



INSTITUTIONAL DEVELOPMENT AND GOOD GOVERNANCE IN THE HIGHWAY SECTOR - LEARNING FROM GUJARAT



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The Transport Research Support program is a joint World Bank/ DFID initiative focusing on emerging issues in the transport sector. Its goal is to generate knowledge in high priority areas of the transport sector and to disseminate to practitioners and decision-makers in developing countries.

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EXECUTIVE SUMMARY

1.1 PREAMBLE

The World Bank financed the Gujarat State Highway Project (GSHP) during 2001-07. The Project Development Objective was to enhance the capacity of the Government of Gujarat (GOG) for effective and efficient planning and management of road infrastructure, while concurrently maximizing existing road infrastructure asset productivity through priority investments and increased maintenance funding. The Project not only achieved its objective and targets successfully, but also was implemented with a significant cost reduction (about 23%). The GSHP resulted in a reduction in the backlog of major maintenance and an improved network to meet rapidly growing transport demand in the state. The project had the unique distinction of no contract disputes, a rarity among the highway development projects in India. The project also set best practices in developing and managing a very comprehensive asset management system, state of the art quality assurance framework and a very comprehensive training and capacity building program.

The Implementation Completion Report (ICR) for GSHP identified several internal factors, in particular, organizational reforms that took place during the preparation and implementation of the subject project. As a result of these reforms and institutional development, the Roads & Building Department significantly transformed its functions from the traditional Public Works Department (PWD) orientation of focusing on execution of civil works towards that of a modernized road agency focusing on road network management, planning and policy. The current plan road network size of 74,111 km is among the highest in terms of network density per sq km in India's states and is among the best managed networks among all the Indian states. The annual road sector allocation has grown from USD 30 million in 1995-1996 to an impressive USD 610 million in 2010-11, currently the second largest among all the Indian states.

There is considerable interest among the road sector professionals in the India to learn more about the Gujarat road sector reform story. This study attempts to identify the key elements of the Gujarat road sector reforms and explores *whether* and, if so, *how* such reforms can be replicated across other Indian states and possibly even in other countries in the region.

1.2 THE STATE CONTEXT

Gujarat is an industrially advanced state in India and is considered to be both a high growth state and a leader in pursuing economic reforms. The state's GDP grew at 10.2 per cent per annum in the plan period 2002–2007 and the Planning Commission set it a target of reaching 11.2 per cent in the current plan period. Gujarat has been quite effective in pursuing economic reforms across many sectors: power reforms, fiscal reforms, some limited but notable education reforms, and private sector participation in infrastructural development particularly ports and roads. Four sets of factors have been of particular importance to the state's economic success:

- Gujarat was blessed with advantageous structural conditions prior to commencement of the reforms: a strong industrial base, private sector interest, and basic state capabilities, which were crucial to the path and speed of reform. The state also has the geographical advantage of a 1,600 km long coast line and its unique situation halfway in the transport corridors linking the two prime growth centers in the country, Mumbai and Delhi.
- Strong state policy leadership has sought and succeeded in incorporating private sector interests into the policy process. Successive Chief Ministers and heads of major departments such as industry and finance played crucial leadership roles. Particularly noteworthy was their ability to see and respond to the problems of the long term with broad and innovative vision.
- Private sector pressure, both implicit and explicit, also played crucial roles in shaping the reforms. The state development policies implemented in Gujarat, since the mid-1990s, were closely attuned to the requirements of private capital and the possible role of private sector in major road infrastructure development far earlier than most other Indian states. These early developments ploughed the way to the current model of private sector participation.
- Gujarat has repeatedly converted crisis into opportunity. The state faced an acute fiscal crisis in the early 1990s and major economic difficulties in 2001 following the Bhuj earthquake. However, Gujarat turned crisis to its advantage by streamlining and modernizing the state's administration and strengthening state-level governance mechanisms, which played a key role in eventually accelerating the pace of growth in the state.

Strong collaboration of private and public leadership led Gujarat to take a proactive approach to development of infrastructure in support of business development, particularly since 1999 when the 'Gujarat Infrastructure Agenda: Vision 2010' was announced. A highly successful decade of implementation followed, and in 2009 the 'Vibrant Gujarat Global Investors' Summit' was held to point to the subsequent follow-up. To attract investment, the Chief Minister has steadily maintained his commitment to undertake the public investments needed to support private investment. The rapid upgrading of Gujarat's network of state and national highways is one evidence of this. Further evidence is the fact that Gujarat has the highest geographical area (27,125 hectares) designated for Special Economic Zones (SEZs) and claims to be the first state to formulate an SEZ policy, which includes flexible labor laws and exit options for investors.

1.3 GUJARAT ROAD SECTOR – PRE-REFORM DAYS

During the last 25 years, the State road network expanded in length from around 50,000 km to about 74,000 km and the paved part increased from about 66% to 91% of the total length. Due to the high growth in vehicle ownership in Gujarat, motor vehicle density per 100 km of paved road has reached a level of about 40% above the National average.

In the mid 1980s the structure of the R&BD was similar to that of other Public Works Departments (PWD) in India. It was responsible for the operation and maintenance of all state-owned roads and buildings. The departmental structure consisted of seven major units: Roads and Buildings (State), National Highways, Capital Projects & Arbitration, Expressways, Roads and Buildings (Rural), Quality Control, and Engineering Staff Training College. It employed about 31,000 people, of which about 11,000 were staff and about 20,000 were laborers. While some works were let out on contracts to the private sector, a considerable proportion of the civil works were executed using the force account.

Before the reforms, R&BD saw itself as the arm of government that directly maintained and developed the state road network to the best of its ability using the funds and human resources made available to it. Since funds were not enough to provide quality roads over all the state, money was allocated to roads where the need was most pressing or political pressure was high. In such circumstances allocating funds based on scientific (systematic, rationally-based) planning seemed superfluous. In such a setting, asset preservation, particularly timely maintenance of pavements and drains, took a back seat to road network improvements that won public support. Lack of spending on maintenance resulted in some road assets being lost, necessitating expensive reconstruction of pavements.

1.4 KEY INSTITUTIONAL REFORMS IN THE ROAD SECTOR

1.4.1 Move from Provider to Manager of Road Infrastructure

During 1997 – 2007, the major reform which affected the way of doing business in R&BD was the move from the role of “provider” to “manager” of road infrastructure. It enabled R&BD to embrace a ‘whole-of-network’ approach to planning and managing the road network development and maintenance, and to take a more integrated approach in the budgeting and funding processes for different road categories in the State, previously managed separately. As part of this reform, the following actions were undertaken.

Creation of a Policy & Planning Unit. The GOG’s ‘road asset management’ and ‘governance’ capacities were substantially improved through the Policy and Planning initiative. The Policy & Planning Unit (PPU) set up in the R&BD was assigned a responsibility to prepare annual budget plans for the department by using a computer-based Gujarat Road Management System (GRMS).

Use of Gujarat Road Management System. Now operational for approximately 20,000 km of the state’s highest priority major roads, the GRMS has helped the R&BD address maintenance funding issues which are typically difficult for most PWDs in India or road agencies in other countries). It has facilitated a more effective dialogue with the Finance Department about maintenance funding.

Enhancement of Quality Control. Since 2006, the GOG has supported a better resourced and more advanced quality control framework centered on Gujarat

Engineering Research Institute (GERI) and its field units, which has helped to improve the overall quality assurance culture in the state and helped to further raise public confidence in road construction quality in the state.

1.4.2 Separation of Planning, management and oversight role from PWD

In parallel with the Bank-funded GSHP, the GOG took an early action to set up the Gujarat Infrastructure Development Board (GIDB) to streamline clearance of infrastructure projects implemented under PPP, as well as the Gujarat State Roads Development Corporation (GSRDC) and various special-purpose toll road development and management bodies separate from the previous R&BD-centred approach to roads development.

GIDB itself does not develop infrastructure but acts as a catalyst for infrastructure development and focuses on overall planning of infrastructure projects and preparing the framework for execution through:

- preparing projects by conducting prefeasibility and feasibility studies using consultants;
- preparing concession agreements which define risk-sharing in a public-private partnership;
- overseeing competitive bidding process;
- advising Departments on financial structuring;
- coordination between various sector specific departments;
- monitoring progress of projects; and
- building the capacity of Departments in the infrastructure sector and bringing in international experience and best practices.

GSRDC was incorporated in 1999 as a limited company for development of road infrastructure on a privatization/BOT basis. Its primary objectives are:

- to cater for development of bridges and roads
- to raise funds from banks, institutions, mutual funds, individuals, etc
- to commercially develop and exploit land alongside the roads/bridges
- to draw up plans for project preparation and undertake feasibility studies.

Special purpose toll road development and management bodies e.g. Gujarat Road and Infrastructure Company Ltd (GRICL) were incorporated in 1999. GRICL was subsequently absorbed in Gujarat Toll Road Investment Company Ltd, for investment in two toll-road special purpose vehicles (SPVs), Vadodara-Halol Toll Road Ltd and Ahmedabad-Mehsana Toll Road Ltd. These SPVs were launched by GoG and Infrastructure Leasing and Financial Services (IL&FS) on 30-year concessions and were a pioneering SPV-based PPP effort among all states.

1.4.3 Strengthening Governance

Gujarat has been a pioneer in strengthening governmental policies, institutions and procedures for better governance. It has been increasingly using information and communication technologies to offer citizen based services to improve their accessibility, make them more transparent and reduce response time. Gujarat also ranks first in the country to have made E-Governance functional in all its municipalities and municipal Corporations.

- One of these initiatives that will go a long way in reducing time and cost overruns in the highway sector is the e-Dhara initiative which is aimed at

complete computerization of land records across the state, eliminating the bureaucratic and cumbersome process of manual record-keeping. This has ensured better transparency, minimal errors, reduced chances of fraud and made sure that R&R benefits and payments are actually received by the intended beneficiaries.

- There is a centralized, functioning e-procurement system in the state. In accordance with the GOG e-procurement provisions, the R&BD uses e-procurement for all works valued more than Rs. 1 million (approx \$0.025 million), irrespective of source of funding. According to the Gujarat Vigilance Commission, procurement-related complaints have decreased significantly with the advent of e-procurement.
- Another measure of accountability in the government is the State-wide Attention on Grievances through Application of Technology (SWAGAT) Online project. Through a video-conference held on every fourth Thursday of the month in the presence of Chief Minister, all the department heads and district representatives, public grievances are addressed and suitable solutions are provided online immediately. The success rate claimed for this system is extraordinarily high (about 92%) since its implementation-- although the criterion for success is not entirely clear, SWAGAT is widely thought to provide an effective instrument for citizens to redress their grievances, while contributing to improvements in delivery of government services.
- Gujarat has also implemented an Integrated Workflow and Document Management System (IWDMS) for automating the government functions and processes at all levels of the administrative hierarchy in all departments including the R&BD. It provides for better record-keeping, information retrieval and knowledge management and fosters a collaborative environment between government departments for faster decision-making. This is particularly useful in the R&BD context, for expediting pre-construction activities such as utility shifting, tree-cutting, and forest/environmental clearances for projects.

1.4.4 Selectivity in Network Management

Gujarat was one of the first states in India to develop a strategic or core road network by applying the 80/20 rule i.e. 80% of the traffic was carried by 20% of the road network and that part of the network should be prioritized for further development and asset management. The concept was first formulated in 2001, and further crystallized under the Bank funded Gujarat State Highway Project. Gujarat's flagship programs like Pragati Path, Vikash Path, Kisan Path and Pravasi Path have actually centered around the strategic road network concept, which has enabled the state to manage these investments more effectively.

1.4.5 Creation of more conducive environment for contractors

In addition to creation of GIDB and GSRDC to facilitate public-private partnerships in road infrastructure financing/development, GOG made a substantial effort to improve the dispute resolution system and inculcate a culture of cooperation among the three contractual parties.

Key changes/improvements effected in the ways of cooperation between the three contractual parties were:

Mandatory Monthly Meetings with the Contractor and the Engineer

Timely payments to the Contractors, and

Timely redress of contract disputes including active encouragement of dispute prevention and 'across-the table' resolution culture.

1.4.6 Strong emphasis on professional staff development in R&BD

In a series of steps, with the support and resources of the GSHP, as well as in response to the impetus of increasingly proactive GOG policies on public sector administration and governance, the R&BD:

- established a Vision 2010-based HRD Policy
- began implementation of an annually-updated '3-year rolling Training Program'
- took progressive action to refurbish and strengthen the Staff Training College (STC) in terms of physical and professional resources
- enhanced the focus, scope and contents of the STC suite of training programs and courses
- appointed an external HRD professional on a fixed-term as HRD Manager to assist the STC on embracing innovations in syllabus, 'faculty' resources and 'delivery' modalities
- introduced a (still ongoing) Computer/IT Training program
- initiated the first rounds of a multi-phase Manager Development Program aimed at enhancing the managerial skills of middle-level R&BD staff for new and evolving responsibilities in the Gujarat road sector environment.

The main focus of the HRD/staff training program enhancements and delivered activities have been contract management / procurement, monitoring & evaluation, environmental and social 'safeguards' functions and management, project management, planning, finance, quality control/management, and (more recently) e-procurement/e-governance.

Overall, the strengthened and modernized HRD planning, implementation capacity and results achieved by the R&BD during the GSHP period and since then, particularly via the enhancement of the STC and its capabilities, have significantly helped to improve the effectiveness and quality of human resources and overall governance in the Gujarat roads sector.

1.4.7 Reforms in social and environmental safeguards management of road projects

Pioneering reforms in social safeguards management were demonstrated in first generation BOT toll projects in the state. The 'National Social Management' policy was the basis for state guidelines established for this 'safeguards' aspect for the BOT toll projects. For Environmental Management, a compilation of good practices from elsewhere has been done as the basis for an eventual state wide Environmental Management (sector) policy for application (inter alia) to investment projects applied by R&BD.

Good practices in resettlement were demonstrated in the Ahmedabad-Mehsana and Vadodara-Halol BOT-Toll highway projects during the 1990s. By using replacement cost, the SPV deviated from the prevailing standard approach to compensation for land and houses. The resulting valuations were 4-6 times higher than the compensation paid by the government under the Land Acquisition Act. The SPV also introduced incentive-based income-generation schemes as part of the rehabilitation assistance. Eligible families who purchased assets needed for

self-employment were given assurance of reimbursement in two stages: 50% of asset value at the end of eighteen months; and 50% at the end of the three years contingent upon the PAPs continuing with the activities and earning the targeted incomes. During this three year period, beneficiaries were offered maintenance allowance in the first year and insurance of the asset against theft, disease, etc, as appropriate thereafter.

Several specific innovative measures were pioneering and noteworthy:

- Special measures for vulnerable families
- Old age pension to all above 60 years of age in urban areas.
- Support for income generating activities given to an additional family member for families with older members in a rural setting.
- Repayment of outstanding debts on lost assets (as a grant).

Some of these best practices have been mainstreamed in subsequent BOT projects managed by the state.

1.5 GUJARAT ROAD SECTOR – KEY DRIVERS OF REFORM

There were three main drivers of reforms in the Gujarat Road Sector: *vision, necessity, and exposure to international best practices.*

The Vision originated at the highest political level and it was embedded first in Gujarat Road Development Plan, 1981-2001, and later in Gujarat Infrastructure Agenda: Vision 2010.

GOG prepared a state-specific road development master plan (Gujarat Road Development Plan, 1981-2001), part of which was funded with the World Bank assistance. The first World Bank financed state-specific road sector operation in Gujarat was the Gujarat Rural Roads Project, which focused on the expansion and improvement of the village road network. In 1996, to better define and update the objectives of the Road Development Plan, GOG issued a cabinet-endorsed "State Road Policy" with key objectives of improved connectivity, efficient land transport system and use of improved technology in construction and maintenance. In 1999, the GOG took a more proactive approach to state development and made infrastructure development as its main thrust with the launch of its 'Gujarat Infrastructure Agenda: Vision 2010' document. It laid out a prioritized list of projects to attract private participation for infrastructure development in the state and identified the policy initiatives needed by the state to facilitate the same. This clearly articulated Vision gave a strong impetus to R&BD to review the way it was doing its business and initiate the necessary reforms to promote implementation of the Vision in the road sector.

Necessity arose because downsizing including a ban on further employment of labour was imposed on R&BD from 1986. The resulting shrinkage in the R&BD "force account" labour pool necessitated contracting out even some routine maintenance works. Notwithstanding occasional special GOG approval for some ad hoc recruitment of new engineers, this sustained GOG-wide process of downsizing induced more discipline and a culture of streamlined program administration in R & BD. On 26 January 2001, Gujarat's people, government and economy were also traumatically affected by a major earthquake disaster, involving (*inter alia*) widespread and costly damage to infrastructure and housing. The R&BD needed to play a major role in the GOG response, particularly in its key responsibilities for public housing and the state's road network. The urgent and daunting responsibilities then impinging on the R&BD (as well as other key GOG

agencies) again underscored the importance of modernization towards more efficient organizational arrangements, management and implementation.

Exposure to best practices was provided through the World Bank funded GSHP. The WB-funded project was prepared in parallel with the 1999 launch of the Gujarat Vision 2010 and provided a myriad of opportunities for the state to learn about international road sector experience (e.g., international construction methods and FIDIC contracts). The project design and strategy supported the newly-embarked Vision through promoting state-level reforms in the road infrastructure sector, improving strategic planning and maintenance effectiveness, mobilizing increased outlays for investment and maintenance of road infrastructure, and facilitating private sector involvement in engineering, construction and maintenance. Its design addressed a number of critical sector issues, such as: (i) strengthening the institutional capacity of the R&BD to better manage the State road network, (ii) improving the capacity and structural quality of key segments of the core state road network, and (iii) reducing the maintenance backlog.

1.6 GUJARAT ROAD SECTOR – POST REFORM

The reforms undertaken in the Gujarat road sector during the late 1990s-mid 2000s had a major impact on a number of critical areas, in particular, administrative costs, maintenance backlog, maintenance funding, and efficiency of service delivery.

Reduction in administrative costs. The share of administrative cost in the capital and maintenance budget was reduced by almost half - from 30% to 15.7% during 2000-2007.

Reduction in maintenance backlog. During 2000-2007, the maintenance backlog was reduced from 10,000 km at the baseline to 5,000 km, which was an impressive 50% reduction. That included over 1,800 km reduction contributed by the Bank-funded GSHP.

Significant Increase in Plan Budget Allocation. The Annual Plan Budget for the road sector (construction and maintenance) underwent a steady and significant growth from Rs. 130 Crores in 1995-96 to Rs. 1292 Crores in 2007-08. The increase has been sustained and even accelerated beyond 2007-08 and the plan allocation for road sector in 2010-11 was Rs. 2747 Crores. In relation to SDP (state Domestic Product) at constant prices, the road sector allocation increased from 0.3% of SDP in 1995-96 to 0.54% in 2002-03 growing further to 0.6% in 2005-06. The percentage allocation for roads in the overall annual plan in the state thus grew from 4.9% in 1995-96 to 8% in 2007-08 and 9.3% in 2008-09. Such significant increase in the financing share reflects the R & BD's ability to create the requisite credentials and trust with the Finance Department and corroborates the political commitment for the road sector.

Increase in maintenance funding. Investment in new roads increased 6 times compared to the pre-reform times. Funding for routine and periodic maintenance which typically receives less attention and support from politicians also increased, though to a less extent, but still doubled by 2008-09 compared to 1998-99. Comparative statistics on annual road maintenance expenditure in select states during 2001-2005 shows that Gujarat paid more attention to maintenance than any other state in India. It spent US\$884 per km, which is over 15 percent more than the second highest spending on maintenance by any Indian state (Kerala), and this

despite the fact that a higher percentage of Gujarat's roads were relatively new, when maintenance demands are normally at their lowest level.

Steady decline in staffing. It is noteworthy that the number of both professional workers and casual labourers in R & BD have steadily declined over years in spite of the network size and budget significantly growing. The casual labourers declined from 14,203 in 1988 to 10,621 in 2000 and further to 8,338 in 2010. Similarly the professional workers declined from 11,075 in 2004 to 10,250 in 2008 and further to 9,381 in 2010.

1.7 KEY ENABLING FACTORS FOR REFORM

1.7.1 Strong Political Will

Gujarat has been lucky to have reform-minded government exhibiting strong political will and clear vision of its ambitious goals for the development and prosperity of the State. The political commitment to implementation of the Infrastructure Vision is also demonstrated through (a) close politico-bureaucracy relationship and exemplary inter-departmental coordination (resulting in efficient project delivery in terms of minimal time and cost overrun and disputes); (b) creation of enabling legal environment, which included enactment of the Gujarat Infrastructure Development Act, 1999, and Toll Policy. Gujarat was the first state in India to have a law governing Build Own and Transfer (BOT) transactions and such other arrangements along with private participation in infrastructure projects.

1.7.2 Continuity of Leadership in the R&BD

Two important factors playing a key role in the successful reform of Gujarat R&BD were strong, leadership by a competent, committed technocrat at the top and depth and continuity of leadership through to the middle levels of management. First, R&BD was headed by a technical Principal Secretary, at least in part because there was widespread support among stakeholders for a technocrat as Principal Secretary of R&BD. A capable technocrat who has risen from the ranks "owns" his department and knows it inside out. He knows the persons surrounding him well, understands their strengths and weaknesses, and is in a good position to run the department and to transform it. Second, R&BD had continuity of leadership involving the same 'age-group' of officers for a considerable period of time in contrast to many road authorities in India.

1.7.3 Development of Supply-side Capacity through GSHP

GSHP helped contractors to develop and grow and fostered adoption of good international practices from elsewhere. The Contractors learned the merits of FIDIC contract conditions and thrived in an environment where transparency and integrity were valued and prompt contract payments were made. The three parties (Employer, Contractor, Engineer) interacted in good spirit. Packaging of works in variable sizes also helped developing industry capacity by providing opportunities to all categories of contractors, including local contractors, and enabling contractors to 'graduate' to larger contracts from satisfactory execution of smaller ones.

1.7.4 Opportunity for Setting Good Practice Examples through GSHP

The works executed under GSHP demonstrated the contemporary best practices and standards in the sector, resulting in raised public expectations. The public demanded that other departmental road works were carried out to the same standard. This promoted a positive and constructive work culture throughout R&BD.

1.7.5 Culture of Resolving Issues by Involving the Public

Gujarat has a long standing history of public participation in decision making. This culture permeates through all public service delivery organisations in the state.

1.7.6 E-Governance at State Level

Gujarat established a separate information technology division, under the General Administration Department. Subsequently, the government set up a separate Department of Science & Technology. The state's e-governance programme has implemented the Gujarat State Wide Area Network (GSWAN) which is thought to be the world's second-largest IP-based WAN connecting over 2800 government offices. Moreover, the IWDMS (as described earlier) has streamlined documentation in government offices. To the extent possible, files are electronic; transmission is instantaneous. This has helped to increase accountability and deter rent-seeking behaviour.

1.7.7 High Degree of awareness, training and innovative methods of Governance at state level

Recognizing that governance is only as good as the human resources employed, the GoG has institutionalized a Vibrant Governance (V-Governance) training initiative. The program aims to bring about an attitudinal change in the work culture and foster result-oriented governance in the state. The program is for all staff (at all levels) in all departments.

1.8 INTERNATIONAL EXPERIENCE AND ITS RELEVANCE IN THE CURRENT CONTEXT

The scope of this Study included comparison of the Gujarat reform experiences with relevant international examples of similar reform processes and their outcomes. The objective of this Chapter is to determine where the Gujarat highways sector stands in terms of institutional reform among other countries. In addition, it is intended to identify other possible initiatives that Gujarat may want to consider to become even more efficient.

The most relevant fields of road agency reform and modernization for these comparisons are:

- Promotion of integrated land transport strategy
- Performance measurement and management
- Road asset management
- Road safety reform.

While comparing the reform process in Gujarat road sector with international best practices, it became quite evident that Gujarat did well in formulating the Vision and Values and linking it with the Business Planning. The infrastructure vision was business driven and fully embedded in its political ambition, vision and culture and the business plan was well grounded in that long term vision. Nevertheless, in formulating the reform strategy and its implementation, Gujarat should have

perhaps focussed more on inter-modal integration and mode neutrality to promote an integrated land transport strategy rather than focussing so strongly on road based transport. The state is conscious of this shortcoming and the GIDB anchored Infrastructure Vision 2020 strives to deal with the port-road-rail interconnectivity aspect in a more strategic and comprehensive manner. In performance measurement and management, Gujarat is leading among the states of India. The R& BD's flagship GRMS and home grown initiative in developing an IT-based Monitoring and Evaluation System are testimonials to this performance measurement and management culture.

By comparison, the R&BD still needs to embrace performance / output based maintenance contracting in its way of business more extensively. On the road safety strategy front, the reforms were unfortunately subdued largely due to lack of political and bureaucratic championship. While the state boasts of one of the most modern accident and emergency response systems the upstream intervention measures of safety engineering, enforcement and awareness were not given due attention. Gujarat has a long way to develop a safe transport system comparable with the international best practices.

1.9 RECOMMENDATIONS

Gujarat's unique business culture, its investment climate and strategic geographical position are not replicable elsewhere. However, Gujarat's approach to a long-term-vision-based set of reforms, developing a business plan well grounded in that long term vision, and creating an enabling framework to deliver the business plan can be well replicated across boundaries to support more efficient and effective governance in the transport sector in other states and countries.

The pre-requisite for reforms is setting a **Long-Term Vision, to which the top leadership of the state—in both government and the private sector-- is committed and seriously determined to pursue.** The Vision Statement sets out the goals for the infrastructure and the service standards which a road agency aspires to achieve by a target year. The Vision Statement for the agency should be supportive of the broader strategic goals of the state or the country, consistent with its resource potentials, and reflect the ambition and priority of its primary clients. For Gujarat the seed for the Road Agency's Vision Statement was sown in people's aspiration expressed through the Chief Minister's vision that it should be possible to travel by road between any two locations within the state in six to seven hours. This was interpreted as a goal to provide a robust highway network in the state where average travel speeds of at least 80km/h could be maintained.

A **Business Plan** needs to be developed to implement the Vision. The Business Plan would depend on the specifics of individual cases and the aspirations of the state as set out in the Vision Statement. At a minimum, the business plan should include (i) the policy framework, including identification of existing legal authorities and any necessary legal and regulatory developments, (ii) organisational changes, with a clear delineation of the new structures, (iii) physical work plan, and (iv) associated budget requirements. The Business Plan cannot be implemented by PWDs/R&BDs in isolation. The "Team Gujarat" aspirations have typically been supported by an MoU across the various governmental stakeholders (e.g. road department, revenue department, forest department, utility agencies and finance department) for each project which sets forth realistic work plan targets for each of the parties. Ideally, the Business Plan should be agreed at the highest level of the Government and involve all the key government stakeholders, e.g. Ministry / Department of

Finance, Home Affairs (Police), Traffic, Revenue, Forests, Environment, and Social Affairs.

Strategic Collaboration on Budgetary Programming. Close and systematic interactions between the roads agency and the central agencies of government responsible for economic planning and financial management (e.g., the Finance Department) can build mutual confidence in medium-to-longer term budget planning, particularly when the roads agency shows that it has the data, tools and skills to readily demonstrate sound 'service delivery', administrative transparency, effectiveness in management, and capacity to absorb more significant budget allocations efficiently and with low operational risk factors. This was amply demonstrated in Gujarat's case through the quantum leap in the road sector budget allocation and utilisation thereof during 1995-2005 and onwards—and the commensurate leap in physical works accomplished.

Partnership with the Supply Side. A liaison with the contracting industry through their authorised forums/associations to understand and address their concerns in advance can be most beneficial. Regular interaction with the prospective bidders from the stage when the technical parameters of the project are under finalisation and thereafter when the draft tender documents are under preparation (without in any way sharing the financial aspects of the project), can go a long way in minimising anomalies in the technical provisions of the project and in the tender documents. Moreover, the culture of true partnership among all the contractual parties and across-the-table-resolution of disputes, as amply demonstrated in Gujarat, goes a long way in helping to ensure smooth and efficient project delivery.

Governance and Accountability, respecting the rule of law. It is well known that good governance is a precursor for economic growth, which is amply demonstrated in the case of Gujarat. Strong and transparent institutions, policies, procedures and human resources are crucial ingredients for sustained growth. With specific reference to the road sector, some of the key governance challenges across the country and how the initiatives in Gujarat can help address these are now considered.

- **Avoiding project delays and rent seeking behaviour.** Avoidable delays to road projects arise when government agencies fail to cooperate. Much too often, each agency sticks rigidly to its own set of rules. Unfortunately, the potential to withhold supervisory approvals to impose costly delays on contractors also creates a serious moral hazard, particularly where the bureaucratic cadres responsible for supervising works and enforcing the multiplicity of regulations are poorly paid relative to the earnings of their counterparts in private employment, as in many states in India (and other countries). Use of this leverage to obtain financial payoffs or other favours (such as educational support for dependents of supervisory staff) is often too great a temptation, with not infrequent disruptions to work progress where contractors are reluctant to comply. Such practices have been a common albatross about the throat of PWDs, other infrastructure authorities, and their contractors, throughout the various states of India for very many years. The interest of the project is sacrificed, ostensibly on the altar of bureaucratic procedures, but the real issue is often the rent-seeking behaviour of the responsible supervisory staff.
- These practices have been mitigated in Gujarat, first, by the **demonstrated commitment from the highest state leaders** to the problem-solving attitudes of the "Team Gujarat" culture, carried down

through the ranks of government staff, and extending across to the partnership with contractors. The system is in place to identify, prevent, and reduce or eliminate avoidable delays through timely dialogue and agreed procedures.

- Adherence to this 'can do' culture has been strongly supported by the **introduction of key instruments of modern management that provide the essential mechanisms for accountability and control**. Well designed e-governance systems for procurement, including the Integrated Workflow and Document Management System, provide accessible, transparent information on the state of progress, and enable quick pinpointing of any sources of delay. Similarly, the e-Dhara initiative, aimed at complete computerization of land records across the state, is eliminating the bureaucratic and cumbersome process of manual record-keeping, ensuring greater transparency, minimal errors, reduced chances of fraud, and also helping to ensure that R&R benefits and payments are received by the actually entitled beneficiaries. Inter-departmental peer reviews, enhanced disclosure of information (as in the portal of GoG's Home Department) and facilitation of citizen inputs in the government's functioning as practiced in Gujarat can be replicated in other states to support better monitoring, public scrutiny and participation. The SWAGAT online initiative in handling complaints is also instructive to other states (although most states have some variation of this already in place).

Balancing HRD and stability in HRM. While there is a certain value of Vision-based HRD and training strategies in the professional and technical development of roads agency staff, this needs to be taken up in a context of policy-based staffing stability. As evidenced by Gujarat, at all major staff levels, stability in staff tenure in their respective positions is vital for improving the roads agency's capabilities over time. The GOG policy of generally limiting HR movements across professional, technical and administrative positions to a three-year minimum cycle is a positive HRM factor worthy of emulation in other Indian states.

1 INTRODUCTION

1.1 BACKGROUND

Gujarat is an industrially advanced state in India and is considered to be both a high growth state and a leader in pursuing economic reforms. The state's GDP grew at 10.2 per cent per annum in the plan period 2002–2007 and the Planning Commission set it a target of reaching 11.2 per cent in the current plan period. Gujarat has been quite effective in pursuing economic reforms across many sectors: power reforms, fiscal reforms, some limited but notable education reforms, and private sector participation in infrastructural development particularly ports and roads.

Over the past decade the state has made significant investments in road infrastructure and developed a good road network providing fast and efficient travel across most of the state, with connections to almost all villages mostly via all-weather roads. The current plan road network size of 74,111 km is among the highest in terms of network density per sq.km in India's states and is among the best managed network among all the Indian states. The annual road sector allocation has grown from USD 30 million in 1995-1996 to an impressive USD 610 million in 2010-11, currently the second largest among all Indian states. Stakeholders — road users, commercial and industrial concerns, and road construction industry— express a high level of satisfaction with the road network and the way in which it is managed by the Roads and Buildings Department (R&BD).

The World Bank financed the Gujarat State Highway Project (GSHP) which was successfully completed in 2007. The Project Development Objective was to enhance the capacity of the Government of Gujarat (GOG) for effective and efficient planning and management of road infrastructure, while concurrently maximizing existing road infrastructure asset utilization through priority investments and increased maintenance funding. The Project not only achieved its objective and targets, but also was implemented with a significant cost reduction (about 23%).¹ The GSHP resulted in a reduction in the backlog of major maintenance and an improved network to meet rapidly growing transport demand. The project had the unique distinction of no time and cost overrun for individual contracts and virtually no contract disputes, a rarity among the highway development projects in India. The project also set best practices in developing and managing a very comprehensive asset management system, state of the art quality assurance framework and a very comprehensive training and capacity building program.

The Implementation Completion Report (ICR) for GSHP identified several internal factors, in particular, organizational reforms that took place during the preparation and implementation of the subject project. As a result of these reforms and institutional development, the Roads & Building Department significantly transformed its roads sector functions from the traditional Public Works Department (PWD) orientation of focusing on execution of civil works towards that of a modernized road agency focusing on road network management, planning

¹ As determined by a comparison of per-km project cost at appraisal with that at completion.

and policy. It was a major innovation in the PWD context in India, and has had strong implications for good governance in the highway sector.

There is considerable interest among the road sector professionals in the India to learn more about the Gujarat road sector reform story. This study attempts to unravel the Gujarat road sector reform story and explores whether and how such reforms can be replicated across other Indian states and even in other countries in the region.

1.2 THE STUDY OBJECTIVE

The ICR for the GSHP has clearly brought out that institutional and organizational reforms during mid 1990s to mid 2000s converted a conventional PWD-style Roads and Building Department (R & BD) in Gujarat executing civil works, into a more modern road agency with enhanced focus on road network management, planning and policy. It was a major innovation in the context of how the road agencies in India are managed and has had strong significance for good governance in the highway sector. This is a strategic change that other Indian states and other countries in the region have expressed interest in and may wish to emulate.

To assist such change, the World Bank has initiated this study to identify factors underpinning the success of the institutional reforms undertaken by Gujarat R&BD and how such conditions could be replicated across other Indian states and countries in the region. The terms of reference are found in the Appendix 1 are summarised as follows:

- Review of institutional reforms in the highway sector in Gujarat and compare the achievements and failures with other lead highway agencies across the World, as applicable;
- Identify the critical policy, regulatory, institutional factors which facilitated and enabled the reforms;
- Analyze what did and did not work and identify the opportunities and constraints;
- Recommend whether and how such reforms can be replicated across other Indian states and other countries in the region

The study aimed to analyze these issues in a systematic manner starting with understanding the state context, analysing the pre- and post-reform situation in the Gujarat road sector, the key drivers and the enabling factors for such reform, comparing with international best practices and exploring the possible replication of such reforms in other Indian states and countries in the region. This study was funded by the Transport Research Program, which is a four-year program designed to support Transport research work at the World Bank and financed by the UK Department for International Development (DFID).

1.3 TARGET AUDIENCE

The target audience for this study is the national and state road agencies across India and in the South Asia region. The policy research community and academia associated with transport sector might also find the study findings and recommendations valuable. It is also expected that this study will be extensively used for internal learning within the Bank.

2 THE STATE CONTEXT

Gujarat has long been a prosperous state with a high level of industrialization. It has a progressive government that actively seeks private investment, worldwide. (See the Appendix 4).

As a proportion of India's output Gujarat accounts for:

- 39% of industrial output
- 10% of mineral production
- 25% of its textile production
- 40% of pharmaceutical products
- 67% of petrochemical production, and
- 20% of exports.

With only 5% of India's total population and 6% of India's total geographical area, this is indeed a commendable achievement for Gujarat. Gujarat has enjoyed high sustained economic growth averaging 9.2% pa in real terms from 1999-00 to 2006-07 and 10.2% per annum during 2002-07.

Firstly, Gujarat is blessed with advantageous initial structural conditions: a strong industrial base, private sector interest, and basic state capabilities, which are crucial to the trajectory of reform. The state also has the geographical advantage of a 1,600 km long coast line and its unique situation halfway in the transport corridors linking the two prime growth centers in the country, Mumbai and Delhi.

Second, two primary variables, working in a complementary tandem are the principal levers of reform success. Strong state policy capacity and leadership, and private sector incorporation into the policy process played a major role. Successive Chief Ministers and heads of crucial departments such as industry and finance played crucial leadership roles. Particularly noteworthy was their ability to see and respond to the problems of the long term and vision. Yet institutional variables of monitoring and feedback mechanisms (for example, the creation of overlapping institutions) ensured that a large sprawling bureaucracy worked effectively across diverse policy domains (for example, privatization, ports, power, and education).

Third, the private sector pressure, both implicit and explicit, played crucial roles in shaping up the reforms. The state development policies implemented in Gujarat, since the mid-1990s, have been closely attuned to the requirements of capital and the possible role of private sector in major road infrastructure development in a way that may be unimaginable in most other Indian states. Gujarat is fortuitous in benefiting from strong path dependence and historical experiences of reform, for example, the joint sector idea that allows it to implement the current model of private sector participation much more easily and without much conflict. Economic reforms gave a renewed legitimacy to such interactions and imperatives. Many policies—port and privatization especially—were shaped and energized by private sector needs and initiatives.

Fourth, Gujarat has converted a crisis into an opportunity. The state faced an acute fiscal crisis in the early 1990s and major economic difficulties in 2001, following the Bhuj earthquake. However, Gujarat turned the crisis to its advantage by streamlining and modernizing the state's administration and strengthening state-level governance mechanisms, which played a key role in eventually accelerating the pace of growth in the state.

In development of infrastructure, Gujarat has taken a proactive approach to state development. In 1999 it announced 'Gujarat Infrastructure Agenda: Vision 2010'. Gujarat remains proactive in seeking development, as evidenced by the 2009 'Vibrant Gujarat Global Investors' Summit'. To attract investment, the Chief Minister has stated his commitment to undertake the public investments needed to support private investment. Gujarat has the highest geographical area (27,125 hectares) designated for Special Economic Zones (SEZs) and claims to be the first state to formulate an SEZ policy, which includes flexible labour laws and exit options for investors.

To exploit its geographical advantage, the importance of good roads is recognized and there is political will to develop Gujarat's roads and keep them in good condition to attract investment. Road works included in the state budget under the head 'Pragati Path' and 'Vikas Path' are evidence of political will. These corridors are being developed by the Government from its own resources to ensure good road connectivity of adequate capacity from one corner of the state to the other (around 500 km) in six to seven hours, as promised by the Chief Minister several years ago (A more detailed account of road development can be found in the Appendix 5).

3 GUJARAT ROAD SECTOR PRE-REFORM DAYS

3.1 CURRENT SITUATION: ROAD NETWORK IN GUJARAT

Gujarat has one of the most extensive and traffic intensive road networks in the country. The road (plan roads only) density in the state stands at around 38 km per 100 sq km and 146 km per 100,000 persons. These figures are broadly comparable to 43 km and 126 km for India. However, it needs to be realized that approximately 91% of Gujarat's roads are paved which is significantly more than the country's average and significantly higher than in other advanced states, e.g., Andhra Pradesh, Karnataka and Punjab (Table 1).

Table 1: Road Network in Gujarat and Other Comparative States

TABLE 1: ROAD NETWORK IN GUJARAT AND OTHER COMPARATIVE STATES

States	Population ²	Road Network ³ , km	Paved Roads, km	Paved Roads, %	Highway network (NH+SH)
Gujarat	50,596,992	137,617	124,295	90%	21,624
Andhra Pradesh	75,727,541	195,188	118,983	61%	12,239
Bihar	82,878,796	75,776	32,139	42%	7,594
Karnataka	52,733,958	148,350	101,120	68%	13,399
Kerala	31,838,619	150,851	50,164	33%	5,289
Orissa	36,706,920	237,034	52,245	22%	7,351
Punjab	24,289,296	70,163	56,857	81%	3,719
Tamil Nadu	62,110,839	164,514	124,344	76%	10,936
Uttar Pradesh	166,052,859	243,673	161,851	66%	14,040
West Bengal	80,221,171	91,761	49,255	54%	5,484
India Total	1,094,583,040	2,430,343	1,405,100	58%	195,823

² As of India Census of 2001. Source: <http://www.indiastat.com>

³ It includes NHs, SHs, major and other district roads, municipal roads, rural roads, forest roads and other minor roads. Source: <http://www.indiastat.com>,

TABLE 2: ROAD NETWORK UNDER R&BD, KM

Category of road	Multilane	Standard Double-lane	Single-lane	Total
National Highway (NHs)	1012	1930	287	3229
State Highways (SH)	962	6521	11073	18556
Major District Roads (MDRs)	9	554	20078	20641
Other District Roads (ODRs)	0	59	10434	10493
Village Roads (VRs)	20	32	21067	21119
Total	2003	9096	62939	74038

Source: R&BD.

At present, the R&BD is in charge of around 74,000 km of roads (**Error! Reference source not found.**), including a large number of bridges and besides its responsibilities for public buildings in the state. National Highways (NHs) are owned and financed by the Government of India's Ministry of Shipping, Road Transport & Highways (MoRTH), and the R&BD supervises works executed on NHs on behalf of MoRTH. All other categories of roads in the state are owned and financed by the GOG, albeit with external funding assistance in some cases (e.g., in the case of PMGSY funding for rural road improvements).

3.2 BEFORE THE REFORM

Gujarat's Road Network in 1990s

In mid 1980s Gujarat's road infrastructure consisted of 1,570 km of NHs, 19,655 km of SHs, 20,364 km of Major District Roads (MDR), 10,355 km of Other District Roads (ODR), and 18,665 km of Village Roads (VR). During the last 15 years, the State road network expanded in length from around 50,000 km to about 74,000 km and the paved part increased from about 66% to 91% of the total length. However, most growth in the length of the State road network occurred on the VR category, which carried a very small percentage (less than 10%) of the State road traffic. Due to the high growth in vehicle ownership in Gujarat (14% per year growth during the last 15 years), motor vehicle density per 100 km of paved road was 44% above the National average.

TABLE 2: LENGTH OF GUJARAT R&BD'S ROAD NETWORK, BEFORE AND AFTER THE REFORM

Category of road	1998-99	2008-09	Change, %
NHs	1,570	3,229	106%
SHs	19,655	18,556	-6%
MDRs	20,364	20,641	1%
ODRs	10,355	10,493	1%
VRs	18,665	21,119	13%
Total	70,609	74,038	5%

3.3 R&BD'S ORGANIZATIONAL STRUCTURE

After establishment of the State of Gujarat in 1960, the Public Works Department (PWD) was responsible for planning, construction and maintenance of public infrastructure assets including buildings, roads, bridges, dams, irrigation canals, water and sewerage system. Later, the PWD was split into three departments, namely Buildings and Communication Department, Irrigation Department, and Water Supply and Sewerage department. From January 01, 1984 the name of Buildings and Communication Department was changed to Roads and Buildings Department (R&BD).

In the 1990s the structure of the R&BD was similar to that of other Public Works Departments (PWD) in India and it was responsible for the operation and maintenance of all State-owned roads and buildings. It had an agency agreement with the (then) Ministry of Surface Transport (MOST) for the maintenance of NHs in Gujarat. The departmental structure consisted of seven major units: Roads and Buildings (State), National Highways, Capital Projects & Arbitration, Expressways, Roads and Buildings (Rural), Quality Control and Engineering Staff Training College. It employed about 31,000 people, of which about 11,000 were staff and about 20,000 were laborers. While some works were contracted out to the private sector, a considerable proportion of the civil works under R&BD charge were executed using the force account.

3.4 KEY SECTORAL ISSUES

Before the reforms, R&BD saw itself as the arm of government that directly maintained and developed the state road network to the best of its ability using the funds and human resources made available to it. Since funds were not enough to provide quality roads over all the state, money was allocated to roads where the need was most pressing or political pressure was high. In such circumstances allocating funds based on scientific (systematic, rationally-based) planning seemed superfluous. In such a setting, asset preservation, particularly timely maintenance of pavements and drains, took a back seat to road network improvements that win public support. Lack of spending on maintenance resulted in some road assets being lost, necessitating expensive reconstruction of pavements.

4 KEY INSTITUTIONAL REFORMS IN THE ROAD SECTOR

4.1 DRIVERS OF REFORMS

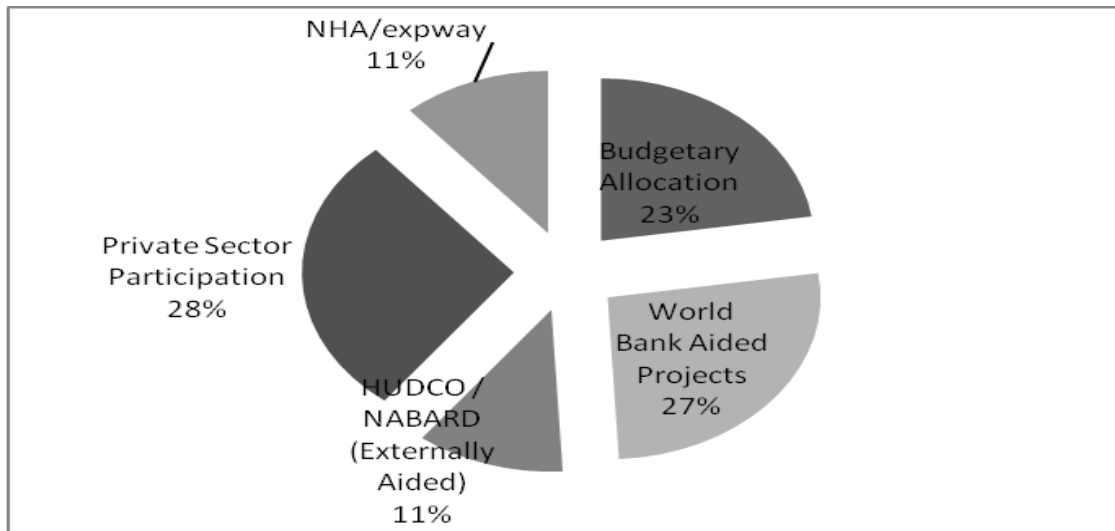
There were three main drivers of reforms in the Gujarat Road Sector: *vision, necessity, and exposure to international best practices*. The *Vision* originated at the highest political level and it was embedded first in Gujarat Road Development Plan, 1981-2001, and later in Gujarat Infrastructure Agenda: Vision 2010. *Necessity* arose because downsizing including a ban on further employment of labour was imposed on R&BD from 1986. *Exposure to methods used elsewhere* was provided through the World Bank funded GSHP.

4.1.1 VISION

Gujarat Road Development Plan, 1981-2001. GOG prepared a State-specific road development master plan (Gujarat Road Development Plan, 1981-2001), part of which was funded with the World Bank assistance. The first World Bank financed State-specific road sector operation in Gujarat was the Gujarat Rural Roads Project, which focused on the expansion and improvement of the village road network. In 1996, to better define and update the objectives of the Road Development Plan, GOG issued a cabinet-endorsed "State Road Policy" which declared the following objectives: (a) provide connectivity to all villages by all weather roads; (b) provide an adequate and efficient road system encompassing all transportation needs to ensure smooth and uninterrupted flow for intra and inter-State goods and passenger traffic; (c) upgrade technology by introducing superior and quicker construction and maintenance methods; (d) induct more scientific principles in resource allocation for maintenance and new construction programs; and (e) set high standards of road safety and travel comfort. To help achieve the above objectives, GOG also significantly increased the allocations for the road sector during the ninth State Plan (1997-2001) compared to the eighth Plan.

Gujarat Infrastructure Agenda: Vision 2010. In 1999, the GOG took a more proactive approach to state development and made infrastructure development as its main thrust with the launch of its 'Gujarat Infrastructure Agenda: Vision 2010' document. It laid out a prioritized list of projects to attract private participation for infrastructure development in the state and identified the policy initiatives needed by the state to facilitate the same. The entire plan encompassed 383 projects in sectors as diverse as: power, ports, industrial parks, roads, railways, water supply & sanitation, urban transport, airport, gas grid, information infrastructure etc. The overall investment plan was estimated at about US\$29 billion (Rs. 116993 Crore), with 17 percent (US\$4.6 billion) planned for the road sector. The plan not only highlighted the funding requirements but also identified potential sources of funding (see **Error! Reference source not found.** for the road sector). This clearly articulated Vision gave a strong impetus to R&BD to review the way it was doing its business and initiate the necessary reforms to promote implementation of the Vision in the road sector.

FIGURE 1: SOURCES OF FUNDING FOR THE INVESTMENT PLAN OF THE ROAD SECTOR – VISION-2010



Source: http://www.gsrdc.com/vision_2010.htm

4.1.2 NECESSITY

The national policy of economic reform in 1991 unleashed tectonic shifts in all states, arising out of the larger national/global context, as well as local/regional developments, and generating fascinating changes both in policies and in the institutional structures underlying developmental strategies. In the early 1990s, as path-breaking economic reforms were being initiated at the national level, the GOG was faced with a state-level fiscal crisis, with significant fiscal deficits over 1996-2001 and growing revenue imbalance. Moreover, the dismantling of the previous long-standing national policy framework for public finance and for infrastructure development raised new challenges for the states, including Gujarat. As the traditional national policies of licensing and financing were vanishing, the state agencies' relevance and role in mediating central rules and regulation faced a challenge. Public finance and governance reforms had increasingly become an imperative for the state, affecting all major sectors.

Downsizing was imposed on R&BD already in 1986, as well as a ban on further employment of labour. The resulting shrinkage in the R&BD "force account" labour pool necessitated contracting out even some routine maintenance works. Notwithstanding occasional special GOG approval for some ad hoc recruitment of new engineers, this sustained GOG-wide process of downsizing had however induced more discipline and a culture of streamlined program administration in R & BD.

In 2001, Gujarat's people, government and economy were also traumatically affected by a major earthquake disaster, involving (inter alia) widespread and costly damage to infrastructure and housing. In acknowledgement of the huge social and economic burdens the state then had to bear, significant national and international assistance was provided both for emergency assistance and for rehabilitation measures in key sectors. The R&BD needed to play a major role in the GOG response, particularly in its key responsibilities for public housing and the state's road network. The urgent and daunting responsibilities then impinging on

the R&BD (as well as other key GOG agencies) again underscored the importance of modernization towards more efficient organizational arrangements, management and implementation, technical capacity, systems and processes, and heightened R&BD and GOG interest in innovation in the planning, executing and financing aspects of public infrastructure provision in future.

In effect, the stimulus of necessity (via fiscal constraints, humanitarian disaster and economic crisis) triggered important and crucial innovations and interventions in Gujarat, particularly in the roads sector.

4.1.3 EXPOSURE TO INTERNATIONAL BEST PRACTICES

World Bank Gujarat State Highway Project (GSHP). The WB-funded project was initiated on time with the launch of the Gujarat Vision 2010 and provided a myriad of opportunities for the state to learn about international road sector experience (e.g., international construction methods and FIDIC contracts). The preparation of the project started in late 1990s and became effective in 2000. The World Bank was in a unique position to respond to the opportunities and challenges faced by Gujarat by providing the critical long-term capital needed to support infrastructure development for accelerated economic growth, using its lending and advisory capabilities to leverage the institutional and policy reform process, and ensuring that social and environmental concerns would be fully reflected in project design and implementation.

The project design and strategy supported the newly-embarked Vision through promoting State-level reforms in the road infrastructure sector, improving strategic planning and maintenance effectiveness, mobilizing increased outlays for investment and maintenance of road infrastructure, and facilitating private sector involvement in engineering, construction and maintenance. Its design addressed a number of critical sector issues, such as: (i) strengthening the institutional capacity of the R&BD to better manage the State road network, through, (ii) improving the capacity and structural quality of key segments of the core state road network, and (iii) reducing the maintenance backlog.

The World Bank-funded GSHP supported (i) the carrying out of an institutional development study (IDS) of the state's roads sector and of the R&BD in that context, and (ii) the implementation of the resulting institutional strengthening action plan. The objective of the IDS was to establish the basis for strategic measures to sustainably improve the capacities available to GOG for effective future management of road infrastructure in Gujarat and in that context, to strengthen R&BD capabilities in the following fields and activities:

- a. road planning and investment selection based on user requirements, road transportation network factors, and sound economic considerations;
- b. planning, implementation, and management of road construction programs;
- c. development and management of efficient, cost-effective, and rationally-determined road network maintenance programs;
- d. generation of increased, dedicated, and sustained levels of funds for on-going road network maintenance needs and planned road investment requirements;

- e. effective use of private sector resources in the engineering and execution of Gujarat's road projects/programs; and
- f. consultation with the main road user stakeholders in Gujarat in the planning of road network developments, and investments for improved road transport.

Based on the results of the IDS, GOG formulated the Institutional Strengthening Action Plan (ISAP), which was a blueprint for the first major stage of modernizing the R&BD and directing its attention towards road management, planning and policy. The ISAP target areas included reduction of staff to objectively essential levels, preparation of annual performance reports and business plans, and the setting up of the Policy & Planning (P&P) Unit, the Highway Design Unit (HDU), as well as the Environmental Management Unit for more effective compliance with social and environmental safeguards. The project-supported ISAP also included progressive computerization of the R&BD, appointment of a dedicated Law Officer to the R&BD, enhancement of the Department's human resource development/training policy, program and facilities. Appendix 2 contains an overview of the GSHP's institutional work and its achievements.

4.2 KEY REFORMS ACHIEVED DURING 1997-2007

4.2.1 MOVE FROM "PROVIDER" TO "MANAGER" OF ROAD INFRASTRUCTURE

The major reform which affected the way doing business in R&BD was the move from the role of "provider" to "manager" of road infrastructure. It enabled R&BD to embrace a 'whole-of-network' approach to planning and managing the road network development and maintenance, and to take a more integrated approach in the budgeting and funding processes for different road categories in the State, previously managed separately. As part of this reform, the following actions were undertaken.

Creation of a Policy & Planning Unit. The GOG's 'road asset management' and 'governance' capacities were substantially improved through the Policy and Planning initiative. The Policy & Planning Unit (PPU) set up in the R&BD was assigned a responsibility to prepare annual budget plans for the department by using a computer-based Gujarat Road Management System (GRMS). That was quite a noteworthy achievement for effective and efficient road planning and management, compared to the past practice by which all the budget plans were prepared manually, with lack of data support or thorough analysis. It is central to the change of focus from execution of civil works to planning and managing the network. The PPU brings a scientific approach to road management by means of the GRMS: the process of budget allocation changed from a need-based (focused on network improvement) to a more scientific planning (focused on asset preservation) approach. It is also assigned some of the more intellectual tasks such as producing the R&BD's Annual Reports (since 2005) and articulating the Department's mission statements. The Chief Engineer (CE) position heading the PPU also carries 'lead' responsibility for the Human Resources Development (HRD) function in R&BD.

Use of Gujarat Road Management System. Now operational for approximately 20,000 km of the state's highest priority major roads, the GRMS has helped the R&BD address maintenance funding issues which are typically difficult for most of road agencies in the developing countries (or PWDs in India) and has facilitated a more effective dialogue with the Finance Department about maintenance funding.

Provided there is adequate up-to-date road network data collection and entry, it can provide a systematic and scientific determination of budget needs (for both maintenance and road improvements). Maintaining assets does not have the appeal and high profile of creating assets. Maintenance is often neglected and in the case of road pavements the lack of timely maintenance can lead to costly remedies being needed in very few years. Lack of timely maintenance not only increases the road agency's costs in the long run, it also increases road user's costs, principally due to the effect of road roughness on travel time and vehicle operation cost. As R&BD was unable in the past to demonstrate the cost impact of maintenance backlog in the longer run and quantify the costs borne by road users it has previously been difficult to convince the Finance Department of the level of funding needed for timely maintenance. Using GRMS, R&BD can demonstrate the need for, and economic benefit of, its proposed program of maintenance in relation to roads covered by the GRMS data.

GRMS comprises nine modules of which the core is the Pavement Management System. This optimises periodic maintenance by minimising the sum of road agency and road user costs using HDM-4.⁴ A Routine Maintenance Management System and a Bridge Management System are used to complete the asset management picture. Together these three modules feed into the Budgeting and Programming System to produce a proposed programme of works for the coming year. Supporting modules providing input data to the above are the Road Information System, the Traffic Information System and the Accident Information System. GRMS can also be effectively used for feasibility studies of road improvement projects. (Appendix 3 provides more details on GRMS).

R&BD's Governance Initiatives. Since 2005-2006 the Department has been committed to governance-oriented activities such as preparation of annual R&BD-specific business plans, agency-level performance evaluation and annual reporting, which are in place and on-going. In line with other major GOG agencies, the R&BD has also long recognized the importance of transparency of information and has a website (<http://www.rmbgujarat.org>) with basic information about the department, its organizational structure and functions, its vision for 2010, the quality control provisions and vigilance structure, achievements, budget, toll policy, contractor registration requirements and details of projects being developed. Under India's Right to Information Act (RTIA 2005), R&BD public information officers have been duly appointed and trained in implementation of the Act. There are also some notable individual initiatives for facilitating retrieval of information for better project management, reporting and decision-making. One such initiative is a web-based system for project management, being rolled out to the entire department over mid- 2010. This database is being populated with data on all R&BD projects and will facilitate the divisions in compiling their monthly reports on projects faster.

Enhancement of Quality Control. A separate unit on Quality Control (QC) under a dedicated Chief Engineer of the R&BD has, since 2003, looked after quality of works, as well as (in more recent times) related issues such as construction safety and child labor. In this regard, while there were capacity constraints up until 2005, the situation seems much better now in terms of adequacy of staff and vehicles for

⁴ HDM-4 (Highway Development and Management Model, version 4) is a computerized system using data on pavement structure and condition, road geometry, traffic counts, heavy vehicle axle loads, vehicle operating costs, and road construction and maintenance costs to optimize road expenditures for, typically, a period of 20 years.

inspection. The divisional engineers routinely inspect at least 25 random works per month and record their observations in an elaborate format. In addition to these routine inspections, the QC wing also investigates cases referred to it by the Gujarat Vigilance Commissioner (GVC) or by the committee of chief engineers. For testing purposes, the unit can avail of empanelled laboratories including those of Gujarat Engineering Research Institute (GERI)⁵, local engineering schools and some private organizations. Since 2006 the GOG has supported a better resourced and more advanced quality control framework and mechanisms centered on GERI and its field units, which has helped to improve the overall quality assurance culture in the state and helped to further raise public confidence in road construction quality in the state. In addition, GERI conducts all types of quality related training in Gandhinagar in conjunction with the Staff Training College (STC) - jointly run by R&DB and the Irrigation Department – both on GERI premises and at the STC site. The GERI training programs include e-governance and e-management of works. The training programs and the advanced nature of the equipment at GERI for conducting all types of tests for road quality – including mobile testing units, IT based test instruments and equipment and (most recently) IT-based centralized analysis and compilation of field test data – have fostered a stronger quality assurance culture and expectations in the state.

4.2.2 SEPARATION OF CERTAIN FUNCTIONS FROM R&BD

In parallel with the Bank-funded GSHP, the GOG took an early action to set up the Gujarat Infrastructure Development Board (GIDB) to streamline clearance of infrastructure projects implemented under PPP, as well as the Gujarat State Roads Development Corporation (GSRDC) and various special-purpose toll road development and management bodies.

The *Gujarat Infrastructure Development Board* (GIDB) was established in 1995 as a registered society and in 1999 it was given a statutory status by the Gujarat Infrastructure Development Act 1999 (GID Act). The objective was to facilitate a higher flow of private sector funds to infrastructure development and to ensure coordination among various government agencies in the facilitation of new infrastructure projects chaired by the Chief Minister, it is the main private sector participation (PSP) facilitator in Gujarat.

GIDB itself does not develop infrastructure but acts as a catalyst for infrastructure development and focuses on:

- overall planning of infrastructure projects and preparing the framework for execution;
- preparing projects by conducting prefeasibility and feasibility studies using consultants;
- preparing concession agreements which define risk-sharing in a public-private partnership;
- overseeing competitive bidding process;
- advising Departments on financial structuring;
- coordination between various sector specific departments;
- monitoring progress of projects; and
- building the capacity of Departments in the infrastructure sector and bringing in international experience and best practices.

⁵ An ISO 9001:2000 certified organization that has advanced equipment for conducting all road quality tests.

GIDB contributes to infrastructure policy making through interaction with stakeholders and drafting the policy measures for the State Government. Learning from international best practices, it has developed the capacity for conceptualizing, preparing and structuring infrastructure projects. Through close collaboration with Government Departments/Agencies, it makes the projects attractive for PSP. GIDB has not only given confidence to private investors but also facilitated substantial private investment in the State.

TABLE 3: GUJARAT'S PPP PROJECTS IN INFRASTRUCTURE, 1999-2008

Category of road	1998-99	2008-09	Change, %
NHs	1,570	3,229	106%
SHs	19,655	18,556	-6%
MDRs	20,364	20,641	1%
ODRs	10,355	10,493	1%
VRs	18,665	21,119	13%
Total	70,609	74,038	5%

Source: GIDB presentation, UNESCAP, Bangkok, February 2009

GIDB has adopted the Model Concession Agreement of the Planning Commission of the Government of India for road sector projects. It has a dedicated corpus to financially support the PPP projects. State government departments and agencies look to this fund for financial support of up to 20% of project costs where the private sector concessionaire is selected through competitive public bidding as prescribed by the GID Act and a concession agreement has been entered into. User charges at a defined tariff are a prerequisite. The executive Committee of GIDB approves and releases the funds.

The GID Act provides a legal framework and is the main law governing PSP and PPP. The preferred means of developer selection is competitive bidding but the Swiss Challenge⁶ approach may also be used if no subsidy is needed. An amendment to the Act in 2006 added an option of direct negotiation with prospective concessionaires.

Gujarat State Road Development Corporation Ltd. (GSRDC) was incorporated in 1999 as a limited company for development of road infrastructure on privatization/BOT basis. It is a wholly-owned government undertaking operating as an arm of R&BD and supported by R&BD staff. Chaired by the Minister of Roads and Buildings, its other members are: Principal Secretary, R&BD; Chief Executive Officer, GIDB; Joint Secretary/Financial Adviser, R&BD; and two representatives from the private sector. For better coordination a Chief Engineer of R&BD is posted as Managing Director on deputation to GSRDC. GSRDC's objectives are to:

⁶ A Swiss challenge is a form of public procurement when an unsolicited proposal is received. The bid is published and third parties are invited to better it. The entity that submitted the unsolicited proposal is then invited to match the best bid from the Swiss challenge process. If the entity does not match the best bid the GID Act requires that its costs in preparing the proposal are reimbursed.

- cater for development of bridges and roads.
- raise funds from banks, Institutions, mutual funds, individuals, etc.
- commercially develop and exploit land alongside the roads/bridges.
- draw up plans for project preparation and undertake feasibility studies.

In its early years GSRDC undertook many cost-benefit analyses without attracting interest from the private sector. Interest was generated by coupling project proposals with viability gap funding offered initially by the GIDB and from 2006, also by the GoI. The confidence level of the PPP entrepreneurs has progressively increased even as GSRDC has improved its project selection and packaging skills, with steadily positive results. The Corporation's success at attracting private sector investment is evidenced in Appendix 7.

GSRDC provides PPP bidders at least one month to prequalify and at least six months to bid. Bidders are given technical details such as the required cross-section, current traffic counts, and details of existing bridges and culverts. A minimum pavement thickness may be specified. Bidders must undertake all the necessary surveys themselves. The concession period and toll rates (escalated by the wholesale price index) are usually specified and the bid criterion is either a lump sum subsidy or the share of revenue paid to the government. Sometimes only toll rates are prescribed and the length of the concession period is the bid criterion.

For the PPP projects, GSRDC has been able to leverage the public financing in a smart manner. Under the Bank financed GSHP, the narrow and intermediate lane highway were upgraded to a full 2 lane highway and once the traffic further grew and the roads became viable under the BOT toll scheme, BOT projects were taken up.

Special purpose toll road development and management bodies. Gujarat Road and Infrastructure Company Ltd (GRICL) was incorporated in 1999 as Gujarat Toll Road Investment Company Ltd, for investment in two toll-road special purpose vehicles (SPVs), Vadodara-Halol Toll Road Ltd and Ahmedabad-Mehsana Toll Road Ltd. These SPVs were promoted by GoG and Infrastructure Leasing and Financial Services (IL&FS) on 30-year concessions and was a pioneering SPV based PPP effort among all states.

Work on the Vadodara-Halol (State Highway 87) road started in April 1999 and its widening of to a four-lane divided carriageway was completed in October 2000 (project length of 32 kms, cost of Rs. 168 Crores). Work on Ahmedabad-Mehsana (State Highway 41) road started in April 2000 and was completed in February 2003 (project length of 63 kms, cost of Rs. 308 Crores). Both these roads were widened to a four-lane divided carriageway with service roads on either side for most of their length.

However, initially traffic and toll revenues proved to be lower than expected and the two companies were unable to service their debts. In 2004 the debts were restructured and the companies were merged into GRICL. GoG took a 16% equity stake in GRICL. Toll collections have since improved and are better than the projections envisaged at the time of restructuring. Revenues increased 31% between fiscal years 2007 and 2008 after GRICL auctioned toll collection. Service roads were meant for local traffic and were not tolled. This led to a tendency where through traffic also started bypassing toll plazas by using the service roads at plaza locations. This loop hole has now been plugged by keeping a record of vehicles that

bypass two successive toll plazas. Such vehicles are required to pay the toll even though they used the service roads. Enforcement is by manual recording of licence plate numbers. This has helped to improve the toll revenues.

A policy framework is critical to address all toll-related issues such as whether there should be an alternative route that is not tolled, assurances regarding development of competing routes, toll plaza spacing, the basis for calculating tolls, relative toll levels by vehicle class, exempt vehicles, treatment of local traffic etc. BOT projects are usually based on the private investor collecting tolls and retaining all or part of the revenue. The government needs the power to charge tolls on public roads and also the power to delegate this power to private sector concessionaires, so that an authorised private entity can charge and recover tolls from the road users.

The power to collect tolls in Gujarat originates from the Bombay Motor Vehicles Tax Act 1958. In 2008 a new toll policy was released (see Box: Toll Policy) which was vetted at the highest level of the government.

BOX 1: TOLL POLICY

Government of Gujarat
Roads and Buildings Department
Resolution No. Toll Policy/G-19/10/2008/303796/Pvt
14/1, Sardar Bhavan, Sachivalaya, Gandhinagar
Date 25th August, 2008.

PREAMBLE

High growth trajectory of the state demands robust infrastructure support. Well laid out road network for last mile and seamless connectivity to Ports, SEZs, SIRs, APMCs, Tourism spots, Industries etc. constitutes robust road sector infrastructure. Provision of such a road network involves huge investment. Public private participation is required for bringing both, the investment and the expertise. The state government, in cognizance of this need, has decided to encourage PPP mode development in road sector. Enabling legislation is in place in the state. Gujarat Infrastructure Development and Bombay Motor Vehicle Act, 1958 empowers GOG to levy user charges (toll) and grant concession to private investors for collecting and retaining toll.

To facilitate clarity regarding toll rate, location of toll plaza, distance between two toll plaza, types of preferred road sections on which toll can be collected etc. and thereby also encourage private investor, need is perceived to lay down tolling principles through a policy document.

In considering of above, Government of Gujarat has formulated a Toll Policy as read below.

(1) Minimum facility configuration

Facilities created/improved with public private participation and having following configuration may be considered for tolling depending up to their techno-economic-socio feasibilities.

Roads having four and more than four lane with or without service road and of length not less than 10 continuous kilometres.

Roads having two lanes with paved shoulders and of length not less than 25 continuous kilometres.
Bypasses having minimum configuration of two lanes with paved shoulders.
Major bridges/road over bridges.

(2) Toll Rates

Toll rates shall be fixed on a case to case basis. Toll rates of Government of India may be considered applicable for the comparable facilities. For other facilities, toll rates may be decided on the basis of toll rate viability, uniformity of rate in the region and restricting recovery to the tune of 50% of the perceived users benefits. Toll rates may be revised periodically for increase in tariff. Government may give some relaxation to local traffic using portion of the project facility.

(3) Distance between two toll plazas

Preferable distance between two plazas may be 25 to 30 km. Distance may be adjusted on the basis of trip length characteristics of road users. The effort should be to keep the distance as much as possible between two to plazas. For the facilities serving special designated area of industries / economic activities. And also Government of Gujarat may decide for tolling on a case to case basis.

By order and in the name of Governor of Gujarat
(R.K.Chauhan)
Officer on Special Duty (SP)
Roads and Buildings Department

4.2.3 STRENGTHENING GOVERNANCE

Gujarat has been a pioneer in strengthening governmental policies, institutions and procedures for better governance. It has been increasingly using information and communication technologies to offer citizen based services to improve their accessibility, make them more transparent and reduce response time. Gujarat also ranks first in the country to have made E-Governance functional in all its municipalities and municipal Corporations.

One of these initiatives that will go a long way in reducing time and cost overruns in the highway sector is the e-Dhara initiative which is aimed at complete computerization of land records across the state, eliminating the bureaucratic and cumbersome process of manual record-keeping. This has ensured better transparency, minimal errors, reduced chances of fraud and made sure that R&R benefits and payments are received by the actual beneficiaries.

There is a centralized, functioning e-procurement system in the state. In accordance with the GOG e-procurement provisions, the R&BD uses e-procurement for all works valued more than Rs. 1 million (approximately \$25,000), irrespective of source of funding. According to the GVC, procurement-related complaints have decreased significantly with the advent of e-procurement.

Another measure of accountability in the government is the State-wide Attention on Grievances through Application of Technology (SWAGAT) Online project. Through a video-conference held on every fourth Thursday of the month in the presence of Chief Minister, all the department heads and district representatives, public grievances are addressed and suitable solutions are provided online immediately. The success rate for satisfactory resolution claimed for this system is extraordinary high (about 92%) since its implementation. Although the criterion for success is not entirely clear, SWAGAT is widely thought to provide an effective instrument for citizens to redress their grievances, while contributing to improvements in delivery of government services.

Further, Gujarat has the benefit of the GVC, patterned along the lines of the Central Vigilance Commission that has jurisdiction on complaints of fraud/corruption over all public servants in the state except for the Chief Minister and his/her cabinet. The GVC conducts preventive vigilance on about 100 random works (about 10% of all works) a year, with the help of GERI. On average, it receives about 400 complaints a year, (about 70% of which are worthy of further investigation), which mostly relate to sub-standard quality of works.

Gujarat has also implemented an Integrated Workflow and Document Management System (IWDMS) for automating the government functions and processes at all levels of the administrative hierarchy in all departments including the R&BD. It provides for better record-keeping, information retrieval and knowledge management and fosters a collaborative environment between government departments for faster decision-making. This is particularly useful in the R&BD context, for expediting pre-construction activities such as utility shifting, tree-cutting, for forest/environmental clearances for projects.

With effect from 01st May 2010, Gujarat has now also implemented an on-line mechanism for release of sanctioned funds right up to the level of the field officers, avoiding delays and difficulties in timely disbursement of Contractors bills and discharging other financial commitments.

The state has also set up a State Data Centre (GSDC) to serve as a central data repository of the State and provide secure data storage, online delivery of citizen information/services, intranet & disaster recovery services, and enable remote management etc. GSDC is intended to enable better operation & management control and minimize overall cost of data, IT resource management and deployment costs.

The online services of the R&B Department (via its portal, www.rnbgujarat.org) aim to bring the department closer to the citizens and to make the work and procedures of the Department speedy and transparent. It makes all the R&BD far more approachable and accessible; provides in-depth information about each office (over and beyond the RTIA requirements), and contact information of all officers.

4.2.4 SELECTIVITY IN NETWORK MANAGEMENT

Gujarat was one of the first states in India to develop a strategic or core road network by applying the 80/20 rule i.e. 80% of the traffic was carried by 20% of the road network and that part of the network should be prioritized for further development and asset management. The concept was first formulated in 2001, which was further crystallized under the Bank funded GSHP. Gujarat's flagship programs like Pragati Path, Vikash Path, Kisan Path and Pravasi Path have actually centred around the strategic road network concept and the state has been able to manage their investments better through the strategic road network approach.

Pragati Paths are roads connecting one corner of the state to another by adopting corridor improvement approach. Vikas Paths are road stretches passing through urban/semi-urban areas with divided carriageways, barriers in the median, footpaths, street lightings and proper covered drainage system. On both sides of roads, Kisan Paths are roads connecting villages to nearest agriculture produce markets and Pravasi Paths are roads connecting places of tourists' interest.

4.2.5 CREATION OF MORE CONDUCTIVE ENVIRONMENT FOR CONTRACTORS

In addition to creation of GIDB and GSRDC to facilitate public-private partnerships in road infrastructure financing/development (see above), GOG made a substantial effort to improve a dispute resolution system and inculcate a culture of cooperation among the three contractual parties.

Key changes/improvements in the dispute resolution system

Government of Gujarat operates Contracts on two types of formats. Where FIDIC document is used, the conscious efforts have been made to implement a dispute resolution clause in its letter and spirit. As a result issues are discussed in periodical (monthly) meetings of the three parties and solutions are sought before these are blown into full fledged disputes. Dispute avoidance rather than resolution is strongly encouraged. Thus very few disputes are referred to Dispute Review Boards (DRBs) in the first place. In case where these disputes are referred to DRBs, matters are largely settled at the DRB Recommendation level by discussions and negotiations across the table. This has inculcated a culture in the department which helped reducing the number of disputes even on works where FIDIC document is not used.

Key changes/improvements effected in the ways of cooperation between the three contractual parties:

- (1) Monthly Meetings with the Contractor and the Engineer regularly.
- (2) Timely payments to the Contractors.
- (3) Timely redressal of grievances including active encouragement of dispute avoidance and across-the-table settlement.

4.2.6 STRONG EMPHASIS ON PROFESSIONAL STAFF DEVELOPMENT IN R&BD

The need for an R&BD-dedicated Human Resource Development (HRD) strategy in R&BD was seen as a counterweight to the Gujarat Rules of Business 1990. Finance Department approval is needed to add new staff where there are financial implications and consultation with the General Administration Department is routinely required to transfer or promote Executive Engineers (Class I), or above. The mid-1990s GOG policy of requiring officers to complete at least 3 years tenure in a given position before being granted a transfer has at least been beneficial to staffing stability and the consolidation of experience in the R&BD. However, R&BD itself has no authority to set its own mandated HRD policies in spite of the fact that most of its officers perform technical or specialist functions. As a result, departmental officers were until recently serving in an environment of administrative norms and standards rather than professional and managerial performance criteria and incentives, with the former mostly framed for the efficiency of a relatively generic 'whole-of-government', 'at-level' approach to civil service HR management in GOG and similarly elsewhere in India.

The IDS had recommended that an HRD system centred on the R&BD be established for:

- personnel performance appraisal
- career planning
- devising programmes for training and development

In a series of steps, with the support and resources of the GSHP and as well as in response to the impetus of increasingly proactive GOG policies on public sector administration and governance, the R&BD:

- established a Vision 2010 -based HRD Policy
- began implementation of an annually-updated '3-year rolling Training Program'
- took progressive action to refurbish and strengthen the Staff Training College in terms of physical and professional resources
- enhanced the focus, scope and contents of the STC suite of training programs and courses
- appointed an external HRD professional on a fixed-term as HRD Manager to assist the STC on embracing innovations in syllabus, 'faculty' resources and 'delivery' modalities
- introduced a (still ongoing) Computer / IT Training program
- initiated the first rounds of a multi-phase Manager Development Program aimed at enhancing the managerial skills of middle-level R&BD staff for new and evolving responsibilities in the Gujarat road sector environment.

The main focus of the HRD/staff training program enhancements and delivered activities have been contract management/procurement, Monitoring & Evaluation, environmental and social 'safeguards' functions and management, project management, planning, finance, quality control/management, and, more recently,

e-procurement/e-governance. Occasional seminars and workshops have also been facilitated for R&BD staff and senior managers via STC on topical professional and governance matters. The staff of the Irrigation Department and other GOG agencies have also taken up many of the enhanced STC courses and programs, more intensively since 2003-2004 onwards. The R&BD also availed a bilateral assistance from CIDA in 2000-2001 that enabled five senior R&BD staff take part in a multi-week Transport Infrastructure Development & Management program in Canada. The current STC training program 'calendar' addresses the technical and managerial skills of all cadres of engineers in the state of Gujarat. Some of the main forms of training currently are:

1. Nano-Technology based waterproofing materials and its application in road construction.
2. Energy Saving Appliances for lighting on roads.
3. Use of fly-ash in road construction.
4. Use of modified bituminous materials in road construction.
5. Use of stone matrix asphalt in road construction.
6. Computer awareness for auto-cad applications
7. Training on Project Management Software for Infrastructure Projects.
8. Construction of Green Roads Concept
9. Safety Materials and Methodology for Road Infrastructure including Traffic Management.
10. Ready Mix Concrete and its use in Road Construction.
11. Use of Pre-cast Structures in Bridge Construction

Overall, the strengthened and modernized HRD planning, implementation capacity and results achieved by the R&BD during the GSHP period and since then, particularly via the enhancement of the STC and its capabilities, have significantly helped to improve the effectiveness and quality of human resources and contributed to strengthening of overall governance in the Gujarat roads sector.

4.2.7 REFORMS IN SOCIAL AND ENVIRONMENTAL SAFEGUARDS MANAGEMENT OF ROAD PROJECTS

Pioneering reforms in social safeguards management were demonstrated in first generation BOT toll projects in the state. National 'Social Management' policy were the basis for state guidelines established for this 'safeguards' aspect for the BOT toll projects while for Environmental Management, a compilation of good practices from elsewhere has been done as the basis for an eventual state wide Environmental Management (sector) policy for application, inter alia, to investment projects applied by R &BD.

Good practices in resettlement were demonstrated by IL&FS in the Ahmedabad-Mehsana and Vadodara-Halol highway projects during the 1990s. By using replacement cost, IL&FS deviated from the standard approach to compensation for land and houses. These were estimated from market surveys, village records, assessments by agriculture specialists and consultation with project-affected persons (PAPs). The resulting valuations were 4-6 times higher than the compensation paid by the government under the Land Acquisition Act. The difference was paid as rehabilitation assistance from project funds. For structures, replacement cost was based on engineering estimates for new construction without depreciation. Compensation was paid at the rates applicable for residential properties for some of the agricultural properties since the PAPs had purchased

these lands with the intention of converting them into residential properties. The compensation amounts were equivalent to the return on investment on fixed deposit schemes offered by nationalized banks.

IL&FS also introduced incentive-based income-generation schemes as part of the rehabilitation assistance. Eligible families who purchased assets needed for self-employment were given assurance of reimbursement in two stages: 50 per cent of asset value at the end of eighteen months; and 50% at the end of the three years contingent upon the PAPs continuing with the activities and earning the targeted incomes. During this three year period, beneficiaries were offered maintenance allowance in the first year and insurance of the asset against theft, disease, etc, as appropriate thereafter. Few specific innovative measures included:

- Special measures for vulnerable families
- Old age pension to all above 60 years of age in urban areas.
- Support for income generating activities given to an additional family member for families with older members in a rural setting.
- Repayment of outstanding debts on lost assets (as a grant).

In the case of Vadodara-Halol, community fragmentation was avoided by relocation of an entire community. Instead of just the seven affected families, all 17 families in the community were offered an alternative developed plot and construction costs, which enabled them to live together and retain their economic and social linkages.

Some of these practices have been mainstreamed in subsequent BOT projects managed by the state.

4.3 AREAS WHERE THE REFORMS HAD LIMITED IMPACT

The Gujarat reform story had its share of shortcomings too. Certain functions/areas where particularly coordination with other agencies/departments were warranted had somewhat muted success.

4.3.1 ROAD FINANCING REFORMS/ROAD FUND

A GSHP-funded study was undertaken with the assistance of external expertise to define the financing requirements faced by the state for effective asset management in future, to identify the scope for road maintenance financing reforms, in particular a possible state-level Road Fund as a means of mobilising appropriate funds to meet future requirements, and to provide advice on the implementation of these reforms, particularly the possible road fund. While the goal of establishing a Road Fund had been included in the institutional Action Plan of the GSHP, this had not gained favour with central GOG areas, and accordingly the Study recommendations for action towards a maintenance-oriented Road Fund did not succeed by the end of the GSHP period. The availability of increasing 'capital works' funds from state, national and private sector sources in successive years since then had slowed down even further the process towards a general consensus among the relevant key departments of the GOG. However, due to the continued strong demand for road infrastructure development and extension in the state, and the increased sector-wide awareness of the associated rise in road asset maintenance costs facing the state if the operability and performance of the major road network is to remain satisfactory, the issue of formation of a Gujarat Road Fund, however, has found its place in the new Vision 2020 document of the GoG.

4.3.2 ROAD SAFETY MANAGEMENT

Some studies, funded by GSHP, were conducted on a pilot basis in 5 districts where extensive surveys were undertaken and black spot analysis was done. Templates were also prepared classifying the black spots into various categories depending on the treatments to be given. Funds were also allotted. However nothing much beyond this could be achieved.

Action Plan for Road Safety Management, involving other departments/entities who have stakes in the matter was also prepared and forwarded to the respective departments of the GoG. No much progress however has been achieved beyond this point.

In a nutshell, on the road safety strategy front, the reforms were unfortunately not very encouraging largely due to lack of political and bureaucratic championship. While the state boasts of one of the most modern accident and emergency response system the upstream intervention measures of safety engineering, enforcement and awareness were not given due attention. Gujarat has a long way to develop a safe transport system comparable with the international best practices.

4.3.3 FUNCTIONING OF POLICY AND PLANNING UNIT

While the creation of the PPU was successful, *recruiting and retaining staff who are not in mainstream engineering was problematic*. This may be perceived as a transitory problem, but in fact it may more reflect inherent problems, such as finding a sufficient and steady workload or a perceived lack of promotion opportunities. The reforms envisaged the PPU using salaried staff to undertake its work in-house. Experience from other countries shows that: engineers prefer field supervision to “backroom” jobs such as planning; non-engineers doubt their career advancement in engineer-oriented organisations; lumpy workloads fall on only a few specialist staff; and there are frequent losses of trained staff through transfers and resignations.

The PPU need not necessarily employ conventional staff to meet all its specialist needs. Maintaining the data bases for the GRMS is a very large job. Its demands are lumpy. Running the system, based on HDM-4, is technically demanding and requires experience. It is a problem when staff leave after being trained. Since its development by consultants, GRMS has continued to be maintained and operated by consultants, but for this to be a sustainable longer-term solution, adequate funding must be provided, given the market rates for such services relative to government pay scales and norms.

Eventually, when GRMS becomes a working tool for field offices, R&BD could revisit the option of bringing the operation of GRMS fully into PPU using salaried staff. Even then, it is likely that the data collection will remain outsourced. India now has specialist firms undertaking automated pavement data collection using expensive technical equipment that requires more than one customer state to achieve economic utilisation.

4.3.4 QUALITY CONTROL

The Quality Assurance concept could not take off the ground. The Quality Control wing in the R & BD is true to its title—it does quality control. But, by doing so, it is duplicating or replacing what should be done by the supervision engineers in the field. Moreover, what it does is very narrowly focussed on the input materials and very little on processes and final output / delivery. It has not come anywhere closer to what was envisaged in the Institutional Development Study (IDS) carried out as part of the Bank-funded Gujarat State Highway Project.

The Quality Control wing diligently applies its resources to the checking of the most important civil works. The IDS study proposed major changes, extending its activities to cover everything from contract preparation to project financial management. The solution proposed by the IDS was to follow the principles of “quality assurance” (QA). QA examines the *process* used to create deliverables. With QA there should be no need to check the outputs themselves—although from time-to-time outputs are checked to audit whether the QA system is working as intended.

QA has three components:

- Guidance documents (manuals) and procedures.
- Staff with proper qualifications/training/skills/experience.
- Records of what is done—and records of checks of what is done.

The following makes the distinctions clear.

- *Quality Control* checks outputs, either as a census (check all) or on a sample basis.
- *Quality Assurance* is a management system to promote quality output. It is founded on:
 - (i) guidance documents telling staff what to do;
 - (ii) staff who have the proper qualifications/training/skills/experience; and
 - (iii) records what has been done and internal checks that have been carried out.
- *Quality Audit* is Quality Control of Quality Assurance (i.e., a check of the QA system).

Hence the Chief Engineer undertakes Quality Audit and the contractor undertakes Quality Assurance (which includes Quality Control).

4.3.5 STRENGTHENING LEGAL MANAGEMENT CAPABILITY THROUGH APPOINTMENT OF LEGAL ADVISER

The IDS report envisaged the role of a Legal Adviser working at a senior level giving advice to senior managers on policy matters and correspondence, vetting tender documents and contracts, and negotiating BOT agreements with well-briefed and powerful private developers. The aim was to avoid legal problems rather than to solve them. The IDS did not specify that an officer necessarily needed to be recruited by the department. The sourcing options included:

- second an individual from the Legal Department

- appoint an individual as a permanent Legal Adviser
- retain a private law firm to provide advisory services

In R&BD, the role of the legal officer, attached to the office of the Principal Secretary, R&BD, was sometimes more like that of a legal clerk: making sure that nothing is overlooked and checking that obligations are met. A legal officer was appointed but has moved out.

It is difficult to recruit a qualified person, which is understandable since the job content is thin. Further contracts-related legal assistance has in recent times also been available to the R&BD from time to time via, for example, the GRDC.

5 GUJARAT ROAD SECTOR POST REFORM

5.1 R&BD

R&BD has changed from an organisation focused on execution of civil works to an agency that manages the road network and outsources much of its work. The construction industry has been transformed in its capacity and competence. Successful implementation of GSHP helped R&BD to create an image as a department that performs; the examples of construction of good roads in urban areas (e.g.) of Siddhpur and Unjha towns on Mehasana Palanpur Road generated a demand for similar urban stretches of roads in other towns and cities for through roads passing through their towns/cities. In fact this was the genesis of the scheme Vikas Path. Because of rational use of maintenance grants and the GSHP component for improvement of existing roads, the condition of roads improved. This created an impact on the general public and in turn on politicians and senior GOG administrators/officials. Good contract management resulting in timely payments and timely redressal of disputes also improved relations between the contracting industry and the department.

Staffing outcome: During the reforms, no changes were made in terms of essential professional and administrative staff of RB&D. Labour force was about 20,000 before the reforms (1986) which reduced to 9,493 in year 2010.

Positions	1998	2008
Chief Engineer	7	8
Superintending Engineer	23	24
Executive Engineer	112	112
Deputy Executive Engineer	425	416

Source: R&BD: <http://www.rnbgujarat.org/Manual1.doc>

5.2 MAJOR OUTCOMES OF THE REFORMS IN THE GUJARAT ROAD SECTOR

The reforms undertaken in the Gujarat road sector during late 1990s-mid 2000s had a major impact on a number of critical areas, in particular, administrative costs, maintenance backlog, maintenance funding, and efficiency of service delivery.

Reduction in administrative costs. The share of administrative cost in the capital and maintenance budget was reduced by almost half - from 30% to 15.7 % during 2000-2007⁷.

Steady decline in staffing. The number of both professional workers and casual labourers in R&BD have steadily declined over years in spite of the network size and budget significantly growing. The casual labourers declined from 14203 in 1988 to 10621 in 2000 and further to 8338 in 2010. Similarly the professional workers declined from 11075 in 2004 to 10250 in 2008 and further to 9381 in 2010.

⁷ World Bank. "Implementation Completion and Results Report on a Loan in the Amount of US\$280 million to India for the Gujarat State Highway Project." June 18, 2008.

Reduction in maintenance backlog. During 2000-2007, the maintenance backlog was reduced from 10,000 km at the baseline to 5,000 km, which was a 50% decrease. That included over 1,800 km reduction contributed by the Bank-funded GSHP.

Significant Increase in Plan Budget Allocation. The Annual Plan Budget for the road sector underwent a steady and significant growth from Rs. 130 Crores in 1995-96 to Rs. 1292 Crores in 2007-08. Even in relation to SDP (state Domestic Product) at constant prices (1995-96) the road sector allocation increased from 0.3% of SDP in 1995-96 to 0.54% in 2002-03 growing further to 0.6% in 2005-06. The increase has been sustained and even accelerated beyond 2007-08 and the plan allocation for road sector in 2010-11 was Rs. 2747 Crores. More significantly the percentage of allocation for roads in the overall annual plan in the state has grown from a 4.9% to 8% in 2007-08 and 9.3% in the current year. Such significant increase in the financing share represents the R & BD's ability to create the requisite credentials and trust with the Finance Department and corroborates the political commitment for the road sector.

Increase in maintenance funding. Investment in new roads increased 6 times compared to the pre-reform times (**Error! Reference source not found.**). Funding for routine and periodic maintenance which typically receives less attention and support from politicians also increased, though to a less extent, but it still doubled by 2008-09 compared to 1998-99. Comparative statistics on annual road maintenance expenditure in select states during 2001-2005 shows that Gujarat paid more attention to maintenance than any other states in India. It spent US\$884 per km, which is over 15 percent more than the second spending on maintenance state, Kerala, among the select number of states.

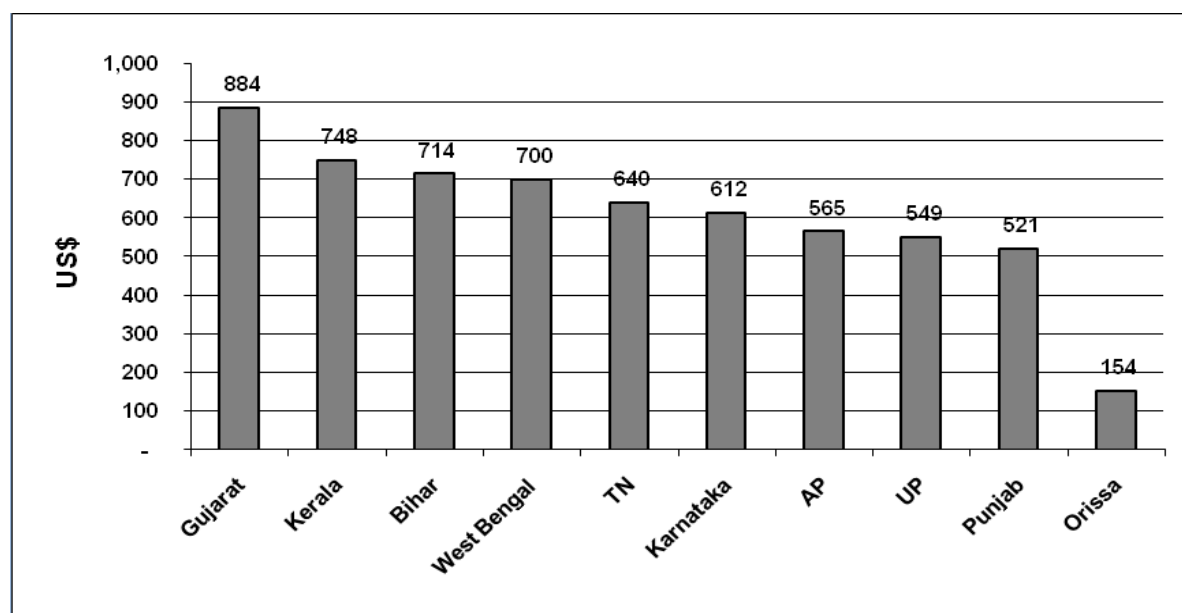
The double increase in maintenance funding demonstrated the understanding of Gujarat's politicians that lack of maintenance would lead to deterioration of roads they had invested in and all their investments would be wasted. They clearly understood that this could not be afforded as it would undermine their efforts in achieving ambitious goals set out in the Gujarat Infrastructure Agenda: Vision 2010.

TABLE 4: ANNUAL PROVISION OF FUNDS TO R&BD IN 1998-99 AND 2008-09, Rs.

Type of works	1998-99	2008-09	Change, times
New construction	2690	16260	6
Maintenance			
Routine	1380	2500	2
Periodic	340	620	2
Emergency		200	
Other	220	130	1
Total	4630	19710	4

Source: R&BD.

FIGURE 2: ANNUAL ROAD MAINTENANCE EXPENDITURE IN GUJARAT AND COMPARATOR STATES DURING 2001-2005, US\$/KM



Source: World Bank South Asia Poverty Reduction (SASPR) Database 2006

Increase in efficiency of service delivery. As a result of the reforms in Gujarat's road sector, most of contracts were executed with minimal time and cost overruns and sometimes even with cost reductions which was uncommon for India's road sector. The civil works contracts implemented under the Bank GSHP were delivered with a significant cost reduction – at about 23%, which was confirmed by comparing per-km project cost at appraisal with that at completion (see Table below).

TABLE 5: UNIT CONSTRUCTION COST COMPARISON BETWEEN APPRAISAL AND COMPLETION OF GSHP

Item	Total Cost (\$ million, 1997- 98 prices)	Total Cost (\$ million, 2007-08 prices)	Length (km)	Unit Cost (\$000/km, 2007-08 prices)
<i>Project Road Works Costs at Appraisal</i>				
Widening and Strengthening	\$348.8	\$443.7	886 km	\$501
Road Maintenance	\$55.2	\$70.2	857 km	\$82
Total	\$404.0	\$513.9	1,743 km	---
<i>Road Works Costs at Implementation Completion</i>				
Widening and Strengthening	---	\$330.0	871 km	\$379
Road Maintenance	---	\$66.6	969 km	\$69
Total	---	\$396.6	1,839 km	---

6 KEY ENABLING FACTORS FOR THE REFORM

6.1 STRONG POLITICAL WILL

Gujarat has been lucky to have reform-minded government exhibiting strong political will and clear vision of its ambitious goals for the development and prosperity of the State. During the launch of the Infrastructure Vision, the State's Chief Minister assured industrialists to provide the infrastructure needed to serve industries operating in the state. The political commitment to implementation of the Infrastructure Vision is also demonstrated through (a) close politico-bureaucracy relationship and exemplary inter-departmental coordination (resulting in efficient project delivery (in terms of minimal time and cost overrun and disputes); (b) creation of enabling legal environment, which included enactment of the Gujarat Infrastructure Development Act, 1999, Toll Policy. Gujarat was the first state in India to have a law governing Build Own and Transfer (BOT) transaction and such other arrangements along with private participation in infrastructure projects.

6.2 CONTINUITY OF LEADERSHIP IN THE R&BD

Two important factors playing a key role in the successful reform of Gujarat R&BD were leadership by a technocrat and continuity of leadership. Firstly, R&BD was headed by a technical Principal Secretary. Support for a technocrat as Principal Secretary R&BD was strong and popular among stakeholders. As indicated by R&BD staff during this study, officers posted to R&BD for three years cannot have the same affinity for the department as an officer whose career has been in the department. A technocrat who has risen from the ranks "owns" his department and knows it inside out. He knows the persons surrounding him well, understands their strengths and weaknesses, and is in a good position to run the department and to transform it.

Secondly, R&BD had continuity of leadership involving the same 'age-group' of officers for a considerable period of time. While it was valuable that the one Principal Secretary (initially as Special Secretary) oversaw throughout its term the Bank-funded GSHP project that supported many innovations and provided exposure to international best practices, it was also significant that the overall group of Chief Engineers and Superintending Engineers at the R&BD during the last ten years was of a younger median age than current norms for those levels in other PWDs, ensuring longer tenure and stability at those levels. Continuity was also largely due to R&BD's personnel planning policy whereby engineers are directly recruited through Public Service Commission examinations to Class I and Class II posts. This ensures good career progression and availability of officers at a comparatively young age to man superior posts, so they can hold these posts long enough to frame policies and oversee their implementation.

6.3 DEVELOPMENT OF SUPPLY-SIDE CAPACITY THROUGH GSHP

GSHP helped contractors to develop and grow, while the GSHP supervision consultant(s) were also constructive in dealings with contractors, to foster adoption of good practices from elsewhere. Contractors learned from the international consultant in applying FIDIC contract conditions. Contractors had to

hire good technical staff and good equipment. Contractors thrived in an environment where transparency and integrity were valued and prompt contract payments were made. The three parties (Employer, Contractor, Engineer) interacted in good spirit. Packaging of works in variable sizes also helped industry capacity development by providing opportunities to all categories of contractors, including local contractors, and enabling contractors to 'graduate' to larger contracts from satisfactory execution of smaller ones. All these factors helped a good deal in maintaining good relationship with the contracting fraternity.

Even post GSHP the story continues to remain very positive; the gains made appear permanent. Tender transparency is good. Online tenders are accepted, processing is swift and the Chief Minister is said to be "strict"—which stifles any possible corruption. Designs are much better than before. Standard designs are used and adapted for site conditions. In one of the local contractor's version "Corruption is less, work is faster and there is no problem being paid."

R&BD also benefited from the GSHP learning experience. R&BD engineers were exposed to methods used elsewhere, learnt to work with consultants and learnt to outsource work that the department could not undertake itself due to staff constraints. Engineers from R&BD were also occasionally sent abroad for training, which helped broaden their horizons.

6.4 OPPORTUNITY FOR SETTING GOOD PRACTICE EXAMPLES THROUGH GSHP

The works executed under GSHP demonstrated the contemporary best practices and standards in the sector, resulting in raised public expectations. The public demanded that other departmental road works were carried out to the same standard. This promoted a positive and constructive work culture throughout R&BD.

6.5 CULTURE OF RESOLVING ISSUES BY INVOLVING THE PUBLIC

Gujarat has a long standing history of public participation in decision making. This culture permeates through all public service delivery organisations in the state. To cite an example, an improvement project involved building up the crust of the road carriageway by thick layers of granular sub-base which raised the formation level and utilised the crust underneath the existing carriageway. There was strong public opposition to this method as it was thought this would cause inconvenience and the works would linger on. There was a call for the additional crust to be made up of bituminous overlays, which was not an economically sound proposal. A pilot road section of 10 km was built to demonstrate that the proposed road construction method would not be as troublesome as feared and that the quality would be as good as a road built using bituminous overlays.

6.6 E-GOVERNANCE AT STATE LEVEL

Gujarat established a separate information technology division, under the General Administration Department. Subsequently, the government set up a separate Department of Science & Technology. The state's e-governance programme has implemented the Gujarat State Wide Area Network (GSWAN) which is thought to be the world's second-largest IP-based WAN connecting over 2800 government offices.

Moreover, the IWDMS (as described earlier) has streamlined documentation in government offices. To the extent possible, files are electronic; transmission is instantaneous. Not only can a file be located instantly, but also the history of its movement can be retrieved. Dwell times can be displayed in graphical form, revealing any tardy processing of the file. This has helped to increase accountability and deter rent-seeking behaviour – while formerly there may have been an incentive to process a file slowly, now the incentive is to process files promptly.

6.7 HIGH DEGREE OF AWARENESS, TRAINING AND INNOVATIVE METHODS OF GOVERNANCE AT STATE LEVEL

Recognizing that governance is only as good as the human resources employed, the GoG has institutionalized a *Vibrant Governance* (V-Governance) training initiative. The program aims to bring about an attitudinal change in the work culture and foster result-oriented governance in the state. The program is for all staff (at all levels) in all departments. The main objectives of the program are as follows:

- To inculcate the ability to adapt to and respond to changes
- To augment capacity building to ensure citizen focus
- To cultivate positive approach, pro-activeness, cost-consciousness and more effective processes
- To facilitate attitudinal and behavioural change for better professional and personal development.

The program has been designed after a comprehensive training need assessment of all the departments and intensive focus group discussions. The training is interactive and contextual, with several examples of success stories within the government weaved in, for better applicability. The program also trains volunteer trainers, who can then render training to other government employees. More than 4000 class 1, 2, 3 and 4 employees in the GOG state secretariat have already undergone this training. Many middle and senior level employees from GOG departments and districts have now also completed the training. The ultimate goal of the program is to train all 500,000 employees of the state government. To ensure that the training is effective and is contextual, regular feedback is also obtained from the participants.

Peer Review. Gujarat has a system of inter-departmental peer reviews, wherein departmental secretaries are given the task of monitoring projects/programs in departments other than their own. For instance, the R&BD Secretary may have to review the progress of educational schemes. This system brings in a certain amount of independence and objectivity in terms of project monitoring and reporting.

7 INTERNATIONAL EXPERIENCE AND ITS RELEVANCE IN THE CURRENT CONTEXT

The objective of this Chapter is to determine where the Gujarat highways sector stands in terms of institutional reform among other developed and developing countries. In addition, it is intended to identify other possible initiatives that Gujarat may want to consider to become even more efficient.

7.1 PHASES OF INSTITUTIONAL REFORMS IN THE ROAD SECTOR

In mid-90s, Talvitie (Talvitie, 1996) suggested 5 phases in the institutional evolution in the road/highway sector based on his long-term observations in many countries. Talvitie's classification of the phases was slightly adjusted by Queiroz and Kerali (Queiroz and Kerali, 2010) about 15 years later based on their experience. The main differences between the two models are in the definitions of Phases 2 and 5. Phase 2 is defined by Talvitie as "Identification of client and producer functions", while by Queiroz and Kerali as "Separation of client and producer functions", because separation, not identification, of functions, will certainly mean execution of these functions by different entities. Phase 5 is defined by Talvitie as "Corporatization of the client organization", while by Queiroz and Kerali as "Establishment of an Executive Agency or a Commercialized (Client) Organization" because some of road administrations may not have become commercialized but a more streamlined agency and less micro-managed by the line Ministry with their main focus on management of the road network.

According to the both models the five-phase process is not necessarily sequential and different parts of an organization can be in different phases. While some of the road administrations may skip certain phases, the sequential five-phase process seems more beneficial as the road administration continues its evolution through learning and experience generated from each phase. These 5 phases include:

Phase 1: Traditional Road or Public Works Department (PWD). It is the starting phase where the road administration/PWD is a single organization employing thousands of people to execute road works. The road agency is centralized with the line Ministry micro-managing budgets, selecting projects and using a political criterion in resource allocation and management. The road administration is in charge of technical issues: standards and specifications, and execution of works. Construction of new roads has a priority.

Phase 2: Separation of the client and producer functions. The road administration adopts a de-concentrated organizational structure with execution of works being separated from project management. Efficiency is emphasized in service delivery and contracting. Several units are established with specific responsibilities, such as planning, management, inspection/supervision, and works execution.

Phase 3: Separation of the manager (client) and provider (producer) organizations. Greater reliance on the market mechanism drives the separation of the client and supplier organizations. The client function remains with the road administration with the central office in charge of administration and management, and regional/field offices in charge of supervision/monitoring of the

services. Regional implementation organizations are formed to execute road works in accordance with contracts issued by the road administration or its regional/field offices. The line Ministry delegates the budgetary and other responsibilities to the central office of the road administration while it defines the mission, broad goals and the annual budget of the road administration.

Phase 4: Privatization of the supplier organizations. The supplier organizations are privatized. All supply functions are contracted out to the private sector. The road administration continues to report to the line Ministry. The Ministry carries out periodic oversight through a Board/Council and monitors its efficiency through agreed performance indicators. The Ministry concentrates on defining and developing the policy framework and carries out periodic oversight of the road administration's efficiency through agreed performance indicators. All budgetary responsibilities are delegated to the road administration. The central office of the road administration is responsible for policy implementation, budget distribution, and performance audits, while the regional/field offices manage the road program and carry out mandatory performance measurement.

Phase 5: Establishment of an executive agency or a commercialized (client) organization. The (client) road administration/agency becomes the formal owner of the road network on behalf of the government. The road administration either becomes an executive (streamlined) agency (e.g., U.K. Highways Agency) under the line Ministry, which outsources most of its activities and keeps in-house only core strategic functions, or commercialized road entity (e.g., the Croatian Motorways Ltd.), whose structure is similar to that of a private corporation, but subject to oversight of Road Board/Council that reports to the Ministry. The income sources of the latter are revenues from road user charges or public subventions declared in a medium-term fiscal framework. This mid-(or long-) term financial commitment are necessary for the entity to plan future investments. In some countries, the corporate entity is empowered to enter into concession agreements with the private sector to build and operate highways (e.g., in Croatia and Latvia).

7.2 WHERE GUJARAT HIGHWAYS SECTOR STANDS IN ITS INSTITUTIONAL REFORMS

The Gujarat highways sector can partially be considered in the 5th phase of its institutional evolution. The R&BD is the formal owner of the entire state road network, including NHs, SHs, MDRs, ODRs, and village (rural) roads. The State government concentrates on defining and developing the policy framework for the sector as part of its comprehensive policy for all sectors. The functions of the client and service provider have been separated for a long time. The central office of the R&BD is responsible for policy implementation, development of budget, and quality control. The R&BD outsources most of its activities and only keeps in-house its core functions – planning and management. Several units, including Policy and Planning Unit, Quality Control unit, Engineering Staff College, Arbitration Tribunal and Vigilance Office, have been established. It has adopted modern technology and management system (i.e., GRMS) for planning and decision-making process. Supply functions are procured from the private sector. Its field offices supervise execution of physical works.

Several functions, specifically planning, management and oversight of PPP projects, have been separated from the R&BD and new organizations have been set up to perform these functions. Planning of PPP highway projects as part of

overall planning of infrastructure projects and development of the framework is the responsibility of GIDB, while development of PPP road infrastructure is the responsibility of GSRDC. Although the R&BD is not the owner of PPP roads, its Policy and Planning Unit (PPU) still takes part in strategic decision making process on financing of roads - whether they will be developed using BOT-toll or BOT-Annuity. The R&BD's PPU carries out a preliminary screening through GRMS to assess the projected traffic and cost of developing a particular stretch of the network. If the preliminary screening finds that the stretch amenable to PPP (BOT-TOLL or Annuity) mode, the R&BD passes it on to GSRDC for a further detailed analysis. GSRDC engages a transaction advisor to carry out such analyses and develops a full blown project proposal for approval of the Finance Department and endorsement of GIDB.

Performance management is in its early stage in the sector and no performance indicators have been developed for R&BD and GSRDC. The Central office of the R&BD does not carry out performance audits but rigorously focuses on quality control of inputs and processes.

7.3 INTERNATIONAL COMPARISON

To draw an international comparison, it was decided to bring in a state / province in a developing country with a federal system, which is similar to Gujarat, is in an advanced stage of development and industrialization and whose highways sector has undergone substantial institutional reforms. The State of Sao Paulo in Brazil has been selected for that purpose. At the same time, it has also been decided to broadly highlight the highly successful road agency reforms in two developed economies, UK and New Zealand, to appreciate where Gujarat is vis a vis the best in the sector.

7.3.1 INSTITUTIONAL DEVELOPMENT IN BRAZIL'S HIGHWAYS SECTOR

Brazil, as India, is a federation consisting of twenty-six States, one federal district (which contains the capital city, Brasilia) and municipalities. States have autonomous administrations, collect their own taxes and receive a share of taxes collected by the Federal government. They have a governor and a unicameral legislative body elected directly by their voters. Municipalities also have autonomous administrations, collect their own taxes and receive a share of taxes collected by the Federal government and state governments.

The Brazil highways sector has undergone substantial institutional evolution. The Ministry of Transport (MOT) concentrates on defining of the policy framework as well as strategic planning, developing guidelines for implementation and prioritization of investment programs for the highway sector, among other sectors. The client and supplier functions are separated. The client function is performed by the National Department for Transport Infrastructure (DNIT), which reports to the MOT. DNIT is the legal successor of the former Brazilian National Highway Department and is responsible for implementing the government's transport policy, including construction, maintenance, and operation of federal highways, besides railways, waterways, and ports. Its main source of funds is the federal budget. DNIT implements its work program directly or through contracts and delegations to other public agencies or the private sector. The client function for the Federal Highway Concession Program that remains under the MOT is performed by a separate agency - National Agency for Land Transport (ANTT) (which is also responsible for the railway concession). The source of income is the federal budget.

7.3.2 INSTITUTIONAL DEVELOPMENT IN STATE OF SAO PAULO'S HIGHWAYS SECTOR

The State of Sao Paulo, as the State of Gujarat in India, is the major industrial and economic powerhouse in Brazil and is the richest state of the country. It alone is responsible for one third of the country's GDP. Similar to the State Government of Gujarat, the State Government of Sao Paulo recognizes transportation as the mainstay of its development and allocates a significant share of its budget to have a well functioning transport infrastructure. About 26% of State of Sao Paulo's budget is spent on transport infrastructure and an additional 26% on urban transport.⁸ The State has the largest number of two-, four- and six-lane highways in Latin America. According to the National Confederation of Transports (CNT), the State of Sao Paulo has the best highway grid in the country, with around 60% classified as excellent, and nine of the 10 best Brazilian highways are in the State of Sao Paulo.⁹

The State of Sao Paulo highway sector has the client function separated from the supplier function. Similar to the State of Gujarat, Sao Paulo State has two separate agencies responsible for management of public road system, which are (a) the State Roads Department (Departamento de Estradas de Rodagem, DER-SP), responsible for non-concession roads; and (b) the Regulatory Agency for Delegated Public Transport Services (Agência Reguladora de Serviços Públicos Delegados de Transporte do Estado de São Paulo, ARTESP¹⁰) responsible for the roads under concession. While the income source of the former is the state budget, the income source of the latter, in addition to budgetary resources, includes revenues from upfront payments and annual fees paid by the toll road concessionaires. Both of the agencies report to the State Secretary of Transportation and hold responsibilities for policy implementation in their respective sub-sectors: non-concessional roads and concessional roads. All supply functions are procured from the private sector through contracts. All toll roads in the State of Sao Paulo, as well as in Brazil, are operated by private concessionaires.

7.3.3 INSTITUTIONAL DEVELOPMENT IN UK'S HIGHWAYS SECTOR

The UK Highways Agency (HA), which is responsible for operating, maintaining and improving the strategic road network in England, is in an advanced stage of its institutional evolution. The functions of the client and supplier are clearly separated. In delivering some of its functions, the HA relies on outsourcing external organizations and commercial firms. For instance, routine maintenance is provided by private companies under contracts let by competitive tender. The HA has also packaged parts of the motorway network into commissions and then invites bids from consultants to take on the responsibility for maintaining all roads and related structures within the commission to a prescribed standard. The winning consultant then organizes a competitive Term Contract between the owner (DOT) and the contractor who then carries out all work on instruction from the consultant.

⁸ Source: "State of Sao Paulo Overview". 2009. Presentation to the World Bank South Asia Study Tour by Vital Luna, Secretary of Economy and Planning, State of Sao Paulo.

⁹ "The Highway Concessions Program of the State of São Paulo: a successful experiment". 2009. Presentation to the World Bank South Asia Study Tour by Carlos Eduardo Sampaio Doria, Director General, ARTESP.

¹⁰ <http://www.artesp.sp.gov.br/>

Box 2: KEY LESSONS IN VISIONS AND VALUES LINKING WITH BUSINESS PLANNING “NETWORK CHALLENGES” AS SAFETY AND RELIABILITY OF TRAVEL TIME.

The HA sees its prime “network challenges” as safety and reliability of travel time

A corporate scorecard is used to align the UKHA’s business activities with its aims and objectives. The scorecard also provides staff with a clear link between individual and team objectives and the Agency’s high-level performance targets.

The highway agencies aim to maintain the network in a safe and serviceable condition whilst minimizing lifetime costs.

Maintenance needs are identified by regular asset condition surveys and inspections.

Transport planning needs to be aligned with wider spatial planning. The HA is working with regional and local planning bodies and developers to find sustainable transport solutions to support housing and development.

The HA works with staff to develop leadership, people management and delivery capability, including program and project management skills, commercial and contractual competence.

Source: US FHWA. “Linking Transportation Performance and Accountability: Australia, Great Britain, New Zealand, Sweden.” International Technology Scanning Program. 2010.

HA is a semiautonomous arm of the Department for Transport (DOT) with its own board and chief executive. The relationship between HA and the DOT is formalized. The DOT approves and determines HA’s budget and agrees to its business plan and targets, while HA is responsible for delivery. From the DOT strategic goals flow the objectives for HA, which has an aim of “safe roads, reliable journeys, informed travelers.” The HA’s Annual Business Plan is built around these objectives (see Box 3Box 3).

Box 3: UK HIGHWAY AGENCY’S OBJECTIVES

Reduce delay and congestion on the strategic road network by delivering sustainable capacity improvements, making journey time more reliable.

Influence customers’ travel behavior and decisions by making network information more readily available.

Improve road safety by maintaining the network in a safe and serviceable condition.

Enhance the environment by mitigating the potentially adverse impact of the strategic road network and supporting the department’s environment and climate change objectives.

Provide an effective Traffic Officer Service.

Seek and respond to feedback from customers.

Deliver efficiency and value-for-money savings and improvements.

Source: US FHWA. “Linking Transportation Performance and Accountability: Australia, Great Britain, New Zealand, Sweden.” International Technology Scanning Program. 2010.

The HA has embraced performance management as the system for delivering results and documenting accountability. The British performance management system, which has evolved significantly during the past decade, has shifted the central government’s approach from setting many precise performance targets for its transportation agencies to setting broader, more general goals. Regular reporting of results provides feedback to the central government on how effectively its priorities are being achieved by the complex network of central, regional, and local transportation agencies, as well as by the many private contractors who operate in the highly privatized British transportation system. The HA measures its performance in the following eight key areas¹¹:

- *Reliability*: Implement a program of delivery actions that tackle unreliable journeys on the strategic road network;
- *Major projects*: Deliver to time and budget the program of major schemes on the strategic road network;

¹¹ <http://www.highways.gov.uk/aboutus/26993.aspx>

- *Safety*: Deliver the Highways Agency's agreed proportion of the national road casualty reduction target;
- *Maintenance*: Maintain the strategic road network in a safe and reliable condition, and deliver value for money;
- *Carbon*: Contribute to national and international goals for a reduction in carbon dioxide emissions by lowering the Highways Agency's emissions;
- *Environment*: Improve quality of life for transport users and non-transport users, and promote a healthy natural environment;
- *Customer Satisfaction*: Deliver a high level of road user satisfaction;
- *Efficiency*: Deliver the Highways Agency's contribution to the Department for Transport's efficiency target.

A set of targets under each of these areas (deliverables) have been agreed with the Ministers and performance against targets is reported in annual reports.

7.3.4 INSTITUTIONAL DEVELOPMENT IN NEW ZEALAND'S HIGHWAYS SECTOR

New Zealand (NZ) is famous for its institutional reforms in the road sector and experimenting with the split of responsibilities by function between several institutions to manage the country's road system. Its reforms date back to 1978 (see Annex 6). In the past decade NZ had two separate agencies, one to manage highways, and the other to provide the funds. In 2008 the two agencies were merged to form the New Zealand Transport Agency (NZTA) "to provide an integrated approach to transport planning, funding and delivery." In announcing its formation the Minister of Transport explained that the NZTA was charged with making sustainable transport choices for moving people and freight using different modes and in so doing will work closely with regional transport committees." National and regional plans now take precedence over benefit-cost analysis as the method of choosing investment in road networks¹². Integrated transport plans coordinate the development of transport networks and land use plans to avoid unintended impacts and to make best use of funds.

NZ has frequently been cited in many international studies of best practices in asset management, performance management processes and road safety. Those processes, while remain in place, are currently undergoing a shift in priorities as a new government has taken a new direction in the national transport policy. It strongly promotes improvements to national highway corridors as a component of a national economic development strategy. As a result, the transportation agency's performance management system is shifting rapidly to respond to and incorporate the new government objectives. The New Zealand experience in 2009 provided an example of how a long-standing performance management system shifts priorities to respond to changing social objectives (see Annex 6).

BOX 3: KEY LESSONS IN FORMULATING REFORM STRATEGY AND IMPLEMENTATION

Policy advice should be separated from delivery.

The private sector should own and operate transport systems.

There should be intermodal neutrality in respect of costs, regulations and other impositions.

Modes should compete freely, with minimal government intervention.

The government's role is to formulate strategic policy from a multi-modal perspective.

Promote affordable, integrated, safe, responsive and sustainable land transport.

Manage the state highway system, including planning, funding, design, supervision, construction and maintenance operations.

Manage funding of the land transport system, including auditing the performance of organizations receiving land transport funding.

Manage regulatory requirements for transport on land.

Source: US FHWA. "Linking Transportation Performance and Accountability: Australia, Great Britain, New Zealand, Sweden." International Technology Scanning Program. 2010.

NZTA's road safety approach takes a holistic view of road safety, putting the emphasis on the road system design: to make it more accommodating of human error; to manage the forces that injure people in a crash to a level that the human body can tolerate without serious injury; and to reduce unsafe road user behavior. Its state highway safety plan aims to provide a consistent, safe and forgiving road environment with no surprises for road users, and to provide a safe working environment for maintenance and construction activities. The plan covers speed management, reducing vehicle-train crashes, the needs of vulnerable road users, keeping vehicles on the roadway and minimizing the consequences of leaving the roadway, and reducing head-on and across-median crashes. This plan is being updated in response to the government's Road Safety to 2020 Strategy.

7.3.5 GUJARAT'S KEY ACHIEVEMENTS COMPARED TO INTERNATIONAL PRACTICES

When comparing the reform process in Gujarat highway/road sector with international best practices, it is quite evident that Gujarat did well in formulating the Vision and Values and linking it with the Business Planning. The infrastructure vision was business driven and fully embedded in its political ambition, vision and culture. The infrastructure / road sector vision enjoyed high degree of political patronage, the business plan was well grounded in that long term vision and the success of the business plan was achieved through the constant support from the highest level of Government. In performance measurement and management, Gujarat is leading among the India states. The R& BD's flagship GRMS and home grown initiative in developing an IT based Monitoring and Evaluation System are testimonials to this performance measurement and management culture.

7.4 FURTHER POSSIBLE INITIATIVES FOR GUJARAT

While comparing to the best international practices, there is indeed ample scope for continued modernisation and reforms of the road sector in Gujarat. Over the medium term, Gujarat may particularly wish to consider undertaking a number of initiatives to further strengthen its performance and efficiency in the highway sector:

- **Reform strategy and implementation:** In formulating the reform strategy, Gujarat should have perhaps focused more on the inert-modal integration and mode neutrality to promote an integrated land transport strategy rather than focusing more aggressively on the road based transport. The current framework of federal level control and management of rail transport has somewhat hindered a broader multi-modal integration. The state is conscious of this shortcoming and the GIDB anchored Infrastructure Vision 2020 strives to deal with the port-road-rail interconnectivity aspect in a more strategic and comprehensive manner.
- **Performance measurement and management:** Although Gujarat is leading among the India states in this area, it needs to more actively embrace performance management, e.g., develop a number of performance measures which are linked to the Vision, well understood to the public, as well as improve the current systems for disseminating results and documenting accountability. Building on the base of a strong community and private sector participation culture, the road agencies should also regularly organise stakeholder workshops / meet, enhance the public communication interface by issuing regular newsletters etc. and improve integration of public / user input in policy planning and implementation strategy. While successful performance

management systems turn out to be long-term and iterative processes that require a commitment of financial and human resources, they prove to substantially improve efficiency and accountability of a government agency.

- **Road Asset Management.** While a lot of civil works are outsourced to the private sector, Gujarat has mainly been using traditional contracts. The state, however, needs to do more in evolving a culture of performance / output based contracting and fully integrating in its way of business.
- **Road Safety Reform.** On the road safety strategy front, the reforms were unfortunately subdued largely due to lack of political and bureaucratic championship. While the state boasts of one of the most modern accident and emergency response system the upstream intervention measures of safety engineering, enforcement and awareness were not given due attention. Gujarat has a long way to develop a safe transport system comparable with the international best practices.

8 RECOMMENDATIONS FOR REPLICATION OF GUJARAT ROAD SECTOR REFORMS

This chapter attempts to answer two key questions (a) Whether the Gujarat experience can be replicated elsewhere, and (b) if so, how.

Gujarat is blessed with advantageous initial structural conditions: a strong industrial base, a historically strong private sector culture and interest, and considerable basic state capabilities, which are crucial to the trajectory of reform. The state also has the geographical advantage of a 1600 km long cost line and of its 'corridor state' status between the two prime growth centers in the country, Mumbai and Delhi.

Moreover, the private sector pressure, both implicit and explicit, played crucial roles in shaping up the reforms. The close historical interaction between private capital and the state in Gujarat ensured that state officials have internalized the requirements of capital in a way that may be impossible in most other states. Gujarat is fortuitous in benefiting from strong path dependence and historical experiences of reform, for example the joint sector idea that allows it to implement the current model of private sector participation much more easily and without much conflict. Economic reforms gave a renewed legitimacy to such interactions and imperatives. Many policies were shaped and energized by private sector needs and initiatives.

Gujarat's unique business culture, its investment climate and strategic geographical position are not replicable elsewhere. However, Gujarat's approach to a long term vision based set of reforms, developing a business plan well grounded in that long term vision, and creating an enabling framework to deliver the business plan can be well replicated across the boundaries to support more efficient and effective governance in the transport sector in other states and countries.

The pre-requisite for reforms is setting a **Long term Vision, to which the top leadership of the state—in both government and the private sector-- is committed and seriously determined to pursue.** The Vision Statement sets out the goals for the infrastructure and the service standards which a road agency aspires to achieve by a target year. The Vision Statement for the agency should be supportive of the broader strategic goals of the state or the country, consistent with its resource potentials, and reflect the ambition and priority of its primary clients. For Gujarat the seed for the Road Agency's Vision Statement was sown in people's aspiration expressed through the Chief Minister's vision that it should be possible to travel by road between any two locations within the state in six to seven hours. This was interpreted as a goal to provide a robust highway network in the state where average travel speeds of at least 80km/h could be maintained.

A Business Plan needs to be developed to implement the vision. The Business Plan would depend on the specifics of individual cases and the aspirations of the state as set out in the vision statement. At a minimum, the business plan should include (i) the Policy Framework, including identification of existing legal authorities and any necessary legal and regulatory developments,, (ii) organisational changes, with a clear delineation of the new structures, (iii) physical work plan, and (iv) associated budget requirements. The Business Plan cannot be implemented by PWDs/R&BDs in isolation. At a minimum, support of the Finance Department is needed because

it provides the funds, approves changes in organisation structure and staffing; and has an interest in the policy and legal frameworks. The “Team Gujarat” aspirations have typically been supported by an MoU across the various governmental stakeholders (e.g. road department, revenue department, forest department, utility agencies and finance department) for each project which sets forth realistic work plan targets for each of the parties. Ideally, the Business Plan should be agreed at the highest level of the Government and involve all the key stakeholders e.g. Ministry / Department of Finance, Home Affairs (Police), Traffic, Revenue, Forests, Environment and Social Affairs.

Strategic Collaboration on Budgetary Programming. Close and systematic interactions between the roads agency and the central agencies of government responsible for economic planning and financial management (e.g., the Finance Department) can build mutual confidence in medium-to-longer term budget planning, particularly when the roads agency shows that it has the data, tools and skills to readily demonstrate sound ‘service delivery’, administrative transparency, effectiveness in management, and capacity to absorb more significant budget allocations efficiently and with low operational risk factors. This was amply demonstrated in Gujarat’s case through the quantum leap in the road sector budget allocation and utilisation thereof during 1995-2005 and onwards - and the commensurate leap in physical works accomplished.

Partnership with the supply side. A liaison with the contracting industry through their authorized forums/associations to understand and address their concerns in advance can be most beneficial. Regular interaction with the prospective bidders from the stage when the technical parameters of the project are under finalization and thereafter when the draft tender documents are under preparation (without in any way sharing the financial aspects of the project), can go a long way in minimizing anomalies in the technical provisions of the project and in the tender documents. Moreover, the culture of true partnership among all the contractual parties and across- the table- resolution of disputes, as amply demonstrated in Gujarat, goes a long way to ensure smooth and efficient project delivery.

Governance and Accountability, respecting the rule of law. It is well known that good governance is a precursor for economic growth, which is amply demonstrated in the case of Gujarat. Strong and transparent institutions, policies, procedures and human resources are crucial ingredients for sustained growth. With specific reference to the road sector, some of the key governance challenges across the country and how the initiatives in Gujarat can help address these are now considered:

- **Avoiding project delays and rent seeking behaviour.** Avoidable delays to road projects arise when government agencies fail to cooperate. Much too often, each agency sticks rigidly to its own set of rules. Unfortunately, the potential to withhold supervisory approvals to impose costly delays on contractors also creates a serious moral hazard, particularly where the bureaucratic cadres responsible for supervising works and enforcing the multiplicity of regulations are poorly paid relative to the earnings of their counterparts in private employment, as in many states in India (and other countries). Use of this leverage to obtain financial payoffs or other favours (such as educational support for dependents of supervisory staff) is often too great a temptation, with not infrequent disruptions to work progress where contractors are reluctant to comply. Such practices have been a common albatross about the throat of PWDs, other infrastructure

authorities, and their contractors, throughout the various states of India for very many years. The interest of the project is sacrificed, ostensibly on the altar of bureaucratic procedures, but the real issue is often the rent-seeking behaviour of the responsible supervisory staff.

- These practices have been mitigated in Gujarat, first, by the **demonstrated commitment from the highest state leaders** to the problem-solving attitudes of the “Team Gujarat” culture, carried down through the ranks of government staff, and extending across to the partnership with contractors. The system is in place to identify, prevent, and reduce or eliminate avoidable delays through timely dialogue and agreed procedures.
- Adherence to this ‘can do’ culture has been strongly supported by the **introduction of key instruments of modern management that provide the essential mechanisms for accountability and control**. Well designed e-governance systems for procurement, including the Integrated Workflow and Document Management System, provide accessible, transparent information on the state of progress, and enable quick pinpointing of any sources of delay. Similarly, the e-Dhara initiative, aimed at complete computerization of land records across the state, is eliminating the bureaucratic and cumbersome process of manual record-keeping, ensuring greater transparency, minimal errors, reduced chances of fraud, and also helping to ensure that R&R benefits and payments are received by the actually entitled beneficiaries. Inter-departmental peer reviews, enhanced disclosure of information (as in the portal of GoG’s Home Department) and facilitation of citizen inputs in the government’s functioning as practiced in Gujarat can be replicated in other states to support better monitoring, public scrutiny and participation. The SWAGAT online initiative in handling complaints is also instructive to other states (although most states have some variation of this already in place).

Balancing HRD and stability in HRM. While there is certain value of Vision-based HRD and training strategies in the professional and technical development of roads agency staff, this needs to be taken up in a context of policy-based staffing stability. As evidenced by Gujarat, at all major staff levels, stability in staff tenure in their respective positions is vital for improving the roads agency’s capabilities over time. The GOG policy of generally limiting HR movements across professional, technical and administrative positions to a three-year minimum cycle is a positive HRM factor worthy of emulation in other Indian states.

APPENDIX 1: TERMS OF REFERENCE

Terms of Reference for Transport Institutional Development Consultant
(International)

Introduction: Background, Rationale

The India Gujarat State Highways project completed in 2007 was rated Highly Satisfactory by both Implementation Completion Report (ICR) prepared by SASDT and World Bank Independent Evaluation Group (IEG). Governance framework and institutional arrangements in the Gujarat road sector has been found exemplary. The Project Development Objective was to enhance the capacity of the Government of Gujarat (GOG) for effective and efficient planning and management of road infrastructure, while concurrently maximizing existing road infrastructure asset utilization through priority investments and increased maintenance funding. The Project not only achieved its objective and targets, it was also implemented with a significant cost reduction – at about 23%, which was confirmed by comparing per-km project cost at appraisal with that at completion.

In addition to external factors affecting this cost reduction, both the IEG review and the ICR identified several internal factors, in particular organizational reforms that took place during the preparation and implementation of the subject project. As a result of these reforms and institutional development, the traditional Public Works Department (PWD) focusing on execution of civil works was being converted into a modernized road agency focusing on road management, planning and policy. It was a major innovation in the PWD context in India, and it has strong implications to good governance in the highway sector.

Many Indian states have expressed interest in learning lessons from Gujarat to improve the performance and management of their road sectors. Unfortunately, the scope of ICR for the project was limited and was unable to go into in-depth research and analysis to understand all factors and reforms leading to improved governance and performance of the Gujarat highway sector. Thus, this study will pursue seeking responses to the following questions:

- What were the internal factors that led to transformation of the conventional PWD and what were their exact impacts?
- What were the institutional reforms this PWD had gone through? What were the key challenges in implementation of these reforms and how were they addressed?
- What worked well and what did not work well?
- How can this practice be replicated in other Indian states, other South Asian countries, and countries of other regions?

The study will cover the period of 1997-2007 because the project preparation started in 1997 and implementation was carried out during 2000-2007.

Aims and Objectives

The objective of this study is to determine key success factors for implementation and sustainability of institutional reforms in the road/highway sector. It aims at analyzing institutional reforms in the road/highway sector in the state of Gujarat,

India, and other countries, and drawing lessons of applicability and replication for other countries on how to improve performance of their road sectors under on-going or proposed Bank-funded projects. The study will concentrate on reviewing and analyzing, in particular:

- Institutional reforms in the road/highway sector worldwide undertaken in the past decade;
- The governance framework, including organizational set-up, regulatory framework, decision-making process, accountability mechanisms, etc. in Gujarat's highway sector before and after the reforms;
- The institutional reform process the Gujarat PWD went through to be transformed from a conventional PWD focusing on execution of civil works into a modernized road agency focusing on road management, planning and policy;
- The critical policy/regulatory/institutional factors in Gujarat which facilitated or enabled the reforms;
- The challenges in implementation of the institutional reforms encountered and solutions applied to address these challenges;
- The types of studies/technical assistance carried out during the project preparation and implementation and types of recommendations from these studies/technical assistance taken forward and implemented.

The ultimate goal of the study will be to promote the Gujarat good practice in the road/highway sectors of other South Asia countries and other regions and promote the findings and recommendations of this Gujarat study into design of new Bank-funded road/highway projects.

Outputs/Results

The key outputs of the study are expected to be:

- Identification of key factors affecting the success or failure of institutional reforms worldwide in the past decade;
- Identification of good practices and key factors that have led to performance improvements and successful institutional reforms of a state-level PWD in Gujarat;
- Development of strategic recommendations for implementing similar institutional reforms targeting transformation of traditional PWDs into modernized road agencies;
- Development of benchmarks for improved institutional capacity (including improved governance) based on the review of the Gujarat State Highway Sector;
- Development of indicators for monitoring and evaluation of institutional strengthening process in similar departments in other Indian states and South Asian countries.

Expected Outcomes and Impact

The expected impact of the study is better understanding by PWDs and road departments (from SAR countries) of the Gujarat highway sector institutional reforms that have led to more efficient and effective performance and improved governance of the sector.

The findings and recommendations of the study are expected to be discussed with representatives of PWDs of Indian states during the proposed dissemination workshop in Gujarat, and with representatives of road agencies of SAR and other countries during the proposed GDL event. The discussions will enable better understanding by PWDs/R&BDs of the Gujarat good governance practices and institutional reforms undertaken. In addition, they will also lead to experience/knowledge sharing among PWDs and promotion of similar reforms in other Indian states and other countries.

Thus, the expected outcomes of the study should include:

- Increased interest of government officials from the road sectors of Indian states and SAR countries in governance and institutional reforms,
- Promotion of the Gujarat good practices and institutional reforms in the Bank-funded highway/road sector projects;
- Incorporation of lessons drawn from the Gujarat experience into the design of new Bank-funded roads projects in SAR and other countries;
- Use of governance benchmarks identified in the Gujarat experience in the results monitoring framework of the Bank funded road/highway lending projects to monitor efficiency outcomes of institutional strengthening and governance improvement components.

Activities and Methodology

The study will be carried out using the following methodology:

- Literature review of institutional reforms in the road/highway sector worldwide;
- Review of the available documentation and literature related to the Bank-funded project and Gujarat State Highway Sector covering the period of project preparation and implementation;
- Interviews and/or surveys of (i) Gujarat state government representatives that were involved in the project as well as promotion and implementation of institutional and regulatory reforms; (ii) construction industry representatives who were active in Gujarat state before and after implementation of these reforms.

The scope of this study will cover:

- Overview of successful and unsuccessful institutional reforms in the road/highway sector worldwide;
- Analysis of organizational reforms targeting improvement of governance that took place in the Gujarat's highway sector during preparation and implementation of the Bank-funded highway project;
- Analysis of key factors leading to successful implementation of the governance and organizational reforms in Gujarat highway sector;
- Determination of benchmarks based on the Gujarat example to improve governance and strengthen institutional capacity in the highway/road sector of other Indian states and other countries;
- Development of strategic recommendations for Indian states and other countries to improve governance and strengthen institutional capacity of their highway/road sectors.

Dissemination Plan

Dissemination workshop in March 2010: It will be organized in Gujarat with involvement of representatives of Indian PWDs to discuss the findings of the study and promote mainstreaming of the Gujarat good practices and institutional reforms in the highway sector of all Indian states;

GDL event in March 2010: It will be organized with participation of representatives of the Ministries of Transport and Departments of Roads from South Asia countries to disseminate the findings of the report and promote the good practices identified in the Gujarat State Highway Sector across SAR countries. Countries from other regions that may be interested in this event will also be encouraged to participate in this event.

Publishing of the report on internet in May 2010: The final report will be posted on the websites of the Gujarat Roads and Bridges Department and the World Bank South Asia Transport.

Consultant Qualification Requirements

The study is to be implemented by a team of an international consultant (TTL) and a local consultant (Research Assistant). The International Consultant is to have at least 15 years of experience in institutional reforms in the transport/road sector in several countries, including developing or transition countries and developed countries, and have experience in handling governance issues in the transport sector. Good familiarity with the India road sector context is highly desirable. In addition, he/she is to have proven skills in task leading of analytical works covering transport/road sector and complex issues, have experience of working with road projects on the ground and have an understanding of policy and decision-making process, management, planning and procurement in the sector.

The International Consultant will receive support from a local consultant, who will help setting necessary meetings with the Gujarat PWD officials and other stakeholders and research for necessary information for the study.

Reporting

The Consultant will report to Arnab Bandyopadhyay, Sr. Transport Engineer, who is TTL of the study and Natalya Stankevich, Governance/Operations Analyst, co-TTL of this study and primary author of the ICR for that Gujarat State Highways Project.

The draft report and final report will go through the World Bank and Gujarat PWD peer reviewing processes. Only after the comments from the peer reviewers are reflected in the final report and it is cleared and approved by the World Bank and Gujarat PWD, the report will be recommended for dissemination through a workshop, GDL event and World Bank website.

Duration of the consulting services

The consulting service of 20 working days would be required during September 19, 2009 through May 31, 2009.

PROJECT TIMELINE: SEPTEMBER 2009 – MAY 2010

Milestones	Deadline
Concept Note Review	31 August 2009
Submission of Draft interim report on findings	15 November 2009
Final draft report	15 January 2010
Dissemination (workshop/GDL event, website)	30 April 2010

APPENDIX 2: INSTITUTIONAL DEVELOPMENT UNDER GSHP

The GSHP stretched over a decade, starting with the PCC in February 1997 and finishing at the end of 2007 following the completion of the civil works.

The consultant carrying out the PCC fielded a separate team in the second half of 1997 to undertake an institutional strengthening study. Its report, GSHP Institutional Development Strategy (IDS), was completed in February 1998 and was a blueprint for modernising R&BD giving it an added focus on road management, planning and policy.

The IDS study contemplated further consulting support, which was realised in the form of a road safety study¹³, a training needs assessment report, and institutional strengthening consultancy services to help implementation of the Institutional Strengthening Action Plan (ISAP). The ISAP consultant was deeply involved with the establishment of a Policy and Planning Unit (PPU) in R&BD.

This appendix describes these institutional reforms. It also describes the very important educational value of the civil works undertaken under GSHP.

GSHP Civil Works

The civil works were completed 23% under the budgeted cost and generally on time. All the players concerned with GSHP did a good job. The following summarises the salient lessons learned from that success.

Good project monitoring helped the project. Visits by the World Bank team were frequent (about every four months) and long enough (10 days) to facilitate interaction and application of minds to issues as they arose.

GSHP helped modernise the way the R&BD oversees contractors.

Project success was founded on cooperative working relationships between all parties. R&BD, World Bank and the consultant cooperated harmoniously. Other departments also obliged. For example, property acquisition by the Revenue Department and tree clearance by the Forest Department were undertaken in a timely manner.

The relationship was not at all adversarial. World Bank officers were open-minded, helpful and flexible. They took account of local conditions rather than try to impose solutions that worked in other countries. The World Bank wanted large contract packages to attract capable contractors. R&BD considered the packages too small to attract international bidders and too large for local contractors. A compromise was reached which retained only one large package. Only five contractors prequalified for this large package. The lowest bid was 27% higher than the engineer's estimate and the spread from lowest to highest bid was a mere 2%. The Bank concurred with R&BD that the contract be split and re-bid. These two smaller

¹³ Road Safety Assessment Study and Implementation Strategy, Road Safety Study, 2006.

contracts were won by contractors who had not been able to prequalify for the large contract and were completed for less than the engineer's estimates.

The following examples further illustrate the benefits of a cooperative approach.

GSHP was preceded by the Strategic Options Study in 1995 which evaluated 3000km of Gujarat state highways and selected 1500km for detailed evaluation. R&BD collected data before the Strategic Options Study consultant mobilized. The consultant devised a matrix of attributes to rank roads according to needs, but this process produced some odd results. Jointly, R&BD and the consultant found that the reason lay in misinterpretation of some of the data.

Widening the Ahmedabad-Mehsana road required removal of trees in the right-of-way. The Forest Department wanted the standing trees be auctioned after giving public notice. That could have delayed the project by many weeks. The contractor was permitted to cut the trees and stack them at depots, from where they were auctioned later. Cooperation of the Forest Department meant progress on road works did not suffer.

A similar example concerned the bidding documents, which required contractors to pay the Revenue Department royalties based on quantities of materials extracted from time to time. This would have involved checking of quantities, making payments, verification, etc, at various stages of the works and at various levels in the Revenue and R&B Departments. The extra work and distraction it would have caused would have impeded the contractors' smooth and speedy execution of work. The bid documents were changed to allow contractors to pay royalties based on the quantities estimated to be needed. The Revenue Department accepted there would be both underpayment and overpayment on account of small differences between estimated and actual quantities used in the works

The GSHP contract was negotiated in 1998 but signing was delayed by the embargo that followed India's nuclear weapons testing. The Bank's flexibility permitted the maintenance component to start before contract signing. The standard \$10 million 'retroactive financing' (that is, money that can be spent in advance of signing) was increased to \$20 million.

A cooperative spirit extended to the contractors also. The first three years of the contract were the worst economically for Gujarat. Added to the effect of the embargo there was a serious earthquake in 2001. Restoration after the earthquake diverted funds from the state budget which was already depleted by loss of revenues due to tax concessions introduced after the disaster. Consequently, in the first phase, payments to contractors were late. After 42 days the contractors were entitled to interest, but they did not insist.

Continuity of key staff facilitated a cooperative working relationship. Continuity of key personnel led to mutual understanding and trust. The Bank officer in charge of the project remained in that role almost to the end. Continuity at R&BD was maintained throughout by the Special Secretary who later became Principal Secretary. This worked to the ultimate benefit of the project. Political stability also helped. The same government under the same Chief Minister governed the state from October 2001 until the completion of the project.

Demand for good work was created by setting examples. An instance of this was the road from Mehasana to Palanpur (both district headquarters) which passed through two smaller towns Sidhpur and Unjha. Sidhpur and Unjha were provided

with service roads, well-designed traffic junctions and good roadside drainage. This aroused public demand for roads with similar infrastructure in Mehsana and Palanpur. It was argued that these are bigger towns and as district headquarters must have such facilities also. It became easier to get approvals for such proposals from Finance, Planning and other departments as these demands were backed by support from the people's representatives.

The works executed under GSHP raised public expectations. The public demanded that other departmental road works were carried out to the same standard. This promoted a positive and constructive work culture throughout R&BD.

Public involvement resolved issues. For example, the project involved building up the crust of the carriageway by thick layers of granular sub-base which raised the formation level and utilised the crust underneath the existing carriageway. There was strong public opposition to this method as it was thought this would cause inconvenience and the works would linger on. There was a call for the additional crust to be made up of bituminous overlays, which was not an economically sound proposal. A pilot road section of 10 km was built to demonstrate that the proposed road construction method would not be as troublesome as feared and that the quality would be as good as a road built using bituminous overlays.

Contractors were helped to develop and grow. Contractors are quick to praise the GSHP supervision consultant, who was constructive and helpful to the contractors. The contractors greatly appreciated the time spent by the consultant explaining, helping and educating them. The contractors grew in their ability and were able to perform to standards they had hitherto not been asked to achieve. At the end of GSHP the contractors felt confident to bid for larger works and in other states.

GSHP was Gujarat R&BD's second project funded by the World Bank. The first was for rural roads. Heavy machinery for that project was acquired by R&BD to assist the contractors working on those projects. This machinery was useful for executing GSHP. Post 1991 the economic climate in the country became more liberal. Imported spare parts for heavy machinery became more readily available, enhancing the utility of these machines further.

A contractor who has seen his business nearly five-fold described the GSHP system as "perfect". He gained invaluable experience from contract supervision by an international consultant applying FIDIC contract conditions. He had to hire good technical staff and good equipment, which he purchased from Europe. Early relocation of utilities (which save 5% or more of the cost, according to another contractor) was achieved much of the time. Contractors as a whole said processes were transparent and payments prompt. The three parties (Employer, Contractor, Engineer) interacted in good spirit.

Post GSHP the story remains very positive; the gains made are permanent. Tender transparency is good. Online tenders are accepted, processing is swift and the Chief Minister is "strict"—which stifles possible corruption. Designs are much better than before. Standard designs are used and adapted for site conditions. "Corruption is less, work is faster and there is no problem being paid."

There is still room for improvement. For example, contracts remain heavily in favour of Employer. FIDIC sets out the role of Engineer as an impartial adjudicator of claims by Contractor. FIDIC could be adopted, not just in name, in spirit also. FIDIC is generic whereas specific contracts require specific conditions. These are

spelt out in Conditions of Particular Application, known as COPA. COPA must not be used to shift the powers of Engineer back to Employer.

R&BD benefited greatly. GSHP was a learning experience for R&BD engineers, who were exposed to methods used elsewhere, learnt to work with consultants and learnt to outsource work that the department could not undertake since additional staff had not been approved. Engineers from R&BD were sent abroad for training. This helped them broaden their horizons.

Successful implementation of the project helped R&B to create an image as a department that performs. This helped R&BD to garner more funds once the Finance Department was in a position to allocate more funds following the earthquake restoration work.

Institutional Development Strategy

The IDS study pointed R&BD in the direction of managing the road network—seeing itself in a new light of planning and supervising rather than designing and executing civil works. Whilst the transformation has been partial, rather than complete, it has marked a large step forward in the evolution of the road sector in Gujarat.

The report's conclusions were summed up in an institutional development matrix, reproduced in Table 7. The status of each of these thirteen actions reflecting the judgments of the authors of this report [this Appendix] are briefly stated in Table 8. These are expanded upon in the following sections.

TABLE 6: INSTITUTIONAL STRENGTHENING ACTION PLAN FROM IDS REPORT

Activity	Key Outputs	Action(s) Required
1. Develop a Road Management System and establish units in R&BD to operate the systems	Functioning PMS, BMS and RMMS for state roads	Put out Consultancy and follow up on recommendations
2. Establish an Environmental Monitoring Unit for GSHP which will evolve into a permanent unit in R&BD	Functioning GSHP EMU Permanent EMU in R&BD	Establish GSHP EMU and appoint staff. Skills transfer and training at Division level
3. Develop a Project Financial Management System for GSHP and R&BD	Functioning PFMS for GSHP and other R&BD projects	Appoint Financial Manager Development of PFMS for GSHP by PCC
4. Strengthen construction administration and QC systems	Completion of GHSP Strengthened QC Wing, improved control procedures and documents	Appoint supervision consultant to transfer skills Technical audit and quality control for periodic maintenance
5. Establish a Computer Systems Unit and install computer systems needed to operate new management systems	Functioning computer systems in head office and Circle/Division field offices	Introduce computerization at Division and Sub-Division level Procurement and training
6. Establish a Highway Design Unit	Transfer of GSHP design technology to a functioning Highway Design Unit	Decision by R&BD and establishment of Unit
7. Appoint a Legal Advisor in R&BD	Permanent Legal Advisor post	Decision by R&BD and appointment of staff
8. Establish a Policy and Planning Unit in R&BD	Functioning unit, manuals, planning tools and traffic/accident databases	Decision by R&BD and appointment of staff to Unit
9. Establish a BOT Unit to manage BOT and toll projects	Procedures for project evaluation, agreements and monitoring	Activate privatization Cell (BOT) with training, etc.
10. Appoint a Human Resource Development Manager and establish a HRD training program	Functioning HRD system training program in place and R&BD staff receiving training	Decision by R&BD and appointment of HRD Manager
11. Establish a Road Transport Council	Permanent Road Transport Council actively coordinating road sector issues	Already in place. Activate
12. Establish a Road Safety Council	Permanent Road Safety Council actively coordinating road safety initiative	Already in place. Activate
13. Reform road taxation and establish a Road Fund	Fuel tax surcharge to cover Plan and Non Plan expenditures. Road Trust Fund in place	Review by R&BD Decision by GoG

TABLE 7: BRIEF COMMENTS ON IDS ACTION PLAN

Activity	Comment on Status as at end 2009
1. Develop a Road Management System and establish units in R&BD to operate the systems	System working well but tasks outsourced because of difficulties recruiting and retaining suitable staff
2. Establish an Environmental Monitoring Unit for GSHP which will evolve into a permanent unit in R&BD	Implemented in name only. For major projects, the necessary environmental and resettlement investigation is outsourced as part of the feasibility and design work.
3. Develop a Project Financial Management System for GSHP and R&BD	A financial management system was developed by the Institutional Strengthening Consulting Services but has not been fully introduced.
4. Strengthen construction administration and QC systems	Unit is doing a diligent and useful job. "Quality Assurance" concepts are not being applied.
5. Establish a Computer Systems Unit and install computer systems needed to operate new management systems	Computerization proceeded at pace. Staff receive training and must pass computer skills tests to be eligible for promotion.
6. Establish a Highway Design Unit	The unit exists but is not clear as to its mandate. Training of engineers has improved design skills but the Highway Design Unit is not used as the department's "centre of excellence" for design.
7. Appoint a Legal Adviser in R&BD	Appointee resigned. Post vacant. R&BD outsources legal services so this post is mainly administrative. The IDS envisaged a much different role for the Legal Adviser.
8. Establish a Policy and Planning Unit in R&BD	Established and functioning but too much of its functions rest on the Chief Engineer because of problems recruiting and retaining staff. Much of the work therefore outsourced, and this may be the best option.
9. Establish a BOT Unit to manage BOT and toll projects	Established in the form of the GSRDC. Functioning well.
10. Appoint a Human Resource Development Manager and establish a HRD training program	Implemented in name only, but not without some success.
11. Establish a Road Transport Council	Established. Its operation was not reviewed but there is a need for a less formal interaction with civil contractors and other stake holders to air views and avoid problems rather than solving them.
12. Establish a Road Safety Council	Established. Its operation was not reviewed.
13. Reform road taxation and establish a Road Fund	Not actioned, but R&BD does not consider it lacks funding. At least for now, a Road Fund would be of marginal benefit.

Develop a Road Management System

This has been achieved fully, as expanded upon in Chapter 4.

Environmental Monitoring/Management Unit

The report envisaged an in-house environment unit which engaged in community consultation and ensured R&BD projects met standards set for environmental protection, land acquisition and resettlement. The report gave examples of engineering solutions being improved as a result of community consultation.

Appropriately, this role of Environment Officer has been assigned to the Policy and Planning Unit, but recruitment and retention of suitable staff is problematic, as it is with other professional posts that lie outside mainstream engineering.

Financial Management System

A financial management system was developed by the Institutional Strengthening Consulting Services but has not been fully introduced.

Quality Control

The Quality Control wing diligently applies its resources to the checking of the most important civil works. Quality control should not be confined to construction work, however. The IDS study envisaged quality control extending from contract preparation to project financial management. This is a broad scope of work, and checking it all is impractical.

The solution is to follow the principles of “quality assurance” (QA). QA examines the *process* used to create deliverables. With QA there should be no need to check the outputs themselves—although from time-to-time outputs are checked to audit whether the QA system is working as intended.

QA has three components:

- Guidance documents (manuals) and procedures.
- Staff with proper qualifications/training/skills/experience.
- Records of what is done—and of checks of what is done.

The following makes the distinctions clear.

- *Quality Control* checks outputs, either as a census (everything checked) or on a sample basis.
- *Quality Assurance* is a management system to promote quality output. It does so by means of guidance documents for staff with proper qualifications/training/skills/experience and by recording what is done and what internal checks are carried out.
- *Quality Audit* is Quality Control of Quality Assurance (i.e., a check of the QA system).

Hence, the Chief Engineer undertakes Quality Audit and the contractor undertakes Quality Assurance (which includes Quality Control).

The Quality Control wing is true to its title—it does quality control. But, by doing so, it is duplicating or replacing what should be done by the supervision engineers in the field. And what it does is very narrowly focussed. It does not achieve what was intended by the IDS.

This is one of the most prominent examples of a deficiency that pervades all of R&BD—an absence of *job specifications* to tell people what they should be doing and how they will (or should) be judged in annual performance reports. It should be spelt out the Quality Control wing should be adopting a QA approach.

Computerization

This has been achieved very successfully, from the springboard of GoG’s e-governance drive (see Section 5.7.)

To illustrate, the following is the software hardware available in the R&BD Highway Design Unit (circle) at head office.

Hardware

Personal computers	120
Plotters	33
Line printers	4
Laser printers (A3 & A4)	50

Software

STAADPro	Bridge & Buildings Structural Analysis & Design
STRUDS	Buildings Structural Analysis & Design
STRAP	Buildings Structural Analysis & Design
MIDAS	Bridge Structural Analysis & Design
AUTOCAD	Structural Details Drawings of Bridge & Buildings

Highway Design Unit

The unit exists, is well equipped, and is producing a lot of work. It is, however, without a clear mandate as to what design work it should do and what should be done by the divisions.

This is another prominent example of the absence of job specifications telling people what they should be doing and how they will (or should) be judged in annual performance reports.

Legal Adviser

The IDS report envisaged the Legal Adviser working at a senior level giving advice to senior managers on policy matters and correspondence, vetting tender documents and contracts, and negotiating BOT agreements with well-briefed and powerful private developers. The aim is to avoid legal problems rather than solve them.

A legal officer was appointed but has moved to a more important posting in Delhi. The role of the legal officer in R&BD is more like that of a clerk... making sure that nothing is overlooked and seeing that obligations are met. It is proving difficult to recruit a qualified person, which is understandable if the job content is thin. The IDS did not specify that an officer necessarily needed to be recruited. The options were:

- second an individual from the Legal Department.
- appoint an individual as a permanent Legal Adviser.
- retain a private law firm to provide advisory services.

Policy and Planning Unit

Formation of a new unit to deal with "policy and planning" is arguably the most important recommendation in the IDS report. The PPU is at the heart of the transformation from a Public Works Department focused on executing civil works to a modern road agency that concentrates on road management, planning and policy.

Some of the PPU's eleven officers were trained but have since moved on. Recruiting and retaining staff who are not in mainstream engineering is problematic. This may be a transitory problem. On the other hand, it may reflect inherent problems, such as finding a sufficient and steady workload or a perceived lack of promotion opportunities.

The PPU need not necessarily employ staff to meet all its specialist needs. Indeed, the operation of the Gujarat road management system (GRMS) has to date been carried out by consultants. It may be best left that way. Consultants with more than one person capable of undertaking tasks and are thus less vulnerable when a staff member resigns. And consultants are paid only when there is work to be done, not all year round like a member of staff.

BOT Unit

Establishment of a BOT unit has been met by creating Gujarat State Road Development Corporation Ltd (GSRDC) in 1999 (see Section 5.5).

HRD Manager

An HRD post was created in PPU but is unfilled. HRD duties have been assumed by the PPU's Chief Engineer/Additional Secretary, assisted by the Staff Training College. Although this is not in keeping with the intention of the IDS study, it has not been without its benefits. A number of initiatives by the Staff Training College have resulted from this collaboration.

The IDS saw the need for an HRD section against the backdrop of Gujarat Rules of Business 1990, and Rule 11 in particular. Finance Department approval is needed to promote or add new staff where there are financial implications. Consultation with the General Administration Department is required to transfer or promote Executive Engineers (Class I), or above. The IDS concluded that departmental officers were administratively-oriented rather than professionally- and management-oriented because R&BD has no authority to set its own HRD policies in spite of the fact that most of its officers perform technical or specialist functions.

The IDS recommended that an HRD system be established comprising:

- personnel performance appraisal
- career planning
- programs for training and development.

Preparing job specifications/descriptions for all positions should be a precursor to these three elements. (Without job specifications how can performance be assessed?) Without job specifications organisational efficiency and staff morale will likely be significantly compromised.

Institutional Strengthening Consulting Services

The contract for Institutional Strengthening Consulting Services was signed in mid-2003 and (after an extension) the project finished at the end of 2006. The largest task was establishing the Gujarat Road Management System (GRMS) and attendant RMMS and BMS (see below). It also reported on quality management and training needs.

Quality Management

Consistent with the comments made in above, the Institutional Strengthening Consulting Services aim was to:

“Undertake a change in philosophy as it concerns Quality, whereby responsibilities are revised as follows:

Quality Control	Responsibility of the Contractor
Quality Assurance	Execution by R&BD
Quality Audit	Responsibility of the Quality Wing of R&BD.”

In addition to the Quality System development, procedure manuals were prepared as follows:

- Quality System Manual for R&BD
- Model Quality Assurance Plan for a Project
- Construction Supervision Manual
- Road Maintenance Manual
- Quality Control Test Procedures Manual

Thus, material has been supplied that would enable the Quality wing adopt a QA approach to its tasks. It should do so.

APPENDIX 3: GUJARAT ROAD MANAGEMENT SYSTEM

Development and establishment of the GRMS is the major element of the Institutional Strengthening Consulting Services. The GRMS resides on a dedicated server at headquarters in Gandhinagar. It is designed to be simple to use and is connected to the field offices via GSWAN. Extensive training has been given by the consultants, including a “train the trainers” programme to promote wide dissemination of knowledge needed to contribute to and use the system.

GRMS comprises the following modules:

- Road Information System (RIS): The RIS forms the skeleton of the GRMS. It imposes the same, well-defined reference points for all modules. The input data define the nodes and links of the network as well as the road types, link lengths, etc.
- Pavement Management System (MPS): The PMS is designed for strategic and project-level analyses. It is capable of (a) strategic budgeting studies, (b) project level technical analyses and (c) multi-year road works programming and optimization under budget constraints.
- Routine Maintenance Management System (RMMS): The RMMS is designed to improve the quality of routine maintenance through standardization of activities including specifications, performance standards, quantity standards, and supervision.
- Bridge Management System (BMS): The main purpose of the BMS module is to plan, record and monitor bridge inspections, repairs and improvements in a systematic way, enabling preventive maintenance and early identification of deficiencies.
- Traffic Information System (TIS): The TIS stores traffic volume data, as well as data from axle load surveys and origin-destination surveys. The TIS produces a range of analysis/results, including AADT²⁴ estimates of and traffic forecasts.
- Accident Information System (AIS): The AIS records traffic accidents and their attributes so they can be correlated with road data and ‘black spots’ identified.
- Environment and Social Information System (EIS): The EIS helps the department make much wider use of the environmental and social data to reduce the impacts on the physical and human environment.
- Monitoring and Evaluation System (MES): The MES measures/assesses the performance of works/services to thereby manage outcomes and outputs more effectively in relation to defined targets.
- Budgeting and Programming System (BAP): The BAP system has two options:
 - use HDM-4 to prioritise expenditures and generate a multi-year works programme constrained, if necessary, by the available funds,¹⁵ or

²⁴ Annual average daily traffic.

²⁵ Version 4 of the Highway Development and Management Model (HDM-4) is a computer system which uses data on pavement structure and condition, road geometry, traffic counts, heavy vehicle axle loads, vehicle operating costs, and road construction and maintenance costs to optimize road expenditures for, typically, a period of 20 years.

- use a “decision tree” method to generate a one-year works programme using simple rules that were devised from analyses using HDM-4.

This structure is comprehensive and will be invaluable when (if) it is fully implemented.

Already, great value is being derived from the core modules of the system (which are based on HDM-4) as they are fully operational and working well. These modules are the RIS (Road Information System), PMS (Pavement Management System) and BAP (Budgeting and Programming System). Although R&BD staff have been trained in their use, the difficulty retaining staff in PPU has meant that the consultant who set up the system is hired annually to operate it and produce the prioritised programme of works, subject to budget constraints.

This process takes inputs from the TIS (Traffic Information System) which is also fully functional and is being used as intended. A state-wide traffic counting programme is undertaken twice yearly at a large number of locations across the state. The data are entered in the system which makes seasonal and other adjustments to produce forecasts of average annual traffic. Axle load data and origin-destination data are collected intermittently, in the course of preparing projects.

In 2010-11, the RIS will be extended to include 33,000km of MDRs and ODRs (major district roads and other district roads). The plan is to eventually also include VRs (village roads).

The RMMS (Routine Maintenance Management System) is simply an inventory and data base. It is not yet contributing to more efficient expenditure on routine maintenance by the field offices.

The BMS (Bridge Management System) is not so much a “system” for maintenance management as a catalogue of bridge condition with photographs. As such it enables specialist engineers to give advice to field officers without the time and cost of travel to site. It is not known whether the BMS is being used this way in practice.

The AIS (Accident Information System) is not operating. Cooperation of the Police, who need to enter the required information on field data sheets, has not been forthcoming.

The EIS (Environment and Social Information System) has been populated. Updating the EIS is meant to take place when there is a change in field conditions. This begs the question of how a change in conditions is notified, and what happens if there is no update after the change.

The MES (Monitoring and Evaluation System) is not working as intended. The field officers are meant to enter details of work underway and completed. Most are not doing so.

The current state of the MES underscores the importance of *job specifications* telling people what they should be doing and how they will (or should) be judged in annual performance reports.

The MES also underscores the importance of *relevance*. The system's core modules produce a works programme defining the major works to be done in the forthcoming year but, to the field engineer, this is just a "black box". He contributes data for the system to use, but has no further contact with it until he is presented with a list of tasks. There is no point inventing work just to make the field engineers feel an affinity with the process, but there may be a way in which the field engineers can use the system themselves. For example, field engineers may find themselves having to redeploy funds that, for some reason, will not be spent on the works to which they were allocated. Could they use the BAP module in decision tree mode to optimise that redeployment?

APPENDIX 4: GUJARAT ECONOMIC & POLITICAL BACKDROP

The population of Gujarat state has passed 50 million. The gross state domestic product (GSDP) of Gujarat (see **Error! Reference source not found.**) is growing in real terms at a compound rate of around 9% annually in real terms (i.e., taking out the effect of inflation). GSDP per person is 25% above the average for India.

TABLE 8: GUJARAT GSDP (RS CRORE)

Year	Current prices	Constant prices	Percent growth over previous year	
			Current prices	Constant prices
1999-00	109861	109861	-	-
2001-02	123573	113277	11.2	8.4
2002-03	141534	122500	14.5	8.1
2003-04	168080	140598	18.8	14.8
2004-05	189118	153079	12.5	8.9
2005-06	219780	170200	16.2	11.2
2006-07	254533	185802	15.8	9.2
Mean			11.5	9.2

Source: Socio-economic Review, Gujarat State 2007-08, Directorate of Economics and Statistics, Gujarat, February 2008.

The tertiary sector is the highest contributor to GSDP. A key driver of Gujarat's economy is manufacturing, notably textiles, petrochemicals, pharmaceuticals and agro-based products.

As a proportion of India's output Gujarat accounts for:

- 39% of industrial output
- 10% of mineral production
- 25% of its textile production
- 40% of pharmaceutical products
- 67% of petrochemical production
- 20% of exports.

Gujarat has extensive forest cover and a large cropping area. It is a leading producer of horticultural crops and Gujarat Cooperative Milk Marketing Federation enjoys a significant market share in India's processed food sector. The agricultural sector, including animal husbandry, contributes 15% of GSDP. Gujarat produces 60% of India's cotton and two-thirds of its denim. It also produces one-third of India's man-made fibre.

The state is rich in minerals, especially limestone, lignite and bauxite. The state also has India's largest hydro-electricity project, the Sardar Sarovar project.

The chemical industry in Gujarat accounts for half the state's annual investment. India's first specialized chemical handling port was developed at Dahej, in the Bharuch district. A liquefied natural gas (LNG) terminal has been recently commissioned at Dahej to serve the power sector and other industries. Jamnagar is the site of what is claimed to be the world's largest "greenfield" refinery. Over one-third of India's installed refining capacity is in Gujarat.

The Government of Gujarat (GoG) has taken a proactive approach to state development. In 1999 it announced 'Gujarat Infrastructure Agenda: Vision 2010' which envisaged investment of Rs.116,983 crore encompassing 383 projects in: power, ports, industrial parks, roads, railways, water supply, sanitation, urban transport, water, airports, a gas grid and information infrastructure.

To attract investment Gujarat has set up single-window facilities at the district level. The Gujarat Industrial Promotion Board is setting up kiosks at important places to disseminate information regarding regulations governing new investment.

Of the states of India, Gujarat has the longest coastline. It has 42 functional ports including the major port at Kandla which is the site of India's largest multi-product Special Economic Zone (SEZ). Gujarat has actively sought private participation to improve infrastructure facilities. Gujarat developed port facilities, estates and roads in conjunction with the private sector.

Ports in Gujarat can serve many landlocked northern states, namely Punjab, Haryana, Himachal Pradesh, Uttarakhand, Delhi, Rajasthan and western parts of Uttar Pradesh and Madhya Pradesh. Roads connecting Rajasthan, Punjab, Haryana, Delhi and other states to Mumbai, the commercial capital of India, pass through Gujarat. To exploit this geographical advantage, the importance of good roads is recognized by a population known for its strong business and entrepreneurial instinct. Accordingly there is political will to develop Gujarat's roads and keep them in good condition to attract investment.

Road works included in the state budget under the head 'Pragati Path' and 'Vikas Path' are evidence of political will. These corridors are being developed by GoG independently from its own resources to ensure good road connectivity of adequate capacity from one corner of the state to the other (around 500 km) in six to seven hours.

In addition to well-developed road infrastructure, Gujarat has 13 domestic airports (the highest of the states) and one international airport. It also has an extensive railway network of 5,188km.

Likewise, the energy sector is well-developed. Installed electricity capacity was 9,628MW in 2008 with very low transmission losses of less than 4%. Gujarat is the only state in India to have an integrated gas grid. It is 2200km in length and is operated on an open-access common carrier principle.

Gujarat has more than 2 million direct telephone exchange lines and more than 20 million cellular telephone subscribers.

Gujarat has the highest geographical area (27,125 hectares) designated for Special Economic Zones (SEZs). As at the end of 2008 Gujarat had 55 approved of which 45 are sector-specific and 10 are multi-product. Gujarat's three operational SEZs are: Kandla SEZ, Sur SEZ and Surat Apparel Park. It claims to be the first state to formulate an SEZ policy, which includes flexible labour laws and exit options for investors.

Gujarat is proactive in seeking development. (See Box: *Vibrant Gujarat* Global Investors' Summit 2009.) As an inducement, the state makes a commitment to provide all supporting public investment.

In summary, Gujarat is a prosperous state and has a progressive government with strong political will. This is a favourable environment for infrastructure development (including roads) and for reform of infrastructure management. This is the backdrop to the success of the road sector in Gujarat.

BOX 4: VIBRANT GUJARAT GLOBAL INVESTORS' SUMMIT 2009

Vibrant Gujarat Global Investors' Summit 2009



The Government of Gujarat (GoG) organized the 4th biennial Global Investors' Summit 2009 during 12-13 January 2009. Based on the theme 'Gujarat Going Global' and aimed at bringing together business leaders, investors, corporations, thought leaders, policy and opinion makers; the summit served as a perfect platform to understand and explore business opportunities with the State of Gujarat.

'Vibrant Gujarat': Global Investors' Summit 2009 was likewise a success. During the course of two days MoUs worth US\$ 243 billion were signed. The summit witnessed participation of delegates from 45 countries, amounting to over 600 foreign delegates, who were joined by a "who's who" of Indian industry.

Japan was the Partner Country to this Summit. This being the first time any country has agreed to partner with a State of another country. Japan External Trade Organisation was designated as the partner organization. Japan also reciprocated Gujarat's initiatives for mutual economic cooperation by sending two senior level delegations, led by the Ambassador of Japan to India and a Former Minister of Economic & Fiscal Policy of Japan. The maximum number of delegates was from Japan, totalling to over 70 members. Another major delegation was from USA. The 232 stalls catered for companies from India and 16 foreign countries.

Earlier Summits held in 2003, 2005 and 2007 led to the signing of MoUs worth US\$ 14 billion, US\$ 20 billion and US\$ 152 billion respectively.

<http://www.business.gov.in/outerwin.htm?id=http://www.vibrantgujarat.com/>

APPENDIX 5: ROAD DEVELOPMENT IN GUJARAT

Funds available to R&BD have increased dramatically since the start of GSHP. Inflation has been of the order of 80% from 1998-09 to 2008-09 but the increases in funding exceed that by a very wide margin (see **Error! Reference source not found.10**).

TABLE 9: ANNUAL PROVISION OF FUNDS TO R&BD, 1998-99 AND 2008-09, RS CRORE

		1998-09	2008-09	% change
New construction	269	1626	604	
Maintenance				
	Routine	138	250	181
	Periodic	34	62	181
	Emergency		20	
Other	22	13	150	
SUBTOTAL	463	1971	425	
Other sources of funds				
	NABARD		520	
	TFC		224	
	CRF	1	122	
TOTAL	464	2838	611	

GSHP widened and strengthened 871 km of state highways between the end of 1999 to the end of 2007 and carried out maintenance of a further 969 km. The original financial outlay was Rs 1524 crore by the World Bank and Rs 640 crore by GoG. Due to cost savings the final figures were much less, namely Rs 1190 crore and Rs 545 crore.

Statistics of the Gujarat road network before and after the GSHP are found in **Error! Reference source not found**.below.

TABLE 10: ROAD LENGTHS BY CROSS SECTION AND SURFACE TYPE, 1998 AND 2008

ROAD LENGTH - March 2008

		SURFACED ROADS										UNSURFACED ROADS			GRAND TOTAL	
		BLACK TOP					WBM (gravelled road)					Total surf-aced	Motor-able	Non-motor-able		Total un-surf-aced
		BSSL	SSL	SDL	SML	Total	BSSL	SSL	SDL	SML	Total					
National highways		0	16	1375	1842	3233	0	0	0	0	0	3233	0	11	11	3244
	Total	0	16	1375	1842	3233	0	0	0	0	0	3233	0	11	11	3244
State roads	SH	855	9655	6736	817	18063	6	86	9	0	101	18164	103	153	256	18420
	MDR	465	2913	267	30	3675	7	5	0	0	12	3687	4	32	36	3723
	ODR	108	1760	22	0	1890	17	4	0	0	21	1911	2	0	2	1913
	VR	73	2996	16	0	3085	0	9	0	0	9	3094	2	6	8	3102
	Total	1501	17324	7041	847	26713	30	104	9	0	143	26856	111	191	302	27158
Panchayat	SH	17	7	0	0	24	0	0	0	0	0	24	3	0	3	27
	MDR	6327	9553	235	41	16156	197	145	0	0	342	16498	148	195	343	16841
	ODR	3613	3781	21	0	7415	367	166	0	0	533	7948	195	296	491	8439
	VR	8379	5606	57	8	14050	1836	1062	0	0	2898	16948	752	703	1455	18403
	Total	18336	18947	313	49	37645	2400	1373	0	0	3773	41418	1098	1194	2292	43710
ALL	NH	0	16	1375	1842	3233	0	0	0	0	0	3233	0	11	11	3244
	SH	872	9662	6736	817	18087	6	86	9	0	101	18188	106	153	259	18447
	MDR	6792	12466	502	71	19831	204	150	0	0	354	20185	152	227	379	20564
	ODR	3721	5541	43	0	9305	384	170	0	0	554	9859	197	296	493	10352
	VR	8452	8602	73	8	17135	1836	1071	0	0	2907	20042	754	709	1463	21505
	GRAND TOTAL	19837	36287	8729	2738	67591	2430	1477	9	0	3916	71507	1209	1396	2605	74112

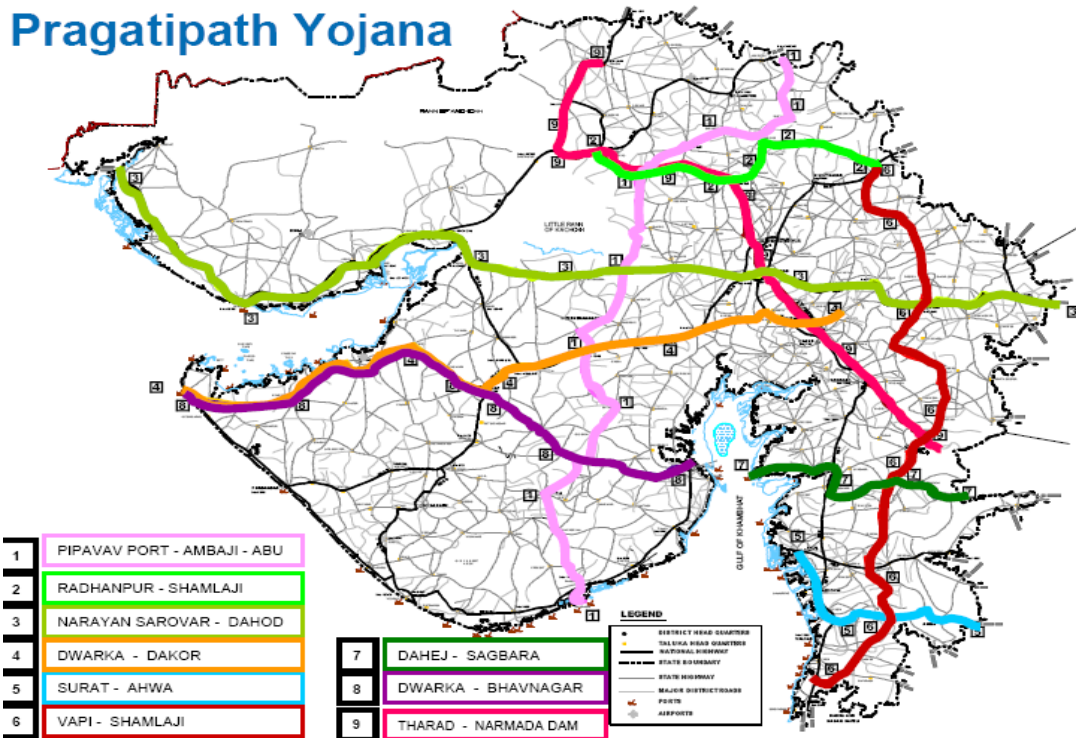
ROAD LENGTH - March 1999

		SURFACED ROADS										UNSURFACED ROADS			GRAND TOTAL	
		BLACK TOP					WBM (gravelled road)					Total surf-aced	Motor-able	Non-motor-able		Total un-surf-aced
		BSSL	SSL	SDL	SML	Total	BSSL	SSL	SDL	SML	Total					
National highways		0	0	1600	277	1877	0	0	0	0	0	1877	0	0	0	1877
	Total	0	0	1600	277	1877	0	0	0	0	0	1877	0	0	0	1877
State roads	SH	1515	10371	6727	174	18787	13	245	23	0	281	19068	164	200	364	19432
	MDR	435	2706	159	0	3300	5	58	0	0	63	3363	13	33	46	3409
	ODR	294	1522	11	1	1828	23	23	0	0	46	1874	32	0	32	1906
	VR	317	2306	0	0	2623	8	30	0	0	38	2661	10	29	39	2700
	Total	2561	16905	6897	175	26538	49	356	23	0	428	26966	219	262	481	27447
Panchayat	SH	23	24	0	0	47	26	0	0	0	26	73	3	10	13	86
	MDR	8881	6371	70	6	15328	872	612	0	0	1484	16812	463	255	718	17530
	ODR	4017	1709	6	0	5732	1453	712	0	0	2165	7897	553	185	738	8635
	VR	5880	1583	29	3	7495	5291	2108	0	0	7399	14894	1619	862	2481	17375
	Total	18801	9687	105	9	28602	7642	3432	0	0	11074	39676	2638	1312	3950	43626
ALL	NH	0	0	1600	277	1877	0	0	0	0	0	1877	0	0	0	1877
	SH	1538	10395	6727	174	18834	39	245	23	0	307	19141	167	210	377	19518
	MDR	9316	9077	229	6	18628	877	670	0	0	1547	20175	476	288	764	20939
	ODR	4311	3231	17	1	7560	1476	735	0	0	2211	9771	585	185	770	10541
	VR	6197	3889	29	3	10118	5299	2138	0	0	7437	17555	1629	891	2520	20075
	GRAND TOTAL	21362	26592	8602	461	57017	7691	3788	23	0	11502	68519	2857	1574	4431	72950

SH state highway
 MDR major district road
 ODR other district road
 VR village road
 BSSL below-standard single lane
 SSL standard single lane (3.75 - 4.05m carriageway)
 SDL sandard double lane (7m carriageway)
 SML standard middle lane (5.0 - 5.5m carriageway)

GoG has implemented a program called Pragatipath Yojana which widened and strengthened 3710 km of roads at a cost of Rs 1750 crore in the corridors shown in **Error! Reference source not found.**3. Average speeds of 80km/h are envisaged to ake it possible to travel from one corner of the state to another in six to seven hours.

FIGURE 3: THE PRAGATIPATH YOJANA ROAD NETWORK



Since 2005-06 another program known as Vikaspath has been upgrading roads passing through urban areas as 2- or 4-lane carriageways with kerbs, footpaths, lighting, drainage, and provision for parking. Separate pipelines or channels were provided for utilities (water, gas, telephone etc.). Rs 2250 crore has been expended thus far. When the work is completed, at a remaining cost of Rs 150 crore, 688 km of roads will have been improved.

Another programme known as Kisanpath is improving rural connectivity for farm produce and has to date spent Rs 370 crore on improving nearly 5300 km of roads benefiting 3500 villages. A further 1400 villages will gain from the expenditure of a further Rs 470 crore.

APPENDIX 6: INTERNATIONAL EXPERIENCE IN ROAD SECTOR REFORM

Performance Measurement and Management

International experience of transport agency performance and accountability is still developing, so much so that in 2009 the US Federal Highway Administration sent a team to learn from countries that have had performance management systems for at least a decade. (For definitions, see box.) The teams studied how the transport agencies (i) demonstrated accountability to elected officials and the public and (ii) how they used goal setting and performance measures to manage, explain, deliver, and adjust their budgets and internal activities.

In more detail, the team sought the following information:

- examples of how national, State, or provincial strategic goals are translated into meaningful performance measures for the transportation agency;
- ways to establish effective and achievable performance levels based on input from the public, elected officials, and the business community;
- examples of linking performance and transparency to national, state, regional, and metropolitan plans and budgets;
- ways in which transportation agencies demonstrate good governance and accountability in meeting or exceeding performance expectations; and
- advice on what works and what does not when performance measures are applied to Federal or multiregional transportation programs.

BOX 5: • PERFORMANCE MEASUREMENT AND MANAGEMENT:

Performance Measurement and Management:

Definitions

Performance measurement is ongoing monitoring and reporting of progress toward goals.

Performance measures can be a qualitative or quantitative. They measure outcomes, outputs, efficiency, or cost-effectiveness of efforts to meet strategic goals, not merely short-term aims.

Performance management translates strategic goals into specific targets, determines actions to achieve them, allocates resources to perform those actions, and undertakes performance measurement.

The agencies consulted were:

- Swedish Road Administration, Sweden
- Department for Transport, and Highways Agency, England
- New South Wales Roads and Traffic Authority, and Austroads, Australia

- Victoria Department of Transport, and VicRoads, Australia
- Queensland Department of Transport and Main Roads, Australia
- New Zealand Transport Agency, New Zealand.

The countries and agencies chosen have mature performance management systems and large, complex, industrialized transport networks and many services provided by local governments or private contractors. All are parliamentary democracies, which limits the speed with which policies can change.

The following sections summarise the conclusions reached by the FHA team.

Broad Policy Goals and Collaboration

Central governments articulate broad policy goals, and transport agencies translate those goals into specific performance measures or targets in collaboration with the federal or state governments. This collaborative target-setting occurs between national and State governments and between State and regional/local governments.

The team seldom found that one level of government mandates the performance of another. Rather, they negotiate performance measures and targets which are codified in one- to five-year service agreements. Negotiations are fluid and continuous, and supported by extensive data collection that show trends in system wide performance. All agencies were highly focussed when it came to safety.

Cascading national goals into state/regional performance measures creates a focus on outcomes rather than processes.

Unsurprisingly (given the uncertain longevity of political office) all agencies noted that elected officials emphasised short-term accomplishments at the expense of long-term trends.

Connecting Funding Allocations and Performance

Transport agencies' performance management systems demonstrated improved customer satisfaction, more reliable travel times, reduced environmental impacts, and greater efficiency. Performance management systems dovetailed with asset management systems that demonstrated a good understanding of funding and investment needs. Agencies benefitted by earning credibility with legislators and budgeting agencies.

Most agencies did not have dedicated road user funds and budget levels were not strongly influenced by performance. This was due to overall funding constraints and competition from other sectors, such as education and health. One agency stated that while its performance management did not garner budget increases, elected officials viewed it as so effective that it maintained its budget when others were cut. Half the agencies expressed discouragement that they could not convince legislators to spend more on network preservation despite sophisticated documentation.

Ambitious Goals and Visions Drive Investment

Ambitious national visions and broad goals, more than specific performance targets, generated new investments. When governments articulated new

transport visions, adopted new transport goals, or sought to use transport investment to achieve other ends (e.g., economic stimulus) the likelihood of new investment increased.

The following are examples of recent budget increases for expanding the network or new economic stimulus programs:

- In 2009, the Australian “Nation Building” program funded a record \$22.1 billion road and rail construction program.
- Sweden has been undertaking significant investments for nationally important corridors and bridges. A cordon pricing system will be used to pay for a new outer belt for Stockholm.
- New Zealand’s new government is pursuing a national road network similar to the US system.
- Great Britain is using tolling and long-term design-build-finance-operate contracts for a \$10.2 billion upgrade and long-term maintenance of the M25 highway.

Value for Money

“Value for money” is a common theme. Several agencies apply benefit-cost analysis to every project. Benefit-cost analysis gives agencies a common language to demonstrate the value of their projects and programs.

Sometimes major projects are selected for political and policy reasons, not just benefit-cost ratios. And some are re-evaluated after they are completed, to check whether the expectations of the original benefit-cost analysis are realised.

Several agencies summarize future asset management needs to quantify the government’s future financial liability and reveal the consequences of under-investment in maintenance.

Accountability is Transparent

All agencies produce detailed, ongoing measures detailing achievement of goals and management of public resources. Regular reporting is viewed as critical for accountability.

Agencies regularly reviewed performance with their managers to produce monthly, quarterly, and annual performance summaries. Continual two-way dialogue occurred between ministers and executives, as well as parliamentary committees.

Limited Number Targets

In general, governments have steadily reduced the number of targets for transport agencies and moved toward fewer, broader, more policy-oriented goals. For example, since 1998 the number of measures to be met by the UK agency shrunk from 600 to 30.

“Do It With People, Not To Them”

“Do it with people, not to them” was both a direct quote and a common sentiment of transportation officials.

The preferred way to manage performance is: carrots versus sticks, incentives versus penalties, dialogue versus dictates.

Performance measurement identifies areas for improvement, not imposition of penalties. When improvement is needed, it is achieved through training, benchmarking, peer exchanges, and local agency staff development.

Performance Management Takes Time and Resources

All agencies have staff dedicated to collecting and reporting performance data. Performance measures evolve. They take time and significant effort to develop. Outcomes are difficult to measure—such as transport’s effect on the economy.

Lessons Learned

The following are the lessons learned by the team:

- Articulate a limited number of high-level national goals linked to clear targets and measures of success.
- Negotiate intergovernmental agreements on how agencies will pursue these national goals, adapted to reflect regional or local priorities.
- Evaluate performance by tracking performance measures and reporting them in clear language.
- To promote performance, and achieve targets, encourage state, regional, and local agencies by incentives, training, and support (not penalties).
- Rather than focus on many short-term targets, use performance management to advance long-term improvements in decision making and investment.
- Use benefit-cost analysis to demonstrate value-for-money. Undertake some post-construction evaluations to assess whether the anticipated benefits were realized.
- Recognize that major national visions, not achievement of narrow targets, tend to generate new investment.
- Express long-term deferred maintenance as a long-term future liability which links budget allocation to long-term sustainability of the network.
- Demonstrate accountability by producing annual performance reports on agency achievements. Rather than use technical terms, report results using language that is meaningful to the public.
- Collaborate frequently with other government agencies. Meet periodically with top leadership on cross-cutting issues such as economic development, public health, highway safety, and so on.
- As well as the usual performance measures (infrastructure condition, internal operations, transit times,...) have a strong safety focus and document the results of safety measures.
- Focus on desired outcomes for travel time reliability that lead to expanded strategies for highway operations.
- Decision making needs high-quality performance data. Provide resources to collect, analyze and report performance data.
- Performance management is a culture that needs to be fostered so that it becomes part of the organisation.

HIGHWAYS AGENCY BUSINESS PLAN— UNITED KINGDOM

One of the agencies visited by the Federal Highway Administration team was the UK Highways Agency, which is an executive agency of the Department of Transport. The Highways Agency has a highly developed performance management system. This section describes its fifty-page Business Plan 2009-10.

Aim, Objectives and Values

The Business Plan states the Agency's aim, objectives and values as follows:

Our aim is "Safe roads, Reliable journeys, informed travellers" and all of our work is framed around delivery against this aim.

Our prime objective is to deliver a high quality service to all our customers by:

- reducing congestion and improving reliability.
- improving road safety.
- respecting the environment.
- seeking and responding to feedback from our customers.

We also have four enabling objectives.

- To ensure more effective delivery through better working relationships.
- To implement best practice and innovative solutions to improve service.
- To be a good employer.
- To be an efficient agency with effective business processes and resource management systems.

There are six values setting out how we behave in fulfilling our objectives:

- Customer Service—we put our customers first and aim to deliver world class quality of service
- Teamwork—we work together in dynamic teams and partnerships.
- Continuous Improvement—we are committed to learning, innovation and flexibility.
- Diversity—we value people for who they are and their contributions.
- Best Value—we provide quality services that provide value for money.
- Integrity—we build trust by acting with honesty, openness and fairness.

Challenges

The Highways Agency sees its prime "network challenges" as safety and reliability of travel time. The Agency has a Public Service Agreement (PSA) with the government which says: "The Highways Agency will minimise increases in journey time unreliability through the implementation of a

programme of delivery actions.” The safety PSA has a quantitative target of a 40% reduction in those killed or seriously injured in the decade to 2010.

The Highways Agency’s “strategic challenges” are sustainability (lasting economic, social and environmental benefits), climate change (reducing carbon emissions) and fiscal stimulus (boosting the economy by increased public expenditure in response to the current financial crisis).

To address these challenges, a set of deliverables and targets have been agreed with Ministers and performance against targets is reported in annual reports. The following are the areas in which performance is measured.

- Reliability— implement a programme of delivery actions that tackle unreliable journeys on the strategic road network.
- Major Projects— deliver to time and budget the programme of major schemes on the strategic road network.
- Safety— deliver the Highways Agency’s agreed proportion of the national road casualty reduction target.
- Maintenance— maintain the strategic road network in a safe and reliable condition, and deliver value for money.
- Carbon Emissions— contribute to national and international goals for a reduction in carbon dioxide emissions by lowering the Highways Agency’s emissions.
- Customer Satisfaction— deliver a high level of road user satisfaction.
- Efficiency— deliver the Highways Agency’s contribution to the Department for Transport’s efficiency target.

A corporate scorecard is used to align the Agency’s business activities with its aims and objectives. The scorecard also provides staff with a clear link between individual and team objectives and the Agency’s high-level performance targets.

The budget can be categorised by five areas of activity: traffic management; major improvements; technology improvements (e.g., installation of CCTV cameras); maintenance (to minimise lifetime costs of assets); and smaller schemes (e.g., research and development, information technology).

Managing, Maintaining and Improving the Network

The Agency’s Reliability Delivery Plan consists of seven programmes containing 30 measures to reduce congestion. GPS equipment is reducing accident investigation times and allowing lanes to be re-opened quicker. Local solutions are being applied to fix specific problems. “Quick change” moveable barriers are being used at road works to make the maximum number of lanes available at peak times. Technology, such as variable message signs, is being used to improve traffic flow management. A 24-hour information service and real-time travel information guides road users’ travel decisions.

The Agency aims to maintain the network in a safe and serviceable condition whilst minimising lifetime costs. Maintenance needs are identified by regular asset condition surveys and inspections. Road condition information (rutting, road texture and road profile) is captured by survey vehicles travelling at traffic speed. The Agency is currently introducing the world’s first Traffic Speed

Deflectometer vehicle, which measures the pavement's structural condition without the need to close traffic lanes. Improvements to the Integrated Asset Management Programme are ongoing.

For the delivery of major schemes to improve the network, the Agency has been building its commercial and project management capabilities. It is now focussing on the following areas.

- Introducing better defined performance measures for suppliers, to enable the Agency to manage their activities.
- Providing commercial capability training for our staff.
- Completing the establishment of a new Commercial Division.
- Extending and improving use of 'earned value' management techniques.
- Providing training specific to the needs of project managers.

Improving the Environment

Acting on environmental responsibilities forms part of the Agency's approach to Sustainable Development. The Agency is reviewing its strategic approach to the environment, to minimise negative impacts of roads and to enhance the quality of the environment where that is practical and cost effective. This covers air quality, cultural heritage, nature conservation, noise, water quality and drainage, materials and landscape.

Supporting Wider Government Policy

The strategic road network plays an important part in supporting wider government policy... spanning spatial planning, national road safety goals and sustainability.

The Agency is producing its third Sustainable Action Plan in support of the government's sustainability strategy 'Securing the Future' published in 2005. It is working on climate change, reduction of carbon emissions, and safety. The Agency has adopted a Safety Risk Management culture to ensure the safety needs of road users and road workers are considered when a road scheme is being developed and delivered.

Transport planning needs to be aligned with wider spatial planning. The Agency is working with regional and local planning bodies and developers to find sustainable transport solutions to support housing and development.

The Agency is contributing to the Department for Transport's 'Value for Money' delivery agreement with the Treasury, which was established as part of the 2007 Comprehensive Spending Review. Efficiencies will be achieved through a variety of activities, including the staged introduction of new maintenance contracts, managing down the cost of major projects, and minimising the impact of construction industry inflation through better procurement.

The Agency has responded to the government initiative to improve handling of datasets that hold sensitive personal data to protect them from loss or accidental release. All staff are completing a training course to raise awareness of data handling and information risk issues. We will also continue to work with

our supply chain so that they fully understand our requirements for protecting information they may be handling on our behalf.

Building Capability

The Agency is working with staff to develop leadership, people management and delivery capability, including programme and project management skills, commercial and contractual competence. Modernisation of rewards in line with the Cabinet Office reward principles is intended to improve organisational flexibility.

Engaged employees are more connected to their work and organisation, which results in better performance and customer satisfaction. 'You Make It Happen' Awards to staff members recognise outstanding examples of actions and attitudes.

The Agency is endeavouring to work with a wider range of suppliers. To that end it has established a Supplier Diversity Day to see how we can better work with the supply chain.

Customer Focus

Communicating with customers and stakeholders is an important part of the Agency's job. Each year it communicates with about 13,000 customers through road users' satisfaction surveys. By asking for views and acting on feedback the Agency can raise its standards by addressing potential improvements.

An annual Stakeholder Performance Survey of 3000 stakeholders reveals what drives satisfaction and dissatisfaction. By working closely with stakeholders the Agency conveys the rationale behind its work and receives feedback and ideas—which it considers to be true collaboration.

We continue to look for ways to help our customers with their journeys. Our Customer Promise consists of a series of enduring statements to focus and drive the service we provide. It helps to provide shape and direction for our entire workforce. And our customers should be able to see the benefits of our actions in relation to each aspect of the Promise. It will also assist us in delivering our own contribution to the Government's Service Transformation Agreement.

To drive the service it offers and guide its workforce the Highways Agency has formulated a 'Customer Promise' as follows.

We will:

- help you make your journeys safely and reliably.
- provide value for money and invest in improved services.
- provide information to help you make choices before and during your journey.
- clear up incidents quickly and safely.
- limit any delays when carrying out road works and improvements.
- play our part in protecting the environment.
- ask you for your views and act on feedback.
- deal with you promptly, courteously and helpfully.

ROAD REFORM IN NEW ZEALAND

The Beginning: Funding Reform

New Zealand is prominent in road sector reform. Its reforms date from April 1978 when a sophisticated system of Road user charges was introduced. Road user charges were motivated by the fact that pavement costs are principally determined by heavy vehicles, mainly trucks. Whilst it is equitable that users are charged for the road costs they incur, the main reason for road user charges was to encourage trucks to spread their weight over the pavement by fitting the right number of axles. Trucks bought licences in multiples of 1000 km at a price that depended on the nominated maximum weight and the axle configuration. Light vehicles paid their road user charges through a per-litre levy on fuel. All revenues were paid into a road fund for spending solely on constructing and maintaining roads.

The road fund was administered by the National Roads Board, chaired by the Minister of Works and Development and with members representing the government, road users, and local authorities. The national Roads Board was serviced by the Road Division of the Ministry of Works and Development which was also responsible for planning, construction and maintenance of the national network of 'state highways'. Local roads were the responsibility of local authorities. Prioritisation of road projects was mainly based on benefit-cost analysis which was introduced in the early 1970s.

The road fund paid for all costs of state highways and half the costs of local roads.

Road Management Reforms: First Round

In 1984, the government-of-the-day decided the NZ public sector should be reformed based on the following principles.

- Government policy should be separated from regulatory and service delivery functions.
- Activities that are better undertaken commercially should be contracted-out. Government agencies involved in service delivery should be sold to the private sector or formed into state-owned companies.
- Government departments and agencies should be accountable for managing their operations.

Reforms in the transport sector were based on the following principles.

- Policy advice should be separated from delivery.
- The private sector should own and operate transport systems.¹⁶
- There should be intermodal neutrality in respect of costs, regulations and other impositions.

¹⁶ This was of major significance to the railways. The New Zealand Government Railways had been commercialized and had transformed into the more lean New Zealand Railways Corporation. It was later sold to private interests.

- Modes should compete freely, with minimal government intervention.
- The government's role is to formulate strategic policy from a multi-modal perspective.
- Safety is a joint responsibility of operators and the government.
- Costs of safety monitoring and law enforcement should be met on a user-pays basis.

The process of road reform started in 1986. It signalled the end of the National Roads Board and the Ministry of Works and Development, which had a staff and wage-worker force of nearly 10,000 persons. In April 1988, all the Ministry's commercial activities were grouped into one organisation known as Works and Development Services Corporation (NZ) Ltd a wholly government-owned company. Policy and regulatory functions concerning roads passed to the Ministry of Transport.

In October 1989, the New Zealand government changed the way roads and highways were managed. It established Transit New Zealand, a government entity with an independent board responsible for funding and managing the national state highway network and allocating funds to local roads.

The Transit New Zealand Act 1989 required competitive tendering of design, supervision, maintenance and construction for works on all state highways and most local roads from July 1991. Prior to 1991 the Ministry of Works and Development had carried out most of the work on state highways, without competition. Local authorities had carried out most of their own road works.

After 1991 nearly all road and highway works moved to the private sector. Government-owned businesses were sold and most of local government's construction units were also sold. Instead of building and maintaining roads and highways using their own staff, central government and local governments behaved as network owners managing their assets and developing competitive pricing procedures for securing services and contracting physical works.

Transit New Zealand developed ten-year 'performance specified' maintenance contracts where contractors take total responsibility for delivering agreed service levels. Regular audits check compliance. Cost savings around 20% were achieved, as well as improved services. Other contracting techniques such as design-build, were also utilised.

Transit New Zealand set about developing innovative policies, procedures and information systems that included:

- end-result specifications;
- QA (quality assurance) for all physical works;
- a road asset maintenance management system;
- traffic monitoring systems;
- a safety management system;
- planning and protection systems;
- a national road project financial management system;
- a ten-year forward planning software tool for maintenance planning;
- a property management system;

- a long-term procurement strategy;
- a national highway strategy framework;
- intelligent transport systems, and
- local/national road management alliances.

Transit New Zealand managed state highways on the basis that users should expect a 'no surprises' road environment, with accountability being sheeted home to Transit New Zealand if stated conditions were not met.

Safety Reform

The Land Transport Safety Authority was established in 1993 and charged with promoting land transport safety at reasonable cost—meaning that safety regulations were required to be subject to benefit-cost analysis.¹⁷ The Land Transport Safety Authority maintained a road accident database which helped determine road safety funding allocations, targeting of road safety programmes, and monitoring performance.

Road Management Reforms: Second Round

In July 1996, Transfund New Zealand was created to take over the funding role of Transit New Zealand using road user charges revenues deposited in the National Land Transport Fund. This separated Transit New Zealand's 'funder' and 'supplier' roles, leaving Transit New Zealand to manage state highways. The board of Transfund was accountable to the Minister of Transport under the terms of its Performance Agreement with the government.

A national land transport strategy was developed and made public in December 2002. Once adopted by the Minister of Transport, regional land transport strategies were required to be aligned with the national strategy, bearing in mind community aspirations, availability of resources, and viability of alternative transport modes. Key features of the national strategy were that it should: not be 'owned' by road authorities; be subject to full consultation; and be binding on all regional land transport plans.

A state highway strategy was also developed, setting out Transit New Zealand's vision for the state highway network and translating this vision into specific policies and targets with corresponding performance measures for levels of service, pavement roughness, road geometry, safety, environmental factors, etc.

In December 2004, the Land Transport Safety Authority and Transfund New Zealand were replaced by Land Transport New Zealand, established with the objective of promoting safe and functional transport by land.

Current Status of Reforms

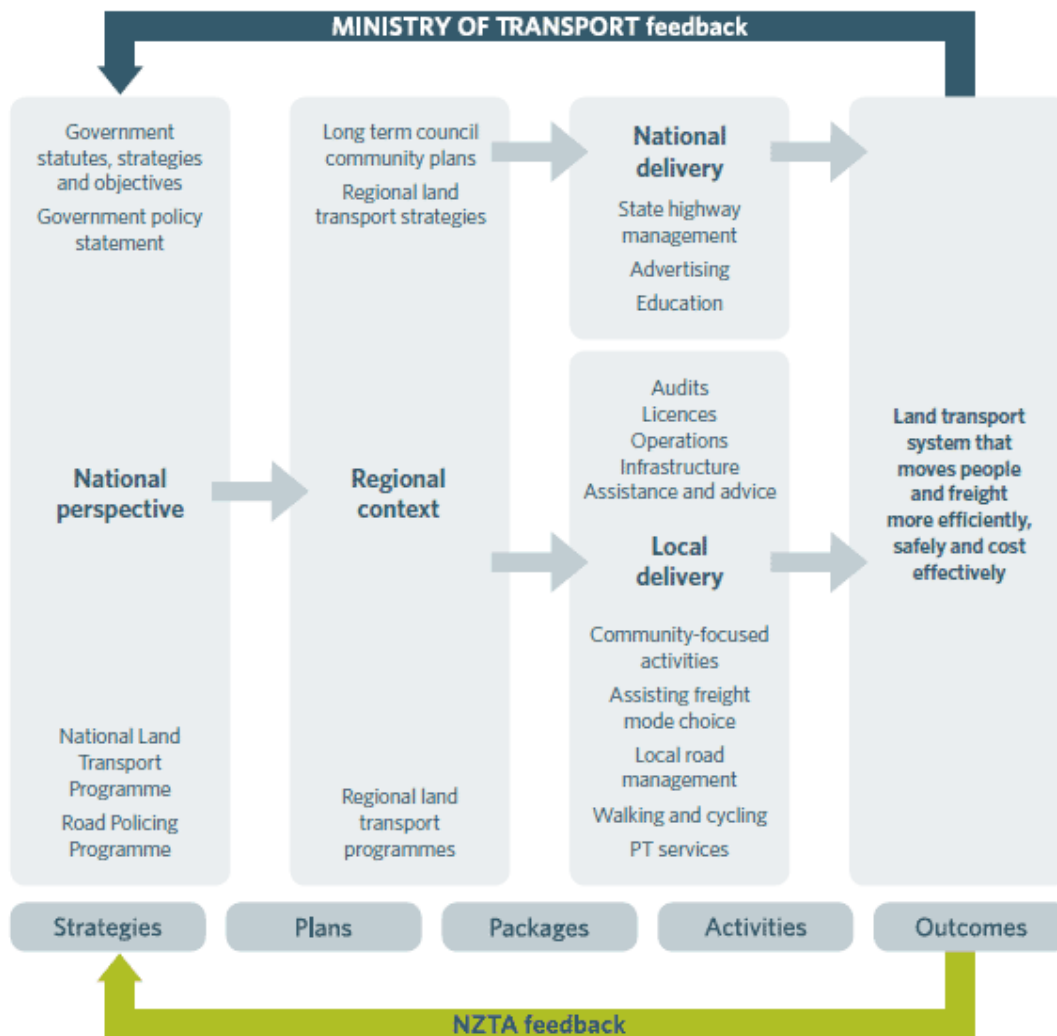
In August 2008, Land Transport New Zealand merged with Transit New Zealand to become the NZ Transport Agency (NZTA). In announcing its formation the minister of transport explained that the NZTA was charged with making sustainable transport choices for moving people and freight using

¹⁷ Safety reforms were first introduced in aviation, then spread to the maritime sector and to land transport (road and rail).

different modes and in so doing will work closely with regional transport committees.”

With this change, at least one element of reform has gone full circle. Trans Fund was created to remove Transit New Zealand’s potential conflict of interest as the arbiter of the road fund’s allocation of money to itself (Transit New Zealand) for state highways and how much was allocated to local authorities for local roads. Now these roles are back under one agency, but with a difference: national and regional plans now take precedence over benefit-cost analysis as the method of choosing investment in road networks.¹⁸ Integrated transport plans coordinate the development of transport networks and land use plans to avoid unintended impacts and to make best use of funds.

FIGURE 4: LAND TRANSPORT MANAGEMENT PROCESS



18 The national and regional plans do not conflict with the principles of benefit-cost analysis as their intent is to serve the national good.

The mission of the NZTA is as follows:

“Our role is to ensure that the government's objectives for land transport are delivered through activities such as the provision of infrastructure and services. We work with stakeholders to deliver safe and optimum transport solutions that best meet the needs of communities both today and in the future.

We develop standards, guidelines and rules to help manage all transport networks. We're also responsible for the allocation of funding for land transport activities. Planning, building and maintaining the state highway network is also a function we undertake.”

Legislation specifically defines NZTA’s responsibilities as follows:

- promote affordable, integrated, safe, responsive and sustainable land transport;
- investigate and review accidents and incidents involving transport on land;
- manage the state highway system, including planning, funding, design, supervision, construction and maintenance operations;
- manage funding of the land transport system, including auditing the performance of organizations receiving land transport funding;
- manage regulatory requirements for transport on land;
- cooperate with, provide advice and assist any government agency or local government agency at the Minister’s request;
- provide the Minister with advice on our functions;
- carry out any other land transport functions directed by the Minister;
- carry out the functions required by the Land Transport Management Act or other Act;

The process in which NZTA is a key player is shown in .

The chief executive of NZTA reports to a statutory board appointed by the Minister of Transport. The organisation of NZTA is shown in

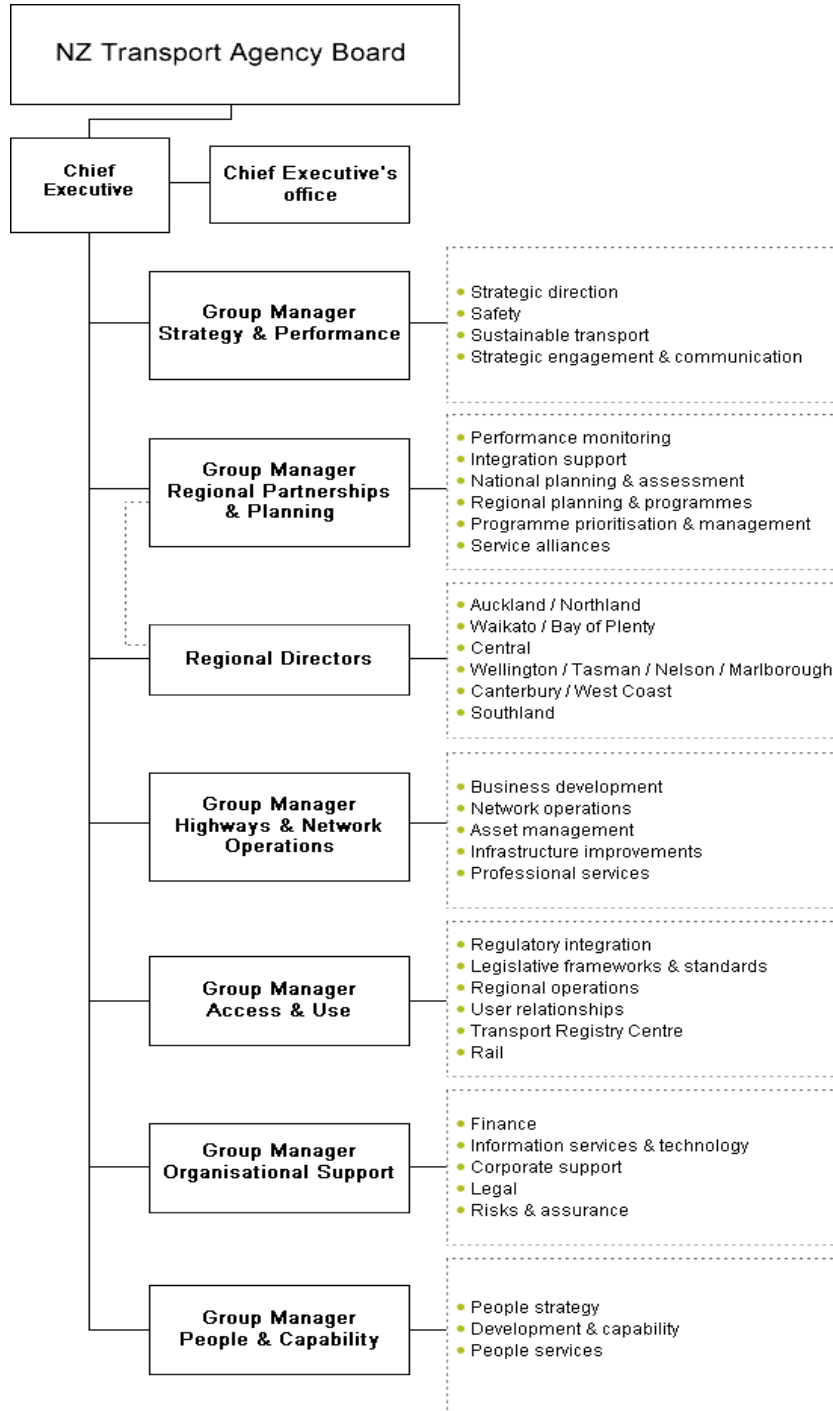
Figure 5.

NZTA issued a Statement of Intent 2009–2012, setting out the approach and course of action for the next three years that will contribute to achieving the government’s vision for the transport sector and economy as a whole. It covers the Agency’s strategy and priorities, financial forecasts, and service performance.

NZTA maintains close working relationships with:

- transport operators and the general public;
- transport committees, regional councils and local authorities, which are responsible for implementing transport projects and other activities funded through the National Land Transport Program;
- suppliers, including contractors and consultants;
- the NZ Police, which provides road policing services; and the Ministry of Transport, which is responsible for leading development of strategic transport policy and monitoring performance of the sector’s government entities.

Figure 5: NZ Transport Agency Organisation Chart



Regional, district and city councils are responsible for delivering land transport infrastructure and services in their areas. NZTA helps to fund these programmes. After public consultation, regional transport committees develop regional land transport programmes which contain:

- a statement of land transport priorities for the region
- lists of land transport activities included in the program
- the priority of each activity— other than for local road maintenance, local road renewals, local road minor improvement works, and existing public transport services
- an assessment of each activity
- an assessment of the program by the regional transport committee
- a 10-year financial forecast of anticipated revenue and expenditure.

It is NZTA's policy to avoid, remedy or mitigate effects on the environment during the planning, construction, maintenance and operation of the state highway network. To that end, it has an environmental plan which sets out a strategic environmental vision that guides specifications and standards for its contractors undertaking road works.

NZTA's road safety approach takes a holistic view of road safety, putting the focus on the road system design: to make it more accommodating of human error; to manage the forces that injure people in a crash to a level that the human body can tolerate without serious injury; and to reduce unsafe road user behaviour.

NZTA's state highway safety plan aims to provide a consistent, safe and forgiving road environment with no surprises for road users, and to provide a safe working environment for maintenance and construction activities. The plan covers speed management, reducing vehicle-train crashes, the needs of vulnerable road users, keeping vehicles on the roadway and minimising the consequences of leaving the roadway, and reducing head-on and across-median crashes. This plan is being updated in response to the government's Road Safety to 2020 Strategy.

In 2009, NZTA opened New Zealand's first new toll road. It uses electronic toll collection allowing traffic to flow freely without changing lanes or stopping. Tolls enabled the toll road to be built earlier than otherwise possible, delivering safety, travel time and other benefits to road users.

Potential toll road projects are evaluated in terms of the government's priorities (as set out in its Government Policy Statement on Land Transport Funding and its New Zealand Transport Strategy) and whether the toll revenues make a meaningful contribution to construction costs, after deducting costs of toll collection and operating and maintaining the road. All toll projects will use fully electronic collection systems that enable traffic to flow freely at all times and will be inter-operable nationwide.

Travel time reliability is recognised as an important objective. Twice-yearly travel time surveys in main cities identify where journeys are taking longer because of increasing congestion. Where longer journeys are unacceptable actions will be taken to reduce congestion.

APPENDIX 7: GSRDC PROJECTS UNDERTAKEN UNDER BOT/PPP

Please see the next page for a list of projects undertaken under BOT/PPP.

Name of Project	Project cost with land Rs Crore	Project cost Rs Crore	Length km	Concession period	VGF			Current status
					From GOI	From GOG	Total	
Commissioned BOT project								
Himatnagar Bypass, Himatnagar 0/0 to 8/73 km. on SH-9	7.00	7	8.73	15 Years	0%	0%	0%	Commissioned April 2006
Chhayapuri ROB, Vadodara Km. 105/2 on Vadodara-Ahmedabad link road (SH86)	27.06	22.32	1.038	181 Months	0%	0%	0%	Commissioned March 2003
Bhuj – Nakhatrana, Kutch 5/2 to 50/0 of SH-42.	--	35.04	44.6	13 years 3 months 2 days	0%	0%	0%	Commissioned February 2008
Ongoing BOT project								
Kim – Mandvi , Surat 14/4 to 52/6 on SH-65	--	21.1	38.2	20 Years	0%	15%	15%	Construction in progress
Under VGF Scheme								
Ahmedabad–Viramgam-Maliya 11/50 to 59/0 (SH-17) 59/0 to 195/065 km (SH- 7)	1015.36	785.403	180	22 Years	Premium quoted by Bidders No VGF needed.			Construction in progress and scheduled to be complete by December 2012
Rajkot – Jamnagar – Vadinar 3/0 to 125/55 km. on SH-25	774.8	604.22	131.65	20 Years				Construction in progress and scheduled to be complete by December 2012
Halol – Godhra – Shamlaji 335/16 to 501/39 km. on SH5	808.65	580.575	173.06	20 Years				Construction in progress and scheduled to be complete by December 2012
RFP Stage, BOT project								
Deesa – Panthavada – Gundri (Banaskantha) 140/92 to 185/24 km. on SH-7	47.74	39.77	44.32	Period to be quoted by bidders	N.A	N.A		Financial closure to be achieved in December2009. Construction to be completed by December 2010
RFQ Stage, BOT project								
Bagodara – Wataman – Tarapur - Vasad 0/0 to 101/76 on SH-8	883.9	464.62	101.76	Period to be quoted by bidders	N.A	N.A		Bidding stage
RFQ stage, VGF project								
Bhachau – Bhuj (Kutch) 0/0 to 77/0 on SH-42	256.94	182.39	77	30 Years	20% 51.4 Crore	0%	20%	Bidding stage
Nakhatrana – Panendhro (Kutch)	203	141.26	79.15	30 Years	20% 40.6	20% 40.6	40%	Bidding stage

Name of Project	Project cost with land Rs Crore	Project cost Rs Crore	Length km	Concession period	VGF			Current status
					From GOI	From GOG	Total	
Commissioned BOT project								
Himatnagar Bypass, Himatnagar 0/0 to 8/73 km. on SH-9	7.00	7	8.73	15 Years	0%	0%	0%	Commissioned April 2006
Chhayapuri ROB, Vadodara Km. 105/2 on Vadodara-Ahmedabad link road (SH86)	27.06	22.32	1.038	181 Months	0%	0%	0%	Commissioned March 2003
Bhuj - Nakhatrana, Kutch 5/2 to 50/0 of SH-42.	--	35.04	44.6	13 years 3 months 2 days	0%	0%	0%	Commissioned February 2008
Ongoing BOT project								
Kim - Mandvi, Surat 14/4 to 52/6 on SH-65	--	21.1	38.2	20 Years	0%	15%	15%	Construction in progress
Under VGF Scheme								
Ahmedabad-Viramgam-Maliya 11/50 to 59/0 (SH-17) 59/0 to 195/065 km (SH-7)	1015.36	785.403	180	22 Years	Premium quoted by Bidders No VGF needed.			Construction in progress and scheduled to be complete by December 2012
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RFQ Stage, BOT project								
Bagodara - Wataman - Tarapur - Vasad 0/0 to 101/76 on SH-8	883.9	464.62	101.76	Period to be quoted by bidders	N.A	N.A		Bidding stage
RFQ stage, VGF								

RFP = request for proposals. RFQ = request for prequalification.

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LIST OF ABBREVIATIONS

AIS	Accident Information System
BAP	Budgeting and Programming System
BMS	Bridge Management System
BOT	Build-Operate-Transfer
EIS	Environment and Social Information System
FIDIC	International Federation of Consulting Engineers (in French)
GERI	Gujarat Engineering Research Institute
GID Act	Gujarat Infrastructure Development Act
GIDB	Gujarat Infrastructure Development Board
GoG	Government of Gujarat
Gol	Government of India
GRICL	Gujarat Road and Infrastructure Co Ltd
GRMS	Gujarat Road Management System
GSDC	Gujarat State Data Centre
GSDP	Gross State Domestic Product
GSHP	Gujarat State Highway Project
GSRDC	Gujarat State Road Development Corporation Ltd
GSWAN	Gujarat State Wide Area Network
GVC	Gujarat Vigilance Commission
HDM-4	Highway Development and Management Model, version 4
HRD	Human Resources Development
IDS	Institutional Strengthening Strategy
ISAP	Institutional Strengthening Action Plan
IT	Information Technology
IWDMS	Integrated Workflow and Document Management System
ISCS	Institutional Strengthening Consulting Services
LNG	Liquefied Natural Gas
MES	Monitoring and Evaluation System
MoU	Memorandum of Understanding
PAP	Project-Affected Person

PCC	Project Coordinating Consultancy
PMS	Pavement Management System
PPU	Policy and Planning Unit
PSP	Private Sector Participation
PPP	Public-Private Partnership
PWD	Public Works Department
QA	Quality Assurance
R&BD	Roads and Buildings Department
RFP	Request for Proposals
RIS	Road Information System
RFQ	Request for (Pre) Qualification
RMMS	Routine Maintenance Management System
Rs	Indian Rupees
SEZ	Special Economic Zone
SH	State Highway
SPV	Special Purpose Vehicle
STC	Staff Training College
TIS	Traffic Information System
VGF	Viability Gap Funding



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