the vice ministry refocused its efforts on policy and planning with the management of road maintenance on the primary, priority

road network being vested in a newly created road fund, FOVIAL. The reforms created substantial new employment opportunities in contracting and also sharply increased efficiency – supervision cost falling on average from 28% to 5% of contract cost. Uruguay **Case 2** commenced reform of its road agency, DNV in 1994 and has reduced staffing in stages from 3,450 to 1,810. A variety of initiatives have been undertaken to expand the amount of work undertaken through contract, ranging from micro-enterprises to employ part of the downsized labor force through the expansion of the concessioning of main corridors to attract the attention of international firms.

7. PRIVATE SECTOR PARTICIPATION

At one level, the drive towards maintenance by contract which has been experienced in virtually all countries in the region has naturally opened greater opportunities for the private sector in contracting. This process is also one that has been ongoing for some time in the region, and certainly prior to the 1990s. Gyamfi and Ruan, 1996 cite, among others the early progress made in Argentina, Brazil, Chile, Colombia and Honduras in regard to management by contract. However, much more has since been done by way of involving the private sector in a deeper way in the road management process.

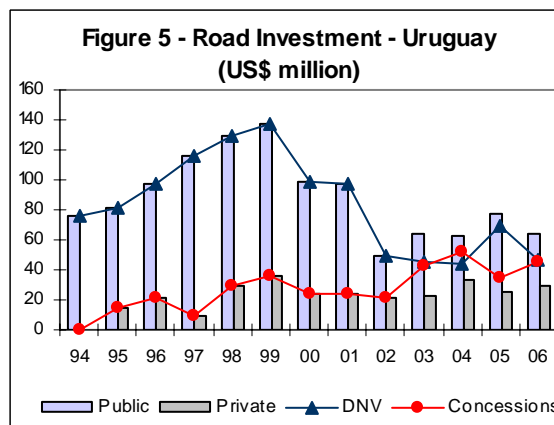
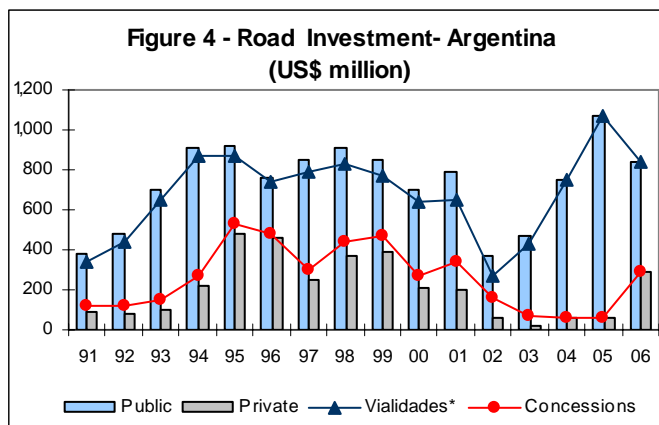
Strong demand for road improvement taken together with more diversified economic and financial structures mean that it is (relatively) easier to raise alternative sources of funding in Latin America for road projects than in other regions. Latin America has the highest number of public-private partnership projects (PPP) in the roads sector in any developing region, even though as shown in **Figure 3** recent growth has been erratic. While it is certainly the case that there was some stepping back by the private sector since the financial turmoil at the end of the 1990s, countries are re-doubling their efforts to improve the viability and attractiveness of projects for private sector participation and have in several cases sought to improve the institutional framework for managing public-private partnerships and concessions.



Source: World Bank PPI data base

Early experiences, such as the first toll road concessions in Mexico, are illustrative of initial over-ambition in terms of the delivery. Similarly in Colombia there has been a learning curve to negotiate, such that the country is now in the so-called “fourth generation” since the granting of a first road concession in 1994. The idea is to clarify bidding processes and the structuring of contracts to both reduce the level of contract re-negotiation and to

more equitable share the risks between government and private sponsors. A special purpose institution – INCO – has been created to manage concessions. In Brazil there were similar reforms carried out in 1997 to create an institution (ANTT). While various issues, including unreliability of payments, have slowed the expansion of the road network managed under a concession process, some 10% of federal roads are now so managed. Concessions may also be important at state level – 21% in the case of Sao Paulo. In Argentina, some 23% of the national network is operated under concession and this process is expanding at the provincial level, starting with Buenos Aires. **Figures 4 and 5** demonstrate respectively for Argentina and Uruguay the relationship between public and private flows in recent years.



Source: World Bank Documents. *National and provincial.

8. CONTRACTING REFORMS

There have been singular successes achieved in the new approach to contracting, across the board from the larger scale and medium terms rehabilitation and maintenance contracts (such as in Argentina, Colombia and Uruguay) to the introduction of micro-enterprises to carry over certain asset preservation activities (such as in Nicaragua, Honduras and Peru). This development rates as a strongly positive outcome in regard to the second major objective of the PROVIAL, the adoption of the core ideas being widespread in the region in contrast to the recommendations regarding road financing.

Deeper attention has perhaps been paid in Latin America compared to other regions to the constraints and to how they might be addressed. An array of responses has been developed going beyond the “traditional” contracting out. Particular attention has been paid to performance –based contracting, on the basis of a road corridor or a sub-network of roads, for a multi-year period. These approaches have been used both for contracts which are managed directly by the public administration and for those under a concession arrangement to the private sector. Some of these contracts are for maintenance alone, payments being related to the achievement of pre-determined standards. But many of them are for a mixture of rehabilitation and maintenance interventions (the so-called CREMA) first developed in Argentina. Most of the available evidence suggests that in Latin America – particularly in Argentina, Chile and Uruguay - similar benefits have been gained in terms of cost reduction and efficiency improvements as in Australia, Canada and the USA (Zietlow, 2003). Brazil for example is well advanced in its goal of putting 100% of paved national roads under CREMA style contracts of varying duration. Experience to date has been that output-based contracts result in unit costs 30% lower than in traditional contracting – partly due to organizing larger sections (of up to 300 km) of input-based contracts, are fixed price, on average 300 km network of road sections under CREMAS

rather than an average of 60 kilometers per contract before. In Argentina, after the two generations of CREMAs on 11,000 km and 8,200 km respectively, currently the Government strategy is to cover 87% of the national non-toll network by the end of 2010. In addition, CREMAS will be used in 4 provinces. The early experience of CREMAs demonstrated cost savings of 12%-18% - the rehabilitation under CREMAs on average 16% to 20% more costly than conventional contracts, but this difference is more than outweighed by benefits from additional features incorporated in CREMAs, which would normally be borne by road agency..

Another important focal area for Latin American reforms is the “micro-enterprise”, which has taken a significant role in the provision of routine maintenance services, as shown in **Table 2** below. Micro-enterprises fall broadly into two categories - those which are owner managed and operated firms and those which are cooperatives or associations. Starting from an initial experience in Colombia in 1994 – and subsequently adopted in a variety of countries such as Peru, Guatemala, Honduras and Nicaragua – micro-enterprises have received a lot of initial help in their establishment, many of them being formed from the direct labour teams rendered redundant by ministerial restructuring. For a number of years, these micro-enterprises might, for example, be awarded contracts to gain experience prior to having to face competition in the open market. The second type of micro-enterprise has become the dominant form and a very successful model for delivering the joint benefits of assured and efficient routine road maintenance and social benefits through the development of entrepreneurship and communities along the roads. There is evidence that maintenance is provided more efficiently through micro-enterprises than through other means. An important explanatory factor for success is the institutional capacity in the reformed road sector institutions – especially in the Central American road funds - to manage contracting to many small scale operators; comprehensive training and institutional support strategies (Brushett, Corvalan, Peltier-Thiberge and Aguilera, 2007 forthcoming).

Table 2 - Micro-enterprise Programs in Latin America

Country	Year	Total	Total Number of	Total Number of Km	Total Cost
Bolivia	2001	354	2,291	10,200	5.1
Colombia	1984	318	3,235	11,823	18.1
Ecuador	2002	70	889	2,762	2.1
Honduras	1999	70	889	2,762	2.6
Nicaragua	1997	33	411	1,464	1.5
Peru	1995	642	7,236	15,744	13.4

Country	Road Network	Road Type /Surface	Road Agency	Road Type
Bolivia	Main	Paved	ABC	Inter-Urban, Rural
Colombia	Main, Urban	65% paved, 35%	INVIAS	Urban, Rural
Ecuador	Main, Rural	Paved and unpaved	Ministry and Municipalities	Urban, Rural
Honduras	Main	Paved	Fondo Vial	Inter-Urban
Nicaragua	Main, Secondary	Paved 99%	FOMAV	Inter-Urban, Rural
Peru	Rural, Regional, Main	Unpaved 98%	Municipalities (Rural), Regional Government (Departmental), Ministry of Transport and Communications (National)	Rural, Inter-urban

Source: World Bank Transport Note Micro-enterprises for Routine Maintenance – Experience from Latin America

9. DECENTRALIZING ROAD MANAGEMENT

While not originally one of the key dimensions of road management and financing reforms, the matter of determining the roles and responsibilities for managing the sub-national network in Latin America is of great importance. The region has a stronger institutional basis than many for managing all types of service provision at sub-national level, though in the past there has been fairly typical reluctance of central administrations to grant much autonomy, especially of the fiscal variety, to the lower tiers of government. Successful decentralization in the road sector is of particular relevance in Latin America given that large countries such as Argentina, Brazil, Colombia and Mexico have governance structures at province/state/department and also municipal level that could be used to improve the quality of planning and implementation of sub-national roads – given also that in nearly all countries of the region the quality and availability of these roads is generally much less than for the national roads.

Decentralization of road management is not however solely for the large countries. Peru has been one of the most successful in this process, developing an effective strategy for improving the quality of rural roads and for progressively building up decentralized financing and management capacity **Case 3**. Argentina has a well established structure for the management of provincial roads and there has been a lot of success in building capacity at that level. In other countries funding availability has also proven to be a critical brake on the success of decentralization of road management. In Colombia, there are earmarked revenue transfers for a number of sectors but not for roads. There is great inequality in the access to resources between different provinces and municipalities because of erratic transfers and differences in the capability to raise local revenue. The Brazilian experience is an illustration of the practical difficulties in transferring responsibility for a part of the national network to state level. In 1997, a large part of the national network was identified as of “local interest” and meriting transfer to the state level responsibility after rehabilitation. A small proportion of these roads have actually been transferred given subsequent legislative changes and lack of funding for the necessary works.

10. CONCLUSIONS

It is fair to conclude that Latin America has made some, measurable progress in regard to addressing the stated problem of inadequate maintenance of the road network. However on average, less than one third of the national road network is now in good condition (Fay and Morrison, 2005) – albeit some of the stronger performers are doing much better than this. In some cases – such as Mexico and Panama, there has been a quite appreciable improvement over the past 10 years whereas in other cases such as Argentina and Uruguay the quality of the (pave road) network has been consistently high – 80% and 67% respectively. However, the percentage of roads in good condition in secondary and tertiary networks is generally much lower though solid data is scarce. The example of Peru is that roads in good and average condition are 63%, 20% and 8% respectively for the primary, secondary and tertiary networks. Available data indicate limited shifting of the balance of funding from public sources towards conservation and away from new construction – not enough to address the funding gap given the constraints faced in raising public expenditure as a whole. The region has not generally adopted a road user funded approach to road maintenance financing – and whilst there has been a measure of

success in raising new, specific resources for the sector especially in the context of public-private initiatives, funding flows are still erratic and insufficient in most countries.

Working from a situation where management by contract was already well established before the 1990s, most countries in the region have deepened the role played by contracting with considerable progress made in related areas of performance-based contracting and concessioning not only construction, but also road conservation, out to the private sector. Institutional reforms in road management administration have not generally been as radical as has been seen in other parts of the world. However the effectiveness of the core road agencies has been improving and the changes that have been carried out have been generally supportive of the restructuring of roles and the scaling back of direct public sector interventions. A challenge for the future will be making greater strides in the decentralization of road management and providing agencies at the sub-national level with the technical and financial resources needed to bring up the level of sub-national road infrastructure which significantly lags the national in most countries.

CASE STUDIES OF ROAD FINANCING AND MANAGEMENT REFORMS

Case 1 – The Central American Road Funds

Five Central American countries – Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua – are the only ones in the region which have established national road maintenance funds. The road funds were created over the period 1993 to 2000. With the exception of Costa Rica, the road funds are dependent 100% on fuel levies, although in the case of Nicaragua this is only so since 2007 following a revision to the law. The fuel levies are in the range 3-8 cents per liter. Each road fund is under the supervision of a board or technical committee with mixed public and private sector participation, though in every case under the chairmanship of the minister responsible for roads.

In relation to generally accepted best practices, the Central America road funds fall short in at least some respects - though there is a good deal of divergence between the country situations. Only El Salvador and Nicaragua are separate public entities with executive boards; and only El Salvador has direct channeling of resources to the road funds, rather than through budget line allocations. Costa Rica's road fund is focused primarily on road improvement rather than on road conservation. Funding has been generally limited to all or part of the main road network - only Costa Rica and Nicaragua formally allocate funds to the urban network. A final, important point to underline is that the fuel levies paid over are generally specified in the law and may not be considered to be road user charges in the correct sense of the word - the levies are not set, nor can they vary, in reference to cost the road user actually imposes on the road network.

The case of Honduras provides a good illustration of the qualified success of road funds to date. The law provides for paying over various fuel levies to the Road Fund – but these have never been transferred in full. Maintenance carried out has increased, but still falls short of meeting all assessed needs. The condition of the paved road network has improved, but that of the unpaved network which has borne the brunt of the funding shortfall has not. The Road Fund is fully staffed, but its effectiveness has been reduced by frequent turnover and changes in the government appointed Chief Executive.

Nonetheless the economies of the Central America sub-region have clearly on balance been beneficiaries of the reform, that is: amount of maintenance carried out has increased, all of which is contracted out to the private sector; resources made available have generally been utilized strategically, allocated first to a priority network; road funds have helped to build new contracting capacity, in some cases with the creation and support to micro-enterprises for routine maintenance; and the condition of the network has improved, on average 34% of all public roads and as high as 70% of main roads are assessed as in good condition.

(Adapted from Brushett presentation “Central American Road Funds” to the 2007 University of Birmingham Senior Road Executives Program)

Case 2 – The Uruguay Experience with Road Management Reform

Starting in 1994, Uruguay has reformed its road management structure through a number of phases to create a more efficient and effective core management agency as well as to create new network management arrangements with strong private sector participation.

The initial impetus for reform was from the need to modernize road management and maintenance policies and to increase the efficiency in the use of limited available resources. The cornerstone of the government's strategy was to place highest priority on road maintenance over new construction – and to that end a priority network was defined. Core institutional reforms were seen as essential to the success of the strategy, such that the national roads directorate (DNV) was to be reorganized in order to prioritize planning, regulation and control and move out of execution activities. Implementation of maintenance programs would be contracted out to the private sector, with some residual force account activities largely restricted to rural districts.

DNV has since embarked on a gradual, but substantial restructuring of its organization and business processes – with greater orientation towards performance and results. By end 1998 about 23% of national road maintenance had been contracted out. Staffing had been reduced from an original 3,450 to fewer than 2,000 (subsequently to fall to 1,810 by 2003). Specific attention was paid to the creation of micro-enterprises consisting of former employees which were allocated routine maintenance contracts on some of the lower trafficked roads in the national road network. The original contracts were re-tendered in 2002 and 2003. The micro-enterprises have survived and seem to have flourished in a more competitive environment. Substantial improvements have been obtained in maintenance management and planning systems. Base unit cost parameters have been determined for maintenance works. These are set to drive a generalized reduction in maintenance costs and a reduction in the variations in cost structures of the different maintenance activities.

Increasing attention was paid to new forms of contracting out which increase private sector participation. Firstly was the use of contracts for rehabilitation and maintenance (CREMA) – performance based contracts usually of 4-5 years duration covering sub networks on 150-250 kilometers. These arrangements helped DNV realize cost efficiencies and also helped tie up maintenance funding over as multi-year period. Secondly was the concessioning of heavily trafficked transport corridors to the private sector, normally under 20-30 year contracts under which tolls could be charged. The initial concession dated from 1994, but the use of this mechanism has increased since 1997 with currently 542 kilometers under concession and a further 650 kilometers under consideration. Thirdly was the awarding in 2002 of the “Megaconcession” under which about 15% of the national network and assigned its maintenance and operation to a different entity through a concession contract. The “Megaconcession” is based on the principle of cost sharing – users are required to pay a toll but there is also a subsidy payable by the government. The concessionaire enjoys a minimum revenue guarantee and also receives subsidy payments based on kilometers of road and structures maintained.

The core reform of DNV has been largely accomplished, but further attention needs to be given to staff incentives retention to consolidate capacity creation in policy and regulation. Road asset preservation has been improved. Considerable progress has been made on private sector participation and diversifying sources of revenue. 42% of the DNV network is being managed through private sector contracts and concessions. Multi-year contracts help mitigate against budget cuts while road concessions generate incremental toll revenue. The “Megaconcession” is now a proven mechanism for accelerating commercial management and can, with suitable reforms, be envisaged as a vehicle for further revenue diversification and become more attractive for direct private investment – such as securitization of toll revenues; and government guaranteed bond issues.

(Adapted from Brushett, 2007)

Case 3 - The Peru Experience in Decentralization of Road Management

Decentralization of responsibilities for road management is an important dimension of the reform process in Peru. The policy is based on Peru's constitutionally mandated decentralization dating from 1993 and on key legislation passed in 2002, further to which regional governments were directly elected for the first time in 2003. Sub-national entities include 26 regional governments and 1,832 municipalities of which 194 are provincial and 1,638 are district. The territory of a province includes several districts but the provincial mayor has no authority over district mayors. The objective of the decentralization agenda is to improve service provision, including roads, by assigning responsibility closest to the user, increasing accountability, and allowing for a high level of citizen participation in decision making. According to the new decentralization framework, the national government is responsible for national roads, regional governments for regional roads and municipalities for rural roads.

Political decentralization was accompanied by fiscal decentralization: Sub-national governments in 2006 accounted for 35% of government expenditures, up from 28% in 2003, and more than half of all public investment in Peru. However, with some exceptions, to date the fiscal discretion available to sub-national governments is quite limited and priorities are still set to a large extent by national priorities. High priority has been assigned by the current administration to the expansion of infrastructure in rural areas, which will be a continuation of the emphasis that has been placed since 1995 on developing sustainable, user oriented approaches to rural road improvements.

Building on the decentralization reforms, management of rural roads has been progressively handed down to the municipal level, especially since 2002. A specific institutional model has been developed – the Provincial Road Institutes (PRIs) managed by a board comprising all mayors of a given province. *Provias Rural* – the department of the Ministry of Transport which used to be directly responsible for managing the roads – now provides technical assistance to develop the PRIs. Fragmentation of the municipal sector in Peru reduces opportunities for economies of scale and many districts still have a very low institutional capacity. By fostering greater coordination between all district and provincial municipalities in a given province, the PRI model has been able to establish efficient, fully decentralized, institutions capable of managing rural roads. As of 2006, 121 provinces were engaged, at various stages of implementation, in the creation of a PRI. The most advanced PRIs (there are 38 of them) were handling all maintenance and some rehabilitation activity in their respective provinces. Inter alia the PRIs have taken on the management of the micro-enterprise program for rural roads. Since June 2006, budget resources have been transferred on a permanent basis to municipalities to finance the routine maintenance of all rehabilitated rural roads – amounting to 14,500 kilometers on a national scale.

At the regional level, similar institutional capacity is being built in the newly created regional governments so that they can effectively manage regional roads. The successful (and older) reforms engaged to strengthen municipalities' ability to efficiently manage rural roads, are influencing policies set up to help regional governments manage their road assets. For example, the micro-enterprise model for routine road maintenance was successfully experimented on regional roads and this experience is currently being scaled up.

A number of issues are currently being addressed in Peru to enhance the road decentralization process, that is: (i) increasing funding available for sub-national roads –

Peru lags other Latin American countries and has sufficient resources now only to maintain 38% of the total network; (ii). addressing limited management capacity at sub-national level, which has proved difficult due to fragmentation and the small size of municipalities, through the scaling up of the PRI model and building institutional capacity in regional governments; and (iii) enhancing coordination of planning and prioritization of infrastructure investments across various sectors (“bundling”) – to increase the effectiveness of investment of roads and its impact on user livelihoods through reduced travel costs and increased incomes.

(adapted from World Bank Report No. 36484-PE - Republic of Peru Decentralized Rural Transport Project, November 2006)

ANNEX 1 – INDICATORS OF INVESTMENT IN THE ROAD SECTOR BY COUNTRY

A. Public Investment in the Road Sector (% of GDP)

Country	2000	2001	2002	2003	2004	2005	2006
Mexico	0.20	0.16	0.21	0.21	0.27	0.26	0.27
Guatemala	-	-	-	0.79	0.72	0.63	0.93
El Salvador	0.90	1.47	1.92	1.82	-	-	-
Honduras	-	-	1.18	1.37	1.21	1.27	1.01
Nicaragua	3.22	2.52	1.87	1.49	2.11	2.14	0.70
Costa Rica	0.73	0.57	0.38	0.53	0.45	0.33	-
Panama	0.85	1.21	0.48	0.92	0.38	1.09	1.06
Colombia	0.41	0.62	0.33	0.31	0.39	-	-
Ecuador	0.66	0.75	0.58	0.54	0.75	0.35	-
Peru	0.50	0.43	0.41	0.41	0.33	0.28	0.31
Bolivia	1.94	2.19	2.08	2.28	2.85	2.98	-
Paraguay	1.47	1.21	1.98	1.60	1.73	1.39	1.22
Brazil	0.60	0.61	0.52	0.40	0.52	0.70	0.77
Uruguay	0.48	0.53	0.41	0.58	0.47	0.46	-
Argentina	0.25	0.30	0.36	0.37	0.49	0.58	-
Chile	0.48	0.49	0.52	0.48	0.34	0.46	-
Total	0.53	0.56	0.54	0.51	0.53	0.60	0.52

B. Public Investment in the Total Road Network (by km)

Country	km	2000	2001	2002	2003	2004	2005	2006
Mexico	329,532	3,516	2,997	4,178	4,097	5,685	6,117	6,787
Guatemala	14,118	-	-	-	-	-	-	-
El Salvador	10,029	11,746	20,191	27,381	27,231	-	-	-
Honduras	13,603	-	-	5,710	7,002	6,698	7,806	6,886
Nicaragua	19,036	6,664	5,424	3,947	3,209	4,941	5,450	1,936
Costa Rica	35,303	3,313	2,631	1,836	2,621	2,371	1,867	-
Panama	14,391	6,845	9,895	4,121	8,276	3,711	11,709	12,383
Colombia	120,000	2,853	4,270	2,265	2,045	3,129	-	-
Ecuador	43,200	2,420	3,679	3,321	3,595	5,673	2,949	-
Peru	79,250	3,331	2,915	2,960	3,160	2,865	2,787	3,153
Bolivia	62,479	2,604	2,849	2,632	2,956	3,971	4,447	6,028
Paraguay	60,000	1,886	1,274	1,681	1,481	2,007	1,725	1,855
Brazil	1,724,929	2,088	1,797	1,394	1,159	1,820	3,224	3,951
Uruguay	70,732	1,404	1,379	706	912	883	1,094	906
Argentina	630,000	1,106	1,260	583	753	1,185	1,694	1,339
Chile	79,353	3,186	2,945	2,906	3,028	2,903	4,069	-

C. Maintenance in the Road Sector (US\$ million)

Country	2000	2001	2002	2003	2004	2005	2006
Mexico	447	281	565	653	1,100	837	1,136
Honduras	-	-	29	38	32	39	35
Costa Rica	53	59	28	57	44	40	43
Bolivia	62	40	47	42	54	48	89
Uruguay	52	56	28	41	15	40	47
Argentina	109	108	62	57	116	149	-

D. Investment Commitments of Projects with Private Participation (US\$ million)

Country	2000	2001	2002	2003	2004	2005	2006
Mexico	-	-	-	39	564	949	285
Costa Rica	-	-	-	-	-	304	-
Colombia	120	71	-	110	352	-	-
Ecuador	-	-	-	-	-	-	43
Peru	-	45	-	75	-	230	795
Brazil	1,175	631	-	-	25	-	-
Argentina	15	-	-	-	-	-	322
Chile	-	2,029	1,045	-	706	435	115
Latin America	1,309	2,776	1,045	224	1,647	1,918	1,560

Source: for A, B, and C: National information and World Bank analysis. For D: World Bank PPI data base.

ANNEX 2 – EXAMPLES OF ROAD MANAGEMENT AND FINANCING REFORMS

1. Flow of Funds to Road Asset Conservation

Before 1990	Introduce tolls – Mexico (CAPUFE). Eliminate earmarking of revenues – Brazil, 1988.
1990-1999	Eliminate earmarking of revenues – Colombia, 1991. Introduce “second generation” road funds – Honduras, 1993 (1999 revised); Guatemala, 1996; Costa Rica, 1998. Introduce special account for road financing – Bolivia, 1998. Allow tolls to be charged by private concessions – Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Uruguay.
2000 onwards	Introduce “second generation” road funds – El Salvador, 2000; Nicaragua 2000 (revised 2005). Introduce special mechanism for road financing – Argentina, 2001.

2. Government Structures for Delivery of Road Management Services

Before 1990	
1990-1999	Restructure roads administration – Bolivia, 1999 (SNC); El Salvador, 1999 (VMOP); Honduras, 1996 (SOPTRAVI); Nicaragua, 1997 (MTI); Uruguay, 1994 (DNV). Create roads agency – Colombia, 1995 (INVIAS). Manage toll roads – Mexico, 1997 (CAPUFE).
2000 onwards	Create concession management agencies – Argentina, 2001 (OCCOVI); Brazil, 2002 (ANTT); Colombia, 2003 (INCO). Restructure road administrations – Bolivia, 2004 (ABC replaces SNC); Brazil, 2002 (DNIT replaces DNER). Manage toll roads – Mexico 2002 (FARAC replaces CAPUFE).

3. Private Participation in the Road Sector

Before 1990	Launch concession program – Mexico, 1989.
1990-1999	Launch concession program – Argentina, 1990; Brazil, 1995; Chile, 1994; Colombia, 1994; Ecuador, 1998; Uruguay, 1994. Reacquire concessioned roads – Mexico, 1997.
2000 onwards	Establish new public-private partnership scheme – Mexico, 2005. Launch new forms of concession – Chile, 2001 (urban highways, fully electronic free flow toll system); Colombia, 2003 (4 th generation); Uruguay, 2001 (Megaconcesion).

4. New Forms of Contract

Before 1990	Launch micro-enterprises, output-based contracts – Colombia, 1984.
1990-1999	Launch micro-enterprises, output-based contracts – Honduras, 1999; Nicaragua, 1997; Peru, 1995; Uruguay – 1995. Launch CREMA contracts – Argentina, 1997; Uruguay, 1998.
2000 onwards	Extend CREMAs to other parts of network – Argentina, 2003; Uruguay, 2002. Launch micro-enterprises, output-based contracts – Bolivia, 2002; Ecuador, 2002; El Salvador, 2000. Launch CREMA contracts – Brazil, 2002; Peru. Launch multi-year maintenance contracts – Chile; Mexico, 2003; Panama, 2000.

5. Decentralization of Road Management

Before 1990	Transfer revenues for roads under state responsibility – Brazil, 1988.
1990-1999	Introduce framework for managing decentralized roads – Colombia, 1991; Peru, 1993. Carry out incomplete decentralization – Bolivia, 1996 (recentralized, 1999); Colombia, 1995 (transfer of responsibilities with inadequate resources); Ecuador, 1994; Mexico, 1995 (no additional resources to states)
2000 onwards	Transfer some federal responsibilities to state and municipal level – Brazil, 2002 (limited implementation). Carry out decentralization program – Peru, 2002 (transfer secondary and tertiary roads to sub-national level; create new institutional structures to support process – Provincial Roads Institutes (2002) and <i>Provias Descentralizado</i> (2006)

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